



Multi-Protocol On-board Ethernet Print Server

# NETWORK USER'S GUIDE

HL-4040CN  
HL-4050CDN

Please read this manual thoroughly before using the printer.  
Keep the CD-ROM in a convenient place so you can use it quickly  
if you need to.

Please visit us at <http://solutions.brother.com> where you can get  
product support, the latest driver updates and utilities, and  
answers to frequently asked questions (FAQs) and technical  
questions.

## Definitions of warnings, cautions, and notes

We use the following icon 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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## IMPORTANT NOTE:

- Windows® XP in this document represents Windows® XP Professional, Windows® XP Professional x64 Edition and Windows® XP Home Edition.
- Windows Server® 2003 in this document represents Windows Server® 2003 and Windows Server® 2003 x64 Edition.

## Service center locations

For service centres in China, contact your local Brother Office. Address and telephone contact information for Chinese offices can be found at <http://www.brother-cn.net>.

### Internet addresses

Brother Global Web Site: <http://www.brother.com>

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## Overview

The Brother printer can be shared on a 10/100Mb wired Ethernet network using the internal network print server. The print server provides printing services for Windows® 2000/XP/XP Professional x64 Edition, Windows Vista™, Windows Server® 2003/ 2003 x64 Edition supporting the TCP/IP protocols and Macintosh OS® X 10.2.4 or greater supporting TCP/IP. The following chart shows what network features and connections are supported by each operating system.

Operating Systems	10/100 BASE-TX Wired Ethernet (TCP/IP)	Printing	BRAdmin Light	BRAdmin Professional <sup>1</sup>	Internet Printing (IPP)	Status Monitor	Driver Deployment Wizard
Windows® 2000/XP	✓	✓	✓	✓	✓	✓	✓
Windows® XP Professional x64 Edition							
Windows Vista™							
Windows Server® 2003 Server® 2003 x64 Edition							
Mac OS® X 10.2.4 or greater	✓	✓	✓			✓	

<sup>1</sup> BRAdmin Professional is available as a download from <http://solutions.brother.com>

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

## Network function features

The Brother HL-4000 Series have the following basic network functions.

### Network printing

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The print server provides printing services for Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 supporting the TCP/IP protocols and Macintosh supporting TCP/IP (Mac OS® X 10.2.4 or greater).

### Management utility

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#### BRAdmin Light

BRAdmin Light is a utility for initial setup of Brother network connected devices. This utility can search for Brother products on your network, view the status and configure basic network settings, such as IP address. The BRAdmin Light utility is available for Windows® 2000/XP, Windows Vista™, Windows Server® 2003 and Mac OS® X 10.2.4 or greater computers. For installing BRAdmin Light, please see the Quick Setup Guide we provided with the printer. For Macintosh® users, BRAdmin Light 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>

#### BRAdmin Professional (for Windows®)

BRAdmin Professional is a utility for more advanced management of network connected Brother devices. This utility can search for Brother products on your network, view the status and configure the network settings from a computer running Windows® system. BRAdmin Professional has additional features from BRAdmin Light. For more information and downloading, visit us at <http://solutions.brother.com>

#### Web BRAdmin (For Windows®)

Web BRAdmin is a utility for managing network connected Brother devices. This utility can search for Brother products on your network, view the status and configure the network settings. Unlike BRAdmin Professional, which is designed for Windows® only, the Web BRAdmin server utility can be accessed from any client PC with a web browser that supports JRE (Java Runtime Environment). By installing the Web BRAdmin server utility on a PC running IIS<sup>1</sup>, administrators with a web browser can connect to the Web BRAdmin server, which then communicates with the device itself.

For more information and downloading, visit us at <http://solutions.brother.com>

<sup>1</sup> Internet Information Server 4.0 or Internet Information Service 5.0 / 5.1 / 6.0 / 7.0



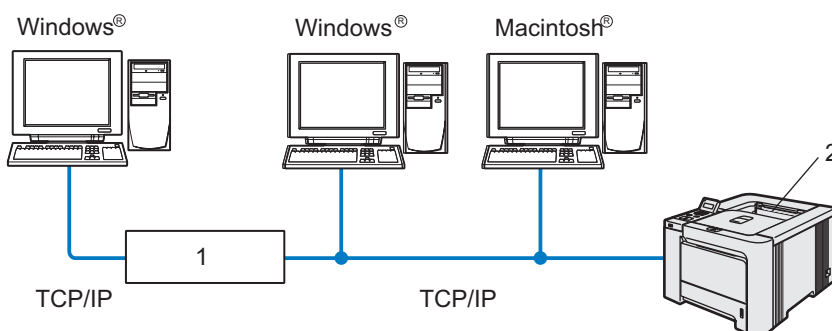
# Types of network connection

## Network connection example

Generally there are two types of network connections: Peer-to-Peer and Network Shared environment.

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

In a Peer-to-Peer environment, each computer directly sends and receives data to each device. There is no central server controlling file access or printer sharing.



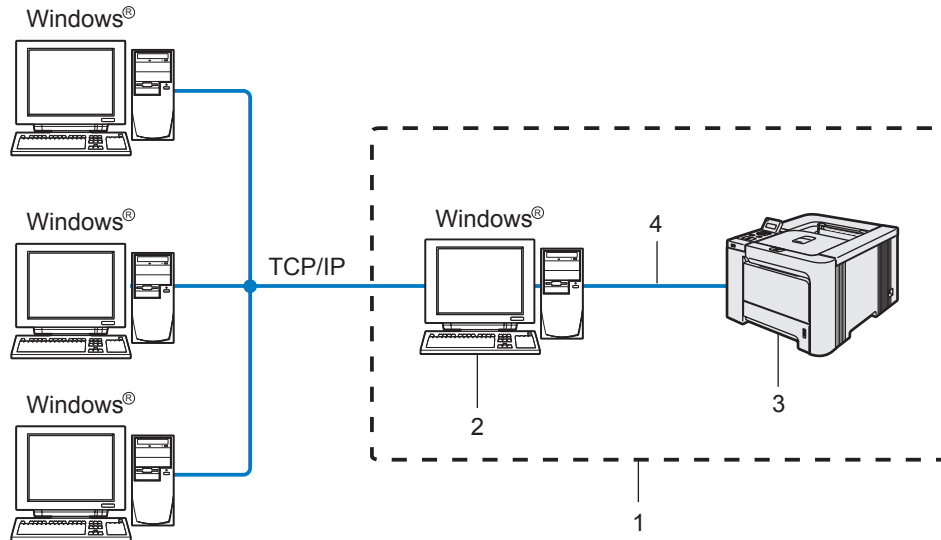
**1 Router**

**2 Network 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 4.
- 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 data 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.



- 1 Network Shared
- 2 Also known as “Server” or “Printer server”
- 3 Printer
- 4 TCP/IP, USB or Parallel

- 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 unless the printer is connected via the parallel or USB interface at the server.

# 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.



### Note

- You can configure the protocol settings by using the HTTP (web browser). See *Using Web Based Management (web browser) to change the print server settings* on page 14.
  - For the protocols of the security features, see *Security protocols* on page 40.
- 

## 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.



### Note

We recommend Microsoft Internet Explorer 6.0® (or higher) or Firefox® 1.0 (or higher) for Windows® and Safari™ 1.0 for Macintosh®. Please also make sure that JavaScript and Cookie are always enabled in whichever browser you use. We recommend you upgrade to Safari™ 1.2 or higher to enable JavaScript. If a different web browser is used, make sure it is compatible with HTTP 1.0 and HTTP 1.1.

## 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 on 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, refer to the remainder of this chapter for more information.



### Note

If you do not wish to, or are unable to use the automatic installer or any of Brother's software tools, you can also use the printer's control panel to change network settings. For more information, see *Control panel setup* on page 27.

## 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

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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, Windows® 2000/XP, Windows Vista™, or Windows Server® 2003 network) the print server will automatically obtain its IP address from the 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.

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For more information on DHCP, BOOTP and RARP, see *Using DHCP to configure the IP address* on page 72, *Using BOOTP to configure the IP address* on page 72 and *Using RARP to configure the IP address* on page 73.

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 73.

If the APIPA protocol is disabled, the 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 10.

## Subnet mask

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Subnet masks restrict network communication.

■ Example: Computer 1 can talk to Computer 2

- Computer 1  
IP Address:192.168.1.2  
Subnet Mask:255.255.255.0
- Computer 2  
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.

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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 Light utility to configure your network printer

### BRAdmin Light

The BRAdmin Light utility is designed for initial setup of Brother network connected devices. It can also search for Brother products in a TCP/IP environment, view the status and configure basic network settings, such as IP address. The BRAdmin Light utility is available for Windows® 2000/XP, Windows Vista™, Windows Server® 2003 and Mac OS® X 10.2.4 or greater.



#### 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 version of BRAdmin Light utility from <http://solutions.brother.com>
- If you require more advanced printer management, use the latest version of BRAdmin Professional utility that is available as a download from <http://solutions.brother.com>. This utility is only available for Windows® users.
- If you are using Personal Firewall software (e.g. Windows Firewall), disable it. Once you are sure that you can print, re-start your Personal Firewall software.
- Node name: Node name appears in current BRAdmin Light. The default Node name of the network card in the printer is "BRNxxxxxxx" ("xxxxxxx" is the last six digits of Ethernet address.).
- The default password for Brother print servers is `access`.

### 1 Start the BRAdmin Light utility.

- For Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 users

Click **Start / All Programs**<sup>1</sup> / **Brother** / **BRAdmin Light** / **BRAdmin Light**.

<sup>1</sup> **Programs** for Windows® 2000 users

- For Mac OS® X 10.2.4 or greater users

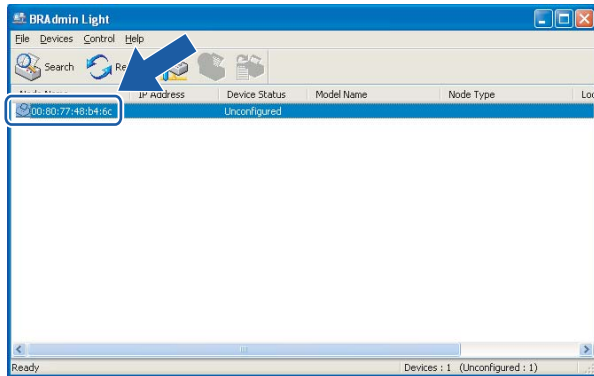
Double-click **Macintosh HD** (Startup Disk) / **Library** / **Printers** / **Brother** / **Utilities** / **BRAdmin Light.jar** file.

### 2 BRAdmin Light will search for new devices automatically.

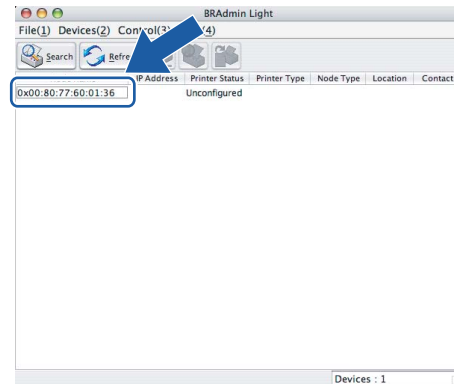


- 3 Double-click the unconfigured device.

