LEXMARK™

ABC Print Server

User's Guide

August 2004   **www.lexmark.com**

Edition: August 2003

Electronic emission notices

Federal Communications Commission (FCC) compliance information statement

The NAME OF PRODUCT has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult your point of purchase or service representative for additional suggestions.

The manufacturer is not responsible for any radio or television interference caused by using other than recommended cables or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this equipment.

Note: To assure compliance with FCC regulations on electromagnetic interference for a Class B computing device, use a properly shielded and grounded cable such as Lexmark part number 1329605 for parallel attach or 12A2405 for USB attach. Use of a substitute cable not properly shielded and grounded may result in a violation of FCC regulations.

Any questions regarding this compliance information statement should be directed to:

Director of Site Operations
Lexmark International, Inc.
740 West New Circle Road
Lexington, KY   40550
(859) 232-3000

Industry Canada compliance statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Community (EC) directives conformity

This product is in conformity with the protection requirements of EC Council directives 89/336/EEC and 73/23/EEC on the approximation and harmonization of the laws of the Member States relating to electromagnetic compatibility and safety of electrical equipment designed for use within certain voltage limits.A declaration of conformity with the requirements of the directives has been signed by the Director of Manufacturing and Technical Support, Lexmark International, S.A., Boigny, France.

This product satisfies the Class B limits of EN 55022 and safety requirements of EN 60950.

The United Kingdom Telecommunications Act 1984

This apparatus is approved under the approval number NS/G/1234/J/100003 for the indirect connections to the public telecommunications systems in the United Kingdom.

Noise emission levels

The following measurements were made in accordance with ISO 7779 and reported in conformance with ISO 9296.

1-meter average sound pressure, dBA	
Printing	
Idling	

ENERGY STAR

The EPA ENERGY STAR Office Equipment program is a partnership effort with office equipment manufacturers to promote the introduction of energy-efficient products and to reduce air pollution caused by power generation.

Companies participating in this program introduce products that power down when they are not being used. This feature will cut the energy used by up to 50 percent. Lexmark is proud to be a participant in this program.

As an ENERGY STAR Partner, Lexmark International, Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

Japanese VCCI notice

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準
に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用すること
を目的としていますが、この装置がラジオやテレビジョン受信機に近接して
使用されると、受信障害を引き起こすことがあります。
　取扱説明書に従って正しい取り扱いをして下さい。

Wireless Notice

In some environments, the use of wireless devices may be restricted. Such restrictions may apply aboard airplanes, in hospitals, near explosives, in hazardous locations, etc. If you are uncertain of the policy that applies to the use of this device, please ask for authorization to use it prior to turning it on.

FCC Statement

Lexmark International Inc. declares that this device, Lexmark 4050e model-type 4032-2W0, complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any questions regarding this declaration should be directed to:

Director of Lab Operations
Lexmark International, Inc.
740 West New Circle Road
Lexington, KY 40550
(859) 232-3000

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

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by the manufacturer may cause harmful interference and void your authority to operate this equipment. Use of supplied data cable is required to comply with the Class B limits of Part 15 of the FCC Rules.

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Industry Canada (Canada)
This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada specification RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.
To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.
The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF fields in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's Web site **www.hc-sc.gc.ca/rpb**.
The term "IC:" before the certification/registration number only signifies that the Industry Canada technical specifications were met.

Avis de conformité aux normes d'Industrie Canada
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
Cet appareil est conforme à la spécification RSS-210 d'Industry Canada. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne peut engendrer aucune interférence et (2) il doit accepter toute interférence qu'il reçoit, y compris celles qui peuvent altérer son fonctionnement. Pour éviter toute interférence radio au service sous licence, cet appareil est conçu pour être utilisé à l'intérieur et loin des fenêtres afin de garantir une protection optimale. L'équipement (ou son antenne émettrice) est soumis à l'obtention d'une licence s'il est installé à l'extérieur.
L'installateur de cet équipement radio doit veiller à ce que l'antenne soit implantée et dirigée de manière à n'émettre aucun champ HF dépassant les limites fixées pour l'ensemble de la population par Santé Canada.
Reportez-vous au Code de sécurité 6 que vous pouvez consulter sur le site Web de Santé Canada **www.hc-sc.gc.ca/rpb**.
Le terme "IC :" avant que le nombre de certification enregistrement signifie seulement que le Canada d'Industrie spécifications techniques ont été rencontrées.

