



Multi-Protocol On-board Ethernet Print Server  
and Wireless (IEEE 802.11b/g) Ethernet Print Server

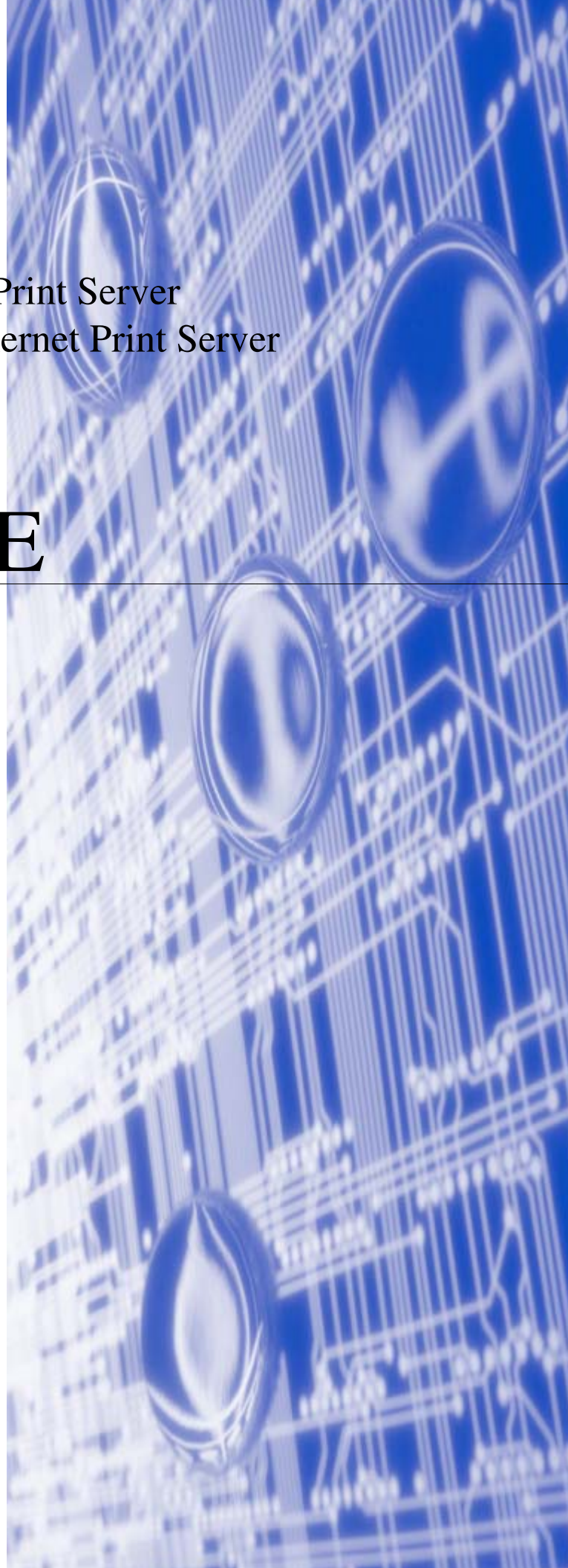
# NETWORK USER'S GUIDE

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HL-5270DN  
HL-5280DW

Please read this manual thoroughly before using the printer. You can print or view this manual from the Printer 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 printing needs. Download the latest drivers and utilities for your Brother printers, read the FAQs and troubleshooting tips or learn about special printing solutions.



## Definitions of warnings, cautions, and notes

We use the following icons throughout this User's Guide:



Notes tell you how you should respond to a situation that may arise or give tips about how the operation works with other features.



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**(HL-5280DW only)**

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## Overview

The Brother printer can be shared on a 10/100Mb wired or IEEE 802.11b/802.11g wireless (HL-5280DW only) Ethernet network using the internal network print server. The print server provides printing services for Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000/XP supporting the TCP/IP protocols and Macintosh® supporting TCP/IP. The following chart shows what network features and connections are supported by each operating system.

Model Names	Operating Systems	10/100 BASE-TX Wired Ethernet (TCP/IP)	IEEE 802.11b/g Wireless Ethernet (TCP/IP)	Printing	BRAdmin Professional	BRAdmin Light	Internet Printing	Status Monitor
HL-5270DN	Windows® 95/98/Me/2000/XP Windows NT® 4.0	✓		✓	✓		✓ <small>(Available for Windows® 2000/XP)</small>	✓
	Mac OS® X 10.2.4 or greater	✓		✓		✓		✓
	Mac OS® 9.1-9.2	✓		✓				
HL-5280DW	Windows® 95/98/Me/2000/XP Windows NT® 4.0	✓	✓ <small>(Not available for Windows® 95)</small>	✓	✓		✓ <small>(Available for Windows® 2000/XP)</small>	✓
	Mac OS® X 10.2.4 or greater	✓	✓	✓		✓		✓
	Mac OS® 9.1-9.2	✓		✓				

To use the Brother printer through a network, you need to configure the print server, and set up the computers you use.

**Note**

For wireless network users (HL-5280DW only):

- To achieve optimum results with normal every day document printing, place the Brother printer as close to the network access point (router) as possible with minimal obstructions. Large objects and walls between the two devices as well as interference from other electronic devices can affect the data transfer speed of your documents.

Due to these factors, wireless may not be the best method of connection for all types of documents and applications. If you are printing large files, such as multi-page documents with mixed text and large graphics, you may want to consider choosing wired Ethernet for a faster data transfer, or USB for the fastest throughput speed.

- Although Brother HL-5280DW can be used in a both wired and wireless network, only either one of the connection methods can be used at a time. When a network interface cable is connected to the printer, the printer automatically detect wired network interface, and when the network interface cable is not connected to the printer, the wireless network connection becomes active.

In this chapter, you will learn the basic concept of the network function, connection and protocols. In *Chapter 2* you will read information on wired network configuration and in *Chapter 3*, you will read information on wireless network configuration. *Chapter 4*, *Chapter 5*, *Chapter 6*, *Chapter 7* and *Chapter 8* describes how to configure your print server along with your operating system as follows:

*Chapter 4: Network printing from Windows®: basic TCP/IP Peer-to-Peer printing*

*Chapter 5: Network printing from Windows®: NetBIOS Peer-to-Peer printing*

*Chapter 6: Internet printing for Windows®*

*Chapter 7: Network printing from Macintosh®*

*Chapter 8: Control panel setup*

# Network function features

The Brother HL-5270DN and HL-5280DW have the following basic network functions.

## Network printing

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The print server provides printing services for Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000/XP supporting the TCP/IP protocols and Macintosh supporting TCP/IP (Mac OS® 9.1 to 9.2 / Mac OS® X 10.2.4 or greater for a wired network and Mac OS® X 10.2.4 or greater for wireless network).

The wireless network function is supported by the HL-5280DW only.

## Management utility

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### BRAdmin Professional (for Windows®)

The BRAdmin Professional utility provides powerful, easy to use configuration and management of network settings. For more information on how to install the BRAdmin Professional utility, please see the Quick Setup Guide we have provided with the printer

For more information on BRAdmin Professional, visit us at <http://solutions.brother.com>.

### BRAdmin Light (for Mac OS® X 10.2.4 or greater)

BRAdmin Light is a utility for viewing printer status and configuring network settings from a computer running Mac OS® X 10.2.4 or greater. The BRAdmin Light software will be installed automatically when you install the printer driver. If you have already installed the printer driver, you don't have to install it again.

For more information on BRAdmin Light, visit us at <http://solutions.brother.com>.

# Types of network connection

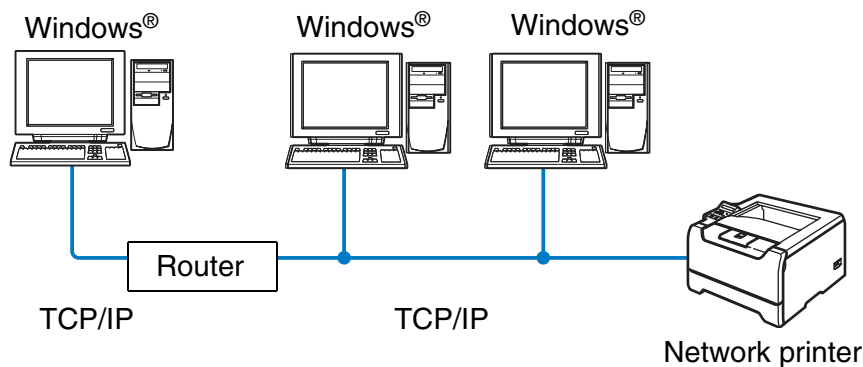
## Wired network connection example

1

Generally speaking, there are two types of network connection: Peer-to-Peer environment and a Network Shared environment.

### Peer-to-Peer printing using TCP/IP

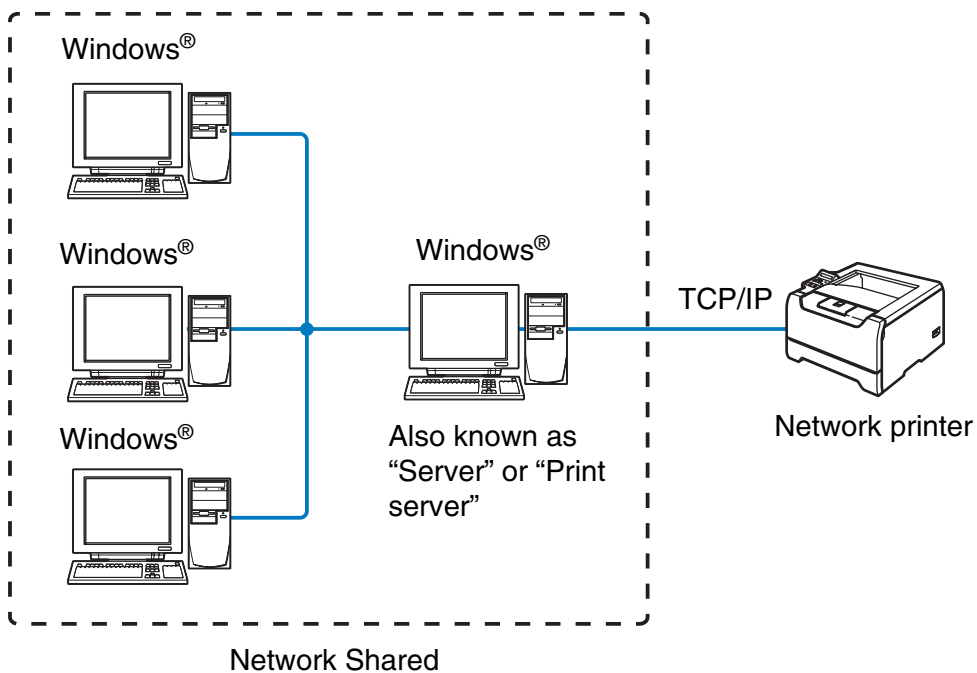
In a Peer-to-Peer environment, each computer directly sends and receives data to and from the Brother printer.



- In a smaller network of 2 or 3 computers, we recommend the Peer-to-Peer printing method as it is easier to configure than the Network Shared printing method described on the following page. See *Network Shared printing* on page 1-5.
- Each computer must use the TCP/IP Protocol.
- The Brother printer needs to have an appropriate IP address configuration.
- If you are using routers, the Gateway address must be configured on the computers and the Brother printer.
- The Brother printer can also communicate with Macintosh®. (TCP/IP compatible operating systems)

## Network Shared printing

In a Network Shared environment, each computer sends and receives data to and from the Brother printer via a centrally controlled computer. This type of computer is often called a “server” or a “print server”. Its job is to control the printing of all print jobs.



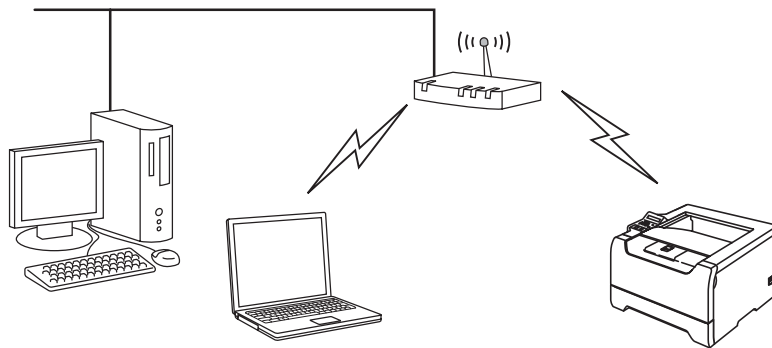
- In a larger network, we recommend a Network Shared printing environment.
- The “server” or the “print server” must use the TCP/IP print protocol.
- The Brother printer needs to have an appropriate IP address configuration.
- The Brother printer needs to have an appropriate IP address configuration unless the printer is shared via the parallel or USB interface at the server.
- The Brother printer can also communicate with Macintosh® (TCP/IP compatible operating systems) devices.

## Wireless network connection example (HL-5280DW only)

### Connected to wireless capable computer with an access point in the network (Infrastructure mode)

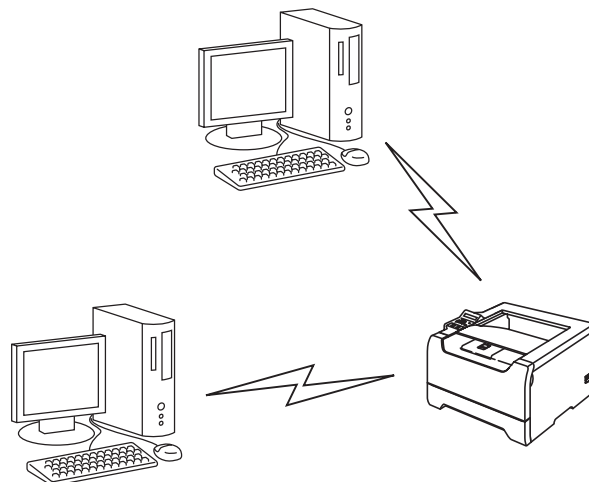
This type of network has a central access point at the heart of the network. The access point can also act as a bridge or a gateway to a wired network. When the Brother wireless printer (your printer) is part of this network, it receives all print jobs via an access point.

Wired computer connected to the access point



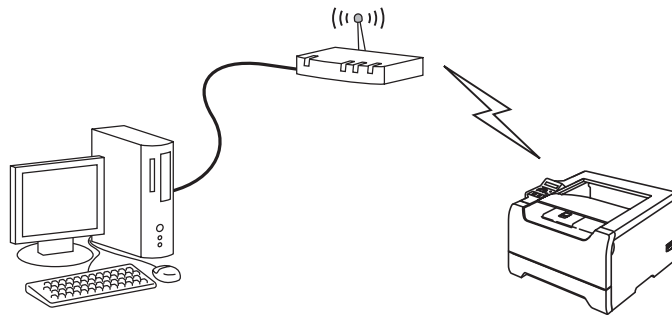
### Connected to wireless capable computer without an access point in the network (Ad-hoc mode)

This type of network does not have a central access point. Each wireless client communicates directly with each other. When the Brother wireless printer (your printer) is part of this network, it receives all print jobs directly from the computer sending the print data.



## An access point is in the network, but the computer is not wireless capable

This type of network has a central access point at the heart of the network. The access point is connected to a computer which is not wireless capable with the Ethernet cable. When the Brother wireless printer (your printer) is a part of this network, it receives all print jobs via an access point.





# Protocols

## TCP/IP protocols and functionalities

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

The print server used on this Brother product supports the TCP/IP (Transmission Control Protocol/Internet Protocol) protocol.

TCP/IP is the most popular set of protocols used for communication such as Internet and E-mail. This protocol can be used in almost all operating systems such as Windows®, Macintosh® and Linux.

The following TCP/IP protocols are available on this Brother product.

### DHCP/BOOTP/RARP

By using the DHCP/BOOTP/RARP protocols, the IP address can be automatically configured.

#### Note

To use the DHCP/BOOTP/RARP protocols, please contact your network administrator.

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### APIPA

If you do not assign an IP address manually (using the BRAdmin software) or automatically (using a DHCP/BOOTP/RARP server), the Automatic Private IP Addressing (APIPA) protocol will automatically assign an IP address from the range 169.254.1.0 to 169.254.254.255.

### DNS client

The Brother print server supports the Domain Name Service (DNS) client function. This function allows the print server to communicate with other devices by using its DNS name.

### NetBIOS/IP

NetBIOS over IP basic functionality allows the Brother print server to appear in a Windows® network neighborhood.

### LPR/LPD

Commonly used printing protocols on a TCP/IP network.

## Port9100

Another commonly used printing protocol on a TCP/IP network.

## SMTP client

Simple Mail Transfer Protocol (SMTP) client is used to send e-mails via Internet or Intranet.

## IPP

Internet Printing Protocol (IPP Version 1.0) allows you to print documents directly to any accessible printer via the internet.

## mDNS

mDNS allows the Brother print server to automatically configure itself to work in a Mac OS® X Simple Network Configured system. (Mac OS® X 10.2.4 or greater).

## TELNET

The Brother print server supports TELNET server for command line configuration.

## SNMP

The Simple Network Management Protocol (SNMP) is used to manage network devices including computers, printers and terminals in a TCP/IP network.

## Web server (HTTP)

The Brother print server is equipped with a web server that allows you to monitor its status or change some of its configuration settings.



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**Note**

We recommend Microsoft Internet Explorer 6.0 (or higher) or Netscape® 7.1 (or higher). If a different web browser is used, make sure it is compatible with HTTP 1.0 and HTTP 1.1.

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## Overview

Before using your Brother printer in a network environment, you must configure the TCP/IP settings. In this chapter, you will learn the basic steps required to print over the network using the TCP/IP protocol.