### Windows®



### Macintosh®

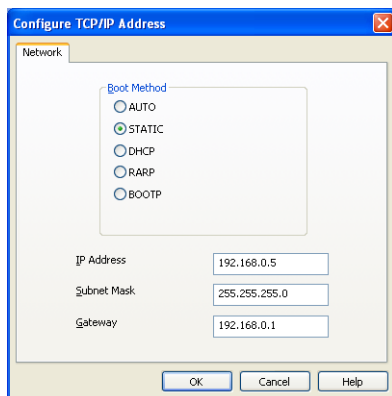


### Note

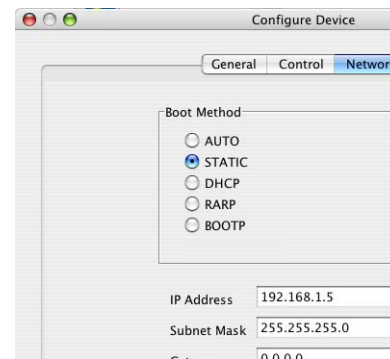
- If the print server is set to its factory default settings without using a DHCP/BOOTP/RARP server, the device will appear as **Unconfigured** in the BRAdmin Light utility screen.
- You can find the node name and Ethernet address by printing out the Printer Settings Page. See *Printing the Printer Settings Page* on page 31.

- 4 Choose **Static** from **Boot Method**. Enter the **IP address**, **Subnet Mask** and **Gateway** (if needed) of your print server.

### Windows®



### Macintosh®



- 5 Click **OK**.
- 6 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

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You can configure your network printer using the control panel **LAN** menu on the LCD display. See *Control panel setup* on page 27.

2

## 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 72.

# Changing the print server settings

## Using the BRAdmin Light utility to change the print server settings

2

- 1 Start the BRAdmin Light utility.
  - For Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 users  
Click **Start / All Programs**<sup>1</sup> / **Brother / BRAdmin Light / BRAdmin Light**.
  - <sup>1</sup> **Programs** for Windows® 2000 users
  - For Mac OS® X 10.2.4 or greater users  
Double-click **Macintosh HD (Startup Disk) / Library / Printers / Brother / Utilities / BRAdmin Light.jar** file.
- 2 Select the print server which you want to change the settings.
- 3 Select **Network Configuration** from the **Control** menu.
- 4 Enter a password. The default Password is `access`.
- 5 You can now change the print server settings.

**Note**

If you want to change more advanced settings, use the BRAdmin Professional utility that is available as a download from <http://solutions.brother.com>

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

You can configure and change the print server settings using the control panel **LAN** menu. See *Control panel setup* on page 27.

## Using Web Based Management (web browser) to change the print server settings

A standard web browser can be used to change your print server settings using the HTTP (Hyper Text Transfer Protocol).



### Note

We recommend Microsoft Internet Explorer 6.0<sup>®</sup> (or higher) or Firefox<sup>®</sup> 1.0 (or higher) for Windows<sup>®</sup> and Safari<sup>™</sup> 1.0 for Macintosh<sup>®</sup>. Please also make sure that JavaScript and Cookie are always enabled in whichever browser you use. We recommend you upgrade to Safari<sup>™</sup> 1.2 or higher to enable JavaScript. To use a web browser, you will need to know the IP address of 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 a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen on the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as "BRNxxxxxx" where "xxxxxxx" 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 You can now change the printer server settings.

## 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 in order to use 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`.

## Configuring the standard TCP/IP port

### Printer driver not yet installed

#### For Windows Vista™

- 1 Click the **Start** button, **Control Panel**, **Hardware and Sound**, and then **Printers**.
- 2 Click **Add a printer**.
- 3 Select **Add a local printer**.
- 4 You must now select the correct Network printing port. Select **Create a new port** and select **Standard TCP/IP Port** from the pull-down window, then click **Next**.
- 5 Enter the IP address, or the print server name you wish to configure. The Wizard will automatically enter the Port name information for you, then click **Next**.
- 6 Windows Vista™ will now contact the printer that you specified. If you did not specify the correct IP address or name then an error dialog will appear.
- 7 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.
- 8 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**.

- 9 Specify a name and click **Next**.



#### Note

- When the **User Account Control** screen appears, click **Continue**.
- If the printer driver that you are installing does not have a Digital Certificate you will see a warning message. Click **Install this driver software anyway** to continue with the installation.

- 10 Continue through the Wizard clicking **Finish** when complete.

### For Windows® 2000/XP and Windows Server® 2003

- 1 For Windows® XP and Windows Server® 2003: Click the **Start** button and select **Printers and Faxes**. For Windows® 2000: Click the **Start** button, select **Settings** and then **Printers**.
- 2 For Windows® XP and Windows Server® 2003: Click **Add a printer** to start the **Add Printer Wizard**. For Windows® 2000: Double click the **Add Printer** icon to start 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, then click **Next**.
- 5 You must now select the correct Network printing port. Select **Create a new port** and select **Standard TCP/IP Port** from the pull-down window, then click **Next**.
- 6 The **Add Standard TCP/IP Printer Port Wizard** will now appear. Click **Next**.
- 7 Enter the IP address, or the print server name you wish to configure. The Wizard will automatically enter the Port name information for you, then click **Next**.
- 8 Windows® 2000/XP and Windows Server® 2003 will now contact the printer that you specified. If you did not specify the correct IP address or name then an error dialog will appear.
- 9 Click **Finish** to complete the Wizard.
- 10 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.
- 11 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**.
- 12 Specify a name and click **Next**.
- 13 Continue through the Wizard clicking **Finish** 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 For Windows Vista™:  
Click the **Start** button, **Control Panel**, **Hardware and Sound**, and then **Printers**.  
For Windows® XP and Windows Server® 2003:  
Click the **Start** button and select **Printers and Faxes** windows.  
For Windows® 2000:  
Click the **Start** button and select **Settings** and then **Printers**.
- 2 Right click on the printer driver you wish to configure, and then select **Properties**.
- 3 Click the **Ports** tab 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.
- 6 Enter the IP address of your network printer. Click **Next**.
- 7 Click **Finish**.
- 8 Close **Printer Ports** and **Properties** dialog box.

## Other sources of information

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

## Overview

Brother print server range supports SMB (Server Message Block). This means that just like regular Windows® computer'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 computer's that are connected to Microsoft® 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 Web Based Management (web browser), BRAdmin Professional or Web BRAdmin.

## Print server configuration for Windows® 2000/XP, Windows Vista™ and Windows Server® 2003

### 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.

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



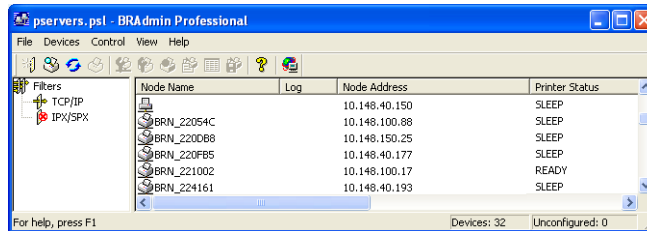
### Note

- You cannot change the workgroup/domain name using the BRAdmin Light utility that was supplied on the CD-ROM with your Brother product. Please use the latest version of BRAdmin Professional utility that is available as a download from <http://solutions.brother.com>. This utility is only available for Windows® users.
- The print server must have a valid IP address and your computer must also have a valid IP address; you can configure the IP address by using BRAdmin Light or BRAdmin Professional. See *Using the BRAdmin Light utility to configure your network printer* on page 10.
- The default password for Brother print servers is `access`.

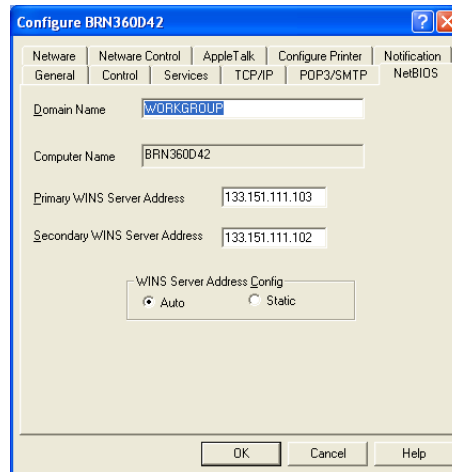


- 1 Start the BRAdmin Professional utility (from Windows® 98/Me, Windows NT® 4.0, Windows® 2000/XP, Windows Vista™ and Windows Server® 2003), by clicking **Start / All Programs**<sup>1</sup> / **Brother Administrator Utilities / Brother BRAdmin Professional Utilities / BRAdmin Professional**.

<sup>1</sup> **Programs** for Windows® 98/Me, Windows NT® 4.0, and Windows® 2000 users



- 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.



#### 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 Web Based Management (web browser)

You can also use a standard web browser to change the NetBIOS name. To do this, connect to the print server using its IP address (see *Using Web Based Management (web browser) to change the print server settings* on page 14) 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 **Submit**).

## 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® 2000/XP, Windows Vista™ and Windows Server® 2003 network applet.

## Overview

Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 users can print using TCP/IP using the standard Network Printing software and IPP protocol software built into any Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 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`.
- This print server also supports the IPPS printing, see *Printing documents securely using IPPS* on page 44.

## IPP printing for Windows® 2000/XP, Windows Vista™ and Windows Server® 2003

Use the following instructions if you wish to use the IPP printing capabilities of Windows® 2000/XP, Windows Vista™ and Windows Server® 2003.

### For Windows Vista™

- 1 Click the **Start** button, **Control Panel**, **Hardware and Sound**, and then **Printers**.
- 2 Click **Add a printer**.
- 3 Select **Add a network, wireless or Bluetooth printer**.
- 4 Click **The printer that I want isn't listed**.
- 5 Select **Select a shared printer by name** 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 a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, 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 "BRNxxxxxx" where "xxxxxx" is the last six digits of the Ethernet address.

- 6 When you click **Next**, Windows Vista™ will make a connection with the URL that you specified.
- If the printer driver has already been installed:
    - 1 You will see the printer selection screen in the **Add Printer** wizard. Click **OK**.  
If the appropriate printer driver is already installed on your computer, Windows Vista™ will automatically use that driver for use. In this case, you will simply be asked if you wish to make the driver the default printer, after which the Driver installation wizard will complete. You are now ready to print.
    - 2 Go to 11.
  - 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 Vista™ about the type of printer driver to be used.

Go to 7.
- 7 If your printer is not in the list of supported printers, click **Have Disk**. You will then be asked to insert the driver disk.
- 8 Click **Browse** and select the appropriate Brother printer driver that is contained in the CD-ROM or in the network share. Click **Open**.
- 9 Click **OK**.
- 10 Specify the model name of the printer. Click **OK**.
-  **Note**
- When the **User Account Control** screen appears, click **Continue**.
  - If the printer driver that you are installing does not have a Digital Certificate you will see a warning message. Click **Install this driver software anyway** to continue with the installation. The **Add Printer** wizard will then complete.
- 
- 11 You will see the **Type a printer name** screen in the **Add Printer** wizard. Check the **Set as the default printer** check box if you want to use this printer as the default printer, and then click **Next**.
- 12 To test the printer connection, click **Print a test page**, and then click **Finish** and the printer is now configured and ready to print.

## For Windows® 2000/XP and Windows Server® 2003

- 1 For Windows® XP and Windows Server® 2003: Click the **Start** button and select **Printers and Faxes**.  
For Windows® 2000: Click the **Start** button, select **Settings** and then **Printers**.
- 2 For Windows® XP and Windows Server® 2003: Click **Add a printer** to start the **Add Printer Wizard**.  
For Windows® 2000: Double click the **Add Printer** icon to start the **Add Printer Wizard**.
- 3 Click **Next** when you see the **Welcome to the Add Printer Wizard** screen.
- 4 Select **Network printer**.  
For Windows® XP and Windows Server® 2003: 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 and Windows Server® 2003: 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 a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, 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 "BRNxxxxxx" where "xxxxxx" is the last six digits of the Ethernet address.