Declaration of Conformity with Regard to the EU Directive 1999/5/EC (R&TTE Directive) in languages of the European Community

Statement of Limited Warranty

Lexmark International, Inc., Lexington, KY

This warranty applies to the United States and Canada. For customers outside the U.S. and Canada, refer to the country-specific warranty information that came with your printer.

Lexmark N4000e Print Server

This Statement of Limited Warranty applies to this product if it was originally purchased for your use, and not for resale, from Lexmark or a Lexmark remarketer, referred to in this statement as "Remarketer."

Warranty

Lexmark warrants that this product:

- Is manufactured from new parts, or new and serviceable used parts, which perform like new parts
- Is free from defects in material and workmanship
- Conforms to Lexmark's official published specifications
- Is in good working order

If this product does not function as warranted during the warranty period, contact a Remarketer or Lexmark for repair without charge.

If this product is a feature or option, this statement applies only when that feature or option is used with the product for which it was designed. To obtain warranty service, you may be required to present the feature or option with the product.

If you transfer this product to another user, warranty service under the terms of this statement is available to that user for the remainder of the warranty period. You should transfer proof of original purchase and this statement to that user.

Warranty service

The warranty period is 12 months and starts on the date of original purchase as shown on the purchase receipt.

To obtain warranty service you may be required to present proof of original purchase. Warranty service will be provided at a Remarketer or a Lexmark designated location. You may be required to deliver your product to the Remarketer or Lexmark, or ship it prepaid and suitably packaged to a Lexmark designated location. You are responsible for loss of, or damage to, a product in transit to the Remarketer or the designated location.

When warranty service involves the exchange of a product or part, the item replaced becomes the property of the Remarketer or Lexmark. The replacement may be a new or repaired item. The

replacement item assumes the remaining warranty period of the original product. Replacement is not available to you if the product you present for exchange is defaced, altered, in need of a repair not included in warranty service, or damaged beyond repair. Also, such product must be free of any legal obligation or restrictions that prevent its exchange.

Before you present this product for warranty service, remove all programs, data, and removable storage media.

For further explanation of your warranty alternatives and the nearest Lexmark authorized servicer in your area, please contact Lexmark at 1-859-232-3000, or on the World Wide Web at http://support.lexmark.com.

Remote technical support is provided for this product throughout its warranty period. Lexmark offers a variety of extended warranty programs that include an extension of technical support. For products no longer covered by a Lexmark warranty, technical support may only be available for a fee.

Extent of warranty

We do not warrant uninterrupted or error-free operation of a product.

Warranty service does not include repair of failures caused by:

- Modification or attachments
- Accidents or misuse
- Unsuitable physical or operating environment
- Maintenance by anyone other than Lexmark or a Lexmark authorized servicer
- Operation of a product beyond the limit of its duty cycle
- Failure to have installed a maintenance kit as specified (if applicable)
- Use of printing media outside of Lexmark specifications
- Use of other than Lexmark supplies (such as toner cartridges, inkjet cartridges, and ribbons)
- Use of other than Lexmark product or component

ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES, EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD.

Limitation of liability

Your sole remedy under this Statement of Limited Warranty is set forth in this section. For any claim concerning performance or nonperformance of Lexmark or a Remarketer for this product under this Statement of Limited Warranty, you may recover actual damages up to the limit set forth in the following paragraph.
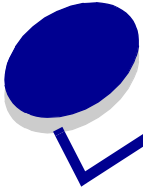
Lexmark's liability for actual damages from any cause whatsoever will be limited to the greater of 1) $5,000 or 2) the amount you paid for the product that caused the damages. This limitation of liability will not apply to claims by you for bodily injury or damage to real property or tangible personal property for which Lexmark is legally liable. In no event will Lexmark be liable for any lost profits, lost savings, incidental damage, or other economic consequential damages. This is true even if you advise Lexmark or a Remarketer of the possibility of such damages. Lexmark is not liable for any claim by you based on a third party claim.

