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Brother Multi-Protocol Print Server

NC-series

USER'S GUIDE

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If for any reason you must ship your print server, carefully package the print server to avoid any damage during transit. It is recommended that you save and use the original packaging. The print server should also be adequately insured with the carrier.

WARNING

When shipping the print server, put it into the unti-static bag to avoid a damage.

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INTRODUCTION

Overview

Brother print servers allow multiple host computers to share a Brother printer on an 10Mbit or 100Mbit Ethernet network. Any user can print their job as if the printer was directly connected to their computer. No special software is required on the host computers and application programs run without any modification. Because the Brother print servers provides multi-protocol capabilities, users on DEC, UNIX, Novell, AppleTalk, LAN Server/Warp Server, Windows NT, Windows 95/98, NetBIOS and Banyan VINES computers can simultaneously access the same printer.

Features

The Brother print servers offers the widest range of features in the industry, including:

- LAT, TCP/IP, Netware, AppleTalk, NetBIOS, Banyan VINES and DLC/LLC protocols
- Network Operating System compatibility:

  - Digital Equipment Corporation networks, including PATHWORKS and DECprint Server
  - UNIX systems that support either the Berkeley lpr/lpd printing protocol, printing to a raw TCP port
  - Novell Netware V2.15 or above, V3.xx, or V4.xx, including support for NetWare Directory Services (NDS)
  - AppleTalk Phase 2
  - Windows NT4.0 and NT3.5x
  - IBM LAN Server V4.0 or above, or any earlier version that has IBM TCP/IP V2.xx.
  - Windows 95/98 (Peer-to-Peer or client mode)

- Very high performance
- Superior network and printer management:

  - BRAdmin and BRAdmin32 Windows-based Management utilities.
  - SNMP MIB I and MIB II also including printer MIB over IP or IPX
  - Remote console management via DEC NCP, TELNET, NetWare, or NC-2010h/NC-2100h serial port
  - HTTP web browser management capability

- lpd-Plus feature for providing multiple services with custom setup and reset strings plus text-to-PostScript conversion
- Flash memory for easy updating of firmware

CHAPTER 1
NOVELL NETWARE CONFIGURATION

Brother print servers allow NetWare client PCs to print jobs on the same printer as DEC, TCP/IP, AppleTalk, NetBIOS and Banyan users. All NetWare jobs are spooled through the Novell server.

General Information

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

Brother's original BRAdmin application has now been replaced with the BRAdmin32 application. This offers enhanced Netware support. The system administrator can now create both Bindery and NDS based queues in a single environment without having to switch between applications. The BRAdmin32 application has been designed to run on Windows 95/98 and NT 4.0. You must install the Novell 32-bit client if you wish to create queue information on your Netware servers.

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

Creating a Print Queue Using BRAdmin or BRAdmin32

Brothers BRAdmin utilities are Windows-based applications that provide similar functionality to the Netware PCONSOLE utility (or the NWADMIN utility in Netware 4.1x). To use the BRAdmin programs to configure a Brother print server under NetWare, make sure that you are logged in as SUPERVISOR (NetWare 2.xx or 3.xx) or ADMIN (NetWare 4.1x) and perform the following steps:

Alternatively, Brother print servers can be configured with the NetWare PCONSOLE or NWADMIN utilities in conjunction with Brothers DOS BRCONFIG utility.

Installing the BRAdmin software

<For Windows 3.1 users>

> ✎ **Note**
> The BRAdmin32 application will not run on Windows 3.x systems.

1. Insert the "Print Server Configuration Utility for Windows 3.1" diskette into your disk drive.

2. Choose Run from the File menu in the Program Manager.

3. Type the drive name where you inserted the supplied disk and "SETUP" in the box: for example, `A:\SETUP`. Choose the OK button or press the Enter key.

4. The installer starts running. Follow the instruction on the computer screen.

<For Windows 95/98/NT 4.0 users>

1. Insert the "Print Server Configuration Utility BRAdmin32" diskette into your disk drive.

2. Click the **Start** button and choose **Run**.

3. Type `A:\SETUP`. Choose the **OK** button or press the **Enter key**.

4. The installer will now start.

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

1. Start the appropriate BRAdmin program.

2. One or more print server will appear in the list (the default node names are BRO_xxxxxx_P1 or BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address).

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 Netware tab.

> ✒ **Note**
> If necessary change the "Print Server Name", the default Netware print server name will be BRO_xxxxxx_P1 where xxxxxx is the Ethernet address of the print server. Be careful! Changing the name may impact the configuration of other protocols because the print server service names will be altered.

---

a. If it is not already selected, select **Queue Server** mode.

b. Click on the **Add Queue** button. (BRAdmin32 users click the **Change Bindery Queues** button.

<**BRAdmin users**>
Click on **Create** to create a new queue and type in the desired queue name on the desired file server (or you may select an existing queue). BRAdmin should automatically find all Netware file servers in your network and display their names in the "File Server" box. You must have supervisory access rights to create a queue on the Netware server you wish to configure. Click **OK**, **Yes**, and then **OK** again to add this queue. Click on **Close, OK,** and then select **Yes** to save the changes, then click **OK**.

<**BRAdmin32 users**>
Select the Netware server which you wish to configure. Then select the **New Queue** button. Type in the queue name that you wish to create. Once you have done that highlight the queue name you created an then click on the **Add** button. The queue name you create will then move to the Service Print Queues box. Click on **Close** and then **OK**

Now exit the BRAdmin application.

Configuring the Brother Print Server (Queue Server Mode in NDS mode) using BRAdmin32

1. Make sure that you logged in as SUPERVISOR (Netware 2.xx or 3.xx) or ADMIN (Netware 4.xx).

2. Start the BRAdmin32 program.

3. One or more print server services will appear in the list of printers (the default node names are BRO_xxxxxx_P1 or BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address).

4. Select the printer that you wish to configure and double click it. *You will be asked for a password. The default password is "access".*

5. Select the Netware tab.

> ✎ **Note**
> If necessary change the "Print Server Name", the default Netware print server name will be BRO_xxxxxx_P1 where xxxxxx is the Ethernet address of the print server. Be careful! Changing the name may impact the configuration of other protocols because the print server service names will be altered.

 a. If it is not already selected, select **Queue Server** mode.

 b. Select the correct NDS tree and NDS context (you can manually enter this information, or by clicking on the down arrow by the side of NDS tree and the Change button by the side of NDS Context, you can let BRAdmin32 display your choices automatically. Once you have specified this information, click on the **Change NDS queues** button.

 c. In the Netware Print Queues screen select the appropriate TREE and Context and then Click the **New Queue** button.

 d. Enter the queue name and specify the volume name. If you do not know the volume name, select the **Browse** button to browse the Netware volumes. When the information is entered correctly, select the OK button.

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

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

Now exit the BRAdmin32 application.

Configuring the Brother Print Server (Queue Server Mode in NDS mode) using Novell NWADMIN and BRAdmin/BRAdmin32

1. Make sure that you are logged in as ADMIN in NDS mode on the NetWare 4.1x file server and start the NWADMIN application.

2. Select desired Context that will contain the Printer and then click on **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Printer** and then **OK**.

3. Enter the name of the printer and select **Create**.

4. Select the desired Context that will contain the default print queue, and then click on **Object** and **Create** to get **New Object** menu.

5. Select **Print Queue** and then **OK**. Make sure that **Directory Service Queue** is selected and then type in a name for the default print queue.

6. Click on the button to select the print queue volume. Change the directory context if necessary, then select the desired volume (from **Available Objects**) and click **OK**. Click **Create** to create the print queue.

7. Change context if required and then double click the name of the printer you created in step 3.

8. Click **Assignments** and then **Add..**

9. Change context if necessary and select the print queue you created in step 5.

10. Click **Configuration** and set the **Printer type** to **Other/Unknown**. Click **OK** and then **OK** again.

11. Change the context if required, select **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Print Server** and then **OK**.

12. Enter the name of the print server and select **Create**.

✎ **Note**
Enter the Netware print server name of the print server exactly as it appeared in the Netware tab of the BRAdmin application (this will generally be the BRO_xxxxxx_P1 default service name, unless you changed the name).

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

---

13. Double click on the name of your print server. Click on **Assignments** and then **Add...**

14. If necessary, change the directory context. Select the printer you created in step 3 and click **OK** and then **OK** again.

15. Exit NWADMIN.

16. Start the appropriate BRAdmin application, and select the correct print server from the list (by default, the node name is BRO_xxxxxx_P1 or BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address).

17. Double click the appropriate Brother print server. You will be prompted for a password, the default password is "access". Now select the **NetWare** tab.

18. Select **Queue Server** as the operating mode.

> ✎ **Note**
> The same service assigned by Netware server name cannot be used for both queue server mode and remote printer mode.

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

19. Enter the NDS tree name (note that a print server can service both NDS and bindery queues).

20. Type in the name of the context where the print server resides.

21. Exit the BRAdmin application making sure that you save the changes that you have made.

Configuring the Brother Print Server (Remote Server Mode in NDS mode) using Novell NWAdmin and BRAdmin/BRAdmin32

To configure a Brother print server for remote printer mode with NWADMIN (NetWare Administrator utility) and BRAdmin or BRAdmin32, you will need to perform the following steps:

1. Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server and that you are logged in as ADMIN in NDS mode on the NetWare 4.1x file server.

2. Start NWADMIN by double clicking on the icon. Select the desired Context that will contain the new printer.

3. Select **Object** from the menu bar and then **Create**. When you get the **New Object** menu, select **Printer** and then **OK**.

4. Enter the name of the printer and select **Create**.

5. Double click on the print server name of your PSERVER NLM. Click on **Assignments** and then **Add...**

6. If necessary, change the directory context. Select the printer you created and click **OK**. Note the number of the printer, as you will use this later, then click **OK**.

7. Select the desired Context that will contain the default print queue, and then click on **Object** and **Create** to get **New Object** menu.

8. Select **Print Queue** and then **OK**. Make sure that **Directory Service Queue** is selected, and then type in a name for the default print queue.

9. Click on the button to select the print queue volume. Change the directory context if necessary, then select the desired volume **(Objects)** and click **OK**. Click **Create** to create the print queue.

10. Change context if required and then double click the name of the printer you created previously.

11. Click **Assignments** and then **Add..**

12. Change context if necessary and select the print queue you created. Click **OK** and then **OK** again, and then exit NWADMIN.

13. Start the appropriate BRAdmin application, and select the correct print server you wish to configure (by default, the node names will begin with BRO_xxxxxx_P1, BRO_xxxxxx).

14. Double click the appropriate print server. You will be prompted for a password, the default password is "access".

15. Now select the **NetWare** tab.

16. Select **Remote Printer** as the **Operating Mode**, select the name of your PSERVER NLM as the **Print Server** Name and select the number of the printer from step 6 as the **Printer Number.**

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

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

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

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

As an alternative to Brother's BRAdmin applications or the Novell NWADMIN (Netware 4.1x systems only), you can use the standard Novell PCONSOLE utility in conjunction with Brother's BRCONFIG program to set up your print queues. Note that if desired, you may use a WWW browser, TELNET, the DEC NCP utility, or the serial port – if your print server is supplied with a serial interface - instead of the BRCONFIG utility). The procedure is as follows:

1. Login as Supervisor (NetWare 3.xx) or ADMIN (NetWare 4.1x; be sure to specify the /b option for bindery mode).

2. Insert the "Print Server Configuration Utility diskette in drive A: and type the following at the DOS prompt:

   A:BRCONFIG or A:BRCONFIG PrintServerName

   Where PrintServerName is the Netware print server name of the Brother print server (the default name is BRO_xxxxxx_P1, where "xxxxxx" is the last six digits of the Ethernet address).

3. If you did not specify the print server name in the BRCONFIG command, select the corresponding server name from the list of print servers.

4. When you get the message that the print server is connected, type the default password "access" in response to the "#" prompt (the password will not echo), and then press the **ENTER** key in response to the **Enter Username>** prompt.

5. When you get the **Local>** prompt, type:

    ```
    SET NETWARE SERVER servername ENABLED
    ```

    Where servername is the name of the file server on which the print queue will reside. If there is more than one file server that you wish to print from, repeat this command as many times as necessary.

6. Type EXIT to exit the BRCONFIG remote console program and save the changes and start the Novell PCONSOLE utility.

7. Select **Print Server Information** (NetWare 3.xx) or **Print Servers** (NetWare 4.1x; ignore the warning message) from the **Available Options** menu.

8. You will be shown a list of current print servers. Press the **INSERT** key to create a new entry, type in the Netware print server name (BRO_xxxxxx_P1 by default, where "xxxxxx" is the last six digits of the Ethernet address) and press **ENTER**. Return to the main **Available Options** menu by pressing **ESCAPE**.

9. Select the **Print Queue Information** (NetWare 3.xx) or **Print Queues** (NetWare 4.1x) menu option to see list of configured print queues.

10. Press **INSERT** to create a new queue on the file server, type the new queue name and press **ENTER**. The name does not have to be related to the name of the print server resources, but should be short and convenient for users to remember.

11. Make sure that the new queue name is highlighted, and then press **ENTER** to configure the queue.

12. Select **Queue Servers** (in NetWare 4.1x, this item is called **Print Servers**) and press **ENTER** to specify which network print servers can print jobs from this print queue. The list will be empty, since none have been selected yet if this is a new queue.

13. Press **INSERT** to get a list of the queue server candidates and select the print server service name from step 8, Press **ENTER**.

14. Press **ESCAPE** several times until you return to the **Available Options** menu.

15. Force the print server to rescan file servers for print jobs. You may either turn the printer off and on again or you may down the print server in PCONSOLE as follows:

- In the **Available Options** menu, highlight Print Server Information, and press **ENTER**.

- Select the print server name (BRO_xxxxxx_P1) and press **ENTER**. If you have NetWare 4.1x, highlight **Information and Status** and press **ENTER**, and then skip to the next bullet.

   If you have NetWare 3.xx or 2.xx:
   - Highlight **Print Server Status/Control** and press **ENTER**.
   - Highlight Server Info and press **ENTER**.

- Push **ENTER** and then select **Down** and press **ENTER** again. This will force the print server to rescan the available file servers for new queue entries.

- Alternatively, use the BRCONFIG or TELNET command `SET NETWARE RESCAN` to make the print server rescan for file servers.

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

1. Make sure that you are logged in as ADMIN in NDS mode on the NetWare 4.1x file server.

2. Run the PCONSOLE utility from PC workstation.

3. Select **Print Servers** from the **Available Options** menu.

4. Press **INSERT** and enter the **Print Server Name**

✎ **Note**

Enter the Netware print server name of the print server exactly as it appeared in the Netware tab of the BRAdmin (this will generally be the BRO_xxxxxx_P1 default service name, unless you changed the name to something else).

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

---

5. Return to the main **Available Options** menu by pressing **ESCAPE.**

6. Select **Print Queues.**

7. Press **INSERT** type in the desired print queue name (you will also be asked for a volume name. Press **INSERT** and select the appropriate volume), and press **ESCAPE** to return to the main menu.

8. Make sure that the new queue name is highlighted, and press **ENTER**.

9. Select **Print Servers** and press **ENTER** to specify which network print servers can print jobs from this print queue. The list will be empty, since none have been selected.

10. Press **INSERT** to get a list of the queue server candidates and select the Netware print server name from step 4, which will then be added to the list. Press **ENTER**.

11. Select **Printers** from the Available Options menu.

12. Press **INSERT** and enter a descriptive name for the printer.

13. Press **ESCAPE** and go back to the Available Options menu.

14. Select **Print Servers** and select the name of the printer server that you entered in Step 4.

15. Highlight the **Printers** option in the **Print Server Information** menu.

16. Press **INSERT** and select the name of the printers you entered in Step.

17. Press **ESCAPE** several times to return to DOS.

18. Insert the Brother Print Server Configuration Utility diskette in Drive A: of your PC and type: A:BRCONFIG.

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

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

- Where **tree** is the NDS tree name.
- Where **context** is the name of context where the print server resides.
- Service is the name of the service assigned by Netware print server name (where the default services are BRO_xxxxxx_P1 for the Brother printer, where "xxxxxx" is the last six digits of the Ethernet address.
- You can also enter the TREE and CONTEXT name using your web browser by connecting to the Brother print server using the TCP/IP protocol and selecting the Netware protocol configuration.

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

✒ **Note**
The same services assigned by Netware print server names cannot be used for both queue server mode and remote printer mode.

✒ **Note**
If you want to enable remote printer capabilities on services other than the default NetWare services, you must define new services that are enabled for information on how to this.

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

1. Make sure that the PSERVER NLM (NetWare Loadable Module) is loaded on your file server.

2. Log into the file server from your PC workstation as ADMIN if you are using NetWare 4.1x (if you want NDS support, do not login under bindery mode). If you are using NetWare 2.xx or 3.xx, login as SUPERVISOR.

3. Run the PCONSOLE utility from your PC workstation.

4. If you are creating a new print queue, select **Print Queue Information** (NetWare 3.xx) or **Print Queues** (NetWare 4.1x) from the **Available Options** menu.

5. Press **INSERT**, type in the desired print queue name (with NetWare 4.1x, you will also be asked for a volume name; press **INSERT** and select the appropriate volume), and press **ESCAPE** to return to the main menu.