- 7 When you click **Next**, Windows® 2000/XP and Windows Server® 2003 will make a connection with the URL that you specified.
  - If the printer driver has already been installed:
    - 1 You will see the printer selection screen in the **Add Printer Wizard**.  
If the appropriate printer driver is already installed on your computer, Windows® 2000/XP and Windows Server® 2003 will automatically use that driver for use. In this case, you will simply be asked if you wish to make the driver the default printer, after which the Driver installation wizard will complete. You are now ready to print.
    - 2 Go to 12.
  - 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.

Go to 8.

- 8 The driver installation starts automatically.



#### Note

If the printer driver that you are installing does not have a Digital Certificate you will see a warning message. Click **Continue Anyway** to continue with the installation.

- 9 Click **OK** when you see the **Insert Disk** screen.
- 10 Click **Browse** and select the appropriate Brother printer driver that is contained in the CD-ROM or in the network share. Click **Open**.
- 11 Click **OK**.
- 12 Check **Yes** if you want to use this printer as the default printer. Click **Next**.
- 13 Click **Finish** and the printer is now configured and ready to print. To test the printer connection, print a test page.

5

## 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 (`http://printer_ip_address/`) and the printer will still receive and process data.

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.

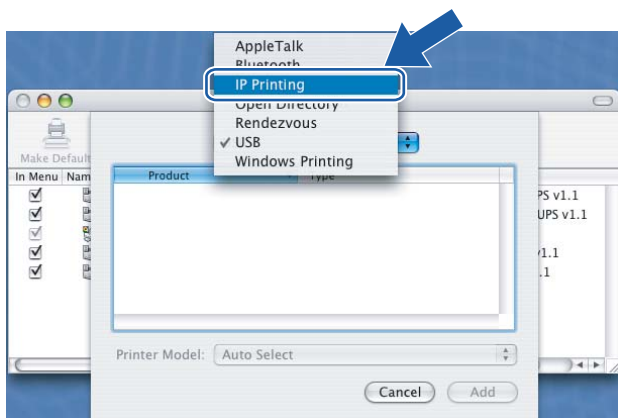
## Overview

This chapter explains how to configure the BR-Script 3 (PostScript® 3™ language emulation) printer driver on a Network. The BR-Script 3 printer driver is available for HL-4050CDN only.

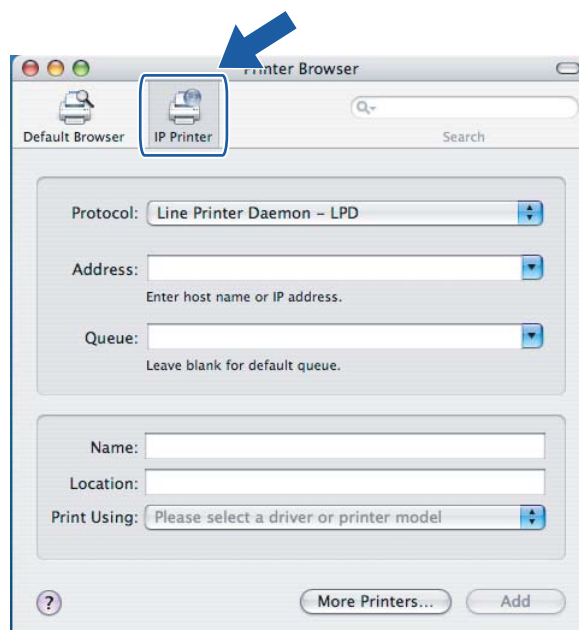
## How to select the printer driver (TCP/IP)

- 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**.
- 6 Select **IP Printer**.

(Mac OS® X 10.2.4 to 10.3.x)

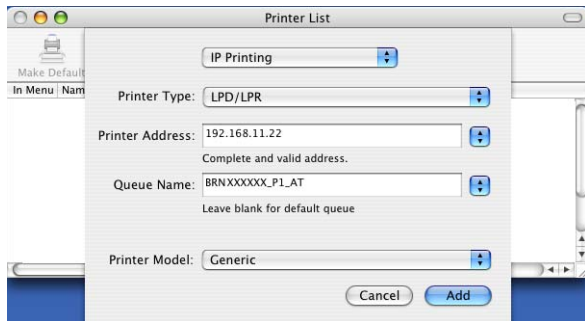


(Mac OS® X 10.4)

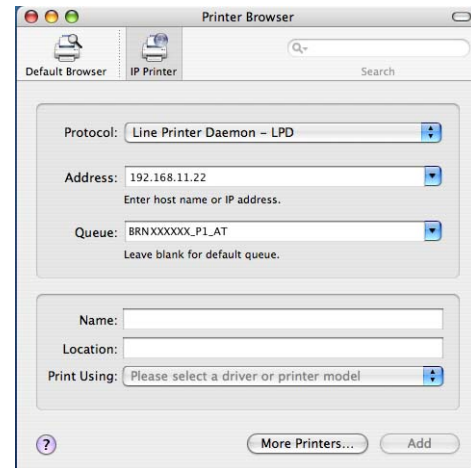


- 7 Enter the IP address of the printer into the **Address** box.

(Mac OS® X 10.2.4 to 10.3.x)



(Mac OS® X 10.4)

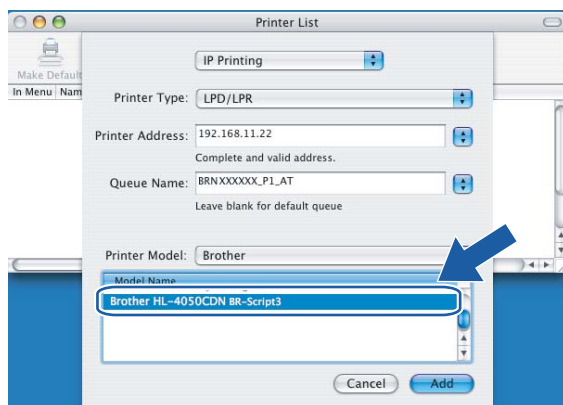


#### Note

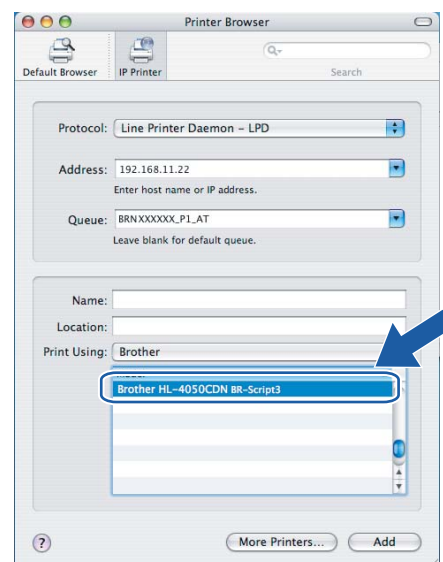
- The Printer Settings Page will allow you to confirm the IP address. To learn how to print the Printer Settings Page, see *How to print the Printer Settings Page* on page 31.
- When specifying the **Queue Name**, use the value brnxxxxxx\_p1\_at where xxxxxx are the last 6 digits of the Ethernet address.

- 8 From the **Print Using** pull-down list select your model. For example, select **Brother HL-4050CDN BR-Script3**.

(Mac OS® X 10.2.4 to 10.3.x)



(Mac OS® X 10.4)



- 9 Click **Add** and the printer will be available from the **Printer List**.



## 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 LAN menu* on page 28.

### **Print the Printer Settings Page**

See *Printing the Printer Settings Page* on page 31 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 32 for information on how to restore the network settings to factory default.

### **Disable the APIPA protocol**

See *Disabling the APIPA protocol* on page 33 for information on how to disable the APIPA protocol.

## Changing the print server settings using the control panel LAN 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 13.

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

The LAN menu selections of the control panel allow you to set up the Brother printer for your network configuration. Press any of the Menu buttons (+, -, OK or Back), and press the + or - button to move forward or backward through the menus until LAN is displayed. Press the OK 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 Light utility and Web Based Management (web browser), which can also be used to configure many aspects of the network. See *Changing the print server settings* on page 13.

### Control panel LAN menu table and default factory settings

Level one	Level two	Level three	Options
LAN	TCP/IP	BOOT Method	Auto*, Static, RARP, BOOTP, DHCP
		IP Address	[000-255] . [000-255] . [000-255] . [000-255] [000] . [000] . [000] . [000] * <sup>1</sup>
		Subnet Mask	[000-255] . [000-255] . [000-255] . [000-255] [000] . [000] . [000] . [000] * <sup>1</sup>
		Gateway	[000-255] . [000-255] . [000-255] . [000-255] [000] . [000] . [000] . [000] *
		IP Boot Tries	0 to 32767 3*
		APIPA	On*, Off
		IPv6	On, Off*
	Ethernet	Auto*, 100B-FD, 100B-HD, 10B-FD, 10B-HD	
	Factory Reset	OK?	-

<sup>1</sup> On connection to the network, if the machine's 'BOOT Method' is 'Auto' the machine will attempt to automatically set the IP address and Subnet Mask from a boot server such as DHCP or BOOTP. If a boot server cannot be found, an APIPA IP address will be allocated, such as 169. 254. [001-254]. [000-255]. If the 'BOOT Method' of the machine is set to 'Static' you will need to manually enter an IP address from the machine's control panel.

### TCP/IP

This menu has seven sections: BOOT Method, IP Address, Subnet Mask, Gateway, IP Boot Tries, APIPA and IPv6.

## ■ BOOT 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 73. 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. For more information on RARP, see *Using RARP to configure the IP address* on page 73.

- BOOTP

BOOTP is an alternative to rarp that has the advantage of allowing configuration of the subnet mask and gateway. For more information on BOOTP, see *Using BOOTP to configure the IP address* on page 72.

- 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, Windows Vista™ and Windows Server® 2003 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 **BOOT Method** to **Static**, this will prevent the print server from trying to obtain an IP address from any of these systems.

## ■ IP Address

This field displays the current IP address of the printer. If you have selected a **BOOT 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 attempts to scan the network to obtain the IP address through the `BOOT Method` you have set (see *BOOT Method* on page 29). The default setting is 3.

### ■ 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 `BOOT Method` you have set (see *BOOT Method* on page 29). Selecting `Off` means the IP address doesn't change when the print server cannot obtain an IP address through the `BOOT 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 33.

### ■ 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.

## Ethernet

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.

## Factory Reset

You can restore the `LAN` 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 “BRNxxxxxx” (where “xxxxxx” is the last six digits of the 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 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 (+, -, **OK** or **Back**) of the control panel on your printer to take the printer off-line.
- 4 Press the + or - button to select `Machine Info..`
- 5 Press **OK**, and then press **OK** 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 Make sure that 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 (+, -, **OK** or **Back**) of the control panel on your printer to take the printer off-line.
- 4 Press the + or - button to choose `LAN`. Press **OK**.
- 5 Press the + or - button to choose `Factory Reset`. Press **OK**.
- 6 Press **OK** again.



### Note

You can reset the print server back to its default factory settings using the BRAdmin application or Web Based Management (web browser). For more information, see *Changing the print server settings* on page 13.

## 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 **BOOT Method** you have set.

By default, the APIPA protocol is enabled. You can disable the APIPA protocol using the BRAdmin Light utility or Web Based Management (web browser). For more information, see *Changing the print server settings* on page 13.

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 (+, -, **OK** or **Back**) to take the printer off line.
- 4 Press + or - until **LAN** appears on the LCD display.
- 5 Press **OK** to proceed to the next menu level, and then press + or - until **TCP/IP** appears.
- 6 Press **OK** to proceed to the next menu level, and then press + or - until **APIPA** appears.
- 7 Press **OK** 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*.