This limitation of remedies also applies to any developer of materials supplied to Lexmark. Lexmark's and the developer's limitations of remedies are not cumulative. Such developer is an intended beneficiary of this limitation.

Additional rights

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusion or limitation of incidental or consequential damages. If such laws apply, the limitations or exclusions contained in this statement may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

Contents

1 Getting started

Select a location for your print server

The location of your print server is vital to ensuring that it works effectively. Follow these guidelines when determining a location for your print server:

- The print server should be kept on a flat, level surface away from excessive heat, cold and moisture.

- Keep the print server within appropriate range of a wireless access point if your network uses an Infrastructure configuration.

- Locate the print server away from other non-essential electronic devices such as microwaves or other appliances.

- Do not place the print server near obstructions that could hinder the wireless signal.

Unpacking your print server
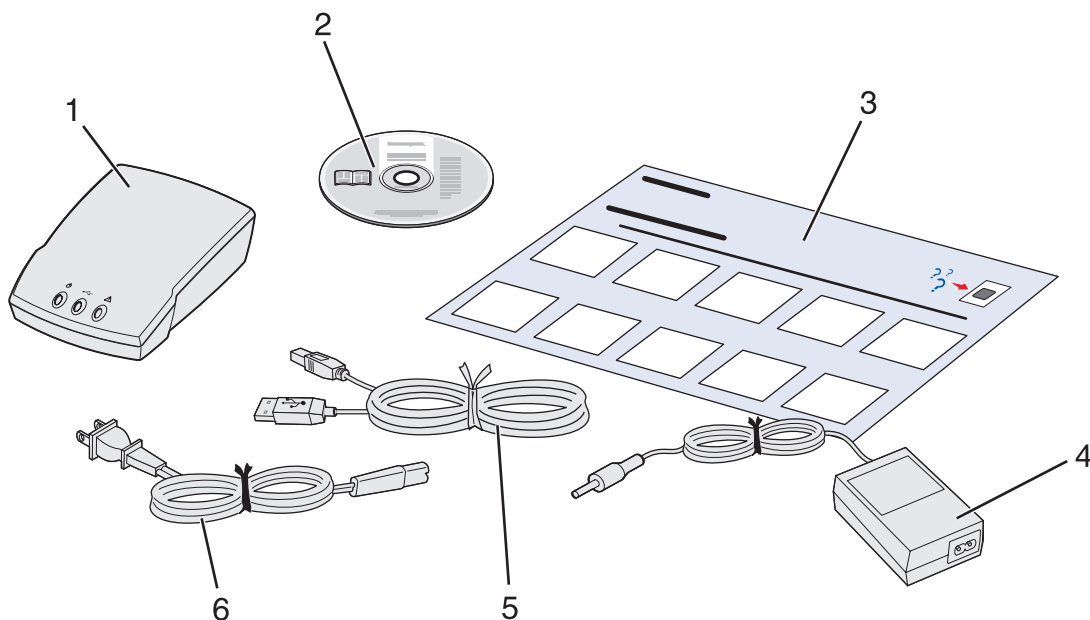
Number	Description
1	(Insert Variable) for Print server Name
2	(Insert Variable) Setup Utility CD
3	Setup Sheet
4	Power Supply
5	USB Cable
6	Power Cord wall adapter

Understanding the print server ports

1   2   3   4
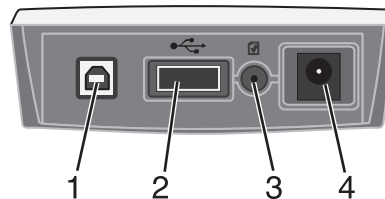
Number	Part	Description
1	USB Port (To Computer)	Connects your print server to a computer. You then use the USB port 2 to connect your print server to your printer.
2	USB Port (To Printer)	Connects your print server to your printer.
3	Test button	Press once to print a test page. Press and hold to reset your print server to factory default settings.
	Power cord connector	Connects the print server to the power supply.