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

6.
a. Select **Print Servers** from the PCONSOLE menu and then select the name of the PSERVER NLM on your host computer.

b. Select **Printers.**

c. Press **INSERT** to get **Object, Class** menu.

d. Press **INSERT** and enter the **Printer Name** (any unique name is OK).

e. Highlight the printer name and press **ENTER** twice to get **Printer Configuration Menu.**

f. PCONSOLE will assign a **Printer Number**. Remember this number, since it will be used later.

g. Highlight **Print Queues Assigned** and press **ENTER** and then **INSERT** to get a list of available queues.

h. Highlight the name of the print queue you wish to assign to the remote printer and press **ENTER**.

i. The other settings in the menu are not required. Push **ESCAPE** several times to exit PCONSOLE.

j. Skip to the **Assigning the remote printer name and number** sections below.

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

6.
a. Select **Print Server Information** from the PCONSOLE main menu and choose the name of the PSERVER NLM.

b. Select **Print Server Configuration** and then **Printer Configuration**. Select any "Not Installed" printer and press **Enter.** Remember the number of this printer, since it will be used later in the configuration process.

c. If desired, type in a new name for the printer.

d. Go to **Type**, press **ENTER**, highlight **Remote Other/Unknown** and press **ENTER** again. The other settings in this menu are not required.

e. Push **ESCAPE** and save the changes.

f. Push **ESCAPE** and select **Queues Serviced by Printer.**

g. Highlight the printer name that you just configured and press **ENTER**.

h. Press **INSERT**, choose the desired print queue, and press **ENTER** (you can accept the default priority).

i. Press **ESCAPE** several times to exit PCONSOLE.

Assigning the Remote printer name and number using BRAdmin/BRAdmin32

7.

a. Start the BRAdmin program and double click the print server you wish to configure. The default password is "access".

b. Select the **Netware** tab.

c. Make sure that the Operating Mode is set to Remote Printer.

d. Select the correct print server and the correct Printer Number.

e. Press OK and Save the changes. Exit the BRAdmin program.

✎ **Note**
The same services assigned by Netware print server name cannot be used for both queue server mode and remote printer mode.

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

Assigning the Remote printer name and number using BRCONFIG

7.

a. Insert the Brother Print Server Software diskette in Drive A: of your PC and type:

```
A:BRCONFIG
```

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

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

- Where nlm is the name of the PSERVER NLM on your file server
- Number is the printer number (must match the printer number you selected during the PCONSOLE configuration in the previous steps)
- Service is the name of the service assigned by Netware print server name(where the default services are BRO_xxxxxx_P1 for the Brother printer, where "xxxxxx is the last six digits of the Ethernet address).

For example, to set up remote "Printer 3" for an Brother printer with the print server BRO_00C3E4_P1 using the PSERVER NLM called BROTHER1PS, you would type:

```
SET NETWARE NPRINTER BROTHER1PS 3 ON BRO_00C3E4_P1
SET NETWARE RESCAN
EXIT
```

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

✎ **Note**
The same services assigned by Netware print server name cannot be used for both queue server mode and remote printer mode.

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

Testing the Print Queue

Test the queue by using the NetWare DOS nprint command:

```
C:> nprint c:\autoexec.bat q=queuename
```

where queuename is one of the print queues you created earlier in this chapter. The file will be spooled to the print server for printing and should print on the printer within a short period of time. If it does not, double check your configuration, and if necessary, refer to Chapter 12 for Troubleshooting information.

CHAPTER 2
UNIX NETWORK CONFIGURATION (TCP/IP)

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

TCP/IP

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

Brother print servers 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.

> ✐ **Note**
> For setting the IP address of the print server, refer to the IP address section end half of this chapter.

TCP/IP UNIX Host Configuration

The configuration process for most UNIX systems is described in the following steps. Unfortunately, this process can vary, so 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 or provide similar information to a nameserver on the network. 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        BRO_00C351
    ```

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

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

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

---

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

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

   ```
   BINARY_P1        Binary data
   TEXT_P1          Text data (CR added)
   ```

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

3.

✎ **Note**
This step applies to the majority of UNIX systems, including 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.

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.

An example of a typical printcap file:

```
laser1|Printer on Floor 1:\
    :lp=:\
    :rm=BRO_003C51:\
    :rp=TEXT_P1:\
    :sd=/usr/spool/lpd/laser1:
```

✒ **Note**

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

This will create a queue named laser1 on the host computer that communicates to a Brother print server with a node name **(rm)** of BRO_003C51 and a service name **(rp)** of TEXT_P1 for printing text files to a Brother printer through spool directory /usr/spool/lpd/laser1. If you are printing binary graphics files, you would use the service BINARY_P1 instead of TEXT_P1.

✒ **Note**

The **rm** and **rp** options are not available on all 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.

✒ **Note**

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.). Such 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).

HP/UX Configuration

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

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

IBM RS/6000 AIX Configuration

The RS/6000 AIX operating system uses the **smit** program to set up the remote printer. The procedure is as follows:

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

Sun Solaris 2.x Configuration

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

```
lpsystem -t bsd queue
lpadmin -p queue -sprnservername!prnserverservice
accept queue
enable queue
```

- 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).
- `prnserverservice` is the print server Binary or Text service.

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

As an alternative, you may use **Printer Manager** in the **Admintool** utility under OpenWindows. Select **Edit**, **Add**, and **Add Access to Remote Printer**. Then enter the print server name in the format `printservername!printserverservice` 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

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

- Select **Printers**.
- Select **Configure**.
- Select **Add**.
- Enter the name of the print queue you entered in the `/etc/printcap` file as the **Printer name**,
- Enter anything as the **Comment**, and **Class name**.
- For the **Use printer interface** select "Existing".

- 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).
- Select "Direct" as the **Connection**.
- Enter the desired **Device name** (`/dev/lp` generally works).
- Select "Hardwired" as the **Device**.
- Select "No" for the **Require banner** field.

Other Non-Standard Configurations

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 section 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.

Other Systems

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

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

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

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

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

On some systems it is also necessary to start the daemon. This is done on Berkeley-compatible UNIX systems with the lpc start command as shown in the following example:

```
lpc start laser1
```

IP Address Configuration

The final step before printing is to program the IP address information into the print server. This can be done in any of the following ways:

a) Printer front panel setting. (If your printer has a LCD front panel).
b) BRAdmin32 (for Windows 95/98/NT 4 using the IPX/SPX or TCP/IP protocol)
c) DHCP, Reverse Arp (rarp), BOOTP

d) The UNIX arp command.
e) DEC NCP, NCL, or ccr utilities
f) Brother BRCONFIG NetWare utility (A Novell Network is necessary)
g) BRAdmin (Novell Network necessary)
h) Serial port (If your print server has a serial interface)

The following step (i,j,k) is effective way, when you change IP address.

i) TELNET (A valid IP address must already be programmed into the print server).
j) HTTP (A valid IP address must already be programmed into the card print server).
k) Other SNMP based management utility

These configuration methods are described in the following paragraphs.

✎ **Note**
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 front panel to allocate an IP address (printers with LCD panels only)

Refer to the Quick setup guide for details on how to configure IP address information using the printer control panel.

Changing the IP Address using the BRAdmin32 application

Start the BRAdmin32 utility (from Windows 95/98 or NT4.0).

The BRAdmin32 utility can use the IPX/SPX or TCP/IP protocols to communicate with the Brother print server. As the default IP address of Brother print servers is 192.0.0.192, this means that the print server will probably be incompatible with the IP address numbering scheme on your network. If you are not using DHCP, BOOTP or RARP, you will probably want to change the IP address. There are two ways that you can do this from within BRAdmin32. 1) use the TCP/IP protocol and let BRAdmin32 find the Brother Print server as an un-configured device, or 2) Use the IPX/SPX protocol.

USING IPX/SPX to change the IP address
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 BRO_xxxxxx, where "xxxxxx" is the six digits of the Ethernet 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.

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 TCP/IP to change 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**".

> ✎ **Note**
> If the print server is set to its factory default settings, it will not appear in the BRAdmin32 screen, however, when you select the "Search Active Devices" option, it will be found as a un-configured device.

3. Select the "**Device**" menu and choose the "**Setup Unconfigured Device**".

4. Input the IP address, Subnet mask and Gateway (If needed) of your print server.

> ✎ **Note**
> You can find the MAC address on the serial number label on the print
> server itself, or you can see it by printing the configuration page. Refer to
> the Quick Setup Guide for information on how to print the configuration
> page on your print server.
> NC-2100h users should note that the original BRAdmin32 utility will not
> find the NC-2100h print server. If you are using the original version of
> BRAdmin32 please upgrade to the version that was supplied with the NC-
> 2100h network card. The latest version can also be found on our web site
> www.brother.com

5. Click OK then select Close.

With the correctly programmed IP address, you will see the Brother print
server in the device list.

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 DHCP Server in your
network (typically a Unix, Windows NT or Novell Netware network) the
print server will automatically obtains its IP address from DHCP server and
register its name with any RFC 1001 and 1002-compliant dynamic name
services.

> ✎ **Note**
> If you do not want your print server configured via DHCP, BOOTP or
> RARP, you must set the BOOT METHOD to static, this will prevent the
> print server from trying to obtain an IP address from any of these
> systems. To change the BOOT METHOD, use the print front panel (for
> those printers that have a LCD panel, TELNET (using the `SET IP`
> `METHOD` command), Web browser or BRAdmin (Novell network
> required).

Using arp to Configure the Print Server IP Address

Arp is the simplest method of configuring the print server IP address. To use, arp, enter the following command at the UNIX system prompt:

```
arp -s ipaddress ethernetaddress
```

where ethernetaddress is the Ethernet address of the print server and ipaddress is the IP address of the print server. For example:

```
arp -s 192.189.207.2 00-40-17-00-c3-e4
```

✒ **Note**
- You must be on the same Ethernet segment (that is, there cannot be a router between the print server and operating system) to use the `arp -s` command.
- If there is a router, you may use BOOTP or other methods described in Chapter 2 to enter the IP address.
- If your Administrator has configured the system to deliver IP adresses using BOOTP, DHCP or RARP your Brother Print Server can receive an IP address from any one of these IP address allocation systems, in which case, you will not need to use the `ARP` command. The `ARP` command only works once. For security reasons, once you have successfully configured the IP address of a Brother Print Server using the ARP command, you can not use the ARP command again to change the address. The print server will ignore any attempts to do this. If you wish to change the IP address again, use a Web Browser, TELNET (using the `SET IP ADDRESS` command as described in Appendix A), the printer front panel (if you have an LCD panel) or factory reset the print server (which will then allow you to use the ARP command again).

Using rarp to Configure the IP Address

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

```
00:40:17:00:01:07    BRO_000107
```

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

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

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

For AT&T UNIX-based systems, type:

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

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

Using BOOTP to Configure the IP Address

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

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

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

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

```
BRO_000107 1  00:40:17:00:01:07 192.189.207.3
```

and:

```
BRO_000107:ht=ethernet:ha=004017000107:\
ip=192.189.207.3:
```

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

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

Configuring the IP Address with NCP or BRCONFIG

Users of DEC and Novell networks have additional alternatives for configuring the IP addresses of Brother print servers by using the remote console facility. On VMS systems, you will need to have DECNET running in order to use the remote console.

The procedure is as follows:

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

- To do this on a printer that has an LCD panel: take the printer off-line by pressing the SEL button, press and hold down the SHIFT button then press the UP arrow button until PRINT CONFIG is displayed, press the SET button. The printer will then print out a configuration sheet, the sheet labeled "Print Configuration" contains all Print Server configuration information. Put the printer back on-line again by pressing the SEL button.
- For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.
- Brother's external interfaces, which connect to the parallel interface, have a black button recessed into the rear of the unit. Press this button to print out a configuration sheet.

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

```
$ MCR NCP
NCP>CONNECT VIA QNA-0 PHY ADD 00-40-17-00-01-07
```

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

```
# addnode BR -c qna-0 -h 00-40-17-00-01-07
# ccr BR
```

On a NetWare networks, you can use the BRAdmin utilities or the command line BRCONFIG utility which are included with every print server.

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

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

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

        Local> SET IP ADDRESS 192.189.207.3

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

        Local> SET IP SUBNET 255.255.255.0

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

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

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

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

        Local> SET IP ROUTER 192.189.207.1

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

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

Before attempting to print

It is **very** important to verify the connection between the host and the print server by using the `ping` command with the IP address you have set. For example:

```
ping 192.189.207.3
```

You should get a message that the print server is alive. If you get an error message or no response, then there is no connection. You will not be able to print if you cannot ping the print server. If this is the case, verify that you have set up the host and print server correctly and that the physical connections (e.g., the transceivers and cabling) are good. Refer to the Troubleshooting chapter for additional information.

To print to the print server from UNIX, use the standard lpr command with the -P option to specify the queue name. For example, to print the file TEST on the queue laser1, you would type:

```
lpr -Plaser1 TEST
```

Some AT&T-based UNIX systems, such as SCO and HP/UX, use the standard lp command instead of lpr. In these cases, use the `-d` option instead of `-P` to specify the queue name as shown in the following example:

```
lp -dlaser1 TEST
```

✎ **Note**
- If you want to utilize printing options such as landscape mode, language switching, etc., refer to Appendix B for information on using servers.

For non-UNIX systems such as VMS, the TCP/IP printing process is normally transparent, so you use the same commands or procedures as you would for a local printer.

IP Security

Brother print servers provide a means of allowing only host computers with authorized IP addresses to access the print server. This is very useful for applications where general access to the printer is not allowed. The console command `SET IP ACCESS ENABLED ipaddress` enters a host computer IP address into the access table of the print server (where ipaddress is the IP address of the host computer; refer to Appendix A for information on using the print server console). To remove an IP address, use the command `SET IP ACCESS DISABLED ipaddress.` To re-enable general access, use the command `SET IP ACCESS ALL.`

Raw TCP ports

The Brother range of print servers provide a raw TCP port capability that can be used by any application that can open and send data to a TCP port. The port number is 9100 (238C hex). The ports pass data through unmodified, so there is no TELNET interpretation provided. When using the raw TCP ports, make sure that TELNET interpretation is disabled in your software or else you may get distorted printouts.

If you need a different TCP port number or if you want additional TCP ports, you may define a TCP port number on any service by using the console command:

```
 SET SERVICE servicename TCP nn
```

where `servicename` is the name of the service, and nn is the desired port number (must be greater than 1023). Refer to Appendix A for information on using the console.

CHAPTER 3
WINDOWS NT AND LAN SERVER
NETWORK CONFIGURATION (TCP/IP)

Users of Windows NT can print directly to Brother print servers using the TCP/IP protocol and/or the DLC/LLC protocol (see chapter 4 for instructions). Microsoft Windows NT 3.5x and NT 4.0 users must install Microsoft's "TCP/IP printing" protocol.

Brother print servers also support transparent printing from IBM LAN Server and Warp Server file servers, as well as from OS/2 Warp Connect workstations using the TCP/IP protocol. TCP/IP is included as standard with Warp Server and with LAN Server V4.0, and is optional on LAN Server V3.x systems. It is also included as standard with OS/2 Warp Connect, and is an optional component of earlier versions of OS/2.

Windows NT(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).

NT 3.5x systems:

a. Go into the Control Panel and run the Network applet.

b. Select **Add Software** and **TCP/IP Protocol and related components**.

c. Select the **TCP/IP Network Printing Support** check box. And then click on the Continue button. (This option will be unavailable if the TCP/IP Network Printing Support protocol is already installed.

d. Insert the requested disk(s) to copy the required files. Your NT server will need to be re-booted when the files are copied over.

NT 4.0 systems:

a. Running the **Network** applet, click on the **Protocols** tab.

b. Select **Add**, and double click on **TCP/IP protocol**.

c. Insert the requested disk(s), or CD-ROM, to copy the required files.

d. Click on the **Services** tab, click on **Add** and double click on **Microsoft TCP/IP Printing**.

e. Again insert the requested disk (s) or CD-ROM.

f. Click on the **Protocols** tab when then copying is finished.

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. If you are not directly connected to the Internet, you may assign any arbitrary Class C address in the form aaa.bbb.ccc.ddd, where aaa is any number from 192 to 223, bbb and ccc are any number from 0 to 255, and ddd is any number from 0 to 254; for example, 192.189.207.3.

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

Configuring an IP address for the Print Server

You must now set an IP address into the Brother Print Server. There are several ways of doing this:

If your printer has an LCD panel you can use the front panel buttons to change the IP address, subnet mask and gateway addresses. Refer to Quick Setup Guide for instructions on how to do this. You can also use the BRadmin32 Windows utility to change the IP address.

