



Multi-Protocol Print Server

Network User's Guide

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TABLE OF CONTENTS

CHAPTER ONE

Unix Printing

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	1-5
HP/UX Configuration	1-6
IBM RS/6000 AIX Configuration	1-7
Sun Solaris 2.x Configuration	1-8
SCO UNIX Configuration	1-9
DEC TCP/IP Servers for VMS (UCX)	1-10
TGV's Multinet	1-10
Wollongong's PATHWAY	1-11
IBM/AS400	1-12
Other Systems	1-13
Other Sources of Information	1-14

CHAPTER TWO

TCP/IP PRINTING

PRINTING FROM WINDOWS NT OR WINDOWS 2000/XP/LAN SERVER

AND WARP SERVER	2-1
Overview	2-1
Windows NT 3.5x/NT 4.0/2000/XP (TCP/IP) Configuration	2-2
Windows 2000/XP Printing (Printer Driver not yet Installed)	2-3
Standard TCP/IP Port Printing	2-3
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 (Printer Driver not yet Installed).....	2-6
Windows NT 4.0 Printing (Printer Driver already Installed).....	2-7
LAN Server, OS/2 Warp Server Configuration.....	2-8
Server Configuration.....	2-8
Configuration of an OS/2 Server.....	2-8
Other Sources of Information.....	2-10
CHAPTER THREE	
PEER-TO-PEER PRINTING	
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.....	3-3
Other Sources of Information.....	3-4
CHAPTER FOUR	
NETBIOS PEER-TO-PEER PRINTING	
USING NETBIOS ON 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 on a Web Browser	4-3
NetBIOS Port Monitor for Windows 95/98/Me, NT4.0/2000/XP	4-3
Installing the Brother NetBIOS Port Monitor	4-4
Associating the Printer	4-5

Windows 95/98/Me	4-5
Windows NT4.0/2000/XP	4-5
Adding a Second NetBIOS Print Port.....	4-6
Windows 95/98/Me	4-6
Windows NT4.0/2000/XP	4-6
LAN Server/OS/2 Warp Server Configuration.....	4-7
Server Configuration:	4-7
Workstation Configuration:	4-7
Other Sources of Information.....	4-8
CHAPTER FIVE	
HOW TO CONFIGURE INTERNET PRINTING FOR WINDOWS 2000/XP	
INTERNET PRINTING INSTALLATION.....	
	5-1
Overview	5-1
Windows 2000/XP IPP Printing	5-2
Other Sources of Information.....	5-3
CHAPTER SIX	
NOVELL NETWARE PRINTING	
HOW TO CONFIGURE NOVELL NETWARE PRINTING.....	
	6-1
Overview	6-1
Interface	6-3
Configuring NetWare Systems	6-3
Configuring in Directory Service (NDS)	6-4
Configuring in Bindery Service	6-7
CHAPTER SEVEN	
APPLETALK (ETHERTALK) TCP/IP PRINTING	
PRINTING FROM A MACINTOSH	
	7-1
Overview	7-1
Macintosh Configuration	7-2
Operation	7-2
How to Select the Print Server (AppleTalk).....	7-3
How to Select the Print Server (TCP/IP)	7-4

Changing the Configuration	7-6
Other Sources of Information.....	7-6
CHAPTER EIGHT	
WEB BASED MANAGEMENT	
HOW TO USE A WEB BROWSER TO MANAGE YOUR DEVICE.....	8-1
Overview	8-1
How to Connect to Your Printer Using a Browser	8-2
Other Sources of Information.....	8-2
CHAPTER NINE	
TCP/IP CONFIGURATION	
ASSIGNING TCP/IP INFORMATION.....	9-1
Overview	9-1
Using the Printer Control Panel to Allocate an IP Address.....	9-2
Changing the Default IP Address Using the BRAdmin	9-2
Using BRAdmin and the IPX/SPX Protocol to Set the IP Address.....	9-3
Using BRAdmin and the TCP/IP Protocol to Set the IP Address	9-3
Using DHCP to Configure the IP Address	9-4
Other Source of Information	9-4
CHAPTER TEN	
TROUBLESHOOTING	10-1
Overview	10-1
Installation Problems.....	10-2
Intermittent Problems	10-4
TCP/IP Troubleshooting	10-4
UNIX Troubleshooting.....	10-5
Windows NT/LAN Server (TCP/IP) Troubleshooting	10-6

Windows 95/98/Me Peer-to-Peer Print (LPR) Troubleshooting.....	10-6
Windows 95/98/Me/NT 4.0 Peer-to-Peer Print (NetBIOS) Troubleshooting	10-7
Windows 2000/XP IPP Troubleshooting	10-8
Novell NetWare Troubleshooting.....	10-8
AppleTalk Troubleshooting.....	10-9
Web Browser Troubleshooting (TCP/IP)	10-9
INDEX.....	I-1

CHAPTER ONE

Unix Printing

Printing from UNIX/Linux using TCP/IP

Overview

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.



