



Multi-Protocol Print Server

Network User's Guide

Please read this manual thoroughly before using the printer. You can print or view this manual from the CD-ROM at any time, please keep the CD-ROM in a convenient place for quick and easy reference at all times.

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Table of Contents

IMPORTANT INFORMATION: REGULATIONS	1-iii
Federal Communications Commission (FCC) Declara- tion of Conformity (For U.S.A. only)	1-iii
Industry Canada Compliance Statement (For Canada only).....	1-iii
Declaration of Conformity (Europe).....	1-iv
Intel Copyright and License Information.....	1-iv
Table of Contents	1-v

1

Unix Printing	1-1
Printing from Unix/Linux using TCP/IP	1-1
Overview.....	1-1
TCP/IP	1-2
General TCP/IP UNIX Host Configuration.....	1-3
Linux Configuration.....	1-6
HP/UX Configuration	1-7
IBM RS/6000 AIX Configuration	1-8
Sun Solaris 2.x Configuration	1-10
SCO UNIX Configuration.....	1-11
DEC TCP/IP Servers for VMS(UCX).....	1-12
TGV's Multinet	1-12
Wollongong's PATHWAY	1-12
IBM AS/400	1-12
Other Systems.....	1-14
Other Sources of Information	1-15

2

TCP/IP Printing.....	2-1
Printing from Windows® NT, Windows® 2000/XP, LAN Server and Warp Server	2-1
Overview.....	2-1
Windows® NT 3.5x/NT 4.0/2000/XP (TCP/IP) Configura- tion.....	2-2
Windows® 2000/XP Printing (Printer Driver not yet installed)	2-2
Standard TCP/IP Port Printing	2-2
IPP Printing from Windows® 2000/XP Clients	2-4
IPP printing from Windows 95/98/Me Clients	2-4
Windows® 2000/XP Printing (Printer Driver already installed)	2-5
Windows® NT 4.0 Printing	2-5
Windows® NT 4.0 Printing	

Installing the Brother Peer to Peer Software	2-6
Windows® NT 4.0 Printing	
Associating to the Printer.....	2-7
Windows® NT 4.0 Printing	
Adding a Second Brother LPR Port.....	2-8
Windows® NT 3.5x Printing.....	2-9
Windows® NT 3.5x Printing	
(Printer Driver not yet installed)	2-10
LAN Server, OS/2 Warp Server Configuration	2-11
Server Configuration.....	2-11
Configuration of an OS/2 Server	2-11
Other Sources of Information.....	2-14

3 Peer to Peer Printing 3-1

How to Print in a Windows® 95/98/Me Peer to Peer network	
3-1	
Overview.....	3-1
TCP/IP Printing.....	3-2
Installing the Brother Peer to Peer Software	3-2
Associating to the printer	3-3
Adding a Second Brother LPR Port.....	3-4
Other Sources of Information.....	3-4

4 NetBIOS Peer to Peer Printing..... 4-1

How to Print using NetBIOS in Windows® 95/98/Me/NT/2000/XP,	
LAN Server and OS/2 Warp Server.....	4-1
Overview.....	4-1
Print Server Configuration	4-2
Changing the workgroup/domain name using TELNET or BRCONFIG or a web browser	4-3
NetBIOS Port Monitor for Windows® 95/98/Me, NT4.0/2000/XP	4-4
Installing the Brother NetBIOS Port Monitor	4-4
Associating the printer	4-5
Windows® 95/98/Me	4-5
Windows NT® 4.0 /Windows® 2000/XP.....	4-6
Adding a Second NetBIOS Print Port	4-7
Windows® 95/98/Me	4-7
Windows NT® 4.0 / Windows® 2000/XP.....	4-7
LAN Server/OS/2 Warp Server Configuration	4-8
Server Configuration:.....	4-8
Workstation Configuration:	4-8
Other Sources of Information.....	4-9

5

Configuring Internet Printing for Windows®	5-1
Internet Printing Installation	5-1
Overview.....	5-1
Brother Internet Print General Information	5-2
Brother Internet Print	
Configuring the Brother Print Server	5-3
Print Server Configuration Checklist	5-3
Brother Internet Print	
Using BRAdmin to Configure the Print Server.....	5-4
Brother Internet Print	5-5
Using a Web Browser to configure the Print Server ...	5-5
Brother Internet Print	
Using TELNET to Configure the Print Server	5-6
Brother Internet Print	
Installing the BIP software on Windows® 95/98/Me/ NT4.0/2000/XP	5-7
Setup from CD-ROM	5-7
Adding a Second Brother Internet Port.....	5-10
Windows® 2000/XP IPP Printing.....	5-11
Specifying a different URL.....	5-12
Other Sources of Information	5-13

6

Novell NetWare Printing	6-1
How to configure Novell NetWare Printing	6-1
Overview.....	6-1
General Information.....	6-2
Creating a NDPS Printer Using NWADMIN for NetWare5 6-3	
NDPS Manager	6-3
NDPS Broker	6-4
Creating a Printer Agent.....	6-5
Configuring Netware 3 and NetWare 4 systems	6-6
Configuring the Brother Print Server (Queue Server Mode in Bindery emulation mode) using BRAdmin	6-6
Configuring the Brother Print Server (Queue Server Mode in NDS mode) using BRAdmin.	6-8
Configuring the Brother Print Server (Queue Server Mode in NDS mode) using Novell NWAD- MIN and BRAdmin.....	6-9
Configuring the Brother Print Server (Remote Printer Mode in NDS mode) using Novell NWAdmin and BRAdmin	6-12
Configuring the Brother Print Server	

(Queue Server Mode in Bindery emulation mode) using PCONSOLE and BRCONFIG.....	6-14
Configuring the Brother Print Server (Queue Server Mode in NDS mode) using PCONSOLE and BRCONFIG.....	6-16
Configuring the Brother Print Server (Remote Printer Mode) using PCONSOLE and BRCONFIG.....	6-19
Other Sources of Information.....	6-22

7

AppleTalk (EtherTalk) TCP/IP Printing.....	7-1
Printing From a Macintosh.....	7-1
Overview.....	7-1
Macintosh Configuration (OS 8.5 - 9.2).....	7-2
How to Select the Print Server (AppleTalk/EtherTalk).....	7-4
How to Select the Print Server (TCP/IP).....	7-5
Macintosh Configuration (OS X v. 10/10.1).....	7-8
How to Select the Print Server (AppleTalk/EtherTalk).....	7-9
How to Select the Print Server (TCP/IP).....	7-10
Changing the Configuration.....	7-11
Other Sources of Information.....	7-11

8

DLC Printing.....	8-1
Printing from Windows® NT or Windows® 2000.....	8-1
Overview.....	8-1
Configuring DLC on Windows® NT/2000.....	8-2
Windows® 2000 Printer Setup.....	8-2
Windows® NT 4.0 Printer Setup.....	8-4
Windows® NT 3.5x Setup.....	8-5
Configuring DLC on Other Systems.....	8-6
Other Sources of Information.....	8-6

9

LAT Network Configuration.....	9-1
Printing from DEC LAT Systems.....	9-1
Overview.....	9-1
LAT Concepts.....	9-1
VMS LAT Host Configuration.....	9-2
Eliminating Blank Pages.....	9-4
PATHWORKS for DOS Configuration.....	9-5
PATHWORKS for Windows® 95/98/NT4.0.....	9-7
PATHWORKS for Macintosh Configuration.....	9-7
DECprint Supervisor Configuration Notes.....	9-8

Installation on Other Host Computers	9-10
--	------

10

BANYAN VINES

Network Configuration 10-1

Printing from Banyan Vines Systems	10-1
Overview.....	10-1
Necessary items to use a Brother print server on a VINES network	10-1
File Server User Console	10-2
File Server Queue Configuration	10-3
Print Server Configuration Using BRAdmin.....	10-5
Print Server Configuration Using the Print Server Con- sole	10-6

11

Web Based Management

How to use a Web Browser to manage your Device.....	11-1
Overview.....	11-1
How to connect to your printer using a Browser.....	11-2
Other Sources of Information	11-2

12

TCP/IP Configuration.....

Assigning TCP/IP Information	12-1
Overview.....	12-1
Using the printer control panel to allocate an IP address (printers with LCD panels only)	12-2
Changing the IP Address using the BRAdmin application 12-2	
Using BRAdmin and the IPX/SPX Protocol to set the IP address	12-3
Using BRAdmin and the TCP/IP Protocol to set the IP address	12-4
Using DHCP to Configure the IP address	12-5
Using APIPA to Configure the IP Address.....	12-5
Using ARP to Configure the Print Server IP Address	12-5
Using RARP to Configure the IP Address	12-7
Using BOOTP to Configure the IP Address.....	12-8
Configuring the IP Address with DEC NCP or BRCONFIG.....	12-9
Changing the IP Address settings with the TELNET Console.....	12-12
Other Sources of Information	12-13

13	Troubleshooting.....	13-1
	Overview.....	13-1
	Installation problems.....	13-1
	Intermittent Problems.....	13-4
	TCP/IP Troubleshooting	13-5
	UNIX Troubleshooting	13-6
	Windows® NT/LAN Server (TCP/IP) Troubleshooting	13-8
	Windows® 95/98/Me Peer to Peer Print (LPR) Troubleshooting.....	13-8
	Windows® 95/98/Me Peer-to-Peer (HP JetAdmin compatible method) Troubleshooting	13-9
	Windows® 95/98/Me/NT 4.0 Peer-to-Peer Print (NetBIOS) Troubleshooting.....	13-9
	Brother Internet Print (TCP/IP) Troubleshooting.....	13-10
	Windows® 95/98/Me/2000/XP IPP Troubleshooting ...	13-11
	Novell NetWare Troubleshooting.....	13-12
	AppleTalk Troubleshooting	13-13
	DLC/LLC Troubleshooting	13-13
	LAT Troubleshooting	13-14
	Banyan VINES Troubleshooting	13-16
	Web Browser Troubleshooting (TCP/IP)	13-17

14	Appendix.....	A-1
	Appendix A	A-1
	General Information	A-1
	BRAdmin (Recommended).....	A-1
	Web BRAdmin	A-1
	HTTP (Recommended)	A-2
	WebJetAdmin	A-2
	TELNET	A-2
	BRCONFIG.....	A-2
	Using Services.....	A-3
	General.....	A-3
	Reloading the Print Server Firmware.....	A-4
	General.....	A-4
	Reloading firmware using BRAdmin	A-5
	Reloading process	A-6
	Reloading using the FTP Protocol from a command prompt	A-7
	Reloading using the FTP Protocol from a Web Browser .	A-8
	Index	-1

1 Unix Printing

Printing from Unix/Linux using TCP/IP

Overview

Brother print servers are supplied with the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite. Since virtually all UNIX host computers support TCP/IP, this capability allows a printer to be shared on a UNIX Ethernet network. As with all protocols, TCP/IP communications can proceed concurrently while other protocols are active, this means that UNIX, NetWare, Apple, and other computers can share the same Brother print server over an Ethernet network.

The Linux operating system uses the same setup procedures as standard Berkeley UNIX systems. Refer to this chapter for a typical GUI based Linux installation.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel (if applicable), the BRAdmin application or let your DHCP server allocate an IP address to the printer.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address on your printer.
- 3 The default password for Brother print servers is `access`.
- 4 The default name for a Brother print server is usually `BRN_XXXXXX` (where `XXXXXX` is the last six digits of the Ethernet address of the print server).
- 5 When configuring the PRINTCAP file, pay particular attention to the service names, `BINARY_P1` and `TEXT_P1`.

TCP/IP

Brother print servers appear to the network as a UNIX host computer with a unique IP address running the lpd (line printer daemon) protocol. As a result, any host computer that supports the Berkeley remote LPR command can spool jobs to Brother print servers without the need for any special software on the host computer. For special applications, raw TCP ports are also available.

Brother print servers also support the FTP protocol. This protocol can be used to send print jobs from Unix systems.

The Brother print server is pre-configured to run on a TCP/IP network with a minimum of setup. The only mandatory configuration of the print server is the allocation of an IP address, which can be either automatically assigned using DHCP, BOOTP etc., or manually assigned using the ARP command, BRAdmin or the printer control panel (if applicable).



For setting the IP address of the print server, refer to the Quick Setup Guide or to *chapter 12* of this user guide.

General TCP/IP UNIX Host Configuration

The configuration process for most UNIX systems is described in the following steps. As this process varies, we recommend that you refer to your system documentation for additional information.

- 1 Configure the `/etc/hosts` file on each UNIX host that needs to communicate with the print server. Use your favorite editor to add an entry to the `/etc/hosts` file containing the IP address and node name of the device. For example:

```
192.189.207.3      BRN_310107
```

The actual format of the entry may vary depending on your system, check your system documentation and also note the format of other entries in the `/etc/hosts` file.



The node name in this file does not necessarily need to be the same as the one that is actually configured into the Brother print server (the name that appears on the printer configuration page), however, it is good practice to make the names the same. Some operating systems, such as HP/UX, do not accept the "_" character in the default name, for these systems you must use a different name).

In any case, the node name in the `/etc/hosts` file must match the node name in the `/etc/printcap` file.

Some systems such as HP/UX and AIX allow you to enter the IP address as the host name when setting up the print queue. If this is the case, you do not need to configure the hosts file.

- 2 Choose which print server service you want to use. There are several types of services available on Brother print servers. Binary services pass data through unmodified and are therefore required for PCL or PostScript rasterized graphics printouts. Text services add a carriage return at the end of each line for proper formatting of UNIX text files (which end in linefeed and do not have carriage returns). The text service can also be used for non-rasterized graphics, such as ASCII PostScript graphics or many types of PCL graphics.

Choose one of the available services (a service name will be used in step 3):

BINARY_P1 Binary data
TEXT_P1 Text data (CR added)

You may set up multiple print queues on your UNIX host computer for the same print server, each one with a different service name (for example, one queue for binary graphics jobs and one for text jobs).

- 3 Configure the `/etc/printcap` file on each host computer to specify the local print queue, the print server name (also called remote machine or `rm`), and the print server service name (also called remote printer, remote queue, or `rp`), and the spool directory.



This step applies to the majority of UNIX systems, including Linux, Sun OS (but not Solaris 2.xx), Silicon Graphics (lpr/lpd option required), DEC ULTRIX, DEC OSF/1, and Digital UNIX. SCO UNIX users should follow these steps, but should also refer to the *SCO UNIX Configuration* section. Users of RS/6000 AIX, HP/UX, Sun Solaris 2.xx, and other systems that do not use the `printcap` file should skip to section 3-a. SCO user's should also skip to section 3a (SCO uses the `printcap` file, but this file is automatically configured via the `rlpconf` command).

An example of a typical `printcap` file:

```
laser1|Printer on Floor 1:\
:lp=:\
:rm=BRN_310107:\
:rp=TEXT_P1:\
:sd=/usr/spool/lpd/laser1:
```



Make sure this information is added to the end of the printcap file. Also make sure that the last character in the printcap file is a colon ":".

This will create a queue named laser1 on the host computer that communicates to a Brother print server with a node name (rm) of BRN_310107 and a service name (rp) of TEXT_P1 printing text files to a Brother printer through spool directory /usr/spool/lpd/laser1. If you are printing binary graphics files, you would use the service BINARY_P1 instead of TEXT_P1.



The rm and rp options are not available on some UNIX systems, so if necessary check your documentation to determine the equivalent options.

Users of Berkeley-compatible UNIX systems can use the lpc command to obtain the printer status:

```
%lpc status
laser1:
queuing is enabled
printing is enabled
no entries
no daemon present
```

Users of AT&T-compatible UNIX systems can generally use the lpstat or rlpstat commands to obtain similar status information. Because this procedure varies from system to system, refer to your system documentation for the exact usage.

- 4 Skip this section if you have completed Step 3, unless you have an SCO UNIX system.

If you have an HP/UX system, IBM RS/6000 AIX computer, or Sun Solaris 2.xx, there is no printcap file. This is also true for some other AT&T-based UNIX systems, as well as many VMS-based TCP/IP software packages (for example, UCX, TGV Multinet, etc.). On SCO systems, there is a printcap file, but it is automatically configured by the `rlpconf` command. Most of these systems generally use a printer setup program to define the service name (remote printer), the print server name (remote machine) or IP address, and the local queue name (spool directory). Refer to the appropriate section depending on your version of Unix.

Linux Configuration

If you do not wish to use the command line interface to configure your Linux distribution, you may wish to use the Linux Printer System Manager application on your GUI. To do this, do the following:

- 1 From the Linux Printer System Manager screen, click the **Add** button.
- 2 You will now be asked to specify which Printer type you are using, select the **Remote Unix (lpd) Queue** option and click **OK**.
- 3 You must now specify the remote host name, remote queue name and the input filter to use.
- 4 The **Remote Host** name is the IP address of the printer, or the name from the hosts file which corresponds to the IP address of the printer.
- 5 The **Remote Queue** name is the service name that the printer will use when processing the data. Generally we recommend that you use the name "BINARY_P1", however, if you are planning to send text documents that do not have a carriage return and a line feed, then use "TEXT_P1".
- 6 Select the appropriate **Input Filter** from the list of available printers on your particular build of Linux.

In order to make your settings work, select the **Restart lpd** option. As soon as the lpd server restarts, you will be able to send printed documents from your server.

HP/UX Configuration

In the case of HP/UX10.xx, the sam program is used to set up the remote printer. The steps are as follows:

- 1 Execute the sam program. From the list of options, select **Printers and Plotters**.
- 2 Select **LP Spooler**.
- 3 Select **Printers and Plotters**.
- 4 Select **Actions** and then **Add Remote Printer/Plotter**.
- 5 Enter any name as the **Printer Name** (this will be the name of the print queue).
- 6 Enter the IP address of the print server as the **Remote System Name**.
- 7 Enter the desired print server service name as the **Remote Printer Name**.
- 8 Check the box next to **Remote Printer is on BSD system**.
- 9 You may accept the default values for the remaining items.
- 10 Click **OK** to configure the printer.

You should now be able to print using the lp-d command with the printer name.

If you are using the HP distributed print service, the configuration procedure is slightly different because you are sending the print jobs to a file server, which in turn spools the job to the print server. You must therefore know the name of the file server (spooler host) in addition to the above information. You will add a physical and a remote printer, and then assign a logical printer to the remote printer (a unique name that does not match any other name). To print, use the lp -d command with the logical printer name.

Earlier versions of HP/UX use similar procedures to 10.xx users:

- 1 Enter **sam** and select **Peripheral Devices** and then **Add Remote Printer (not Networked printer)**.
- 2 Enter the following remote printer settings (the other settings do not matter):
 - **Line printer name** (user-selectable).
 - **Remote system name** (the print server name; must match what is in `hosts` file or use print server IP address).
 - **Remote printer queue** (Printserver binary or text service name, e.g. `BINARY_P1` or `TEXT_P1`).
 - **Remote Printer is on a BSD System** (Yes).

IBM RS/6000 AIX Configuration

The RS/6000 AIX operating system uses the `smit` program to set up the remote printer. The procedure is as follows for AIX 4.0 and later:

- 1 Enter `smit` and select **devices**.
- 2 Select **Printer/Plotter**.
- 3 Select **Print Spooling**.
- 4 Select **Add a Print Queue**.
- 5 Select **Remote**.
- 6 Enter the following Remote Printer Settings:

Name of queue (user selectable)

Host name of Remote Printer (print server name; must match name in `/etc/hosts` file or use the print server IP address)

Name of queue on remote printer (print server binary or text service name, eg. `BINARY_P1` or `TEXT_P1`).

Type of print spooler. BSD (press the LIST button and choose BSD)

The procedure for pre-V4.0 systems is as follows.

- 1 Enter `smit` and select **devices**.
- 2 Select **printer/plotter**.
- 3 Select **manage remote printer subsystem**.
- 4 Select **client services**.
- 5 Select **remote printer queues**.
- 6 Select **add a remote queue**.
- 7 Enter the following remote queue settings:
 - **Name of queue to add** (user selectable).
 - **Activate the queue** (Yes).
 - **Destination host** (print server name; must match name in `/etc/hosts` file or use the print server IP address)
 - **Name of queue on remote printer** (print server binary or text service name, eg. `BINARY_P1` or `TEXT_P1`).
 - **Name of device to add** (user selectable; for example `lp0`).

Sun Solaris 2.x Configuration

Sun Solaris 2.x uses the `lpsystem` and `lpadmin` programs for remote printer configuration:

```
lpsystem -t bsd prnservername
lpadmin -p queue -s prnservername!prnserver-service
accept queue      (not required on newer Solaris systems)
enable queue      (not required on newer Solaris systems)
```

Where `queue` is the name of the local print queue.

`prnservername` is the name of the print server (must match the entry in the `/etc/hosts` file or IP address).

`prnserver-service` is the print server `BINARY_P1` or `TEXT_P1` service.

If this is the first printer configured, you must also use the `lpsched` command prior to the `accept` command.

As an alternative, you may use Printer Manager in the Admintool utility under OpenWindows. Select **Edit**, **Add**, and **Add Access to Remote Printer**. Then enter the print server name in the format `prnservername!\prnserver-service` as described above. Make sure that the printer server OS is set to **BSD** (the default setting), and click **Add**.

Note that we recommend that you use the `/etc/hosts` file for the printer name rather than NIS or other name services. Also note that due to a bug in the Sun `lpd` implementation on Solaris 2.4 and earlier releases, you may experience problems printing very long print jobs. If this is the case, a workaround is to use the raw TCP port software as described later in this chapter.

SCO UNIX Configuration

To configure a printer in version Version 5.x of SCO Unix, use the SCOADMIN program.

- 1 Select **Printers** and then **Print Manager**.
- 2 On the menu select **Printer** and then **Add Remote** followed by **Unix...**
- 3 Enter the IP address of the print server, and type in the name of the printer that will be used to spool to.
- 4 Deselect **Use External remote Printing Protocol...**
- 5 To eject the printed page, add the command `rp=lpaf` to the `/etc/printcap` file.