Changing the IP Address using the BRAdmin32 application

Start the BRAdmin32 utility (from Windows 95/98 or NT4.0)
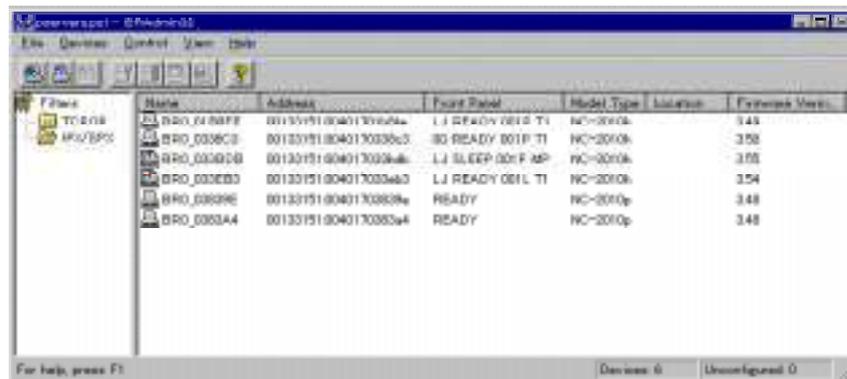
The BRAdmin32 utility can use the IPX/SPX or TCP/IP protocols to communicate with the Brother print server. As the default IP address of Brother print servers is 192.0.0.192, the print server will probably be incompatible with the IP address numbering scheme on your network. If you are not using DHCP, BOOTP or RARP, you will probably want to change the IP address. There are two ways that you can do this from within BRAdmin32. 1) use the TCP/IP protocol and let BRAdmin32 find the Brother Print server as an un-configured device, or 2) Use the IPX/SPX protocol.

<USING IPX/SPX to change the IP address>
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 BRO_xxxxxx, where "xxxxxx" is the six digits of the Ethernet 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.

3. Select "**Device**" menu and choose "**Setup Unconfigured device**".

4. Select the TCP/IP tab and set the IP address, Subnet mask and Gateway as needed.

5. Click **OK**.

<USING TCP/IP to change 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**".

✎ **Note**
If the print server is set to its factory default settings, it will not appear in the BRAdmin32 screen, however, when you select the "Search Active Devices" option, it will be found as a un-configured device.

---

3. Click the "**Setup Unconfigured Device**" button.

4. Input the IP address, Subnet mask and Gateway (If needed) of your print server.

✎ **Note**
You can find the MAC address on the serial number label on the print server itself, or you can see it by printing the configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.
NC-2100h users should note that the original BRAdmin32 utility will not find the NC-2100h print server. If you are using the original version of BRAdmin32 please upgrade to the version that was supplied with the NC-2100h network card. The latest version can also be found on our web site www.brother.com

---

5. Click **OK** then select **Close**.

With the correctly programmed IP address, you will see the Brother print server in the device list.

Changing the IP Address using the ARP command

If your printer does not have a LCD panel and you cannot use the BRAdmin32 utility, you can use the "`arp -s`" command from the DOS prompt:

```
arp -s 192.189.207.77 00-40-17-00-ed-d6
```

Substitute the IP address of the Brother Print Server that you wish to use and replace '`00-40-17-00-ed-d6`' with the actual Ethernet hardware address of the Brother Print Server (which can be found on the label affixed to the bottom of the box or by printing out a configuration page:

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

- For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.

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

If you get the message "The arp entry addition failed:", try pinging a known device on the network using the command "`ping ipaddress`", where "ipaddress" is the IP address of that device.

✎ **Note**
- You must be on the same Ethernet segment (that is, there cannot be a router between the print server and the Windows NT system) to use the `arp -s` command.
- If there is a router, you may use BOOTP or other methods described in Chapter 2 to enter the IP address.
- If your Administrator has configured the system to deliver IP address using BOOTP, DHCP or RARP your Brother Print Server can receive an IP address from any one of these IP address allocation systems, in which case, you will not need to use the `ARP` command.
- The `ARP` command only works once. For security reasons, once you have successfully configured the IP address of a Brother Print Server using the ARP command, you can not use the ARP command again to change the address. The print server will ignore any attempts to do this. If you wish to change the IP address again, use a Web Browser, TELNET (using the `SET IP ADDRESS` command as described in Appendix A), the printer front panel (if you have an LCD panel) or factory reset the print server (which will then allow you to use the ARP command again).

Verify that you can communicate with the Brother Print server by using the `ping` command with the IP address or name (if you have edited your `HOSTS` file). For example:

```
ping 192.189.207.77
```

Again, substitute your actual name or IP address. You should get a response back from the Brother print server if the IP address has been set and the print server is alive on the network. If you do not, print the configuration page and verify that the IP address has changed.

Windows NT Print Queue Configuration

Windows NT 4.0 Print Queue Configuration (Printer Driver already installed)

> ✎ **Note**
> If you have Windows NT 3.5 or 3.51, skip to the Windows NT 3.5x section.

If you have already installed the appropriate Brother printer driver do the following:

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** and then **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 wish to assign to the print server in the **Name or address of server providing lpd:** box. If you have edited your `HOSTS` file, enter the name associated with the print server, instead of an IP 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**:
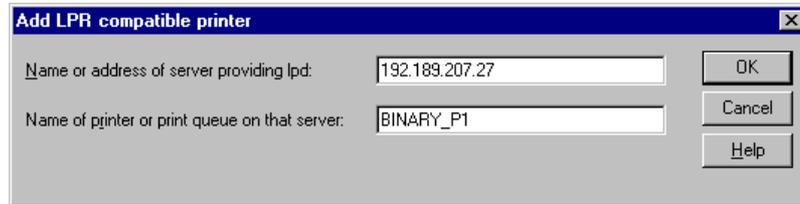
7. Click on the **Close** button.

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 Share tab and share the driver.

Windows NT 4.0 Print Queue Configuration (Printer Driver not installed)

> ✎ **Note**
> If you have Windows NT 3.5 or 3.51, skip to the next section.

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, enter the name associated with the print server, instead of an IP 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**:


```
Add LPR compatible printer                                              ⊠
Name or address of server providing lpd:    192.189.207.27         OK
                                                                   Cancel
Name of printer or print queue on that server:  BINARY_P1          Help
```
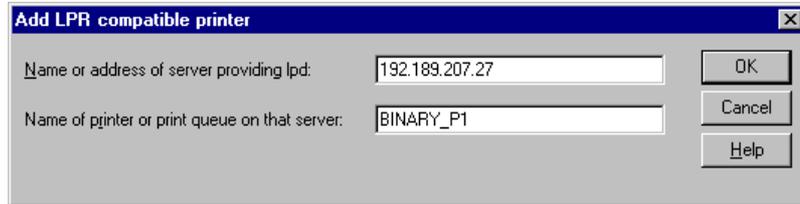
> ✎ **Note**
> Refer to Chapter 2 (TCP/IP) for more information on Service Names.

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 appropriate driver diskettes.

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 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 3.5x Print Queue Configuration

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

1. Go to the **Main** window and select the **Print Manager** icon.

2. Select **Printer** menu.

3. Select **Create Printer**.

4. Enter any name for the **Printer Name**.

5. Select **Driver**. Choose the appropriate driver.

6. Select **Description**. Enter anything for the description.

7. Select **Print to** and then select **Other**.

8. Select **LPR Port**.

9. Type in the IP address that you wish to assign to the print server in the **Name or address of host server providing lpd:** box. If you have edited your HOSTS file, enter the name associated with the print server, instead of an IP address.

10. Type in the print server service name in the **Name of printer on that Machine.** If you do not know which service name to use, enter BINARY_P1 and then click on **OK**.

✎ **Note**

Refer to Chapter 2 (TCP/IP) for more information on Service Names.

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11. Share the printer if necessary.

LAN Server / Warp Server Configuration

Brother print servers will work with IBM LAN Server/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 OS/2 LAN Server or 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).

Programming an IP address for the printer

1. If your printer does not have an LCD panel, at the OS/2 prompt, use the "arp -s" command from the DOS prompt to enter the IP address into the Brother Print Server as shown in the following example. If your printer does have an LCD display, use the front panel buttons to configure the IP address as described in the Quick Setup Guide.

```
arp -s 192.189.207.77 00:40:17:00:ed:d6 temp
```

Substitute the IP address of the Brother Print Server that you wish to use and replace '00:40:17:00:ed:d6' with the actual Ethernet hardware address of the Brother Print Server (which can be found on the label affixed to the bottom of the box or by printing out a configuration page). Note that you should use colons rather than hyphens to separate the bytes of the hardware address.

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

- For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.

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

  If you get the message "The arp entry addition failed:", try pinging a known device on the network using the command "`ping ipaddress`", where "ipaddress" is the IP address of that device.

✎ **Note**
- You must be on the same Ethernet segment (that is, there cannot be a router between the print server and the Windows NT system) to use the `arp -s` command.
- If there is a router, you may use BOOTP or other methods described in Chapter 2 to enter the IP address.
- If your Administrator has configured the system to deliver IP addresses using BOOTP, DHCP or RARP your Brother Print Server can receive an IP address from any one of these IP address allocation systems, in which case, you will not need to use the `ARP` command.
- The ARP command only works once. For security reasons, once you have successfully configured the IP address of a Brother Print Server using the ARP command, you can not use the ARP command again to change the address. The print server will ignore any attempts to do this. If you wish to change the IP address again, use a web browser, TELNET (using the `SET IP ADDRESS` command as described in Appendix A), the printer front panel (if you have an LCD panel) or factory reset the print server (which will then allow you to use the ARP command again).

---

2. Verify the connection by using the "`ping`" command with the address or name of the print server. For example:

   ```
   ping 192.189.207.77
   ```

If you have put an entry into the hosts file, substitute 'bro' with the name you have entered. Otherwise use desired IP address in place of 192.189.207.77. In the above example, the name '`bro`' will be associated with the IP address 192.189.207.77.

Configuration 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).

- Type in any name for the printer.

- 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.

- 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.

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

You will get the **Settings** window. Enter the following:

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

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

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

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

- Select **Definitions**
- Select **Aliases**
- Select **Printers**
- 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

- Exit the **LAN Requester** program.

4. 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:

```
COPY C:\CONFIG.SYS \\servername\alias
```

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.

5. The Brother print server will appear as a standard OS/2 printer to application programs. To make the print server operate transparently with DOS programs, execute the following command on each workstation:

```
NET USE LPT1: \\servername\alias
```

This will make the printer and the Brother print server appear to the software as a printer that is directly connected to the parallel port of the workstation.

CHAPTER 4
WINDOWS 95/98 PEER-TO-PEER
CONFIGURATION

Microsoft's Windows 95/98 operating system features built-in networking capabilities. These capabilities allow a Windows 95/98 PC to be configured as a client workstation in a NetWare, Windows NT, PATHWORKS, LAN Server, and Banyan VINES environment.

For smaller networks, Windows 95/98 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.

There are two methods of working in Windows 95/98 peer to peer printing mode. One method uses the Brother LPR Port driver. Brother print servers are also compatible with HP's JetAdmin compatible method.

LPR method

This software requires the TCP/IP protocol to be installed on your Windows 95/98 peer-to-peer computers and an IP Address had to be defined for the print server. To install the TCP/IP protocol refer to your Windows 95/98 documentation.

Changing the IP Address using the BRAdmin32 application

Start the BRAdmin32 utility (from Windows 95/98)

The BRAdmin32 utility can use the IPX/SPX or TCP/IP protocols to communicate with the Brother print server. As the default IP address of Brother print servers is 192.0.0.192, this means that the print server will probably be incompatible with the IP address numbering scheme on your network. If you are not using DHCP, BOOTP or RARP, you will probably want to change the IP address. There are two ways that you can do this from within BRAdmin32. 1) use the TCP/IP protocol and let BRAdmin32 find the Brother Print server as an un-configured device, or 2) Use the IPX/SPX protocol.

<USING IPX/SPX to change the IP address>

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 BRO_xxxxxx, where "xxxxxx" is the six digits of the Ethernet 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.

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 TCP/IP to change 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**".

✎ **Note**
If the print server is set to its factory default settings, it will not appear in the BRAdmin32 screen, however, when you select the "Search Active Devices" option, it will be found as a un-configured device.

---

3. Select the "**Device**" menu and choose the "**Setup Unconfigured Device**".

4. Input the IP address, Subnet mask and Gateway (If needed) of your print server.

✎ **Note**
You can find the MAC address on the serial number label on the print server itself, or you can see it by printing the configuration page. Refer to the Quick Setup Guide for information on how to print the configuration page on your print server.

NC-2100h users should note that the original BRAdmin32 utility will not find the NC-2100h print server. If you are using the original version of BRAdmin32 please upgrade to the version that was supplied with the NC-2100h network card. The latest version can also be found on our web site www.brother.com

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5. Click **OK** then select **Close**.

Installing the Brother Network Direct Print Software

1. Make a backup copy of Brother Network Print Software disk and use this backup disk for the installation process. Store the original diskette in a safe place.

2. Insert the backup installation diskette into the PC. From the Windows 95/98 Start button, select Run. Then enter **A:SETUP** and press **Enter** to start the Brother Network Direct Print installation program.

3. Push the **Next** button in response to the Welcome message.

4. Select **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. One suggested naming scheme is to use BLP followed by the IP address of the printer that you wish to print to. For example, BLP193.1.1.10. Which ever 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. (Optional: If you have edited the `hosts` file on your computer, you can also enter the name of the print server. Refer to the Windows NT chapter for more information on the hosts file).

> ✎ **Note**
> - Please note that Window 95/98 store the hosts file in the default Windows directory.
> - By default, the Windows 95/98 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

1. You must now create a printer on your Windows 95/98 system using the standard Windows 95/98 printer setup procedure. 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 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 Network Direct Print port (printer name you assigned in step 6 of the Installing **the Brother Network Direct Print 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 Network Direct Print Port

You do not re-run the install program to add a new Network Direct Print 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** form 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… *One suggested naming scheme is to use BLP followed by the IP address of the printer. For example, BLP193.1.1.10.* 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.

HP's JetAdmin compatible method

To use a peer-to-peer print queue from a Windows 95/98 workstation, first make sure that the following items are configured in the Network Control Panel:

• IPX/SPX Compatible Protocol or TCP/IP protocol.
• HP JetAdmin (the latest version can be downloaded from the HP Web site).
• The appropriate network adapter driver for your PC card.

1. Go to the **Start** button and choose **Settings** then select **Printers**.

2. Click on the **Add Printer** icon.

3. Click on **Next**.

4. Select **Local printer** and click on **Next** again.

> ✎ **Note**
> The initial release of Windows 95/98 does not support printing from DOS applications (this is a Microsoft/HP limitation).

5. Select the correct printer model (click **Have Disk** if your printer is not listed), and click on **Next.**

6. If the driver already exists, select **Keep Existing Driver** (if it does not, this step will be skipped), and then click on **Next.**

7. If desired, change the name of the printer and/or make it the default and then click on **Next.**

8. Select **Yes** when you are asked, "Would you like to print a test page?" Click on **Finish** to complete the installation.

9. Confirm the printer is created in the printer group. Then open the property dialog of the printer.

10. Select the detail tab and click the Address Button.

11. Click "Other" and select the HP JetDirect Port and click OK.

12. Following the HP JetDirect Port Wizard for assign the port to the printer or TCP/IP protocol first.

> ✎ **Note**
> If using IPX/SPX protocol, be sure to login as supervisor or ADMIN privilege for configuration.

CHAPTER 5
NetBIOS CONFIGURATION (NetBEUI and TCP/IP)

Introduction

Your Brother print server supports SMB (Server Message Block) over NetBEUI and also supports SMB over the TCP/IP protocol via the NetBIOS interface. This allows direct printing on Microsoft-compatible networks. Because our print server supports the SMB protocol over NetBEUI and TCP/IP, our print server will appear in your network neighborhood irrespective of if you are using the NetBEUI or TCP/IP protocols.

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 and Windows NT4.0 systems may receive "Printer is busy" error messages when more that one person attempts to access the print. In this instance Brother have developed 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.

✏ **Note**
The SMB over TCP/IP protocol was added to Brother print servers that have software version 3.59 or later. Previous versions of our print servers only supported SMB over NetBEUI. If you wish to upgrade your older Brother print servers, please visit the Brother web site and download the latest version. You MUST download version 3.59 or later for the appropriate print server.

Because software versions prior to 3.59 supported the SMB protocol over NetBEUI AND DID NOT SUPPORT THE SMB PROTOCOL OVER TCP/IP our previous documentation and software referred to the NetBEUI protocol. Theretofore we used the name "NetBEUI" instead of "NetBIOS" , i.e. NetBEUI configuration, NetBEUI port monitor, etc…

If you are using SMB over NetBEUI, all workstations must be on the same network segment due to the limitations of the NetBEUI protocol.

Print Server Configuration

The key to getting this function to work is to ensure that the Brother print server is configured for your network domain name or workgroup name. When you install Windows 95/98 you are asked which workgroup you belong to, the default workgroup name for Windows 95/98 is "Workgroup", however you could change this to anything you want. With Windows NT 4.0, Microsoft introduce 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/domain. The Brother print server automatically has a default workgroup/domain name of "WORKGROUP". If you need to change name, you can configure the Brother print server to recognize this. There are five 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 BRAdmin32 for Windows 95/98, NT 4.0 (This utility can use the TCP/IP protocol or Netware IPX protocol - no file server necessary.)
- Use BRAdmin for Windows 3.1 (this utility requires a Netware file server and the IPX protocol on your PC).
- Use a Web browser, (the printer must have a valid IP address and your computer must also have a valid IP address); You can configure the IP address by using BRAdmin32.
- TELNET, again your computer and printer must have a valid IP address.
- Use BRCONFIG for DOS (this utility requires a Netware file server and the IPX protocol).