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 print server is 0.0.0.0.
2. Refer to chapter 1 of printer User's Guide to learn how to configure the IP address on your printer.
3. The default password for print server is "access".
4. The default name for print server is usually BRN_XXXXXX (where XXXXXX is the last six digits of the Ethernet address of the print server).

TCP/IP

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 print servers without the need for any special software on the host computer. For special applications, raw TCP ports are also available.

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



Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" about how to configure IP address information using the printer control panel.

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 (or man pages) 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 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. 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=BINARY_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 print server with a node name (`rm`) of `BRN_310107` to a Brother printer through spool directory `/usr/spool/lpd/laser1`. Enter `BINARY_P1` to `:rp=`.



The `rm` and `rp` options are not available on some UNIX systems, so if necessary check your documentation (or man pages) 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.

3. 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".
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 "Resart 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):
3. Line printer name (user-selectable)
4. Remote system name (the print server name; must match what is in hosts file or use print server IP address)
5. Remote printer queue (Printserver binary name, e.g. BINARY_P1).
6. 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, eg. BINARY_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:
8. Name of queue to add (user selectable)
9. Activate the queue (Yes)
10. Destination host (print server name; must match name in /etc/hosts file or use the print server IP address)
11. Name of queue on remote printer (print server binary, eg. BINARY_P1).
12. 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`.

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 printer name to be used to spool to.
4. Deselect "Use External remote Printing Protocol..."
5. Edit the /etc/printcap file to include formfeed add the text rp=lpaf

SCO UNIX requires TCP/IP V1.2 or later to work with print server. 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 interface, 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.

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=prnserverservice, where queue is the name of the queue, prnservername is the print server name from the hosts file, and prnserverservice is the print server service name.

IBM/AS400

To use a 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, <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) RMSTSYS (*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 (QTEMP/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) MFRTYPMDL(*HP5SI) PPRSRC1(*A4) PPRSRC2(*A4)
RMTLOCNAME('10.0.0.200') SYSDRVPGM(*HPPJLDRV) TEXT('Arne"s
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_P1
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 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.
1. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER TWO

TCP/IP Printing

Printing from Windows NT or 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. 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 print servers is 0.0.0.0.
2. The default password for 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 print server is always 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. Select the "Standard TCP/IP Port" option as the port is installed by default on Windows 2000/XP systems.
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 a IPP print jobs from a Windows 95/98/Me client PC providing 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 chose 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

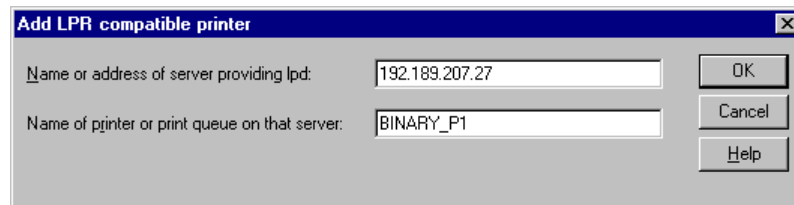
If you did not install the TCP/IP protocol or the Microsoft TCP/IP Printing protocol during the installation of your Windows NT 4.0 system (either workstation or server) follow these steps. Please note that it is essential that you install the Microsoft TCP/IP Printing protocol if you wish to print over the network using the TCP/IP protocol. If you have already installed the TCP/IP protocol and Printing protocol proceed to step 2.

Step 1: Running the Network applet, click on the Protocols tab.

1. Select Add, and double click on TCP/IP protocol.
2. Insert the requested disk(s), or CD-ROM, to copy the required files.
3. Click on the Services tab, click on Add and double click on Microsoft TCP/IP Printing.
4. Again insert the requested disk (s) or CD-ROM.
5. Click on the Protocols tab when then copying is finished.
6. Double click on the TCP/IP Protocol option and add the host IP address, subnet mask, and gateway address. Consult your system manager for these addresses.
7. Click OK twice to exit (your NT server will need to be re-booted).