SCO UNIX requires TCP/IP V1.2 or later to work with Brother print servers. You must first configure the `/etc/hosts` and `/etc/printcap` files as described in step 2. Then run the `sysadmsh` program as follows:

- 1 Select **Printers**.
- 2 Select **Configure**.
- 3 Select **Add**.
- 4 Enter the name of the print queue you entered in the `/etc/printcap` file as the **Printer name**.
- 5 Enter anything as the **Comment**, and **Class name**.
- 6 For the **Use printer interface** select **Existing**.
- 7 Press the F3 key to get a list of available interfaces, and select the desired one as the **Name of interface** using the cursor keys (Dumb is a good choice).
- 8 Select **Direct** as the **Connection**.
- 9 Enter the desired Device name (`/dev/lp` generally works).

10 Select **Hardwired** as the **Device**.

11 Select **No** for the **Require banner** field.

Older SCO Unix Systems

The Brother print servers support the FTP protocol. Earlier SCO Unix systems are often configured to print using the FTP protocol.

DEC TCP/IP Servers for VMS(UCX)

You need to run the `sys$system:ucx:$lprsetup` command, specify a printer name, and then enter the print server IP address as the remote system name. Specify one of the print server services (see beginning of this section for options) as the remote system printer name. Accept the defaults for other questions.

TGV's Multinet

TGV's Multinet requires you to run the `MULTINET CONFIGURE / PRINTERS` command, then use the **ADD** command to add a printer, specifying the print server IP address, a protocol type of LPD, and one of the service options described at the beginning of this chapter as the remote print queue.

Wollongong's PATHWAY

First make sure that you have the Access option with lpd enabled. Then enter the print server name and IP address in the `TWG$TCP:[NETDIST.ETC]HOSTS` file, run the LPGEN program, and execute the command: `add queue/
rmachine=prnservername/rprinter=prnservername/
service=prnservername`, where `queue` is the name of the queue, `prnservername` is the print server name from the hosts file, and `prnservername` is the print server service name.

IBM AS/400

To use a Brother print server with an IBM AS/400 running IBM's TCP/IP gateways services for OS/400 (the OS/400 system must be v3.1 or later)

Use the CFGTCP command at your OS/400 prompt to add the print server's TCP/IP address to the AS/400 host table.

Use the following one-line OS/400 command to create the LPD queue:

```
CRTOUTQ OUTQ(<queuename> RMSTSYS
(*INTNETADR) RMTprtQ(<service>)
AUTOSTRWTR(1) CNNTYPE(*IP) DESTTYPE (*OTHER)
MFRTYPMDL (<driver>)
INTNETADR('<ipaddress>') TEXT
('<description>')
```

where <queuename> is the new AS/400 print queue name, <service> is the print server service name (BINARY_P1 or TEXT_P1) <driver> is the OS/400 printer driver name (*HP4 is recommended if in doubt), and <ipaddress> is the IP address of the print server. Note that the IP address and description must be enclosed in single quotes.

For example:

```
CRTOUTQ OUTQ(BR1) RMTSYS(*INTNETADR)
RMTprtQ(BINARY_P1) AUTOSTRWTR(1) CNNTYPE(*IP)
DESTTYPE(*OTHER) MFRTYPMDL(*HP5SI)
INTNETADR('10.0.0.200') TEXT('Arnes Printer')
```

If you are using A4 paper, you may find that the printer page formatting is incorrect (this is probably because your AS/400 system is set to Letter sized paper), to resolve this problem, do the following:

Edit the **Host Print Transform** source code:

```
RTVWSCST DEVTYPE(*TRANSFORM) MFRTYPMDL(*HP5SI)
SRCMBR(HP5SI) SRCFILE(MYLIB/SRC)
```

At the paper definition, alter the existing hex codes for **Letter Size**, 1B 26 6C 02 41 to hex codes for **A4 Size**, 1B 26 6C 32 36 41.

OS/400 version 4, 5, 5.1

You can also use the following command line to create a printer definition:

```
CRTDEVPRT DEVD(BR2) DEVCLS(*LAN) TYPE(3812)
MODEL(1) LANATTACH(*IP) PORT(9100) FONT(011)
PARITY(*NONE) STOPBITS(1) TRANSFORM(*YES)
MFRTPMDL(*HP5SI) PPRSRC1(*A4) PPRSRC2(*A4)
RMTLOCNAME('10.0.0.200') SYSDRVPGM(*HPPJLDRV)
TEXT('Arnes Printer')
```

Other Systems

Other systems use similar programs to set up print servers. These programs will generally ask for the following information:

Requested information:	You should use:
remote printer	Binary or Text service name
remote host computer name	Any name (must match the name in the printcap file, if any) or in some cases, you may enter the print server IP address here
remote host IP address	IP address of print server.

Technical support specialists for these companies can usually answer configuration questions if you provide them with the equivalent UNIX configuration information (tell them that the print server looks like a remote UNIX host computer running the lpd line printer daemon).

If you have not created a spool directory for the Brother print server on your UNIX host computer, you will need to do so now (the printer setup utilities in HP/UX, AIX, Solaris 2.xx, and other systems will automatically create the spool directory). The lpd spool directory is usually located in the `/usr/spool` directory (check with your system manager to see if the location is different for your system). To create a new spool directory, use the `mkdir` command. For example, to create a spool directory for the queue `laser1`, you would enter:

```
mkdir /usr/spool/lpd/laser1
```

On some systems it is also necessary to start the daemon. This is done on Berkeley-compatible UNIX systems with the `lpc start`

command as shown in the following example:

```
lpc start laser1
```

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

2

TCP/IP Printing

Printing from Windows® NT, Windows® 2000/XP, LAN Server and Warp Server

Overview

Users of Windows® NT can print directly to a network-ready Brother printer using the TCP/IP protocol. Microsoft Windows® NT 3.5x and NT 4.0 users must install Microsoft's "TCP/IP printing" protocol. Windows® 2000/XP users are able to send print jobs directly to the printer without installing any additional software. Brother's print server also supports transparent printing from IBM LAN Server and OS/2 Warp Server file servers, as well as from OS/2 Warp Connect workstations using the TCP/IP protocol.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel (if applicable), the BRAdmin application, or let your DHCP server allocate an IP address.
- 2 The default password for Brother print servers is `access`.
- 3 Windows® NT 3.51 and Windows® NT 4.0 users must install the "Microsoft TCP/IP printing" protocol (available through the control panel applet).
- 4 Windows® 2000/XP users can print using TCP/IP using the standard Network Printing software and IPP protocol software built into any Windows® 2000/XP installation.
- 5 Windows® 95/98/Me users can send print jobs using the IPP protocol via a Windows® 2000/XP computer providing that the Microsoft Internet Print Services software is installed on the client PC, IIS is installed and running on the Windows® 2000/XP computer and that the client PC is using version 4 or later of Microsoft Internet Explorer.

- 6 The default name for a Brother print server is usually BRN_XXXXXX (where XXXXXX is the last six digits of the Ethernet address of the print server).

Windows® NT 3.5x/NT 4.0/2000/XP (TCP/IP) Configuration

If you have not already done so, install the TCP/IP protocol onto your Windows® NT system. This is done via the **Network** icon in the **Control Panel** window of the Windows® NT system (the **Control Panel** is in the **Main** window on NT 3.5x systems, or use the **Start** button on NT 4.0 to access the **Settings/Control Panel** menu). The default configuration of Windows® 2000/XP automatically installs the TCP/IP protocol. Refer to the appropriate section in this chapter for more information.

Windows® 2000/XP Printing (Printer Driver not yet installed)

By default, Windows® 2000/XP systems install with all the necessary software required for you to be able to print. This chapter describes the two most commonly used configurations, Standard TCP/IP Port printing and IPP (Internet Printing Protocol). If you have already installed the printer driver, jump to the **printer driver already installed** section.

Standard TCP/IP Port Printing

- 1 From the **Printers** folder select **Add Printer**. The **Add Printer Wizard** will now start. Click on **Next**.
- 2 Now select the **Local Printer** option and deselect the **Automatically detect and install my Plug and Play printer** option.
- 3 Click on **Next**.

- 4 You must now select the correct Network printing port.
 - a For Windows® 2000: Select the **Standard TCP/IP Port** option as the port.
 - b For Windows® XP: Select a new port from the pull-down window and select **Standard TCP/IP Port**.
- 5 When you have done that click **Next**.
- 6 The **Add Standard TCP/IP Port Wizard** will now appear. Click the **Next** button.
- 7 Enter the IP address, or name of the printer you wish to configure. The Wizard will automatically enter the Port name information for you.
- 8 Click the **Next** button.
- 9 Windows® 2000/XP will now contact the printer that you specified. If you did not specify the correct IP address or name then you will receive an error message.
- 10 Click the **Finish** button to complete the Wizard.
- 11 Now that you have configured the port, you must specify which printer driver you wish to use. Select the appropriate driver from the list of supported printers. If you are using a driver supplied with the printer on CD-ROM then select the **Have Disk** option to browse to the CD-ROM. You can also click the **Windows Update** button to connect directly to Microsoft's support Web site to download printer drivers.
- 12 When the driver is installed, click the **Next** button.
- 13 Specify a name and click the **Next** button.
- 14 Now specify if you wish to share the printer, enter the share name and click **Next**.
- 15 Continue through the Wizard clicking the **Finish** button when complete.

IPP Printing from Windows® 2000/XP Clients

If you wish to print using the IPP protocol, follow these steps:

- 1 From the **Printers** folder select **Add Printer**. The **Add Printer Wizard** will now start. Click on **Next**.
- 2 Select **Network Printer**.
- 3 Click the **Connect to a printer on the Internet or on your intranet** option.
- 4 You must now enter a URL name. A typical example of a URL name for a printer that supports the IPP protocol is: `http://ip_address:631/ipp` (where `ip_address` is the IP address, NetBIOS name or DNS name of the print server).
- 5 Click the **Next** button.
- 6 Windows® 2000/XP will now connect to the device that you specified and determine the model number of the printer. If the appropriate driver is installed on the PC, it will be used. If the appropriate driver is not available you will be asked to insert the driver diskette that was supplied with the printer.
- 7 Follow the Wizard through to the end of the installation.
- 8 Click the **Finish** button to complete the Wizard.

IPP printing from Windows 95/98/Me Clients

It is also possible to send IPP print jobs from a Windows® 95/98/Me client PC, provided that the PC has the ability to connect to and access Windows® 2000/XP resources. Visit the Microsoft web site (www.microsoft.com) and download the Windows® Internet Print Services support software for Windows® systems.

Once installed, this software will allow you to connect to a Windows® 2000/XP system that is also running IIS and send print jobs using the IPP protocol.

By using Microsoft's IPP software you can also send jobs to other printers that do not support the IPP protocol.

Windows® 2000/XP Printing (Printer Driver already installed)

If you have already installed the printer driver and wish to configure it for network printing, follow these steps:

- 1 Select the printer driver you wish to configure.
- 2 Select **File** and then choose **Properties**.
- 3 Click the **Ports** tab of the driver and click **Add Port**.
- 4 Select the port that you wish to use. Typically this would be **Standard TCP/IP Port**. Then click the **New Port...** button.
- 5 The **standard TCP/IP Port Wizard** will start. Follow steps 6-10 of the "Standard TCP/IP Port Printing" section.

Windows® NT 4.0 Printing

If you did not install the TCP/IP protocol during the installation of your Windows® NT 4.0 system (either workstation or server) follow these steps. If you have already installed the TCP/IP protocol, proceed to the next section.

- 1 Go to the **Start** button, choose **Settings**, and then select **Control Panel**.
- 2 Run the **Network** applet by double clicking the **Network** icon and then click on the **Protocols** tab.
- 3 Select **Add**, and double click on the **TCP/IP Protocol**.
- 4 Insert the requested disk(s), or CD-ROM, to copy the required files.
- 5 Click the **Close** button. The Windows® NT system will review protocol bindings and then you will see the **TCP/IP Properties** dialog.
- 6 Configure the host IP address, subnet mask, and gateway address in that dialog. Consult your system manager for these addresses.

- 7 Click **OK** to exit (your NT workstation or server will need to be re-booted).

Windows[®] NT 4.0 Printing

Installing the Brother Peer to Peer Software

- 1 Start the CD-ROM installation menu program according to the Quick Setup Guide.
- 2 Select the desired Language and then select **Install Software**. Then select the **Network Print Software** installation program.
- 3 Click on **Next** in response to the Welcome message.
- 4 Select the **Brother Peer to Peer Print (LPR)** button.
- 5 Select the desired directory to install the **Brother Peer to Peer Print (LPR)** files and click on **Next**. The installation program will create the directory for you if it does not already exist on your disk.
- 6 Enter the Port name that you wish to use and click **OK**. The default port name is BLP1. Whichever name you choose, it must be unique and it **MUST** begin with BLP.
- 7 You must now enter the actual IP address of the print server in the IP Address field. If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer configuration page. By default the NetBIOS name will appear as BRN_XXXXXX where XXXXXX is the last six digits of the Ethernet address.
- 8 Click the **OK** button. When prompted you must re-boot your computer.

Windows® NT 4.0 Printing Associating to the Printer

You must now create a printer on your Windows® system using the standard Windows® printer setup procedure.

- 1 To do this, go to the **Start** button, select **Settings** and then **Printers**.
- 2 Double click the **Add Printer** icon to get the **Add Printer Wizard**.
- 3 Select **My Computer** (not Network Printer) and click on **Next**.
- 4 Select the Brother LPR Port (the port name you assigned in step 6 of the “Installing Brother Peer to Peer Software” section in this chapter) and click on Next.
- 5 Select the desired printer model. If the correct model is not displayed, click on the **Have Disk** option and insert the CD-ROM supplied with your printer.
- 6 If the driver already exists, select **Keep Existing Driver** (if it does not exist, this step will be skipped), and then click on **Next**.
- 7 If desired, change the name of the printer then click **Next**.
- 8 If desired, make the printer shared (so other user can access it), and select the operating system(s) that these other computers will be running. Click on **Next**.
- 9 Select **Yes** when you asked **Would you like to print a test page?**. Click on **Finish** to complete the installation. You may now print to the printer as if it were a local printer.

Windows® NT 4.0 Printing Adding a Second Brother LPR Port

You do not need to re-run the install program to add a new Brother LPR port. Instead, press the **Start** button, select **Settings**, and open the **Printers** window. Click on the icon of the printer that you wish to configure, select **File** from the menu bar, and then choose **Properties**. Click on the **Ports** tab and push the **Add Port** button. In the **Printer Ports** dialog, highlight **Brother LPR Port**. Click the **New Port** button and enter the port name. The default port name is BLP1. If you have already used this name, you will get an error message if you try to use it again, in which case use BLP2, etc... Once you have specified the port name, click the **OK** button. You will then see the **Port Settings** dialog.

Enter the IP address of the printer that you wish to print to and click **OK**. And then click **Close** in the **Printer Ports** dialog. You should now see the port that you have just created in the **Print to the following port(s)** setting of the printer driver.

Windows® NT 3.5x Printing

- 1 Go into the **Control Panel** and run the **Network** applet.
- 2 Select **Add Software** and **TCP/IP Protocol** and related components.
- 3 Select the **TCP/IP Network Printing Support** check box. And then click on the **Continue** button. (This option will be unavailable if the TCP/IP Network Printing Support protocol is already installed.)
- 4 Insert the requested disk(s) to copy the required files. Your NT server will need to be re-booted when the files are copied over.

Windows® NT 3.5x Printing (Printer Driver not yet installed)

If you have Windows® NT 3.5 or 3.51, use the following procedure to configure the print server.

- 1 Go to the **Main** window and select the **Print Manager** icon.
- 2 Select **Printer** menu.
- 3 Select **Create Printer**.
- 4 Enter any name for the **Printer Name**.
- 5 Select **Driver**. Choose the appropriate driver.
- 6 Select **Description**. Enter anything for the description.
- 7 Select **Print to** and then select **Other**.
- 8 Select **LPR Port**.
- 9 Type in the IP address that you assigned to the print server in the **Name or address of host server providing lpd:** box. If you have edited your HOSTS file or are using Domain Name System, enter the name associated with the print server, instead of an IP address.
- 10 Type in the print server service name in the **Name of printer on that Machine**. If you do not know which service name to use, enter `BINARY_P1` and then click on **OK**.



Refer to *Appendix* for more information on Service Names.



Share the printer if necessary.

LAN Server, OS/2 Warp Server Configuration

Brother print servers will work with IBM LAN Server, OS/2 Warp Server networks that have IBM TCP/IP V2.0 or later installed on the file server (TCP/IP is supplied as standard with LAN Server V4.0 and later as well as Warp Server). Use the following procedure to configure the print server on an LAN Server or OS/2 Warp Server file server, or on an OS/2 Warp Connect workstation:

Server Configuration

Make sure that TCP/IP software is installed on your OS/2 file server. If you have not already done so, open the TCP/IP folder on the desktop, and double click on the **TCP/IP Configuration** icon to add the IP address to the OS/2 file server (consult your system manager for this address).

Refer to *chapter 12* for information on how to assign an IP address to the printer.

Configuration of an OS/2 Server

- 1 From the OS/2 desktop open the **Templates** folder. Use the right mouse button to drag the **Printer** icon (not the Network Printer icon) onto the desktop.
- 2 The **Create a Printer** window should be open (if it is not, double click on the printer icon).
- 3 Type in any name for the printer.
- 4 Select the default printer driver. If the desired printer driver is not listed, click on the **Install new Printer Driver** button and add the driver.
- 5 Choose the output port. IBM TCP/IP automatically creates 8 named pipes called `\PIPE\LPD0` through to `\PIPE\LPD7`.

Pick an unused port and double click on it.



Early versions of Warp Server have a bug in which the named pipes do not appear (the problem does not affect Warp Connect or LAN Server). This problem is fixed via a patch available from IBM.

You will get the Settings window. Enter the following:

LPD server	The Brother print server name (from the HOSTS file) or its IP address.
LPD printer	For most applications, use the Brother print server 'binary' service BINARY_P1. However, if you are printing text files from the DOS or OS/2 command prompt, you should use the text service TEXT_P1, which will add carriage returns for proper formatting of the data (but will potentially distort graphics printouts).
Host name	The IP name of the OS/2 file server
User	The IP address of the OS/2 file server

You may leave the other entries blank. Click on the **OK** button. The pipe should be highlighted; if not, click on it.

Click on the **Create** button to create the printer.

Open the **LAN Services** folder and execute the **LAN Requester** program:

- 1 Select **Definitions**.
- 2 Select **Aliases**.
- 3 Select **Printers**.
- 4 Select **Create**. Enter the following:

Alias	Should be same as the printer name previously defined
Description	Anything you want
Server name	Name of OS/2 server

Spooler queue	Name of printer as defined previously
Maximum number of users	Leave blank unless you want to limit the number of users

5 Exit the LAN Requester program.

- 6 You should now be able to print. To test the queue, type the following from either the OS/2 command prompt or from a DOS workstation:
- 7 `COPY C:\CONFIG.SYS \\servername\alias`
- 8 Where `servername` is the name of the file server and `alias` is the alias name that you specified during this configuration process. This should print the `CONFIG.SYS` file on the printer. Note that if you selected a binary service as the LPD printer name, the lines will be staggered; don't worry about this because normal DOS, Windows[®], and OS/2 applications will print OK.
- 9 The Brother print server will appear as a standard OS/2 printer to application programs. To make the print server operate transparently with DOS programs, execute the following command on each workstation:
- 10 `NET USE LPT1: \\servername\alias`
- 11 This will make the printer appear to the software as a printer that is directly connected to the parallel port of the workstation.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing and for documents on the IPP protocol and how to configure a Windows[®] 2000/XP/95/98/Me System.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

3

Peer to Peer Printing

How to Print in a Windows® 95/98/Me Peer to Peer network

Overview

Microsoft's Windows® 95/98/Me operating systems feature built-in networking capabilities. These capabilities allow a Windows® PC to be configured as a client workstation in a file server based network environment.

For smaller networks, Windows® 95/98/Me also allows the PC to operate in a peer-to-peer mode. In this mode, the PC can share resources with other PCs on the network without the need for a central file server.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel (if applicable), the BRAdmin application, or let your DHCP server allocate an IP address to the printer.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address on your printer.
- 3 The default password for Brother print servers is `access`.
- 4 Windows® 95/98/Me users can send print jobs using the IPP protocol via a Windows® 2000 computer providing that the Microsoft Internet Print Services software is installed on the client PC, IIS is installed and running on the Windows® 2000 and that the client PC is using version 4 or later of Microsoft Internet Explorer.
- 5 Brother printers are also compatible with HP JetDirect software, this means that you can use HP utilities to manage and to print to your Brother printer.

TCP/IP Printing

Our Peer to Peer printing software requires the TCP/IP protocol to be installed on your Windows® peer-to-peer computers and an IP Address has to be defined for the print server. Refer to your Windows® documentation for more information on how to configure the TCP/IP protocol on your Windows® PC.

If you haven't already done so, configure the IP address of the printer, for more information on IP address configuration, refer to *chapter 12* of this user guide.

Installing the Brother Peer to Peer Software

- 1 Start the CD-ROM installation menu program according to the Quick Setup Guide.
- 2 Select the proper model and then the **Software Installation** menu. Then select the appropriate menu to start the **Brother Network Print Software** installation program.
- 3 Push the **Next** button in response to the Welcome message.
- 4 Select the **Brother Peer to Peer Print (LPR)** button.
- 5 Select the desired directory to install the **Brother Peer to Peer Print (LPR)** files and push **Next**. The installation program will create the directory for you if it does not already exist on your disk.
- 6 Enter the **Port name** that you wish to use and click **OK**. The default port name is BLP1. Whichever name you choose, it must be unique and it **MUST** begin with BLP.
- 7 You must now enter the actual IP address of the print server in the **Printer name or IP address** field. If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in your printer configuration page. By default the NetBIOS name will usually appear as BRN_XXXXXX where XXXXXX is the last six digits of the Ethernet address.



Windows® 95/98/Me store the hosts file in the default Windows® directory. By default, the Windows® hosts file is called `hosts.sam`. If you wish to use the hosts file you must rename the file to `hosts` with no extension. The `.sam` extension stands for sample.

- 8 Click the **OK** button. When prompted you must re-boot your computer.

Associating to the printer

You must now create a printer on your Windows® system using the standard Windows® printer setup procedure.

