brother®

Multi-Protocol Print/Fax Server

Network User's Guide

NC-100h

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

The Brother Solutions Center (http://solutions.brother.com) is your one stop resource for all your machine needs. Download the latest drivers and utilities for your Brother machine, read the FAQs and troubleshooting tips or learn about special printing solutions in the 'Solutions' and 'Customer Education' sections.

UK Version

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declares, that the products

Product Name: Brother Network Interface (BR-net)
Model Number: NC-100h

complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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Cet appareil numérique de la classe B est conforme a la norme NMB-003 du Canada.

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    15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561, Japan

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Safety: EN 60950,
EMC: EN 55022 Class B,   EN 55024

following the provisions of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC (as amended by 91/263/EEC and 92/31/EEC).

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Caution for LAN connection

Connect this product to a LAN connection that is not subjected to overvoltages.

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Table of Contents

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(*1) Complete descriptions of these features are included in the
Software User's Guide on the CD-ROM.

1 Introduction

Computer Network Basics

■■■

Overview

The network-connected Brother machine allows multiple computers to carry out several independent print jobs on one machine.

To use the Brother machine through a network, you need to select a protocol, configure the Print / Fax Server, and set up the computers you use.

■ **Protocol selection and Print / Fax Server configuration**
If a Brother machine has been already connected to a network, please check the current protocol. In this case, you don't need to configure the Print / Fax Server.

■ **Print / Fax Server**
Print / Fax Server activates the network functions built-in the Brother machine.

Protocols

Protocols are the standardized sets of rules for transmitting data on a network. Protocols allow the users to gain access to the network-connected resources.

■ **TCP/IP**
This is the most popular set of protocols used for communication such as Internet and E-mail. This protocol can be used in almost all the operation systems such as Windows®, Macintosh® and Linux.
TCP/IP is suited to a large-scale network and is widely used for company networks.
TCP/IP is also widely used as the print protocol. The Brother machine can use the TCP/IP-based protocols such as LPR and NetBIOS Name Resolution.

Protocol Configuration Items

TCP/IP Configuration

- IP Address
- Gateway (when routers exist on your network)

■ **IP Address**
An IP address is a series of numbers that identifies each computer connected to the Internet. An IP address consists of four numbers separated by dots. Each number is between 0 and 255. You must allocate a unique IP address that is correct for the attached network.

Example) In a small network, set the IP addresses by changing the final number.
192.168.1.1, 192.168.1.2, 192.168.1.3

■ **Subnet mask**
Subnet masks restrict network communication and an example of one follows...
- 255.255.0.0

Example) PC1 can talk to PC2

PC1 IP Address   193.   1.   2.   3
Subnet Mask   255.   255. 0.   0

PC2 IP Address   193.   1.   3.   4
Subnet Mask   255.   255. 0.   0

Here is an example of an IP address and a subnet mask.

IP Address   193.   1.   2.   3
Subnet Mask   255.   255. 0.   0

0 means this part of the address is not limited for communication.

In the above example, we can communicate with anything that has an IP address that begins with 193.1.X.X

■ **Gateway (and Router)**

A Gateway is the transfer device that passes data between networks. A gateway is a network point that acts as an entrance to another network and sends data transmitted via the network to an exact destination. The router knows where to direct data that arrives at the gateway. If a destination is located at an external network, the router transmits data to the external network. If your network communicates with other networks, you may need to configure the Gateway IP address. If you do not know the Gateway IP address then contact your Network Administrator.

Node name

Node name appears in current BRAdmin Professional or Printer configuration page. Default Node name is "BRN_xxxxxx" ("xxxxxx" is the last six digits of Ethernet address.)

Network Connection

Types of Network

There are various ways to configure and arrange networks and network printing depending on the office environment and requirements. We recommend to use this product in a Peer to Peer environment in which each computer directly sends and receives data to and from the Brother machine.

Peer-to-Peer Printing

Each computer requires configuration of the printer port.
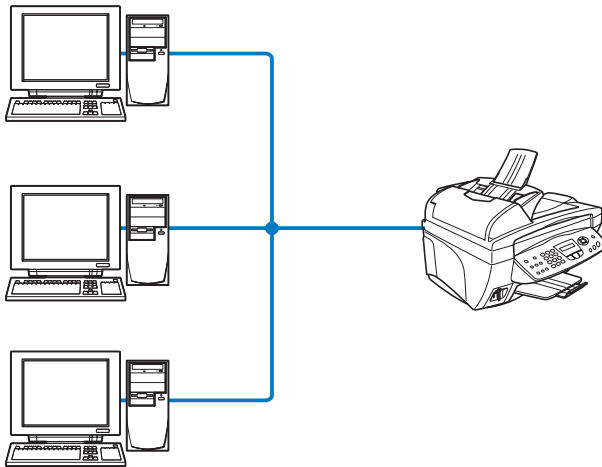
Network Example

Example : Peer-to-Peer (TCP/IP)
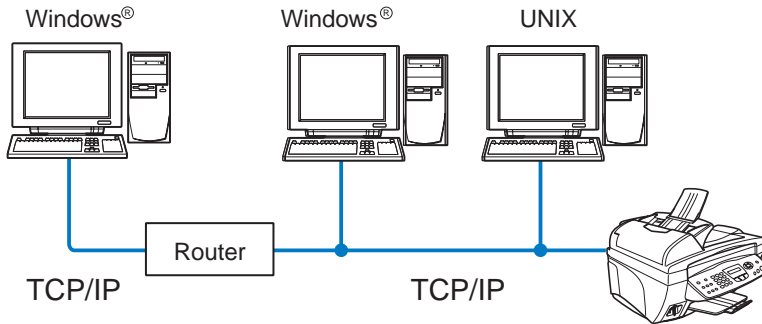
- Each computer needs the TCP/IP and Print Protocol configured.