Windows NT 4.0 Printing (Printer Driver not yet Installed)

1. Go to the Start button, choose Settings, and then select Printers. Double click the Add Printer icon to get the Add Printer Wizard. Click. Select My Computer (Not Network Printer) and click on Next.
2. Select Add Port, select LPR Port (LPR Port will not be displayed unless you install the "Microsoft TCP/IP Printing" protocol as described earlier) from the list of available ports and click on New Port.
3. Type in the IP address that you wish to assign to the print server in the Name or address of server providing lpd: box. If you have edited your HOSTS file are using Domain Name System, enter the name associated with the print server, instead of an IP address. 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 print configuration page. From default the NetBIOS name will usually appear as "BRN_XXXXXX" where XXXXXX is the last six digits of the Ethernet address.
4. Type in the print server service name in the Name of printer or print queue on that server: box. If you do not know which service name to use, enter BINARY_P1 and then click on OK:



The screenshot shows a Windows dialog box titled "Add LPR compatible printer". It has a standard Windows window border with a close button (X) in the top right corner. The dialog contains two text input fields. The first field is labeled "Name or address of server providing lpd:" and contains the text "192.189.207.27". The second field is labeled "Name of printer or print queue on that server:" and contains the text "BINARY_P1". To the right of these fields are three buttons: "OK", "Cancel", and "Help".



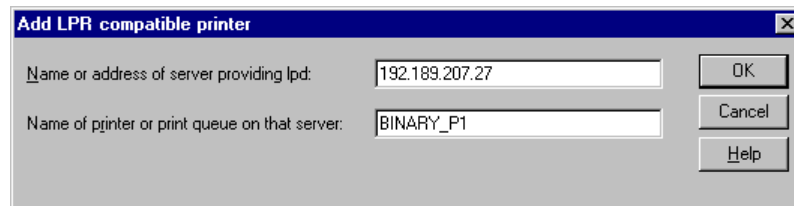
Refer to How to configure TCP/IP printing for UNIX system for more information on Service Names.

5. Click on Close. The new print server IP address should be listed and highlighted as an available port. Click on Next.
6. 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.
7. If the driver already exists, select Keep Existing Driver (if it does not, this step will be skipped), and then click on Next.
8. If desired, change the name of the printer then click on Next.
9. If desired, make the printer shared (so other users can access it), and select the operating system(s) that these other computers will be running. Click on Next.
10. Select Yes when you are 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 (Printer Driver already Installed)

Follow these steps if the printer driver is already installed.

1. Click on Start then select Settings/Printers to display the currently installed printer drivers.
2. Double click the printer driver you wish to configure and select Printer menu and then choose Properties.
3. Select the Ports tab and click on Add Port.
4. Select LPR Port (LPR Port will not be displayed unless you install the "Microsoft TCP/IP Printing" protocol as described earlier) from the list of available ports and click on New Port.
5. Type in the IP address that you assigned to the print server in the Name or address of server providing lpd: box. If you have edited your HOSTS file or are using Domain Name System, you can enter the name associated with the print server, instead of an IP address. 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 print configuration page. From default the NetBIOS name will usually appear as "BRN_XXXXXX" where XXXXXX is the last six digits of the Ethernet address.
6. Type in the print server service name in the Name of printer or print queue on that server: box. If you do not know which service name to use, enter BINARY_P1 and then click on OK:



7. Click on the Close button.
8. You should now see that the printer driver is configured to print to the IP address (or name) that you specified.
9. If you wish to share the printer, click on the Sharing tab and share the driver.

LAN Server, OS/2 Warp Server Configuration

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 a 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 the printer User's Guide "1.2 Configuring the Printer on a Network" about how to configure IP address information using the printer control panel.

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 print server name (from the HOSTS file) or its IP address.
LPD printer	For most applications, use the print server 'binary' service BINARY_P1.
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 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 the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER THREE

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 features 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 print servers is 0.0.0.0.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.
3. The default password for print servers is "access".
4. 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 and that the client PC is using version 4 or later of Microsoft Internet Explorer.

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 1 of printer User's Guide.

Installing the Brother Peer-to-Peer Software

1. Start the CD-ROM supplied with your printer installation menu program according to the Quick Setup Guide and select "Install Software".
2. Click "Install Network Software".
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 Network Direct Print 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 print configuration page. From default the NetBIOS name will usually appear as "BRN_XXXXXX" where XXXXXX is the last six digits of the Ethernet address. You can also specify the LPR Byte Counting Enabled setting. We recommend you to set it "Off". When you have any trouble in printing, set the LPR Byte Counting Enabled setting "On" and try the print again.



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 (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 Brother Network Direct Print 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 the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER FOUR

NetBIOS Peer-to-Peer Printing

Using NetBIOS on Windows 95/98/Me/NT/2000/XP, LAN Server and OS/2 Warp Server

Overview

Print server supports SMB (Server Message Block) 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 print servers is 0.0.0.0.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.
3. The default login names are "user" for users and "admin" for administrator and the default password for 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 utility.

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 print server. 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 where as 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 print server automatically has a default workgroup/domain name of "WORKGROUP". If you need to change name, you can configure the print server to recognize this. There are two 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.



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 on a Web Browser

You can 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 print server configuration screen, enter the workgroup/domain name into the "Domain Name" text box. Make sure you submit the changes.

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 print server and your client PC.