✎ **Note**

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 domain name using TELNET or BRCONFIG

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

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

Now enter the command:

 SET NETBIOS DOMAIN *domainname*
 EXIT

✒ **Note**

If you are using SMB on NetBEUI with **old** firmware and the **old** NetBEUI port Monitor,
Use: SET **NETBEUI** DOMAIN *domainname*

---

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

NetBIOS Port Monitor for Windows 95/98, NT4.0

This software requires the TCP/IP or NetBEUI transport protocols to be installed on your Windows 95/98, NT4.0 computer. To install those protocols refer to your Windows 95/98, NT4.0 documentation.
If you are using the TCP/IP protocol, the proper IP address should be defined on both the Brother print server and your client PC.

✒ **Note**

If you are using the new NetBIOS feature, you have to use version 1.0 or later of the Brother NetBIOS Port monitor with the Firmware version 3.59 or later in you Brother print server. Version 1.0 or later of the Brother NetBIOS Port Monitor is not compatible with previous versions of print Brother server firmware.

Installing the Brother NetBIOS Port Monitor

✒ **Note**
Make a backup of the Brother Network Print Software disk and use this backup for the installation process. Store the original diskette in a safe place.

✒ **Note**
If you already installed a previous version of this Port Monitor software. You must remove it before you install the later version.

---

1. Insert the backup diskette into the PC. From the Windows 95/98/NT4.0 **Start** button, select **Run**. Then enter **A:SETUP** and press **Enter** to start the Brother Network Direct Print installation program.

2. Push the **Next** button in response to the Welcome message.

3. Select **Brother Peer-to-Peer Print (NetBIOS)** installation

---

✒ **Note**
Previous versions of this software would display "Brother Peer to Peer Print (NetBEUI) installation".

---

4. Select the desired directory to install the Brother Network Direct Print files and push **Next**.

5. Enter the Port name that you wish to use. The port name must start with "BNT". For example **BNT1**. Which ever 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.

> ✒ **Note**
> On previous versions of this software you the port name would have to begin with "BNB".

6. You must now enter the server name and port name for actual print server. The default domain/workgroup name is "WORKGROUP", if the print server does not automatically appear in your Network Neighborhood, then you must ensure that the domain name is configured correctly. The name should be compliant with UNC (Universal Name Convention). For example "\\NodeName\ServiceName".

   Where print NodeName is the NetBIOS name of the Brother print server (the default name is BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address), and ServiceName is the service name for NetBIOS of the Print server, by default it is BINARY_P1. For example:

   \\BRO_002477\BINARY_P1

> ✒ **Note**
> If you are using SMB on NetBEUI with **old** print server firmware and **old** NetBEUI port Monitor software you would use:
>
> (Universal Name Convention). For example "\\ServerName\P1".
> Where print ServerName is the NetBIOS name of the Brother print server (the default name is BRO_xxxxxx_P1, where "xxxxxx" is the last six digits of the Ethernet address), and P1 is port name. For example:
> BRO_002477_P1\P1

   Then press "**OK".**

7. Click the **Finish** button. You must now restart your computer before you can continue.

Associating to the printer

1. You must now create a printer on your Windows 95/98 and NT4.0 system using the standard Windows printer setup procedure. To do this, go the **Start** button, select **Setting** and then **Printers**.

(Windows 95/98)

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 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 Peer-to-Peer Print (NetBIOS)** (Port name you assigned in step 6 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)

2. Select **Add Printer** to begin the printer installation.

3. Click **Next** when you get the add **Printer Wizard** window.

4. Select **My Computer** when you are asked how the printers is connected to your computer, and then push **Next**.

5. Select the **Brother Peer-to-Peer Print (NetBIOS)** (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 Network Direct Print Port

1. You do not need to re-run the installation program to add a new NetBEUI 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)

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)

2. Click on the **Port** 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/Warp Server Configuration

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 (BRO_*xxxxxx* by default, where "*xxxxxx*" is the last six digits of Ethernet address) and ServiceName is the service name of the Print Server (BINARY_P1 by default). For example:

NET USE LPT2: \\BRO_002477\BINARY_P1

✒ **Note**

If you are using SMB on NetBEUI with **old** print server firmware (before Version 3.59) use:

NET USE LPTx: \\Servername\Portname

where "x" is the LPT port number (1 through 9), servername is the NetBIOS Name of the print server (BRO_*xxxxxx_pp* by default, where "*xxxxxx*" is the last six digits of Ethernet address and "*pp*" is the port name). For example:

NET USE LPT2: \\BRO_002477_P1\P1

CHAPTER 6
APPLETALK NETWORK CONFIGURATION

> ✎ **Note**
> To use the AppleTalk protocol, your printer must support BR-Script (Brother's PostScript Emulation). Refer to your printer user guide for more information. The printer must also support Tagged Binary mode. The following Brother printers support Tagged Binary Mode: HL-2060, HL-1660e, HL-2400C, BR-3000C (Postscript option board) and HL-1070.

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

AppleTalk

Our AppleTalk capabilities allow a Brother printer to appear as a shareable printer node on an AppleTalk Phase 2 network. The print servers broadcast information to Macintoshes on the network and automatically appear in the Chooser program of each Macintosh. Brother print servers support ASCII and Binary printing.

> ✎ **Note**
> If you are using a printer which does not support the BR-Script Emulation, you should turn off the AppleTalk protocol so that the print server does not appear in the Chooser program. The Brother external interface automatically queries the printer, if it does not support tagged binary postscript printing, the AppleTalk protocol is automatically disabled.

Macintosh Configuration

Brother print servers are compatible with the Brother printers using AppleTalk and Apple Laserwriter 8 drivers (earlier versions of the LaserWriter drivers may crash or cause PostScript errors on large networks). If you do not have these drivers you must install them. Consult your Macintosh documentation for instructions on how to do this.

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

Operation

Once the print server is installed and the printer is powered on, the Brother print server service name (default is BRO_xxxxxx_P1_AT, where "xxxxxx" is the last six digits of the Ethernet address; for example, BRO_009C53_P1_AT) should appear in the Chooser.

How to Select the Print Server

1. Open the Chooser from the Apple Menu on the Macintosh, and then click on the Laserwriter icon (if necessary, select the appropriate AppleTalk zone from the Network Control Panel).
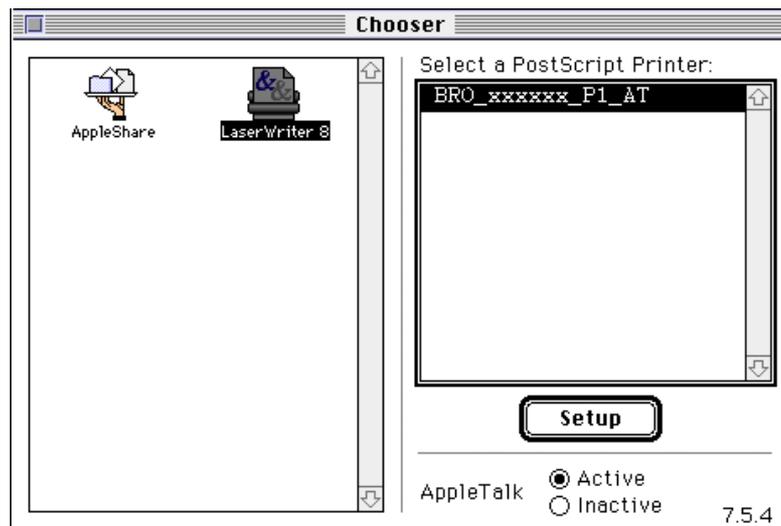
Fig5-1. Mac Chooser

2. Click on the appropriate print server and close the Chooser. You should now be able to print from the Macintosh.

✒ **Note**

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 SET APPLETALK ZONE command described in Appendix A. You can also configure zone information using BRAdmin from a PC, or by using a web browser.

Important: If you are using the Brother external print server.
Your printer must either support the IEEE 1284 bi-directional standard (refer to your printer documentation) or you must enable AppleTalk spoofing by using the following command from the print server console (refer to Appendix A if you do not know how to use the console):

SET SERVICE servicename RECEIVE ENABLED

where servicename is the name of the AppleTalk service (BRO_xxxxxx_P1_AT by default, where "xxxxxx" is the last six digits of the print server Ethernet address).

Printing Binary Graphics

Scanned images and other types of graphics are frequently saved in a format known as binary PostScript. The printers require that the printer be set in a special binary mode. A Brother print server can print binary files under the following circumstances:

- If the printer supports printing binary files through the parallel port.

- If the printer supports the HP Tagged Binary Communications protocol. If this is the case, you may enable filter 4 on the print server AppleTalk service via the console as described in Appendix B, in the majority of cases, you do not have to do this.

Refer to your printer's documentation for additional information. If neither of the above is true, print the files in ASCII mode. ASCII mode printing is supported in applications such as QuarkXpress, Adobe Photoshop, and others. The only drawback of ASCII mode is that print times will be longer due to the increased file sizes.

Changing the Configuration

You may use HTTP, NCP, TELNET, BRCONFIG or Brother's BRAdmin applicationsto change the Print server AppleTalk name and default zone name. You can also disable AppleTalk broadcasts. The procedure and commands are described in Appendix A. Note that name can also be changed by using the (Apple LaserWriter Utility) Apple Printer Utility.

CHAPTER 7
WINDOWS NT (DLC/LLC)
CONFIGURATION

DLC is a simple protocol that is included in Windows NT as standard. It can be used on other operating systems (such as Windows 3.x) with the addition of vendor supplied software that supports the Hewlett-Packard JetDirect card. If you are going to use the TCP/IP protocol for printing, refer to the chapter "Windows NT and LAN Server Network Configuration (TCP/IP)"

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

Configuring DLC on Windows NT

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

1. Log into Windows NT with administrative privileges. Go to the NT Control Panel and double click on the **Network** icon.

2. On Windows NT 3.5x systems, select **Add Software**. On Windows NT 4.0 systems, click on the **Protocol** tab, and click **Add**.

3. Select **DLC Protocol** and then **OK**. You will be asked for the location of the files, for Intel based computers, the necessary files are stored in the i386 directory of the Windows NT CD-ROM. If you have a non-Intel platform, specify the correct directory on your Windows NT CD-ROM. Click **Continue** (for 3.5 ystems) or **Close** (for 4.0 systems).

4. Reboot your system to make the change take effect.

Windows NT 4.0 Printer Setup

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

2. Select **Add Printer** (If you have already installed a Brother printer driver, double click the printer driver that you wish to configure and then select **Printers/Properties,** select the **Ports** tab and continue from Step 4 (ignoring steps 9-13) about installing the correct driver).

3. Select **My Computer** and then click **Next**.

4. Select **Add a Port**.

5. Select Hewlett-Packard Network Port and then click New Port.

6. A list of available print server Ethernet addresses appears in the larger box under **Card Address**. Select the address of the desired print server (the Ethernet address is on the label affixed to the print server, you can also see it on the printer self test page):

   - To do this on a printer that has an LCD panel: take the printer off-line by pressing the SEL button, press and hold down the SHIFT button then press the UP arrow button until PRINT CONFIG is displayed, press the SET button. The printer will then print out a configuration sheet, the sheet labeled "Print Configuration" contains all Print Server configuration information. Put the printer back on-line again by pressing the SEL button.
   - For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.
   - Brother's external interfaces, which connect to the parallel interface, have a black button recessed into the rear of the unit. Press this button to print out a configuration sheet.

7. The selected print server address will then appear in the smaller box under **Card Address.**

8. Type in any desired name for the port (the name must not be the name of an existing port or DOS device, such as LPT1) and click **OK** then on the **Printer Ports** screen, click **Close**.

9. The name you selected in the above step will appear as a checked port in the list of available ports. Click **Next**.

10. Select the correct driver click **Next**.

11. Give a name to the printer. If desired, select the printer as the default.

Select **Shared** or **Not Shared**. If shared, specify the share name and operating systems that will be printing to it.

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

Windows NT 3.5x Printer Setup

1. From the Windows NT **Main** group, double click on the **Print Manager** icon.

2. Select **Printer** from the menu bar and click on **Create Printer**.

3. Enter any desired name for the printer in the **Printer Name** box.

4. Select the printer model in the **Driver** menu.

5. Choose **Other** (or **Network Printer** for V3.1 systems) from the **Print to** menu.

6. Click on **Hewlett-Packard Network Port**.

7. Type in your desired name for the port (this name must not be an existing port or DOS device, such as LPT1).

8. The Ethernet addresses of available print servers will appear in the **Card Address** menu. Select the desired address (the address is on the label affixed to the print server, or it can be gotten through the self-test page)

   - To do this on a printer that has an LCD panel: take the printer off-line by pressing the SEL button, press and hold down the SHIFT button then press the UP arrow button until PRINT CONFIG is displayed, press the SET button. The printer will then print out a configuration sheet, the sheet labeled "Print Configuration" contains all Print Server configuration information. Put the printer back on-line again by pressing the SEL button.
   - For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.
   - Brother's external interfaces, which connect to the parallel interface, have a black button recessed into the rear of the unit. Press this button to print out a configuration sheet.

9. Click **OK**.

10. If you want to share the printer, click **Share the Printer on the Network**.

11. Click **OK**.

12. If necessary, select the appropriate printer options and then click **OK**.

Configuring DLC on Other Systems

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

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

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

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

CHAPTER 8
LAT NETWORK CONFIGURATION

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

LAT Concepts

A Brother printer server will be a node on the network that offers a printing service to other nodes on the network. A node is simply a device, such as a host computer, terminal server, or print server. Every node on the network has a unique name, Brother print servers are pre-configured with the name "BRO_" followed by the last six digits of the Ethernet address (for example, "BRO_00C351").

Brother print servers are pre-configured to run on a LAT network without any additional setup. The configuration can be changed if necessary by using the NCP, NCL, or ccr facility A LAT on your host computer this procedure is described in Appendix A of this manual. Note that in most cases it is not necessary to change the configuration.

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

VMS LAT Host Configuration

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

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

1. Before creating a print queue, you will need to determine the following:

- **The VMS queue name.** This can be any unique name. (Do a SHOW QUEUE command at the VMS prompt to list the existing queues).

- **The LAT application port.** The name of this port is LTAxxx, where "xxx" is any unused number (do a `SHOW PORT` command in the VMS LATCP program to see the existing ports).

- **The print server node name and port name .** The default node name is BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address (for example, BRO_00C3E4). You can see the name of your print server by printing out a configuration page:

  - To do this on a printer that has an LCD panel: take the printer off-line by pressing the SEL button, press and hold down the SHIFT button then press the UP arrow button until PRINT CONFIG is displayed, press the SET button. The printer will then print out a configuration sheet, the sheet labeled "Print Configuration" contains all Print Server configuration information. Put the printer back on-line again by pressing the SEL button.
  - For internal Print Servers that are connected to a Brother printer which do not have an LCD panel, refer to your printer user guide for instructions on how to print out a configuration page.
  - Brother's external interfaces, which connect to the parallel interface, have a black button recessed into the rear of the unit. Press this button to print out a configuration sheet.

  - Or with the `SHOW SERVER` command from the console. You can also see this information if you have a HTTP connection to the printer using the TCP/IP protocol. The port name is P1 for the printer. As an alternative to the port name, you may use the service name (refer to Appendix B for information on how to use services).

> ✎ **Note**
>
> If you wish to use a different node name, you must change the print server name as described in Appendix A.

---

2. Use the VMS editor to create a text file with the necessary configuration commands (alternatively, you may edit the file LAT$SYSTARTUP.COM for VMS 5.5-x and later systems or LTLOAD.COM for earlier VMS systems). For instance, the following sample command file creates a queue named XJ on LAT port 33 for a print server with a default node name of BRO_00C351 using the LATSYM processor and the default VMS form:

```
$MCR LATCP
CREATE PORT LTA33:/APPLICATION
SET PORT LTA33:/NODE=BRO_00C351/PORT=P1
SHOW PORT LTA33:
EXIT
$SET TERM LTA33:/PASTHRU/TAB/NOBROADCAST-
/PERM
$SET DEVICE/SPOOL LTA33:
$INIT/QUEUE/START/ON=LTA33:/PROC=LATSYM XJ
```

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

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

✎ **Note**

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

✎ **Note**

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

---

3. Execute the command file you have just created by typing "@" plus the
   file name in response to the VMS "$" prompt (for example,
   `@LATSTART.COM`). For additional convenience, you may want to
   include the "@filename" command in your system startup file so that
   the procedure is executed automatically when the system is booted.