We recommend that you use the automatic installer application in the CD-ROM we have provided with the printer. By using this application, you can easily connect your printer to your network and install the network software and printer driver which you need to complete the network configuration. You will be guided by the on-screen instructions until you are able to use your Brother network printer. Please follow the instructions in the supplied Quick Setup Guide.

If you want to configure your printer without using the automatic installer application, please read this chapter and learn how to configure the TCP/IP settings. Then, in *Chapter 4*, *Chapter 5*, *Chapter 6* and *Chapter 7*, you will learn how to install the network software and the printer driver into the operating system running on your computer.

### Note

You can configure the printer's TCP/IP settings using the control panel on the printer. For further information, see *Control panel setup* in Chapter 8.

## IP addresses, subnet masks and gateways

To use the printer in a networked TCP/IP environment, you need to configure the IP address and subnet mask. 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 gateway address.

### IP address

An IP address is a series of numbers that identifies each computer connected to a network. An IP address consists of four numbers separated by dots. Each number is between 0 and 255.

Example: In a small network, you would normally change the final numbers.

192.168.1.1, 192.168.1.2, 192.168.1.3

## How the IP address is assigned to your print server:

If you have a DHCP/BOOTP/RARP server in your network (typically a UNIX®/Linux or Windows® 2000/XP network) the print server will automatically obtain its IP address from the DHCP server and register its name with any RFC 1001 and 1002-compliant dynamic name services.

### Note

On smaller networks, the DHCP server may be the router.

For more information on DHCP, BOOTP and RARP, see *Using DHCP to configure the IP address* on page A-1, *Using BOOTP to configure the IP address* on page A-2 and *Using RARP to configure the IP address* on page A-2.

If you do not have a DHCP/BOOTP/RARP server, the Automatic Private IP Addressing (APIPA) protocol will automatically assign an IP address from the range 169.254.1.0 to 169.254.254.255. For more information on APIPA, see *Using APIPA to configure the IP address* on page A-3.

If the APIPA protocol is disabled, the default IP address of a Brother print 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. For information on how to change the IP address, see *Setting the IP address and subnet mask* on page 2-3.

## Subnet mask

Subnet masks restrict network communication.

Example: PC1 can talk to PC2

PC1 IP Address: 192.168.1.2  
Subnet Mask: 255.255.255.0

PC2 IP Address: 192.168.1.3  
Subnet Mask: 255.255.255.0

### Note

0 denotes that there is no limit to communication at this part of the address.

In the above example, we can communicate with anything that has an IP address that begins with 192.168.1.X

## Gateway (and router)

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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.

## Setting the IP address and subnet mask

### Using the BRAdmin Professional utility to configure your network printer (for Windows® only)

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#### BRAdmin Professional utility

The BRAdmin Professional utility is designed to allow you to manage your network connected Brother printers in a TCP/IP environment.



#### Note

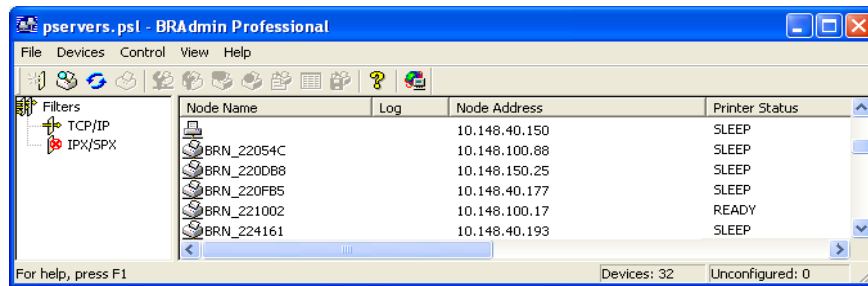
- Please use the BRAdmin Professional utility version that was supplied on the CD-ROM with your Brother product. You can also download the latest Brother BRAdmin Professional utility version from <http://solutions.brother.com>. This utility is only available for Windows® users.
- If you are using Personal Firewall software (e.g. the Internet Connection Firewall available in Windows® XP), disable it. Once you are sure that you can print, re-start your Personal Firewall software.
- Node name: Node name appears in current BRAdmin Professional. The default Node name of the network card in the printer is "BRN\_XXXXXX" ("XXXXXX" is the last six digits of Ethernet address.).
- The default password for Brother print servers is `access`.
- If you are connecting to a wireless network, you must configure the wireless settings of the printer before you can use BRAdmin Professional. (HL-5280DW only).

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**1** Start the BRAdmin Professional utility (from Windows® 95/98/Me, Windows NT® 4.0 and Windows® 2000/XP), by clicking **Start / Programs / Brother Administrator Utilities / Brother BRAdmin Professional Utilities / BRAdmin Professional**.

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

- 3 Select **Search Active Devices** from the **Devices** menu. BRAdmin Professional will search for new devices automatically.



### Note

- If the print server is set to its factory default settings without using a DHCP/BOOTP/RARP server, the device will appear as APIPA in the BRAdmin Professional utility screen.
- You can find the node name and Ethernet address (**Node Address** above) by printing out the Printer Settings Page. See *Printing the Printer Settings Page* on page 8-11 for information on how to print the Printer Settings Page on your print server.

4 Double-click the unconfigured device.

5 Enter the **IP address**, **Subnet Mask** and **Gateway** (if needed) of your print server.

6 Click **OK**.

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

## Using the control panel to configure your printer for a network

You can configure your network printer using the control panel **NETWORK** menu. See *Control panel setup* on page 8-1.

## Using other methods to configure your printer for a network

You can configure your network printer using other methods. See *Other ways to set the IP address (for advanced users and administrators)* on page A-1.

## Changing the print server settings

### Using the BRAdmin Professional utility to change the print server settings (for Windows® only)

---

2

- 1** Start the BRAdmin Professional utility (from Windows® 95/98/Me, Windows NT® 4.0 and Windows® 2000/XP), by clicking **Start / Programs / Brother Administrator Utilities / Brother BRAdmin Professional Utilities / BRAdmin Professional**.
- 2** Select **TCP/IP** in the left frame of the main BRAdmin window.
- 3** Select the print server which you want to configure, in the right frame of the main BRAdmin window.
- 4** Select **Configure Print Server** from the **Control** menu.
- 5** Enter a password. The default Password is `access`.
- 6** You can now change the print server settings.

### Using the control panel to change the print server settings

---

You can configure and change the print server settings using the control panel `NETWORK` menu. See *Control panel setup* on page 8-1.

## Using the HTTP (web browser) to change the print server settings

---

A standard web browser (we recommend Microsoft Internet Explorer version 6.0 (or higher), or Netscape® version 7.1 (or higher)) can be used to change your print server settings using the HTTP (Hyper Text Transfer Protocol). To use a web browser, you must have assigned an IP address to the print server.

- 1 Type `http://printer_ip_address/` into your browser. (Where `printer_ip_address` is the IP address or the print server name)

For example: `http://192.168.1.2/` (if the printer's IP address is 192.168.1.2.)



### Note

---

If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as "BRN\_XXXXXX" where "XXXXXX" is the last six digits of the Ethernet address.

---

- 2 Click **Network Configuration**.
- 3 Enter a user name and a password. The User Name is `admin` and the default Password is `access`.
- 4 Click **OK**.
- 5 Click **Configure TCP/IP**.
- 6 You can now change the printer server settings.



# Configuring your wireless network printer (HL-5280DW only)

## Overview

To connect your printer to your wireless network, you need to follow the steps in the Quick Setup Guide. We recommend that you use the automatic installer application in the CD-ROM we have provided with the printer. By using this application, you can easily connect your printer to your wireless network and install the network software and printer driver which you need to complete the configuration of your printer for a wireless network. You will be guided by the on-screen instructions until you are able to use your Brother wireless network printer. Please follow the instructions in the supplied Quick Setup Guide.

If you want to configure your printer without using the automatic installer application, please read this chapter for more details on how to configure the wireless network settings. For information on TCP/IP settings, see *IP addresses, subnet masks and gateways* on page 2-1. Then, in *Chapter 4* and *Chapter 5* (for Windows®), and *Chapter 7* (for Macintosh®), you will learn how to install the network software and drivers into the operating system running on your computer.

## Wireless network terms and concepts

When you configure the wireless network printer, you must ensure that your wireless network printer is configured to match the settings of the existing wireless network. This section provides some of main terms and concepts of these settings, which may be helpful when you configure the wireless network printer.

### SSID (Service Set Identifier) and channels

---

You need to configure the SSID and a channel to specify the wireless network you want to connect to.

#### SSID

Each wireless network has its own unique network name and it is technically referred to as SSID or ESSID (Extended Service Set Identifier). The SSID is a 32-byte or less value and is assigned to the access point. The wireless network devices you want to associate to the wireless network should match the access point. The access point and wireless network devices regularly send wireless packets (referred to as a beacon) which has the SSID information. When your wireless network device receives a beacon, you can identify the wireless network that is close enough for the radio waves to reach your device.

## Channels

Wireless networks use channels. Each wireless channel is on a different frequency. When configuring your Brother device to work in a wireless network, you must set it to the channel that is used on the wireless network that you are connecting to. There are up to 14 different channels that can be used when using a wireless network. However, in many countries the number of channels available are restricted. For further information, see *Print server specifications* on page B-1.

## Authentication and encryption

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Most wireless networks use some kind of security settings. These security settings define the authentication (how the device identifies itself to the network) and encryption (how the data is encrypted as it is sent on the network). If you do not correctly specify these options when you are configuring your Brother wireless device, it will not be able to connect to the wireless network. Therefore care must be taken when configuring these options. Please refer to the information below to see which authentication and encryption methods your Brother wireless device supports.

### Authentication methods

The Brother printer supports the following methods:

■ Open system

Wireless devices are allowed to access the network without any authentication.

■ Shared key

A secret pre-determined key is shared by all devices that will access the wireless network. The Brother printer uses the WEP keys as the pre-determined key.

■ WPA-PSK

Enables a Wi-Fi® Protected Access Pre-shared key (WPA-PSK), which enables the Brother wireless printer to associate with access points using TKIP or AES encryption. (See *Connected to wireless capable computer with an access point in the network (Infrastructure mode)* on page 1-6).

■ LEAP

Cisco® LEAP (Light Extensible Authentication Protocol) has been developed by Cisco Systems, Inc. which uses user ID and password for authentication.

## Encryption methods

Encryption is used to secure the data that is sent over the wireless network. The Brother wireless network printer supports the following encryption methods:

- None  
No encryption method is used.
- WEP  
By using WEP (Wired Equivalent Privacy), the data is encrypted by a static secure key.
- TKIP  
TKIP (Temporal Key Integrity Protocol) provides per-packet key mixing, message integrity check and a re-keying mechanism.
- AES  
AES (Advanced Encryption Standard) is Wi-Fi® authorized strong encryption standard.
- CKIP  
The original Key Integrity Protocol for LEAP by Cisco Systems, Inc.

## Network key

There are some rules for each security method:

- Open system/Shared key with WEP  
This key is a 64-bit or 128-bit value that must be entered in an ASCII or hexadecimal format.
  - 64 (40) bit ASCII: Uses 5 text characters.  
e.g. "WSLAN" (this is case sensitive).
  - 64 (40) bit hexadecimal: Uses 10 digits of hexadecimal data.  
e.g. "71f2234aba"
  - 128 (104) bit ASCII: Uses 13 text characters.  
e.g. "Wirelesscomms" (this is case sensitive)
  - 128 (104) bit hexadecimal: Uses 26 digits of hexadecimal data  
e.g. "71f2234ab56cd709e5412aa2ba"
- WPA-PSK and TKIP/AES  
Uses a Pre-Shared Key (PSK) that is more than 7 and less than 64 characters in length.

## Configuring your printer for a wireless network

There are three methods to configure your wireless network printer; by using the automatic installer application in the CD-ROM (recommended), using the SecureEasySetup™ software and the printer control panel.

### Using the Brother automatic installer application in the CD-ROM to configure your wireless network printer

---

We recommend that you use the Brother automatic installer application in the CD-ROM we have provided with the printer. For installation in infrastructure mode (recommended), please follow the instructions in the supplied Quick Setup Guide, and for installation in ad-hoc mode, see *Wireless installation in ad-hoc mode (HL-5280DW only)* in Chapter 10.

### Using SecureEasySetup™ to configure your printer in a wireless network

---

The SecureEasySetup™ is an easy way to configure your Brother device to your wireless network settings. By pushing a button on the wireless router or access point, you can send the wireless network and security settings to the printer. Your router or access point must also support SecureEasySetup™. See the user's guide for your wireless LAN router or access point for instructions on how to use the SecureEasySetup™ feature of that device.

 **Note**

Routers or access points that support SecureEasySetup™ will have the following logo displayed on the product.



- 1 Place your Brother printer close to the access point (Less than 5 m/16 feet).
- 2 Push the SecureEasySetup™ button on your wireless router or access point. See the user's guide for your wireless router or access point for instructions.

- 3 Press any of the Menu buttons (+, -, **Set** or **Back**) of the control panel on your printer to take the printer off-line.

INFORMATION

- 4 Press the + button or the - button to move forward or backward through the menus until NETWORK is displayed.

NETWORK

- 5 Press **Set**. Press the + button or the - button to select WLAN.

WLAN

- 6 Press **Set**. Press the + button or the - button to select WIRELESS.

WIRELESS

- 7 Press **Set**. Press the + button or the - button to select SecureEasySetup.

SecureEasySetup

- 8 Press **Set**.

- 9 The wireless network connection status using the SecureEasySetup™ software will be displayed; CONNECTING WLAN, CONNECTED or CONNECTION ERROR.

CONNECTING WLAN is displayed when the print server is trying to make connections to your router or access point. Wait till either CONNECTED or CONNECTION ERROR is displayed.

CONNECTED is displayed when the print server is successfully connected to your router or access point. You can now use your printer in a wireless network.

CONNECTION ERROR is displayed when the print server has not successfully connected to your router or access point. Try starting from Step 1 again. If the same message is displayed again, reset the print server back to the default factory settings and try again.

## Using the control panel NETWORK menu to configure your wireless network printer (in infrastructure mode)

You can configure your print server by using the NETWORK menu on the printer's control panel. See to the steps below for further information.

- 1 Press any of the Menu buttons (+, -, **Set** or **Back**) to take the printer off-line.



- 2 Press the + button or the - button to move forward or backward through the menus until NETWORK is displayed.



- 3 Press **Set**.  
Press the + button or the - button to select WLAN.



- 4 Press **Set**.  
Press the + button or the - button to select WIRELESS.



- 5 Press **Set**.  
Press the + button twice to select COMM.MODE.



- 6 Press **Set**.  
Press the + button or the - button to select INFRASTRUCTURE.



- 7** Press **Set**.  
Press the **+** button to select `LIST SSID`.

LIST SSID

- 8** The printer will search for a wireless network name (SSID) around the printer.

WAITING...

- 9** After a few seconds, you can select the SSID from the list using the **+** button or the **-** button. Press **Set** to select the SSID. If your SSID is displayed and you have selected it, go to *Step 14*. If you want to add a new SSID, go to *Step 10*.

XXXXXXXXXXXX

- 10** Press the **+** button to select `SSID`.

SSID

- 11** Press **Set**.  
Enter a new SSID using **+** button or the **-** button.

- 12** Press **Set**.  
Press the **+** button or the **-** button to select `CHANNEL`.

CHANNEL

- 13** Press **Set**.  
Press the **+** button or the **-** button to select the channel.

==\*\*

**14** Press **Set**.

Press the **+** button or the **-** button to select AUTHENTICATION.

AUTHENTICATION

**15** Press **Set**.

Press the **+** button or the **-** button to select the Authentication method.

OPEN SYSTEM

SHARED KEY

WPA-PSK

LEAP

Press **Set**.

If you select OPEN SYSTEM, WPA-PSK or LEAP, go to *Step 16*.

If you select SHARED KEY, go to *Step 18*.

**16** Press the **+** button or the **-** button to select ENCRYPTION.

ENCRYPTION

**17** Press **Set**.

Press the **+** button or the **-** button to select the Encryption type.

If you have selected OPEN SYSTEM in *Step 15*, select NONE or WEP.

If you have selected WPA-PSK in *Step 15*, select TKIP or AES.

If you have selected LEAP in *Step 15*, select CKIP.

NONE

WEP

TKIP

AES

CKIP

Press **Set**.

If you select NONE, go to *Step 32*.

If you select WEP, go to *Step 18*.

If you select TKIP or AES, go to *Step 26*.

If you select CKIP, go to *28*.



**18** Press the + button or the - button to select WEP KEY SELECT.

WEP KEY SELECT

**19** Press **Set**.  
Press the + button or the - button to select the key number; KEY1, KEY2, KEY3, KEY4.

KEY1

KEY2

KEY3

KEY4

**20** Press **Set**.  
Press the + button or the - button to select WEP KEY1 SIZE, WEP KEY2 SIZE, WEP KEY3 SIZE or WEP KEY4 SIZE, which key number matches the one you have selected in *Step 19*.

WEP KEY1 SIZE

WEP KEY2 SIZE

WEP KEY3 SIZE

WEP KEY4 SIZE

**21** Press **Set**.  
Select the WEP key size; 64 (40) BITS or 128 (104) BITS.

=64(40)BITS

=128(104)BITS

**22** Press **Set**.  
Press the + button or the - button to select WEP KEY1 TYPE, WEP KEY2 TYPE, WEP KEY3 TYPE or WEP KEY4 TYPE, which key number matches the one you have selected in *Step 19*.