Installing the Brother NetBIOS Port Monitor

1. Start the CD-ROM supplied with your printer installation menu program according to the Quick Setup guide and select "Install Software".
2. Click "Install Network Software"
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 actual print server. You can use the Browse button for searching 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 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 BRN_XXXXXX-P. For example:

\\BRN_310107\BRN_XXXXXX-P



You can find the NetBIOS name and MAC address by printing out the printer configuration page. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" about how to configure IP address information using the printer control panel.

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 NT4.0/2000/XP 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 (Port name you assigned in step 7 of the Installing the Brother Peer-to-Peer Print (NetBIOS) 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 NT4.0/2000/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 (XP) when you are asked how the printer is connected to your computer, and then push Next.
5. Select the Brother NetBIOS Port (Port name you assigned in step 6 of the Installing the Brother Peer-to-Peer Print (NetBIOS) 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 windows. 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 NT4.0/2000/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 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 (BRN_XXXXXX-P by default). For example:

```
NET USE LPT2: \\BRN_310107\ BRN_XXXXXX-P
```



You can find the NetBIOS name and MAC address by printing out the printer configuration page. Refer to the printer User's Guide "8.4.1 Confirming Printer Configuration and Network Settings".

Other Sources of Information

1. Visit <http://solutions.brother.com> for more information on network printing.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER FIVE

How to Configure Internet Printing for Windows 2000/XP

Internet Printing Installation

Overview

Quick Tips:

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.

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 the “Connect to a printer on the Internet or on a home or office network” 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 following 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 print 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.

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 System.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER SIX

Novell NetWare Printing

How to Configure Novell NetWare Printing

Overview

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 print servers is 0.0.0.0.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.
3. The default password for print servers is "access".



You can set the Netware environment easily by using the Netware Quick Setup option in the BRAdmin software. To start Netware Quick Setup, start the BRAdmin software and select the printer icon you wish to configure. Select "Netware Quick Setup" in the control menu. Enter the administrator's password and then follow the instructions on the screen.

Using in NetWare Environment

The printer supports the following versions of NetWare:

NetWare 3.12/3.2 (bindery service)

NetWare 4.1/4.11/4.2/5 (bindery service)

NetWare 4.1/4.11/4.2/5 (directory service)

Directory service (NDS) and bindery service support the following modes respectively:

Queue Server mode in which the printer functions as a print server

Remote printer mode in which the printer functions as a remote printer

The printing procedure of the two modes is explained below. Decide on the mode to use before you install the printer.

Queue Server Mode (Recommended)

In the Queue Server mode, the printer functions as the print server by retrieving and printing print jobs from the print queues on the file server. As it fully utilizes the printer functions, the system capacity of this mode is better than that of the remote printer mode. However, the printer uses one user license on the file server.

Remote Printer Mode

In the remote printer mode, the print server running on the file server sends jobs to the printer. The printer prints out the jobs retrieved from the print server.

In this mode, the printer does not use up any user license of the file server.

To install your printer in a NetWare environment, you must ensure that you log on as SUPERVISOR (for NetWare 3.x) or ADMIN (for NetWare 4.x 5.x).

Interface

The following frame types are supported:

- Ethernet II specifications
- IEEE802.3 specifications
- IEEE802.2 specifications
- SNAP specifications

The frame types are automatically detected. However, if you wish to select a specific frame type, use the BRAdmin software, the control panel, a web browser or the BRAdmin Professional software.

Configuring NetWare Systems

1. Start the BRAdmin software and select the printer icon you wish to configure Click the Configure Device icon.
2. Enter the password and click OK. (The default password is "access".)
3. Select the Netware tab.
4. Select the Operating Mode you want to use.

For directory service:

When you select NDS Queue Server or NDS Remote Printer see "Configuring in Directory Service (NDS)" in this chapter.

For bindery service:

When you select Bindery Queue Server or Bindery Remote Printer see "Configuring in Bindery Service", in this chapter.

Configuring in Directory Service (NDS)

We have to create the print server, printer, and each object of the queue for this machine on the NetWare file server.

5. Click Print Environment Settings. The NetWare Print Environment Settings dialog box is displayed.

Creating the Print Server Object

6. Click the Create button.



If you are in remote printer mode, you can also select the print server that is already created. For the procedure, refer to the online Help file.

The Input Name dialog box is displayed.

7. Click the Select button.
8. In the Select Object dialog box, select the context to create the object, and click the OK button.
9. Check that the selected object name is displayed in the Context of the Input Name dialog box, enter the print server name in Name, and then click the OK button. Example: BRN_4000F4

The print server name will be entered in Print Server of the NetWare Print Environment Settings dialog box.