4. Define or modify a form for use with the print server. VMS uses forms
   to define the page layout. If you are printing graphics or PostScript jobs,
   you must define your form for `NOTRUNCATE` and `NOWRAP` to prevent
   printer errors. For example, to redefine the VMS default form
   `DEFAULT`, you would type the following at the "$" prompt:

   `DEFINE/FORM DEFAULT/NOTRUNCATE/NOWRAP`

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

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

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

   `PRINT/QUEUE=BRO MYFILE.TXT`

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

Eliminating Blank Pages

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

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

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

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

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

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

PATHWORKS for DOS Configuration

To configure the print server for PATHWORKS for DOS:

1. Create a VMS queue as previously described.

2. Run PCSA_MANAGER on the VMS system.

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

3. Perform the following steps on the PC:

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

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

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

    b. If you are using Windows 3.1x, make sure that you have selected DEC PATHWORKS as the network under the Windows Setup icon. Then:

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

PATHWORKS for Windows 95/98/NT4.0

To configure the print server for PATHWORKS for Windows:

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

PATHWORKS for Macintosh Configuration

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

```
CREATE PORT LTA53:/APPLICATION
SET PORT LTA53:/NODE=BRO_009C53/PORT=P1
```

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

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

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

DECprint Supervisor Configuration Notes

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

ULTRIX Configuration

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

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

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

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

```
cd /dev
MAKEDEV lta0
```

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

```
MAKEDEV lta1
```

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

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

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

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

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

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

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

```
lp1|BRO1:\
    :lp=/dev/tty05:\
    :ts=BRO_009C53:\
    :op=P1:\
    :fc#0177777:fs#023:\
    :sd=/usr/spool/lp1:
```

"lp1" in the example is the printer name; you may choose to replace it with a name of your choice. Likewise, "BRO1" is a secondary name that you may want to replace with your own designation. The "op" parameter is the port name (P1). You must change the "`ts`" parameter to be the actual node name of your print server (the default node name is BRO_xxxxxx, where xxxxxx = the last six digits of the Ethernet address). You must also change the "`tty05`" entry in the "`lp`" parameter to be the actual tty port you are using. The "`fc`" and "`fs`" parameters should be entered exactly as shown above since they are required for the output to be printed correctly.

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

```
lcp -h tty05:BRO_00C531:P1
```

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

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

Again substitute your actual printer name for "lp1".

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

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

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

If you have trouble printing, enter the `lpstat -t` command to get the status of the print job. If the job is hung in the queue, you may have a configuration problem: Refer to Chapter 11, Troubleshooting for additional assistance.

Installation on Other Host Computers

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

Changing the Configuration

The default configuration of Brother print servers should be adequate for most applications. However, if you wish to change the configuration, you may access the print server console via the NCP or NCL utilities on a VMS system, the ccr and TELNET commands on an ULTRIX computer, or through the serial port using DECserver-style commands. The configuration procedure is described in detail in Appendix A. If you are using TCP/IP it is also possible to see current network card configuration information if you are using a web browser.

CHAPTER 9
BANYAN VINES NETWORK CONFIGURATION

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

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

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

- Brother BRAdmin software (on the Print Server Configuration Utility diskette), or through TELNET, HTTP, DEC NCP or NCL, or Brother BRCONFIG NetWare utilities (refer to Appendix A for information on using the console).

A. File Server User Console

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

1. From any VINES workstation log in as a supervisor and execute the MANAGE program by typing MANAGE at the DOS prompt.

2. At the main menu, select **2 - Users** and press **ENTER.**

3. You will get the **Manage Users** screen. Select **ADD a user** to get the **Add A User** screen. Type in a StreetTalk name for the desired print server service. You may optionally type in a description, nickname, and a password. Press the **F10** key when you are finished.

4. You will then get the **Add User Profile** screen. Select a blank user profile and then press **ENTER**. If there is no existing blank profile, then select the Sample Profile.

5. You will get the message "Do you want to force the user to change passwords on the next login?". Select **No** and press **ENTER**.

6. You will then get the **Manage A User** screen. If you selected a blank user profile in step 4, you can skip to step 8. Otherwise, use the arrow keys to select **MANAGE User Profile** and press **ENTER.**

7. You will get the **Manage User Profile** screen. Execute the following steps to create a blank user profile:

- Select **EDIT profile**.
- When the profile appears on the screen, press CTRL-X multiple times to delete every line in the profile, and press **F10** when you have finished. You may then use this newly created blank profile as a template when configuring additional Brother print servers. Then press **ESCAPE** to return to the **Manage a User** screen.

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

B. File Server Queue Configuration

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

1. From the main menu, select **1 - Services** and press **ENTER.**

2. You will get the **Manage Services** menu. Select **ADD a server-based service** and press **ENTER.**

3. From the **Add A Service** screen type the desired StreetTalk name for the print queue, press **ENTER**, and then type in a description of the print server followed by **ENTER**.

4. Select the desired file server (if there is more than one) and press **ENTER**.

5. When you get the **Select Type Of Service** screen, select **3 - VINES print service** (for VINES 5.xx) or **2 - Banyan Print Service** (for VINES 6.xx) and press **ENTER**.

6. Use the arrow keys to select the disk where the print queue service will reside and press **ENTER**.

7. You will get the message "The service is running but not yet available to users." Press **F10**.

8. If desired, type in the maximum number of jobs and maximum size of job for the queue when you get the **Configure Queue** screen. Otherwise press **F10** for unlimited number and size.

9. If desired, choose a default paper format when you get the **Configure Paper Formats** screen. Otherwise, press **F10** to select the defaults.

10. If desired, enter the user names that are authorized to use the printer when you get the **Access Lists** screen. Otherwise, press **F10** to accept the defaults.

11. If you have a VINES 5.xx system, you may optionally enter the users to be notified in the event off printer problems when you get the **Alert list** screen. Otherwise, press **F10** to accept the defaults (not applicable for VINES 6.xx).

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

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

13. When you get the **Destination Attributes** screen, enter the StreetTalk name of the Brother print server (from step A-3) and an optional description. Press **F10**.

14. You will get the **Output strings** menu. This screen allows you to define strings of characters that can be sent before and after the print job to put the printer in a particular state (for example, duplex mode). The default values will work OK for most applications. However, if you are printing text files directly from the DOS prompt, you should define a Post-job string such as \f (formfeed) to insure that the paper is ejected (this is generally not needed with DOS or Windows application programs, since the program or drivers reset the printer after each job, and it may cause problems with binary graphics files). Press **F10** to accept the output string values.

15. You will then get the **Enable strings** menu. This menu allows you to select whether or not a banner page is printed, whether or not to use the setup and reset strings, and other options. Choose the desired options or press F10 to select the defaults.

16. You will be asked, "Would you like to add another destination at this time?" Select **No**.

17. You will then get the **Print Queue Status** screen, which will show that the queue is not accepting jobs or printing jobs. Change both values to **Yes** and then press **F10**. You will get the message that the queue is now ready to accept and print jobs. Press **F10** again.

18. If you are configuring more than one queue on the file server, repeat steps 1 through 17 of this section. Otherwise, press **ESCAPE** multiple times to exit the MANAGE utility.

C. Print Server Configuration Using BRAdmin

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

1. Install the software from the Print Server Configuration Utility diskette by selecting **File** from the Windows Program Manager menu bar. Then select **Run**, enter A:\SETUP.EXE as the command line, click **OK**, and follow the instructions on the screen.

2. Start the BRAdmin program.

3. The Brother print server node name (BRO_xxxxxx_P1 or BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address) will show up in the list. If it does not, double-check your Ethernet cabling and (if applicable) hub connection. Click on this name with the mouse button. You will be asked for a password, the default password is "access".

4. Click on the **Configure** button.

5. Click on the **Banyan** tab.

6. The Banyan hop count is set by default to two hops, which is adequate for most networks. However, if the file server is located more than two hops from the print server, you must set the hop count to the appropriate value.

7. Enter the StreetTalk name of the print server (this must **exactly** match the name you entered in Step A-3). If the SteetTalk name has spaces in it, you must enclose the name in double quotation marks (for example, "john smith@uc_engineering@irvine"). If you entered a password in step A-3, you should also enter the same password here.

8. Click on the **Services** tab.

9. Double click on the service you wish to enable for VINES. If in doubt, use BINARY_P1 (for the BIO port). Refer to Appendix B of the manual for additional information on using services.

10. Type in the StreetTalk name of the print queue you defined in step B-3.

11. Click on **OK,** and then click **OK** again to save the configuration.

12. Click **OK** and then **OK** again to exit BRAdmin.

D. Print Server Configuration Using the Print Server Console

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

1. Connect to the print server console using TELNET, NCP, BRCONFIG, or the serial port (refer to Appendix A for information on using the console).

2. Execute some or all of the following commands (you must minimally enter the StreetTalk login name of the print server and associate one of the print server services with the StreetTalk name of a print queue).

   ```
   SET BAnyan LOgin loginname
   ```
   Purpose: Sets StreetTalk login name of print server.

   ```
   SET BAnyan PAssword password
   ```
   Purpose: Sets login password of print server. The password (if any) must match the password you specified in step A-3.

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

   ```
   SET BAnyan HOp nn
   ```
   Purpose: Sets number of hops between the Brother print server and the Banyan file server. The default value is 2, which is adequate for most sites, but you will need to change this value if the file server is more than two hops away from the print server.

   ```
   SET BAnyan [ENable|DISable]
   ```
   Purpose: Enables or disables Banyan protocol on the Brother print server. Banyan is enabled by default.

   ```
   SET BAnyan TImeout nn
   ```
   Purpose: Sets job timeout (in seconds).

   ```
   CLEAR SERVIce service Streettalk
   ```
   Purpose: Disables the Banyan protocol on the specified service.

   ```
   SHow BAnyan
   ```
   Purpose: Shows Banyan protocol settings and statistics.

3. When you have finished entering commands, type EXIT to exit the remote console and cause the commands to take effect.

E. Testing the print queue

To test the queue, use the Banyan BPRINT command from the DOS prompt on your workstation. For example:

```
BPRINT TEST.TXT /P:MYQUEUE
```

Prints the file TEST.TXT to the file server queue MYQUEUE.

CHAPTER 10
WEB FUNCTION

Overview

A standard World Wide Web Browser (we recommend Netscape Navigator version 3.0 or later/Microsoft Internet Explorer version 3.02a or later) can be used to manage your printer using the HTTP (Hyper Text Transfer Protocol). It is possible to get the following information from the printer using a web browser.

1. Printer status information
2. Take control of the printer front panel
3. Software Version information of the printer and network card
4. Consumable lists, Frequency asked question, etc
5. Log information (HL-2400CN only if using the Internal Brother print server, the printer must have version 1.15 (or later) software installed)

✎ **Note**
Printer web based management is currently only available on Brother's HL-2400CN/HL-1660e and HL-2060 printers. Other printers which use the Brother range of print servers will allow you to manage the print server parameters using a web browser.

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

How to connect to your printer using a Browser

Type "`http://printers IP Address /`" into your browser.

Web Function Page

Once you are connected to the printer, you will see a screen similar to the one below.

Fig. 10-1 Sample of HL-2400CN printer

- **Refresh**

  The refresh button reloads the page.
- **Automatic Refresh**

  The Automatic Refresh botton reloads the page every 15 seconds.
- **View Configuration**

  The confuguration button lets you see printer information such as toner status, current page count, etc...

- **Control panel**

Fig. 10-2 Control panel image

The control panel allows you to see the current printer status and also allows you to interact with the printer as if you were standing at the printer and pressing the buttons on the front panel.

- **Printer settings**

  This section allows you to change printer settings such as default font, etc.

- **On Line support**

  Use this section for on-line product support (you must have a Internet connection to use this section).

- **Administrator settings**

  Special section for Administrators. Used to change password information or to change front panel message information.

- **Find device**

  This button is used to find other Brother network connected printers. If you are using a Brother print server on a HL-10h, HL-1260, HL-1260e or a HL-1660 printer, or if you are using the NC-2010p external interface on any Brother printer, this function will not work.

Log Management Function

Overview

By using this function, the printer can record a log of your printed documents and any printer errors that may have occurred. The Administrator can then view this information and see how the printer is being utilized.

✒ **Note**

We strongly recommend that you use this function when the printer is not printing or receiving data from a computer. If you use this function whilst the printer is busy, the log data may become inaccurate as the printer will not yet know that all data has not been received.

---

1. Job Print Log
    Record details on every job sent to the printer.

2. Total Job Print Log
    Record the total number of pages printed, what type of paper was used, etc.

3. Error Log
    Record any errors that occurred during printing.

Every Log function can be viewed in HTML (directly onto the screen), CSV or TXT formats. If you specify the CSV or TXT format, you can use your browser to save the file and then use another application to analyze the data.

✒ **Note**

To use this function, you need a PCMCIA HDD card (only type 3 PCMCIA HDD). You may also find that, in some instances, some details are not recorded onto the PCMCIA HDD.

How to use this function

1. Select the **Administrator Settings** (Refer to Fig.10-1) and then select either **Log Configuration** or **View Print Log**. By default this function is disabled, to enable it select **Log Configuration** and then enable the appropriate log. Refer to the above section for information on each log function. When you enable logging, you must enter a password, the default password for each log is the password of the print server, i.e. "access". If you check the **Delete the log file** option, the printer will automatically delete the appropriate log file when the PCMCIA HDD card reaches the Maximum log file size.

2. To view the log information, select **Administrator Settings** and then select the **View Print Log** option. You can now view all three logs, "View Job Print Log", "View Total Job Print Log" or" View Error Log". Select the log that you wish to view. In the **View Job Print Log** option you can specify the logging information that you wish to see. For example, you can choose to display the username details, date of print job, area covered with CMYK (HL-2400CN only), etc… Select the information that you wish to view and then enter the password. As with the Log Configuration section, the password will default to "access"

3.

✒ **Note**

- When you are displaying the log information, you can choose to display the information in HTML, CSV or TXT formats. If you choose HTML, then all pages will be displayed in your web browser as standard HTML pages. If you wish to save the data to another application for further analysis. Select either CSV or TXT.
- If you are a driver developer, you may wish to append the following PJL control codes to your printer driver, this will allow the Log Function to record job information, date information and user name information.

1. Begin Filter
```
<ESC>%-12345X@PJL
@PJL JOB NAME="job name"
@PJL PRINTLOG ITEM=2,date
@PJL PRINTLOG ITEM=3,user name
```

2. End Filter
```
<ESC>%-12345X@PJL EOJ
<ESC>%-12345X
```

CHAPTER 11
BROTHER INTERNET PRINT (BIP)

BIP Remote Internet Printing Installation

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

General Information

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

When a job is printed to the BIP virtual port, it is actually
MIME-encoded (converted to a standard Internet E-mail
message) and sent out to a Brother print server at the remote
location using either the Messaging Winsock or API (MAPI)
(MAPI is Windows 95/98 only). This means that BIP is
compatible with most common E-mail software packages. The
only requirement is that the E-mail server be capable of sending
E-mail message over the Internet.

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

- If you are connected to a Local Area Network, the E-mail
  message is passed to the E-mail server, which in turn
  transmits the message out over the Internet using the SMTP
  protocol (Simple Mail Transport Protocol) to the remote
  print server.

- If you are connecting via a modem directly to an Internet Service Provider (ISP), the ISP handles the routing of the E-mail to the remote print server.

At the remote site, an E-mail server receives the E-mail message. The remote print server, which has its own E-mail address, uses the POP3 protocol (Post Office Protocol 3) to download the E-mail message from the server. It then decodes the attachment and prints it out on the printer.

What this Chapter Covers

This chapter covers the following topics:

- Installation of the BIP software on a Windows 95/98/NT4.0 PC at the local site.
- Enabling the BIP capability on a Brother print server at the remote site.

✎ **Note**

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

This user-guides assumes that you have already installed a Brother print server at the remote site with valid IP address. It also assumes that you have the capability of configuring E-mail services on your PC and E-mail server, or that you have access to a network administrator who can perform these tasks for you.

Installing the BIP Software on a Windows 95/98/NT4.0

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

✎ **Note**

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

---

1. Make a backup copy of Brother Network Print Software disk, and use this backup for the installation process. Store the original diskette in a safe place.

2. Insert the backup installation diskette into the PC. From the Windows 95/98/NT4.0 **Start** button, select **Run.** Then enter `A:\SETUP` and press **Enter** to start the BIP installation program.

3. Push the **Next** button in response to the Welcome message.

4. Select the **Brother Internet Print** button.

5. Select the desired directory to install the BIP files and then push **Next**. The installation program will create the directory for you if it does not already exist.

6. Select either **WINSOCK** (the default) or **MAPI** as the mail transport protocol and press **Next**. (Windows 95/98 only) Most mail programs, include Microsoft Exchange which is included with Windows 95/98, use MAPI. The installation program will then begin installing the files.

7. You will then be asked for a port name. Enter the name of the port. The port name must begin with the BIP and end with a number, for example, BIP1.

8. You will then see a message about Partial E-mail Print. Partial E-mail Print is the ability of the Brother Internet Print software to break down E-mail Print jobs into smaller sections to prevent a mail file size limitation problem for mail server. This feature is only available on Brother print servers with version 3.47 or later.

9. Press **OK** to continue.

10. You will then be asked to enter the port settings for the remote print server:

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

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

11. Press **OK** to continue. You will then be asked to re-start your computer.

12. One your computer has re-started you must create a printer on your Windows 95/98/NT4.0 system using the standard Windows 95/98/NT4.0 printer setup procedure. To do this, go the **Start** button, select **Settings** and then **Printers**.