## Overview

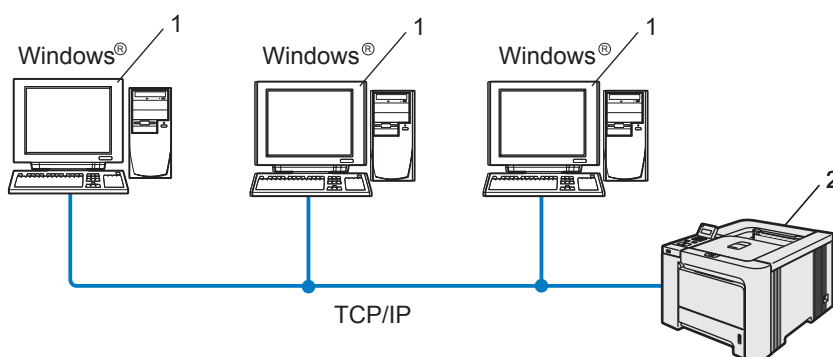
The Driver Deployment Wizard software can be used to ease the installation or even automate the installation of a locally connected or network connected printers. The Driver Deployment Wizard can also be used to create self running executable files which when run on a remote PC, completely automate the installation of a printer driver. The remote PC does not have to be connected to a network.

## Connection methods

The Driver Deployment Wizard supports the three connection methods.

### Peer-to-peer

The device is connected to the network but each user prints directly to the printer WITHOUT printing through a central queue.

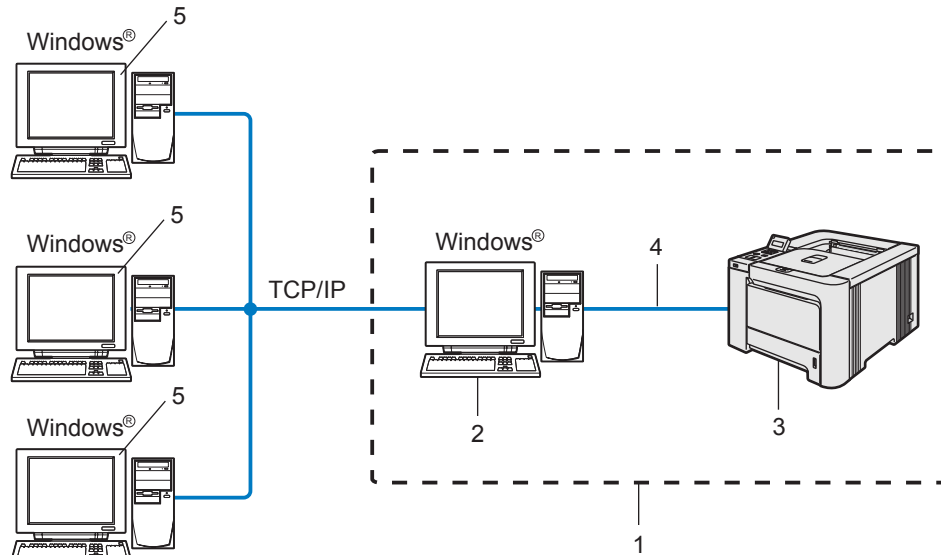


- 1 Client Computer
- 2 Network printer



## Network Shared

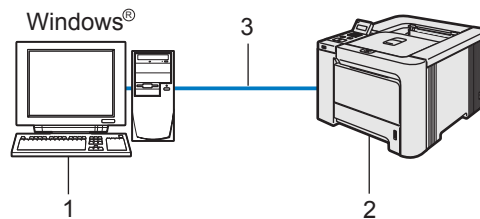
The device is connected to a network and a central print queue is used to manage all print jobs.



- 1 Network Shared
- 2 Print server
- 3 Network printer
- 4 TCP/IP, USB or Parallel (where available)
- 5 Client Computer

## Local Printer (USB, LPT1)

The device is connected to the computer using a parallel or USB cable.



- 1 Client Computer
- 2 Printer
- 3 TCP/IP, USB or Parallel (where available)

## How to install the Driver Deployment Wizard software

- 1 Put the supplied CD-ROM into your CD-ROM drive. The opening screen will appear automatically.
- 2 Select your model and the language. Then click **Install Other Drivers or Utilities**.
- 3 Select the **Driver Deployment Wizard** installation program.



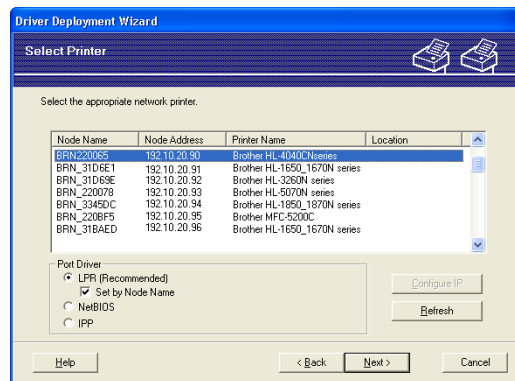
### Note

For Windows Vista™, when the **User Account Control** screen appears, click **Continue**.

- 4 Click **Next** in response to the Welcome message.
- 5 Read the license agreement carefully. Then follow the on-screen instructions.
- 6 Click **Finish**. Now the Driver Deployment Wizard software has been installed.

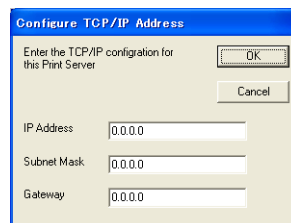
## Using the Driver Deployment Wizard software

- 1 When you run the Wizard for the first time you will see a welcome screen. Click **Next**.
- 2 Choose **Printer**, and then click **Next**.
- 3 Choose your connection type to the printer that you want to print to.
- 4 Choose the option you require, and follow the on-screen instructions.  
If you choose **Brother Peer-to-Peer Network Printer**, the following screen is displayed.

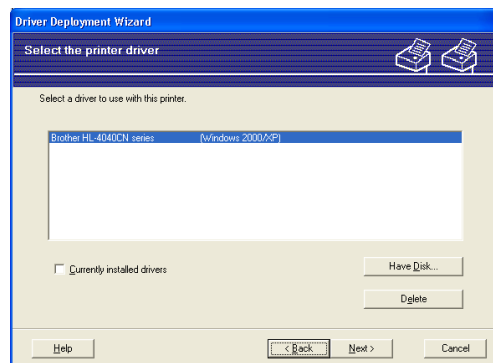


### ■ Setting the IP Address

If the printer does not have an IP address, the Wizard will allow you to change the IP address by selecting the printer from the list and by selecting the **Configure IP** option. A dialogue box then appears which allows you to specify information such as the IP address, subnet mask and also the gateway address.

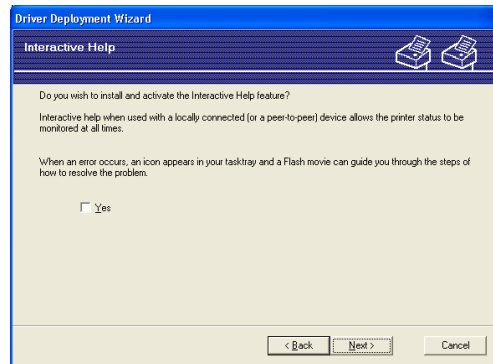


- 5 Choose the printer you wish to install, and then click **Next**. If the driver you wish to use is not installed on your computer, click **Have Disk** and then specify the path of the printer driver.

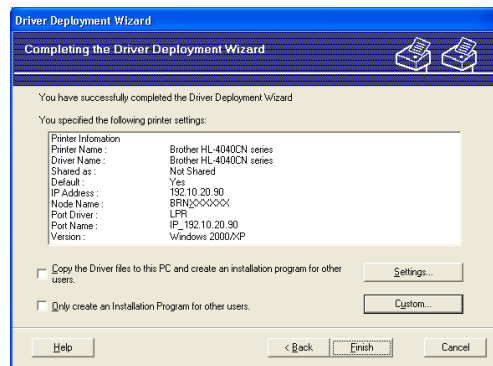


- 6 Click **Next** after you choose the correct driver.

- 7 Check **Yes** if you want to install the Interactive Help feature and then click **Next**.



- 8 A summary screen will appear. Confirm the settings of the driver.



### ■ Creating an executable file

The Driver Deployment Wizard software can also be used to create self running .EXE files. These self-running .EXE files can be saved to the network, copied to a CD-ROM, a floppy disc or even E-mailed to another user. Once run, the driver and its settings are automatically installed without any user intervention.

- **Copy the Driver files to this PC and create an installation program for other users.**

Select this option if you wish to install the driver onto your computer and also create a self-running executable file for use with another computer using the same operating system as your own.

- **Only Create an Installation Program for other users.**

Select this option if the driver is already installed on your computer and you wish to create a self-running executable file without again installing the driver on your own computer.



### Note

If you work in a "queue" based network and you create an executable file for another user who does not have access to the same printer queue that you define into the executable file, the driver when installed on the remote computer will default to LPT1 printing.

- 9 Click **Finish**. The driver is automatically installed to your computer.

## Overview

In today's world there are many security threats to your network and the data that travels over it. Your Brother machine employs some of the latest network security and encryption protocols available today. These network features can be integrated into your overall network security plan to help protect your data and prevent unauthorized access to the machine. This chapter explains that various security protocols supported and how to configure them.

## Security terms

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### ■ CA (Certificate Authority)

A CA is an entity that issues digital certificates (especially X.509 certificates) and vouches for the binding between the data items in a certificate.

### ■ CSR (Certificate Signing Request)

A CSR is a message sent from an applicant to a CA in order to apply for issue of a certificate. The CSR contains information identifying the applicant, the public key generated by the applicant and the digital signature of the applicant.

### ■ Certificate

A Certificate is the information that binds together a public key with an identity. The certificate can be used to verify that a public key belongs to an individual. The format is defined by the x.509 standard.

### ■ Digital signature

A Digital signature is a value computed with a cryptographic algorithm and appended to a data object in such a way that any recipient of the data can use the signature to verify the data's origin and integrity.

### ■ Public key cryptosystem

A Public key cryptosystem is a modern branch of cryptography in which the algorithms employ a pair of keys (a public key and a private key) and use a different component of the pair for different steps of the algorithm.

### ■ Shared key cryptosystem

A Shared key cryptosystem is a branch of cryptography involving algorithms that use the same key for two different steps of the algorithm (such as encryption and decryption).

## Security protocols

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The Brother print server supports the following security protocols.

**Note**

How to configure the protocol settings, see *Using Web Based Management (web browser) to change the print server settings* on page 14.

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### SSL (Secure Socket Layer) / TLS (Transport Layer Security)

These security communication protocols encrypt data to prevent security threats.

### Web server (HTTPS)

The internet protocol that the Hyper Text Transfer Protocol (HTTP) uses SSL.

### IPPS

The printing protocol that the Internet Printing Protocol (IPP Version 1.0) uses SSL.

## Security methods for E-mail notification

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The Brother print server supports the following security methods for E-mail notification.

**Note**

How to configure the settings of security methods, see *Using Web Based Management (web browser) to change the print server settings* on page 14.

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### POP before SMTP (PbS)

A user authentication method for sending E-mail from a client. The client is given permission to use the SMTP server by accessing the POP3 server before sending the E-mail.

### SMTP-AUTH (SMTP Authentication)

SMTP-AUTH expands SMTP (the Internet E-mail sending protocol) to include an authentication method that ensures the true identity of the sender is known.