Understanding the print server indicator lights
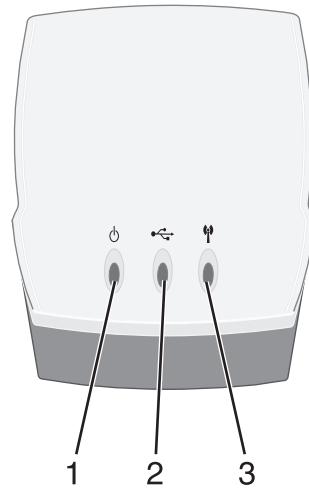
Number	Part	Description
1	Power Indicator	Shows that the print server has power
2	USB Status	Shows that the print server is connected over USB and is communicating.
3	Wireless Status	Shows that the print server is communicating wirelessly.

Wireless network settings

You may need to know some of your wireless network settings in order to set up your wireless print server. Here are some of the settings that you may need to know:

For Basic Setup:

- Network Name, also known as SSID (Service Set ID)

- Security type

    - None
    - WEP (Wired Equivalency Protocol)
    - WPA (Wifi Protected Access)

- Security Key(s)

For Advanced Setup:

- Basic setup settings

- BSS (Basic Service Set) Type

- Channel Number

2 Setting up your wireless print server

Setup overview

The basic setup process consists of two parts: configuring your wirelessprint server and installing your printer on the network. The configuration segment involves connecting the print server to a computer via USB cable and running the Wireless Print Server Setup Wizard to configure the device and test the wireless connection. The installation segment involves connecting the print server to the printer that you want to install and running that printer's drivers or printer software CD to install it as a network printer.

Basic setup accommodates both Infrastructure mode (in which the network structure is based on a series of wireless routers or base-stations) as well as Ad-Hoc mode (in which wireless devices communicate with each other directly without using a wireless router). While basic setup is the recommended process, it is possible to set up your wireless print server without using the USB connection or Setup Wizard to complete the configuration process. For instructions on setting up your wirelessprint server through an alternate configuration method, see (insert cross-ref to Advanced Setup section). Unix/Linux operating systems require the advanced setup instructions to configure and install your print server.

Before setting up your wireless print server, make sure:

- The toner or print cartridges are installed correctly

- Paper has been loaded into the printer

- Your printer is turned on and ready to be installed

Minimum requirements

- The Lexmark Wireless Print Server

- An existing wireless network

  - The following security types are supported:
    - No security
    - WEP with 64 bit or 128 bit security keys
    - WPA (wifi protected access) - Personal in pre-shared key mode over TKIP

- A network-capable printer

- The Lexmark ABC Setup Utility CD

- The drivers or printer software CD that came with your printer
- A computer that utilizes one of the following operating systems:
  - Windows 2000
  - Windows XP
  - Unix/Linux xx.xx

Configuring your wireless print server

Connect your print server to your computer

1 Insert the small end of the USB cable into the print server's left side USB port.

2 Connect the large end of the USB cable to your computer's USB port.

3 Connect the print server to its power supply.
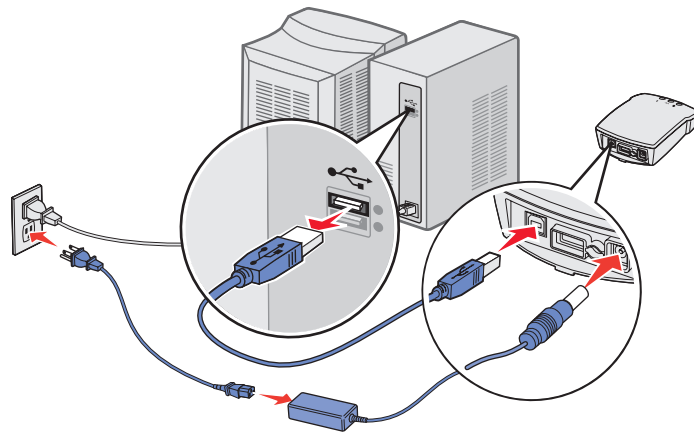
Special instructions for Windows 98 SE, ME:

The HID driver required for communicating with a USB device is not installed by default for Windows 98, Windows 98/SE, or Windows ME. If you have not previously used a USB device with this operating system, you may need to insert your operating system CD to install the necessary HID driver.