- 1 To do this, go the **Start** button, select **Setting** and then **Printers**.
- 2 Select **Add Printer** to begin the printer installation.
- 3 Click **Next** when you get the **Add Printer Wizard** window.
- 4 Select **Local Printer** when you are asked how the printers are connected to your computer, and then push **Next**.
- 5 Select the correct driver. Click **Next** when you are done.
- 6 If you have selected a printer driver that is already being used, you have the option of either keeping the existing driver (recommended) or replacing it. Select the desired option and press **Next**.
- 7 Select the Brother LPR port (the port name you assigned in step 4 of the "Installing the Brother Peer to Peer Software" section) and press **Next**.
- 8 Enter any desired name for the Brother printer and press **Next**. For example, you could call the printer "Networked Brother Printer".
- 9 Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

You have now finished installing the Peer to Peer Print (LPR) software.

Adding a Second Brother LPR Port

You do not re-run the install program to add a new Brother LPR port. Instead, press the **Start** button, select **Settings**, and open the **Printers** window. Click on the icon of the printer that you wish to configure, select **File** from the menu bar, and then choose **Properties**. Click on the **Details** tab and push the **Add Port** button. In the **Add Port** dialog, select the **Other** radio button and then highlight **Brother LPR port**. Click **OK** and enter the port name. The default port name is BLP1. If you have already used this name, you will get an error message if you try to use it again, in which case use BLP2, etc... Once you have specified the port name, click the **OK** button. You will then see the **Port Properties** dialog.

Enter the IP address of the printer that you wish to print to and click **OK**. You should now see the port that you have just created in the **Print to the following port** setting of the printer driver.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

4 NetBIOS Peer to Peer Printing

How to Print using NetBIOS in Windows[®] 95/98/Me/NT/2000/XP, LAN Server and OS/2 Warp Server

Overview

Brother print server range supports SMB (Server Message Block) over the TCP/IP protocol via the NetBIOS interface. This means that just like regular Windows[®] PC's, Brother printers can appear in your network neighborhood. The main advantage of NetBIOS printing is that you are able to print from legacy DOS applications that are running on PC's that are connected to Microsoft networks.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel, the BRAdmin application, or let your DHCP server allocate an IP address to the printer
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address on your printer.
- 3 The default password for Brother print servers is `access`.
- 4 The default domain name of the print server is `WORKGROUP`, to change it use your web browser or the BRAdmin application.

Print Server Configuration

In order for this function to work, you must correctly change the DOMAIN name or WORKGROUP name to match that of your network. Once this is done, the print server will appear automatically in your network neighborhood and you will be able to send print documents to it without having to install additional software.

However, in some instances you may find that your Windows® 95/98/Me and Windows® NT4.0/2000/XP systems may receive "Printer is busy" error messages when more than one person attempts to access the printer. In this instance Brother has provided the "Brother NetBIOS Port Monitor" software which allows users to continue spooling print jobs while the printer is busy, down or out of paper. The port monitor will hold the jobs until the printer is again available.

When you install Windows® 95/98/Me you are asked which workgroup you belong to. The default workgroup name for Windows® 95/98/Me is WORKGROUP, however you could change this to anything you want. With Windows® NT, Microsoft introduced the concept of "Domains". A domain offers centralized security management whereas a workgroup offers distributed security management. The print server does not care if your network consists of a Workgroup or a Domain, the only thing you must tell it is the name of the workgroup or domain. The Brother print server automatically has a default workgroup/domain name of WORKGROUP. If you need to change name, you can configure the Brother print server to recognize this. There are four ways of doing this. (If you are unsure about the name of your workgroup or domain, look in the identification tab in your network applet).

- Use BRAdmin (This utility can use the TCP/IP protocol or Netware IPX protocol - no file server necessary.)
- Use a Web browser (the print server must have a valid IP address and your computer must also have a valid IP address); you can configure the IP address by using BRAdmin.
- TELNET, again your computer and printer must have a valid IP address.
- Use BRCONFIG for DOS (this utility requires a Netware file server and the IPX protocol).



Because of the way that Microsoft networks work, the print server may take several minutes to appear in the network neighborhood. You will also find that the print server may take several minutes to disappear from the network neighborhood even if the printer is switched off. This is a feature of Microsoft workgroup and domain based networks.

Changing the workgroup/domain name using TELNET or BRCONFIG or a web browser

If you are unable to use the BRAdmin application, you can use TELNET, a web browser or the BRCONFIG Remote console program (BRCONFIG requires the IPX/SPX protocol to be installed on your PC).

When you are connected to the print server, enter the default password `access` in response to the `#` prompt. Type in anything in response to the `Enter Username>` prompt, you will then be at the `Local>` prompt.

Now enter the command:

```
SET NETBIOS DOMAIN domainname  
EXIT
```

Where `domainname` is the name of the domain or workgroup that you are on. If you are not sure what your domain name or workgroup name is, look in the Identification tab in your Windows® 95/98/Me/NT 4.0 network applet.

You can also use a standard WWW browser to change the NetBIOS name. To do this, connect to the print server using its IP address and then select the **Configure NetBIOS** option from the **Network Configuration** screen, then enter your workgroup/domain name into the **Domain Name** text box. Make sure you submit the changes (click on the **Submit** button).

NetBIOS Port Monitor for Windows® 95/98/Me, NT4.0/2000/XP

This software requires the TCP/IP transport protocols to be installed on your Windows® 95/98/Me, NT4.0/2000/XP computer. To install those protocols refer to your Windows® documentation.

If you are using the TCP/IP protocol, the proper IP address should be defined on both the Brother print server and your client PC.

Installing the Brother NetBIOS Port Monitor

- 1 Start the CD-ROM installation menu program according to the Quick Setup guide.
- 2 Select the proper model and then the **Software Installation** menu. Then select the **Network Print Software** menu to start the **Brother Network Print Software** installation program.
- 3 Push the **Next** button in response to the Welcome message.
- 4 Select **Brother Peer-to-Peer Print (NetBIOS)** installation
- 5 Select the desired directory to install the **Brother Network Direct Print** files and push **Next**.
- 6 Enter the port name that you wish to use. The port name must start with "BNT". For example BNT1. Whichever name you choose, it must be unique. Then press **OK**. The name must be unique on your PC, however other computers can use the same port name as the name you specify on your PC.
- 7 You must now enter the server name and port name for the actual print server. You can use the **Browse** button to search for the print server, select the domain/workgroup name, and then the server is listed. If the print server does not automatically appear in your browse list, then you must ensure that the domain name is configured correctly. Otherwise you must enter the name manually. The name should be compliant with UNC (Universal Name Convention). For example:
`\\NodeName\ServiceName.`

Where `NodeName` is the NetBIOS name of the Brother print server (the default name is usually `BRN_XXXXXX`, where `XXXXXX` is the last six digits of the Ethernet address), and `ServiceName` is the service name for NetBIOS of the print server. By default it is `BINARY_P1`. For example:

```
\\BRN_310107\BINARY_P1
```



You can find the NetBIOS name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 8 Then press **OK**.
- 9 Click the **Finish** button. You must now restart your computer before you can continue.

Associating the printer

- 1 You must now create a printer on your Windows® 95/98/Me and NT 4.0/2000 system using the standard Windows® printer setup procedure. To do this, go the **Start** button, select **Setting** and then **Printers**.

Windows® 95/98/Me

- 2 Select **Add Printer** to begin the printer installation.
- 3 Click **Next** when you get the **Add Printer Wizard** window.
- 4 Select **Local Printer** when you are asked how the printer is connected to your computer, and then push **Next**.
- 5 Select the correct driver. Click **Next** when you are done.
- 6 If you have selected a printer driver that is already being used, you have the option of either keeping the existing driver (recommended) or replacing it. Select the desired option and press **Next**.

- 7 Select the **Brother NetBIOS Port** (the port name you assigned in step 6 of the “Installing the Brother NetBIOS Port Monitor” section and press **Next**.
- 8 Enter any desired name for the Brother printer and press **Next**. For example, you could call the printer "Networked Brother Printer".
- 9 Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

You are now ready to print. If necessary, you can share the printer on your PC so that all print jobs are routed through your computer.

Windows NT® 4.0 /Windows® 2000/XP

- 2 Select **Add Printer** to begin the printer installation.
- 3 Click **Next** when you get the **Add Printer Wizard** window.
- 4 Select **Local printer** (Windows® 2000) or Local printer attached to this computer (Windows® XP) when you are asked how the printer is connected to your computer, and then push **Next**.
- 5 Select the **Brother NetBIOS Port** (the port name you assigned in step 6 of the “Installing the Brother NetBIOS Port Monitor” section and press **Next**.
- 6 Select the correct driver. Click **Next** when you are done.
- 7 If you have selected a printer driver that is already used, you have the option of either keeping the existing driver (recommended) or replacing it. Select the desired option and press **Next**.
- 8 Enter any desired name for the Brother printer and press **Next**. For example, you could call the printer "Networked Brother Printer".
- 9 Select **Not Shared** or **Shared** and **Share Name** and press **Next**.
- 10 Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

You are now ready to print. If necessary, you can share the printer on your PC so that all print jobs are routed through your computer.

Adding a Second NetBIOS Print Port

- 1 You do not need to re-run the installation program to add a new NetBIOS port. Instead, press the **Start** button, select **Settings**, and open the **Printers** window. Click on the icon of the printer that you wish to configure, select **File** from the menu bar, and then choose **Properties**.

Windows® 95/98/Me

- 2 Click on the **Details** tab and push the **Add Port** button. In the **Add Port** dialog, select the **Other** radio button and then highlight **Brother NetBIOS port**. Click **OK** and enter the port name. The default port name is BNT1. If you have already used this name, you will get an error message if you try to use it again, in which case use BNT2, etc... Once you have specified the port name, click the **OK** button. You will then see the **Port Properties Dialog**. Enter the print server and port name of the printer that you wish to print to and click **OK**. You should now see the port that you have just created in the **Print to the following port** setting of the printer driver.

Windows NT® 4.0 / Windows® 2000/XP

- 2 Click on the **Port/s** tab and push the **Add Port** button. In the **Add Port** dialog, highlight **Brother NetBIOS port**. Click **New Port** and enter the port name. The default port name is BNT1. If you have already used this name, you will get an error message if you try to use it again, in which case use BNT2, etc... Once you have specified the port name, click the **OK** button. You will then see the **Port Properties Dialog**. Enter the print server and port name of the printer that you wish to print to and click **OK**. You should now see the port that you have just created in the **Print to the following port** setting of the printer driver.

LAN Server/OS/2 Warp Server Configuration

As Brother print servers support the SMB protocol over TCP/IP via a NetBIOS interface, you can easily configure your printer to work with an IBM LAN Server and OS/2 Warp Server networks that have IBM TCP/IP V2.0 or later installed on the fileserver. Use the following procedure to configure the LAN Server, OS/2 Warp Server or OS/2 Warp connect workstation.

Server Configuration:

- 1 Open the **Templates** folder on the OS/2 desktop.
- 2 Using the right mouse button, drag the **Printer** template onto the desktop.
- 3 Type in any desired name for the printer from the **Create a Printer** window.
- 4 Choose an unused port (for example, LPT3) to connect to the printer.
- 5 Choose the appropriate printer driver from the list.
- 6 Click **Create** and then **OK**.
- 7 If desired, indicate whether you want to share the printer.

Workstation Configuration:

On each workstation that you wish to print from, execute the following step:

Go to the DOS or OS/2 command prompt and enter the command:

```
NET USE LPTx: \\NodeName\ServiceName
```

Where *x* is the LPT port number (1 through 9), *NodeName* is the NetBIOS Name of the print server (usually *BRN_XXXXXX* by default, where *XXXXXX* is the last six digits of Ethernet address) and *ServiceName* is the service name of the print server (*BINARY_P1* by default). For example:

NET USE LPT2: \\BRN_310107\BINARY_P1



You can find the NetBIOS name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer *chapter 12* of this user guide to learn how to configure the IP address of the printer.

5

Configuring Internet Printing for Windows®

Internet Printing Installation

Overview

Brother's Brother Internet Print (BIP) software, for Windows® 95/98/Me/NT4.0, allows a PC user at one location to send a print job to a Brother Printer at a remote location via the Internet. For example, a user on a PC in New York could print a document directly from his Microsoft Excel application program to a printer in Paris.

Windows® 2000/XP users can also use this BIP software, but are recommended to use the IPP protocol support that is part of the Windows® 2000/XP operating systems. Skip to the "Windows® 2000 IPP Printing" section of this document.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel, the BRAdmin application, or let your DHCP server allocate an IP address to the printer.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address on your printer.
- 3 The default password for Brother print servers is `access`.
- 4 Windows® 2000/XP users can print using TCP/IP using the standard Network Printing software and IPP protocol software built into any Windows® 2000/XP installation.
- 5 Windows® 95/98/Me users can send print jobs using the IPP protocol via Windows® 2000 computer, provided that the Microsoft Internet Print Services software is installed on the client PC, Internet Information Server (IIS) is installed and running on the server and that the client PC is using version 4 or later of Microsoft Internet Explorer.

Brother Internet Print General Information

The BIP software is installed using a standard Windows® 95/98/Me/NT4.0/2000/XP Installation Wizard. It creates a virtual port on the Windows® 95/98/Me/NT4.0/2000/XP PC that operates in a similar way to the standard LPT1 printer port from the application program point of view. The user can use the Windows® 95/98/Me/NT4.0/2000/XP Print Manager to create a printer that uses this port along with a standard Windows® 95/98/Me, NT4.0/2000/XP-compatible printer. Any Windows® 95/98/Me/NT4.0/2000/XP applications program can therefore print to this printer (and hence to the virtual port) without modification or operational procedure.

When a job is printed to the BIP virtual port, it is actually MIME-encoded (converted to a standard Internet E-mail message) and sent out to a Brother print server at the remote location. This means that BIP is compatible with most common E-mail software packages. The only requirement is that the E-mail server be capable of sending E-mail message over the Internet.

In more detail, the procedure works in the following way:

- If you are connected to a Local Area Network, the E-mail message is passed to the E-mail server, which in turn transmits the message out over the Internet using the SMTP protocol (Simple Mail Transport Protocol) to the remote print server.
- If you are connecting via a modem directly to an Internet Service Provider (ISP), the ISP handles the routing of the E-mail to the remote print server.
- At the remote site, an E-mail server receives the E-mail message. The remote print server, which has its own E-mail address, uses the POP3 protocol (Post Office Protocol 3) to download the E-mail message from the e-mail server. It then decodes the attachment and prints it out on the printer.



If an E-mail is received that has not been configured to use the BIP virtual port driver, the printer will print the E-mail out as a text document.

Brother Internet Print Configuring the Brother Print Server

The print server can be configured using BRAdmin, by using a web browser, or by using the TELNET command.

Print Server Configuration Checklist



Before configuring the print server to receive BIP jobs, be sure that the E-mail server at the remote site (the receiving end) is configured to handle the TCP/IP POP3, and SMTP protocols (SMTP is only required if the notification feature is enabled).

- 1 Configure the POP3 server on the E-mail server at the remote site with a mail account (Mailbox name) and password for the Brother print server (generally, the mail account name will be the first part of the Email address; for example, if you assign the Email address `emailprinter@xyz.com`, then the mail account name would be `emailprinter`).
- 2 Make sure that the print server is installed and running with TCP/IP enabled and has a valid IP address assigned to it.

Because access to the E-mail server on most networks is usually restricted, you may need to have your network administrator check the configuration and add the mail account.

Brother Internet Print

Using BRAdmin to Configure the Print Server



Skip this section if you wish to use the print server remote console or Web Browser to configure the print server.

Using the BRAdmin application, you can configure the Brother print server using the TCP/IP protocol, or the IPX protocol.

The steps required to configure the print server to receive print jobs from a Windows® 95/98//Me/NT4.0/2000/XP. PC running the BIP software is as follows:

- 1 Start BRAdmin.
- 2 Select the node name of the desired Brother print server from the list and double click on it. (the default node name is usually BRN_XXXXXX, where XXXXXX is the last six digits of the Ethernet address (MAC address)). You will be prompted for a password; the default password is `access`.



You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 3 Click on the **POP3/SMTP** tab.
- 4 Enter the address of the POP3 server (consult your network administrator if you do not know this address).
- 5 Enter the mailbox name for the remote Brother print server. Usually this will be the first part of the E-mail address (for example, if the E-mail address of the print server is `emailprinter@xyz`, then the mailbox name would be `emailprinter`).
- 6 Enter the password for the mailbox, if any.

- 7 The print server is configured by default to poll the POP3 server every 30 seconds. You may change this value, if desired.
- 8 If you have enabled notification, enter the address of your SMTP server (consult your network administrator if you do not know this address).
- 9 Press the **OK** button and save the changes. Now exit the BRAdmin application. You have now configured the print server to receive print jobs.

Brother Internet Print Using a Web Browser to configure the Print Server

- 1 Connect to the printer server IP address using your web browser.
- 2 When you reach the network configuration screen, you will be prompted for a password. The default password is "access".
- 3 Select the Configure POP3/SMTP option and enter the information as described above. Refer to "*Using a Web Browser to configure the Print Server*".
- 4 You should see a Segmented Message Timeout option. If a print job is separated into multiple E-mail messages using the Partial E-mail Print feature of the BIP, this value indicates how long the print server will wait for all of the segments of the message to arrive.

Brother Internet Print

Using TELNET to Configure the Print Server



Skip this section if you used BRAdmin or a Web Browser to configure the remote print server.

As an alternative to BRAdmin, you can use the print server remote console to configure the print server. The console can be accessed via TELNET. When you access the print server using these utilities, you will be asked for a password. The default password is `access`.

- 1 When you get the `Local>` prompt after connecting to the console, enter the command:

```
SET POP3 ADDRESS address
```

where `ipaddress` is the address of your POP3 server (consult with your network administrator if you do not know this address).

- 2 Enter the command:

```
SET POP3 NAME mailboxname  
SET POP3 PASSWORD emailpassword
```

where `mailboxname` is the name of the remote print server mailbox and `emailpassword` is the password associated with this mailbox. Usually the mailbox name is the same as the first part of the E-mail address that you defined previously (for example, usually if the E-mail address is `emailprinter@xyz.com`, then the mailbox name is `emailprinter`).

- 3 The print server is set by default to poll the POP3 server every 30 seconds. If you wish to change this value, enter the command:

```
SET POP3 POLLING rate
```

where `rate` is the polling rate in seconds.

Type `EXIT` to exit the console and save the changes. You have now completed configuring the print server.

Brother Internet Print

Installing the BIP software on Windows® 95/98/Me/NT4.0/2000/XP

To install the BIP software on a Windows® 95/98/NT4.0/2000/XP PC, execute the following steps:



- Be sure that the PC is running an E-mail program (for example, Microsoft Outlook) that is capable of sending E-mail message using Winsock.
- Be sure that your E-mail server is capable of sending messages across the Internet.

Setup from CD-ROM

- 1 Start the CD-ROM installation menu program according to the Quick Setup guide.
- 2 Select the proper model and **Software Installation** menu. Then select the **Network Print Software** menu to start the **Brother Network Print Software** installation program.
- 3 Push the **Next** button in response to the Welcome message.
- 4 Select the **Brother Internet Print** button.
- 5 Select the desired directory to install the BIP files and then push **Next**. The installation program will create the directory for you if it does not already exist.
- 6 You will then be asked for a port name. Enter the name of the port. The port name must begin with the BIP and end with a number, for example, BIP1.
- 7 You will then see a message about **Partial E-mail Print**. Partial E-mail Print is the ability of the Brother Internet Print software to break down E-mail Print jobs into smaller sections to prevent a mail file size limitation problem for the mail server.
- 8 Press **OK** to continue.

- 9 You will then be asked to enter the port settings for the remote print server:

Enter any unique legal Internet E-mail address for the remote print server (for example emailprinter@xyz.com). Note that Internet E-mail addresses cannot have spaces in them.

Enter your E-mail address and the IP address of your SMTP E-mail server (consult your network administrator if you do not know this address). Also specify if you are going to use the **Partial E-mail Print** option and the **Notification** type.

- 10 Press **OK** to continue. You will then be asked to re-start your computer.
- 11 Once your computer has re-started you must create a printer on your Windows® 95/98/Me/NT4.0/2000/XP system using the standard Windows® 95/98/Me/NT4.0/2000/XP printer setup procedure. To do this, go the **Start** button, select **Settings** and then **Printers**.
- 12 Select **Add Printer** to begin the printer installation.
- 13 Click **Next** when you get the **Add Printer Wizard** window.

(For Windows® 95/98/Me users)

- 14 Select **Local Printer** when you are asked how the printers are connected to your computer and push **Next**.

(For Windows® NT4.0/2000/XP users)

- 14 Select **Local Printer**, and then delete the check mark in **Plug and Play** check box.

<For Windows® 95/98/Me users>

- 15 Select the desired model of the remote printer (for example, Brother HL-series). If necessary, click **Have Disk** to load the driver from the CD-ROM. Click **Next** when you are done.
- 16 If you have selected a printer driver that is already being used, you have the option of either keeping the existing driver (recommended) or replacing it. Select the desired option and press **Next**.

17 Select the **Brother Internet port** (BIP...) which you selected in step 6 and press **Next**.

<For Windows® NT4.0/2000/XP users>

15 Select the **Brother Internet port** (BIP...) which you selected in step 6 and press **Next**.

16 Select the desired model of the remote printer (for example, Brother HL-series). If necessary, click **Have Disk** to load the driver from the CD-ROM. Click **Next** when you are done.

17 If you have selected a printer driver that is already being used, you have the option of either keeping the existing driver (recommended) or replacing it. Select the desired option and press **Next**.

18 Enter any desired name for the BIP remote printer and press **Next**. Note that this name does not need to match the port name that you assigned in step 6, or E-mail address that you assigned in step 9.

19 Select **No** when asked if you want to print a test page, unless you have already configured the remote print server to receive BIP print jobs.

You have now finished installing the BIP software. If you need to configure another remote print server, go to the next section, "Adding a Second Brother Internet Port".

Adding a Second Brother Internet Port

You should not re-run the install program to add a new Brother Internet Port. Instead, press the **Start** button, select **Settings**, and open the **Printers** window. Click on the icon of a printer that is using BIP, select **File** from the menu bar, and then choose **Properties**. Click on the **Details (Ports on Windows® NT)** tab and push the **Add Port** button.

In the **Add Port** dialog, select the **Other** radio button (Windows® 95/98/Me only) and then **Brother Internet Port**. Click **OK (New Port on Windows® NT)** and it will give you the **Port Name** text box. Any unique name can be given here as long as it starts with "BIP" and another port does not already exist with the same name.