### APOP (Authenticated Post Office Protocol)

APOP expands POP3 (the Internet receiving protocol) to include an authentication method that encrypts the password when the client receives E-mail.

## Configuring the protocol settings

You can enable or disable the each protocol and security method using Web Based Management (web browser).



### Note

We recommend Microsoft Internet Explorer 6.0® (or higher) or Firefox® 1.0 (or higher) for Windows® and Safari™ 1.0 for Macintosh®. Please also make sure that JavaScript and Cookie are always enabled in whichever browser you use. We recommend you upgrade to Safari™ 1.2 or higher to enable JavaScript. To use a web browser, you will need to know the IP address of the print server.

- 1 Start your web browser.
- 2 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 a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen on the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as "BRNxxxxxxx" where "xxxxxxx" is the last six digits of the Ethernet address.

- 3 Click **Network Configuration**.
- 4 Enter a user name and a password. The User Name is `admin` and the default Password is `access`.
- 5 Click **OK**.
- 6 Click **Configure Protocols**.  
Now you can configure the protocol settings.



### Note

If you change the protocol settings, restart the printer after clicking **Submit** to activate the configuration.

# Managing your network printer securely

To manage your network printer securely, you need to use the management utilities with security protocols.

## Secure Management using Web Based Management (web browser)

To use the HTTPS protocol, the following printer settings are required.

- A certificate and private key must be installed in the printer. For how to install a certificate and private key, see *Creating and installing a certificate* on page 47.
- The HTTPS protocol must be enabled. To enable the HTTPS protocol, see *Configuring the protocol settings* on page 41.



### Note

We recommend Microsoft Internet Explorer 6.0<sup>®</sup> (or higher) or Firefox<sup>®</sup> 1.0 (or higher) for Windows<sup>®</sup> and Safari™ 1.0 for Macintosh<sup>®</sup>. Please also make sure that JavaScript and Cookie are always enabled in whichever browser you use. We recommend you upgrade to Safari™ 1.2 or higher to enable JavaScript. To use a web browser, you will need to know the IP address of the print server.

- 1 Start your web browser.
- 2 Type `https://Common_Name/` into your browser. (Where `Common_Name` is the Common Name that you assigned for the certificate, such as an IP address, host name or domain name. For how to assign a Common Name for the certificate, see *Creating and installing a certificate* on page 47.)

- For example:

`https://192.168.1.2/` (if the Common Name is the printer's IP address)

`https://BRNxxxxxx/` (if the Common Name is the printer's host name)



### Note

If you have edited the hosts file on your computer or are using a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, 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 "BRNxxxxxx" where "xxxxxx" is the last six digits of the Ethernet address.

- 3 You can now access the printer using HTTPS.



### Note

Disable the Telnet, FTP and TFTP protocols. Accessing the machine using these protocols is not secure. For how to configure the protocol settings, see *Using Web Based Management (web browser) to change the print server settings* on page 14.



## Secure Management using BRAdmin Professional (for Windows®)

To use the BRAdmin Professional utility securely, you need to follow the points below.

- We strongly recommend to use the latest version of the BRAdmin Professional utility or Web BRAdmin that are available as a download from <http://solutions.brother.com>. If you use an older version of BRAdmin <sup>1</sup> to manage your brother devices the user authentication will not be secure.
- If you want to avoid access to your printer from older versions of BRAdmin <sup>1</sup>, you need to disable the access from older versions of BRAdmin <sup>1</sup> from **Advanced Setting of SNMP** on **Configure Protocol** page by using Web Based Management (web browser). See *Using Web Based Management (web browser) to change the print server settings* on page 14.
- Disable the Telnet, FTP and TFTP protocols. Accessing the machine using these protocols is not secure. For how to configure the protocol settings, see *Using Web Based Management (web browser) to change the print server settings* on page 14.
- If you use BRAdmin Professional and Web Based Management (web browser) together, use Web Based Management with HTTPS protocol. See *Secure Management using Web Based Management (web browser)* on page 42.
- If you are managing a mixed group of older print servers <sup>2</sup> and the new NC-6500h print server with BRAdmin Professional, we recommend using a different password in each group.

<sup>1</sup> BRAdmin Professional older than Ver. 2.80, Web BRAdmin older than Ver. 1.40, BRAdmin Light for Macintosh® older than Ver. 1.10

<sup>2</sup> NC-2000 series, NC-2100p, NC-3100h, NC-3100s, NC-4100h, NC-5100h, NC-5200h, NC-6100h, NC-6200h, NC-6300h, NC-6400h, NC-8000, NC-100h, NC-110h, NC-120w, NC-130h, NC-140w, NC-8100h, NC-9100h, NC-7100w, NC-7200w, NC-2200w

## Printing documents securely using IPPS

To print documents securely over the internet, you can use the IPPS protocol.



### Note

- Communication using IPPS cannot prevent unauthorized access to the printer server.
- IPPS is available for Windows® 2000/XP, Windows Vista™ and Windows Server® 2003.

To use the IPPS protocol, the following printer settings are required.

- A certificate and private key must be installed in the printer. For how to install certificate and private key, see *Creating and installing a certificate* on page 47.
- The HTTPS protocol must be enabled. To enable the HTTPS protocol, see *Configuring the protocol settings* on page 41.

The basic steps for IPPS printing are the same as IPP printing. For detailed information, see *Internet printing for Windows®* on page 21.

## Specifying a different URL

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

`https://Common_Name/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.

`https://Common_Name/ipp/port1`

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

`https://Common_Name/`



### Note

If you forget the URL details, you can simply enter the above text (`https://Common_Name/`) and the printer will still receive and process data.

Where `Common_Name` is the Common Name that you assigned for the certificate, such as an IP address, host name or domain name. For how to assign a Common Name for the certificate, see *Creating and installing a certificate* on page 47.

- For example:

`https://192.168.1.2/` (if the Common Name is the printer's IP address)

`https://BRNxxxxxx/` (if the Common Name is the printer's host name)

## Using E-mail notification with user authentication

To use the E-mail notification function via secure SMTP server that requires a user authentication, you need to use POP before SMTP or SMTP-AUTH method. These methods prevent an unauthorized user from accessing the mail server. You can use Web Based Management (web browser), BRAdmin Professional and Web BRAdmin to configure these settings.



### Note

You need to match the settings of POP3/SMTP authentication with one of the E-mail servers. Contact your network administrator or your internet service provider about the configuration before using.

How to configure the POP3/SMTP settings using Web Based Management (web browser).

- 1 Start your web browser.
- 2 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 a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, you can also enter the NetBIOS name of the print server. The NetBIOS name can be seen on the printer settings page. The NetBIOS name assigned is the first 15 characters of the node name and by default it will appear as "BRNxxxxxx" where "xxxxxx" is the last six digits of the Ethernet address.

- 3 Click **Network Configuration**.
- 4 Click **Configure Protocol**.
- 5 Click **Advanced Setting of POP3/SMTP**.
- 6 You can configure the POP3/SMTP settings on this page.



**Note**

- If you can use both POP before SMTP and SMTP-AUTH, we recommend choosing SMTP-AUTH.
- If you choose POP before SMTP for the SMTP Server Authentication Method, you need to configure POP3 settings. You can also use the APOP method.
- For more information, see the Help text in the Web Based Management.
- You can also confirm whether the E-mail settings are correct after configuration by sending a test E-mail.

- 7 After configuring, click **Submit**. The Test E-mail Send/Receive Configuration dialog appears.
- 8 Follow the instructions on-screen if you want to test with the current settings.

## Creating and installing a certificate

The Brother print server allows you to use SSL/TLS communication by configuring a certificate and corresponding private key. This print server supports two certification methods. A self-signed certificate and a certificate that is issued by a CA (Certificate Authority).

### ■ Using self-signed certificate

This print server issues its own certificate. Using this certificate, you can easily use the SSL/TLS communication without having a certificate from a CA. See *Creating and installing self-signed certificate* on page 49.

### ■ Using a certificate from a CA

There are two methods for installing a certificate from a CA. If you already have a CA or if you want to use a certificate from an outside trusted CA:

- When using a CSR (Certificate Signing Request) from this print server. See *Creating CSR and installing a certificate* on page 61.
- When importing a certificate and a private key. See *Import and export the certificate and private key* on page 63.



### Note

- If you are going to use SSL/TLS communication, we recommend that you contact your system administrator before using.
- This print server stores only one pair of a certificate and a private key that you installed or previously imported. This printer overwrites the certificate and the private key if you install a new one.
- When you reset the print server back to its default factory settings, the certificate and the private key that are installed will be deleted. If you want to keep the same certificate and the private key after resetting the print server, export them before resetting and re-install them. See *How to export the certificate and private key* on page 64.

This feature can be configured using Web Based Management (web browser) only. Follow these steps to access the configure certificate page using Web Based Management.

- 1 Start your web browser.
- 2 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.)

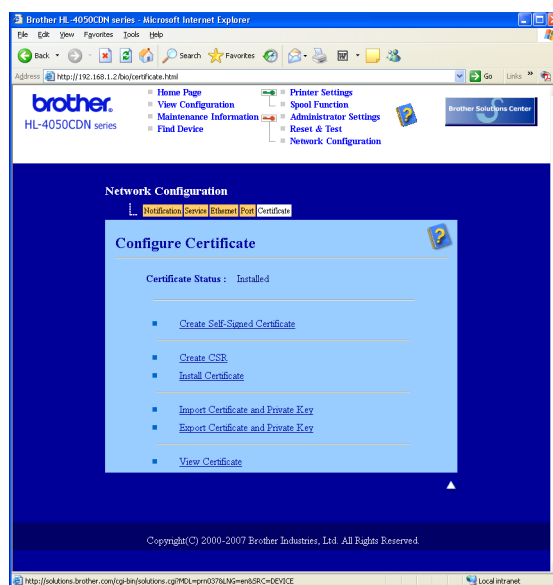


### Note

If you have edited the hosts file on your computer or are using a Domain Name System, you can also enter the DNS name of the print server. As the print server supports TCP/IP and NetBIOS, 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 "BRNxxxxxx" where "xxxxxx" is the last six digits of the Ethernet address.

- 3 Click **Network Configuration**.

- 4 Enter a user name and a password. The User Name is `admin` and the default Password is `access`.
- 5 Click **OK**.
- 6 Click **Configure Certificate**.
- 7 You can configure the certificate settings from the screen below.



### Note

- The functions that are grayed and unlinked indicate they are not available.
- For more information on configuration, see the Help text in the Web Based Management.

## Creating and installing self-signed certificate

### How to create and install a self-signed certificate

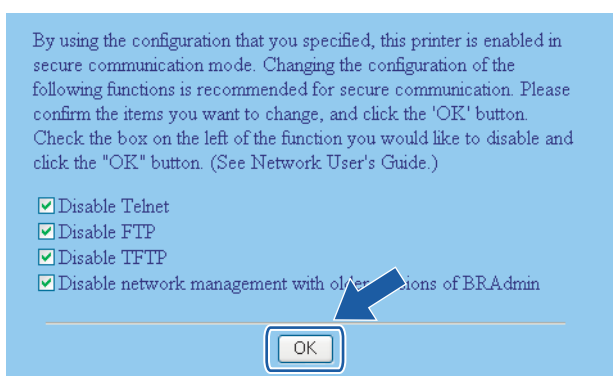
- 1 Click **Create Self-Signed Certificate** on the **Configure Certificate** page.
- 2 Enter a **Common Name** and a **Valid Date**, then click **Submit**.