- The Brother machine needs to have an IP address configured.

- If a TCP/IP environment has been already established, we recommend using Peer-to-Peer.

- If a routers exist, then computers can access the Brother machine through the routers. (In this case, the Gateway address must be configured.)

- The Brother machine can also communicate with Macintosh® (TCP/IP compatible Operating Systems) devices.

Features

Overview

The Brother Network Print / Fax Server allows your Brother machine to be shared on a 10/100Mbit Ethernet Network. Administration utilities provide easy configuration and management of your Brother machine. Once configured, it allows your machine to FAX documents over the Internet; print and scan documents over a network. This is supplied with Brother's Peer to Peer printing software allowing you to easily share the machine as a small workgroup printer.

Network Printing

The Print / Fax server can be utilized as a print server providing printing services for the Windows® 98/Me, Windows® 2000/XP supporting the TCP/IP protocols and Macintosh® Networks supporting QuickDraw over TCP/IP or Rendezvous. (See *chapter 5* for details)

Network Scanning

You can scan documents into a PC on your Network directly. (See chapter 8 of the Software User's Guide on the CD-ROM)

Network PC-FAX

You can directly send a PC file as a PC-FAX on your Network. (See chapter 6 of the Software User's Guide on the CD-ROM for complete description)

Network PhotoCapture Center

You can view or retrieve data from the media card inserted into Brother machine by double-clicking the Network PhotoCapture Center icon on the desk top of your PC. The software is automatically installed when you select network connection during the software installation.

Management Utilities

The BRAdmin Professional utilities provide powerful easy to use configuration and management of Fax and network settings.

2 TCP/IP Configuration

Assigning TCP/IP Information (Basic)

Overview

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

The Automatic Private IP Addressing (APIPA) protocol automatically assigns an IP address from the range: 169.254.1.0 to 169.254.254.255. If you want to disable the APIPA protocol, set APIPA to Off using control panel. For more information see page 2-8. If the APIPA protocol is disabled, the default IP address of a Brother Print/Fax server is 192.0.0.192.
However, you can easily change this IP address number to match with the IP address details of your network. This can be done in any of the following ways:

■ From your machine's control panel settings.

■ BRAdmin Professional utility (for Windows® 98/Me and Windows® 2000/XP).

■ DHCP, APIPA, Reverse ARP (RARP) or BOOTP.

■ Other SNMP based management utilities.

These configuration methods are described in the following paragraphs.

The IP address you assign to the Print/Fax 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). (See page 1-2 for more details)

# Using the machine's control panel to allocate an IP address

Refer to *chapter 3* for details on how to configure IP address information using the machine's control panel. By using the control panel on the machine, you can program the IP address details at the same time that other machine parameters are configured.

Changing the IP Address using the BRAdmin Professional utility

Please use the BRAdmin Professional utility version that was supplied on the CD-ROM with your Brother product.

You can also download the latest Brother BRAdmin Professional utility version from http://solutions.brother.com. This utility is only available for Windows® users.

Start the BRAdmin Professional utility (from Windows® 98/Me and Windows® 2000/XP), by clicking **Start** / **Programs** / **Brother Administrator Utilities** / **Brother BRAdmin Professional Utilities** / **BRAdmin Professional**.
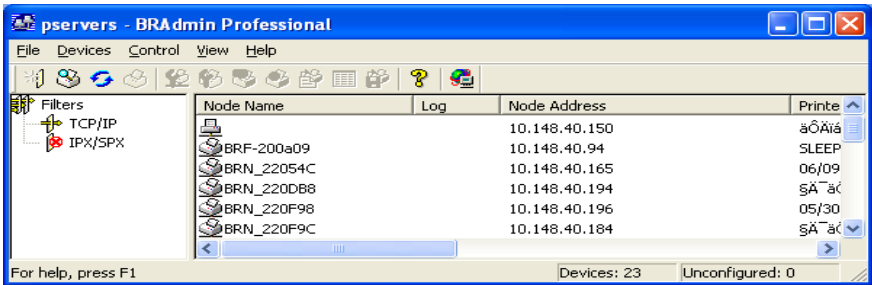
The BRAdmin Professional utility can use the TCP/IP protocols to communicate with the Brother Print/Fax server.

If you wish to use the TCP/IP protocol to manage the Print/Fax server make sure that the Print/Fax server has a valid IP address. If you are not using DHCP, BOOTP or RARP, you will want to change the IP address.This is how to change the IP address using the BRAdmin Professional utility:

■ Use the TCP/IP protocol and let BRAdmin Professional utility find the Brother Print/Fax server as an unconfigured device.

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

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

1 Select **TCP/IP filter** in the left frame of the main BRAdmin window.

2 Select the **Device** menu and choose the **Search Active Devices**.

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

3 Select the **Devices** menu and choose **Setup Unconfigured Devices**.

4 Select the MAC address of your Print/Fax server and click the **Configure** button.

You can find the node name and MAC address by printing out the machine configuration page. Refer to this Guide *chapter 3* for information on how to print the configuration page on your Print/Fax server.

5 Enter the **IP address**, **Subnet mask** and **Gateway** (if needed) of your Print/Fax server.

6 Click **OK** then select **Close**.

7 With the correctly programmed IP address, you will see the Brother Print/Fax server in the device list.

Assigning TCP/IP Information Automatically (Advanced)

Using DHCP to Configure the IP address

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

If you do not want your Print/Fax server configured via DHCP, BOOTP or RARP, you must set the BOOT METHOD to static so that the Print/Fax server has a static IP address. This will prevent the Print/Fax server from trying to obtain an IP address from any of these systems. To change the BOOT METHOD, use the machine's control panel or by using the BRAdmin Professional utility.

Using APIPA to Configure the IP Address

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

By default, the APIPA protocol is enabled.