Windows® 2000/XP IPP Printing

Use the following instructions if you wish to use the IPP printing capabilities of Windows® 2000/XP.

- 1 Run the **Add Printer Wizard** and click the **Next** button when you see the **Welcome to the Add Printer Wizard** screen.
- 2 You are now able to select **Local Printer** or **Network Printer**. Make sure that you select **Network Printer**.
- 3 You will see the **Add Printer Wizard** screen.
- 4 Select **Connect to a printer on the Internet or on your intranet** and then enter the following in the URL field: `http://printer_ip_address:631/ipp` (Where `printer_ip_address` is the IP address or DNS name of your printer).
- 5 When you click **Next**, Windows® 2000/XP will make a connection with the URL that you specified.

IF THE PRINTER DRIVER HAS ALREADY BEEN INSTALLED

If the appropriate printer driver is already installed on your PC, Windows® 2000/XP will automatically use that driver for use. In this case, you will simply be asked if you wish to make the driver the default driver, after which the Driver installation Wizard will complete. You are now ready to print.

IF THE PRINTER DRIVER HAS NOT BEEN INSTALLED

One of the benefits of the IPP printing protocol is that it establishes the model name of the printer when you communicate with it. After successful communication you will see the model name of the printer automatically. This means that you do not need to inform Windows® 2000 the type of printer driver to be used.

- 6 Click **OK**. You will then see the printer selection screen in the **Add Printer Wizard**.
- 7 If your printer is not in the list of supported printers, click the **Have Disk** button. You will then be asked to insert the driver disk.

- 8 Click the **Browse** button and select the CD-ROM or network share that contains the appropriate Brother printer driver.
- 9 Now specify the model name of the printer.
- 10 If the printer driver that you are installing does not have a Digital Certificate you will see a warning message. Click **Yes** to continue with the installation. The **Add Printer Wizard** will then complete.
- 11 Click the **Finish** button and the printer is now configured and ready to print. To test the printer connection, print a test page.

Specifying a different URL

Please note that there are several possible entries that you can enter for the URL field.

http://printer_ip_address:631/ipp

This is the default URL and we recommend that you use this URL. Please note the **Get More Info** option will not display any printer data.

http://printer_ip_address:631/ipp/port1

This is for HP JetDirect compatibility. Please note the **Get More Info** option will not display any printer data.

http://printer_ip_address:631/

If you forget the URL details, you can simply enter the above text and the printer will still receive and process data. please note the **Get More Info** option will not display any printer data.

If you are using the built in service names that the Brother print server supports, you can also use the following: (However, please note the **Get More Info** option will not display any printer data).

```
http://printer_ip_address:631/brn_XXXXXX_p1
http://printer_ip_address:631/binary_p1
http://printer_ip_address:631/text_p1
http://printer_ip_address:631/postscript_p1
http://printer_ip_address:631/pcl_p1
http://printer_ip_address:631/brn_XXXXXX_p1_at
```

Where `printer_ip_address` is the IP address of the printer.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing and for documents on the IPP protocol and how to configure a Windows® 2000/95/98/Me System.
- 2 Visit Microsoft's web site for the "Microsoft Internet Print Services" software for Windows® 95/98/Me.
- 3 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

6

Novell NetWare Printing

How to configure Novell NetWare Printing

Overview

Brother print servers allow NetWare client PCs to print jobs on the same printer as TCP/IP or other network protocol users. All NetWare jobs are spooled through the Novell server and delivered to the printer when it is available.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer control panel, the BRAdmin application, or let your DHCP server allocate an IP address to the printer.
- 2 The default password for Brother print servers is `access`.

General Information

In order to use a Brother print server on a NetWare network, one or more file servers must be configured with a print queue that the print server can service. Users send their print requests to the file server's print queue, and the jobs are then spooled (either directly, or in the case of remote printer mode, via an intermediate print server) to the appropriate Brother print server.

The system administrator can create Bindery (NetWare 3), NDS (NetWare 3 and NetWare 4) based queues in a single environment without having to switch between applications by using the BRAdmin application.

NetWare 5 users wishing to configure an NDPS printer must use the NWADMIN application supplied with NetWare 5. Please note that it is possible to create IPX BINDERY or NDS based queues on a NetWare 5 system using the BRAdmin application.

You must install the Novell NetWare Client 32 if you wish to create queue information on your NetWare servers using the BRAdmin application.

If you can't use the BRAdmin application in your environment, you can create the queue using the traditional NetWare PCONSOLE utility or NWADMIN utilities, but you will then also need to use the Brother BRCONFIG utility, TELNET or a WWW browser to configure the print server as described later in this chapter.

Brother print servers can service up to 16 file servers and 32 queues.

Creating a NDPS Printer Using NWADMIN for NetWare5

With NetWare 5, Novell has released a new preferred printing system called Novell Distributed Print Services (NDPS). Before the print server can be configured, NDPS must be installed on the NetWare 5 server and an NDPS Manager configured on the server.



For further information regarding NDPS printers and printing please refer to the "*Other Sources of Information*" section at the end of this chapter.

NDPS Manager

This creates a NDPS manager that interacts with services running at the server and manages an unlimited number of printer agents.

You have to create an NDPS manager within an NDS tree before creating server-based printer agents. If the NDPS manager controls a printer attached directly to the server, you must load the manager on the server that the printer is attached to.

- 1 In NetWare administrator, navigate to the area you want the NDPS manager to reside. Select **Object | Create | NDPS Manager** and click **OK**.
- 2 Enter an **NDPS manager name**.
- 3 Browse to a server (which has NDPS installed but no NDPS manager installed) where you want to install the NDPS manager and then to the volume you want the NDPS manager database assigned to. Click **create**.

NDPS Broker

When NDPS is installed, an NDPS broker is loaded onto the network. One of the Broker services Resource Management Service allows Printer Drivers to be installed onto the server for use with Printer Agents.

To add a Printer Driver to the Broker:

- 4 Make sure the **Resource Management Service** is enabled.
- 5 Open the **Broker Object's** main window in NetWare Administrator
- 6 Select the **Resource Management** view.
- 7 The **Resource Management** dialog appears. Select the **Add Resources** button.
- 8 When the **Manage Resources** dialog appears, select the icon for the type of driver you want to add. This will be a 3.1x, 95/98/Me or NT4.0 driver for NetWare 5 (Additionally, a Windows[®] 2000 driver is available for NetWare 5.1). If you are using NDPS version 1 with NetWare 4.x, only 3.1x and 95/98/Me options will be available. NDPS version 2 for NetWare 4.x will support NT drivers automatic download.
- 9 A complete list of currently loaded resources of that type appears in the **Current Resources** window. Click the **Add** button.
- 10 The **Add <resource type>** dialog appears. The listed resources that appear on this screen are currently installed.
- 11 Press the **Browse** button to locate the driver you want to add to the list. The driver list appears possibly showing several printers. This should be the driver in the different languages.

Creating a Printer Agent

- 1 In NetWare Administrator, select **object | create | NDPS Printer**. Enter the NDPS printer name.



For further information regarding NDPS printers and printing please refer to the "*Other Sources of Information*" section at the end of this chapter.

- 2 If this is a new printer select **create A New Printer Agent**.
- 3 If there is already an NDS printer and you are upgrading it to use the NDPS scheme, select **Existing NDS printer object**. You will then have to select which printer object you wish to upgrade.
- 4 Enter the name you wish the Printer Agent to be referred to by, and either type the name of the NDPS Manager or click the reference button and select a NDPS Manager. Select **Novell Printer Gateway** for the **Gateway type** and click **OK**.
- 5 Select **None** for the printer Type, and **Novell Port Handler** for the Port Handler Type. Then click **OK**.
- 6 You must now specify the type of connection that you are going to use. There are four possible options. Select the **LPR over IP** option.
- 7 Enter the relevant details of the printer and Brother recommend typing `Binary_P1` for the printer name. Click **finish** and wait. Select the printer drivers for the client operating systems.

You are now ready to print.

Configuring Netware 3 and NetWare 4 systems

Brother's BRAdmin application provides similar functionality to the NetWare PCONSOLE utility (or the NWADMIN utility in NetWare 4.1x or later). To use the BRAdmin application to configure a Brother print server under NetWare, make sure that you are logged in as SUPERVISOR (NetWare 2.xx or 3.xx) or ADMIN (NetWare 4.1x or later) and perform the appropriate steps as detailed in the following pages.



You must install the Novell NetWare Client 32 if you wish to create queue information on your NetWare servers by BRAdmin.

Configuring the Brother Print Server (Queue Server Mode in Bindery emulation mode) using BRAdmin

- 1 Make sure that you logged in as SUPERVISOR (NetWare 2.xx or 3.xx) or ADMIN (NetWare 4.xx or later).
- 2 Start BRAdmin.
- 3 One or more print servers will appear in the list (the default node names are BRN_XXXXXX, where XXXXXX is the last six digits of the Ethernet address (MAC address)).



You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to printer the configuration page on your print server.

- 4 Select the print server that you wish to configure and double click it. You will be asked for a password. The default password is `access`.
- 5 Select the NetWare tab.



If necessary change the **Print Server Name**. The default NetWare print server name will usually be `BRN_XXXXXX_P1` where `XXXXXX` is the Ethernet address of the print server. Be careful! Changing the name may impact the configuration of other protocols because the print server service names will be altered.

- a** If it is not already selected, select **Queue Server** as the operating mode.
- b** Click the **Change Bindery Queues** button.
- c** Select the NetWare server which you wish to configure.
- d** Select the **New Queue** button and type in the queue name which you wish to create.
- e** Once you have done that highlight the queue name you created and click on the **Add** button.
- f** Click on **Close** and then **OK**.

Now exit the BRAdmin application. You are ready to print.

Configuring the Brother Print Server (Queue Server Mode in NDS mode) using BRAdmin

- 1 Make sure that you logged in as `ADMIN` in NDS mode.
- 2 Start BRAdmin.
- 3 One or more print server services will appear in the list of printers (the default node names are `BRN_XXXXXX`, where `XXXXXX` is the last six digits of the Ethernet address (MAC address)).



- You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.
- 4 Select the printer that you wish to configure and double click it. You will be asked for a password. The default password is `access`.
 - 5 Select the **NetWare** tab.
 - a If it is not already selected, select **Queue Server** as the operating mode.
 - b Select the correct NDS tree and NDS context (you can manually enter this information, or by clicking on the down arrow by the side of NDS tree and the **Change** button by the side of NDS Context, you can let BRAdmin display your choices automatically). Once you have specified this information, click on the **Change NDS queues** button.
 - c In the **NetWare Print Queues** screen select the appropriate **TREE** and Context and then click the **New Queue** button.
 - d Enter the queue name and specify the volume name. If you do not know the volume name, select the **Browse** button to browse the NetWare volumes. When the information is entered correctly, select the **OK** button.

- e Your queue name will appear in the TREE and Context that you specified. Select the queue and click on **Add**. The queue name will then be transferred to the Service Print Queues Window. You will be able to see the TREE and Context information along with the queue name information in this Window.

- f Click on the **Close** button. Your Brother print server will now log into the appropriate NetWare server.

Now exit the BRAdmin application. You are ready to print.

Configuring the Brother Print Server (Queue Server Mode in NDS mode) using Novell NWADMIN and BRAdmin

If you do not wish to use the Brother BRAdmin application solely to configure your NetWare file server, use the following instructions for configuration using the NWADMIN application in conjunction with the BRAdmin application.

- 1 Make sure that you are logged in as `ADMIN` in NDS mode on the NetWare 4.1x (or later) file server and start the NWADMIN application.
- 2 Select desired **Context** that will contain the Printer and then click on **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Printer** and then **OK**.
- 3 Enter the name of the printer and select **Create**.
- 4 Select the desired **Context** that will contain the default print queue, and then click on **Object** and **Create** to get the **New Object** menu.
- 5 Select **Print Queue** and then **OK**. Make sure that **Directory Service Queue** is selected and then type in a name for the default print queue.
- 6 Click on the button to select the print queue volume. Change the directory context if necessary, then select the desired volume (from **Available Objects**) and click **OK**. Click **Create** to create the print queue.

- 7 Change context if required and then double click the name of the printer you created in step 3.
- 8 Click **Assignments**.
- 9 Click **Add**.
- 10 Change the context if necessary.
- 11 Select the print queue you created in step 5.
- 12 Click **Configuration** and set the **Printer type** to **Other/Unknown**. Click **OK**.
- 13 Change the context if required, select **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **print server** and then **OK**.
- 14 Enter the name of the print server and select **Create**.



Enter the NetWare print server name of the print server exactly as it appeared in the NetWare tab of the BRAdmin application (this will generally be the `BRN_XXXXXX_P1` default service name, unless you changed the name).

You can find the current service name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

Important:

Do not assign a password to the print server or it will not log in.

- 15 Double click on the name of your print server. Click on **Assignments** and then **Add...**
- 16 If necessary, change the directory context. Select the printer you created in step 3 and click **OK** and then **OK** again.
- 17 Exit NWADMIN.

- 18 Start the appropriate BRAdmin application, and select the correct print server from the list (by default, the node name is BRN_XXXXXX, where XXXXXX is the last six digits of the Ethernet address (MAC address)).
- 19 Double click the appropriate Brother print server. You will be prompted for a password, the default password is `access`. Now select the NetWare tab.
- 20 Select **Queue Server** as the operating mode.

The same service assigned by NetWare server name cannot be used for both queue server mode and remote printer mode.



If you want to enable queue server capabilities on services other than the default NetWare services, you must define new services that are enabled for NetWare and for the desired port. Refer to the *Appendix* in this manual for information on how to do this.

- 21 Enter the NDS tree name (note that a print server can service both NDS and bindery queues).
- 22 Type in the name of the context where the print server resides.
- 23 Exit the BRAdmin application making sure that you save the changes that you have made. You are now ready to print.

Configuring the Brother Print Server (Remote Printer Mode in NDS mode) using Novell NWAdmin and BRAdmin

To configure a Brother print server for remote printer mode with NWADMIN (NetWare Administrator utility) and BRAdmin, you will need to perform the following steps:

- 1 Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server and that you are logged in as `ADMIN` in NDS mode on the NetWare 4.1x file server.
- 2 Start NWADMIN by double clicking on the icon. Select the desired **Context** that will contain the new printer.
- 3 Select **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Printer** and then **OK**.
- 4 Enter the name of the printer and select **Create**.
- 5 Double click on the print server name of your PSERVER NLM. Click on **Assignments** and then **Add**.
- 6 If necessary, change the directory context. Select the printer you created and click **OK**. Note the number of the printer, as you will use this later, then click **OK**.
- 7 Select the desired **Context** that will contain the default print queue, and then click on **Object** and **Create** to get **New Object** menu.
- 8 Select **Print Queue** and then **OK**. Make sure that Directory Service Queue is selected, and then type in a name for the default print queue.
- 9 Click on the button to select the print queue volume. Change the directory context if necessary, then select the desired volume (Objects) and click **OK**. Click **Create** to create the print queue.
- 10 Change context if required and then double click the name of the printer you created previously.
- 11 Click **Assignments** and then **Add**.

- 12 Change context if necessary and select the print queue you created. Click **OK** and then **OK** again, and then exit NWADMIN.
- 13 Start the appropriate BRAdmin application, and select the correct print server you wish to configure (by default, the node names will begin with BRN_XXXXXX_P1)



You can find the NetWare server name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 14 Double click the appropriate print server. You will be prompted for a password, the default password is `access`.
- 15 Now select the **NetWare** tab.
- 16 Select **Remote Printer** as the **Operating Mode**, select the name of your PSERVER NLM as the print server Name and select the number of the printer from step 6 as the Printer Number.



The same service assigned by NetWare print server cannot be used for both queue server mode and remote printer mode. If you want to enable remote printer capabilities on a service other than the default NetWare service, you must define new services that are enabled for NetWare and for the desired port. Refer to *Appendix B* in this manual for information on how to do this.

- 17 Click **OK**. And exit BRAdmin.

You must now unload the PSERVER NLM from your NetWare file server console and then reload it in order for the changes to take effect.

As an alternative to Brother's BRAdmin application or the Novell NWADMIN application, you can use the standard Novell PCONSOLE utility in conjunction with Brother's BRCONFIG program to set up your print queues. BRCONFIG program will be installed at the same time when you install the BRAdmin and you can find the BRCONFIG in the menu **Start/Program/Brother BRAdmin utilities**.

Configuring the Brother Print Server (Queue Server Mode in Bindery emulation mode) using PCONSOLE and BRCONFIG

- 1 Login as `Supervisor` (NetWare 3.xx) or `ADMIN` (NetWare 4.1x or later; be sure to specify the `/b` option for bindery mode).
- 2 Execute `BRCONFIG` from the Windows® menu.
- 3 Select the corresponding server name from the list of print servers.
- 4 When you get the message that the print server is connected, type the default password `access` in response to the `#` prompt (the password will not echo), and then press the `ENTER` key in response to the `Enter Username>` prompt.
- 5 When you get the `Local>` prompt, type:
 - 6 `SET NETWARE SERVER servername ENABLE`
Where `servername` is the name of the file server on which the print queue will reside. If there is more than one file server that you wish to print from, repeat this command as many times as necessary.
- 7 Type `EXIT` to exit the `BRCONFIG` remote console program and save the changes, then start the Novell `PCONSOLE` utility.
- 8 If you have NetWare 4.xx, change the mode to Bindery Mode by pressing `F4` key. Select **print server Information** (NetWare 3.xx) or **print servers** (NetWare 4.1x; ignore the warning message) from the **Available Options** menu.
- 9 You will be shown a list of current print servers. Press the `INSERT` key to create a new entry, type in the NetWare print server name (`BRN_XXXXXX_P1` by default, where `XXXXXX` is the last six digits of the Ethernet address) and press `ENTER`. Return to the main **Available Options** menu by pressing `ESCAPE`.
- 10 Select the **Print Queue Information** (NetWare 3.xx) or **Print Queues** (NetWare 4.1x) menu option to see list of configured print queues.

- 11 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 print server resources, but should be short and convenient for users to remember.
- 12 Make sure that the new queue name is highlighted, and then press ENTER to configure the queue.
- 13 Select **Queue Servers** (in NetWare 4.1x, this item is called **print servers**) 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 yet if this is a new queue.
- 14 Press INSERT to get a list of the queue server candidates and select the print server service name from step 9, Press ENTER.
- 15 Press ESCAPE several times until you return to the **Available Options** menu.

Force the print server to rescan file servers for print jobs. You may either turn the printer off and on again or you may use the BRCONFIG or TELNET command `SET NETWARE RESCAN` to make the print server rescan for file servers.

Configuring the Brother Print Server (Queue Server Mode in NDS mode) using PCONSOLE and BRCONFIG

- 1 Make sure that you are logged in as `ADMIN` in NDS mode on the NetWare 4.1x file server.
- 2 Run the PCONSOLE utility from PC workstation.
- 3 Select print servers from the **Available Options** menu.
- 4 Press INSERT and enter the print server name.



Enter the NetWare print service name of the print server exactly as it appeared in the printer configuration page (the default name is `BRN_XXXXXX_P1`, where `XXXXXX` is the last six digits of the Ethernet address (MAC address), unless you changed the name to something else). You can find the NetWare print service name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

Important:

Do not assign a password to the print server or it will not log in.

- 5 Return to the main **Available Options** menu by pressing ESCAPE.
- 6 Select **Print Queues**.
- 7 Press INSERT type in the desired print queue name (you will also be asked for a volume name. Press INSERT and select the appropriate volume), and press ESCAPE to return to the main menu.
- 8 Make sure that the new queue name is highlighted, and press ENTER.
- 9 Select print servers 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.

- 10 Press INSERT to get a list of the queue server candidates and select the NetWare print server name from step 4, which will then be added to the list. Press ENTER. And then, press ESCAPE several times to return to the main **Available Options** menu.
- 11 Select **Printers** from the **Available Options** menu.
- 12 Press INSERT and enter a descriptive name for the printer.
- 13 Make sure that the new printer name is highlighted, and then press ENTER. You will be shown the **Printer Configuration Window**.
- 14 Select **Print Queues Assigned: (See List)**, and then press ENTER.
The list of print queues will be empty, since none has been selected.
- 15 Press INSERT to get a list of the print queues and select the print queue name which you entered in Step 7.
- 16 Press ESCAPE several times and go back to the **Available Options** menu.
- 17 Select **print servers** and select the name of the print server that you entered in Step 4.
- 18 Highlight the **Printers** option in the **print server Information** menu.
- 19 Press INSERT and select the name of the printer you entered in Step 12.
- 20 Press ESCAPE several times to return to DOS.
- 21 Execute the BRCONFIG from the Windows® menu.

Select the print server from the list of print servers. When you get the message that the print server is connected, press the ENTER key and type the default password of `access` in response to the # prompt (the password will not echo), and then press the ENTER key again in response to the `ENTER` `Username>` prompt. When you get the `Local>` prompt, type:

```
SET SERVICE service TREE tree
SET SERVICE service CONTEXT Context
```

- Where `tree` is the NDS tree name.
- Where `context` is the name of context where the print server resides.
- Service is the name of the service assigned by NetWare print server name (where the default services are `BRN_XXXXXX_P1` for the Brother printer, where `XXXXXX` is the last six digits of the Ethernet address (MAC address)).
- You can also enter the TREE and CONTEXT name using your web browser, by connecting to the Brother print server using the TCP/IP protocol and selecting the **NetWare protocol configuration**.

22 Use the BRCONFIG command or TELNET command: `SET NETWARE RESCAN` to force the print server to rescan for file servers, or power cycle the printer.



The same service assigned by NetWare print server cannot be used for both queue server mode and remote printer mode. If you want to enable remote printer capabilities on a service other than the default NetWare service, you must define new services that are enabled for NetWare and for the desired port. Refer to Appendix in this manual for information on how to do this.

Configuring the Brother Print Server (Remote Printer Mode) using PCONSOLE and BRCONFIG

- 1 Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server.
- 2 Log into the file server from your PC workstation as `ADMIN` if you are using NetWare 4.1x (if you want NDS support, do not login under bindery mode). If you are using NetWare 2.xx or 3.xx, login as `SUPERVISOR`.
- 3 Run the PCONSOLE utility from your PC workstation.
- 4 If you are creating a new print queue, select **Print Queue Information** (NetWare 3.xx) or **Print Queues** (NetWare 4.1x) from the **Available Options** menu.
- 5 Press `INSERT`, type in the desired print queue name (with NetWare 4.1x, you will also be asked for a volume name; press `INSERT` and select the appropriate volume), and press `ESCAPE` to return to the main menu.