WEP KEY1 TYPE

WEP KEY2 TYPE

WEP KEY3 TYPE

WEP KEY4 TYPE

**23** Press **Set**.  
Select the WEP key format; ASCII or HEX.

=ASCII

=HEX

**24** Press **Set**.

Press the **+** button or the **-** button to select **WEP KEY1**, **WEP KEY2**, **WEP KEY3** or **WEP KEY4**, which key number matches the one you have selected in *Step 19*.

WEP KEY1

WEP KEY2

WEP KEY3

WEP KEY4

**25** Press **Set**.

Enter a new WEP key.

\*\*\*\*



**Note**

For more information on rules for the WEP key, see *Network key* in Chapter 3.

Press **Set**.  
Go to *Step 32*.

**26** Press the **+** button or the **-** button to select **PASSPHRASE**.

PASSPHRASE

**27** Press **Set**.

Enter a network key for WPA-PSK and TKIP/AES.

\*\*\*\*



**Note**

For more information on rules for the WEP key, see *Network key* in Chapter 3.

Press **Set**.  
Go to *Step 32*.

**28** Press the **+** button or the **-** button to select **USER**.

USER

- 29** Press **Set**.  
Enter a user ID for LEAP.

- 30** Press **Set**.  
Press the **+** button or the **-** button to select **PASSWORD**.

- 31** Press **Set**.  
Enter a password for LEAP.

Press **Set**.

- 32** Press the **+** button or the **-** button to select **APPLY**.

- 33** Press **Set**.  
Press the **+** button or the **-** button to select **YES** or **YES&REPORT**.

 **Note**

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In order to make your wireless settings effective, you must select the **APPLY** option from the **WIRELESS** sub menu and then select **YES** or **YES&REPORT**. If you do not do this, the network settings will not be used unless you switch the printer off and then on again. If you select **YES&REPORT**, the printer will print the network printer server settings list.

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## Changing the print server settings

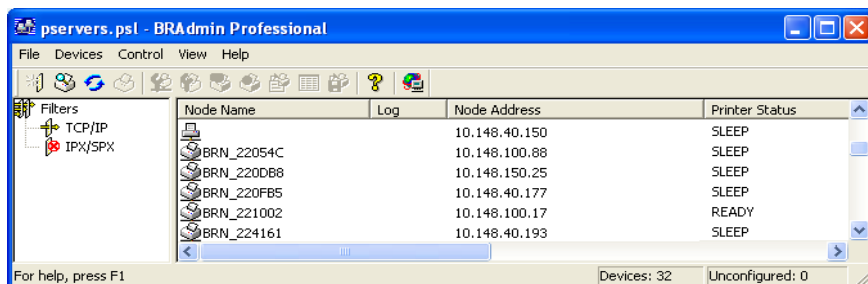
Once you have configured your wireless network printer, you can change the wireless settings using the BRAdmin Professional utility or the control panel on the front of the Brother printer.

### Using the BRAdmin Professional utility to change the print server settings (for Windows® only)

#### Note

- 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.
- If you are using Personal Firewall software (e.g. the Internet Connection Firewall available in Windows® XP), disable it. Once you are sure that you can print, re-start your Personal Firewall software.
- Node name: Node name appears in current BRAdmin Professional window. The default Node name of the network card in the printer is "BRW\_XXXXXXX" ("XXXXXXX" is the last six digits of Ethernet address.).

- 1 Start the BRAdmin Professional utility (from Windows® 95/98/Me/2000/XP, Windows NT® 4.0), by clicking **Start / Programs / Brother Administrator Utilities / Brother BRAdmin Professional Utilities / BRAdmin Professional**.



#### Note

- If the print server is set to its factory default settings without using a DHCP/BOOTP/RARP server, the device will appear as APIPA in the BRAdmin Professional utility screen.
- You can find the node name and Ethernet address (**Node Address** above) by printing out the Network Configuration List. See *Printing the Printer Settings Page* on page 8-11 for information on how to print the Network Configuration List on your print server.

- 2 Select **TCP/IP** in the left frame of the main BRAdmin window.
- 3 Select the print server which you want to configure, in the right frame of the main BRAdmin window.

- 4 Select **Configure Wireless Setting** from the **Control** menu.
- 5 Enter a password. The default Password is `access`.
- 6 You can now change the print server settings.

## Using the control panel NETWORK menu to change the print server settings

---

You can configure and change the print server settings using the control panel **NETWORK** menu. See *Control panel setup* on page 8-1.

## Using the HTTP (web browser) to change the print server settings

---

A standard web browser (we recommend Microsoft Internet Explorer version 6.0 (or higher), or Netscape® version 7.1 (or higher) can be used to change your print server settings using the HTTP (Hyper Text Transfer Protocol). To use a web browser, you must have assigned an IP address to the print server.

- 1 Type `http://printer_ip_address/` into your browser. (Where `printer_ip_address` is the IP address or the print server name)

For example: `http://192.168.1.2/` (if the printer's IP address is 192.168.1.2.)



### Note

If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as `BRW_XXXXXX` where `XXXXXX` is the last six digits of the Ethernet address.

- 2 Click **Network Configuration**.
- 3 Enter a user name and a password. The User Name is `admin` and the default Password is `access`.
- 4 Click **OK**.
- 5 Click **Configure TCP/IP**.

You can now change the printer server settings.

## Using other methods to configure your printer for a wireless network

---

You can configure your wireless network printer using other methods. See *Other ways to set the IP address (for advanced users and administrators)* on page A-1.

## Overview

If you are a Windows<sup>®</sup> user and want to print using the TCP/IP protocol in a Peer-to-Peer environment, please follow the instructions in this chapter. This chapter explains how to install the network software and the printer driver which you will need to be able to print using your network printer.



### Note

- You must configure the IP address on your printer before you proceed with this chapter. If you need to configure the IP address, see *Chapter 2* first.
- Verify the host computer and print server are either on the same subnet, or that the router is properly configured to pass data between the two devices.
- The default password for Brother print servers is `access`.

## For Windows<sup>®</sup> 2000/XP users

By default, Windows<sup>®</sup> 2000/XP systems install the necessary print software to enable you to print. This section describes the most commonly used configuration, Standard TCP/IP Port printing. Windows<sup>®</sup> 2000/XP users can also print via the Internet using the IPP protocol. For more information, see *Internet printing for Windows<sup>®</sup>* on page 6-1.

If you have already installed the printer driver, jump to *Printer driver already installed* on page 4-2.

## Configuring the standard TCP/IP port

### Printer driver not yet installed

- 1** For Windows<sup>®</sup> XP: Go to the **Start** button and select **Printers and Faxes**.  
For Windows<sup>®</sup> 2000: Go to the **Start** button, select **Settings** and then **Printers**.
- 2** For Windows<sup>®</sup> XP: Click **Add a printer** to get the **Add Printer Wizard**.  
For Windows<sup>®</sup> 2000: Double click the **Add Printer** icon to get the **Add Printer Wizard**.
- 3** Click **Next** when you see the **Welcome to the Add Printer Wizard** screen.
- 4** Select **Local printer** and deselect the **Automatically detect and install my Plug and Play printer** option.
- 5** Click **Next**.
- 6** 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.

- 7 Click **Next**.
- 8 The **Add Standard TCP/IP Printer Port Wizard** will now appear. Click **Next**.
- 9 Enter the IP address, or the print server name you wish to configure. The Wizard will automatically enter the Port name information for you.
- 10 Click **Next**.
- 11 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.
- 12 Click the **Finish** button to complete the Wizard.
- 13 Now that you have configured the port, you must specify which printer driver you wish to use. Select the appropriate driver from the list of supported printers. If you are using a driver supplied with the printer on CD-ROM then select the **Have Disk** option to browse to the CD-ROM.
- 14 For example, select the “X:\Driver\PCL\WIN2K\_XP\your language” folder (where X is your drive letter). Click **Open**, and then **OK**. Select your printer model, then click **Next**.
- 15 Specify a name and click the **Next** button.
- 16 Now specify if you wish to share the printer, enter the share name and click **Next**.
- 17 Continue through the Wizard clicking the **Finish** button when complete.

### 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 **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 8 to 12 of *Printer driver not yet installed* on page 4-1.

## For Windows NT® 4.0 users

Windows NT® 4.0 users can send print job using Brother Peer-to-Peer Print software provided on the Brother CD-ROM supplied with the printer.

### Installing the TCP/IP protocol

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If you did not install the TCP/IP protocol during the installation of your Windows NT®4.0 system (either workstation or server) follow these steps. If you have already installed the TCP/IP protocol, proceed to the next section, *Installing the Brother Peer-to-Peer software* on page 4-3.

- 1 Go to the **Start** button, select **Settings**, and then **Control Panel**.
- 2 Run the **Network** applet by double clicking the **Network** icon and then click the **Protocols** tab.
- 3 Select **Add**, and double click the **TCP/IP Protocol**.
- 4 Insert the requested disk(s), or CD-ROM, to copy the required files.
- 5 Click **Close**. The Windows NT® 4.0 system will review protocol bindings and then you will see the **TCP/IP Properties** dialog.
- 6 Configure the host IP address, subnet mask, and gateway address in that dialog. Consult your system administrator for these addresses.
- 7 Click **OK** to exit (your Windows NT®4.0 workstation or server will need to be re-booted).

### Installing the Brother Peer-to-Peer software

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- 1 Start the CD-ROM installation menu program according to the printer Quick Setup Guide.
- 2 Select your model and the desired language. Then click **Install Other Drivers or Utilities**.
- 3 Select the **Network Print Software** installation program.
- 4 Click **Next** in response to the Welcome message.
- 5 Read the license agreement carefully. Then follow the on-screen instructions.
- 6 Select the **Brother Peer-to-Peer Print (LPR)** button.
- 7 Select the desired directory to install the **Brother Peer-to-Peer Print (LPR)** files and click **Next**. The installation program will create the directory for you if it does not already exist on your disk.
- 8 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.



- 9 You must now enter the actual IP address of the print server and the print server name. If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as “BRN\_XXXXXX” for a wired network or “BRW\_XXXXXX” for a wireless network where “XXXXXX” is the last six digits of the Ethernet address.



### Note

- The node name and the NetBIOS name is printed on the Printer Settings Page. To learn how to print the Printer Settings Page, see *Printing the Printer Settings Page* on page 8-11.
- If you search the device using the search function in Step 8 above, disable the Personal Firewall software if you are using it. Once you are sure that you can print, re-start your Personal Firewall software.

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

## Adding a second Brother LPR port

---

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

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

## For Windows® 95/98/Me users

Windows® 95/98/Me users can send print job using Brother Peer-to-Peer Print software provided by the CD-ROM which we have supplied with the printer.

## Installing the Brother Peer-to-Peer software

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### Note

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 your model and the desired language. Then click **Install Other Drivers or Utilities**.
- 3 Select the **Network Print Software** installation program.
- 4 Click **Next** in response to the Welcome message.
- 5 Read the license agreement carefully. Then follow the on-screen instructions.
- 6 Select the **Brother Peer-to-Peer Print (LPR)** button.
- 7 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.
- 8 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.

- 9** You must now enter the actual IP address of the print server and the print server name. If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as “BRN\_XXXXXX” for a wired network or “BRW\_XXXXXX” for a wireless network where “XXXXXX” is the last six digits of the Ethernet address.

**Note**

- The node name and the NetBIOS name is printed on the Printer Settings Page. To learn how to print the Printer Settings Page, see *Printing the Printer Settings Page* on page 8-11.
- If you search the device using the search function in Step 8 above, disable the Personal Firewall software if you are using it. Once you are sure that you can print, re-start your Personal Firewall software.

- 10** Click the **Finish** 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** Double click **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 click **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 click **Next**.
- 7** Select the Brother LPR port (the port name you assigned in step 7 of the *Installing the Brother Peer-to-Peer software* on page 4-5) and click **Next**.
- 8** Enter any desired name for the Brother printer and click **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, go to the **Start** button, select **Settings**, and open the **Printers** window. Click the icon of the printer that you wish to configure, select **File** from the menu bar, and then **Properties**. Click the **Details** tab and then 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

See *Chapter 2* of this User's Guide to learn how to configure the IP address of the printer.

# Network printing from Windows<sup>®</sup>: NetBIOS Peer-to-Peer printing

## Overview

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



### Note

- You must configure the IP address on your printer before you proceed with this chapter. See *Chapter 2* for more information.
- The default password for Brother print servers is `access`.
- The default domain name of the print server is `WORKGROUP`, to change it use your web browser or the BRAdmin application.

## Print server configuration for Windows<sup>®</sup> 95/98/Me, Windows<sup>®</sup> 2000/XP and Windows NT<sup>®</sup> 4.0

### Print server configuration

In order for this function to work, you must correctly change the domain name or workgroup name to match that of your network. Once this is done, the print server will appear automatically in your network neighborhood and you will be able to send print documents to it without having to install additional software. However, in some instances you may find that your Windows<sup>®</sup> 95/98/Me/2000/XP and Windows NT<sup>®</sup>4.0 systems may receive "Printer is busy" error messages when more than one person attempts to access the printer. In this instance Brother has provided the "Brother NetBIOS Port Monitor" software which allows users to continue spooling print jobs while the printer is busy, down or out of paper. The port monitor will hold the jobs until the printer is again available.

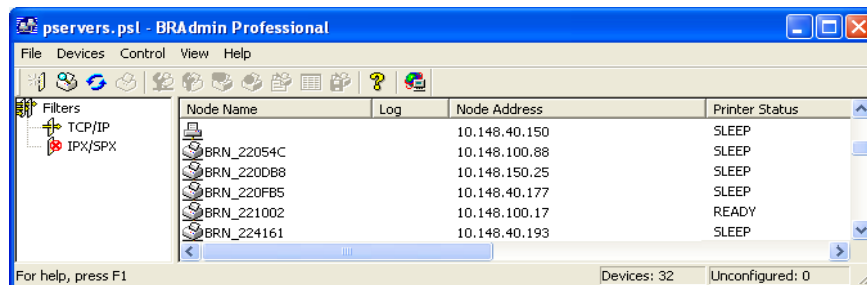
When you install Windows<sup>®</sup> 95/98/Me you are asked which workgroup you belong to. The default workgroup name for Windows<sup>®</sup> 95/98/Me is `WORKGROUP`, however you could change this to anything you want. With Windows NT<sup>®</sup>4.0, Microsoft introduced the concept of "Domains". A domain offers centralized security management whereas a workgroup offers distributed security management. The print server does not care if your network consists of a Workgroup or a Domain, the only thing you must tell it is the name of the workgroup or domain. The Brother print server automatically has a default workgroup/domain name of `WORKGROUP`. If you need to change name, you can configure the Brother print server to recognize this. There are three 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).

## Changing the Workgroup/Domain Name using the BRAdmin Professional utility

### Note

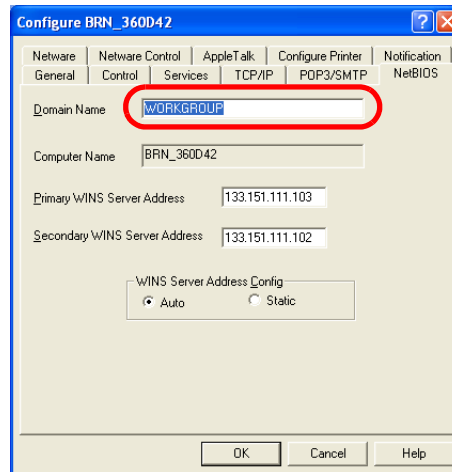
- The print server must have a valid IP address and your computer must also have a valid IP address; you can configure the IP address by using the BRAdmin Professional utility. See *Using the BRAdmin Professional utility to configure your network printer (for Windows® only)* on page 2-3.
- Please use 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.
- The default password for Brother print servers is `access`.

- 1 Start the BRAdmin Professional utility (from Windows® 95/98/Me, Windows NT® 4.0 and Windows® 2000/XP), by clicking **Start / Programs / Brother Administrator Utilities / Brother BRAdmin Professional Utilities / BRAdmin Professional**.



- 2 Select **TCP/IP** in the left frame of the main BRAdmin window.
- 3 Select the print server which you want to configure, in the right frame of the main BRAdmin window.
- 4 Select **Configure Print Server** from the **Control** menu.
- 5 Enter a password. The default Password is `access`.

## 6 Select **NetBIOS** tab. Enter a workgroup/domain name.



5

### 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 Workgroup/Domain Name using a web browser

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

## Changing the Workgroup/Domain Name using TELNET

If you are unable to use the BRAdmin Professional utility, you can use TELNET.

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

Now enter the command:

```
SET NETBIOS DOMAIN domainname
EXIT
```

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

## Installing the Brother NetBIOS Port Monitor

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The Brother NetBIOS Port Monitor requires the TCP/IP transport protocols to be installed on your Windows® 95/98/Me/2000/XP and Windows NT®4.0 computer. To install those protocols, see your Windows® documentation. If you are using the TCP/IP protocol, the proper IP address should be defined on both the Brother print server and your client PC.



### Note

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If you already installed the driver from the printers 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 printer Quick Setup Guide.
- 2 Select your model and the desired language. Then click **Install Other Drivers or Utilities**.
- 3 Select the **Network Print Software** installation program.
- 4 Click **Next** in response to the Welcome message.
- 5 Read the license agreement carefully. Then follow the on-screen instructions.
- 6 Select **Brother Peer-to-Peer Print (NetBIOS)** installation.
- 7 Select the desired directory to install the Brother Network Direct Print files and click **Next**.
- 8 Enter the port name that you wish to use. The port name must start with "BNT". For example BNT1. Whichever name you choose, it must be unique. Then click **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.
- 9 You must now enter the server name and port name for the actual print server. You can use the **Browse** button to search for the print server, select the domain/workgroup name, and then the server is listed. If the print server does not automatically appear in your browse list, then you must ensure that the domain name is configured correctly. Otherwise you must enter the name manually. The name should be compliant with UNC (Universal Name Convention). For example: `\\NodeName\ServiceName`.