Creating Printer Object

10. Click the Create button. The Input Name dialog box is displayed.
11. If Context is correctly set, enter the printer name in the Name field, and click the OK button. Example: BRN_4000F4-P

The Printer Name will be entered in Printer name of the NetWare Print Environment Settings dialog box.

Creating Print Queue Object

12. Click the Create button. The Input Name dialog box is displayed.
13. If Context is correctly set, enter the print queue name in the Queue Name field, and click OK. Example: BRN_4000F4-Q
14. Click the Select button on the right of Queue Volume box.
15. In the Select Object dialog box, select the volume of the created object, and then click the OK button.
16. Check that the selected object name is displayed in Queue Volume of the Input Name dialog box, and then click OK.

The Print Queue name will be entered in Queue of the NetWare Print Environment Settings dialog box.

17. When the print server, printer and queue are all set, click the OK button.



You can specify users that can be connected to the queue by clicking the User button.

18. Check that the settings specified in the NetWare Print Environment Settings dialog box are entered in the NetWare tab of the Configure dialog box as follows:

Example:

Item	Queue Server Mode	Remote Printer Mode
Print Server Name	BRN_4000F4	CLEVER-PS (selected from already existing print server)
Remote Printer Name	---	BRN_4000F4-P
NDS Tree Name	BTREE	BTREE
Context Name	OU=SALES. O=BROTHER	OU=SALES. O=BROTHER

19. Click the Netware Control tab.
20. Enter the required item and click the OK button.
21. When you use Remote Printer mode, reboot the Netware print server on the Netware file server.

Configuring in Bindery Service

We have to create the print server, printer, and each object of the queue for this printer on the NetWare file server.

1. Click Print Environment Settings.

Creating the Print Server Object

2. Click the Create button.



If you are in remote printer mode, you can also select the Print Server that is already created. For the procedure, refer to the online Help file.

The Input Name dialog box is displayed.

3. Click the Select button.
4. In the Select Object dialog box, select the server to create the object, and click the OK button.
5. Check that the selected object name is displayed in server of the Input Name dialog box, enter the print server name in Name, and then click the OK button. Example: BRN_4000F4

The Print Server name will be entered in Print Server of the NetWare Print Environment Settings dialog box.

Creating Printer Object

6. Click the Create button. The Input Name dialog box is displayed.
7. Enter the printer name at Name, and click the OK button. Example:
BRN_4000F4-P

The Printer Name will be entered in Printer name of the NetWare Print Environment Settings dialog box.

Creating Print Queue Object

8. Click the Create button. The Input Name dialog box is displayed.
9. Enter the print queue name and click OK. Example: BRN_XXXXXX-Q

The queue name will be entered in Queue Name of the NetWare Print Environment Settings dialog box.

10. When the print server, printer and queue are all set, click the OK button.



You can specify users that can be connected to the queue by clicking the User button.

11. Check that the settings specified in the NetWare Print Environment Settings dialog box are entered in the NetWare tab of the Configure dialog box as follows:

Example:

Item	Queue Server Mode	Remote Printer Mode
Print Server Name	BRN_4000F4	CLEVER-PS (selected from already existing print server)
Remote Printer Name	---	BRN_4000F4-P
File Server	CLEVER	CLEVER

12. Click the Netware Control tab.
13. Enter the required item and click the OK button.
14. When you use Remote Printer mode, reboot the Netware print server on the Netware file server.

CHAPTER SEVEN

AppleTalk (EtherTalk) TCP/IP Printing

Printing from a Macintosh

Overview

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 Mac OS 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 print using a web browser and then click on " Network Configuration " enter the password, then select "Configure AppleTalk", Click "BRN_XXXXXX_P1_AT", then on Service Name, enter the new name that you wish to appear in Chooser. Then click on "Submit".
3. Mac OS 8.6 or later supports TCP/IP printing.
4. The default password for print servers is "access".
5. The default IP address of print servers is 0.0.0.0. To change it, use the BRAdmin application, the printer control panel or let your DHCP server allocate an IP address to the printer.

Macintosh Configuration

<For Mac OS 8.6 – 9.2 users only>

Before you try to use the print server, you must firstly enable the AppleTalk protocol from the AppleTalk Control Panel on the Macintosh. Refer to "Setting up AppleTalk" in "Mac Help" on your Macintosh.

How to set AppleTalk active (For Mac OS X users)

1. Choose System Preferences from the Apple menu.
2. Click Network.
3. Make sure that AppleTalk is chosen in the Show pop-up menu for the desired network interface.
4. Click the AppleTalk tab.
5. Verify that the checkbox for "Make AppleTalk Active is selected.". If it is not, click to select it and then click Apply Now.

Operation



Once the print server is installed and the printer is powered on, the print server 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 printer User's Guide "8.4.1 Confirming Printer Configuration and Network Settings".