Using RARP to Configure the IP Address

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

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

Where the first entry is the Ethernet address of the Print/Fax server and the second entry is the name of the Print/Fax 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/Fax server will get the IP address from the rarp daemon when the printer is powered on.

Using BOOTP to Configure the IP Address

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

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

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

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

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

and:

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

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

As with rarp, the Print/Fax server will load its IP address from the BOOTP server when the machine is powered on.

Other Sources of Information

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

3 **Front Panel Setup**

LAN Main Setup Menu

You can connect your machine into the network to use the Network Scanner, Network Printer and Network PhotoCapture Center.

To use all the network functions, you can set up your machine using the control panel LAN menu.

You can also set up the LAN settings using BRAdmin. (See *chapter 2* or visit at: http://solutions.brother.com)

The LAN menu selections allow you to setup the Brother machine for your network and Internet Fax configuration. Press **Menu/Set** then press the appropriate number, **5** for LAN. In the LAN Main Setup menu, there are two main selections: **Setup TCP/IP** and **Setup Misc.** Proceed to the menu selection you wish to configure. (See chapter 3 of the User's Guide for the LAN menu options)

Please note that the machine is supplied with the BRAdmin Professional Windows® software, which can be used to configure many aspects of the network.

Setup TCP/IP

This menu has nine sections: **BOOT Method**, **IP Address**, **Subnet Mask**, **Gateway**, **Host Name**, **WINS Config**, **WINS Server**, **DNS Server** and **APIPA**.

BOOT Method

1 Press **Menu/Set**, **5**, **1**, **1**.

2 Press ⌄ or ⌄ to select Auto, Static, RARP, BOOTP or DHCP.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Static mode
In this mode the machine's IP address must be manually assigned. Once entered the IP address is locked to the assigned address.

Auto mode
In this mode, the machine will scan the network for a DHCP server, if it can find one, and if the DHCP server is configured to allocate an IP address to the machine, then the IP address supplied by the DHCP server will used. If no DHCP server is available, then the machine will scan for a BOOTP server. If a BOOTP server is available, and it is configured correctly, the machine will take its IP address from the BOOTP server. After it is initially powered ON, it may take a few minutes for the machine to scan the network for a server.

RARP mode
Brother Print / Fax 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:

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

Where the first entry is the Ethernet address of the Print / Fax server and the second entry is the name of the Print / Fax 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:

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For AT&T UNIX-based systems, type:

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

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

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

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

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

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

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

and:

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

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

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

DHCP mode
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® 2000/XP network) the Print / Fax server will automatically obtains its IP address from DHCP server and register its name with any RFC 1001 and 1002-compliant dynamic name services.

If you do not want your Print / Fax server configured via DHCP, BOOTP or RARP, you must set the Boot Method to Static, this will prevent the Print / Fax server from trying to obtain an IP address from any of these systems. To change the Boot Method, you can use the front panel or the BRAdmin application.

IP Address

This field displays the current IP address of the machine. If you have selected a BOOT Method of Static, enter the IP address that you wish to assign to the machine (check with your network manager for the IP address to use). If you have selected a method other than Static, the machine will attempt to determine its IP address using the DHCP or BOOTP protocols. The default IP address of your machine will probably be incompatible with the IP address numbering scheme of your network. We recommend that you contact your network manager for an IP address for the network the unit will be connected on.

1 Press **Menu/Set**, **5**, **1**, **2**.

2 Select **1** to change. Enter the IP address.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

When the Boot Method is set to "Auto", the machine cannot receive IP address from a BOOTP server in Windows® 2000. So please ensure that you use DHCP for Windows® 2000 server.

Subnet Mask

This field displays the current subnet mask used by the machine. If you are not using DHCP or BOOTP to obtain the subnet mask, enter the desired subnet mask. Check with your network manager for the subnet mask to use.

1 Press **Menu/Set**, **5**, **1**, **3**.

2 Select **1** to change. Enter the Subnet Mask address.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Gateway

This field displays the current gateway or router address used by the machine. If you are not using DHCP or BOOTP to obtain the gateway or router address, enter the address you wish to assign. If you do not have a gateway or router, leave this field blank. Check with your network manager if you are unsure.

1 Press **Menu/Set**, **5**, **1**, **4**.

2 Select **1** to change. Enter the Gateway address.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Host Name

You can register the machine name on the Network. This name is often referred to as a NetBIOS name; it will be the name that is registered by the WINS server on your network. Brother recommends the name BRN_XXXXXX (where XXXXXX is the last six digits of the Ethernet address) (up to 15 characters).

1 Press **Menu/Set**, **5**, **1**, **5**.

2 Select **1** to change. Enter the Host Name.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

WINS Config

This selection controls how the machine obtains the IP address for the WINS Server.

1 Press **Menu/Set**, **5**, **1**, **6**.

2 Press ⬡ or ⬡ to select Auto or Static.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Auto
Automatically uses a DHCP request to determine the IP addresses for the primary and secondary WINS servers. You must set the BOOT Method to Auto for this feature to work.

Static
Uses a specified IP address for the primary and secondary WINS servers.

WINS Server

1 Press **Menu/Set**, **5**, **1**, **7**.

2 Press ⬙ or ⬘ to select Primary or Secondary.

3 Press **Menu/Set**.

4 Enter the WINS Server address.

5 Press **Menu/Set**.

6 Press **Stop/Exit**.

Primary WINS Server IP Address
This field specifies the IP address of the primary WINS (Windows® Internet Naming Service) server. If set to a non-zero value, the machine will contact this server to register its name with the Windows® Internet Name Service.

Secondary WINS Server IP Address
This field specifies the IP address of the secondary WINS server. It is used as a backup to the Primary WINS server address. If the Primary server is unavailable, the machine still can register itself with a secondary server. If set to a non-zero value, the machine will contact this server to register its name with the Windows® Internet Name Service. If you have a primary WINS server, but no secondary WINS server, simply leave this field blank.