The following steps apply to configuring a remote printer with NDS support on NetWare 4.1x systems:

- 6
 - a Select **print servers** from the PCONSOLE menu and then select the print server name of the PSERVER NLM on your file server.
 - b Select **Printers**.
 - c Press `INSERT` to get **Object, Class** menu.
 - d Press `INSERT` and enter the **Printer Name** (any unique name is OK).
 - e Highlight the printer name and press `ENTER` twice to get to the **Printer Configuration** Menu.
 - f PCONSOLE will assign a **Printer Number**. Remember this number, since it will be used later.

- g* Highlight **Print Queues Assigned** and press ENTER and then INSERT to get a list of available queues.
- h* Highlight the name of the print queue you wish to assign to the remote printer and press ENTER.
- i* The other settings in the menu are not required. Push ESCAPE several times to exit PCONSOLE.
- j* Skip to the **Assigning the remote printer name and number** sections below.

The following steps apply to configuring a remote printer on NetWare 3.xx systems:

6

- a* Select **print server Information** from the PCONSOLE main menu and choose the name of the PSERVER NLM.
- b* Select **print server configuration** and then **printer configuration**. Select any **Not Installed** printer and press Enter. Remember the number of this printer, since it will be used later in the configuration process.
- c* If desired, type in a new name for the printer.
- d* Go to **Type**, press ENTER, highlight **Remote Other/Unknown** and press ENTER again. The other settings in this menu are not required.
- e* Push ESCAPE and save the changes.
- f* Push ESCAPE and select **Queues Serviced by Printer**.
- g* Highlight the printer name that you just configured and press ENTER.
- h* Press INSERT, choose the desired print queue, and press ENTER (you can accept the default priority).
- i* Press ESCAPE several times to exit PCONSOLE.

Assigning the Remote printer name and number using BRCONFIG

7

- a Execute the BRCONFIG from the Windows® menu.
- b Select the Brother print server from the list of print servers. When you get the message that the print server is connected, press the ENTER key and type the default password `access` in response to the `#` prompt (the password will not echo) and then press the ENTER key again in response to the `Enter Username>` prompt. When you get the `Local>` prompt, type:

```
SET NETWARE NPrinter nlm number ON service
SET NETWARE RESCAN
EXIT
```

- Where `nlm` is the name of the PSERVER NLM on your file server.
- `Number` is the printer number (this must match the printer number you selected during the PCONSOLE configuration in the previous steps).
- `Service` is the name of the service assigned by NetWare print server name (where the default services are `BRN_XXXXXX_P1` for the Brother printer, where `XXXXXX` is the last six digits of the Ethernet address (MAC address)).

For example, to set up remote "Printer 3" for a Brother printer with the print server `BRN_310107_P1` using the PSERVER NLM called `BROTHER1PS`, you would type:

```
SET NETWARE NPrinter BROTHER1PS 3 ON BRN_310107_P1
SET NETWARE RESCAN
EXIT
```

- You can also enter the remote printer name using your web browser, by connecting to the Brother print server using the TCP/IP protocol and selecting the **NetWare protocol configuration**.



The same services assigned by NetWare print server name cannot be used for both queue server mode and remote printer mode.

You must now unload the PSERVER NLM from your NetWare file server console and then reload it in order for the changes to take effect.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

7 AppleTalk (EtherTalk) TCP/IP Printing

Printing From a Macintosh

Overview

Brother print servers support the AppleTalk protocol running over Ethernet (also known as EtherTalk). This allows Macintosh users to print at the same time as all other Ethernet network using the AppleTalk (also referred to as EtherTalk) protocol.

With the release of System 8.6 or later, Apple introduced a TCP/IP printing capability. This allows Macintosh users to send print jobs using the TCP/IP protocol.

Quick Tips:



- 1 The default name that will appear in the Chooser of a Macintosh will usually be `BRN_XXXXXX_P1_AT` (where `XXXXXX` is the last 6 digits of the Ethernet address)
- 2 From a Macintosh network, the easiest way to change this name is to assign an IP address to the printer and then use a Web browser to change the name. Connect to the printer using a web browser and then click on **Network Configuration**. Enter the password (the default password is `access`) then select **Configure AppleTalk**. Click on `BRN_XXXXXX_P1_AT`, then on **Service Name**. Enter the new name that you wish to appear in **Chooser**. Then click on **Submit**.
- 3 System 8.6 or later supports TCP/IP printing.
- 4 The default password for Brother print servers is `access`.
- 5 To print a network configuration page, press the **TEST** button on the back of the print server.
- 6 The default IP address of Brother print servers is `192.0.0.192`. To change it, use the printer control panel, the BRAdmin application, or let your DHCP server allocate an IP address to the printer.

Macintosh Configuration (OS 8.5 - 9.2)

Your Brother Printer is compatible with the standard Apple LaserWriter 8 printer driver (earlier versions of the LaserWriter drivers may crash or cause PostScript errors on large networks). If you do not have the LaserWriter 8 driver you must install it. Consult your Macintosh documentation for instructions on how to do this.

Before you try to use the Brother print server, you must first enable the EtherTalk protocol from the **Network Control Panel** on the Macintosh. If the EtherTalk protocol is not selected, or the **Network Control Panel** does not exist, you must use Apple's **Network Installer** software to add these capabilities.

The appropriate PPD file supplied with your printer must first be installed. Insert the CD-ROM into the CD-ROM drive of your

computer. Select the **Start Here** icon, select your language and follow the on-screen instructions for **Install Software**.

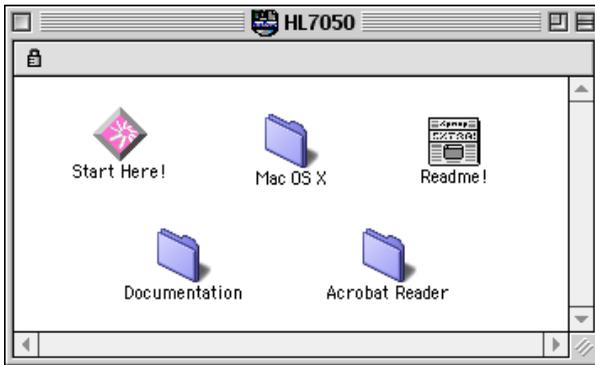


Figure 1 Typical Macintosh Installer

The above screenshot is from a Brother HL-7050 series printer driver. However, you will see a similar screen for all Brother printers that include a Macintosh printer driver.

How to Select the Print Server (AppleTalk/EtherTalk)

Once the print server is connected on your network and the printer is powered on, the Brother print server's AppleTalk service name (default is BRN_XXXXXX_P1_AT, where XXXXXX is the last six digits of the Ethernet address (MAC address)) should appear in the **Chooser**.



You can find the service name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 1 Open the **Chooser** from the **Apple Menu** on the Macintosh, and then click on the LaserWriter icon (if necessary, select the appropriate AppleTalk zone from the **Network Control Panel**).

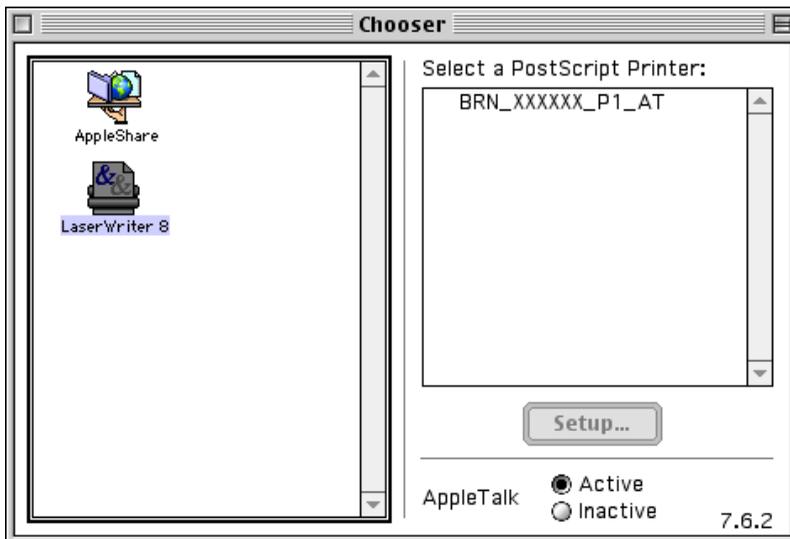


Figure 2 Macintosh Chooser

- 2 Click on the appropriate print server and close the **Chooser**

program. You should now be able to print from the Macintosh.



If you cannot see the print server, first make sure that your cabling is correct and that you have enabled EtherTalk from your Macintosh **Network Control Panel**. You may also need to force the print server into the correct AppleTalk zone using the BRAdmin application or a web browser.

How to Select the Print Server (TCP/IP)

Apple has developed the "**Desktop Printer**" utility. This can be found from the **Apple menu** (this is only available from System 8.6 or later). When you run it you will see the following screen:



Figure 3 Selecting LPR Printing

- 1 Select the **Printer (LPR)** option and click **OK**. You will then see the following

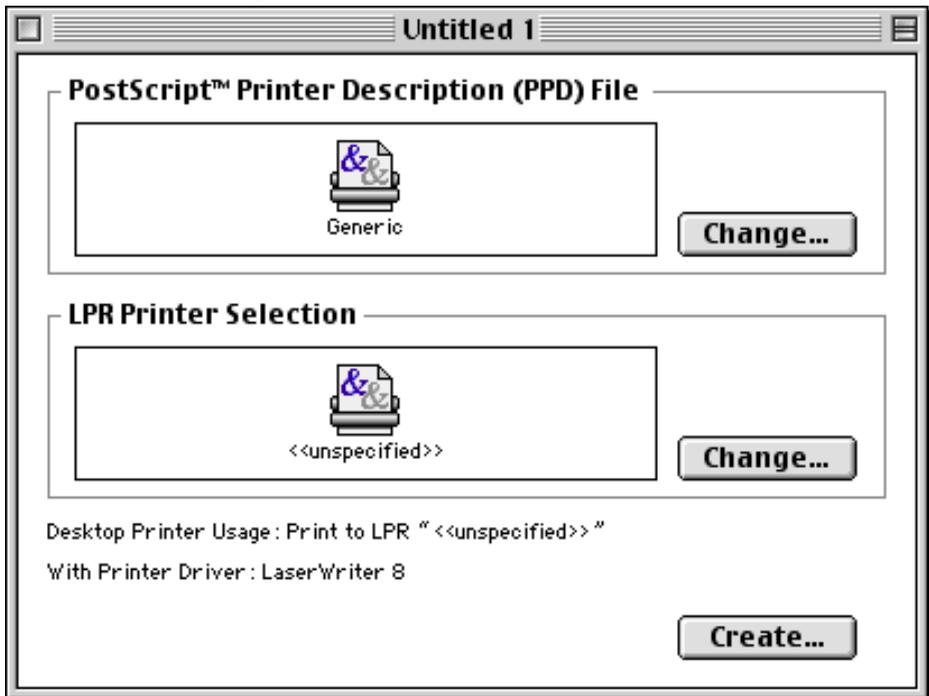


Figure 4 Selecting the PPD and LPR Configuration

- 2 At this point we must select the correct PPD file for the printer and also configure the correct LPR information. Click the **Change** button in the **PostScript Printer Description (PPD) File** section and select the appropriate PPD file for your model.
- 3 Now select the **Change** button below the **LPR Printer Selection** text.
- 4 You must then enter the IP address and service name details of the printer. When specifying the **Queue**, use the value `brn_XXXXXX_p1_at` where `XXXXXX` are the last 6 digits of the Ethernet address.

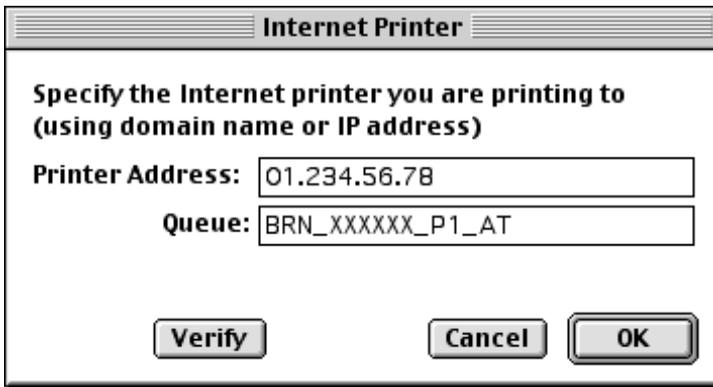


Figure 5 Entering the IP address and Queue



If you do not specify the correct value the printer may not print, or it may not print the data correctly. Please ensure that the value you enter here matches with the Service name of the printer.

- 5 Click **OK** to go back to the previous screen.
- 6 You are now ready to create the printer for use. To do that, click the **Create** button and you will see the following:

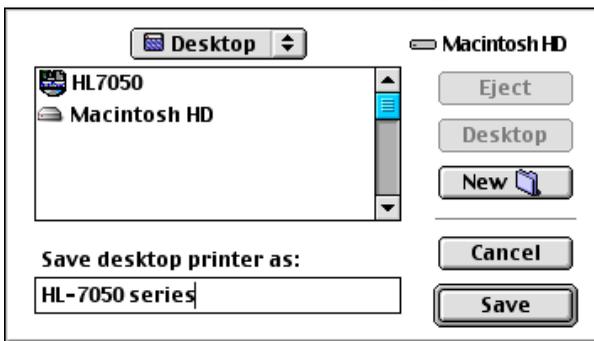


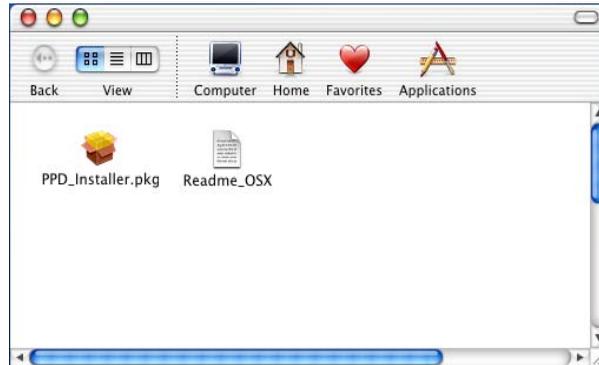
Figure 6 Saving the printer to the Desktop (screen shown is from the HL-7050)

- 7 Enter the name of the printer in the **Save desktop printer As:** option and click on **Save**.
- 8 We must now make this our default printer by clicking the printer name once and then select **Printing** and **Set Default Printer**.

Whenever you send a print job, the printer that you just created will be used.

Macintosh Configuration (OS X v. 10/10.1)

The appropriate PPD file supplied with your printer must be installed. Insert the CD-ROM into the CD-ROM drive of your computer. Select the **Mac OS X** folder. Double click on the **PPD_Installer.pkg** icon and follow the on-screen instructions.



How to Select the Print Server (AppleTalk/EtherTalk)

After installing the PPD, use the following steps to select the printer driver:

- 1 Turn the power of the printer ON.
- 2 Open the **Applications** folder.
- 3 Open the **Utilities** folder.
- 4 Open the **Print Center** Icon.
- 5 Click the **Add Printer** button.
- 6 Select **AppleTalk**.
- 7 Select BRN_XXXXXX_P1_AT and click the **Add** button.

For AppleTalk connections, the printer's AppleTalk service name is BRN_XXXXXX_P1_AT, where XXXXXX is the last six digits of the Ethernet address.

Printing the configuration page will allow you to confirm the MAC address. Please refer to the Quick Setup Guide for information on how to print the configuration page.

- 8 From the **Printer Model** pull-down list select your model.
- 9 Click **Add** and the printer will be available from the **Printer List**.

How to Select the Print Server (TCP/IP)

After installing the PPD, use the following steps to select the printer driver:

- 1 Turn the power of the printer ON.
- 2 Open the **Applications** folder.
- 3 Open the **Utilities** folder.
- 4 Open the **Print Center** Icon.
- 5 Click the **Add Printer** button.
- 6 Select **LPR Printers using IP**.
- 7 Enter the TCP/IP address of the printer into the **LPR Printer's Address** box.

Printing the configuration page will allow you to confirm the TCP/IP address. Please refer to the Quick Setup Guide for information on how to print the configuration page.

- 8 If you are not using the default **Queue** enter the Queue name you are using.
- 9 From the **Printer Model** pull-down list select your model.
- 10 Click **Add** and the printer will be available from the **Printer List**.

Changing the Configuration

From a Macintosh, the easiest way to change the printer or print server parameters is to use a web browser.

Simply connect to the printer using the format: `http://ip_address` where `ip_address` is the address of the printer.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.
- 3 Refer to *chapter 11* for more information on web-based management.

8 DLC Printing

Printing from Windows[®] NT or Windows[®] 2000

Overview

DLC is a simple protocol that is included in Windows NT[®] and Windows[®] 2000 as standard. It can be used on other operating systems (such as Windows[®] 3.x) with the addition of vendor-supplied software that supports the Hewlett-Packard JetDirect card.

Quick Tips:

- 1 One way to print the details of all network settings is to print a configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page.



Because DLC is a non-routable protocol, there cannot be a router between the print server and the sending computer.

Configuring DLC on Windows® NT/2000

To use DLC on Windows® NT, you must first install the DLC protocol.

- 1 Log into Windows® NT with administrative privileges. Go to the **NT Control Panel** and double click on the **Network** icon. Windows® 2000 users select the **properties** of the **Local Area Connection**.
- 2 On Windows® NT 3.5x systems, select **Add Software**. On Windows® NT 4.0 systems, click on the **Protocol** tab, and click **Add**. Windows® 2000 users click the **Install** button from the **General** tab.
- 3 Select **DLC Protocol** and then **OK** or **Add** if using Windows® 2000. You may be asked for the location of the files. For Intel based computers, the necessary files are stored in the i386 directory of the Windows® NT CD-ROM. If you have a non-Intel platform, specify the correct directory on your Windows® NT CD-ROM. Click **Continue** (for NT 3.5x systems) or **Close** (for NT 4.0 systems).
- 4 Reboot your system to make the change take effect. Windows® 2000 should not require a re-boot.

Windows® 2000 Printer Setup

- 1 Log into Windows® 2000 with administrative privileges. From the **Start** menu, select **Settings** and then **Printers**.
- 2 Select **Add Printer** (If you have already installed a Brother printer driver, double click the printer driver that you wish to configure and then select **Printers/Properties**, select the **Ports** tab, click on **Add Port** and continue from Step 6 (ignoring steps 11-14 about installing the correct driver)).
- 3 Click **Next**.
- 4 Select **Local Printer** and make sure that **Automatically detect and install my Plug and Play printer** is not checked.
- 5 Click **Next**.

- 6 Select the **Create a new port:** option and highlight **Hewlett-Packard Network Port**.
- 7 Click **Next**.
- 8 A list of available print server MAC addresses (Ethernet addresses) appears in the larger box under **Card Address**. Select the address of the desired print server (you can see the Ethernet address on the printer configuration page).



- You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.
- 9 The selected print server address will then appear in the smaller box under **Card Address**.
 - 10 Type in any desired name for the port (the name must not be the name of an existing port or DOS device, such as LPT1) and click **OK** then on the **Printer Ports** screen, click **Next**.
 - 11 Select the correct driver click **Next**.
 - 12 Give a name to the printer and specify if you wish to be able to print from DOS application. Then click **Next**.
 - 13 Specify the share name (if you are going to share the printer).
 - 14 Enter the **Location** and **Comment** information and click **Next** until you see the **Completing the Add Printer Wizard** screen.
 - 15 Click **Finish**.

Windows[®] NT 4.0 Printer Setup

Log into Windows[®] NT with administrative privileges. From the **Start** menu, select **Settings** and then **Printers**.

- 1 Select **Add Printer** (If you have already installed a Brother printer driver, double click the printer driver that you wish to configure and then select **Printers/Properties**, select the **Ports** tab and continue from Step 4 (ignoring steps 9-11 about installing the correct driver)).
- 2 Select **My Computer** and then click **Next**.
- 3 Select **Add a Port**.
- 4 Select **Hewlett-Packard Network Port** and then click **New Port**.
- 5 A list of available print server MAC addresses (Ethernet addresses) appears in the larger box under **Card Address**. Select the address of the desired print server (you can see the Ethernet address on the printer configuration page).



You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 6 The selected print server address will then appear in the smaller box under **Card Address**.
- 7 Type in any desired name for the port (the name must not be the name of an existing port or DOS device, such as LPT1) and click **OK** then on the **Printer Ports** screen, click **Close**.
- 8 The name you selected in the above step will appear as a checked port in the list of available ports. Click **Next**.
- 9 Select the correct driver. Click **Next**.
- 10 Give a name to the printer. If desired, select the printer as the default.
- 11 Select **Shared** or **Not Shared**. If shared, specify the share

name and the operating systems that will be printing to it.

- 12 Select whether or not you want to print a test page, and then select **Finish**.

Windows[®] NT 3.5x Setup

- 1 From the Windows[®] NT **Main** group, double click on the **Print Manager** icon.
- 2 Select **Printer** from the menu bar and click on **Create Printer**.
- 3 Enter any desired name for the printer in the **Printer Name** box.
- 4 Select the printer model in the **Driver** menu.
- 5 Choose **Other** (or **Network Printer** for V3.1 systems) from the **Print to** menu.
- 6 Click on **Hewlett-Packard Network Port**.
- 7 Type in your desired name for the port (this name must not be an existing port or DOS device, such as LPT1).
- 8 The MAC addresses (Ethernet addresses) of available print servers will appear in the **Card Address** menu. Select the desired address (You can see the Ethernet address on the printer configuration page).



You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 9 Click **OK**.
- 10 If you want to share the printer, click **Share the Printer on the Network**.
- 11 Click **OK**.
- 12 If necessary, select the appropriate printer options and then click **OK**.

Configuring DLC on Other Systems

To use DLC on other network systems, you will generally need vendor-supplied software. Typically such software will support the Brother print servers. Follow the vendor's instructions to install the DLC protocol on your system.