Where `NodeName` is the NetBIOS name of the Brother print server (the default name is usually “BRN\_XXXXXX” for a wired network or “BRW\_XXXXXX” for a wireless network, where “XXXXXX” is the last six digits of the Ethernet address), and `ServiceName` is the service name for NetBIOS of the print server. By default it is BINARY\_P1. For example: `\\BRN_310107\BINARY_P1`



### Note

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You can find the NetBIOS name and node name by printing out the Printer Settings Page. See *Printing the Printer Settings Page* on page 8-11.

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**10** Then click **OK**.

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

## Associating to the printer

5

You must now create a printer on your Windows® 95/98/Me, Windows NT®4.0 and Windows® 2000/XP systems using the standard Windows® printer setup procedure.

### Windows® 95/98/Me

- 1** For Windows® 2000: Go to the **Start** button, select **Settings** and then **Printers**.
- 2** Double click **Add Printer** to begin the printer installation.
- 3** Click **Next** when you get the **Add Printer Wizard** window.
- 4** Select **Local Printer** when you are asked how the printer is connected to your computer, and then click **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 click **Next**.
- 7** Select the **Brother NetBIOS Port** (the port name you assigned in step 8 of the “Installing the Brother NetBIOS Port Monitor” section) and click **Next**.
- 8** Enter any desired name for the Brother printer and click **Next**. For example, you could call the printer "Networked Brother Printer".
- 9** Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

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

### Windows NT®4.0 / Windows® 2000/XP

- 1** For Windows® XP: Go to the **Start** button and select **Printers and Faxes**.  
For Windows® 2000: Go to the **Start** button, select **Settings** and then **Printers**.
- 2** For Windows® XP: Select **Add a printer** to begin the printer installation.  
For Windows® 2000 and Windows NT® 4.0: Double click **Add Printer** to begin the printer installation.
- 3** Click **Next** when you get the **Add Printer Wizard** window.
- 4** Select **Local printer** (Windows® 2000), **Local printer attached to this computer** (Windows® XP) or

**My computer** (Windows NT® 4.0) when you are asked how the printer is connected to your computer, and then click **Next**.

- 5 Select the **Brother NetBIOS Port** (the port name you assigned in step 8 of the “Installing the Brother NetBIOS Port Monitor” section and click **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 click **Next**.
- 8 Enter any desired name for the Brother printer and click **Next**. For example, you could call the printer "Networked Brother Printer".
- 9 Select **Not Shared** or **Shared** and **Share Name** and click **Next**.
- 10 Windows® will now ask you if you wish to print out a test page, select **Yes** and then select **Finish**.

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

## Adding a second NetBIOS print port

---

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

### Windows® 95/98/Me

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

### Windows NT®4.0 / Windows® 2000/XP

- 2 Click the **Ports** tab and click 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.

## Other sources of information

- 1 Visit <http://solutions.brother.com> for more information on network printing.
- 2 See *Chapter 2* of this User's Guide to learn how to configure the IP address of the printer.

## Overview

Windows® 2000/XP users can print using TCP/IP using the standard Network Printing software and IPP protocol software built into any Windows® 2000/XP installation.



### Note

- You must configure the IP address on your printer before you proceed with this chapter. If you need to configure the IP address, see *Chapter 2* first.
- Verify the host computer and print server are either on the same subnet, or that the router is properly configured to pass data between the two devices.
- The default password for Brother print servers is `access`.

## Windows® 2000/XP IPP printing

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

- 1** For Windows® XP: Go to the **Start** button and select **Printers and Faxes**.  
For Windows® 2000: Go to the **Start** button, select **Settings** and then **Printers**.
- 2** For Windows® XP: Click **Add a printer** to get the **Add Printer Wizard**.  
For Windows® 2000: Double click the **Add Printer** icon to get the **Add Printer Wizard**.
- 3** Click **Next** when you see the **Welcome to the Add Printer Wizard** screen.
- 4** Select **Local printer** or **Network printer**.  
For Windows® XP: Make sure that you select **A network printer, or a printer attached to another computer**.  
For Windows® 2000: Make sure that you select **Network Printer**.
- 5** Click **Next**.
- 6** For Windows® XP: Select **Connect to a printer on the Internet or on a home or office network** and then enter the following in the URL field: `http://printer_ip_address:631/ipp` (Where `printer_ip_address` is the IP address or the print server name).

For Windows® 2000: Select **Connect to a printer on the Internet or on your intranet** and then enter the following in the URL field: `http://printer_ip_address:631/ipp` (Where `printer_ip_address` is the IP address or the print server name).

 **Note**

If you have edited the hosts file on your computer or are using Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS names, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen in the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as “BRN\_XXXXXX” for a wired network or “BRW\_XXXXXX” for a wireless network where “XXXXXX” is the last six digits of the Ethernet address.

**7** When you click **Next**, Windows® 2000/XP will make a connection with the URL that you specified.

**If the printer driver has already been installed:**

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

**If the printer driver has NOT been installed:**

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

**8** Click **OK**. You will then see the printer selection screen in the **Add Printer Wizard**.

**9** If your printer is not in the list of supported printers, click the **Have Disk** button. You will then be asked to insert the driver disk.

**10** Click the **Browse** button and select the CD-ROM or network share that contains the appropriate Brother printer driver.

**11** Now specify the model name of the printer.

**12** If the printer driver that you are installing does not have a Digital Certificate you will see a warning message. Click **Yes** to continue with the installation. The **Add Printer Wizard** will then complete.

**13** Click the **Finish** button and the printer is now configured and ready to print. To test the printer connection, print a test page.

## Specifying a different URL

---

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

`http://printer_ip_address:631/ipp`

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

`http://printer_ip_address:631/ipp/port1`

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

`http://printer_ip_address:631/`

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

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

`http://printer_ip_address:631/brn_xxxxxx_p1`

`http://printer_ip_address:631/binary_p1`

`http://printer_ip_address:631/text_p1`

`http://printer_ip_address:631/pcl_p1`

Where `printer_ip_address` is the IP address or the print server name.

## Other sources of information

See *Chapter 2* of this User's Guide to learn how to configure the IP address of the printer.

## Overview

This chapter explains how to print from Macintosh® on a Network using the Simple Network Configuration capabilities on Mac OS® X 10.2.4 or greater. For more information on how to configure the Brother Laser driver on a Network for Mac OS® 9.1 to 9.2, see the Quick Setup Guide included with the printer.

For updated information on printing from a Macintosh® visit the Brother Solutions web site at: <http://solutions.brother.com>

## Printing from a Macintosh® using the Simple Network Configuration capabilities of Mac OS® X

With the release of Mac OS® X 10.2, Apple® introduced Simple Network Configuration capabilities.

The Simple Network Configuration capabilities of Mac OS® X lets you create an instant network of computers and smart devices by connecting them to each other. The smart devices automatically configure themselves to be compatible with your network.

You do not need to manually configure any IP address or network strings within the printer as the printer will automatically configure itself.

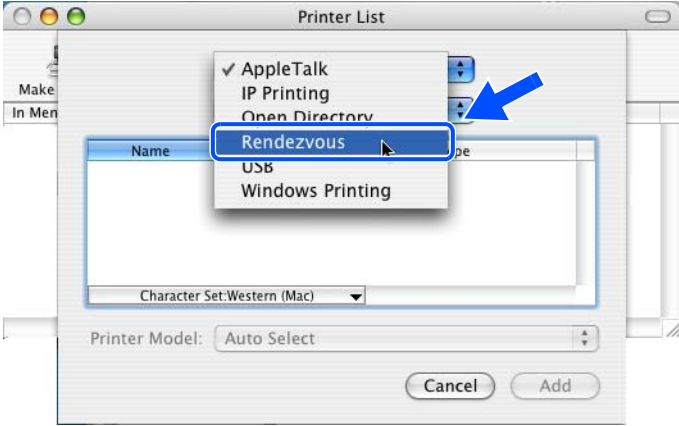
Please note that you need to use Mac OS® X 10.2.4 or later version.

### How to select the printer driver (Mac OS® X 10.2.4 or greater)

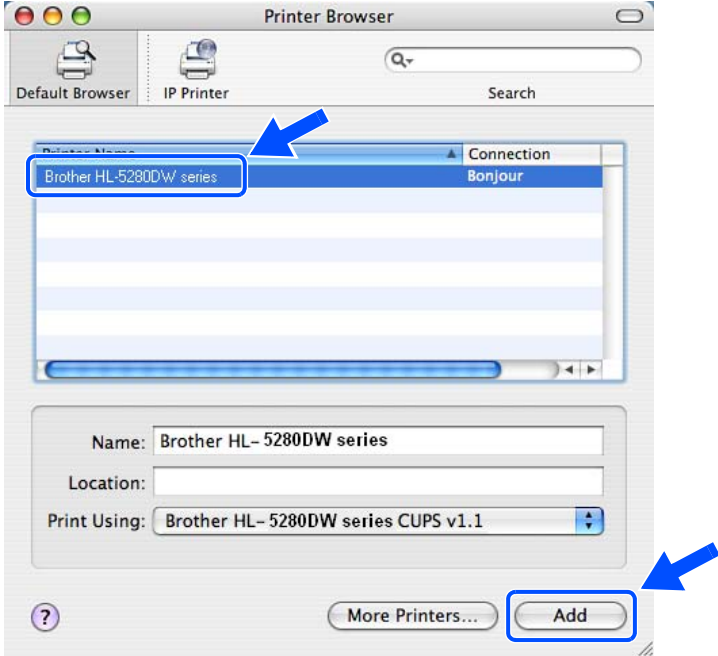
---

- 1 Turn the power of the printer ON.
- 2 From the **Go** menu, select **Applications**.
- 3 Open the **Utilities** folder.
- 4 Double click the **Printer Setup Utility** icon. (Mac OS® X 10.2.x users, click the **Print Center** icon.)
- 5 Click **Add**.  
(For Mac OS® X 10.2.4 to 10.3) Go to Step 6.  
(For Mac OS® X 10.4) Go to Step 7.

6 (For Mac OS® X 10.2.4 to 10.3)  
Make the following selection.



7 Select **Brother HL-XXXX series** (where XXXX is your model name) and then click **Add**.



8 Click the printer, then click **Make Default** to set the printer as the default printer. The printer is now ready to print.



# Changing the print server settings

## Using a web browser to change the print server settings

---

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

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

See *Using the HTTP (web browser) to change the print server settings* on page 2-6.

## Using the BRAdmin Light utility (for Mac OS® X 10.2.4 or greater)

---

Brother BRAdmin Light utility is a Java application that is designed for the Mac OS X 10.2.4 or greater environment. BRAdmin Light allows you to change network settings on Brother network ready printer. The BRAdmin Light software will be installed automatically when you install the printer driver. If you have already installed the printer driver, you don't have to install it again.

### Note

---

- Please use the BRAdmin Light utility version that was supplied on the CD-ROM with your Brother product. You can also download the latest Brother BRAdmin Light utility version from <http://solutions.brother.com>. This utility is only available for Macintosh® users.
- Node name: Node name appears in current BRAdmin Light. The default Node name of the network card in the printer is "BRN\_XXXXXX" for a wired network or "BRW\_XXXXXX" for a wireless network ("XXXXXX" is the last six digits of Ethernet address.).
- The default password for Brother print servers is `access`.

- 1** Start the BRAdmin Light utility (from Mac OS® X 10.2.4 or greater), by double clicking the **Macintosh HD** icon on your desk top and clicking **Library / Printers / Brother / Utilities**. And then, double click the **BRAdminLight.jar** file.
- 2** Select the print server which you want to change the settings.
- 3** Select **Configure Print Server** from the **Control** menu.
- 4** Enter a password. The default Password is `access`. You can now change the print server settings.

## Using the control panel to change the print server settings

---

You can configure and change the print server settings using the control panel NETWORK menu. See *Control panel setup* on page 8-1.

## Other sources of information

- 1 Visit <http://solutions.brother.com> for more information on network printing.
- 2 See *Chapter 2* of this User's Guide to learn how to configure the IP address of the printer.

## Overview

With the control panel you can do the following:

### Change the print server settings

See *Changing the print server settings using the control panel NETWORK menu* on page 8-1.

### Print the Printer Settings Page

See *Printing the Printer Settings Page* on page 8-11 for information on how to print the Printer Settings Page.

### Restore the network settings to factory default

See *Restoring the network settings to factory default* on page 8-11 for information on how to restore the network settings to factory default.

### Disable the APIPA protocol

See *Disabling the APIPA protocol* on page 8-12 for information on how to disable the APIPA protocol.

## Changing the print server settings using the control panel NETWORK menu

Before using your Brother printer in a network environment you need to configure the correct TCP/IP settings. For more information, see *Changing the print server settings* on page 2-5.

In this section, you will learn how to configure the network settings using the control panel, located on the top of the printer.

The **NETWORK** menu selections of the control panel allow you to set up the Brother printer for your network configuration. Press any of the Menu buttons (**+**, **-**, **Set** or **Back**), and press the **+** or **-** button to move forward or backward through the menus until **NETWORK** is displayed. Press the **Set** button to move to the next menu level. Press the **+** or **-** button to proceed to the menu selection you wish to configure.

Please note that the printer is supplied with the BRAdmin Professional utility for Windows<sup>®</sup>, BRAdmin Light utility for Mac OS<sup>®</sup> X 10.2.4 or greater and HTTP protocol (web based management) for Windows<sup>®</sup> and Macintosh<sup>®</sup>, which also can be used to configure many aspects of the network. See *Changing the print server settings* on page 2-5 for Windows<sup>®</sup> and *Changing the print server settings* on page 7-3 for Macintosh<sup>®</sup>.

## Control panel NETWORK menu table and default factory settings

### (HL-5270DN)

See (HL-5280DW) on page 8-3 for the HL-5280DW NETWORK menu table.

8

Level one	Level two	Level three	Options 1	Factory settings
NETWORK	TCP/IP	TCP/IP ENABLE	=ON, OFF	=ON
		IP ADDRESS=	[000-255].[000-255].[000-255]. [000-255]	[169].[254].[001-254].[000-255] <sup>1</sup>
		SUBNET MASK=	[000-255].[000-255].[000-255]. [000-255]	255.255.0.0 <sup>2</sup>
		GATEWAY=	[000-255].[000-255].[000-255]. [000-255]	0.0.0.0
		IP BOOT TRIES	=0 to 32767	=3
		IP METHOD	=AUTO, STATIC, RARP, BOOTP, DHCP	=AUTO
		APIPA	=ON, OFF	=ON
		IPV6	=ON, OFF	=OFF
	NETBIOS/IP	-	=ON, OFF	=ON
	ENET	-	=AUTO, 10B-HD, 10B-FD, 100B-HD, 100B-FD	=AUTO
	FACTORY RESET	OK?	-	-

1. The factory setting for IP Address may be changed by the APIPA setting.
2. The factory setting for Subnet Mask may be changed by the APIPA setting.

**(HL-5280DW)**

See (HL-5270DN) on page 8-2 for the HL-5270DN NETWORK menu table.

 **Note**

In order to make your wireless settings effective, you must select the **APPLY** option from the **WIRELESS** sub menu and then select **YES** or **YES&REPORT**. If you do not do this, the network settings will not be used unless you switch the printer off and then on again. If you select **YES&REPORT**, the printer will print the network printer server settings list.