If the driver is not isntalled on your system, when the Print server is plugged in the **Add New Hardware Wizard** will appear. Proceed through the wizard until it prompts you to insert your operating system CD. Once the driver is installed, you can proceed with setup normally.

Using the ABC Wireless Print Server Setup Wizard

1 Insert the ABC Setup Utility CD.

2 The welcome screen will open automatically. Click **Next** to access your computer's current wireless settings.

3 Select the appropriate **Network Name (SSID)** from the list and click **Next**.
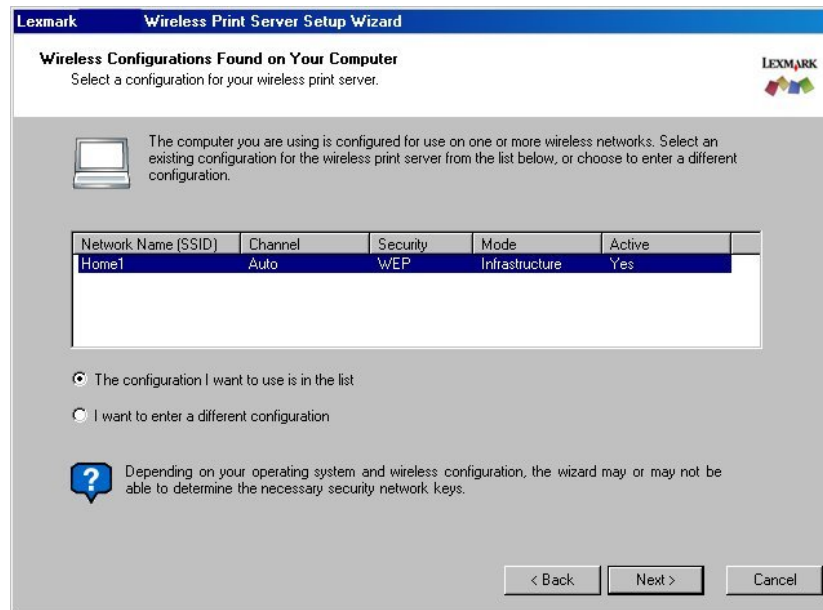
Troubleshooting tip:

If the Network Name you want to use is not in the list:

- Select the **I want to enter a different configuration** radio button and Click **Next**.

If the correct Network Name is still not in the next list:

- Make sure that your wireless network is broadcasting and try again.

If the correct Network Name still does not appear:

- See **Entering alternate network settings**.

4 Select the appropriate security method and click **Next**. If no security was detected, proceed to step 6.

5 Enter the appropriate security key(s) for your network and click **Next**.

6 Check each network attribute on the summary screen to make sure that the settings are correct. If the settings are correct, click **Next** to apply these settings to your print server.