#### Note

- The length of the **Common Name** is less than 64 bytes. Enter an identifier such as an IP address, host name or domain name to use when accessing this printer through SSL/TLS communication. The host name is displayed by default.
- A warning will pop-up if you enter a different name in the URL than the **Common Name** that was used for the self-signed certificate.

- 3 Now the self-signed certificate is created successfully. Check the box on the left of each function you want to disable, and then click **OK**.



#### Note

- We recommend disabling the Telnet, FTP, TFTP protocols and the network management with older versions of BRAdmin<sup>1</sup> for secure communication. If you enable them, the user authentication is not secure.
- <sup>1</sup> BRAdmin Professional older than Ver. 2.80, Web BRAdmin older than Ver. 1.40, BRAdmin Light for Macintosh® older than Ver. 1.10
- A check box only appears for an individual protocol or the older BRAdmin utility if they are already enabled.

- 4 Restart the printer to activate the configuration.
- 5 Now the self-signed certificate is saved in your printer memory. To use SSL/TLS communication, the self-signed certificate also needs to be installed on your computer. Proceed to the next section.

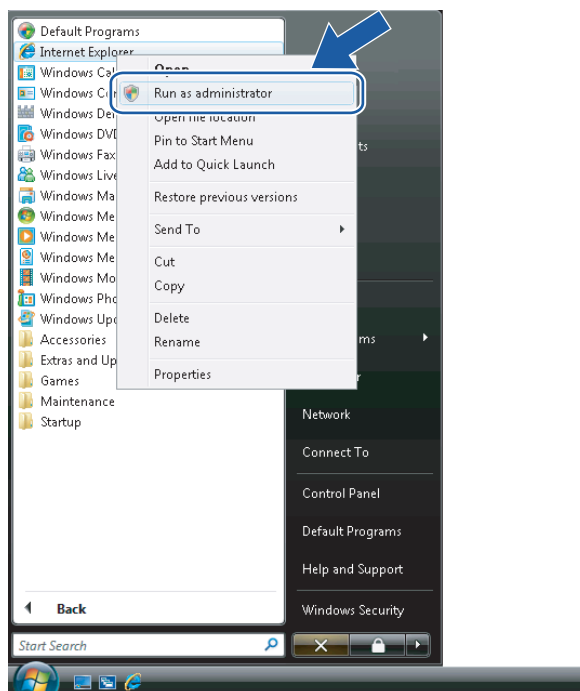
## How to install the self-signed certificate on your computer

### Note

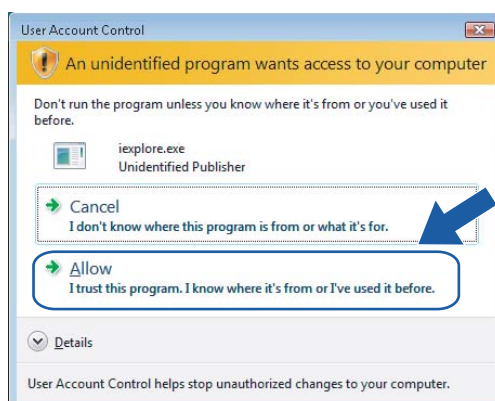
The following steps are for Microsoft Internet Explorer. If you use another web browser, follow the help text of the web browser itself.

### For Windows Vista™ users that have administrator rights

- 1 Click **Start** and **All Programs**.
- 2 Right click **Internet Explorer**, and then click **Run as administrator**.

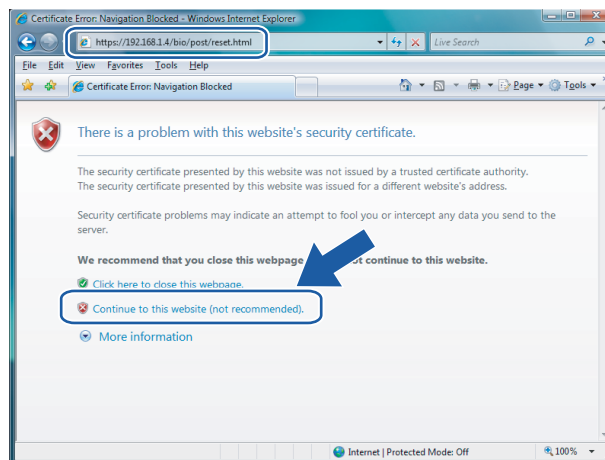


- 3 Click **Allow**.

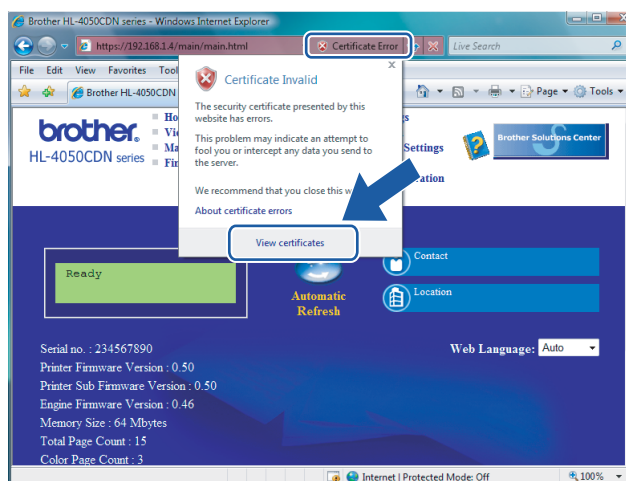




- 4 Type `https://printer_ip_address/` into your browser to access your printer. (Where `printer_ip_address` is the IP address or the print server name) Then, click **Continue to this website (not recommended)**.

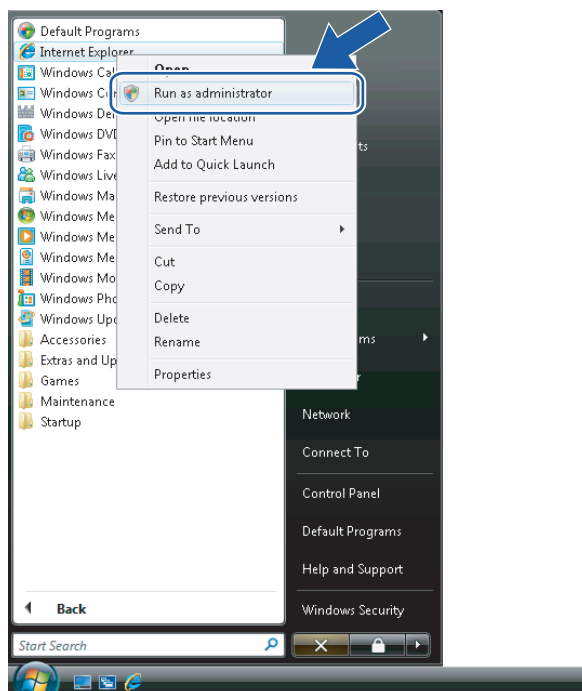


- 5 Click **Certificate Error**, and then click **View certificates**. For the rest of the instructions, follow the steps from 4 on page 58.

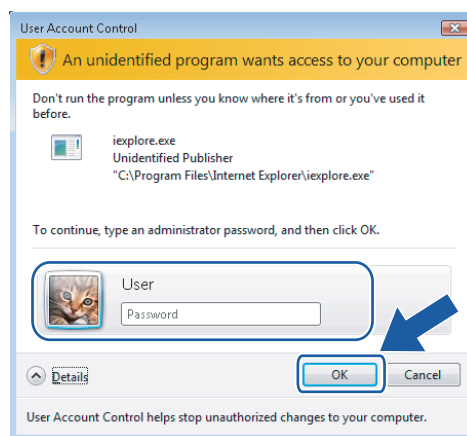


**For Windows Vista™ users that do not have administrator rights**

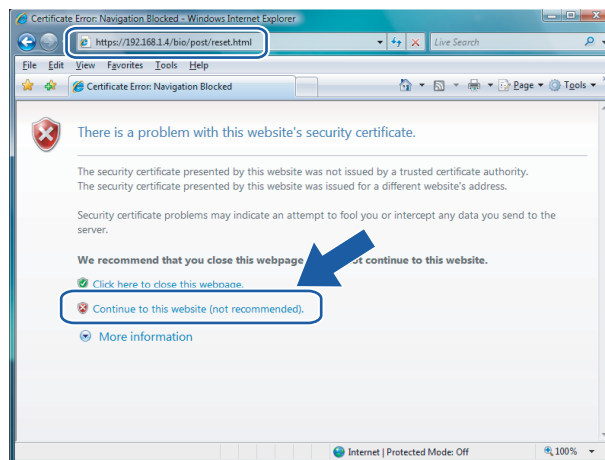
- 1 Click **Start** and **All Programs**.
- 2 Right click **Internet Explorer**, and then click **Run as administrator**.



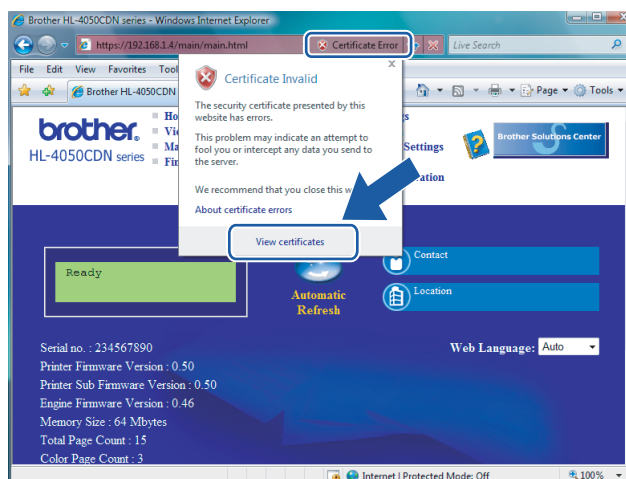
- 3 Choose the Administrator that you want to install with and enter the administrator password, and then click **OK**.



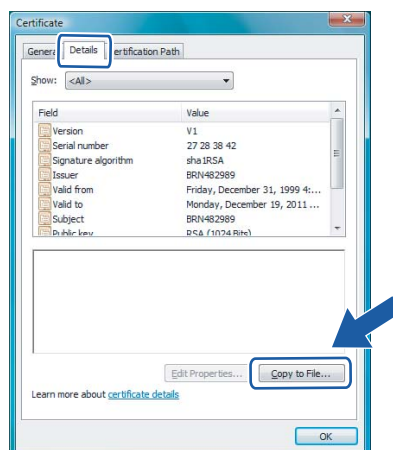
- 4 Type `https://printer_ip_address/` into your browser to access your printer. (Where `printer_ip_address` is the IP address or the print server name) Then, click **Continue to this website (not recommended)**.



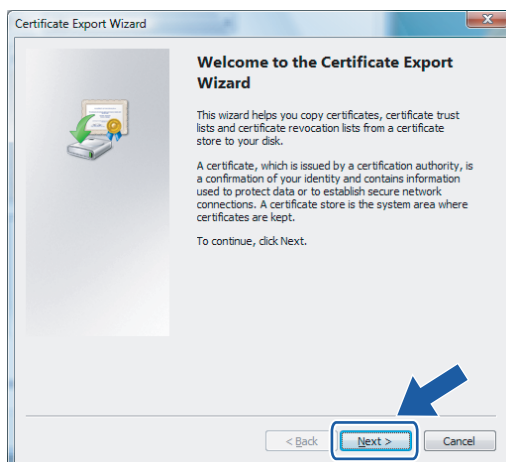
- 5 Click **Certificate Error**, and then click **View certificates**.