DNS Server

1 Press **Menu/Set**, **5**, **1**, **8**.

2 Press ⬦ or ⬦ to select Primary or Secondary.

3 Press **Menu/Set**.

4 Enter the DNS Server address.

5 Press **Menu/Set**.

6 Press **Stop/Exit**.

Primary DNS Server IP Address
This field specifies the IP address of the primary DNS (Domain Name Service) server.

Secondary DNS Server IP Address
This field specifies the IP address of the secondary DNS server. It is used as a backup to the Primary DNS server address. If the Primary server is unavailable, the machine will contact the Secondary DNS server.

APIPA

The setting of On will cause the print server to automatically allocate a Link-Local IP address in the range (169.254.1.0 - 169.254.254.255) when the print/fax server cannot obtain an IP address through the BOOT Method you have set (Menu, 5, 1). Selecting Off means the IP address doesn't change, when the print/fax server cannot obtain an IP address through the BOOT Method you have set

1 Press **Menu**, **5**, **1**, **9**.

2 Press ⬦ or ⬦ to select On or Off.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Setup Misc.

Ethernet

Ethernet link mode. Auto allows the print server to operate in 100BaseTX full or half duplex, or in 10BaseT half duplex mode by auto negotiation.

100BaseTX Full Duplex (100B-FD) or Half Duplex (100B-HD) and 10BaseT Full Duplex (10B-FD) or Half Duplex (10B-HD) fix the print server link mode. This change is valid after the print server has been reset (default is Auto).

If you incorrectly set this value, you may not be able to communicate with your print server.

1 Press **Menu/Set**, **5**, **2**, **1**.

2 Press ⌁ or ⌁ to select Auto/100B-FD/100B-HD/ 10B-FD/10B-HD.

3 Press **Menu/Set**.

4 Press **Stop/Exit**.

Time Zone

This field displays the time zone you can set for your country. The time is the difference between your location and Greenwich Mean Time. This time will be shown on documents received via the Internet. For example the Time Zone for Eastern Time in the USA and Canada is GMT-05:00.

1 Press **Menu/Set**, **5**, **2**, **2**.

2 Enter the time.

3 Press ⌁ or ⌁ to press **Menu/Set** to accept the selection.

4 Press **Stop/Exit** to exit the configuration menu.

Windows® Time Zone Setting
You can determine the time difference for you location by using the
Time Zone setting in Windows®.

1 Click on **Start**.

2 Select **Settings** / **Control Panel**.

3 Double click on **Date/Time**.

4 Select **Time Zone**.

Verify your time zone setting from the pull-down menu (this menu
displays the time difference from GMT).

Network Configuration List

This feature prints a report listing all the current network Print / Fax
Server Settings.

1 Press **Menu/Set**, **7**, **6**.

2 Press **Mono Start** or **Colour Start**.

3 Press **Stop/Exit**.

Restoring the Network Settings to Factory Default

Follow the steps below to restore all network settings of the internal
Print/Fax server to factory default.

1 Disconnect the Ethernet cable from the machine.

2 Press the up and down arrow navigation keys to display the
Network Default menu.

3 Press **1** to return all settings of the Print/Fax server back to
factory default.

4 Power off the machine.

5 Reconnect the Ethernet cable and power the machine back ON.

4 Network Printing from Windows® (Peer to Peer)

For Windows® 2000/XP, LAN Server and Warp Server users

Overview

Windows® 2000/XP users are able to send print jobs directly to the printer without installing any additional software. Brother's print server also supports transparent printing from IBM LAN Server and OS/2 Warp Server file servers, as well as from OS/2 Warp Connect workstations using the TCP/IP protocol.

Quick Tips:

1 The Automatic Private IP Addressing (APIPA) protocol automatically assigns an IP address from the range: 169.254.1.0 to 169.254.254.255. If you want to disable the APIPA protocol, set APIPA to Off using control panel. For more information see page 2-8. If the APIPA protocol is disabled, the default IP address of a Brother Print/Fax server is 192.0.0.192. To change it, use the machine's control panel, the BRAdmin Professional utility software or let your DHCP server allocate an IP address to the printer.

2 The default password for Brother Print/Fax servers is `access`.

3 Windows® 2000/XP users can print using TCP/IP using the standard Network Printing software.

4 The default name for a Brother Print/Fax server is usually `BRN_xxxxxx` (where `xxxxxx` is the last six digits of the Ethernet address of the Print/Fax server).

Windows® 2000/XP (TCP/IP) Configuration

The default configuration of Windows® 2000/XP automatically installs the TCP/IP protocol. Refer to the appropriate section in this chapter for more information.

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

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

Standard TCP/IP Port Printing

1   From the **Printers** folder select **Add Printer**. The **Add Printer Wizard** will now start. Click on **Next**.

2   Now select the **Local Printer** option and deselect the **Automatically detect and install my Plug and Play printer** option.

3   Click on **Next**.

4   You must now select the correct Network printing port. Select **Create a new port** and select **Standard TCP/IP Port** port from the pull-down window.

5   When you have done that click **Next**.

6   The **Add Standard TCP/IP Port Wizard** will now appear. Click the **Next** button.

7   Enter the IP address, or name of the printer you wish to configure. The Wizard will automatically enter the Port name information for you.

8   Click the **Next** button.

9 Windows® 2000/XP will now contact the printer that you specified. If you did not specify the correct IP address or name then you will receive an error message.

10 Click the **Finish** button to complete the Wizard.

11 Now that you have configured the port, you must specify which printer driver you wish to use. Select the appropriate driver from the list of supported printers. If you are using a driver supplied with the machine on CD-ROM then select the **Have Disk** option to browse to the CD-ROM. You can also click the **Windows Update** button to connect directly to Microsoft's support Web site to download printer drivers.