Level one	Level two	Level three	Level four	Options 1	Factory settings	
NETWORK	WIRED	WIRED ENABLE	-	=ON, OFF	=ON	
		TCP/IP	TCP/IP ENABLE		=ON, OFF	=ON
			IP ADDRESS=		[000-255].[000-255]. [000-255].[000-255]	[169].[254].[001-254].[000-255] <sup>1</sup>
			SUBNET MASK=		[000-255].[000-255]. [000-255].[000-255]	255.255.0.0 <sup>2</sup>
			GATEWAY=		[000-255].[000-255]. [000-255].[000-255]	0.0.0.0
			IP BOOT TRIES		=0 to 32767	=3
			IP METHOD		=AUTO, STATIC, RARP, BOOTP, DHCP	=AUTO
			APIPA		=ON, OFF	=ON
			IPV6		=ON, OFF	=OFF
		ENET		-	=AUTO, 10B-HD, 10B-FD, 100B-HD, 100B-FD	=AUTO
	NETBIOS/IP		-	=ON, OFF	=ON	
	SET DEFAULT	OK?		-	-	
	WLAN	WLAN ENABLE		-	=ON, OFF	=ON
		TCP/IP	TCP/IP ENABLE		=ON, OFF	=ON
			IP ADDRESS=		[000-255].[000-255]. [000-255].[000-255]	[169].[254].[001-254].[000-255] <sup>1</sup>
			SUBNET MASK=		[000-255].[000-255]. [000-255].[000-255]	255.255.0.0 <sup>2</sup>
			GATEWAY=		[000-255].[000-255]. [000-255].[000-255]	0.0.0.0
			IP BOOT TRIES		=0 to 32767	=3
			IP METHOD		=AUTO, STATIC, RARP, BOOTP, DHCP	=AUTO
			APIPA		=ON, OFF	=ON
IPV6		=ON, OFF	=OFF			

Level one	Level two	Level three	Level four	Options 1	Factory settings	
NETWORK (Continued)	WLAN (Continued)	WIRELESS	SecureEasySetup	-	-	
			COMM.MODE	=AD-HOC, INFRASTRUCTURE	=AD-HOC	
			LIST SSID	(Shows a list of available names for the wireless network)	-	
			SSID	(Shows SSID [uses a maximum of 32 digits and characters 0-9, a-z and A-Z in ASCII values])	SETUP	
			CHANNEL	=1.....14	=11	
			AUTHENTICATION	=OPEN SYSTEM, SHARED KEY, WPA-PSK, LEAP	=OPEN SYSTEM	
			ENCRYPTION	=NONE, WEP, TKIP, AES, CKIP	=NONE	
			WEP KEY SELECT	=KEY1, KEY2, KEY3, KEY4	=KEY1	
			WEP KEY1 SIZE WEP KEY2 SIZE WEP KEY3 SIZE WEP KEY4 SIZE	=64(40)BITS, 128(104)BITS	=128(104)BITS	
			WEP KEY1 TYPE WEP KEY2 TYPE WEP KEY3 TYPE WEP LEY4 TYPE	=ASCII, HEX	=ASCII	
			WEP KEY1 WEP KEY2 WEP KEY3 WEP KEY4	(Shows the WEP key [uses a maximum of 5 or 13 digits and characters 0-9, a-z and A-Z in ASCII values, or uses a maximum of 10 or 26 digits and characters 0-9 and A-F in HEX values])	-	
			PASSPHRASE <sup>3</sup>	(Show the network key for WPA-PSK [uses more than 7 and less than 64 characters in length])	-	
			USER <sup>4</sup>	(Shows the user ID for LEAP [uses 64 characters or less in length])	-	
			PASSWORD <sup>4</sup>	(Shows the password for LEAP [uses 32 characters or less in length])	-	
			APPLY	=YES, YES&REPORT	=YES&REPORT	
			NETBIOS/IP	-	=ON, OFF	=ON
			SET DEFAULT	OK?	-	-

Level one	Level two	Level three	Level four	Options 1	Factory settings
NETWORK (Continued)	FACTORY RESET	OK?	-	-	-

1. The factory setting for IP Address may be changed by the APIPA setting.
2. The factory setting for Subnet Mask may be changed by the APIPA setting.
3. PASSPHRASE is used for the WPA-PSK authentication.
4. USER and PASSWORD are used for the LEAP authentication.

## WIRED menu options

See *WLAN menu options (HL-5280DW only)* on page 8-8 for detailed information of the `WLAN` menu option.

### WIRED ENABLE

You can enable and disable the wired network connection by selecting `ON` or `OFF`.

### TCP/IP

This menu has eight sections: `TCP/IP ENABLE`, `IP ADDRESS=`, `SUBNET MASK=`, `GATEWAY=`, `IP BOOT TRIES`, `IP METHOD`, `APIPA` and `IPV6`.

#### ■ TCP/IP ENABLE

You can enable and disable the TCP/IP protocol.

#### ■ IP ADDRESS=

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

#### ■ SUBNET MASK=

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

#### ■ GATEWAY=

This field displays the current gateway or router address used by the printer. 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 administrator if you are unsure.

#### ■ IP BOOT TRIES

This field displays how many times the printer attempt to scan the network to obtain the IP address through the `IP METHOD` you have set (see *IP METHOD* on page 8-6). The default setting is 3.

## ■ IP METHOD

This field displays methods to obtain the IP address using TCP/IP protocols.

- **AUTO**

In this mode, the printer 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 printer, then the IP address supplied by the DHCP server will be used. If no DHCP server is available, then the printer will scan for a BOOTP server. If a BOOTP server is available, and it is configured correctly, the printer will take its IP address from the BOOTP server. If a BOOTP server is not available, the printer will scan for a RARP server. If a RARP server also does not answer, the IP address is scanned through APIPA facility, see *Using APIPA to configure the IP address* on page A-3. After it is initially powered ON, it may take a few minutes for the printer to scan the network for a server.

- **STATIC**

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

- **RARP**

The 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:

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

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

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

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

For AT&T UNIX® based systems, type:

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

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

- **BOOTP**

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`) and enter the name, network type (1 for Ethernet), Ethernet address and the IP address, subnet mask and gateway of the print server. Unfortunately, the exact format for doing this is not standardized, so you will need to refer to your system documentation to determine how to enter this information (many UNIX® systems also have template examples in the bootptab file that you can use for reference). Some examples of typical `/etc/bootptab` entries include:

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

and:

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

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

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

- DHCP

Dynamic Host Configuration Protocol (DHCP) is one of several automated mechanisms for IP address allocation. If you have a DHCP server in your network (typically a UNIX®, Windows® 2000/XP network) the print server will automatically obtain its IP address from a 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 **IP METHOD** to **STATIC**, this will prevent the print server from trying to obtain an IP address from any of these systems.

## ■ 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 server cannot obtain an IP address through the `IP METHOD` you have set (see *IP METHOD* on page 8-6). Selecting **OFF** means the IP address doesn't change when the print server cannot obtain an IP address through the `IP METHOD` you have set.

By default, the APIPA protocol is enabled. If you wish to disable the APIPA protocol, see *Disabling the APIPA protocol* on page 8-12.

## ■ IPV6

This printer is compatible with IPv6, the next generation internet protocol. If you want to use the IPv6 protocol, visit <http://solutions.brother.com> for more information.

## NETBIOS/IP

You can enable and disable the NetBIOS facility to obtain the IP address.

## ENET

Ethernet link mode. **AUTO** allows the print server to operate in 100BASE-TX full or half duplex, or in 10BASE-T full or half duplex mode by auto negotiation.

100BASE-TX Full Duplex (100B-FD) or Half Duplex (100B-HD) and 10BASE-T 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. The default setting is **AUTO**.



### Note

---

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

---

## SET DEFAULT

You can restore the **WIRED** menu settings to factory default.

## WLAN menu options (HL-5280DW only)

---

See *WIRED menu options* on page 8-5 for detailed information of the **WIRED** menu option.

## WLAN ENABLE

You can enable and disable the wireless network connection by selecting **ON** or **OFF**.

## TCP/IP

See *TCP/IP* on page 8-5 for more information.

## WIRELESS

See *Using the control panel NETWORK menu to configure your wireless network printer (in infrastructure mode)* on page 3-6 for more information.

### ■ SecureEasySetup

You can configure the wireless network settings using SecureEasySetup™. See *Using SecureEasySetup™ to configure your printer in a wireless network* on page 3-4.

### ■ COMM.MODE

This field shows the current network communication mode; `AD-HOC` or `INFRASTRUCTURE`.

### ■ LIST SSID

This field shows a list of available names for the wireless networks (SSID) within range. You can select the SSID from the list. See *SSID* on page 3-1.

### ■ SSID

You can enter the SSID name for the wireless network you want to connect with (uses a maximum of 32 digits and characters 0-9, a-z and A-Z in ASCII values). See *SSID* on page 3-1.

### ■ CHANNEL

This field shows the currently used channel in an Ad-hoc mode. See *Channels* on page 3-2.

### ■ AUTHENTICATION

You can select an authentication mode; `OPEN SYSTEM`, `SHARED KEY`, `WPA-PSK` or `LEAP`. You can select `SHARED KEY`, `WPA-PSK` or `LEAP` when `INFRASTRUCTURE` is selected in `COMM.MODE`. See *Authentication methods* on page 3-2.

### ■ ENCRYPTION

You can select an encryption type; `NONE`, `WEP`, `TKIP`, `AES` or `CKIP`. See *Encryption methods* on page 3-3.

### ■ WEP KEY SELECT

You can select a WEP key; `KEY1`, `KEY2`, `KEY3` or `KEY4`. See *Network key* on page 3-3.

### ■ WEP KEY1 (2, 3 or 4) SIZE

You can select an either size of WEP KEY1 (2, 3 or 4); `64 (40) BITS` or `128 (104) BITS`. See *Network key* on page 3-3.

### ■ WEP KEY1 (2, 3 or 4) TYPE

You can select a format of WEP KEY1 (2, 3 or 4); `ASCII` or `HEX (hexadecimal)`. See *Network key* on page 3-3.

### ■ WEP KEY1 (2, 3 or 4)

You can enter a new WEP key for each WEP KEY number; 1, 2, 3 or 4. See *Network key* on page 3-3.

### ■ PASSPHARASE

If you have selected `WPA-PSK` for an authentication mode, you will need to enter a network key that is more than 7 and less than 64 characters in length.

### ■ USER

If you have selected `LEAP` for an authentication mode, you will need to enter a user ID that is 64 characters or less in length.

**■ PASSWORD**

If you have selected **LEAP** for an authentication mode, you will need to enter a password that is 32 characters or less in length.

**■ APPLY**

In order to make your wireless settings effective, you must select the **APPLY** option from the **WIRELESS** sub menu and then select **YES** or **YES&REPORT**. If you do not do this, the network settings will not be used unless you switch the printer off and then on again.

**NETBIOS/IP**

You can enable and disable the NetBIOS facility to obtain the IP address.

**SET DEFAULT**

You can restore the **WLAN** menu settings to factory default.

## Printing the Printer Settings Page

### Note

Node name: Node name appears in the Printer Settings Page. The default Node name of the network card in the printer is "BRN\_XXXXXX" for a wired network and "BRW\_XXXXXX" for a wireless network ("XXXXXX" is the last six digits of Ethernet address.).

The Printer Settings Page prints a report listing all the current printer settings including the network print server settings. You can print the Printer Settings Page using the printer control panel.

### How to print the Printer Settings Page

- 1 Make sure that the front cover is closed and the power cord is plugged in.
- 2 Turn on the printer and wait until the printer is in the Ready state.
- 3 Press any of the Menu buttons (+, -, **Set** or **Back**) to take the printer off line.
- 4 Press + or - until `INFORMATION` appears on the LCD display.
- 5 Press **Set**, and then press **Set** again to print the Printer Settings Page.

## Restoring the network settings to factory default

If you wish to reset the print server back to its default factory settings (resetting all information such as the password and IP address information), please follow these steps:

- 1 Press the + or - button to choose `NETWORK`. Press **Set**.
- 2 Press the + or - button to choose `FACTORY RESET`. Press **Set**.
- 3 Press **Set** again.

### Note

You can reset the print server back to its default factory settings using the BRAdmin Professional utility for Windows®, BRAdmin Light utility for Macintosh® or a web browser. For more information, see *Changing the print server settings* on page 2-5 for Windows® and *Changing the print server settings* on page 7-3 for Macintosh®.

## Disabling the APIPA protocol

If the APIPA protocol is enabled, the print server will automatically allocate a Link-Local IP address in the range (169.254.1.0 - 169.254.254.255) when the print server cannot obtain an IP address through the **IP METHOD** you have set.

By default, the APIPA protocol is enabled. You can disable the APIPA protocol using the BRAdmin Professional utility or a web browser. For more information, see *Changing the print server settings* on page 2-5.

You can also disable the APIPA protocol using the control panel on the top of the printer. Please follow these steps:

- 1** Make sure that the front cover is closed and the power cord is plugged in.
- 2** Turn on the printer and wait until the printer is in the Ready state.
- 3** Press any of the Menu buttons (+, -, **Set** or **Back**) to take the printer off line.
- 4** Press + or - until `NETWORK` appears on the LCD display.
- 5** Press **Set** to proceed to the next menu level, and then press + or - until `APIPA` appears.
- 6** Press **Set** to proceed to the next menu level, and then press + or - to select **OFF**. The APIPA protocol has been set to be disabled.



### Note

For more information on APIPA, see *Chapter 1* or *Chapter 2*, or visit <http://solutions.brother.com>.

## Overview

This chapter explains how to resolve typical network problems you may encounter when using the Brother network printer. If, after reading this chapter, you are unable to resolve your problem, please visit the Brother Solutions Center at: <http://solutions.brother.com>.

This chapter is divided into the following sections:

- General problems
- Network print software installation problems
- Printing problems
- Protocol-specific troubleshooting
- Wireless network specific troubleshooting

## General problems

### CD-ROM is inserted, but does not start automatically

If your computer does not support Autorun, the menu will not start automatically after inserting the CD-ROM. In this case, execute **Start.exe** in the root directory of the CD-ROM.

### How to reset the Brother print server to factory default

You can reset the print server back to its default factory settings (resetting all information such as the password and IP address information). See *Restoring the network settings to factory default* on page 8-11.

### My computer cannot find the printer/print server

**I cannot make a necessary connection to the printer/print server.**

**My printer/print server does not appear in the window of BRAdmin Professional (BRAdmin Light)**

#### For Windows®

The Firewall setting on your PC may be rejecting the necessary network connection. In this case, you will need to disable the Firewall on your computer and re-install the drivers.

Windows® XP SP2 users:

- 1** Click the **Start** button, **Settings**, and then **Control Panel**.
- 2** Double click **Windows Firewall**.

**3** Click the **General** tab. Verify that **Off (not recommended)** is selected.

**4** Click **OK**.

Windows® XP SP1 users:

**1** Locate the “Windows” key on your keyboard. These are the keys with the Windows logo on it.



**2** Press the “Windows” key plus the “E” key to open **My Computer**.

**3** On the left, right click **My Network Places**, click **Properties**, then right click **Local Area Connection** and click **Properties**.

**4** Click the **Advanced** tab. Under **Internet Connection Firewall**, verify that the box next to **Protect my computer...** is unchecked. If the box is selected, click the box to remove the check. Then, click **OK**.

**5** Once your firewall is disabled, try reinstalling the Brother software package. For instructions on how to install from the CD-ROM, use the Quick Setup Guide we have provided with the printer.

**6** If the installation completed successfully, the Firewall on your computer was rejecting the necessary network connection. In this case, you will need to disable the Firewall on your computer whenever you install the network drivers.



#### Note

After the Brother software package is installed, enable again your Firewall. For instructions on how to re-enable your Firewall software, refer to your User’s Guide or contact the Firewall software manufacturer.

#### For Macintosh®

Re-select your printer in the DeviceSelector application located in Macintosh HD/Library/Printers/Brother/Utilities.



## Network print software installation problems

**The Brother print server is not found during setup of the network print software or from the installation of the Brother printer driver in Windows®.**

**The Brother print server is not found using the Simple Network Configuration capabilities of Mac OS® X.**

(For a network with an Ethernet cable connection)

Make sure you have completed the IP address setting of the Brother print server according to *Chapter 2* of this User's Guide before installing the network print software or printer driver.

(For a wireless network)

Make sure you have completed the IP address setting and wireless network settings of the Brother print server according to *Chapter 3* of this User's Guide before installing the network print software or printer driver.

Check the following:

- 1** Make sure that the printer is powered on, is on-line and ready to print.
- 2** Check to see if there is any LED activity. Brother print servers have two LEDs on the back panel of the printer. The upper green LED shows Link/Activity (Received/Transmit) status. The lower orange LED shows Speed status.
  - No light: If the upper LED is off, then the print server is not connected to the network.
  - The upper LED is green: The Link/Activity LED will be green if the print server is connected to a Ethernet network.
  - The lower LED is orange: The Speed LED will be orange if the print server is connected to a 100BASE-TX Fast Ethernet network.
  - The lower LED is off: The Speed LED will be off if the print server is connected to a 10BASE-T Ethernet network.
- 3** Print the Printer Settings Page and check if the settings such as IP address settings are correct for your network. The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server. And make sure that no other nodes on the network have this IP address. For information on how to print the Printer Settings Page, see *Printing the Printer Settings Page* on page 8-11.

#### 4 Verify that the print server is on your network as follows:

##### For Windows®

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

```
ping ipaddress
```

Where `ipaddress` is the print server IP address (note that in some instances it can take up to two minutes for the print server to load its IP address after setting the IP address).

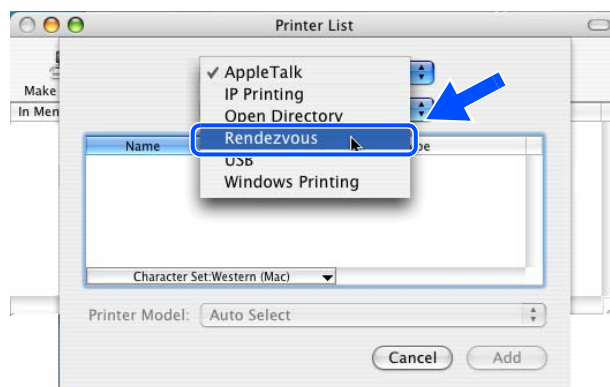
##### For Macintosh®

##### For Mac OS® 9.1 to 9.2 (for the wired network connection only)

- (1) From the **Apple** menu, open the **Chooser**.
- (2) Click the **Brother Laser (IP)** icon, and make sure that your print server name appears in the right frame. If it is visible, then the connection is good. Otherwise, go to *Step 5*.

##### For Mac OS® X 10.2.4 or greater

- (1) From the **Go** menu, select **Applications**.
- (2) Open the **Utilities** folder.
- (3) Double click the **Printer Setup Utility** icon.
- (4) Click **Add**.  
For Mac OS® X 10.2.4 to 10.3: Go to (5).  
For Mac OS® X 10.4: Go to (6).
- (5) For Mac OS® X 10.2.4 to 10.3: Make the following selection.



- (6) Make sure that your print server appears. If it is visible, then the connection is good. Otherwise, go to *Step 5*.
- 5** If you have tried *Step 1* to *Step 4* above and it does not work, then reset the print server back to the default factory settings and try from the initial setup again. For information how to reset to the default factory settings, see *Restoring the network settings to factory default* on page 8-11.
- 6** (For Windows®) If the installation failed, the Firewall on your computer may be blocking the necessary network connection to the printer. In this case, you will need to disable the Firewall on your computer and re-install the drivers. For information how to disable the Firewall, see *For Windows®* on page 9-1.