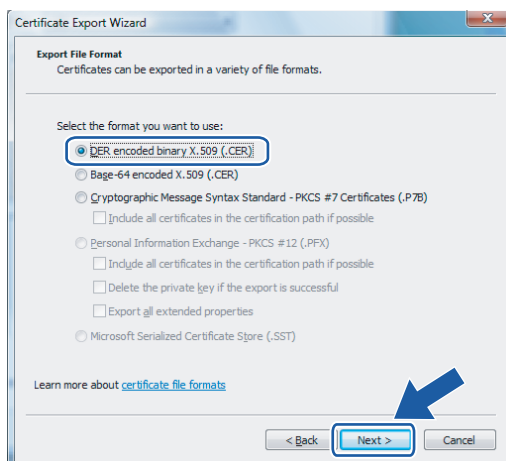
- 6 Choose the **Details** tab, and then click **Copy to File....**



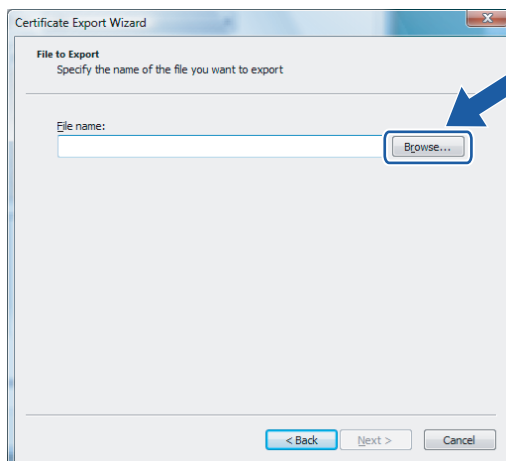
7 Click **Next**.



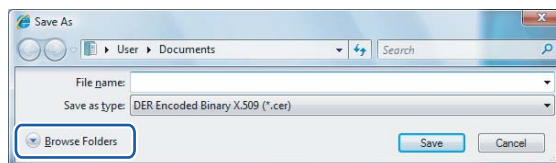
8 Make sure that **DER encoded binary X.509 (.CER)** is chosen, and then click **Next**.



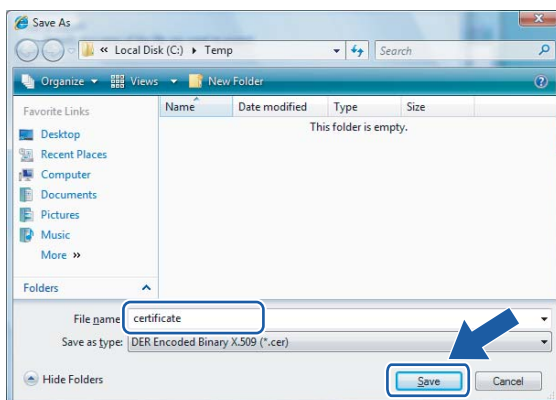
9 Click **Browse...**.



- 10 Click **Browse Folders**.



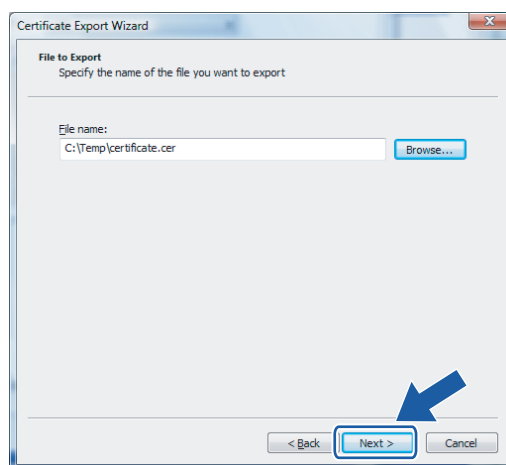
- 11 Choose a folder you want to save the certificate file in and enter a file name, and then click **Save**.

**Note**

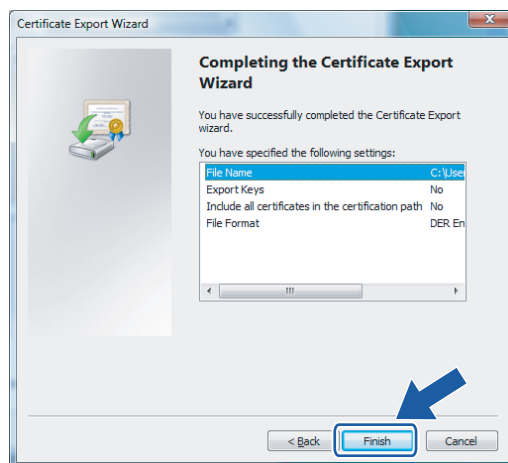
If you choose **Desktop**, the certificate file is saved to the Desktop of Administrator that you chose.

9

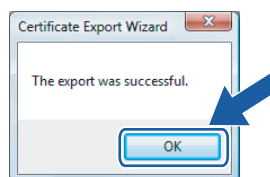
- 12 Click **Next**.



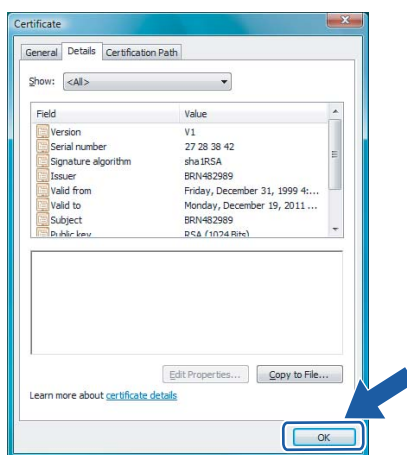
- 13 Click **Finish**.



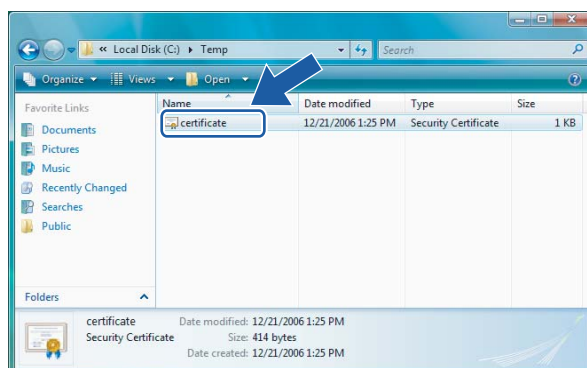
- 14 Click **OK**.



- 15 Click **OK**.

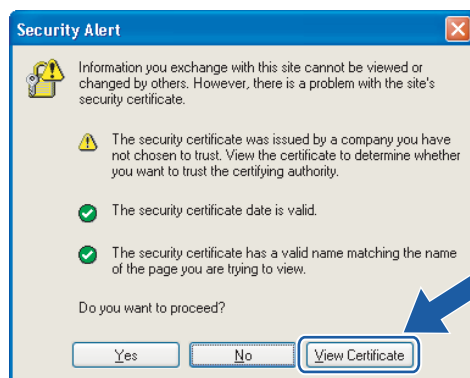


- 16 Open the folder that you saved the certificate file in 11 and double-click the certificate file. For the rest of the instructions, follow the steps from 4 on page 58.

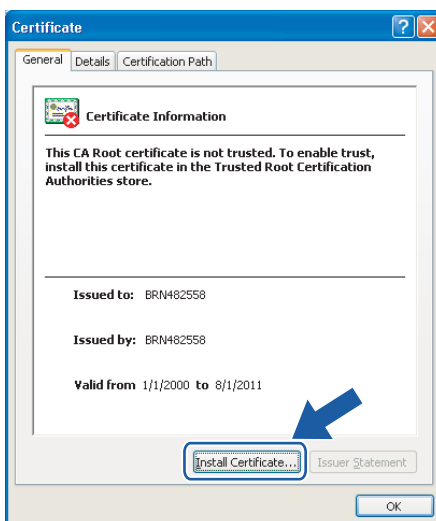


### For Windows® 2000/XP and Windows Server® 2003 users

- 1 Start your web browser.
- 2 Type `https://printer_ip_address/` into your browser to access your printer. (Where `printer_ip_address` is the IP address or the print server name)
- 3 When the following dialog appears, click **View Certificate**.



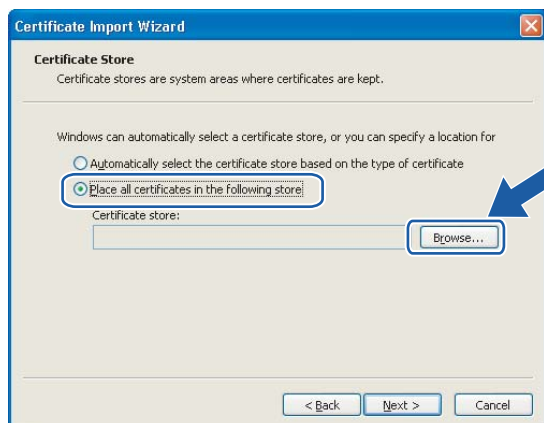
- 4 Click **Install Certificate...** from the **General** tab.



- 5 When the **Certificate Import Wizard** appears, click **Next**.



- 6 Choose **Place all certificates in the following store** and then, click **Browse...**.

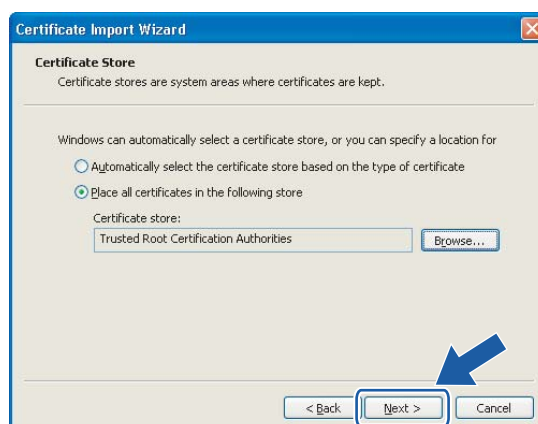




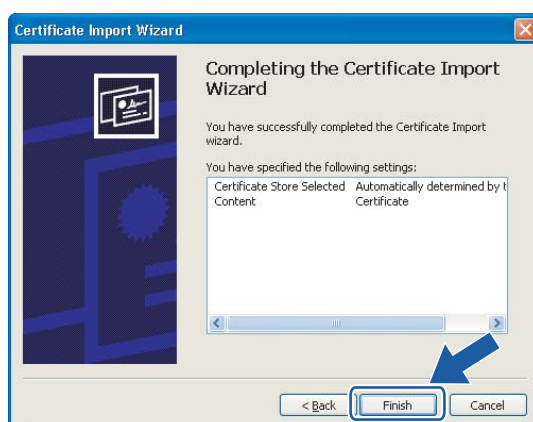
- 7 Choose **Trusted Root Certification Authorities** and then, click **OK**.



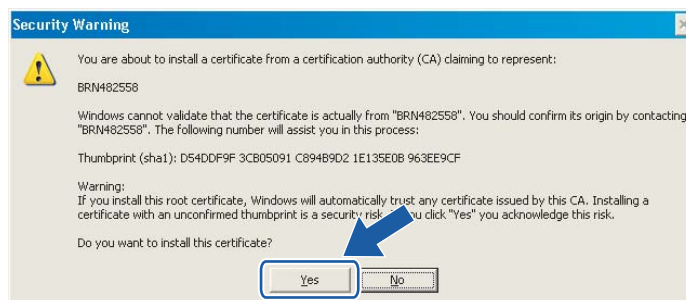
- 8 Click **Next**.



- 9 Click **Finish**.



- 10 Click **Yes**, if the fingerprint (thumbprint) is correct.