How to Select the Print Server (AppleTalk)

<For Mac OS 8.6 – 9.2 users only>

1. Open the Chooser from the Apple Menu on the Macintosh
Click the AdobePS icon and then select BRN_XXXXXXP1_AT. (XXXXXX are the last six digits of the Ethernet address.)
2. Close the Chooser. Setup is now complete.

<For Mac OS X users only>

1. Open the Macintosh HD icon.
2. Open the Applications folder.
3. Open the Utilities folder.
4. Open the Print Center icon.
5. Click the Add Printer button.
6. Select "Apple Talk".
7. Select BRN_XXXXXX_P1_AT and then click the Add button.
8. Select "Quit Print Center" from the Print Center menu. The setup is now complete.



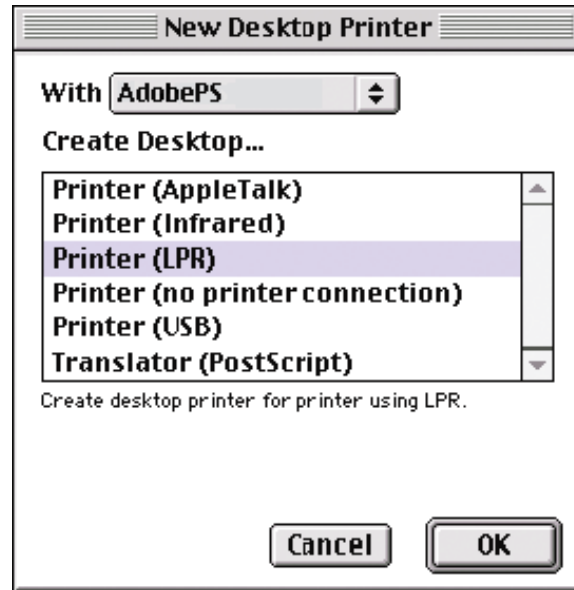
If you cannot see the print server, first make sure that your cabling is correct and that you have enabled EtherTalk from your Macintosh Network Control Panel. You may also need to force the print server into the correct AppleTalk zone using the BRAdmin application or a web browser.

How to Select the Print Server (TCP/IP)

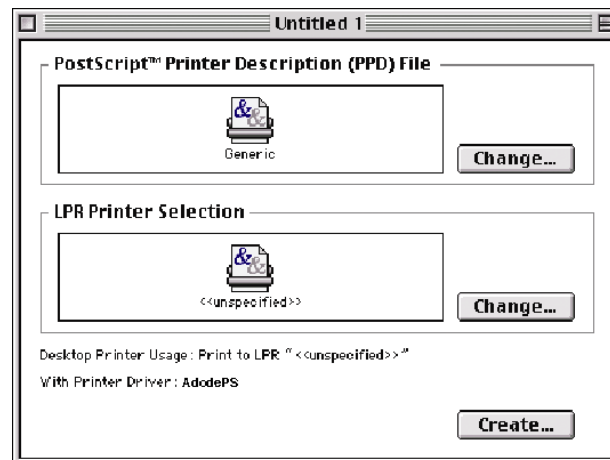
Apple has developed the "Desktop Printer" utility, this can be found from the Apple menu (this is only available from Mac OS 8.6 or later). When you run it you will see the following screen:



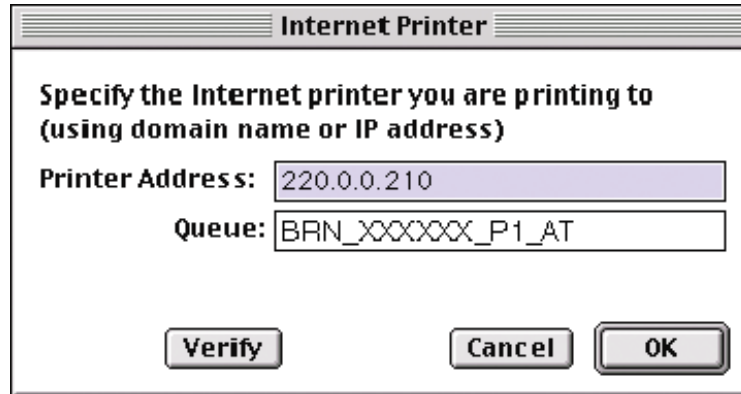
The screen shows in this section are from Mac OS 9. The screens on your Macintosh may vary depending on your Macintosh Operating System.