## Printing problems

### Print job is not printed

Make sure the status and configuration of the print server. Check following:

- 1** Make sure that the printer is powered on, is on-line and ready to print.
- 2** Print the Printer Settings Page of the printer and check if the settings such as IP address settings are correct for your network. The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server. And make sure that no other nodes on the network have this IP address.
- 3** Verify that the print server is on your network as follows:

### For Windows®

- (1) Try pinging the print server from the host operating system command prompt with the command:

```
ping ipaddress
```

Where `ipaddress` is the print server IP address (note that in some instances it can take up to two minutes for the print server to load its IP address after setting the IP address).

- (2) If a successful response is received, then proceed to *Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (LPR) troubleshooting*, and *Windows® 2000/XP IPP troubleshooting*. Otherwise, proceed to *Step 4*.

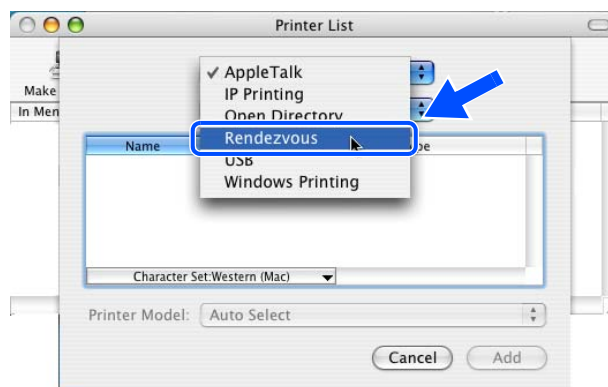
## For Macintosh®

### For Mac OS® 9.1 to 9.2

- (1) From the **Apple** menu, open the **Chooser**.
- (2) Click the **Brother Laser (IP)** icon, and make sure that your print server name appears in the right frame. If it is visible, then the connection is good. Otherwise, go to *Step 4*.

### For Mac OS® X 10.2.4 or greater

- (1) From the **Go** menu, select **Applications**.
- (2) Open the **Utilities** folder.
- (3) Double-click the **Printer Setup Utility** icon.
- (4) Click **Add**.  
For Mac OS® X 10.2.4 to 10.3: Go to (5).  
For Mac OS® X 10.4: Go to (6).
- (5) For Mac OS® X 10.2.4 to 10.3: Make the following selection.



- (6) Make sure that your print server appears. If it is visible, then the connection is good. Otherwise, go to *Step 4*.
- 4** If you have tried *Step 1* to *Step 3* above and it does not work, then reset the print server back to the default factory settings and try from the initial setup again. For information how to reset to the default factory settings, see *Restoring the network settings to factory default* on page 8-11.

## Error during printing

If you try to print while other users are printing large amounts of data (e.g. many pages or pages with a large amount of graphics at high resolution), the printer is unable to accept your print job until the ongoing printing is finished. If the waiting time of your print job exceeds a certain limit, a time out situation occurs, which causes the error message. In such situations, execute the print job again after the other jobs are completed.

## Protocol-specific troubleshooting

### Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (LPR) troubleshooting

---

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

- 1 Make sure that the Brother LPR Port driver is correctly installed and configured according to the Windows® 95/98/Me or Windows NT® 4.0 Peer-to-Peer chapters.
- 2 Try to turn the **Byte Count** on in the **Configure port** area of printer driver properties.

You may find that during the installation of BLP software, the screen that prompts you for a Port name is not displayed. This may happen on some Windows® 95/98/Me and Windows NT® 4.0 computers. Press the ALT and TAB keys to make it appear.

### Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (NetBIOS) troubleshooting

---

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

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

## Windows® 2000/XP IPP troubleshooting

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### I want to use a different Port number other than 631.

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

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

```
http://ip_address/ipp
```

### The Get More Info option in Windows® 2000 is not working

If you are using a URL of:

```
http://ip_address:631 or http://ip_address:631/ipp,
```

the **Get More Info** option in Windows® 2000 will not function. If you wish to use the **Get More Info** option, use the following URL:

```
http://ip_address
```

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

## Web browser troubleshooting (TCP/IP)

---

- 1** If you can not connect to the print server using your web browser it may be worth checking the Proxy Settings of your browser. Look in the Exceptions setting and if necessary, type in the IP address of the print server. This will stop your PC from trying to connect to your ISP or proxy server every time you wish to look at the printer server.
- 2** Make sure that you are using the proper web browser, we recommend Microsoft Internet Explorer version 6.0 (or higher) or Netscape® version 7.1 (or higher).

# Wireless network troubleshooting

## Wireless setup problems

---

9

**The Brother print server is not found during setup using the automatic installer application on the CD-ROM.**

- 1 Make sure that the printer is powered on, is on-line and ready to print.
- 2 Move your Brother printer closer to the computer and try again.
- 3 Reset the print server back to its default factory settings and try again. For the information how to reset to the factory default settings, see *Restoring the network settings to factory default* on page 8-11.

## Wireless connection problem

---

**The wireless network connection is sometimes disabled.**

The wireless network connection status is affected by the environment where the Brother printer and other wireless devices are located. The following conditions may cause connection problems:

- A concrete or metal framed wall is installed between the Brother printer and the access point.
- Electric appliances such as televisions, computer appliances, microwave ovens, intercoms, mobile/cellular phones and the battery chargers and AC power adapters are installed close to your network.
- A broadcast station or high-tension wire is located close to your network.
- A fluorescent light is being switching ON or OFF.

## Wireless installation in ad-hoc mode (HL-5280DW only)

The following instructions will install your Brother printer in a wireless network environment in ad-hoc mode using the Brother automatic installer application in the CD-ROM we have provided with the printer. If you want to setup your printer in infrastructure mode, using a wireless router or access point that uses DHCP to assign IP addresses, you can find instructions in the supplied Quick Setup Guide.

You can also setup your printer using SecureEasySetup™ and the printer control panel. See *Using SecureEasySetup™ to configure your printer in a wireless network* on page 3-4. See *Using the control panel NETWORK menu to configure your wireless network printer (in infrastructure mode)* on page 3-6.

### For Windows® 98/98SE/Me/2000/XP



#### Note

- If you are going to connect the printer to your network, we recommend that you contact your system administrator prior to installation.
- Before installation, if you are using Personal Firewall software (e.g. the Internet Connection Firewall available in Windows® XP), disable it. Once you are sure that you can print, restart your Personal Firewall software.

#### Improper Setup

**If you have previously configured the wireless settings of the printer, you must reset the NETWORK menu settings before you can configure the wireless settings again.**

- 1 Press the + or - button to choose NETWORK. Press **Set**.
- 2 Press the + or - button to choose FACTORY RESET. Press **Set**.
- 3 Press **Set** again.

#### Improper Setup

**DO NOT connect the interface cable.**  
**Connecting the interface cable is done when installing the driver.**

- 1 Make sure that the printer power switch is on.
- 2 Turn on your computer.
- 3 Put the supplied CD-ROM into your CD-ROM driver. The opening screen will appear automatically. Choose **HL-5280DW** and the language.



Wireless installation in ad-hoc mode (HL-5280DW only)

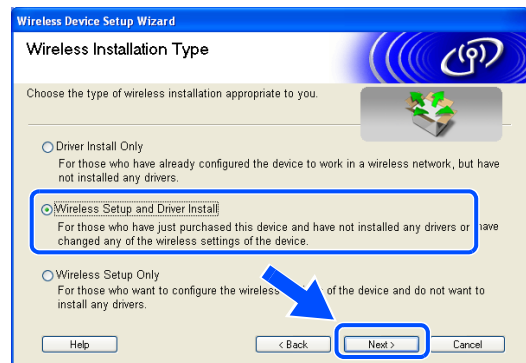
4 Click **Install Printer Driver** on the menu screen.



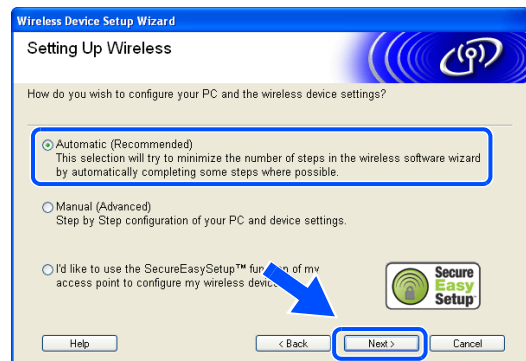
5 Click **Wireless Network users**.



6 Choose **Wireless Setup and Driver Install**, and then click **Next**.



7 Choose **Automatic (Recommended)** and then click **Next**.

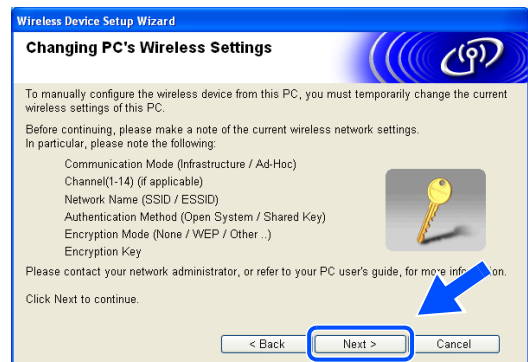
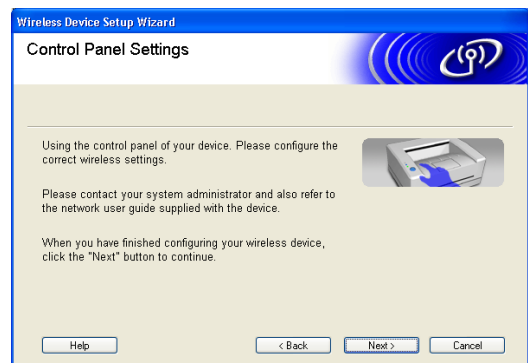
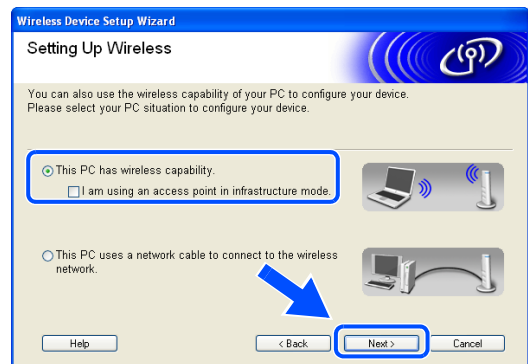
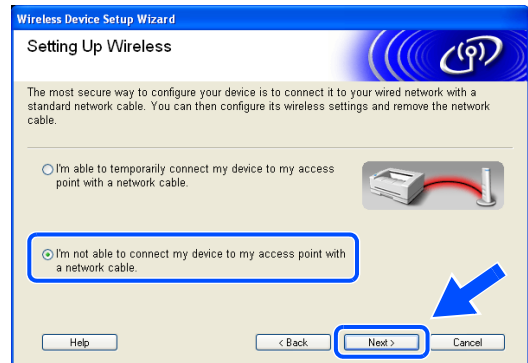


- 8 Choose **I'm not able to connect my device to my access point with a network cable.** Click **Next**.

- 9 If you are using a wireless computer, choose **This PC has wireless capability.**, and make sure **I am using an access point in infrastructure mode** is not checked. Click **Next**.

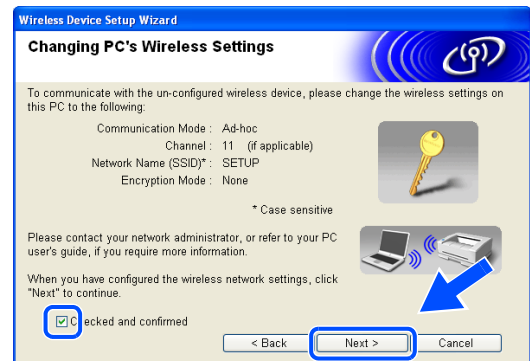
If you are using a wired computer, choose **This PC uses a network cable to connect to the wireless network.**, and you must configure the wireless settings from the control panel. Click **Next** and follow the on-screen instructions to complete the setup. See *Using the control panel NETWORK menu to configure your wireless network printer (in infrastructure mode)* on page 3-6. When finished, go to *Installing the printer driver* on page 10-9.

You need to temporarily change your PC's wireless settings. Please follow the on-screen instructions. Please make sure you take notes on all the settings such as SSID or channel of your PC. You may need them when if you want to restore the current settings in future.



Item	Record the current wireless computer settings
Communication mode: (Infrastructure/Ad-hoc)	
Channel: (1-14)	
Network name: (SSID/ESSID)	
Authentication method: (Open system/Shared key)	
Encryption: (None/WEP/Other)	
Encryption key:	

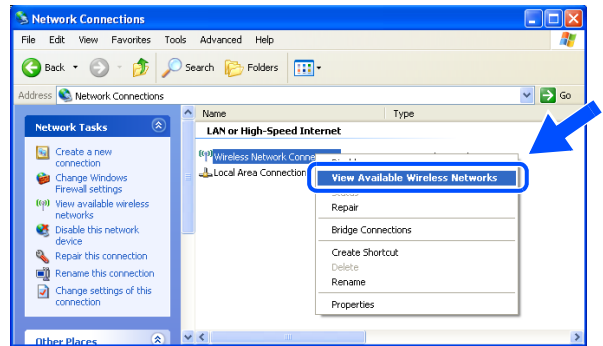
**10** To communicate with the un-configured wireless printer, change the wireless settings on this PC to the printer's default settings which are shown on the screen. Check **Checked and confirmed**, and then click **Next**.



**Note**

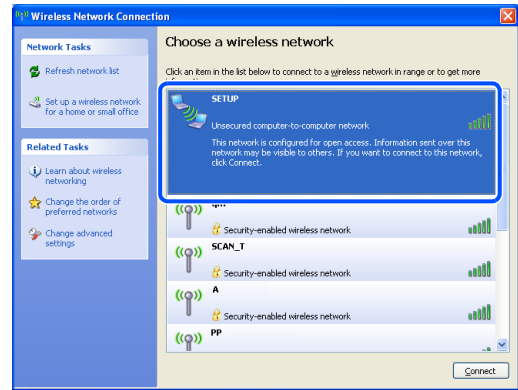
- See the user's guide of your Network Interface or your PC for how to change the wireless settings.
- For Windows® XP SP2 users  
You can change the wireless settings on your PC, following the steps below:
  - 1 Click **Start** and then **Control Panel**.
  - 2 Click the **Network Connection** icon.

- 3 Select and right click **Wireless Network Connection**. Click **View Available Wireless Networks**.

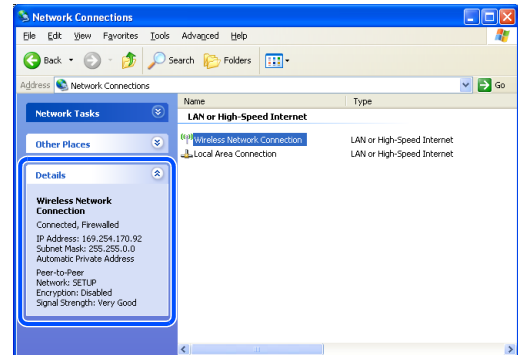


10

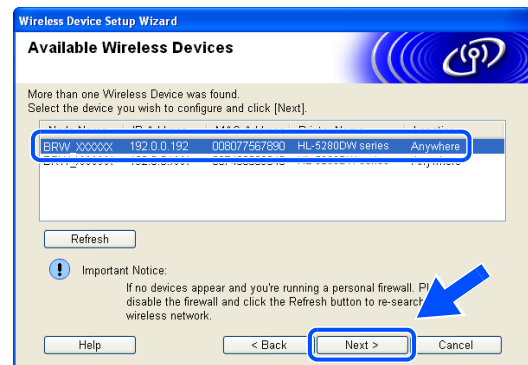
- 4 You can see the Brother wireless device (your printer) in the list. Select **SETUP** and click **Connect**.



- 5 Check the **Wireless Network Connection** status. It may take a few minutes to change from 0.0.0.0 to 169.254.x.x IP address to be shown on screen (where x.x are numbers between 1 and 254).



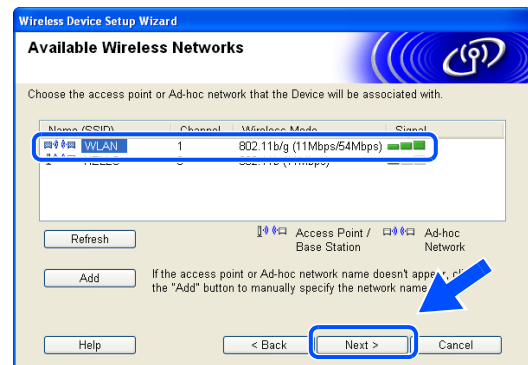
**11** If more than one wireless printer is available on the network, the following list appears. If the list is blank, check if the printer is powered on, and then click **Refresh**. Choose the printer you wish to configure, and click **Next**.



 **Note**

- The Default Node name of the network card in the printer is “BRW\_XXXXXX” (where “XXXXXX” is the last six digits of Ethernet address).
- If you are using Personal Firewall software (e.g. the Internet Connection Firewall available in Windows® XP), temporarily disable it.