**Note**

The fingerprint (thumbprint) is printed on the Printer Settings Page. To learn how to print the Printer Settings Page, see *Printing the Printer Settings Page* on page 31.

- 11 Click **OK**.



- 12 Now the self-signed certificate is installed on your computer, and SSL/TLS communication is available.

## Creating CSR and installing a certificate

---

### How to create the CSR

- 1 Click **Create CSR** on the **Configure Certificate** page.
- 2 Enter a **Common Name** and your information, such as **Organization**. Then click **Submit**.



#### Note

- We recommend that the Root Certificate from the CA be installed on your computer before creating the CSR.
- The length of the **Common Name** is less than 64 bytes. Enter an identifier such as an IP address, host name or domain name to use when accessing this printer through SSL/TLS communication. The host name is displayed by default. The **Common Name** is required.
- A warning will pop-up if you enter a different name in the URL than the **Common Name** that was used for the certificate.
- The length of the **Organization**, the **Organization Unit**, the **City/Locality** and the **State/Province** is less than 64 bytes.
- The **Country/Region** should be an ISO 3166 country code composed of two characters.

- 3 When the contents of the CSR appear, click **Save** to save the CSR file to your computer.
- 4 Now the CSR is created.



#### Note

- Follow your CA policy regarding the method to send a CSR to your CA.
- If you are using **Enterprise root CA** of Windows Server® 2003, we recommend using the **Web Server CertificateTemplate** when creating the certificate. For more information, visit us at <http://solutions.brother.com>

## How to install the certificate to your printer

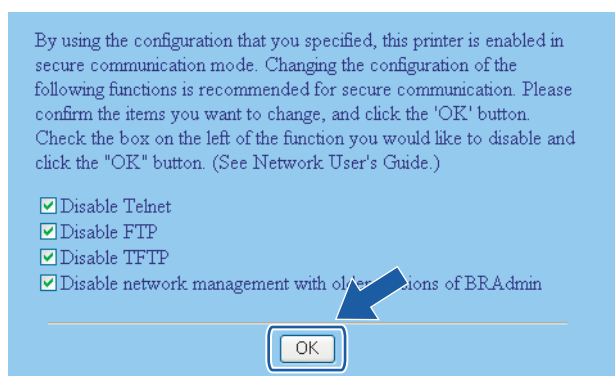
When you receive the certificate from a CA, follow the steps below to install it into the print server.



### Note

Only a certificate issued with this printer's CSR can be installed.

- 1 Click **Install Certificate** on the **Configure Certificate** page.
- 2 Specify the file of the certificate that has been issued by a CA, and then click **Submit**.
- 3 Now the certificate is created successfully. Check the box on the left of each function you want to disable, and then click **OK**.



### Note

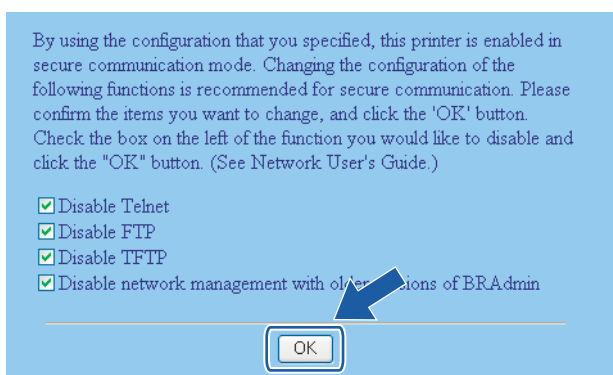
- We recommend disabling the Telnet, FTP, TFTP protocols and the network management with older versions of BRAdmin <sup>1</sup> for secure communication. If you enable them, the user authentication is not secure.
- <sup>1</sup> BRAdmin Professional older than Ver. 2.80, Web BRAdmin older than Ver. 1.40, BRAdmin Light for Macintosh® older than Ver. 1.10
- A check box only appears for an individual protocol or the older BRAdmin utility if they are already enabled.

- 4 Restart the printer to activate the configuration.
- 5 Now the certificate is saved in your printer. To use SSL/TLS communication, the Root Certificate from the CA needs to be installed on your computer. Contact your network administrator about installation.

## Import and export the certificate and private key

### How to import the certificate and private key

- 1 Click **Import Certificate and Private Key** on the **Configure Certificate** page.
- 2 Specify the file that you want to import.
- 3 Enter the password if the file is encrypted, and then click **Submit**.
- 4 Now the certificate and private key are imported successfully. Check the box on the left of each function you want to disable, and then click **OK**.



#### Note

- We recommend disabling the Telnet, FTP, TFTP protocols and the network management with older versions of BRAdmin <sup>1</sup> for secure communication. If you enable them, the user authentication is not secure.

<sup>1</sup> BRAdmin Professional older than Ver. 2.80, Web BRAdmin older than Ver. 1.40, BRAdmin Light for Macintosh® older than Ver. 1.10

- A check box only appears for an individual protocol or the older BRAdmin utility if they are already enabled.

- 5 Restart the printer to activate the configuration.
- 6 Now the certificate and private key are imported to your printer. To use SSL/TLS communication, the Root Certificate from the CA needs to also be installed on your computer. Contact your network administrator about the installation.

## How to export the certificate and private key

- 1 Click **Export Certificate and Private Key** on the **Configure Certificate** page.
- 2 Enter the password if you want to encrypt the file.

**Note**

If a blank password is used, the output is not encrypted.

- 3 Enter the password again for confirmation, and then click **Submit**.
- 4 Specify the location where you want to save the file.
- 5 Now the certificate and private key are exported to your computer.

**Note**

You can import the file that you exported.

## 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

## 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.

### 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 Light

- For Windows®

The Firewall setting on your computer 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 the Macintosh **HD/Library/Printers/Brother/Utilities**.



## Network print software installation problems

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

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.

**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 a 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 31.
- 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®
    - 1 From the **Go** menu, select **Applications**.
    - 2 Open the **Utilities** folder.
    - 3 Double click the **Terminal** icon.
    - 4 Try pinging the print server from the Terminal window:  
`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).

- 5 If you have tried 1 to 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 on how to reset to the default factory settings, see *Restoring the network settings to factory default* on page 32.
- 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 on how to disable the Firewall, see *For Windows®* on page 65.

# 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 a 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® 2000/XP, Windows Vista™ and Windows Server® 2003 IPP troubleshooting. Otherwise, proceed to 4.
  - For Macintosh®
    - 1 From the **Go** menu, select **Applications**.
    - 2 Open the **Utilities** folder.
    - 3 Double click the **Terminal** icon.
    - 4 Try pinging the print server from the Terminal window:  
`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).
- 4 If you have tried 1 to 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 on how to reset to the default factory settings, see *Restoring the network settings to factory default* on page 32.

## 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® 2000/XP, Windows Vista™ and Windows Server® 2003 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, Windows Vista™ and Windows Server® 2003 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/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, Windows Vista™ and Windows Server® 2003 to use Port 80 to communicate with the Brother print server.

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### Web Based Management (web browser) troubleshooting (TCP/IP)

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- 1 If you cannot 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 computer 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 6.0® (or higher) or Firefox® 1.0 (or higher) for Windows® and Safari™ 1.0 for Macintosh®. Please also make sure that JavaScript and Cookie are always enabled in whichever browser you use. We recommend you upgrade to Safari™ 1.2 or higher to enable JavaScript.

## 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® service (switches P JL-compatible printer to PostScript® mode)
PCL_P1	PCL® service (switches P JL-compatible printer to PCL® mode)
BRNxxxxxx_P1_AT	LPD PostScript® service for Mac OS® X

Where `xxxxxx` is the last six digits of the Ethernet address (for example, BRN310107\_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 Light utility or Web Based Management (web browser), see *Setting the IP address and subnet mask* on page 10.

### 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 the 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 **LAN** menu, BRAdmin application or Web Based Management (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:

```
BRN310107 1 00:80:77:31:01:07 192.168.1.2
```

and:

```
BRN310107: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    BRN310107
```

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, 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 33.

If the APIPA protocol is disabled, the 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
```

```
ping ipaddress
```

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
ping 192.168.1.2
```

## 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
ping 192.168.1.2
```



### 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 Web Based Management (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).

A

## 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<sup>1</sup>, 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> to learn more about this software and to download it.

<sup>1</sup> Internet Information Server 4.0 or Internet Information Service 5.0 / 5.1 / 6.0 / 7.0

## Print server specifications

### Ethernet wired network

<b>Network node type</b>	NC-6500h	
<b>Operating system support</b>	Windows® 2000/XP, Windows® XP Professional x64 Edition, Windows Vista™, Windows Server® 2003, 2003 x64 Edition, Mac OS® X 10.2.4 or greater	
<b>Protocol support</b>	TCP/IP: IPv4	ARP, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS, NetBIOS name resolution, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, SMB Print, IPP, IPPS, FTP Server, SSL/TLS, POP before SMTP, SMTP-AUTH, TELNET, SNMPv1, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, LLTD responder
	TCP/IP: IPv6 <sup>1</sup>	NDP, RA, DNS, mDNS, LPR/LPD, Custom Raw Port/Port9100, IPP, IPPS, FTP Server, SSL/TLS, POP before SMTP, SMTP-AUTH, TELNET, SNMPv1, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, LLTD responder
<b>Network type</b>	10/100BASE-TX Ethernet network	
<b>Network printing</b>	Windows® 2000/XP, Windows Vista™ and Windows Server® 2003 TCP/IP printing Mac OS® X 10.2.4 or greater printing	

<sup>1</sup> If you want to use the IPv6 protocol, visit <http://solutions.brother.com> for more information.

## Computer requirements

Computer Platform & Operating System Version		Processor Minimum Speed	Minimum RAM	Recommended RAM	Available Hard Disk Space
<b>Windows® Operating System</b>	2000 Professional	Intel® Pentium® or equivalent	64 MB	128 MB	50 MB
	XP Home Edition		128 MB	256 MB	50 MB
	XP Professional				
	XP Professional x64 Edition	AMD Opteron™ AMD Athlon™ 64 Intel® Xeon® with Intel® EM64T Intel® Pentium® 4 with Intel® EM64T or equivalent	256 MB	384 MB	50 MB
	Windows Vista™	Intel® Pentium® 4 or equivalent 64-bit supported CPU	512 MB	1 GB	50 MB
	Windows Server® 2003	Intel® Pentium® III or equivalent	256 MB	512 MB	50 MB
	Windows Server® 2003 x64 Edition	AMD Opteron™ AMD Athlon™ 64 Intel® Xeon® with Intel® EM64T Intel® Pentium® 4 with Intel® EM64T or equivalent			
<b>Macintosh®<sup>1</sup> Operating System</b>	OS® X 10.2.4 or greater	PowerPC G4/G5, Intel® Core™ Solo/Duo, PowerPC G3 350MHz	128 MB	160 MB	50 MB

<sup>1</sup> Third party USB ports are not supported.

## Management utilities

BRAdmin Light	Windows® 2000/XP/XP Professional x64 Edition, Windows Vista™, Windows Server® 2003/2003 x64 Edition
	Mac OS® X 10.2.4 or greater
BRAdmin Professional <sup>1</sup>	Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000/XP/XP Professional x64 Edition, Windows Vista™, Windows Server® 2003/2003 x64 Edition
Web BRAdmin <sup>1</sup>	Windows NT® 4.0, Windows® 2000 Professional / Server / Advanced Server, Windows® XP Professional/XP Professional x64 Edition, Windows Vista™, Windows Server® 2003/2003 x64 Edition

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

## Open Source Licensing Remarks

### Open SSL statements

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This product includes cryptographic software written by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)). This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).

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