13. Select **Add Printer** to begin the printer installation.

14. Click **Next** when you get the Add Printer Wizard window (Windows 95/98 only).

15. Select **Local Printer** (Windows 95/98), **My computer** (Windows NT4.0) when you are asked how the printers are connected to your computer and push **Next**.

<For Windows 95/98 users>

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

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

18. Select the BIP E-mail port (**BIP...**) and press **Next**.

<For Windows NT4.0 users>

16. Select the BIP E-mail port (**BIP...**) and press **Next**.

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

18. 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**.

19. Enter any desired name for the BIP remote printer and press **Next**. Note that this name does not need to match the E-mail address that you assigned in step 7.

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

You have now finished installing the BIP software. **If you have only one E-mail printer, go to next section, Configuring the Remote Print Server.**

Adding a Second Brother Internet Port

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

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

Configuring the Remote Print Server

The next step is to configure the remote print server. The remote print server can be configured with Brother's BRAdmin and BRAdmin32 configuration utilities, by accessing the print server console through the print server serial port (if your print server has a serial interface), via TELNET, DEC NCP, Brother's BRCONFIG utilities or via a web browser. Refer to Appendix A of the appropriate print server manual for information on how to use the serial port, TELNET, NCP, or BRCONFIG to access the print server console.

Print Server Configuration Checklist

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

1. Configure the POP3 server on the E-mail server at the remote site with a mail account and password for the remote printer (generally, the mail account name will be the first part of the name that you assigned in step 10 of the previous section; for example, if you assigned the name emailprinter@xyz.com, then the mailbox name would be emailprinter).

2. Make sure that the print server is installed and running with TCP/IP enabled and has a valid IP address assigned to it.

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

Using BRAdmin or BRAdmin32 to Configure the Print Server

> ✎ **Note**
> Skip this section if you wish to use the print server console or Web Browser to configure the print server.

To use BRAdmin, you must be running either NetWare or Banyan VINES client software, and the PC must be on the same network as the Brother remote print server. If you use the BrAdmin32 utility, you can configure the Brother print server using the TCP/IP protocol, or the IPX protocol.

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

1. If you have not already done so, install the appropriate BRAdmin utility on the PC that will be used to configure the print server. This is done by selecting **Run** from the Windows 3.1x program manager or by pressing the Windows 95/98/NT4.0 **Start** button and selecting **Run**. In both cases, enter **A:SETUP** as the program name, and follow the instructions of the installation program.

2. Start the BRAdmin program.

3. Select the node name of the desired Brother print server from the list and double clicking on it. (the default node names are BRO_xxxxxx_P1 or BRO_xxxxxx, where "xxxxxx" is the last six digits of the Ethernet address). You will be prompted for a password, the default password is "access".

4. Click on the **Internet** tab.

5. Enter the IP address of the POP3 server (consult your network administrator if you do not know this address).

6. Enter the mailbox name for the remote Brother print server. Usually this will be the first part of the E-mail (for example, if the E-mail address of the remote print server is emailprinter@xyz, then the mailbox name would be emailprinter).

7. Enter the password for the mailbox, if any.

8. The print server is configured by default to poll the POP3 server every 30 seconds. You may change this value, if desired.

9. If you have enabled notification, enter the IP address of your SMTP server (consult your network administrator if you do not know this address).

10. Press the **OK** button and save the changes. Now exit BRAdmin. You have now configured the print server to receive print jobs.

Using a Web Browser to Configure the Print Server

1. Connect to the printer IP address using your web browser.

2. When you reach the network card configuration screen, you will be prompted for a password. The default password is "access"

3. Select the **Configure Internet** option and enter the information as described above.

4. If you have version 3.47 or later software inside the print server, you should see a **Segmented Message Timeout** option. If a print job is separated into multiple E-mail messages using the Partial E-mail Print feature of the BIP, this value indicates how long the print server will wait for all of the segments of the message to arrive.

Using the Console to Configure the Print Server

> ✎ **Note**
> Skip this section if you used BRAdmin or Web Browser to configure the remote print server.

As an alternative to BRAdmin, you can use the print server console to configure the remote print server. The console can be accessed via the print server serial port, TELNET, DEC NCP, or the Brother BRCONFIG utility. Refer to Appendix A if you do not know how to use the console. When you access the print server using these utilities, you will be asked for a password. The default password is "access".

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

    `SET  POP3  ADDRESS  `*`ipaddress`*

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

2. Enter the command:

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

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

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

    `SET  POP3  POLLING  `*`rate`*

    where *rate* is the polling rate in seconds.

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

CHAPTER 12 TROUBLESHOOTING

Overview

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

1. Installation Problems

2. Intermittent Problems

3. Protocol-Specific Troubleshooting

If you would like to know general problem, access Brother Homepage (http://www.brother.com/).

Installation problems

If you cannot print to print server after you install it, check the following:

1. Make sure that the printer is powered on and the print server is securely connected to the printer. Also make sure that the printer is on-line and ready to print.

2. Verify that the connection between the printer and the print server is good by running the self-test as described in the Quick Setup Guide. If the test still fails, try:

- If you have an external Brother print server which connects to the printer via a parallel port, make sure that the parallel port is enabled on the printer (setting the printer to AUTO interface mode will achieve this). The print server parallel interface is compatible with most PC interfaces, so if you can print directly to the printer from a PC, you should also be able to print from the print server.

- If you have an internal print server make sure that the Extended I/O interface is enabled on the printer. If the printer is in AUTO interface mode it will switch between parallel, BIO (Extended I/O) and the serial interface automatically.

- If you are using an older printer that does not support the 1284 bi-directional parallel port standard, try executing the SET PORT P1 ACKH ENABLED and SET PORT P1 DMA DISABLED commands. Also, make sure that fast strobe (FSTB) is disabled (do a SHOW PORT command to determine its state; if necessary, do a SET PORT P1 FSTB DISABLED command).

3. If the self-test page prints but you cannot print documents, try the following

---

✎ **Note**

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

---

a. If you have a VMS system or ULTRIX system, try making a connection to the print server using the NCP (for VMS) or ccr (for ULTRIX) utilities (see Appendix A if you don't know how to do this). If the connection is successful, the hardware and network connections are OK, so proceed to the *LAT Troubleshooting* Section. Otherwise, proceed to step 4.

b. If you are using TCP/IP, try pinging the print server from the host operating system 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). If a successful response is received, then proceed to the *UNIX Troubleshooting* section or *Windows NT/LAN Server Troubleshooting* section. Otherwise, proceed to step 4.

c. If you have a 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), go into PCONSOLE, select PRINT SERVER INFORMATION, and select the name of the print server (make sure that you have entered the print server name). If you can see Print Server Status and Control in the menu, then the Brother print server visible to the network, proceed to the Novel NetWare Installation Troubleshooting Section. Otherwise, go to step 4.

d. If you are running AppleTalk or PATHWORKS for Macintosh, make sure that you can see the print server name under the LaserWriter 8 icon in the Chooser. If it is visible, then the connection is good, so proceed to the *AppleTalk and PATHWORKS for Macintosh* Section.

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

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

b. Verify that the cabling, network connection, and (if applicable) transceiver are good. If possible, try the print server on a different connection on the network, and/or try a different transceiver. Also, print out a self-test page to see if bytes are being transmitted and received.

b. Check to see if there is any LED activity. If you have an external print server, there will be one green LED which should flash during normal Ethernet activity. If you have an internal print server (NC-2010h), there will usually be five LED's which each have a different job:

   - T = Test (flashes during startup and software reload. Make blink or light continuously in the even of a problem)
   - L = Link active (flashes during normal network activity)
   - X = 10BaseT transmit ON (On if a valid 10BaseT connection)
   - P = Signal polarity
   - R = 10BaseT receive (On if a valid 10BaseT connection)

The NC-2100h has three LEDs. These can be used to diagnose problems.

   • Left LED (T-red)
     Test. This LED blinks once on startup. It also blinks during firmware load. If there is a fatal error, it will either blink in a regular pattern or stay lit, depending on the nature of the error.
   • Center LED (F-yellow)
     Fast Ethernet. This LED will be on if the NC-2100h is connected to a 100BaseTX Fast Ethernet network. It is off if the NC-2100h is connected to a 10BaseT network.
   • Right LED (L-green)
     Link OK. This LED is on if there is a valid connection to the network (either 10BaseT or 100BaseTX). It is off if no network is detected.

d. 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.

e. If you have a bridge or router located between the print server and host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow Brother print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the print server.

f. 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 OK but large graphics jobs are distorted or incomplete, make sure that you have adequate memory in your printer.

2. Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

Novell NetWare Troubleshooting

If you cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the Brother print server is attached to the server queue by going to PCONSOLE, selecting PRINT QUEUE INFORMATION, and then CURRENTLY ATTACHED SERVERS. If the print server does not appear in the list of attached servers, then check the following (note that it is always a good idea to try deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors):

1. If you changed the login password, you must change the password in *both* the Brother print server (using the SET NETWARE PASSWORD command if you are using the BRConfig software or by using a web browser or the BRAdmin utility) and in the file server (using the PCONSOLE Print Server Information Change Password command).

2. Make sure that you have enabled at least one NetWare file server using the SET NETWARE SERVER *servername* ENABLED command.

3. Have you exceeded your NetWare user limit?

4. Make sure that the print server name you used in PCONSOLE *exactly* matches the name that is configured in the print server, and make sure it is defined as a Queue Server for the print queue.

5. If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the SET NETWARE FRAME command from the print server remote console.

6. If you are 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).

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 (note that it is always a good idea to try creating a another print queue to eliminate the possibility of setup errors):

1. The problem may be the result of mismatched or duplicate IP addresses. Verify that the IP address is correctly loaded into the print server (via the configuration page or through the front panel of the printer (if your printed has an LCD panel and you are using an internal print server). Make sure that no other nodes on the network have this address (DUPLICATE IP ADDRESSES ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS).

1. If you used NCP, BRCONFIG, or ccr to enter the IP address, make sure that you exited the remote console properly with a CTRL-D and that you turned the printer off and then on again (it may take up to two minutes for the IP address to take effect).

2. Make sure that the TCP/IP protocol is enabled.

4. If you used rarp, make sure that you started the rarp daemon using the rarpd, rarpd -a, in.rarpd -a, or equivalent command. Verify that the /etc/ethers file contains the correct Ethernet address and that the print server name matches the name in the /etc/hosts file.

5. If you used bootp, make sure that bootp is enabled (i.e., the "#" is removed from the bootp entry) in the /etc/bootptab file is correctly configured.

6. Also verify that the host computer and the print server are either on the same subnet (for example, Brother print servers have a default subnet mask of 255.255.255.0 and the host must have the same subnet mask) or that the router is properly configured to pass data between the two devices.

7. 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.

8. 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.

9. 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).

10. 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).

11. If you cannot print from DEC TCP/IP Services for VMS (UCX), make sure that you have version 2.0B or later of this software, because earlier versions will not work with Brother print servers.

12. If you are having trouble printing more than one job at a time, try increasing the IP timeout using the SET IP TIMEOUT command.

13. If text or PCL jobs are run together, try setting the service (remote printer) with EOT set to string number 2 (<ESC>E). For example:

    SET SERVICE BRO_xxxxxx_P1 EOT 2

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

    SET SERVICE BRO_xxxxxx_P1 EOT 3

15. If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your /etc/printcap file.

16. If you are having trouble printing long jobs (over 1MB), add the line mx#0 to your /etc/printcap file entry. If you are using Sun Solaris V2.4 or earlier, there is a bug with long print jobs on any diskless print server, including the print server.

Windows NT/LAN Server Troubleshooting

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

1. Make sure that you can ping the print server using the DOS or OS/2 command PING *ipaddress*, where *ipaddress* is the IP address of the print server. If you cannot ping it, you will not be able to print.

2. Make sure that the TCP/IP protocol is enabled.

3. Make sure that TCP/IP is installed and running on the Windows NT system or the LAN Server file server.

Brother Peer to Peer Print (LPR) Troubleshooting

You may find that during the installation of BLP1 software, the screen that prompts you for a Port name is not displayed. This happens on some Windows 95 computers. Press the ALT and TAB keys to make it appear.

Windows 95/98 (or later) Peer-to-Peer Troubleshooting

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

1. If the print server does not show up under JetAdmin on a Windows 95 Peer-to-Peer network, try removing all of the Windows 95 network software from the Network Control panel and then reinstalling them as follows:

- First install the **IPX/SPX-Compatible Protocol (or the TCP/IP protocol if you are using a later version of JetAdmin)**, the **Client for Microsoft Networks**, and the network adapter card driver.
- Install the Latest HP JetAdmin software
- Restart the system, and then add the **HP JetAdmin** service.

AppleTalk Troubleshooting

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

1. Make sure that you are running Phase 2 AppleTalk and that you have selected the correct network interface from the Network Control Panel on the Macintosh.

2. Make sure that the AppleTalk protocol 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. If you are running PATHWORKS for Macintosh verify that you can print directly from VMS and that you have V1.1 or later of PATHWORKS.

6. 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 with the `SET APPLETALK ZONE` command described in Appendix A.

7. Verify that you have a PostScript printer, because AppleTalk and PATHWORKS for Macintosh require PostScript. If you have a printer with automatic language switching, the printer may need to be manually forced into PostScript mode via the printer front panel (if your printer has a LCD panel).

8. If you are using PATHWORKS for Macintosh, make sure that you specified the LAT port (not the normal name@zone) as the destination.

9. Make sure that PATHWORKS for Macintosh software has been upgraded for support of the Macintosh System 7 finder (a patch is required; the easiest way to determine this is to find out if you have Macintosh computers with System 7 that are successfully printing to other printers via PATHWORKS for Macintosh.

10. Verify that the Laser Prep versions on all Macintosh computers that need to print to the print server are the same.

11. Make sure that bi-directional communications are working, because this is essential for PATHWORKS for Macintosh. To verify this on a VMS system:

- Stop the queue (`STOP/QUEUE/RESET` *queuename*).
- Connect to the device (`SET HOST/DTE LTAxxx:`).
- When you get the message that you are connected, type a <CTRL-T> to query the printer.
- You should get a response back similar to %%[status: idle]%%. If you do not get this response back, make sure that the printer is forced into PostScript mode; if necessary, do a `SET SERVICE` *servicename* `RECEIVE DISABLED` to put the Brother print server back into bi-directional mode. use the `SET PORT P1 BINARY LJ4` command to enable binary mode.

DLC/LLC Troubleshooting

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

1. Make sure that the DLC/LLC protocol is enabled using either the front panel (if your printer had a LCD panel and you are using an internal print server), BRAdmin a web browser or TELNET.

2. Make sure that the MAC address of the Windows setting is as same as the print config result.

LAT Troubleshooting

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

1. If the queue pauses when you try to print, check that the print server node name and port name (or service name) agree with the names defined for the VMS print queue in LATCP or for ULTRIX print queue in the `/etc/printcap` file (ts parameter) and `lcp -s` command. The names MUST EXACTLY agree in order for printing to work.

2. Make sure LAT is enabled for outgoing connections. For VMS, enter LATCP and type SHOW NODE at the `Latcp>` prompt. The display should show `Outgoing Connections Enabled`. If it does not, you should type SET NODE/CONNECTIONS=BOTH. If you are using ULTRIX, make sure that you have started LAT with the lcp -s command and that you have enabled host-initiated connections with the `lcp -h` command.

3. Make sure that there are no duplicate LAT node names or LAT port numbers. Try changing the node name to a different name and/or creating a different LAT port to fix the problem. Also avoid having multiple print queues that use the same LAT port.

4. If you are running ULTRIX, make sure that the `/etc/printcap` file is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error *anywhere* in the file can have *major* consequences. Also check the `/usr/spool` directory to make sure that you have created a valid spool directory.

5. If you are running ULTRIX, check your tty device to make sure that :

   - The tty is a valid LAT tty (execute the command file `/dev/tty*` | `grep` LAT and observe if the device has a "39" in its description).

   - The device is in the `/etc/ttys` file and in the `/dev` directory.

   - The same tty number was entered throughout the configuration process.

6. Intermittent random queue pauses can be caused if the VMS LAT port is not set up as spooled device. Type SHOW DEVICE LTA*xxx* from the VMS console; if the device is not spooled, type SET DEVICE/SPOOL LTA*xxx* command. (One exception: PATHWORKS for MACINTOSH queues should not be set up with the LTA device set as spooled).

7. Make sure that `PROCESSOR=LATSYM` is enabled on your VMS print queue if you get any of the following symptoms:

-   The queue pauses when you power off the print server for no apparent reason.

-   The print server generates excessive LAT traffic on the network

-   Only one host computer can access the print server, others are locked out.

8. If the VMS LAT symbiont abruptly terminates and shuts down one or more queues, the problem may be the result of the inability of the LAT symbiont to handle the load (particularly if you are printing heavy graphics). Try creating multiple LAT processors (copy the LATSYM.EXE file) and splitting the load among these processors.

9. If your VMS graphics printouts are distorted, make sure that you have the LTA port set for PASSALL, PASTHRU, and TAB.

10. If you are having trouble printing PostScript files with VMS (PostScript errors or no printout), make sure that you have the form set for NOTRUNCATE and NOWRAP. Also, make sure you are not trying to print a flag page (unless you are using DCPS) since the flag page in the LAT symbiont is a non-PostScript text file.