Once the protocol is installed, create a network port in the same way that you did for Windows® NT in the previous sections. The MAC address (Ethernet address) of the print server should automatically appear during the configuration process.

The final step is to create a printer using the normal operating system printer setup method. The only difference is that instead of connecting the printer to the LPT1 parallel port, you point it to the network port you just created.



Brother does not recommend using the DLC protocol with Windows® for Workgroups 3.11 in a peer-to-peer configuration if the printer will be heavily used. This is because jobs may be rejected due to print spooler timeouts. The best solution in these situations is to set up one PC as a server for handling network print jobs. All of the other PCs send their print jobs to the server PC using NetBEUI or TCP/IP, and the server PC then uses DLC to send the print jobs to the Brother print server.

Other Sources of Information

Visit <http://solutions.brother.com/> for more information on network printing.

9

LAT Network Configuration

Printing from DEC LAT Systems

Overview

Brother print servers are equipped with the LAT protocol. If you are already familiar with configuring DEC servers or compatible terminal servers in your network, you can use similar procedures to configure a Brother print server.

Quick Tips:

- 1 The default password for Brother print servers is `access`.
- 2 If you assign an IP address to the print server, you can use a Web browser or the BRAdmin application to configure the LAT configuration parameters.

LAT Concepts

A Brother printer server will be a node on the network that offers a printing service to other nodes on the network. A node is simply a device, such as a host computer, terminal server, or print server. Every node on the network has a unique name, Brother print servers are pre-configured with the name `BRN_` followed by the last six digits of the Ethernet address (for example, `BRN_310107`).

To use a Brother print server with a VMS host computer, you will first need to create a LAT application port on the host. A LAT application port allows a program to send and receive data over a LAT connection as if it were communicating with a directly-connected physical port. You will then need to associate a print queue with this port.

VMS LAT Host Configuration

The configuration process requires that you have system manager privileges. Before starting the LAT configuration process, you must first make sure that LAT has been started on your system. If you are currently using terminal servers on your network, then LAT has probably already been activated. If LAT is not started, you need to execute the following command before proceeding:

```
@SYS$STARTUP:LAT$STARTUP
```

- 1 Before creating a print queue, you will need to determine the following:
 - **The VMS queue name.** This can be any unique name. (Do a `SHOW QUEUE` command at the VMS prompt to list the existing queues).
 - **The LAT application port.** The name of this port is `LTAXxx`, where `xx` is any unused number (do a `SHOW PORT` command in the VMS LATCP program to see the existing ports).
 - **The print server node name and port name .** The default node name is `BRN_XXXXXX`, where `XXXXXX` is the last six digits of the MAC address (Ethernet address), for example, `BRN_310107`). You can see the name of your print server by printing out a configuration page.

You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

If you wish to use a different node name, use the BRAdmin application or a web browser to change the name.

- 2 Use the VMS editor to create a text file with the necessary configuration commands (alternatively, you may edit the file LAT\$SYSTARTUP.COM for VMS 5.5-x and later systems or LTLOAD.COM for earlier VMS systems). For instance, the following sample command file creates a queue named XJ on LAT port 33 for a print server with a default node name of BRN_310107 using the LATSYS processor and the default VMS form:

```
$MCR LATCP
CREATE PORT LTA33:/APPLICATION
SET PORT LTA33:/NODE=BRN_310107/PORT=P1
SHOW PORT LTA33:
EXIT
$SET TERM LTA33:/PASTHRU/TAB/NOBROADCAST-
/PERM
$SET DEVICE/SPOOL LTA33:
$INIT/QUEUE/START/ON=LTA33:/PROC=LATSYS XJ
```

Substitute your actual node name, port name (P1), LAT port and queue name for the ones in the example. If you are using a service name, specify

`/SERVICE= servicename` instead of `/PORT=P1`.



Use the default names unless you have specifically changed the names.

Be sure to specify `PROC=LATSYS` or the queue will not service requests from multiple host computers.

- 3 Execute the command file you have just created by typing "@" plus the file name in response to the VMS "\$" prompt (for example, @LATSTART.COM). For additional convenience, you may want to include the "@filename" command in your system startup file so that the procedure is executed automatically when the system is booted.
- 4 Define or modify a form for use with the print server. VMS uses forms to define the page layout. If you are printing graphics or PostScript jobs, you must define your form for NOTRUNCATE and NOWRAP to prevent printer errors. For example, to redefine the VMS default form DEFAULT, you would type the following at the "\$" prompt:

```
DEFINE /FORM DEFAULT /NOTRUNCATE /NOWRAP
```

If you are defining a new form, be sure to specify STOCK=DEFAULT (unless you are using a special stock) and initialize the queue with the DEFAULT=FORM option. For example, to create a form called PCL for the queue BRN on LAT port LTA33:, you would type:

```
DEFINE /FORM PCL /NOTRUNC /NOWRAP /STOCK=DEFAULT  
INIT /QUEUE /START /ON=LTA33 : /PROC=LATSYM / -  
DEFAULT=FORM=PCL BRN
```

- 5 You are now ready to print. Use the PRINT command with the name of the queue and the file you wish to print as shown in the following example:

```
PRINT /QUEUE=BRN MYFILE .TXT
```

If the file does not print, recheck the hardware and software configuration, and then try printing again. If the file still does not print, refer to the Troubleshooting portion of this userguide for further assistance.

Eliminating Blank Pages

When printing through VMS, a blank page is often printed after each job. To eliminate this blank page, first create a text file with the following contents:

```
<ESC> ]VMS ; 2<ESC> \
```

where <ESC> is the escape character (ASCII 27) and "VMS" is in uppercase. Then insert this file into your default library (normally SYSDEVCTL.TLB), and specify it as a setup module in your form (stop and reset all queues that use the library before doing this procedure). For example:

```
$LIB /INS SYS$SYSROOT : [SYSLIB] SYSDEVCTL .TLB NOBL  
$DEF /FORM PCL /SETUP=NOBL
```

The above example inserts the file NOBL.TXT into the default library and then redefines the form PCL (previously defined in step 4) to eliminate blank pages.



This procedure is not required for DECprint Supervisor (DCPS).

PATHWORKS for DOS Configuration

To configure the print server for PATHWORKS for DOS:

- 1 Create a VMS queue as previously described.
- 2 Run PCSA_MANAGER on the VMS system.
 - a Type `MENU` to get the PCSA menu.
 - b Select **SERVICE OPTIONS**
 - c Select **ADD SERVICE** (do not use the **ADD PRINTER QUEUE** option as this will add a PCL printer reset that will affect PostScript printing.
 - d Select **PRINTER SERVICE**.
 - e Enter service name (pick a name).
 - f Enter VMS queue name (previously defined).
 - g Enter VMS form name (use the default if you do not have a specific form defined).

3 Perform the following steps on the PC:

- a If you are using DOS, type the command `USE LPTx:\\node\service` at the DOS prompt, where `x` is the PC parallel port number, `node` is the DECnet node name and `service` is the service name picked previously. For example:

```
USE LPT1:\\VAX\LASER
```

You may delete this print service by typing `LATCP` at the `C:>` prompt and then entering the command `DELETE LPT1:`

- b If you are using Windows[®] 3.1x, make sure that you have selected DEC PATHWORKS as the network under the Windows[®] **Setup** icon.
- c Then click on the **Print Manager** icon, select **Options** and then **Printer Setup**.

- d** Click **Add**, go to the **List of Printers**, select the desired printer type, and click **Install**. If desired, click **Set as Default Printer**.
- e** Click **Connect** and select the desired port (e.g., LPT1). Click **Network** and select the port you chose above and type in the network path (`\\node\service`, where `node` is the DECnet node name and `service` is the service name picked previously; for example, `\\VAX\LASER`).
- f** Click **Connect** (the **Current Printer Connection** should show the port and the network path that you selected).
- g** Click **Close**, **OK**, **Close**, and **Exit** to get out of the **Print Manager**.

PATHWORKS for Windows® 95/98/NT4.0

- 1 To configure the print server for PATHWORKS for Windows®:
- 2 Click on the **Start** button and select **Settings** and then **Printers**.
- 3 Click on **ADD Printer** to start the **Add Printer Wizard**.
- 4 Click on **Next**.
- 5 Select **Network Printer**.
- 6 Type in the network path. (\\node\service, where node is the DECnet node name and service is the service name picked previously; for example, \\VAX\LASER).
- 7 Type in the desired name for the printer and click **Next**.
- 8 Click **Finish** to end the configuration process and print a test page.

PATHWORKS for Macintosh Configuration

If you are using PATHWORKS for Macintosh, you will need to make sure that you have a bi-directional channel (in other words, you did NOT enter the command `SET SERVICE servicename RECEIVE ENABLED` from the remote console). Then create a LAT port using LATCP as shown in the following example (substitute your actual node name and LAT port number):

```
CREATE PORT LTA53:/APPLICATION
SET PORT LTA53:/NODE=BRN_009C53/PORT=P1
```

Do not set the LAT port as a spooled device. Now go into ADMIN/MSA and enter the command:

```
ADD PRINTER name/QUEUE=queuename/DEST=LTA53:
```

where name is the name of the printer, and queuename is the queue name.

DECprint Supervisor Configuration Notes

If you want to use the Brother print server with the DECprint Supervisor software, you must have the DCPS-Open option in order to support Brother printers (you may also need to modify the DCPS device control modules and queue setup to handle "unrecognized" printers). Do not use the `SET SERVICE RECEIVE` command because bi-directional communications is required for DCPS.

Operation of the print server under ULTRIX is similar in concept to VMS in that you must create a LAT application port and associate a print queue with that port (note that ULTRIX can alternatively be configured with TCP/IP as described in Chapter 2). This procedure requires system manager privileges and is shown in the following sections.

- 1 Verify that LAT is working. This can be done simply with a LAT-compatible terminal server; by doing a `SHOW NODE` or `SHOW SERVICE` command, you should see the name of your ULTRIX host displayed. If you do not have a terminal server available, execute the following command:

```
lcp -c
```

This command displays the LAT traffic on the network. You should minimally see some number of frames transmitted because your ULTRIX computer periodically broadcasts messages across the network. If LAT is not working, first check your cabling and your network configuration. If LAT still does not work, then you may need to install LAT into your system. This is a fairly complex procedure that requires rebuilding your kernel; refer to your ULTRIX documentation for information on this procedure.

- 2 If you have not already done so, create some LAT devices. This is done by first changing your default directory to `/dev` and then use the `MAKEDEV` command to create 16 LAT devices:

```
cd /dev  
MAKEDEV lta0
```

This will create 16 devices numbered sequentially. For example, it will create `tty00` through `tty15` if you have not previously created any terminal devices. To create an additional 16 devices, type:

```
MAKEDEV lta1
```

- 3 Edit the `/etc/ttys` file to add a line similar to the following for each LAT connection:

```
tty05 "etc/getty std.9600" vt100 off nomodem
#LAT
```

(substitute your actual tty number in place of `tty05`).

- 4 Verify that you have created valid LAT tty devices with the command:

```
file /dev/tty* | grep LAT
```

Valid LAT devices will have a "39" in the description that is printed when this command is executed.

- 5 Edit the `/etc/printcap` file to define the printer. The following is an example of an entry:

```
lp1|BRN1:\
:lp=/dev/tty05:\
:ts=BRN_310107:\
:op=P1:\
:fc#0177777:fs#023:\
:sd=/usr/spool/lp1:
```

`lp1` in the example is the printer name; you may choose to replace it with a name of your choice. Likewise, `BRN1` is a secondary name that you may want to replace with your own designation. The `op` parameter is the port name (P1). You must change the `ts` parameter to be the actual node name of your print server (the default node name is `BRN_XXXXXX`, where `XXXXXX` is the last six digits of the MAC address (Ethernet address)). You must also change the `tty05` entry in the `lp` parameter to be the actual tty port you are using. The `fc` and `fs` parameters should be entered exactly as shown above since they are required for the output to be printed correctly.

- 6 You now need to establish a host-initiated connection. For example:

```
lcp -h tty05:BRN_310107:P1
```

- 7 Make the spool directory as shown in the following example:

```
cd /usr/spool
mkdir lp1
chown daemon lp1
```

Again substitute your actual printer name for `lp1`.

- 8 Print a file to verify the connection. For example, the following command prints the printcap file:

```
lpr -Plp1 /etc/printcap
```

`lp1` in this example must be replaced by your actual printer name. You may find that you get an error message **Socket is already connected**. If this happens, simply try printing again and the message should go away and the job should be printed. If you get any other message, double check your configuration.

If you have trouble printing, enter the `lpstat -t` command to get the status of the print job. If the job is hung in the queue, you may have a configuration problem: Refer to the Troubleshooting chapter of this user guide for further assistance.

Installation on Other Host Computers

Installation procedures differ somewhat for other DEC operating systems (e.g., RSTS/E and RSX-11M-PLUS). Refer to the appropriate DEC documentation for information on setting up LAT print queues on these systems.

10 BANYAN VINES Network Configuration

Printing from Banyan Vines Systems

Overview

Brother print servers allow printers to be shared on a Banyan VINES network. Users on client PCs send their jobs to any VINES file server running the Banyan PCPrint software, which in turn spools the jobs to the print server. Printing is transparent to user applications, and the print server can be managed using standard VINES utilities like `MANAGE`, `MSERVICE`, `MUSER` and the Operator Console printer control. In addition, VINES users can print concurrently with all network users.

Quick Tips:

- 1 The default password for Brother print servers is `access`.
- 2 If you assign an IP address to the print server, you can use a Web browser or the BRAdmin application to configure the Banyan configuration parameters.

Necessary items to use a Brother print server on a VINES network

Banyan's PCPrint software (a Banyan-supplied software option that is installed on the VINES file server).

File Server User Console

The first step in the configuration process is to configure the file server so that the Brother print server can log into the Banyan VINES network. To do this, you will need to configure a StreetTalk user name for the print server (all VINES print servers log into the file server as users).

- 1 From any VINES workstation log in as a supervisor and execute the **MANAGE** program by typing **MANAGE** at the DOS prompt.
- 2 At the main menu, select **2 - Users** and press **ENTER**.
- 3 You will get the **Manage Users** screen. Select **ADD a user** to get the **Add A User** screen. Type in a StreetTalk name for the desired print server service. You may optionally type in a description, nickname, and a password. Press the **F10** key when you are finished.
- 4 You will then get the **Add User Profile** screen. Select a blank user profile and then press **ENTER**. If there is no existing blank profile, then select the **Sample Profile**.
- 5 You will get the message **Do you want to force the user to change passwords on the next login?**. Select **No** and press **ENTER**.
- 6 You will then get the **Manage A User** screen. If you selected a blank user profile in step 4, you can skip to step 8. Otherwise, use the arrow keys to select **MANAGE User Profile** and press **ENTER**.
- 7 You will get the **Manage User Profile** screen. Execute the following steps to create a blank user profile:
 - Select **EDIT profile**.
 - When the profile appears on the screen, press **CTRL-X** multiple times to delete every line in the profile, and press **F10** when you have finished. You may then use this newly created blank profile as a template when configuring additional Brother print servers. Then press **ESCAPE** to return to the **Manage a User** screen.

- 8 Press ESCAPE twice to return to the main menu.

File Server Queue Configuration

You must now configure the queue(s) on the Banyan VINES file servers. Print queues are one of several different types of services that are available on a VINES file server. To configure a print queue, use the MANAGE utility as follows:

- 1 From the main menu, select **1 - Services** and press ENTER.
- 2 You will get the **Manage Services** menu. Select **ADD a server-based service** and press ENTER.
- 3 From the **Add A Service** screen type the desired StreetTalk name for the print queue, press ENTER, and then type in a description of the print server followed by ENTER.
- 4 Select the desired file server (if there is more than one) and press ENTER.
- 5 When you get the **Select Type Of Service** screen, select **3 - VINES print service** (for VINES 5.xx) or **2 - Banyan Print Service** (for VINES 6.xx) and press ENTER.
- 6 Use the arrow keys to select the disk where the print queue service will reside and press ENTER. You will get the message **The service is running but not yet available to users.** Press F10.
- 7 If desired, type in the maximum number of jobs and maximum size of job for the queue when you get the **Configure Queue** screen. Otherwise press F10 for unlimited number and size.
- 8 If desired, choose a default paper format when you get the **Configure Paper Formats** screen. Otherwise, press F10 to select the defaults.
- 9 If desired, enter the user names that are authorized to use the printer when you get the **Access Lists** screen. Otherwise, press F10 to accept the defaults.
- 10 If you have a VINES 5.xx system, you may optionally enter the users to be notified in the event of printer problems when you

get the **Alert list** screen. Otherwise, press F10 to accept the defaults (not applicable for VINES 6.xx).

- 11 When you get the **Add A Destination** screen, use the arrow keys to select **PCPrint** and press ENTER.



If the PCCPrint option is not installed, PCCPrint will not appear on this screen. You must have PCCPrint installed in order to use an Brother print server.

- 12 When you get the **Destination Attributes** screen, enter the StreetTalk name of the Brother print server and an optional description. Press F10.
- 13 You will get the **Output strings** menu. This screen allows you to define strings of characters that can be sent before and after the print job to put the printer in a particular state (for example, duplex mode). The default values will work OK for most applications. However, if you are printing text files directly from the DOS prompt, you should define a **Post-job string** such as \f (form feed) to ensure that the paper is ejected (this is generally not needed with DOS or Windows application programs, since the program or drivers reset the printer after each job, and it may cause problems with binary graphics files). Press F10 to accept the output string values.
- 14 You will then get the **Enable strings** menu. This menu allows you to select whether or not a banner page is printed, whether or not to use the setup and reset strings, and other options. Choose the desired options or press F10 to select the defaults.
- 15 You will be asked, **Would you like to add another destination at this time?** Select **No**.
- 16 You will then get the **Print Queue Status** screen, which will show that the queue is not accepting jobs or printing jobs. Change both values to **Yes** and then press F10. You will get the message that the queue is now ready to accept and print jobs. Press F10 again.
- 17 If you are configuring more than one queue on the file server, repeat steps 1 through 17 of this section. Otherwise, press ESCAPE multiple times to exit the MANAGE utility.

Print Server Configuration Using BRAdmin

The last step is to add the StreetTalk login name to the Brother print server and to associate the file server queue with one of the services on the print server. The procedure is as follows:

- 1 Start the BRAdmin software.
- 2 Select the node name of the desired Brother print server from the list and double clicking on it (the default node name is BRN_XXXXXXX, where XXXXXX is the last six digits of the Ethernet address (MAC address)). You are prompted for a password. The default password is `access`.
- 3 Click on the **Banyan Vines** tab.
- 4 The Banyan hop count is set by default to two hops, which is adequate for most networks. However, if the file server is located more than two hops from the print server, you must set the hop count to the appropriate value.
- 5 Enter the StreetTalk name of the print server (this must exactly match the name you entered in Step 3 of the **File Server User Console** section). If the SteetTalk name has spaces in it, you must enclose the name in double quotation marks (for example, "john smith@uc_engineering@irvine"). If you entered a password in the File Server User Console section, you should also enter the same password here.
- 6 Click the **Services** tab.
- 7 Double click on the service you wish to enable for VINES. If in doubt, use BINARY_P1. Refer to Appendix of the manual for additional information on using services.
- 8 Type in the StreetTalk name of the print queue you defined in step 3 of the **File Server Queue Configuration** section.
- 9 Click on **OK**, and then click **OK** again to save the configuration.
- 10 Click **OK** and then **OK** again to exit BRAdmin.

Print Server Configuration Using the Print Server Console

As an alternative to BRAdmin, you may use the print server console to configure the print server. The steps are as follows:

- 1 Connect to the print server console using TELNET, NCP, BRCONFIG Execute some or all of the commands detailed below (you must minimally enter the StreetTalk login name of the print server and associate one of the print server services with the StreetTalk name of a print queue).

`SET BAnyan LOfin loginname`
Sets the StreetTalk login name of print server.

`SET BAnyan PAssword password`
Sets the login password of print server. The password (if any) must match the password you specified in step 3 of the File Server User Console section.

`SET SERVICE service STreettalk queuename`
Enables the Banyan protocol on the specified Brother print server service and associates this service with the StreetTalk name of a given print queue on the VINES file server. Type `SHOW SERVICE` to see a list of the available services (if in doubt, use `BINARY_P1`).

`SET BAnyan HOp nn`
Sets number of hops between the Brother print server and the Banyan file server. The default value is 2, which is adequate for most sites, but you will need to change this value if the file server is more than two hops away from the print server.
When you have finished entering commands, type `EXIT` to exit the remote console and cause the commands to take effect.

11 Web Based Management

How to use a Web Browser to manage your Device

Overview

A standard Web Browser (we recommend Netscape Navigator version 4.0 or later/Microsoft Internet Explorer version 4.0 or later) can be used to manage your printer using the HTTP (Hyper Text Transfer Protocol). You can get the following information from a printer on your network using a web browser:

- 1 Printer status information.
- 2 Take control of the printer's control panel.
- 3 Software version information of the printer and print server.
- 4 Change network and printer configuration details.

You must use the TCP/IP protocol on your network and have a valid IP address programmed into the print server and your computer.

Quick Tips:

- 1 The default IP address of Brother print servers is 192.0.0.192. To change it, use the printer's control panel, the BRAdmin application, or let your DHCP server allocate an IP address to the printer.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address on your printer.
- 3 The default password for Brother print servers is `access`.
- 4 You can use a web browser on most computing platforms, for example, Macintosh and Unix users are also able to connect to the printer and manage it.

- 5 You can also use the BRAdmin application to manage the printer and its network configuration.

How to connect to your printer using a Browser

Type `http://printer's IP Address /` into your browser (you can also use the NetBIOS name of the print server, if you are in a Microsoft Windows domain/Workgroup environment). Enter the DNS name of the printer if connecting to a network that uses the DNS protocol.

Other Sources of Information

- 1 Visit <http://solutions.brother.com/> for more information on network printing.
- 2 Refer to *chapter 12* of this user guide to learn how to configure the IP address of the printer.

12 TCP/IP Configuration

Assigning TCP/IP Information

Overview

The TCP/IP protocol requires that each device on the network have its own unique IP address. Use the following information to learn about IP address configuration.