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

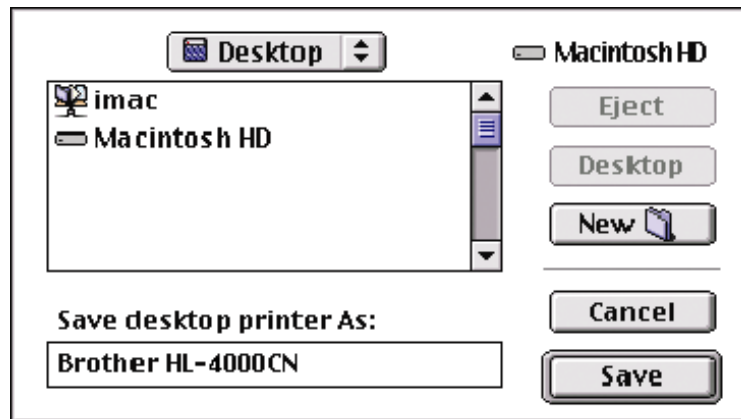


2. At this point we must select the correct PPD file for the printer and also configure the correct LPR information. Click the "Change" button in the "PostScript Printer Description (PPD) File" section. Insert the CD-ROM that contains the PPD file for the printer and select the appropriate PPD file.
3. Now select the "Change" button below the "LPR Printer Selection" text.
4. You must then enter the IP address and service name of 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.



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:



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

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.

PC users can also use the BRAdmin application to change printer and print server details.

Other Sources of Information

1. Visit <http://solutions.brother.com/> for more information on network printing.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.
3. Refer to chapter 8 of this guide for more information about Web Based Management.

CHAPTER EIGHT

Web Based Management

How to Use a Web Browser to Manage Your Device

Overview

A standard World Wide Web Browser (we recommend Netscape Communicator 4.06 or Internet Explorer 4.01 or later) can be used to manage your printer using the HTTP (Hyper Text Transfer Protocol). You can get the following information from the printer using a web browser.

1. Printer status information
2. 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 computer.

Quick Tips:

1. The default IP address of print servers is 0.0.0.0.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.
3. The default password for print servers is "access".
4. You can use a web browser on most computing platforms, for example, Macintosh and Unix users are also cable to connect to the printer and manage it.
5. You can also use the BRAdmin application to manage the printer and network configuration.

How to Connect to Your Printer Using a Browser

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

Click on the links to manage different aspects of the printer. Refer to the help file about this Web browser.

When you access to the print server using Web browser, do not use the PROXY server.

Other Sources of Information

1. Visit <http://solutions.brother.com/> for more information on network printing.
2. Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" for information on how to configure IP address information using the printer control panel.

CHAPTER NINE

TCP/IP Configuration

Assigning TCP/IP Information

Overview

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

The Print server has a default IP address of 0.0.0.0, 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:

1. Printer control panel
2. DHCP
3. BRAdmin application (for Windows 95/98/Me/NT 4.0/2000/XP ONLY if your PC is using the IPX/SPX protocol).

Other ways to CHANGE the IP address once it is already set:

1. HTTP (Web browser)
2. Other SNMP based management utility

These configuration methods are described in the following paragraphs.



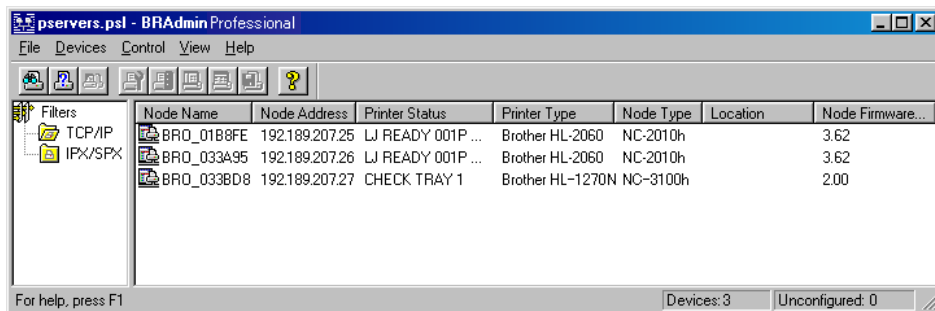
The IP address you assign to the print server must be on the same logical network as your host computers, if it is not, you must properly configure the subnet mask and the router (gateway).

Using the Printer Control Panel to Allocate an IP Address

Refer to the printer User's Guide "1.2 Configuring the Printer on a Network" about how to configure IP address information using the printer control panel. By using the control panel of the printer, you can program the IP address details at the same time that other printer parameters are configured.

Changing the Default IP Address Using the BRAdmin

Start the BRAdmin utility (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 print server. To change the default IP address, 0.0.0.0, use the IPX/SPX protocol.

Using BRAdmin and the IPX/SPX Protocol to Set the IP Address

If your PC has 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 will be BRN_XXXXXX, where "XXXXXX" 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 printer User's Guide "8.4.1 Confirming Printer Configuration and Network Settings".

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. Click OK.

Using BRAdmin and the TCP/IP Protocol to Set the IP Address

If your PC has only 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 factory default settings, or your printer IP address is not appropriate to your network environment, the print server will not appear in the BRAdmin screen. Set the correct IP address to your network environment using IPX/SPX filter or printer control panel.