12 When the driver is installed, click the **Next** button.

13 Specify a name and click the **Next** button.

14 Now specify if you wish to share the printer, enter the share name and click **Next**.

15 Continue through the Wizard clicking the **Finish** button when complete.

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

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

1 Select the printer driver you wish to configure.

2 Select **File** and then choose **Properties**.

3 Click the **Ports** tab of the driver and click **Add Port**.

4 Select the port that you wish to use. Typically this would be **Standard TCP/IP Port**. Then click the **New Port...** button.

5 The **standard TCP/IP Port Wizard** will start. Follow steps 6-10 of the "Standard TCP/IP Port Printing" section.

For Windows® 98/Me users

Overview

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

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

Quick Tips:

1 The Automatic Private IP Addressing (APIPA) protocol automatically assigns an IP address from the range: 169.254.1.0 to 169.254.254.255. If you want to disable the APIPA protocol, set APIPA to Off using control panel. For more information see page 2-8. If the APIPA protocol is disabled, the default IP address of a Brother Print/Fax server is 192.0.0.192. To change it, use the machine's control panel, the BRAdmin Professional utility software or let your DHCP server allocate an IP address to the printer.

2 Refer to *chapter 2* of this user guide to learn how to configure the IP address on your machine.

3 The default password for Brother Print/Fax servers is `access`.

Driver Deployment Wizard

This installer includes the Windows driver and Brother network port driver (LPR).

If the administrator installs the printer driver and port driver using this software, they can save the file to the File server or send the file in an E-mail to other users. The user just clicks on the attached file and the printer driver, port driver and IP address are automatically installed to their PC.

TCP/IP Printing

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

If you haven't already done so, configure the IP address of the machine, for more information on IP address configuration, refer to *chapter 2* of this user guide.

Installing the Brother Peer to Peer Software

If you already installed the driver from the printer's CD-ROM Installer and you selected "Brother Peer-to-Peer Network Printer" during the installation then you do not need to install the Brother Network Print Software again.

1 Start the CD-ROM installation menu program according to the Quick Setup Guide.

2 Select the proper model and then the **Software Installation** menu. Then select the appropriate menu to start the **Brother Network Print Software** installation program.

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

4 Select the **Brother Peer to Peer Print (LPR)** button.

5 Select the desired directory to install the **Brother Peer to Peer Print (LPR)** files and push **Next**. The installation program will create the directory for you if it does not already exist on your disk.

6 Enter the **Port name** that you wish to use and click **OK**. The default port name is BLP1. Whichever name you choose, it must be unique and it MUST begin with BLP.

7 You must now enter the actual IP address of the Print/Fax server in the **Printer name or IP address** field. If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the name of the print server. As the Print/Fax server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the Print/Fax server. The NetBIOS name can be seen in your printer configuration page. By default the NetBIOS name will usually appear as BRN_xxxxxx where xxxxxx is the last six digits of the Ethernet address.

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

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

Associating to the printer

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

1 To do this, go the **Start** button, select **Settings** and then **Printers**.

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

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

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

5 Select the correct driver. Click **Next** when you are done.

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

7 Select the Brother LPR port (the port name you assigned in step 6 of the "Installing the Brother Peer to Peer Software" on page 4-5) and press **Next**.

8 Enter any desired name for the Brother printer and press **Next**. For example, you could call the printer "Networked Brother Printer".

9 Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

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

Adding a Second Brother LPR Port

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

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

Other Sources of Information

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1 Visit http://solutions.brother.com/ for more information on network printing and for documents on the IPP protocol and how to configure a Windows® 98/Me/2000/XP System.

2 Refer to *chapter 2* of this user guide to learn how to configure the IP address of the machine.

5 Network Printing from Macintosh®

TCP/IP Printing for Macintosh®

This chapter explains how to print from Macintosh® on a Network. For more information on how to configure the default Quick Draw driver on a Network, see the Quick Setup Guide included with the machine.

Rendezvous Printing (Mac OS® 10.2.4 or greater)

Rendezvous lets you create an instant network of computers and smart devices just by connecting them to each other.

Rendezvous support allows a Rendezvous ready printer or MFC to automatically configure itself to work in a Mac OS® X Rendezvous system. You do not need to manually configure any IP address or network settings within the printer as the printer will automatically configure itself.

Refer to the information below if you wish to learn how to configure a Brother machine into a Mac OS® X Rendezvous environment. Please note Brother recommends that you use version Mac OS® 10.2.4 or greater.

*1* Run the **Print Center** software and click the **Add**.
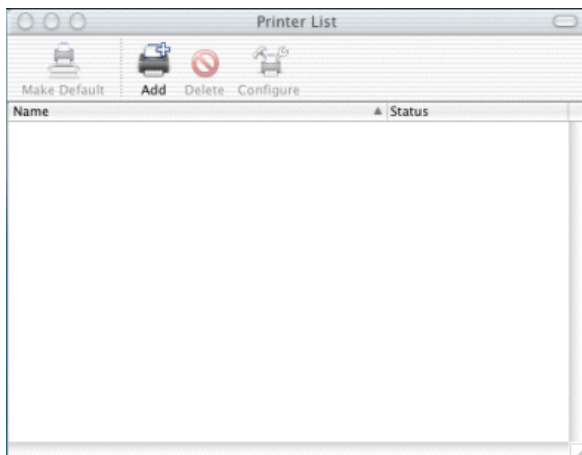
2 Select **Rendezvous** and any Rendezvous compatible machines will be displayed.
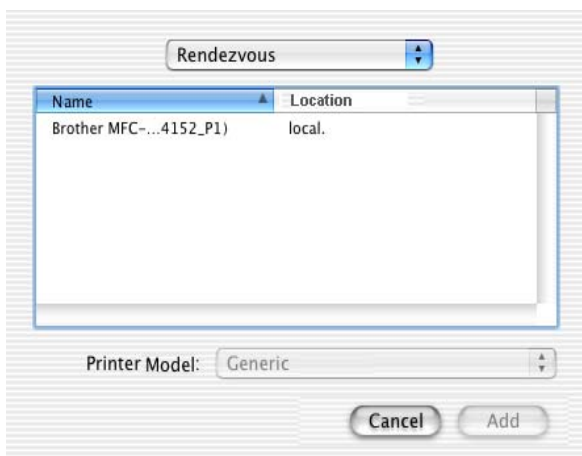

If you are using OS X 10.2.1, three machines are listed. Select any one of the machine listed.