7 Disconnect the USB cable from both your computer and the print server.

8 Use the same cable to connect the print server to your printer. To make this connection, insert the large end of the USB cable into the middle USB port on the back of the print server. Then, insert the small end of the USB cable into your printer.
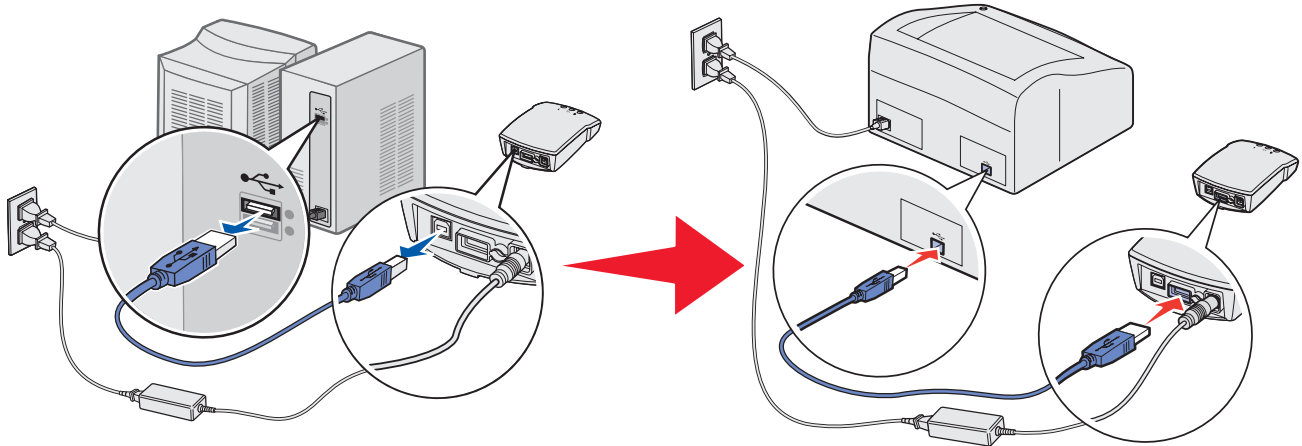
9 Click **Next** to continue with the Setup Utility Wizard.

10 Write down the port or MAC address information displayed on the screen This information will be needed when installing your printer on the network.
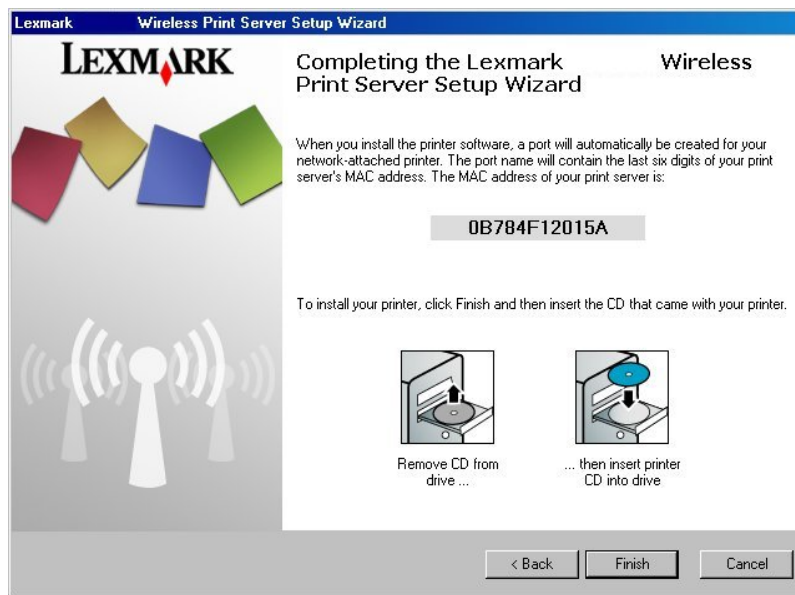
11 Remove the Setup Utility CD from your computer and insert your printer's Drivers or Printer Software CD.

12 Click **Finish** to close the Setup Utility Wizard and proceed to **Installing your printer on the network**.

Entering alternate network settings

Once you have started the ABC Wireless Print Server Setup Utility and the Wizard has collected and displayed your computer's existing wireless settings, if the network configuration you want to use is not available, you have the option to enter a different network configuration.

1 After the Setup Wizard performs the site survey, select the option to enter a different configuration.

   a If wireless network configurations were found on your computer:

   From the *Wireless Configurations Found on your Computer* screen, Select the **I want to enter a different configuration** radio button and click **Next**.

   b If no wireless network configurations were found on your computer:

   From the *Wireless Networks Found in Your Area* screen, select the **I want to enter a different network name** radio button and click **Next** and skip to step 3.

2 From the *Wireless Networks Found in Your Area* screen, select the **I want to enter a different network name** radio button and click **Next**.

3 Enter the Network Name (SSID) of the Network that you want to use.

4 Select the appropriate channel for the network.

> **Note:** Channel options include Auto, and 1-11 (US)/ 1-13 (UK/ Europe).