11. If you are having trouble printing PostScript files (for example, from DECprint Supervisor or from a Windows-based PATHWORKS PC), try disabling binary mode on the printer with the command `SET PORT P1 BINARY DISABLED`.

12. If you are printing across a wide area network bridge (for example, Vitalink) and you get paused or stalled queues, increase the print server circuit timer to 120 milliseconds with the command `SET SERVER TRANSMIT 120`.

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

Banyan VINES Troubleshooting

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

1. Make sure that you have the Banyan VINES PCPrint software option installed.

1. Make sure that the Banyan protocol is enabled.

1. If there are more than two hops (i.e., more than two routers) between the print server and the file server, make sure that you have changed the hop count to the appropriate number via BRAdmin or the print server console.

1. Use the VINES MUSER or MANAGE utility to verify that the print server has logged in. If it has not, make sure that the StreetTalk login name configured in the print server *exactly* matches the login name that was configured using the MUSER or MANAGE utility on the file server.

1. Verify that the StreetTalk name associated with the print server service name *exactly* matches the name of the print queue that was configured using the MSERVICE or MANAGE utility on the file server.

1. Check to see that you have not exceeded the user limit on your Banyan file server (because the print server must login as a user), that printing is enabled on the queue, and that there are no security restrictions on the file server that would prevent the print server from logging in.

Internet Print Troubleshooting

The first step in troubleshooting is to make sure that you have a valid E-mail connection on both the sending PC and the receiving print server. Try sending an E-mail message from the PC to a user at the remote site who can receive mail via the POP3 server. If this does not work, there may be an E-mail configuration problem on the PC, on the local E-mail server, or on the remote POP3 server. Double check to make sure that the E-mail parameters that you configured on the PC and on the remote print server match those that are configured on the E-mail servers.

If you can print small files OK but are having problems printing large files, the problem may be in the e-mail system! Some E-mail systems have difficulties printing large files. If the file does not reach its destination intact, then the problem is with the E-mail system.

Web Browser Troubleshooting

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 every time you wish to look at the printer status.

APPENDIX

Appendix A
Command Summary

General Commands

Although it is not normally necessary to change Brother print server default parameters, you can change the configuration using any of the following methods:

- Brother BRAdmin32 utility for Windows 95/98 and NT 4.0
- Brother BRAdmin Netware utility for Windows 3.1
- HTTP (using a web browser)
- TELNET
- Brother BRCONFIG NetWare Utility
- DEC NCP or NCL Utility

BRAdmin32 The Brother BRAdmin32 utility can use the TCP/IP or IPX/SPX protocol. This utility allows you to graphically manage aspects of the network and printer. It runs on Windows 95/98 and Windows NT 4.0

BRAdmin The Brother BRAdmin Netware utility requires a Novell Netware file server to operate. This utility allows you to graphically manage aspects of the network and printer. To use BRAdmin, Novell Network is necessary and have to attach a NetWare server. As for installation, refer to Chapter 1-3.

HTTP Use your favorite web browser to connect to the Brother print server. This will allow you to configure print server parameters. You must ensure that the print server has a valid IP address. Once you have done this type `http://ip_address/` in your web browser. If you can not connect to the print server check your web browser is configured correctly (check your proxy settings to ensure that your web browser can connect to the printer on your internal network).

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

BRCONFIG To connect to the print server using the Brother BRCONFIG NetWare utility, insert the Brother Print Server Software diskette in Drive A and type: `A:BRCONFIG` at the DOS system prompt. If you have only one print server, you will be immediately connected. If you have more than one print server, you will be given a list of available print servers. Type the number of the print server to which you want to connect. When you are connected, enter the password `"access"` (the password will not appear on the screen) at the "#" prompt, and type anything in response to the `Enter Username>` prompt. When you get the `Local>` prompt, you are ready to enter commands. To use BRCONFIG, Novell Network is necessary and have to attach a NetWare server. As for installation, refer to Chapter 1-8.

DEC NCP, NCL, ccr. To connect to the print server console with the VMS NCP utility, use the following commands:

```
MCR NCP
CONNECT VIA circuit PHY ADD ethernetaddress
```

where *circuit* is the circuit-ID of the VAX or Alpha (for example, SVA-0 for most DEC workstations, MNA-0 for XMI systems, BNA-0 for BI systems, and QNA-0 for Q-BUS systems) and *ethernetaddress* is the hardware address of the NC-series (for example, 00-40-17-00-61-35). Newer OpenVMS systems use NCL instead of NCP. The NCL command to connect to the NC-series console is:

```
SET HOST/MOP/CIRCUIT=circuit/ADD=ethernetaddress
```

ULTRIX systems use the `addnode` and `ccr` commands as follows:

```
addnode name -c circuit -h ethernetaddress
ccr xciiname
```

where *name* is an arbitrary name for the print server (each Brother print server on the network needs a unique name).

In all cases, you will get a message like `Console Connected` or `Remote Console Reserved` when you are connected. When you are connected, push **RETURN** or **ENTER** to get the "#" prompt, enter the password `"access"` (the password will not appear on the screen), and type anything in response to the `Enter Username>` prompt. When you get the `Local>` prompt, you are ready to enter commands.

✎ **Note**
The commands available are generally a subset of the ones used on the DECserver terminal server. Note that unlike the DECserver, there is no distinction between the SET and DEFINE commands or between the CLEAR and PURGE commands. Instead, when you type CTRL-D to exit the remote console, any of these commands take effect immediately and the results are stored permanently (for example, it is not necessary to enter both a SET and a DEFINE to execute a command and save the results).

GENERAL SERVER COMMANDS

```
CLear FATal
```
Deletes fatal error log

```
CLear POrt portname JOB
```
Clears current entry in the print server's internal queue for the specified portname (P1 for the printer.)

```
EXIT/^D
```
Exits print server console

```
HElP
```
Provides information on available commands

```
INitialize
```
Resets print server

```
SET DEFAULT
```
Sets print server parameters to factory defaults

```
SET LOAD DIsable
```
Disables firmware reload after exit

```
SET LOAD ENable
```
Enables firmware reload after exit

```
SET LOAD HOst <name>
```
Sets node name of boot host for (NetWare firmware load)

```
SET LOAD IP aa.bb.cc.dd
```
Sets IP address of load host (TCP/IP firmware load)

```
SET LOAD SOftware <filename>
```
Sets host filename of firmware to load

```
SET PAssword <password>
```
Sets console password (default password is access)

```
SET PROtect <password>
```
Set console protection password to prevent access to SET commands (use UNPROTECT command to access SET commands)

```
SET SERVEr DEScription
```
Sets node description string displayed with SHOW SERVER command

```
CLear SERVEr STRing stringnumber
```
Removes a string number (refer to Appendix B)

```
SET SERVEr STRing n "..."
```
Defines server BOT/EOT string (see Appendix B)

```
SET SERVIce <servicename> <protocol> [EN|DIS]
```
Enable or disables specified protocol on the specified service.

```
SET SERVIce <servicename> BOT nn
```
Set service BOT string to nn (see Appendix B)

```
SET SERVIce <servicename> EOT nn
```
Set service EOT string to nn (see Appendix B)

```
SET SERVIce <servicename> FILter nn
```
Set service filter to nn (see Appendix B)

```
SET SERVIce <servicename> FMS <matchnumber>
```
Set service with specified match string number (see Appendix B)

```
SET SERVIce <servicename> FRS <replacenumber>
```
Set service with specified replacement string number (see Appendix B)

```
SET SERVIce IP <servicename> [EN|DIS]
```
Enable or disable IP jobs

```
SET SERVIce <servicename> NAme <newname>
```
Changes service name

```
SET SERVIce <servicename> RECeive [EN|DIS]
```
Set receive only mode on specified service

```
SHow FATal
```
Show fatal error log

```
SHow FREE
```
Shows memory available

```
SHow LOAD
```
Shows firmware update parameters

```
SHow PORt
```
Shows port parameters

```
SHow PORt <name> STA
```
Shows current port status.

```
SHow SERVEr
```
Shows server and LAT parameters

```
SHow SERVEr COunters
```
Shows server statistics

```
SHow SERVIce
```
Shows service Parameters

```
SHow TEstpage
```
Prints test page

```
SHow VErsion
```
Shows server firmware version

```
UNPROtect
```
Allows system manager to temporarily access `SET` commands when
remote console is in protected mode (See `SET PROTECTION` command).
The `SET DEFAULT` command can be used to permanently disable the
protected mode.

```
Zero
```
Zeroes statistical counts

<For NC-2010p only>

`SET PORT P1 ACKH [EN|DIS]`
Enables or disable ACKH on parallel port

`SET PORT P1 BIDir [EN|DIS]`
Enable or disable bi-directional mode on parallel port

`SET PORT P1 DVID [EN|DIS]`
Enable or disable 1284 device ID queries on parallel port

`SET PORT P1 ECP [EN|DIS]`
Enable or disable 1284 ECP mode on parallel port

`SET PORT P1 FSTB [EN|DIS]`
Enable or disable fast strobe mode on parallel port

`SET PORT P1 NBUF [EN|DIS]`
Enable or disable no buffering on parallel port

<For NC-2010h and NC-2100h only>

`SET PORT S1 CHaracter [7|8]`
Set bits per character on serial port

`SET PORT S1 Flow [NO|XO|CT|DS]`
Set serial port flow control to NONE, XON/XOFF, CTS, or DSR

`SET PORT S1 PArity <parity>`
Set serial port parity to NONE, EVEN, ODD, MARK, or SPACE

`SET PORT S1 SIgnal [EN|DS]`
Enables/disables DTR signal check on serial port

`SET PORT S1 SPeed <baudrate>`
Sets serial port baud rate from 300-57600 bits per second

`SET PORT S1 STop [1|2]`
Sets serial port stop bits per character

`SET SERVIce <servicename> POrt <portname>`
Change service port (<portname> is P1 for printer BIO port and S1 is for NC-2010h/NC-2100h serial port)

`SHow SERVEr QUeue`
Shows print server internal queue and printer front panel

<For NC-2100h only>

`SET ENET MODE [AUTO|10BAse|100BAse]`
Set Ethernet speed

`SHow ENET MODE`
Set Ethernet mode

LAT Commands

`CLear SERVEr GRoup` *number*
Removes LAT group membership

`SET SERVer GRoup mm[-nn]`
Add to current LAT group membership

`SET SERVEr KEepalive nn`
LAT keepalive timer (sec)

`SET SERVEr NAme  <name>`
Sets LAT Node name

`SET SERVEr RB nn`
Receive buffer max(0-5)

`SET SERVEr TB nn`
Transmit buffer max(0-5)

`SET SERVEr TImeout nn`
LAT inactivity timeout (sec)

`SET SERVEr TRansmit nn`
LAT transmit interval (msec)

`SET SERVIce <servicename> LAT [EN|DIS]`
Enable or disable LAT jobs on specified service

TCP/IP Commands

`SET IP Access [EN|DIS|ALL] aa.bb.cc.dd {Mask ee.ff.gg.hh}`
Allows or prevents specified IP address from accessing print server

`SET IP ADdress aa.bb.cc.dd`
Sets IP address of print server

`SET IP BOot n`
Number of BOOTP/RARP tries

`SET IP [EN|DIS]`
Enables or Disables IP Processing

`SET IP RArp nn`
Sets procedure used by print server when obtaining its IP address. By default the IP address is set along with a default subnet mask and a router address that is the same as the address of the load host. By setting nn to 1, the subnet mask is not set. If nn is set to 2, the router address is not set. If nn is set to 3, neither the subnet mask nor the router address is set.

`SET IP ROuter aa.bb.cc.dd`
Sets default router address

`SET IP SUbnet aa.bb.cc.dd`
Sets subnet mask

`SET IP TImeout n`
Sets inactivity timeout (minutes)

`SET SERVIce <servicename> IP [EN|DIS]`
Enable or disables TCP/IP jobs on specified service

```
SET SERVIce <servicename> TCP nn
```
SET TCP port number (>1023) on service

```
SHow IP
```
Shows LPD/TCP/TELNET Parameters

```
SHow IP ACcess
```
Shows IP addresses that are allows to access print server

```
SET IP Method [AUTO|STATIC|DHCP|BOOTP]
```
Set method of getting IP address

NetWare Commands

```
CLear NETWare SErver server
```
Removes specified NetWare file server from Brother print servers access list.

```
SET NETWare ADvertise n
```
Sets advertising frequency of print server

```
SET NETWare [EN|DIS]
```
Enables/Disables Netware protocol on print server

```
SET NETWare FRame [802.2|802.3|ETH|AL|AU|SNA]
```
Sets Netware frame type to 802.2, 802.3, Ethernet II, ALL, AUTO, or SNAP

```
SET NETWare Network n
```
Set Netware internal network number

```
SET NETWare NPrinter <pserver> n ON <servicename>
```
Set NPrinter mode on service

```
SET NETWare PAssword <psw>
```
Sets print server login password for file server

```
SET NETWare POlling n
```
Sets queue polling time in seconds

```
SET NETWare QServer <fileserver> ON <servicename>
```
Sets Queue Server mode on service

```
CLear NETWAre Qserver <fileserver> ON <service>
```
Clear Netware Queue server mode on service

```
SET NETWare REscan
```
Rescans file servers for new queues

```
SET NETWare SErver <name> [EN|DIS]
```
Enables file server

```
SET SERVIce <servicename> NETW [EN|DIS]
```
Enables or disables NetWare jobs on specified service

```
SHow NETWare
```
Shows NetWare parameters

```
SHow SERVIce NDS
```
Show NDS parameters

```
SET SERVIce <servicename> TREE <string>
```
Sets NDS tree on service

```
SET SERVIce <servicename> CONtext <string>
```
Sets NDS context on service

AppleTalk Commands

```
SET APpletalk [EN|DIS]
```
Enables or Disables Appletalk Processing

```
SET APpletalk ZOne "<name>"
```
Set Appletalk zone name

```
SET SERVIce <servicename> APP [EN|DIS]
```
Enables or disables AppleTalk jobs on specified service

```
SET SERVIce <servicename> RECEIVE [EN|DIS]
```
Enables or Disables bi-directional communications on service.

```
SHow APpletalk
```
Shows AppleTalk parameters

Banyan VINES Commands

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

```
SET BAnyan PAssword password
```
Sets login password of print server.

```
SET SERVIce <servicename> Streettalk <queuename>
```
Enables the Banyan protocol on the specified Brother print server service and associates this service with the StreetTalk name of a given print queue the VINES file server.

```
SET BAnyan HOp nn
```
Sets number of hops between the Brother print server and the Banyan file server (default value is 2).

```
SET BAnyan [EN|DIS]
```
Purpose: Enables or disables Banyan protocol on print server. Banyan is enabled by default.

```
SET BAnyan TImeout nn
```
Sets job timeout (in seconds).

```
CLEAR SERVIce <servicename> STreettalk
```
Disables the Banyan protocol on the specified service.

```
SHow BAnyan
```
Shows Banyan protocol settings and statistics.

NetBIOS/NetBEUI Commands

SET NETBeui Enable/Disable
Set NetBEUI Transport protocol enable/disable

SET NETBeui Domain <domainname>
Sets the NetBEUI Domain/Workgroup name

SHow NETBeui
Show NetBEUI configuration

The following three commands are only available on Brother print servers which have version 3.59 or later software. For latest software releases go to the Brother web site at www.brother.com

SET NETBios IP Enable Enable/Disable
Set NETBIOS over TCP/IP Enable/Disable

SET NETBios Domain <domainname>
Set NETBIOS Domain/Workgroup name

SHow NETBios
Show NETBIOS configuration

Internet Print Commands

SET POP3 Address aa.bb.cc.dd
Purpose: Sets POP3 Server IP address

SET POP3 Enable/Disable
Enables or disables POP3 protocol

SET POP3 Polling nn
Sets POP3 server polling frequency in seconds

SET POP3 Name <name>
Sets POP3 mailbox name for print server

SET POP3 Password <password>
Sets the POP3 Mailbox password

SET SMTP Address aa.bb.cc.dd
Sets the SMTP server IP address

SET SMTP ENable / DISable
Enable or disables SMTP capabilities

SHOW POP3
Shows POP3 parameter settings

SHOW SMTP
Shows SMTP parameter settings

DLC commands

The following DLC/LLC configuration commands are available from the NC-series print server console:

SET DLC [EN|DIS]
Enables or Disables the DLC protocol

Appendix B
Using Services (lpd-Plus)

A service is a resource that can be accessed by computers that wish to print the NC-series. The NC-series provides the following predefined services (do a SHOW SERVICE command in the NC-series remote console to get a list of available services):

Service	Definition
BINARY_P1	LAT and TCP/IP binary service
TEXT_P1_TX	TCP/IP text service (adds carriage return after each line feed)
POSTSCRIPT_P1	PostScript service (switches PJL-compatible printer to PostScript mode)
PCL_P1	PCL service (switches PJL-compatible printer to PCL mode)
BRO_*xxxxxx*_P1_AT	AppleTalk service
BRO_*xxxxxx*_P1	NetWare service and NetBEUI service (LAT and TCP/IP are enabled for backwards compatibility)

where "*xxxxxx*" is the last six digits of the Ethernet address (for example, BRO_009C53_P1).
Note that any of the services, not just the user-defined ones, can be modified to meet a user's particular requirements.