3 Click the machine and then change the **Printer Model** to "Brother". The PPD files that are installed on your Macintosh are displayed. Select the relevant PPD file.
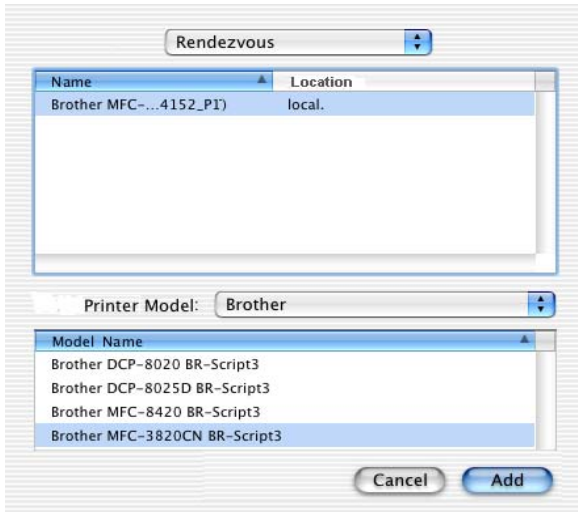
4 The Rendezvous ready machine is displayed.

5 Click the machine and click the **Make Default** button to set the printer as the default printer.The machine is now ready to print.

Other Sources of Information
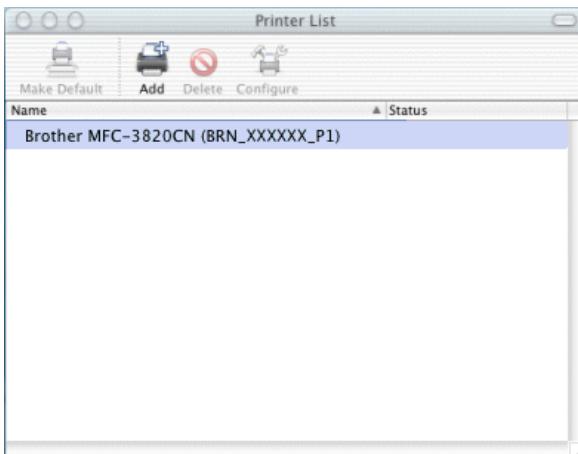
Visit http://solutions.brother.com/ for the latest information on Rendezvous Printing for Mac OS® 10.2.4.

6 Troubleshooting

Overview

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

1 Installation Problems

2 Intermittent Problems

3 Protocol-Specific Troubleshooting

Installation problems

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

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

Verify that the machine and the configuration are good by printing the Network configuration page. Refer to page 3-10 of this user's guide. If the test fails, check:

a If the LCD does not display "LAN Active" after being connected to the network, then the network firmware settings may be corrupted. Please refer to Step 3.

b In this event, try to restore the factory default settings of the Print/Fax server by pressing both upper and lower narrows at Navigation key to show Network Default menu, then press 1. Once you have done that, switch the machine off and then on again, and try to print out the Network configuration page. (See *Restoring the Network Settings to Factory Default*, page 3-10)

2 If the configuration page prints but you cannot print documents, try the following

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

a If you are using TCP/IP:
Try pinging the Print/Fax server from the host operating system command prompt with the command:
`ping ipaddress`

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

b If you are running Macintosh:
If you are using the Quick Draw driver make sure that you can see the Print/Fax server name under the Brother Ink (IP) icon in the Chooser. If it is visible, then the connection is good, so proceed to the Macintosh Section. Otherwise, go to step 3.
If you use the Rendezvous function, please visit the Brother Solutions Center web site on: http://solutions.brother.com

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

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

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

4 If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub (if applicable). Also, if you have a hub or multi-port repeater, verify that the hub or repeater port is good by trying the Print/Fax server on a different port or on the other hub or multi-port repeater.

5 If you have a bridge or router located between the Print/Fax server and host computer, make sure that the device is set up to allow the Print/Fax 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/Fax 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/Fax server.

Intermittent Problems

If the Print/Fax server and machine start up OK, but you intermittently have problems printing, check the following:

1 If you can print small jobs but large graphics jobs are distorted or incomplete, make sure that you have adequate memory in your machine and the latest printer driver installed on your computer. The latest Brother printer drivers can be downloaded from http://solutions.brother.com

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

TCP/IP Troubleshooting

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

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

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

1 The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the Print/Fax server (via the configuration page. Make sure that no other nodes on the network have this address (DUPLICATE IP ADDRESS ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS).

2 Make sure that the TCP/IP protocol of the Print/Fax server is enabled.

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

4 If you used bootp, make sure that you started the bootp daemon on any UNIX workstation and bootp is enabled (i.e., the "#" is removed from the bootp entry) in the /etc/bootptab file is correctly configured.

5 Also verify that host computer and the Print/Fax server are either on the same subnet, otherwise that the router is properly configured to pass data between the two devices.

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

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

1 Make sure that the Brother LPR Port driver is correctly installed and configured according to the "TCP/IP Printing" on page 4-5.