By default Brother print servers have an IP address of 192.0.0.192. However, you can easily change this IP address number to match with the IP address details of your network. This can be done in any of the following ways:

- From your printer's control panel settings (if your printer has an LCD panel).
- BRAdmin application (for Windows® 95/98/Me/NT 4.0/2000/XP, using the IPX/SPX or TCP/IP protocols).
- DHCP, APIPA, Reverse ARP (rarp) or BOOTP.
- The ARP command.
- DEC NCP, NCL, or ccr utilities.
- Brother BRCONFIG NetWare utility (a Novell Network is necessary).
- The printer's control panel.
- TELNET.
- HTTP (Web browser).
- Other SNMP based management utility.

These configuration methods are described in the following paragraphs.



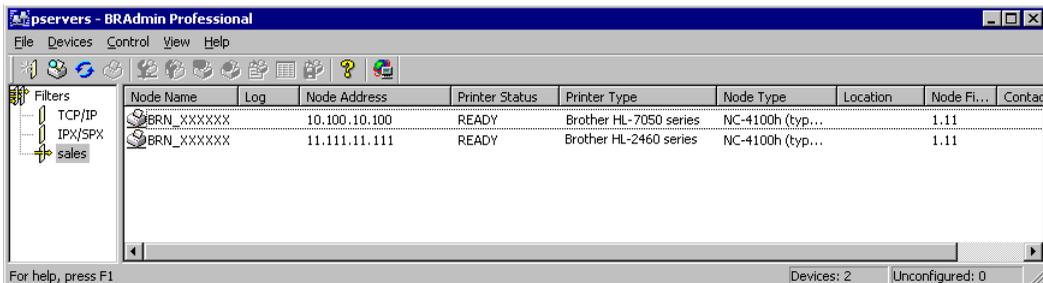
The IP address you assign to the print server must be on the same logical network as your host computers. If it is not, you must properly configure the subnet mask and the router (gateway).

Using the printer control panel to allocate an IP address (printers with LCD panels only)

Refer to the Quick Setup Guide for details on how to configure IP address information using the printer control panel. By using the control panel on the printer, you can program the IP address details at the same time that other printer parameters are configured.

Changing the IP Address using the BRAdmin application

Start the BRAdmin application (from Windows® 95/98/Me, NT4.0, Windows® 2000/XP).



The BRAdmin application can use the IPX/SPX or TCP/IP protocols to communicate with the Brother print server. As the default IP address of Brother print servers is 192.0.0.192, the print server will probably be incompatible with the IP address numbering scheme on your network. If you are not using DHCP, BOOTP or RARP, you will want to change the IP address. There are two ways that you can do this from within BRAdmin.

- Use the IPX/SPX protocol.
- Use the TCP/IP protocol and let BRAdmin find the Brother print server as an unconfigured device.

Using BRAdmin and the IPX/SPX Protocol to set the IP address

If your PC is using the Novell Netware Client software and is using the IPX/SPX protocol, do the following:

- 1 Select **IPX/SPX filter** in the left frame of the main window.
- 2 Check the print server name (the default node name is BRN_XXXXXXX, where XXXXXXX is the last six digits of the Ethernet address (MAC address)) .

If you cannot find your server name, select the **Device** menu and choose **Search Active Devices** (you can also press the F4 key) and try again.



You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 3 Select the print server that you wish to configure and double click it. You will be asked for a password. The default password is `access`.
- 4 Select the **TCP/IP** tab and set the **IP address**, **Subnet mask** and **Gateway** as needed.
- 5 In the **IP Config** box, click the **Static** radio button.
- 6 Click **OK**.

Restart the print server by using BRAdmin, WebBrowser or TELNET. If you are not sure how to restart the print server, you may simply turn the printer's power switch off, and then switch it on.

Using BRAdmin and the TCP/IP Protocol to set the IP address

If your PC is using the TCP/IP protocol, do the following:

- 1 Select **TCP/IP filter** in the left frame of the main window.
- 2 Select the **Device** menu and choose the **Search Active Devices**.



If the print server is set to its factory default settings, it will not appear in the BRAdmin screen. However, selecting the **Search Active Devices** option will force the BRAdmin software to find the device as an **unconfigured device**.

- 3 Select the **Device** menu and choose **Setup Unconfigured Device**.
- 4 Select the MAC address of your print server and click the **Configure** button.

You can find the node name and MAC address by printing out the printer configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

- 5 Enter the **IP address**, **Subnet mask** and **Gateway** (if needed) of your print server.
- 6 Click **OK** then select **Close**.
- 7 With the correctly programmed IP address, you will see the Brother print server in the device list.

Using DHCP to Configure the IP address

The Dynamic Host Configuration Protocol (DHCP) is one of several automated mechanisms for IP address allocation. If you have DHCP Server in your network (typically a Unix, Windows® NT/2000 or Novell Netware network) the print server will automatically obtain its IP address from DHCP server and register its name with any RFC 1001 and 1002-compliant dynamic name services.



If you do not want your print server configured via DHCP, BOOTP or RARP, you must set the BOOT METHOD to static so that the print server has a static IP address. This will prevent the print server from trying to obtain an IP address from any of these systems. To change the BOOT METHOD, use the printer's control panel (for those printers that have a LCD panel), TELNET (using the SET IP METHOD command), a Web browser or by using the BRAdmin application.

Using APIPA to Configure the IP Address

With Automatic Private IP Addressing (APIPA), DHCP clients automatically configure an IP address and subnet mask when a DHCP server is not available. The device chooses its own IP address in the range 169.254.1.0 through to 169.254.254.255. The subnet mask is automatically set to 255.255.0.0 and the gateway address is set to 0.0.0.0.

By default, the APIPA protocol is disabled.

Using ARP to Configure the Print Server IP Address

If you are unable to use the BRAdmin application or the printer's control panel and your network does not use a DHCP server, you can also use the ARP command. ARP is the simplest method of configuring the print server's IP address. The ARP command is available on Windows® systems that have TCP/IP installed as well as Unix systems. To use arp enter the following command at the command prompt:

```
arp -s ipaddress ethernetaddress
```

Where `ethernetaddress` is the Ethernet address (MAC address) of the print server and `ipaddress` is the IP address of the print server. For example:

Windows® Systems

Windows® Systems require the colon ":" character between each digit of the Ethernet address.

```
arp -s 192.189.207.2 00:80:77:31:01:07
```

Unix Systems

Typically, Unix systems require the hash "-" character between each digit of the Ethernet address.

```
arp -s 192.189.207.2 00-80-77-31-01-07
```



You must be on the same Ethernet segment (that is, there cannot be a router between the print server and operating system) to use the `arp -s` command.

If there is a router, you may use BOOTP or other methods described in this chapter to enter the IP address.

If your Administrator has configured the system to deliver IP addresses using BOOTP, DHCP or RARP your Brother print server can receive an IP address from any one of these IP address allocation systems. In which case, you will not need to use the ARP command. The ARP command only works once. For security reasons, once you have successfully configured the IP address of a Brother print server using the ARP command, you cannot use the ARP command again to change the address. The print server will ignore any attempts to do this. If you wish to change the IP address again, use a Web Browser, TELNET (using the SET IP ADDRESS command) the printer's control panel (if your printer has an LCD panel) or factory reset the print server (which will then allow you to use the ARP command again).

To configure the print server and to verify the connection, enter the following command `ping ipaddress` where

`ipaddress` is the IP address of the print server. For example,
`ping 192.189.207.2`.

Using RARP to Configure the IP Address

The Brother print server's IP address can be configured using the Reverse ARP (`rarp`) facility on your host computer. This is done by editing the `/etc/ethers` file (if this file does not exist, you can create it) with an entry similar to the following:

```
00:80:77:31:01:07    BRN_310107
```

Where the first entry is the Ethernet address of the print server and the second entry is the name of the print server (the name must be the same as the one you put in the `/etc/hosts` file).

If the `rarp` daemon is not already running, start it (depending on the system the command can be `rarpd`, `rarpd -a`, `in.rarpd -a` or something else; type `man rarpd` or refer to your system documentation for additional information). To verify that the `rarp` daemon is running on a Berkeley UNIX-based system, type the following command:

```
ps -ax | grep -v grep | grep rarpd
```

For AT&T UNIX-based systems, type:

```
ps -ef | grep -v grep | grep rarpd
```

The Brother print server will get the IP address from the `rarp` daemon when the printer is powered on.

Using BOOTP to Configure the IP Address

BOOTP is an alternative to rarp that has the advantage of allowing configuration of the subnet mask and gateway. In order to use BOOTP to configure the IP address make sure that BOOTP is installed and running on your host computer (it should appear in the `/etc/services` file on your host as a real service; type `man bootpd` or refer to your system documentation for information). BOOTP is usually started up via the `/etc/inetd.conf` file, so you may need to enable it by removing the `"#"` in front of the `bootp` entry in that file. For example, a typical `bootp` entry in the `/etc/inetd.conf` file would be:

```
#bootp dgram udp wait /usr/etc/bootpd bootpd -i
```

Depending on the system, this entry might be called "bootps" instead of "bootp".



In order to enable BOOTP, simply use an editor to delete the `"#"` (if there is no `"#"`, then BOOTP is already enabled). Then edit the BOOTP configuration file (usually `/etc/bootptab`) and enter the name, network type (1 for Ethernet), Ethernet address and the IP address, subnet mask and gateway of the print server. Unfortunately, the exact format for doing this is not standardized, so you will need to refer to your system documentation to determine how to enter this information (many UNIX systems also have template examples in the `bootptab` file that you can use for reference). Some examples of typical `/etc/bootptab` entries include:

```
BRN_310107 1 00:80:77:31:01:07 192.189.207.3
```

and:

```
BRN_310107:ht=ethernet:ha=008077310107:\  
ip=192.189.207.3:
```

Certain BOOTP host software implementations will not respond to BOOTP requests if you have not included a download filename in the configuration file; if this is the case, simply create a null file on the host and specify the name of this file and its path in the configuration file.

As with rarp, the print server will load its IP address from the BOOTP server when the printer is powered on.

Configuring the IP Address with DEC NCP or BRCONFIG

Users of DEC and Novell networks have additional alternatives for configuring the IP address of Brother print servers by using the remote console facility. On VMS systems, you will need to have DECNET running in order to use the remote console. The procedure of DEC Network is as follows:

Connect to the remote console, if you are using the remote console with VMS or LTRIX, you will need to know the circuit ID *QNA-0 for Q-BUS systems, SVA-0 for DEC workstations, UNA-0 for UNIBUS systems, BNA-0 for BI systems, and MNA-0 for XMI systems; you can get the circuit ID by executing the VMS NCP command `SHOW KNOWN CIRCUITS`) and the Ethernet address of the print server (which you can get either from the label on the print server or via the printer configuration page).

To do this on a printer that has an LCD panel: take the printer off-line by pressing the **SEL** button, press and hold down the **SHIFT** button then press the **UP** arrow button until PRINT CONFIG is displayed on the printer's LCD, press the **SET** button. The printer will then print out a configuration page. The sheet labeled "Print Configuration" contains all print server configuration information. Put the printer back on-line again by pressing the **SEL** button.

For internal print servers that are connected to a Brother printer which does not have an LCD panel, refer to the Quick Setup Guide for information on how to print out a configuration page.

Brother's external interfaces, which connect to the parallel interface, have a black button recessed into the rear of the unit. Press this button to print out a configuration page.

On VMS systems, the connection is made as shown in the following example:

```
$ MCR NCP
NCP>CONNECT VIA QNA-0 PHY ADD 00-80-77-31-01-07
```

On ULTRIX systems, you would execute commands similar to the following example:

```
# addnode BR -c qna-0 -h 00-80-77-31-01-07
# ccr BR
```

On a NetWare networks, you can use the BRCONFIG utility which are included with every print server.

If you are using the remote console, you will get the message Console connected (VMS) or Connection established (BRCONFIG) or Remote console reserved (ULTRIX). Press RETURN and enter the default password access in response to the "#" prompt (it will not echo).

You will be prompted for a user name. Enter anything in response to this prompt.

You will then get the Local> prompt. Type SET IP ADDRESS ipaddress, where ipaddress is the desired IP address you wish to assign to the print server (check with your network manager for the IP address to use). For example:

```
Local> SET IP ADDRESS 192.189.207.3
```

You will now need to set the subnet mask by typing SET IP SUBNET subnet mask, where subnet mask is the desired subnet mask you wish to assign to the print server (check with your network manager for the subnet mask to use). For example:

```
Local> SET IP SUBNET 255.255.255.0
```

If you do not have any subnets, use one of the following default subnet masks:

255.255.255.0	for class C networks
255.255.0.0	for class B networks
255.0.0.0	for class A networks

The leftmost group of digits in your IP address can identify the type of network you have. The value of this group ranges from 192 through 255 for Class C networks (e.g., 192.189.207.3), 128 through 191 for Class B networks (e.g., 128.10.1.30), and 1 through 127 for Class A networks (e.g., 13.27.7.1).

If you have a gateway (router), enter its address with the command `SET IP ROUTER routeraddress`, where `routeraddress` is the desired IP address of the gateway you wish to assign to the print server. For example:

```
Local> SET IP ROUTER 192.189.207.1
```

To verify that you have entered the IP information correctly, type `SHOW IP`.

Type `EXIT` or `CTR-D` (i.e., hold down the control key and type "D") to end the remote console session.

Changing the IP Address settings with the TELNET Console

You can also use the TELNET command to change the IP address.

Using TELNET is effective way, when you change the IP address. But a valid IP address must already be programmed into the print server.

If you are using the TELNET, you will be expected to enter the password of the print server. Press RETURN and enter the default password of `access` in response to the "#" prompt (it will not echo).

You will be prompted for a user name. Enter anything in response to this prompt.

You will then get the `Local>` prompt. Type `SET IP ADDRESS ipaddress`, where `ipaddress` is the desired IP address you wish to assign to the print server (check with your network manager for the IP address to use). For example:

```
Local> SET IP ADDRESS 192.189.207.3
```

You will now need to set the subnet mask by typing `SET IP SUBNET subnet mask`, where `subnet mask` is the desired subnet mask you wish to assign to the print server (check with your network manager for the subnet mask to use). For example:

```
Local> SET IP SUBNET 255.255.255.0
```

If you do not have any subnets, use one of the following default subnet masks:

<code>255.255.255.0</code>	for class C networks
<code>255.255.0.0</code>	for class B networks
<code>255.0.0.0</code>	for class A networks

The leftmost group of digits in your IP address can identify the type of network you have. The value of this group ranges from 192 through 255 for Class C networks (e.g., 192.189.207.3), 128 through 191 for Class B networks (e.g., 128.10.1.30), and 1 through 127 for Class A networks (e.g., 13.27.7.1).

If you have a gateway (router), enter its address with the command `SET IP ROUTER routeraddress`, where `routeraddress` is the desired IP address of the gateway you wish to assign to the print server. For example:

```
Local> SET IP ROUTER 192.189.207.1
```

To verify that you have entered the IP information correctly, type `SHOW IP`.

Type `EXIT` or `CTR-D` (i.e., hold down the control key and type "D") to end the remote console session.

Other Sources of Information

Visit <http://solutions.brother.com/> for more information on TCP/IP protocol.

13 Troubleshooting

Overview

This chapter describes procedures for troubleshooting problems you may encounter with a Brother print server, it is divided into the following sections:

- 1 Installation Problems
- 2 Intermittent Problems
- 3 Protocol-Specific Troubleshooting

Installation problems

If you cannot print over the network, check the following:

- 1 Make sure that the printer is powered on, is on-line and ready to print.

Verify that the printer and the configuration are good by printing the configuration page. Refer to the Quick Setup Guide. If the test fails, check:

- a If the LED is not blinking after connected to the network, then the network firmware settings may be corrupted. Please refer to Step 3.
 - b In this event, try to restore the factory default settings of the print server by pressing the TEST switch on the back panel of the printer for longer than 5 seconds. Once you have done that, switch the printer off and then on again, and try to print out the configuration page.
- 2 If the configuration page prints but you cannot print documents, try the following



If none of the following steps are successful, there is almost certainly a hardware or network problem!

a If you are using TCP/IP:

Try pinging the print server from the host operating system command prompt with the command:

```
ping ipaddress
```

Where `ipaddress` is the print server IP address (note that in some instances it can take up to two minutes for the print server to load its IP address after setting the IP address). If a successful response is received, then proceed to the UNIX, TCP/IP Windows® NT/LAN Server, Windows®98/95/Me Peer to Peer (LPR), Internet Printing or Web Browser troubleshooting section. Otherwise, proceed to step 3, and then go to TCP/IP Troubleshooting section.

b If you are using Novell system:

Verify that the print server can be seen on the network. To do this, login as the SUPERVISOR (not as someone with supervisor privileges) or ADMIN (for Netware 4 or later servers), go into PCONSOLE or NWADMIN, select PRINT SERVER INFORMATION, and select the name of the print server (make sure that you have entered the print server name). If you can see `Print Server Status` and `Control` in the menu, then the Brother print server is visible to the network, proceed to the Novel NetWare Installation Troubleshooting Section. Otherwise, go to step 3.

c If you are running AppleTalk for Macintosh:

Make sure that you can see the print server name under the LaserWriter 8 icon in the Chooser. If it is visible, then the connection is good, so proceed to the AppleTalk for Macintosh Section. Otherwise, go to step 3.

3 If you cannot make any of the connections in step 2, check the following:

a Make sure the printer is powered on and on-line.

b Check the cabling, network connection, and print out a configuration page in the Network STATISTICS information to see if bytes are being transmitted and received.

c Check to see if there is any LED activity.

Brother print servers have three LEDs. These can be used to diagnose problems.

- L- LED (green): Link activity
This LED is on if there is a valid connection to the network (either 10BaseT or 100BaseTX). It is off if no network is detected.
- F-LED (orange): Fast Ethernet
This LED will be on if the print server is connected to a 100BaseTX Fast Ethernet network. It is off if the print server is connected to a 10BaseT network.
- A-LED (green): Transmission Activity
This LED will blink synchronized to the transmission or receive status.

- 4 If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub (if applicable). Also, if you have a hub or multi-port repeater, verify that the hub or repeater port is good by trying the print server on a different port or on the other hub or multi-port repeater.
- 5 If you have a bridge or router located between the print server and host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow Brother print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the print server.
- 6 If the job exits the queue but does not print, make sure that you are not trying to print a text job to a PostScript printer. If you have a printer that is capable of automatic language switching, make sure that the printer is not forced into PostScript mode.

Intermittent Problems

If the print server and printer start up OK, but you intermittently have problems printing, check the following:

- 1 If you can print small jobs but large graphics jobs are distorted or incomplete, make sure that you have adequate memory in your printer and the latest printer driver installed on your computer. The latest Brother printer drivers can be downloaded from <http://solutions.brother.com>
- 2 Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

TCP/IP Troubleshooting

If you are using TCP/IP and cannot print to the print server and you have checked the hardware and network as described in the previous steps, then check the following:



It is always a good idea to try following in order to eliminate the possibility of setup errors.

Turning off the printer and then again,
Deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors.

- 1 The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server (via the configuration page. Make sure that no other nodes on the network have this address (DUPLICATE IP ADDRESS ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS).
- 2 If you used BRCONFIG, NCP or to enter the IP address, make sure that you exited the remote console properly with a CTRL-D or EXIT and that you turned the printer off and then again (it may take up to two minutes for the IP address to take effect).
- 3 Make sure that the TCP/IP protocol of the print server is enabled.
- 4 If you used rarp, make sure that you started the rarp daemon on any workstation using the rarpd, rarpd-a, or equivalent command. Verify that the `/etc/ethers` file contains the correct Ethernet address and that the print server name matches the name in the `/etc/hosts` file.
- 5 If you used bootp, make sure that you started the bootp daemon on any UNIX workstation and bootp is enabled (i.e., the "#" is removed from the bootp entry) in the `/etc/bootptab` file is correctly configured.
- 6 Also verify that host computer and the print server are either on the same subnet, otherwise that the router is properly configured to pass data between the two devices.

UNIX Troubleshooting

- 1 Make sure that the `/etc/printcap` file (if applicable) is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error anywhere in the file can have major consequences. Also check the `/usr/spool` directory to make sure that you have created a valid spool directory.
- 2 If you are using a Linux operating system, the X-Window Print tool program that is included with Linux may not properly configure the `etc/printcap` file for `lpd` operation, then you might also edit the `etc/printcap` file and change the following line in the entry for the printer.

```
if
:lp = /dev/null: \

then to
:lp = :\
```

- 3 If you are using a Berkeley-based UNIX, make sure that the daemon is started on Berkeley based systems with the command `lpc start printer`, where `printer` is the name of the local print queue.
- 4 If you are using an AT&T-based UNIX, make sure the printer is enabled (enable `printer`, where `printer` is the name of the local print queue).
- 5 Make sure that the `lpr/lpd` remote line printer service are running on the host computer (refer to your host computer documentation for information on how to do this).
- 6 If you are having trouble printing more than one job at a time, try increasing the IP timeout using the `SET IP TIMEOUT` command or using `BRAdmin`.
- 7 If text or PCL jobs are run together, try setting the service (remote printer) with EOT set to string number 2 (<ESC>E). For example:

```
SET SERVICE BRN_XXXXXX_P1 EOT 2
```

- 8 If PostScript jobs fail to print or are run together, try setting the service (remote printer) with EOT set to string number 3 (control-D). For example:

```
SET SERVICE BRN_XXXXXX_P1 EOT 3
```

- 9 If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your `/etc/printcap` file.
- 10 If you are using Sun Solaris V2.4 or earlier, there is a bug which causes long print jobs to fail when using a print server. If you are having trouble printing long jobs (over 1MB), add the line `mx#0` to your `etc/printcap` file entry.
- 11 If you cannot print from DEC TCP/IP Service for VMS (UCX), make sure that you have version 2.0B or later of this software, because earlier versions will not work with Brother print servers.

Windows® NT/LAN Server (TCP/IP) Troubleshooting

If you are having trouble printing with Windows® NT or LAN Server, check the following:

- 1 Make sure that TCP/IP and TCP/IP print service are installed and running on the Windows® NT system or the LAN Server file server.
- 2 If you are using DHCP and you have not created a reservation for the print server, make sure that you enter the NetBIOS name of the print server in the **Name or address of server providing lpd** box.