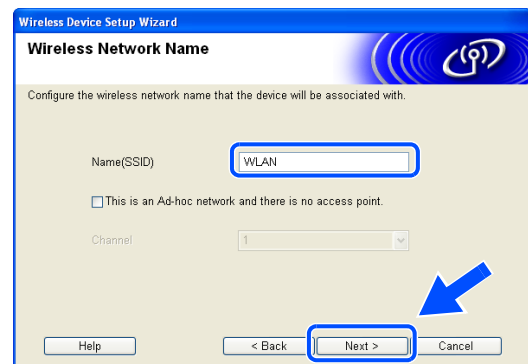
**12** The wizard will search for wireless networks available from your printer. If more than one wireless network is available, the following list appears. Choose the Ad-hoc network you wish to associate the printer with, and then click **Next**.



If no Ad-hoc wireless network are available, you need to create a new wireless network. Go to step **15**.

 **Note**

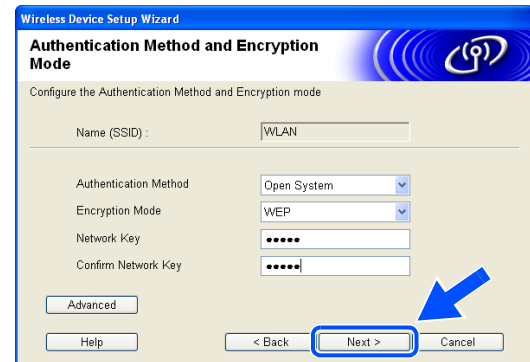
- If your target Ad-hoc network does not appear on the list, you can manually add it by clicking the **Add** button. Follow the on-screen instructions for entering the **Name (SSID)** and the **Channel** number.
- If the list is blank, check if the printer is within range for wireless communication. Then, click **Refresh**.



**13** If your network is not configured for Authentication and Encryption, the following screen will appear. To continue installation, click **OK** and go to step **16**.



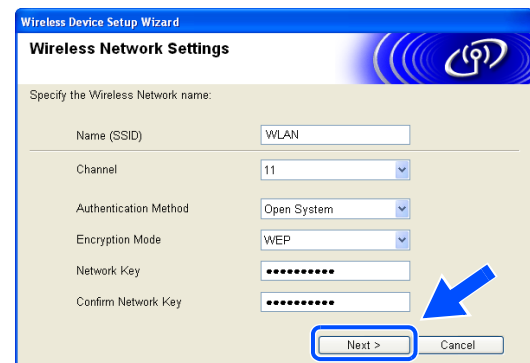
**14** If your network is configured for Authentication and Encryption, the following screen will appear. When configuring your Brother wireless printer, you must ensure that it is configured to match the Authentication and Encryption settings of your existing wireless network. Choose the **Authentication Method** and **Encryption Mode** from the pull-downs in each setting box. Then enter the **Network key** and click **Next**.



**Note**

- If you want to set more than one WEP key, click **Advanced**.
- If you do not know the Authentication or Encryption settings for network, contact your network administrator.

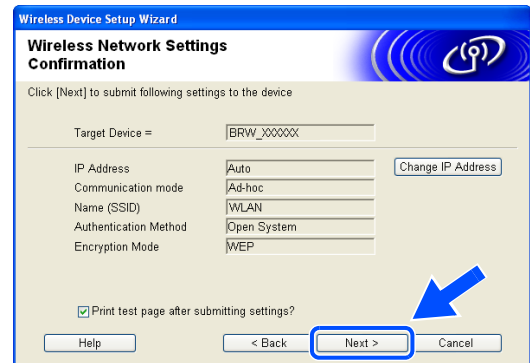
**15** Enter a new SSID and choose the **Authentication Method** and **Encryption Mode** from the pull-downs in each setting box. Then enter the **Network key** and click **Next**.



**Note**

If you do not know the Authentication or Encryption settings for network, contact your network administrator.

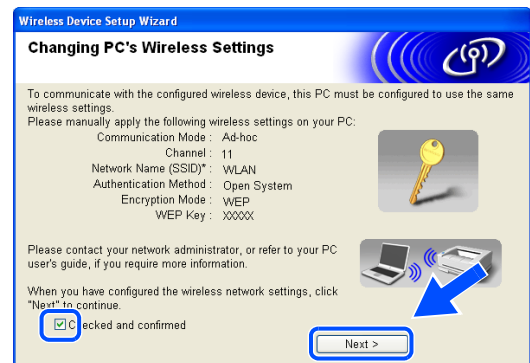
- 16** Click **Next**. The settings will be sent to your printer. The settings will remain unchanged if you click **Cancel**.



 **Note**

If you want to manually enter the IP address settings of your printer, click **Change IP Address** and enter the necessary IP address settings for your network. After making your selection, click **Next** and the Wizard will search for available wireless networks.

- 17** To communicate with the configured wireless device, you must configure your PC to use same wireless settings. Manually change the wireless settings on your PC to match the printer's wireless settings shown on this screen. Check **Checked and confirmed**, and then click **Next**. (The settings shown on this screen are for example only. Your settings will not be the same.)



**You have completed the wireless setup. If you chose to install the drivers in step 6, go to *Installing the printer driver* on page 10-9.**

## Installing the printer driver

### ⊘ Improper Setup

- **DO NOT** try to cancel any of the screens during this installation.
- **If your wireless settings fail, and error message will appear during the installation of printer driver and the installation will be terminated. If you encounter this failure, please go to step 1 and setup the wireless connection again.**

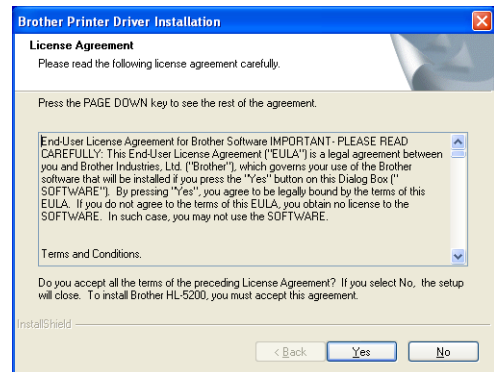
10



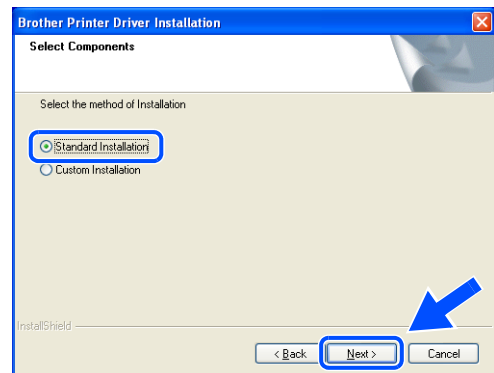
### Note

Peer-to-peer print with NetBIOS is not available for Windows® XP x64 Edition.

- 18** The driver installation starts. When the License Agreement window appears, click **Yes** if you agree to the License Agreement.



- 19** Choose **Standard Installation**, and then click **Next**.



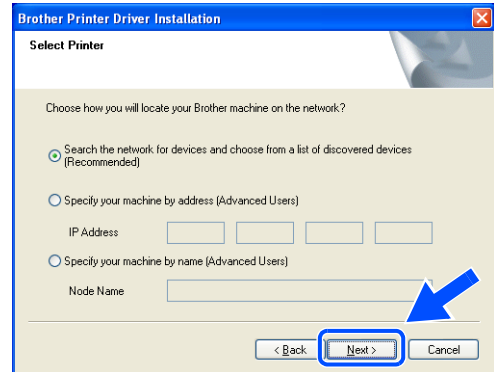


### 20 For LPR Users:

Choose **Search the network for devices and choose from a list of discovered devices (Recommended)**. Or enter your printer's IP address or its node name. Click **Next**.

### For NetBIOS Users:

Choose **Search the network for devices and choose from a list of discovered devices (Recommended)**. Click **Next**.

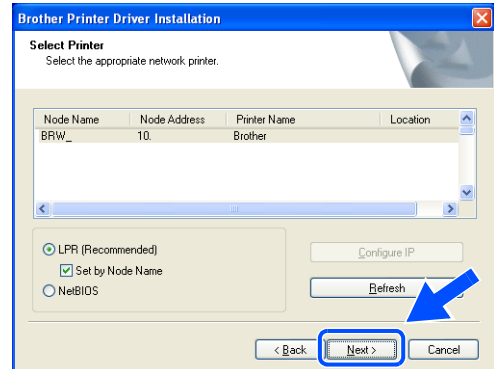


### Note

Contact your administrator if you do not know the printer's IP address or node name.

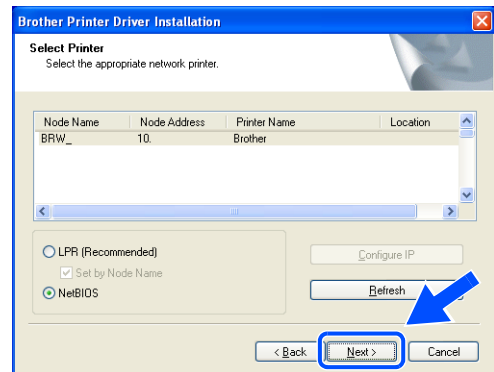
### 21 For LPR Users:

Choose your printer and choose **LPR (Recommended)**, and then click **Next**.

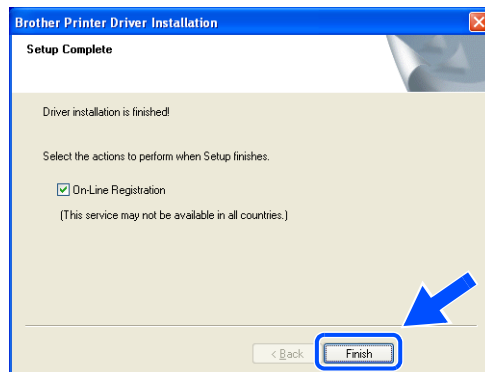


### For NetBIOS Users:

Choose your printer and **NetBIOS**, and then click **Next**.



## 22 Click **Finish**.



10



### Note

- If you want to register your product on-line, check **On-Line Registration**.
- Turn your Personal Firewall back on.



**For Windows NT<sup>®</sup> 4.0 and Windows<sup>®</sup> 2000/XP users, the setup is now complete.**



**For Windows<sup>®</sup> 95/98/Me users, the setup will be complete after your PC has restarted.**

## For Mac OS® X 10.2.4 or greater

### Note

If you are going to connect the printer to your network, we recommend that you contact your system administrator prior to installation.

### Improper Setup

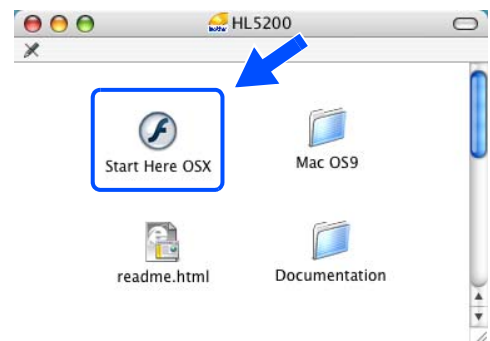
**If you have previously configured the wireless settings of the printer, you must reset the NETWORK menu settings before you can configure the wireless settings again.**

- 1 Press the + or - button to choose NETWORK. Press **Set**.
- 2 Press the + or - button to choose FACTORY RESET. Press **Set**.
- 3 Press **Set** again.

### Improper Setup

**DO NOT connect the interface cable.  
Connecting the interface cable is done when installing the driver.**

- 1 Make sure that the printer power switch is on.
- 2 Turn on your Macintosh®.
- 3 Put the supplied CD-ROM into your CD-ROM drive, and then double-click the HL-5200 icon on your desktop.
- 4 Double-click the **Start Here OSX** icon. If the language screen appears, choose your language.



Wireless installation in ad-hoc mode (HL-5280DW only)

5 Click **Install Printer Driver** on the menu screen.



6 Choose **Wireless Network users**.



7 Choose **Wireless Setup and Driver Install**, and then click **Next**.



8 Choose **Automatic (Recommended)** and then click **Next**.

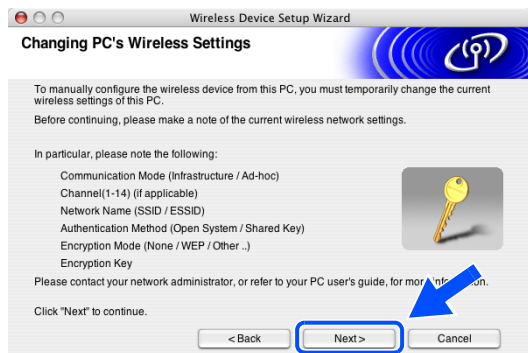
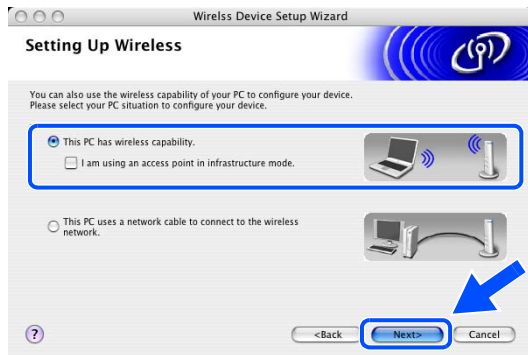


**9** Choose **I'm not able to connect my device to my access point with a network cable.** Click **Next**.

**10** If you are using a wireless computer, choose **This PC has wireless capability.**, and make sure **I am using an access point in infrastructure mode** is not checked. Click **Next**.

If you are using a wired computer, choose **This PC uses a network cable to connect to the wireless network.**, and you must configure the wireless settings from the control panel. Click **Next** and follow the on-screen instructions to complete the setup. See *Using the control panel NETWORK menu to configure your wireless network printer (in infrastructure mode)* on page 3-6. When finished, go to *Installing the printer driver* on page 10-20.

You need to temporarily change the wireless settings of your Macintosh®. Please follow the on-screen instructions. Please make sure you take notes on all the settings such as SSID or channel of your Macintosh®. You may need them when if you want to restore the current settings in future.



Item	Record the current wireless computer settings
Communication mode: (Infrastructure/Ad-hoc)	
Channel: (1-14)	
Network name: (SSID/ESSID)	
Authentication method: (Open system/Shared key)	
Encryption: (None/WEP/Other)	
Encryption key:	

**11** To communicate with the un-configured wireless machine, change the wireless settings on your Macintosh® to the machine’s default settings which are shown on the screen. Check **Checked and confirmed**, and then click **Next**.



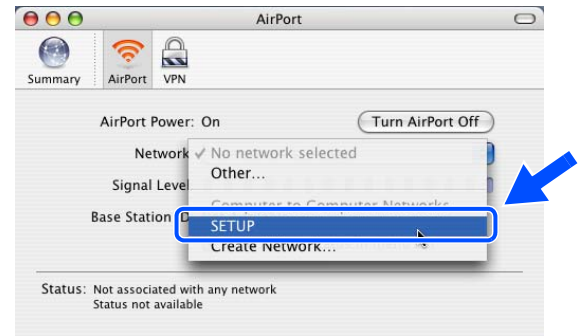
**Note**

- See the user’s guide of your Network Interface of your Macintosh® for how to change the wireless settings.
- You can change the wireless settings on your Macintosh®, following the steps below:

- 1 Click the AirPort status icon and select Open Internet Connect...



- 2 Click the Network tab to see the available wireless devices. You can see the Brother wireless print server in the **Network** option. Select **SETUP**.



- 3 Your wireless network is connected successfully.



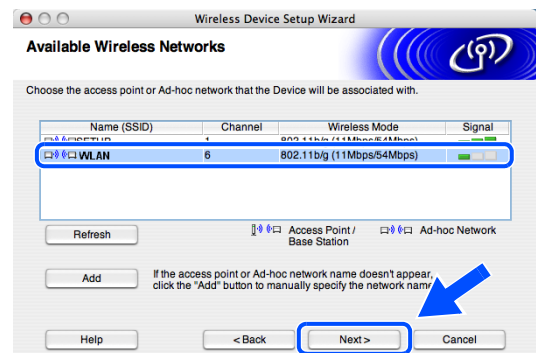
- 4 If more than one wireless machine is available on the network, the following list appears. If the list is blank, check if the machine is powered on, and then click **Refresh**. Choose the machine you wish to configure, and click **Next**.



 **Note**

The Default Node name of the network card in the printer is “BRW\_XXXXXX” (where “XXXXXX” is the last six digits of Ethernet address).

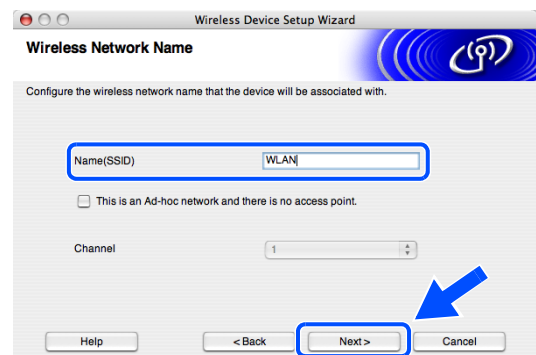
- 5 The wizard will search for wireless networks available from your machine. If more than one wireless network is available, the following list appears. Choose the Ad-hoc network you wish to associate the machine with, and then click **Next**.



If no Ad-hoc wireless network are available, you need to create a new wireless network. Go to step 8.

 **Note**

- If your target Ad-hoc network does not appear on the list, you can manually add it by clicking the **Add** button. Follow the on-screen instructions for entering the **Name (SSID)** and the **Channel** number.
- If the list is blank, check if the machine is within range for wireless communication. Then, click **Refresh**.