2 Try to turn the **Byte Coun**t on in the **Configure port** area of printer driver properties.

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

A **Appendix**

Appendix A

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General Information

You can change the configuration of your Print/Fax server using any of the following methods.

- Brother BRAdmin Professional utility for Windows® 98/Me and Windows® 2000/XP
- Brother Web BRAdmin Professional utility for IIS*

BRAdmin Professional utility (Recommended)

The Brother BRAdmin Professional utility can use the TCP/IP protocol. This utility allows you to graphically manage aspects of the network and printer. It can also be used to upgrade the firmware of the Print/Fax server.

Web BRAdmin

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

Please note this software is not included on the CD-ROM that was supplied with your Brother product.
Please visit http://solutions.brother.com/webbradmin to learn more about this software and to download it.

IIS* = Internet Information Server 4.0
                        or
        Internet Information Services 5.0, 5.1

Using Services

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General

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

Service (Example)	Definition
BINARY_P1	TCP/IP binary, NetBIOS service.
TEXT_P1	TCP/IP text service (adds carriage return after each line feed).
BRN_xxxxxx_P1	Quickdraw Driver for Mac OS® 8.6 - 9.2, Mac OS® X 10.2.4 or greater.

Where xxxxxx is the last six digits of the Ethernet address (for example, BRN_310107_P1).

Reloading the Print / FAX Server Firmware

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General

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

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

Because of this, we STRONGLY recommend that you make a note of the current Print/Fax server configuration before you upgrade. To do this, print out a configuration page (Refer to this User's Guide Chapter 3 for information on how to print a configuration page).

There are two methods of upgrading the firmware in your Brother Print/Fax server:

1. Use the BRAdmin Professional utility **(Recommended)**

2. Use another system (such as a Novell or Unix system to send the new firmware file to the Print/Fax server).

Reloading firmware using BRAdmin Professional utility

The BRAdmin Professional utility can be used to easily re-program your Brother Print/Fax server.

1 Start BRAdmin Professional utility.

2 Highlight the appropriate Print/Fax server. Then press select the Control menu and choose Load Firmware. You can select more than one Print/Fax server by pressing CTRL+<select> or SHIFT+<select> on each additional Print/Fax server.

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

3 TFTP PUT from this host

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

AFTER SENDING FIRMWARE TO THE MACHINE, DO NOT TURN OFF THE MACHINE UNTIL AFTER THE MACHINE HAS PERFORMED AN AUTOMATIC RESTART.

Reloading process

During the firmware file loading process, the machine emits a series of beeps. After the firmware update is completed, the machine will re-start automatically. DO NOT TURN OFF THE MACHINE DURING THESE PROCESSES.

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

If you encounter problems upgrading the firmware and you find that the network portion of the machine no longer functions, call Brother Customer Service in your country.

Appendix B

Updating other machines through the Network

It is possible to program Brother machine on the network with either settings from an already programmed machine or with data from the Brother PC-FAX Address Book. (See Software User's Guide chapter 6)

When Brother PC-FAX in used from a PC that has BRAdmin Professional installed, an extra option appears in BRAdmin. By selecting a networked machine in the BRAdmin main window and right clicking it you will be presented with an extra option, **Import Auto Dial**.

If import Auto Dial option does not appear, open the Brother PC-FAX address book by selecting **Start**, **Programs**, **Brother**, **MFL-Pro Suite**, **PC-FAX Address Book**. It is necessary to run the address book utility to create an address book file.
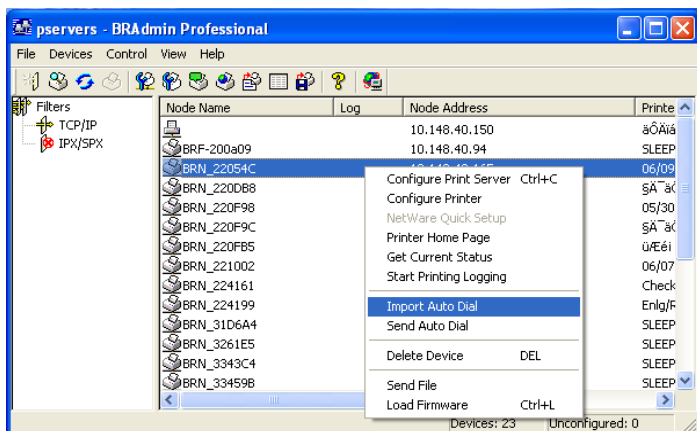
When you select this option BRAdmin reads the telephone settings from that machine (if there are any programmed) into Brother PC-FAX Address Book.
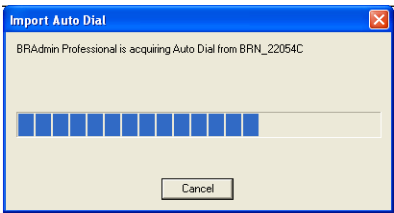

Illustrated below is the Brother Address Book, on the left are One-Touch / Speed-Dial numbers read from the machine. On the right is the Brother Address Book. It is now possible to allocate One-Touch / Speed-Dial numbers from the machine into the Brother Address Book and also use members of the Brother Address Book and send them to the machine. You can now make changes to the data in the Brother PC-FAX Address Book and click OK.
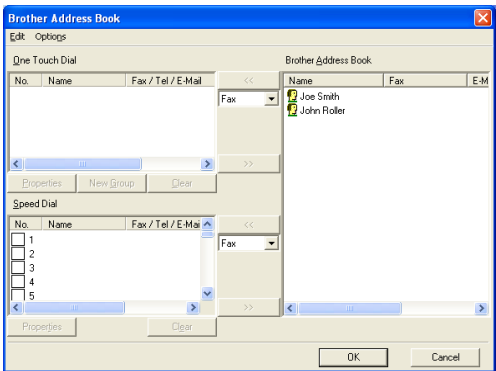
This data is then stored in the Windows® Temp Folder and can be used to update singular or multiple machine on the network.