Windows® 95/98/Me Peer to Peer Print (LPR) Troubleshooting

If you are having trouble printing on a Windows® 95/98/Me Peer-to-Peer network (LPR method), check the following:

- 1 Make sure that the Brother LPR Port driver is correctly installed and configured according to the Windows® 95/98/Me Peer-to-Peer chapters.
- 2 Try to turn the **Byte Count** on in the **Configure port** area of printer driver properties.

You may find that during the installation of BLP software, the screen that prompts you for a Port name is not displayed. This may happen on some Windows® 95/98/Me computers. Press the ALT and TAB keys to make it appear.

Windows® 95/98/Me Peer-to-Peer (HP JetAdmin compatible method) Troubleshooting

If you are having trouble printing on a Windows® 95/98/Me Peer-to-Peer network, check the following (HP JetAdmin compatible method):

- 1 If the print server does not show up under JetAdmin on a Windows® 95/98/Me Peer-to-Peer network, try removing all of the Windows® 95/98/Me network software from the Network Control panel and then reinstalling them as follows:
 - First install the IPX/SPX-Compatible Protocol (or the TCP/IP protocol if you are using a later version of JetAdmin), the Client for Microsoft Networks, and the network adapter card driver.
 - Install the Latest HP JetAdmin software
 - Restart the system, and then add the HP JetAdmin service.

Windows® 95/98/Me/NT 4.0 Peer-to-Peer Print (NetBIOS) Troubleshooting

If you are having trouble printing on a Windows® 95/98/Me/NT 4.0 (or later) Peer-to-Peer network (NetBIOS), check the following:

- 1 Make sure that the Brother NetBIOS Port driver is securely installed and configured according to the Windows® 95/98/Me/NT 4.0 Peer-to-Peer (NetBIOS) chapters. You may find that during the installation of the port driver, the screen that prompts you for a Port name is not displayed. This happens on some Windows® 95/98/Me/NT 4.0 computers. Press the ALT and TAB keys to make it appear.
- 2 Make sure that the print server is configured to be in the same workgroup or domain as the rest of your computers. It may take several minutes for the print server to appear in the network neighborhood.

Brother Internet Print (TCP/IP) Troubleshooting

- 1** The first step in troubleshooting is to make sure that you have a valid E-mail connection on both the sending PC and the receiving print server. Try sending an E-mail message from the PC to a user at the remote site who can receive mail via the POP3 server. If this does not work, there may be an E-mail configuration problem on the PC, on the local E-mail server, or on the remote POP3 server. Double check to make sure that the E-mail parameters that you configured on the PC and on the remote print server match those that are configured on the E-mail servers.
- 2** If you can print small files OK but are having problems printing large files, the problem may be in the e-mail system! Some E-mail systems have difficulties printing large files. If the file does not reach its destination intact, then the problem is with the E-mail system.
- 3** You can also enable the partial e-mail print facility on your client PC, this will split the e-mail up into fragments which should then not overwhelm your e-mail server. To do this, select the property dialog of the Brother Internet Print Port.

Windows® 95/98/Me/2000/XP IPP Troubleshooting

Want to use a different Port number other than 631

If you are using Port 631 for IPP printing, you may find that your firewall may not let the print data through. If this is the case, use a different port number (port 80), or configure your Firewall to allow Port 631 data through.

To send a print job using IPP to a printer using Port 80 (the standard HTTP port) enter the following when configuring your Windows® 2000/XP system.

`http://ip_address/ipp`

Get More Info option in Windows® 2000 not working

If you are using a URL of:

`http://ip_address:631` or `http://ip_address:631/ipp`, the **Get More Info** option in Windows® 2000 will not function. If you wish to use the **Get More Info** option use the following URL:

`http://ip_address`

This will then force Windows® 2000/XP to use Port 80 to communicate with the Brother print server.

Windows® 95/98/Me clients not able to get the driver from a Windows® 2000/XP system.

You must be using version 4.0 or later of Internet Explorer and the **Microsoft Internet Print Services** software must be installed on your client computers.

Novell NetWare Troubleshooting

If you cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the Brother print server is attached to the server queue by going to PCONSOLE, selecting PRINT QUEUE INFORMATION, and then CURRENTLY ATTACHED SERVERS. If the print server does not appear in the list of attached servers, then check the following:



It is always a good idea to try followings in order to eliminate the possibility of setup errors

- Turning off the printer and then on again to force to rescan the Netware queue.
 - Deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors.
- 1 If you changed the login password, you must change the password in both the Brother print server (using the `SET NETWARE PASSWORD` command if you are using the BRConfig software) or by using a web browser or the BRAdmin application and in the file server (using the `PCONSOLE Print Server Information Change Password` command).
 - 2 If you created the print queue using PCONSOLE and instead of BRAdmin, make sure that you have enabled at least one NetWare file server using the `SET NETWARE SERVER servername ENABLED` command.
 - 3 Have you exceeded your NetWare user limit?
 - 4 Make sure that the print server name you used in PCONSOLE exactly matches the name that is configured in the print server, and make sure it is defined as a Queue Server for the print queue.
 - 5 If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the `SET NETWARE FRAME` command from the print server remote console or using BRAdmin.

- 6 If you are using DOS CAPTURE statement and losing portions of your print job, try setting the TIMEOUT parameter in your CAPTURE statement to a higher value (at least 50 seconds for Windows®).

AppleTalk Troubleshooting

If you cannot print from an AppleTalk for Macintosh computer and you have checked the hardware and network as described in the previous steps, then check the following:

- 1 Make sure that you are running Phase 2 AppleTalk and that you have selected the correct network interface from the AppleTalk Control Panel on the Macintosh.
- 2 Make sure that the AppleTalk protocol of the print server is enabled.
- 3 If you have a large network, make sure that you have the Laser Writer V8.xx or equivalent driver, since earlier versions may cause PostScript errors. Also, verify that you get the correct printer information when you select Printer Info from the Setup button in the Chooser.
- 4 Make sure that you have selected the correct Printer Description File (PPD) from the Chooser (otherwise PostScript errors may result)
- 5 Verify that you have selected the correct AppleTalk zone. Because the print server gets its zone information from router broadcasts, it may not be in the zone you expect, and will therefore not show up in the Chooser. If this is the case, you may need to force the zone name using BRAdmin, a web browser or the `SET APPLETALK ZONE` command from TELNET.

DLC/LLC Troubleshooting

If you are having trouble printing with DLC/LLC, check the following:

- 1 Make sure that the DLC/LLC protocol is enabled using either BRAdmin, a web browser or TELNET.
- 2 Make sure that the MAC address of the Windows® setting is the same as shown in the **print configuration page** printout.

LAT Troubleshooting

If you cannot print from a VMS system and you have checked the hardware and network as described in the previous steps, then check the following (note that it is always a good idea to try creating a new queue with a different LAT port to reduce the possibility of setup errors):

- 1 If the queue pauses when you try to print, check that the print server node name and port name (or service name) agree with the names defined for the VMS print queue in LATCP or for ULTRIX print queue in the `/etc/printcap` file (`ts` parameter) and `lcp -s` command. The names **MUST EXACTLY** agree in order for printing to work.
- 2 Make sure LAT is enabled for outgoing connections. For VMS, enter LATCP and type SHOW NODE at the `Latcp>` prompt. The display should show Outgoing Connections Enabled. If it does not, you should type `SET NODE/CONNECTIONS=BOTH`. If you are using ULTRIX, make sure that you have started LAT with the `lcp -s` command and that you have enabled host-initiated connections with the `lcp -h` command.
- 3 Make sure that there are no duplicate LAT node names or LAT port numbers. Try changing the node name to a different name and/or creating a different LAT port to fix the problem. Also avoid having multiple print queues that use the same LAT port.
- 4 If you are running ULTRIX, make sure that the `/etc/printcap` file is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error anywhere in the file can have major consequences. Also check the `/usr/spool` directory to make sure that you have created a valid spool directory.
- 5 If you are running ULTRIX, check your tty device to make sure that:
 - The tty is a valid LAT tty (execute the command `file /dev/tty* | grep LAT` and observe if the device has a "39" in its description).
 - The device is in the `/etc/ttys` file and in the `/dev` directory.
 - The same tty number was entered throughout the configuration process.

- 6 Intermittent random queue pauses can be caused if the VMS LAT port is not set up as spooled device. Type `SHOW DEVICE LTAxxx` from the VMS console; if the device is not spooled, type `SET DEVICE/SPOOL LTAxxx` command. (One exception: PATHWORKS for MACINTOSH queues should not be set up with the LTA device set as spooled).
- 7 Make sure that `PROCESSOR=LATSYM` is enabled on your VMS print queue if you get any of the following symptoms:
 - The queue pauses when you power off the print server for no apparent reason.
 - The print server generates excessive LAT traffic on the network
 - Only one host computer can access the print server, others are locked out.
- 8 If the VMS LAT symbiont abruptly terminates and shuts down one or more queues, the problem may be the result of the inability of the LAT symbiont to handle the load (particularly if you are printing heavy graphics). Try creating multiple LAT processors (copy the `LATSYM.EXE` file) and splitting the load among these processors.
- 9 If your VMS graphics printouts are distorted, make sure that you have the LTA port set for `PASSALL`, `PASTHRU`, and `TAB`.
- 10 If you are having trouble printing PostScript files with VMS (PostScript errors or no printout), make sure that you have the form set for `NOTUNCATE` and `NOWRAP`. Also, make sure you are not trying to print a flag page (unless you are using DCPS) since the flag page in the LAT symbiont is a non-PostScript text file.
- 11 If you are having trouble printing PostScript files (for example, from DECprint Supervisor or from a Windows-based PATHWORKS PC), try disabling binary mode on the printer with the command `SET PORT P1 BINARY DISABLED`.
- 12 If you are printing across a wide area network bridge (for example, Vitalink) and you get paused or stalled queues, increase the print server circuit timer to 120 milliseconds with the command `SET SERVER TRANSMIT 120`.

- 13 If you can print successfully from PATHWORKS using DOS but have problems printing from Windows[®], try increasing the Device Not Selected and Transmission Retry timeouts from the Windows[®] Printer Manager (select Printer Setup, select the desired printer, and press the Connect button).

Banyan VINES Troubleshooting

If you are having trouble printing with Banyan VINES, check the following:

- 1 Make sure that you have the Banyan VINES PCPrint software option installed.
- 2 Make sure that the Banyan protocol is enabled.
- 3 If there are more than two hops (i.e., more than two routers) between the print server and the file server, make sure that you have changed the hop count to the appropriate number via BRAdmin or the print server console.
- 4 Use the VINES MUSER or MANAGE utility to verify that the print server has logged in. If it has not, make sure that the StreetTalk login name configured in the print server exactly matches the login name that was configured using the MUSER or MANAGE utility on the file server.
- 5 Verify that the StreetTalk name associated with the print server service name exactly matches the name of the print queue that was configured using the MSERVICE or MANAGE utility on the file server.
- 6 Check to see that you have not exceeded the user limit on your Banyan file server (because the print server must login as a user), that printing is enabled on the queue, and that there are no security restrictions on the file server that would prevent the print server from logging in.

Web Browser Troubleshooting (TCP/IP)

- 1 If you can not connect to the print server using your web browser it may be worth checking the Proxy Settings of your browser. Look in the Exceptions setting and if necessary, type in the IP address of the print server. This will stop your PC from trying to connect to your ISP or proxy server every time you wish to look at the printer server.
- 2 Make sure that you are using the proper Web Browser, we recommend Netscape Navigator version 4.0 or later/ Microsoft Internet Explorer version 4.0 or later.

A Appendix

Appendix A

General Information

You can change the configuration of your print server using any of the following methods.

- Brother BRAdmin application for Windows 95/98/Me/NT4/2000/XP
- Brother Web BRAdmin application for IIS* server
- HTTP (using a web browser)
- WebJetAdmin Software
- TELNET (command utility)
- Brother BRCONFIG NetWare Utility (command utility)
- DEC NCP or NCL Utility

BRAdmin (Recommended)

The Brother BRAdmin application can use the TCP/IP or IPX/SPX protocol. This utility allows you to graphically manage aspects of the network and printer. It can also be used to upgrade the firmware of the print server.

Web BRAdmin

The Web BRAdmin software is designed to manage all LAN/WAN Brother network connected devices. By installing the Web BRAdmin server software on a computer running IIS*, Administrators with a Web browser can connect to the Web BRAdmin server, which then communicates with the device itself. Unlike the BRAdmin Professional software - which is designed for Windows® systems only - the Web BRAdmin server software can be accessed from any client computer with a web browser that supports Java.

IIS* = Internet Information Server 4.0 or 5.0

HTTP (Recommended)

Use your favorite web browser to connect to the Brother print server. This will allow you to configure printer and/or print server parameters.

WebJetAdmin

Brother's print server range is HP WebJetAdmin compatible.

TELNET

To connect to the print server using TELNET on UNIX, Windows NT, or most other TCP/IP systems, type: TELNET *ipaddress* at the command prompt of the system prompt, where *ipaddress* is the IP address of the print server. When you are connected, push RETURN or ENTER to get the "#" prompt, enter the password *access* (the password will not appear on the screen), and type anything in response to the `Enter Username>` prompt. When you see the `Local>` prompt, you are ready to enter commands.

Enter HELP at the command prompt for a list of supported commands.

BRCONFIG

The Brother BRCONFIG utility runs from the DOS system prompt and is installed with BRAdmin. To connect the print server using the Brother BRCONFIG NetWare utility, choose the BRCONFIG utility from the Brother BRAdmin utilities menu. If you have only one print server, you will be immediately connected to that server. If you have more than one print server, you will be given a list of available print servers. Type the number of the print server to which you wish to connect. When you are connected, enter the password *access* (the password will not appear on the screen) at the "#" prompt, and type anything in response to the `Enter Username>` prompt. When you get the `Local>` prompt, you are ready to enter commands. To use BRCONFIG, a Novell Server (running the IPX protocol) is necessary and an active connection must be made to the server.

Enter HELP at the command prompt for a list of supported commands.

Using Services

General

A service is a resource that can be accessed by computers that wish to print to the Brother print server. The Brother print server provides the following predefined services (do a SHOW SERVICE command in the Brother print server remote console to see a list of available services): Enter HELP at the command prompt for a list of supported

Service (Example)	Definition
BINARY_P1	TCP/IP binary, NetBIOS service and LAT service
TEXT_P1	TCP/IP text service (adds carriage return after each line feed).
POSTSCRIPT_P1	PostScript service (switches PJJL-compatible printer to PostScript mode)
PCL_P1	PCL service (switches PJJL-compatible printer to PCL mode)
BRN_XXXXXX_P1_AT	AppleTalk and LPD service for Mac OS 8.6 or later
BRN_XXXXXX_P1	NetWare service (TCP/IP and LAT are enabled for backwards compatibility)

where XXXXXX is the last six digits of the Ethernet address (for example, BRN_310107_P1).

Reloading the Print Server Firmware

General

The firmware on the print server is stored in flash memory. This means that you can upgrade the firmware by downloading the appropriate update file. To get the latest firmware update, visit the Brother Solutions web site at <http://solutions.brother.com/>



Some software versions that we provide will automatically factory reset your print server parameters. We try to avoid doing this. However, if we add a significant new feature to our print server, it can result in the print server being factory reset.

Because of this, we **STRONGLY** recommend that you make a note of the current print server configuration before you upgrade. To do this, print out a configuration page (refer to your Quick Setup Guide for information on how to print a configuration page).

There are three methods of upgrading the firmware in your Brother print server:

- 1 Use the BRAdmin application (**Recommended**)
- 2 Use the FTP protocol (**Recommended if running on Macintosh or Unix network**)
- 3 Use another system (such as a Novell or Unix system to send the new firmware file to the print server).

Reloading firmware using BRAdmin

The BRAdmin application can be used to easily re-program your Brother print server.

- 1 Start BRAdmin.
- 2 Highlight the appropriate print server. Then press select the Control menu and choose Load Firmware. You can select more than one print server by pressing CTRL+<select> or SHIFT+<select> on each additional print server.

There are three possible ways of sending the new software version to the print server. For whichever method you select, you must enter a password for the print server. The default password for the print server is `access`.

- 3 TFTP PUT from this host

Use this method if you have TCP/IP already installed on your PC. BRAdmin will use the TFTP protocol to send the new firmware data to the print server.

- 4 TFTP GET from a server

If you have a TFTP server installed in your network (many Unix systems provide TFTP support), you may wish to use this option. The new firmware file must be located in the TFTP BOOT directory on your TFTP server. In this case, your PC makes the print server read the firmware data from the assigned TFTP server. If you do not provide the correct file name, then the upgrade will fail. You must also ensure that the firmware file is set so that the print server can read the file. On Unix systems you can use the `chmod` command to specify file attributes. For example, `chmod filename 666` allows the filename to be accessed by anyone. Also make sure that the TFTP service is running on your Unix server.

- 5 Netware GET from a server

You must have a Netware server on your network (running IPX/SPX) and you must store the new firmware file in the SYS/Login directory of the server. In this case, your PC makes the print server read the firmware data from the assigned Netware server, the print server attaches to the Netware server and reads the firmware itself.

Reloading process

The Data LED on the printer control panel will blink during the firmware file loading process. During programming process, the backlight on the printer's LCD goes off, and Erase xxxxxx and Write xxxxxx will be indicated alternately on the LCD. After the firmware update is completed, the printer will re-start automatically. **DO NOT TURN OFF THE PRINTER DURING THESE PROCESSES.**

If the Data LED does not stop blinking after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Then power the print server/printer off and then on again, to retry the download.



If you encounter problems upgrading the firmware and you find that the network portion of the printer no longer functions, you should try re-programming the print server by using the COPY command from the DOS prompt of your PC. To do this, connect a parallel cable between your PC and printer and use the command `COPY filename LPT1:/B` (where filename is the new firmware file).

Reloading using the FTP Protocol from a Web Browser

Please visit the Brother Solutions Web site at <http://solutions.brother.com> for more information on upgrading the print server using a web browser.

Index

A

AIX 1-3
AIX 4.0 1-8
AppleTalk ... 7-1, 7-4, 7-9, 13-2,
13-13
ARP 1-2, 12-1, 12-5

B

BANYAN VINES 10-1
Banyan VINES 13-16
Berkeley UNIX 1-1
BINARY_P1 1-1, 1-4, A-3
BINDERY 6-2
BIP 5-1
BOOTP 1-2, 12-5, 12-8
BRAdmin 12-2
Brother LPR port 3-3
Brother NetBIOS Port Monitor .
4-2, 4-4
Brother Peer to Peer Print ... 3-3
Browser 11-2

C

CFGTCP 1-13
Chooser 7-2

D

DEC 1-12
DEC LAT 9-1
DECprint 9-8
Desktop Printer 7-5
DHCP . 1-2, 3-1, 4-1, 12-1, 12-5
DLC 8-1, 8-2
DLC/LLC 13-13
DNS 11-2
DOMAIN 4-2
DOS 4-1, 9-5

E

E-mail 5-2
emailpassword 5-6
EtherTalk 7-1, 7-4, 7-9

F

flash memory A-4
FTP .. 1-2, 1-12, 13-11, A-4, A-7

H

hosts 3-3
HP distributed print service .1-7
HP JetDirect 3-1
HP/UX 1-3, 1-7
HTTP 11-1, 12-1, A-1
Hyper Text Transfer Protocol ...
11-1

I

IBM AS/400 1-12
IBM LAN Server 2-1
IBM RS/6000 AIX 1-8
IIS 2-1, 3-1
Internet 5-1
Internet Printing 5-1
IPP 2-1, 2-4, 3-1, 5-1, 5-11
IPX 6-2
IPX/SPX 12-1
ISP 5-2

J

JetAdmin 13-9
JetDirect 3-1

L

LAN Server 2-11, 4-8
LAT 9-1, 13-14

LED 13-2
Linux 1-1, 1-6
lpc 1-5, 1-15
lpstat 1-5

M

Macintosh 7-2, 9-7
mailboxname 5-6
Microsoft Internet Explorer . 2-1
Microsoft Internet Print Services
..... 2-1, 3-1
Microsoft TCP/IP printing ... 2-1
MIME 5-2

N

NDPS 6-2, 6-3
NDS 6-2
NET USE 4-8
NetBIOS 4-1, 4-8, 13-9
NetWare 3 6-2
Netware 3 6-6
NetWare 4 6-2, 6-6
NetWare 5 6-2
Netware GET A-5
network neighborhood 4-1
Novell 13-2
Novell Distributed Print Services
..... 6-3
Novell NetWare 13-12
NT 4.0 2-1
NWADMIN 6-2

O

OS/2 2-11
OS/2 Warp 4-8
OS/2 Warp Server 2-1, 2-11
OS/400 1-12

P

password 1-1, 2-1, 3-1, 4-1, 5-1
PATHWORKS 9-5, 9-7

PCONSOLE 6-6
PCPrint 10-4
Peer to Peer Printing 3-1
Peer-to-Peer 13-9
ping 13-2
POP3 5-2, 5-3, 5-6
PPD 7-2, 7-8
PRINTCAP 1-1
printcap 1-4
Printer Agent 6-5
PSERVER NLM 6-12

R

RARP 12-7
Reloading firmware A-5
RFC 1001 12-5
rlpstat 1-5

S

sam 1-7
SCO UNIX Configuration .. 1-11
SCOADMIN 1-11
Server Message Block 4-1
service 1-3
Simple Mail Transport Protocol
5-2
smaller networks 3-1
SMB 4-1, 4-8
smit 1-8
SMTP 5-2, 5-8
Sun Solaris 2.x 1-10
sysadmsh 1-11
System 8.6 7-2, 7-5

T

TCP/IP 1-1, 12-1
TELNET ..4-3, 5-6, 12-1, 12-12,
A-1,A-2
TEXT_P1 1-1, 1-4, A-3
TFTP GETA-5

TFTP PUTA-5
TGV's Multinet 1-12

U

UNIX 1-1

W

Web browser 12-1
WebJetAdminA-1
Windows 2000 2-1, 3-1, 5-1, 8-1, 13-11
Windows 2000 Printing 2-2, 2-5
Windows 95/98/Me 3-1
Windows NT8-1
Windows NT 3.51 2-1
Windows NT 3.5x2-1
Windows NT 3.5x Printing ... 2-9
Windows NT 4.0 Printing2-5
Wollongong's PATHWAY ..1-12
WORKGROUP 4-2