5 Select the Wireless Mode for your network (Infrastructure or Ad-Hoc mode).

6 Click **Next**.

7 Select the type of security that your network uses and click **Next**.

8 If security was selected, enter the appropriate security key(s) and click Next. If no security was selected, proceed to step 9.

9 Check each network attribute on the summary screen to make sure that the settings are correct. If the settings are correct, click **Next** to apply these settings to your print server.

10 Disconnect the USB cable from both your computer and the print server.

11 Use the same cable to connect the print server to your printer. To make this connection, insert the large end of the USB cable into the middle USB port on the back of the print server. Then, insert the small end of the USB cable into your printer.

12 Click **Next** to continue with the Setup Utility Wizard.

13 Write down the port or MAC address information displayed on the screen This information will be needed when installing your printer on the network.

14 Remove the Setup Utility CD from your computer and insert your printer's Drivers or Printer Software CD.

15 Click **Finish** to close the Setup Utility Wizard and proceed to **Installing your printer on the network**.
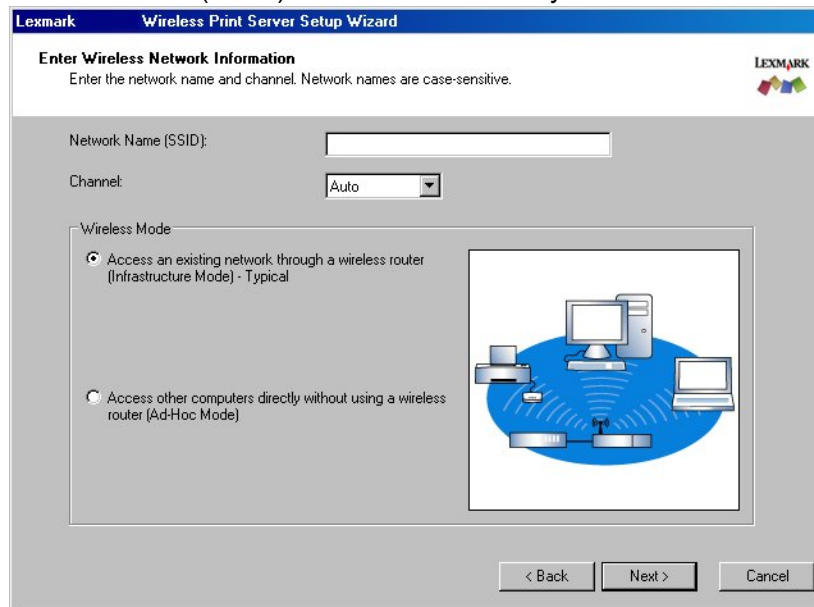
Installing your printer on the network

For Ink Jet Printers:

1 Click **Install**.

2 Select **The printer is on a network** and click **Continue**.

3 Select **Direct network attached** and click **Continue**.

4 Select the device from the list with the MAC address that corresponds to your wireless printer adapter.

The MAC address is provided on the Final screen of the Wireless Print Server Setup Utility Wizard or on the bottom of your print server.

5 Click **Install Selected printers**.

6 Follow the instructions on the screen to complete the installation.

For Laser Printers

1 Click **Network Installation - Install the printer for use on a network**.

2 Select **Local Installation** and click **Next**.

3 Select the port from the list that was created by the Wireless Print Server Setup Utility WIzard.

4 Click **Next**.

5 Follow the instructions on the screen to complete the installation.

3 Changing your wireless print server settings

The easiest way to change settings in the wireless print server is through the embedded web server. In order for this to work, you must have successfully completed the installation of the print server on your network.

1 Type the IP address of the print server in a browser window. This should bring up the embedded web pages for the print server.

2 Select the setting you want to change, such as IP address.

3 Enter the changes and then click submit.

Finding the network printer IP address

Using the IP Setup Utility

The Setup Utility CD ships with the IP Setup Utility on it. You can use this utility to find the IP address of your print server. Once the Utility has been run, it will automatically install on your computer for ease of use.