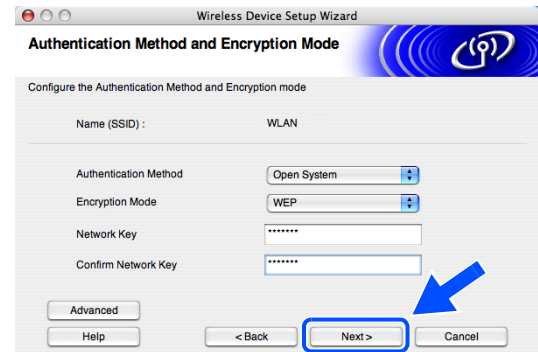




6 If your network is not configured for Authentication and Encryption, the following screen will appear. To continue installation, click **OK** and go to step 9.



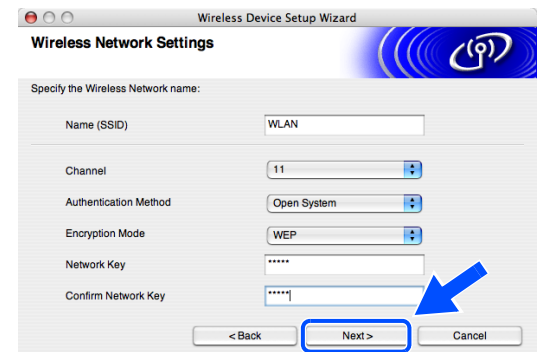
7 If your network is configured for Authentication and Encryption, the following screen will appear. When configuring your Brother wireless machine, you must ensure that it is configured to match the Authentication and Encryption settings of your existing wireless network. Choose the **Authentication Method** and **Encryption Mode** from the pull-downs in each setting box. Then enter the **Network key** and click **Next**.



 **Note**

- If you want to set more than one WEP key, click **Advanced**.
- If you do not know the Authentication or Encryption settings for network, contact your network administrator.

8 Enter a new SSID and choose **Authentication Method** and **Encryption Mode** from the pull-downs in each setting box. Then enter the **Network Key** and click **Next**.



 **Note**

If you do not know the Authentication or Encryption settings for network, contact your network administrator.

- 9 Click **Next**. The settings will be sent to your machine. The settings will remain unchanged if you click **Cancel**.



 **Note**

If you want to manually enter the IP address settings of your machine, click **Change IP Address** and enter the necessary IP address settings for your network. After making your selection, click **Next** and the Wizard will search for available wireless networks.

- 10 To communicate with the configured wireless device, you must configure your Macintosh® to use same wireless settings. Manually change the wireless settings on your Macintosh® to match the machine's wireless settings shown on this screen. Check **Checked and confirmed**, and then click **Next**.  
(The settings shown on this screen are for example only. Your settings will not be the same.)



**You have completed the wireless setup. If you chose to install the drivers in *step 7*, go to *Installing the printer driver* on page 10-20.**

## Installing the printer driver

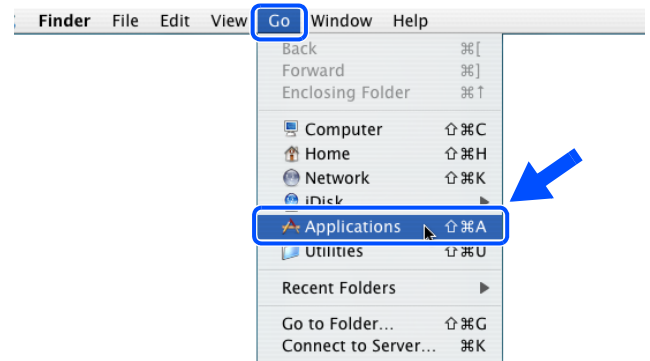
### ⊘ Improper Setup

- **DO NOT** try to cancel any of the screens during this installation.
- **If your wireless settings fail, and error message will appear during the installation of printer driver and the installation will be terminated. If you encounter this failure, please go to step 1 and setup the wireless connection again.**

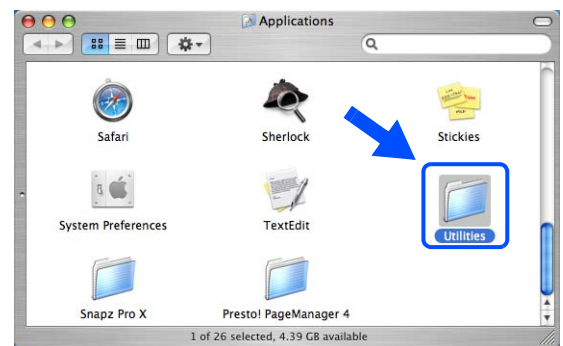
10

**11** The driver installation starts. Follow the on-screen instructions and restart your Macintosh®. (Not available if you chose **Driver Install Only** in *step 7*.)

**12** Click **Go**, then **Applications**.



**13** Double-click the **Utilities** folder.



**14** Double-click the **Printer Setup Utility** icon.

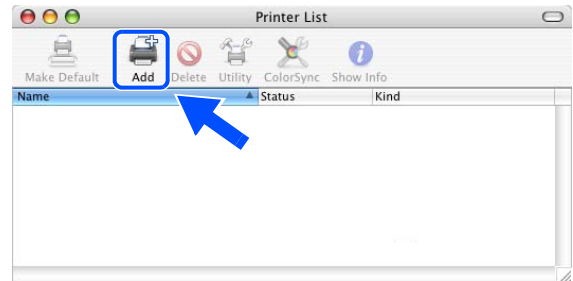


 **Note**

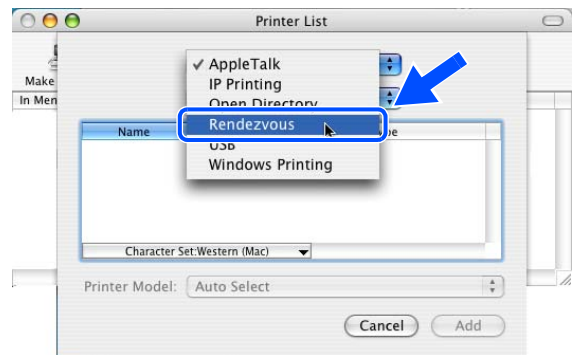
For Mac OS® X 10.2 users, open the **Print Center** icon.

**15** Click **Add**.

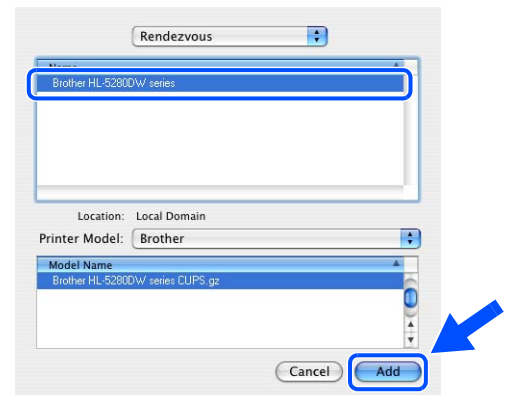
Mac OS® X 10.2.4 to 10.3 users; go to step **16**.  
Mac OS® X 10.4 users; go to step **18**.



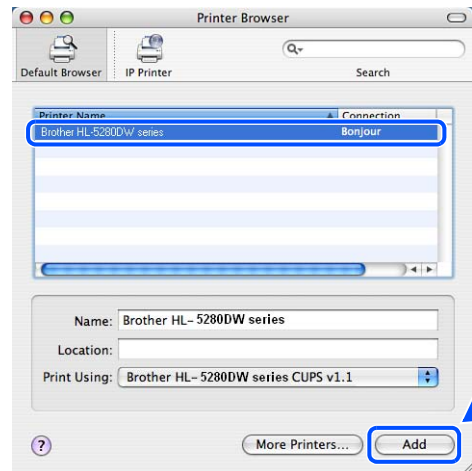
**16** Make the selection shown (For Mac OS® X 10.2.4 to 10.3 users).



**17** Choose **Brother HL-5280DW series**, and then click **Add**. Go to step **19**.



- 18** Choose **Brother HL-5280DW series**, and then click **Add**.



 **Note**

If there is more than one of the same model printer (HL-5280DW) connected on your network, the Ethernet address (MAC address) will be displayed after the model name.

- 19** Mac OS® X 10.3 or greater users:  
Click **Printer Setup Utility**, then **Quit Printer Setup Utility**.

For Mac OS® X 10.2.x users:  
Click **Print Center**, then **Quit Print Center**.



**The setup is now complete.**

## Using services

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

Service (Example)	Definition
BINARY_P1	TCP/IP binary, NetBIOS service
TEXT_P1	TCP/IP text service (adds carriage return after each line feed)
POSTSCRIPT_P1	PostScript <sup>®</sup> service (switches PJL-compatible printer to PostScript <sup>®</sup> mode)
PCL_P1	PCL <sup>®</sup> service (switches PJL-compatible printer to PCL <sup>®</sup> mode)
BRN_XXXXXX_P1_AT	LPD PostScript <sup>®</sup> service for Mac OS <sup>®</sup> 8.6 or later

Where `XXXXXX` is the last six digits of the Ethernet address of the wired network. (for example, `BRN_310107_P1`).

## Other ways to set the IP address (for advanced users and administrators)

For information on how to configure your network printer using the BRAdmin Professional utility or a web browser, see *Setting the IP address and subnet mask* on page 2-3.

### 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 a DHCP server in your network, the print server will automatically obtain its IP address from DHCP server and register its name with any RFC 1001 and 1002-compliant dynamic name services.



#### Note

If you do not want your print server configured via DHCP, BOOTP or RARP, you must set the boot method to static so that the print server has a static IP address. This will prevent the print server from trying to obtain an IP address from any of these systems. To change the boot method, use the printer's control panel `NETWORK` menu, the BRAdmin Professional utility or a web browser.

## 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”.

### Note

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

```
BRN_310107 1 00:80:77:31:01:07 192.168.1.2
```

and:

```
BRN_310107:ht=ethernet:ha=008077310107:\
ip=192.168.1.2:
```

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.

## Using RARP to configure the IP address

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

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

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

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

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

For AT&T UNIX®-based systems, type:

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

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

## Using APIPA to configure the IP address

---

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

By default, the APIPA protocol is enabled. If you want to disable the APIPA protocol, you can disable it using printer control panel. For more information, see *Disabling the APIPA protocol* on page 8-12.

If the APIPA protocol is disabled, the default IP address of a Brother print 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.

## Using ARP to configure the IP address

---

If you are unable to use the BRAdmin application and your network does not use a DHCP server, you can also use the ARP command. The ARP command is available on Windows® systems that have TCP/IP installed as well as UNIX® systems. To use arp enter the following command at the command prompt:

```
arp -s ipaddress ethernetaddress
```

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

### Windows® systems

Windows® systems require the dash "-" character between each digit of the Ethernet address.

```
arp -s 192.168.1.2 00-80-77-31-01-07
```



## UNIX®/Linux systems

Typically, UNIX® and Linux systems require the colon ":" character between each digit of the Ethernet address.

```
arp -s 192.168.1.2 00:80:77:31:01:07
```



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

To configure the print server and to verify the connection, enter the following command `ping ipaddress` where `ipaddress` is the IP address of the print server. For example, `ping 192.189.207.2`.

## Using the TELNET console to configure the IP address

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

TELNET is an effective method to change the printer's IP address. But a valid IP address must already be programmed into the print server.

Type `TELNET ipaddress` at the command prompt of the system prompt, where `ipaddress` is the IP address of the print server. When you are connected, push the Return or Enter key to get the "#" prompt, enter the password `access` (the password will not appear on the screen).

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

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

```
Local> SET IP ADDRESS 192.168.1.3
```

You will now need to set the subnet mask by typing `SET IP SUBNET subnet mask`, where `subnet mask` is the desired subnet mask you wish to assign to the print server (check with your network administrator 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:

255.0.0.0 for class A networks

255.255.0.0 for class B networks

255.255.255.0 for class C networks

The leftmost group of digits in your IP address can identify the type of network you have. The value of this group ranges from 1 through 127 for Class A networks (e.g., 13.27.7.1), 128 through 191 for Class B networks (e.g., 128.10.1.30), and 192 through 255 for Class C networks (e.g., 192.168.1.4).

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 192.168.1.4
```

Type `SET IP METHOD STATIC` to set the method of IP access configuration to static.

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

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

## Using the Brother Web BRAdmin server software for IIS\* to configure the IP address

---

The Web BRAdmin server 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, 5.0 or 5.1

## Print server specifications

### Ethernet wired network

<b>Network node type</b>	NC-6400h	
<b>Operating system support</b>	Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000/XP Mac OS® 9.1 to 9.2, Mac OS® X 10.2.4 or greater	
<b>Protocol support</b>	TCP/IP: IPv4	APR, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS, NetBIOS name resolution, DNS Resolver, mDNS. LPR/LPD, Custom Raw Port/Port9100, SMB Print, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client
	TCP/IP: IPv6 <sup>1</sup>	NDP, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client
<b>Network type</b>	10/100BASE-TX Ethernet network	
<b>Network printing</b>	Windows® 95/98/Me Peer-to-Peer printing Windows NT® 4.0 and Windows® 2000/XP TCP/IP printing Macintosh® printing	
<b>Computer requirements (for drivers, BRAdmin Professional, Peer-to-Peer software, etc.)</b>	Processor Minimum Speed	486/66MHz or higher for Windows® 95/98 Intel® Pentium® 150MHz or higher for Windows® Me Intel® Pentium® 75MHz or higher for Windows NT® 4.0 Intel® Pentium® 133MHz or higher for Windows® 2000 Intel® Pentium® 300MHz or higher for Windows® XP Intel® Pentium® 4 with Intel® EM64T, Intel® Xeron™ with Intel® EM64T, AMD Opteron™, AMD Athlon™ 64 or higher for Windows® XP Professional x64 Edition <sup>2</sup>
	Minimum RAM	8MB or greater for Windows® 95/98 32MB or greater for Windows® Me 16MB or greater for Windows NT® 4.0 64MB or greater for Windows® 2000 128MB or greater for Windows® XP 256MB or greater for Windows® XP Professional x64 Edition
	Recommended RAM	16MB or greater for Windows® 95/98 64MB or greater for Windows® Me 32MB or greater for Windows NT® 4.0 128MB or greater for Windows® 2000 128MB or greater for Windows® XP 256MB or greater for Windows® XP Professional x64 Edition
<b>Macintosh connection</b>	Computer	Ethernet ready Power Macintosh®
	RAM	32MB or more (64MB or more recommended) for Mac OS® 9.1 to 9.2 128MB or more (160MB or more recommended) for Mac OS® X 10.2.4 or greater
	Operating system	Mac OS® 9.1 to 9.2, Mac OS® X 10.2.4 or greater

<b>Management utilities</b>	BRAdmin Professional utility	Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000/XP
	BRAdmin Light	Mac OS® X 10.2.4 or greater
	Web BRAdmin <sup>3</sup>	Windows® 2000 Professional / Server / Advanced Server, Windows® XP Professional

1. If you want to use the IPv6 protocol, visit <http://solutions.brother.com> for more information.
2. Download the printer driver for Windows® XP Professional x64 Edition from <http://solutions.brother.com>.
3. Web BRAdmin are available as a download from <http://solutions.brother.com>.

## Ethernet wireless network

<b>Network node type</b>	NC-7200w	
<b>Operating system support</b>	Windows® 98/Me, Windows NT® 4.0, Windows® 2000/XP Mac OS® X 10.2.4 or greater	
<b>Protocol support</b>	TCP/IP: IPv4	APR, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS, NetBIOS name resolution, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, SMB Print, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client
	TCP/IP: IPv6	NDP, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client
<b>Network type</b>	IEEE 802.11b/g wireless	
<b>Frequency</b>	2412-2472 MHz	
<b>RF channels</b>	US/Canada	1-11
	Europe/Oceania	1-13
	Japan	1-14
<b>Communication mode</b>	Infrastructure, Ad-hoc 802.11	
<b>Data rates</b>	802.11b	11/5.5/2/1 Mbps
	802.11g	54/48/36/24/18/12/9/6 Mbps
<b>Link distance</b>	70 m (233 ft.) at lowest data rate (The distance rate will vary upon environment and other equipment location.)	
<b>Network security</b>	SSID/ESSID, 128 (104) / 64 (40) bit WEP, WPA-PSK (TKIP/AES), LEAP	
<b>Network printing</b>	Windows® 95/98/Me Peer-to-Peer printing Windows NT® 4.0 and Windows® 2000/XP TCP/IP printing Macintosh® printing (Mac OS® 10.2.4 or greater supporting TCP/IP)	
<b>Computer requirements (for drivers, BRAdmin Professional, Peer-to-Peer software, etc.)</b>	Processor Minimum Speed	Pentium® II or equivalent for Windows® 98/Me, Windows NT® 4.0, Windows® 2000/XP
	Minimum RAM	24MB for Windows® 98/Me 32MB for Windows® 2000 64MB for Windows® XP
	Recommended RAM	32MB for Windows® 98/98SE/Me 64MB for Windows® 2000 128MB for Windows® XP
<b>Macintosh® connection</b>	Computer	Wireless (AirPort) ready Power Macintosh®
	Processor Minimum Speed	All base models meet minimum requirements
	Minimum RAM	128MB for Mac OS® X 10.2.4 or greater
	Recommended RAM	160MB for Mac OS® X 10.2.4 or greater

<b>Management utilities</b>	BRAdmin Professional	Windows® 98/Me, Windows NT® 4.0, Windows® 2000/XP
	BRAdmin Light	Mac OS® X 10.2.4 or greater
	Web BRAdmin <sup>1</sup>	Windows® 2000 Professional / Server / Advanced Server, Windows® XP Professional

1. Web BRAdmin are available as a download from <http://solutions.brother.com>.

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