Highlight singular or multiple networked Brother machine in the main BRAdmin window by highlighting and pressing the shift key on your keyboard. Right click the highlighted machine and press **Send Auto Dial**. The new data is then sent to all the highlighted machine.
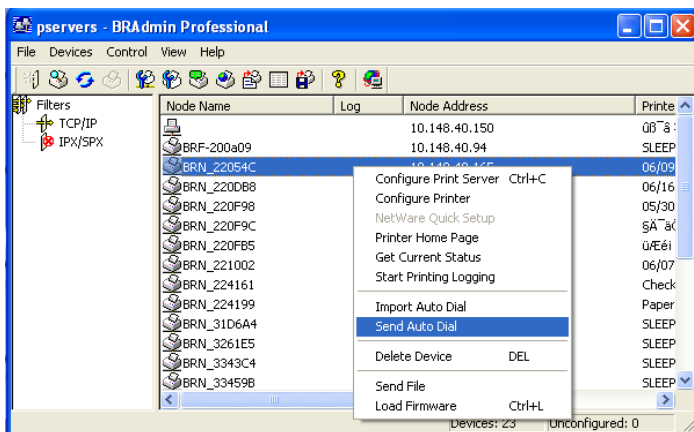
A dialog box is displayed showing the upload status of current machine and beneath this the whole progress is displayed if updating multiple machine.

When the process is finished a dialog box is displayed showing which machine on the network have been updated.
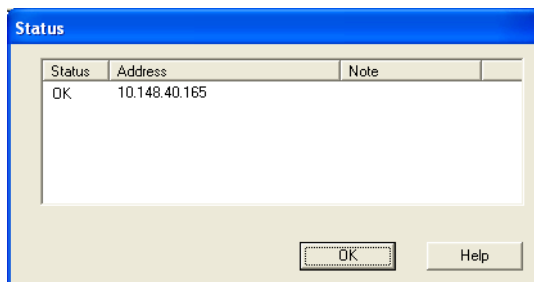
Appendix C

Specifications

Operating System Support

Windows® 98/98SE/Me and Windows® 2000/XP

Mac OS® 8.6-9.2 / Mac OS® 10.2.4 or greater

Protocol Support

TCP/IP (including the following)

- RARP, BOOTP, DHCP, APIPA, NetBIOS Name Resolution, WINS, DNS Resolver, LPR/LPD, Port9100, Rendezvous, TELNET, SNMP, TFTP

Network

10/100Base-TX Ethernet Network

Network Printing

Windows® 98/Me Peer-to-Peer Printing

Windows® 2000/XP TCP/IP Printing

Macintosh® Printing (Quick Draw over TCP/IP)

Rendezvous

Network PC Fax send

Windows® 98/98SE/Me and Windows® 2000/XP

Mac OS® 8.6-9.2 / Mac OS® 10.2.4 or greater

Network Scanning

B/W Resolution (TIFF/PDF): 200x100, 200x200dpi

Color Resolution (JPEG/PDF): 150x150, 300x300, 600x600dpi

Windows® 98/98SE/Me and Windows® 2000/XP

Up to 25 clients can be connected to one machine at a time.

Computer Requirements (for drivers, BRAdmin Professional, Peer-to-Peer software, etc.)

CPU

- Pentium 75MHz or Higher for Windows® 98/98SE
- Pentium 150MHz or Higher for Windows® Me
- Pentium 133MHz or Higher for Windows® 2000
- Pentium 233MHz or Higher for Windows® XP

RAM

- 24MB or greater (32MB recommended) for Windows® 98/98SE
- 32MB or greater (64MB recommended) for Windows® Me
- 64MB or greater (128MB recommended) for Windows® 2000/XP

For Macintosh® connection

Computer

- Ethernet ready Power Macintosh®

RAM

- 32MB or more (64MB or more recommended) for Mac OS® 8.6-9.2
- 128MB or more (160MB or more recommended) for Mac OS® X 10.2.4 or greater

OS

- Mac OS® 8.6-9.2 / Mac OS® X 10.2.4 or greater

Management Utilities

BRAdmin Professional utility

- Windows® 98/98SE/Me and Windows® 2000/XP

Web BRAdmin

- Windows® 2000 Professional/Server/Advanced Server/XP Professional

Function Table and Factory Default Settings

LEVEL ONE	LEVEL TWO	LEVEL THREE	OPTIONS	OPTIONS	FACTORY DEFAULT
5.LAN	1.Setup TCP/IP	1.BOOT Method	Auto/ Static/ RARP/ BOOTP/ DHCP		Auto
		2.IP Address	[000-255].[000-255].[000-255].[000-255]		169.254.X.X *1
		3.Subnet Mask	[000-255].[000-255].[000-255].[000-255]		255.255.0.0 *1
		4.Gateway	[000-255].[000-255].[000-255].[000-255]		000.000.000.000
		5.Host Name	BRN_XXXXXX=(last 6 figures of Ethernet address) (up to 15 characters)	BRN_XXXXXX	BRN_XXXXXX
		6.WINS Config	Auto/ Static		Auto
		7.WINS Server	(Primary) 000.000.000.000	(Secondary) 000.000.000.000	000.000.000.000
		8.DNS Server	(Primary) 000.000.000.000	(Secondary) 000.000.000.000	000.000.000.000
		9.APIPA	On/Off		On
	2.Setup Misc.	1.Ethernet	Auto/ 100B-FD/ 100B-HD/ 10B-FD/ 10B-HD		Auto
		2.Time Zone	GMTXXX:XX		GMT-00:00

*1: The factory setting for the 'IP Address' and 'Subnet Mask' setting may be changed by the APIPA setting.

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