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. Click OK.

Using DHCP to Configure the IP Address

Dynamic Host Configuration Protocol (DHCP) is one of several automated mechanisms for IP address allocation. If you have a DHCP Server in your network (typically a Unix, Windows NT/2000/XP 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.

Other Source of Information

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

CHAPTER TEN

Troubleshooting

Overview

This chapter describes procedures for troubleshooting problems you may encounter with a 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 printer configuration list. Refer to the printer User's Guide "8.4.1 Confirming Printer Configuration and Network Settings" If the test fails, check:
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 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, Windows98/95/Me Peer to Peer (LPR), Internet Printing or Web Browser troubleshooting section. Otherwise, proceed to step 3, and then go to TCP/IP Trouble shooting 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 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 LaserWriter8 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. Verify the cabling, network connection, referring to printer configuration page and make sure that the "Ethernet Mode" is not set to "unknown". If the "Ethernet Mode" is set to "unknown", printer cable may not be connected to the printer.
 - c. Check to see if there is any LED activity.

NC-3100s has two LEDs.

- Green LED
This LED is on if there is a valid connection to the network 100BaseTX.
- Orange LED
This LED will be on or blink if the print server is connected to a 10BaseT or 100BaseTX network.

4. If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub. 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 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. Make sure that the TCP/IP protocol of the print server is enabled.
3. 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 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.
7. 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 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 chapter.
2. Try to turn the Byte Count on in the "Configure port" 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/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.

Windows 2000/XP IPP Troubleshooting

Make sure that the URL setting for IPP is set to `http://ip_address:631/ipp` (enter your printer IP address to "ip_address").

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 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 print server 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 selected the appropriate Queue at the Netware Environment button in Netware tab on BRAdmin application.
 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 a Web browser.
 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 application or a web browser.

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 4.06 or later/ Microsoft Internet Explorer version 4.01 or later.

INDEX

A

AIX 1-3
AIX 4.0 1-7
AppleTalk 7-1, 7-3, 10-2, 10-9
ARP 1-2, 9-1, 9-4

B

Berkeley UNIX 1-1
BOOTP 1-2, 9-4
BRAdmin 9-2
Brother LPR port 3-3
Brother NetBIOS Port Monitor 4-2, 4-4
Brother Peer-to-Peer 3-3
Browser 8-2

C

CFGTCP 1-12
Chooser 7-1

D

DEC 1-10
Desktop Printer 7-4
DHCP 1-2, 3-1, 4-1, 9-1, 9-4
DNS 8-2
DOMAIN 4-2
DOS 4-1

E

EtherTalk 7-1, 7-3

H

hosts 3-2
HP distributed print service 1-6
HP/UX 1-3, 1-6
HTTP 8-1, 9-1
Hyper Text Transfer Protocol 8-1

I

IBM LAN Server 2-1
IBM RS/6000 AIX 1-7
IBM/AS400 1-12
IIS 2-1, 3-1
Internet Printing 5-1
IPP 2-1, 2-4, 3-1, 5-1, 5-2, 10-8

L

LAN Server 2-8, 4-7

LED 10-3
Linux 1-1, 1-5
lpc 1-4, 1-13
lpstat 1-4

M

Mac OS 8.6 7-1, 7-4
Macintosh 7-1
Microsoft Internet Explorer 2-1
Microsoft Internet Print Services 2-1, 3-1
Microsoft TCP/IP printing 2-1

N

NET USE 4-7
NetBIOS 2-6, 4-1, 4-7, 10-7
network neighborhood 4-1
Novell 10-2
Novell NetWare 10-8
NT 4.0 2-1

O

OS/2 2-8
OS/2 Warp 4-7
OS/2 Warp Server 2-1, 2-8
OS/400 1-12

P

password 1-1, 2-1, 3-1, 4-1, 5-1
Peer-to-Peer Printing 3-1
ping 10-2
printcap 1-4

R

RFC 1001 9-4
rlpstat 1-4

S

sam 1-6
SCO UNIX 1-9
SCOADMIN 1-9
Server Message Block 4-1
smaller networks 3-1
SMB 4-1, 4-7
smit 1-7
Sun Solaris 2.x 1-8
sysadmsh 1-9

T

TGV's Multinet 1-10

U

UNIX	1-1
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W

Web browser	9-1
Windows 2000/XP printing	2-3
Windows 2000/XP	2-1, 3-1
Windows 2000/XP Printing	2-5
Windows 95/98/Me	3-1
Windows NT 3.51	2-1
Windows NT 3.5x	2-1
Windows NT 4.0 Printing	2-5, 2-6, 2-7
Wollongong's PATHWAY	1-11
WORKGROUP.....	4-2