Brother print servers provide the powerful capability to customize any of the services to meet specific user requirements through the use of setup and reset strings. Such strings are printer command sequences that are sent to the printer before or after the print job. For example, you could define one of the services to provide landscape mode printing by defining a setup string that contains the appropriate command to put the printer into landscape mode.

Brother print servers provide several predefined strings for popular PCL, PostScript, and PJL (the Page Job Language used by Brother printers) commands. These include (do a SHOW SERVER STRING command in the remote console to see the available strings):

No.	String	Definition
0	(special)	Using this number causes printer not to be automatically reset at the end of each job.
1	NULL	Null string
2	\1BE	PCL reset (<ESC>E)
3	\04	PostScript reset (CTRL-D)
4	\1B%-12345X	PJL UEL
5	@PJL	Enter PJL mode
6	Enter Language=	PJL language switch
7	PCL\0A	PJL PCL command
8	Postscript\0A	PJL PostScript command
9	\FF\04\FF\05\FF\06\FF\07	Enter Language=PCL
10	\FF\04\FF\05\FF\06\FF\08	Enter Language=PostScript
11	\0C	Formfeed

To define a new string, use the command:

```
SET SERVER STRING number "string"
```

where *number* is the number of the string (12 through 31) and *string* is the desired string (must be enclosed in quotation marks).

A given string can include hexadecimal characters by preceding the value with a "\" character. The next two characters after the "\" will then be interpreted as the hexadecimal value of a character. For example, to specify <ESC>E as string number 12, you would enter:

```
SET SERVER STRING 12 "\1BE"
```

Please note that when you associate a string number with a service, the new string number completely replaces any previous string numbers. Also, if you are using one of the predefined PostScript or PCL services, the new string will nullify the language switching function of these services.

However, you can combine several string numbers together by preceding the string number with "\FF". For example, if you defined string number 21 as "\1B" (<ESC>), and string number 22 as "&l1O", you can create a new string number 23 that contains <ESC>&l1O (the PCL landscape mode command) by entering:

```
SET SERVER STRING 23 "\FF\15\FF\16"
```

Note that the string numbers within the quotation marks are expressed in hexadecimal when used with this command.

To associate a string with the service, use the following commands:

```
SET SERVICE servicename BOT stringnumber
SET SERVICE servicename EOT stringnumber
```

where *servicename* is the name of the service and *stringnumber* is the number of the string as defined above. The first command (BOT) adds the specified string to the beginning of the job, while the second command (EOT) adds the specified string to the end of the job. A given service can have both a setup and reset string associated with it.

To clear a string number, type:

```
CLEAR SERVER STRING stringnumber
```

To clear a setup or reset string, set the string number to 1 (the null string):

```
SET SERVICE servicename BOT 1
SET SERVICE servicename EOT 1
```

You may enable or disable protocols that can access a given service with the following commands:

```
SET SERVICE name LAT ENABLED
SET SERVICE name IP ENABLED
SET SERVICE name NETWARE ENABLED
SET SERVICE name APPLE ENABLED
SET SERVICE name DLC ENABLED
SET SERVICE name Banyan ENABLED
SET SERVICE name NetBEUI ENABLED
```

where *name* is the name of the service. Do a SHOW SERVICE command to see the enabled protocols. Note that a given service must have at least one protocol enabled.

A filter is a program built into the NC-series that performs a specific function. There are currently two filters available:

filter no.	Description
1	This filter adds a carriage return character every time a linefeed character is encountered in the data stream. It is useful for printing UNIX text files, because such files do not have carriage returns at the end at the end of lines.

filter no.	Description
2	This filter provides the ability to use the AppleTalk binary mode (this filter is automatically enabled when AppleTalk is enabled on the service.

filter no.	Description
3	This filter converts a text file to PostScript for use with PostScript-only printers.

The service TEXT is predefined with the text filter, while the service BRO_xxxxxx_P1_AT has the AppleTalk filter enabled. To use a filter with other services, use the following command:

```
SET SERVICE name FILTER fltrno ENABLED
```

where *name* is the name of the service and *fltrno* is the number of the filter (e.g., 1 for the text filter).

The default service names are rather long and difficult to remember. If you want to change a service name to something more meaningful, execute the following command from the print server remote console:

```
SET SERVICE oldname NAME newname ENABLED
```

To use a service in LAT, specify the /SERVICE option instead of the /PORT option when defining the LATCP port. For example:

```
LATCP> CREATE PORT LTA555
LATCP> SET PORT LTA555/NODE=BRO_0009C3-
/SERVICE=BINARY_P1
```

To use services from TCP/IP, specify the service name as the remote printer or "rp" parameter in the printcap file or the printer setup program (e.g., SAM or SMIT). Remember that if you want to print text files to a UNIX service, you should enable the TEXT filter (filter number 1).

To use a service with NetWare, use PCONSOLE to specify the default NetWare service name as one of the print servers for the queue (this service is BRO_*xxxxxx*_P1 by default, where "*xxxxxx*" is the last six digits of the Ethernet address). If you want to use a different service, you must also specify this service as one of the print servers for the print queue.

Appendix C
Reloading the Print Server Firmware

The firmware on the print server is stored in flash memory. This means that you can upgrade the firmware by downloading the appropriate update file. Update files are available from Internet access (www.brother.com).

✎ **Note**
We recommend that you factory reset the print server if you upgrade to a later version of software. Instructions on how to perform a factory reset can be found in the quick setup guide that accompanies the print server.

Downloading from BRAdmin32 on the Windows 95/98/NT4

The BRAdmin32 utility can be used to easily re-program your Brother print server.

Start the BRAdmin32 software.

Highlight the appropriate print server. Then press CTRL+L. You can select more than one print server by pressing CTRL+<select> or SHIFT+<select> on each additional print server.

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

1. TFTP PUT from this host
   Use this method if you have TCP/IP already installed on your PC.
   BRAdmin32 will use the TFTP protocol to send the new firmware data
   to the print server.
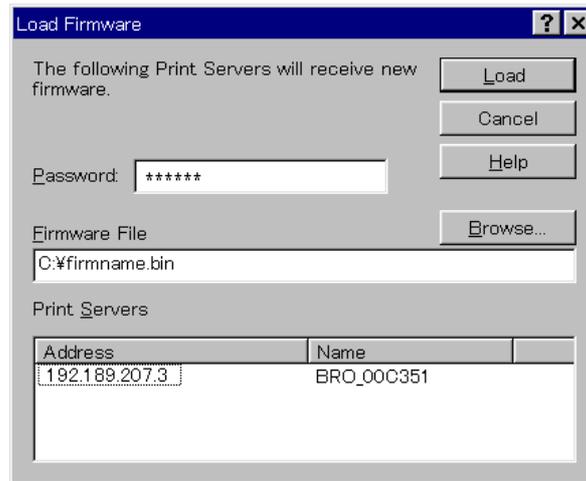
2. TFTP GET from a server
   If you have a TFTP server installed in your network, you may wish to
   use this option. The new firmware file must be located in the TFTP
   BOOT directory on your TFTP server.
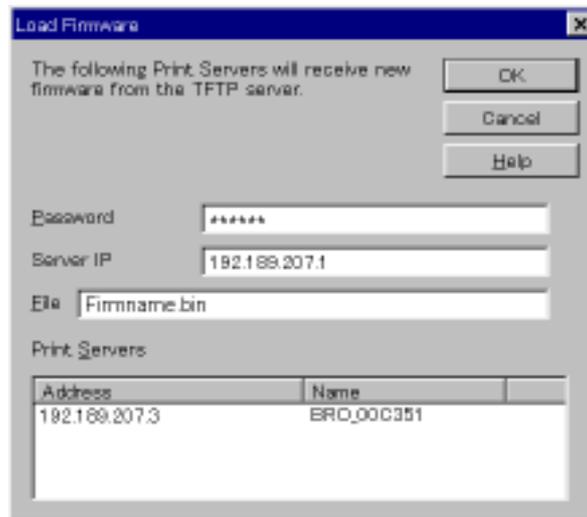
3. Netware GET from a server
   You must have a Netware server on your network (running IPX/SPX) and you must store the new firmware file in the SYS/Login directory of the server.
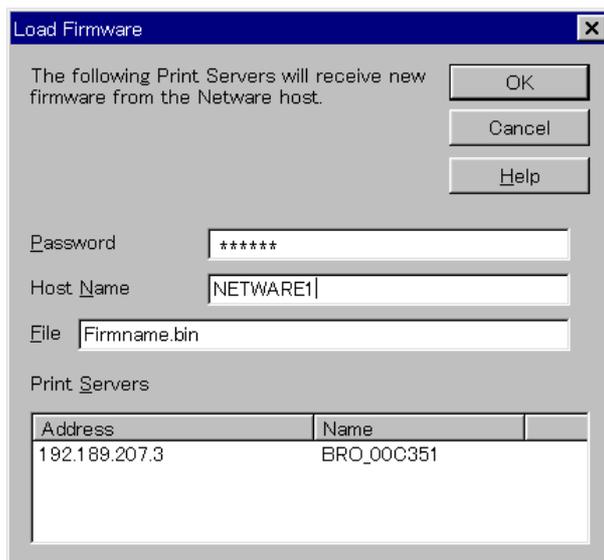
Downloading from a UNIX Host Computer using TFTP

To download the print server firmware from a UNIX host using tftp, first copy the load file e.g. `Firmname.bin` to that host. Make sure that tftp is started by checking the appropriate files on your system (generally speaking, tftp must be enabled in your `/etc/services` file and possibly in another configuration file, such as `/etc/inetd.conf`). Refer to your UNIX system documentation or man pages for additional information.

Now log into the print server remote console using, and execute the following commands:

```
SET LOAD IP unixhost-ipaddress
SET LOAD SOFTWARE "pathname"
SET LOAD ENABLE
EXIT
```

where *unixhost-ip address* is the IP address of the UNIX load host and *pathname* is the full path name for the `Firmname.bin` file (e.g., `/tftpboot/Firmname.bin`). Note that some tftp implementations require that the load file be located in the `/tftpboot` directory. Be sure to put the path name in quotes and remember that UNIX names are case-sensitive. Also, make sure that your file protection allows general access to the boot directory.

When you type a CTRL-D or EXIT to exit the remote console, the file `Firmname.bin` will then be loaded into the print server. The red TEST LED will blink during the load process and will go out when the process is complete.

If the LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Then power the print server off and then on again, enter the `SET LOAD ENABLE` command, and exit the remote console to retry the download.

Downloading from a UNIX Host Computer using BOOTP

To download the print server firmware from a UNIX host using BOOTP, first copy the load file e.g. `Firmname.bin` to that host. Make sure that BOOTP and tftp are started by checking the appropriate files on your system (generally speaking, BOOTP must be enabled in the `/etc/inetd.conf` file, while tftp must be enabled in your `/etc/services` file and possibly in another configuration file, such as the `/etc/inetd.conf` file). Refer to your UNIX system documentation or man pages for additional information. Configure your `/etc/bootptab` file to specify the Ethernet address of the print server and the name of the load file (`Firmname.bin`). Make sure that your file protection allows general access to the directory that contains the load file. The exact format of the file `/etc/bootptab` varies widely, so you will need to refer to your UNIX system documentation for details. A typical `/etc/bootptab` file entry might be:

```
xc2:ht=ethernet:ha=00401700c953:\
ip=192.189.207.3:bf=/usr/Firmname.bin:
```

Now log into the print server remote console using TELNET, and execute the following commands:

```
SET LOAD SOTWARE "pathname"
SET LOAD ENABLE
EXIT
```

Be sure to put the path name in quotes and remember that UNIX names are case-sensitive. Also, make sure that your file protection allows general access to the boot directory.

When you type a CTRL-D or EXIT to exit the remote console, the file `Firmname.bin` will then be loaded into the print server. The red TEST LED will blink during the load process and will go out when the process is complete.

If the red LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Power the printer off and then on again, enter the `SET LOAD ENABLE` command, and then type `EXIT` to exit the remote console and retry the download.

Downloading from a NetWare Server

To download from a NetWare server, first copy the load file e.g.
`Firmname.bin` into the `\login` directory on your `SYS` partition
(`SYS:\LOGIN`). Using the `\login` directory will eliminate any potential
file protection problems.

Connect to the print server remote console using BRCONFIG and enter the
following commands in response to `Local>` prompt.

```
SET LOAD HOST fileservername
SET LOAD SOFTWARE SYS:\LOGIN\Firmname.bin
SET LOAD ENABLE
```

where *fileservername* is the name of the file server. When you type a
CTRL-D to exit the remote console, the file `Firmname.bin` will then be
loaded into the print server. The red diagnostic LED will blink during the
load process and will go out when the process is complete.

If the red LED does not go out after about two minutes, check to make sure
that you correctly entered all parameters and that your network connections
are good. Then power the print server off and then on again, enter the `SET`
`LOAD ENABLE` command, and exit the remote console to retry the
download.

Downloading from a DEC VMS Host Computer

The download procedure for DEC computers is basically identical to the procedure for downloading a DEC terminal server. If MOP is not running on your host computer, enter the following VMS commands to enable it:

```
$ RUN SYS$SYSTEM:NCP
NCP> SHOW CIRCUIT QNA-0 CHARACTERISTIC
NCP> SET CIRCUIT QNA-0 STATE OFF
NCP> SET CIRCUIT QNA-0 SERVICE ENABLE
NCP> SET CIRCUIT QNA-0 STATE ON
NCP> DEFINE CIRCUIT QNA-0 SERVICE ENABLE
NCP> SHOW CIRCUIT QNA-0 CHARACTERISTIC
NCP> EXIT
```

Refer to the documentation included with your VMS system and/or your terminal server if you need additional information on starting MOP. The load file e.g. `Firmname.BIN` must be installed in the directory `SYS$SYSROOT:[MOM$SYSTEM]`. The best way to copy this file from diskette is to use the NFT (Network File Transfer) utility included with PATHWORKS, making sure that you copy in image mode with a maximum record size (MRS) of 512 bytes as shown in the following example:

```
COPY/IMAGE/MRS=512 Firmname.BIN host::directory
```

where host is the name of the VAX host computer and directory is the VMS load directory (for example, `VAX::SYS$SYSROOT:[MOM$SYSTEM]`. Note that you must specify both `/IMAGE` and `/MRS=512` because the copy command defaults to DOS stream mode and 128 byte records.

Make sure that the system logical `MOM$LOAD` is set correctly by verifying that the following line is in your site startup file:

```
$DEF/SYSTEM/EXEC/NOLOG MOM$LOAD -
SYS$SYSROOT:[MOM$SYSTEM]
```

If there are other directories listed in the same command, add the server directory (if necessary) to the list separated by commas. If this command does not exist, type it in at the VMS "$" prompt and also add it to the startup file using the VMS editor.

Now use NCP to access the print server remote and type:

```
SET LOAD SOFTWARE Firmname.BIN
SET LOAD ENABLE
```
in response to the `Local>` prompt.

When you type a CTRL-D to exit the remote console, the file `Firmname.BIN` will then be loaded into the print server. The red TEST LED will blink during the load process and will go out when the process is complete.

If the red LED does not go out after about two minutes, check to make sure that you correctly entered all parameters and that your network connections are good. Then power the print server off and then on again, enter the SET LOAD ENABLE command, and exit the remote console to retry the download.

Downloading from a VINES Server

To download from a Banyan VINES file server, first copy the load file into any directory on your file server (for example, E:). Then use the BRAdmin utility (see Chapter 9 Section C) to download the new firmware. Go to the main screen, select the **File** menu, and choose **Reload**. Then select the drive and directory in which the load file is located, click on the file name, and click on **OK** to get the **Firmware Reload** menu. Select the desired print server(s) and click on **Reload**. Click on **OK** when the reload is complete.

Obtaining Firmware Updates

To get latest firmware updates, "access" the Brother WWW server on www.brother.com.

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(For USA & CANADA Only)

For technical and operational assistance, please call:

In USA	1-800-276-7746	(outside California)
	949-859-9700 Ext. 329	(within California)
In CANADA	1-800-853-6660	
	514-685-6464	(within Montreal)

If you have comments or suggestions, please write us at:

In USA   Printer Customer Support
Brother International Corporation
15 Musick
Irvine, CA 92718

In CANADA   Brother International Corporation (Canada), Ltd.
- Marketing Dept.
1, rue Hôtel de Ville
Dollard-des-Ormeaux, PQ, Canada H9B 3H6

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a week. You can use the system to send the information to any fax machine,
not just the one you are calling from.
Please call 1-800-521-2846 (USA) or 1-800-681-9838 (Canada) and follow
the voice prompts to receive faxed instructions on how to use the system and
your index of Fax-Back subjects.

DEALERS/SERVICE CENTERS (USA only)
For the name of an authorized dealer or service center, call 1-800-284-4357.

SERVICE CENTERS (Canada only)
For service center addresses in Canada, call 1-800-853-6660.

INTERNET ADDRESS
For technical questions and downloading drivers: **http://www.brother.com**