1 Launch the CD.

2 Install the IP Setup Utility.

3 Launch the IP Setup Utility. A device discovery is performed. A list of print servers with printers is offered.

4 Select your printer from the list

5 Click **Launch Web Page**.

Printing a network setup page

Once the print server and printer are connected, for most printers, pushing the test button on the back of the print server will print a network setup page. In order for the IP address to be reported and listed on this page, you must have successfully complete the installation of this product on the wireless network.

4 Troubleshooting

Use this section to solve problems you may have while setting up your print server.

Indicator light status

Indicator light pattern:	State	Result:
Power indicator	On	The Print Server is powered on.
USB Status	Off	USB cable connecting the print server to the printer is secure and the printer is on.
	On	USB cable connecting the print server to the printer or computer is secure and recognized by the USB port.
	Blinking	Indicates that a print job is active.
Wireless Status	Off	Searching for network connection.
	On	Connected to the network.
	Blinking	flash file is downloading or flashing.
USB Status and Wireless Status	Blinking alternately	Firmware Error. Power the print server off and back on again. If the problem continues, call the Customer Support Center.

> **Note:** To locate the Power and USB indicator lights, see **Understanding the print server indicator lights**.

The Setup Utility CD does not auto launch

1 Close all open software programs.

2 Restart your computer.

3 Reinsert the *Setup Utility* CD. If the setup utility screen appears, continue your setup instructions.

   If the setup utility screen does not appear, do the following:

   a From your desktop, double-click **My Computer**.

   b Double-click the CD-ROM drive icon.

    c   If necessary, double-click **setup.exe**.

    d   Continue with step 11 on the *Setup Sheet*.

My network printer does not print

- Make sure all cables to the printer, print server, electrical outlet, and network connection are secure.

- Make sure the Power, USB, and Wireless status indicator lights are on.

- Check the printer status.

- Make sure the network is operating properly.

  Refer to your network documentation or contact your network administrator.

- Make sure the printer software is installed on the computer from which you are sending the print job.

  > **Note:** You must install the printer software on each computer that uses the network printer.

- Make sure the correct printer port is selected. For help, see "Verify the network printer port."

- Restart the computer.

- Make sure there is not a problem with the printer itself.

  1   Disconnect the printer from the printer adapter.

  2   Attach the printer directly to your computer with a USB cable.

  If you are able to print when the printer is directly attached, there may be a problem with your network. Refer to your network documentation or contact your network administrator.

- Uninstall and then reinstall the printer software.

  If the printer still does not print, refer to your printer documentation for help.

5 Advanced Setup

Ad hoc installation

*****This section is currently being researched and written*****

6 Glossary

DHCP. Dynamic Host Configuration Protocol, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. This means that a new device can be added to a network without having to manually assign a unique IP address.

IP address. A number that identifies each device connected to the network. For example, 192.168.0.1.

MAC address. A 12-character identifier that is unique for each network hardware device. For example, 00.02.00.10.08.e8.

network-capable printer. A printing device that does not need to be locally attached to a computer. When connected to a network it can be accessed by any computer on the same network.

printer port. Windows terminology for a physical or logical connection to a printer. For example:

- LPT1 indicates the printer is attached to a physical parallel port with a parallel cable.
- USB001 indicates the printer is attached to a physical USB port with a USB cable.
- Print_Server_E320_0020000035D0 indicates a logical connection to the printer across your network.

subnet. A portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 192.168.0. would typically be part of the same subnet.

TCP/IP. The Transmission Control Protocol (TCP) and the Internet Protocol (IP) are protocols that let different types of computers communicate with each other. The Internet is based on this suite of protocols.

SSID (Service Set ID). The first wireless parameter you must configure is the SSID (Service Set ID), or Network Name. The SSID is a case-sensitive string that cannot exceed 32 characters.

BSS (Basic Service Set). You must also configure the BSS (Basic Service Set). The BSS can be one of the following:

- Infrastructure - A network using a wireless access point
- Ad-Hoc - Stand-alone or peer-to-peer network
- Auto - Default print server setting

Network authentication. You can use one of the following protocols for network authentication:

- None
- Shared - WEP (Wired Equivalency Protocol)
- WPA-Personal (TKIP:PSK) - WPA (WiFi Protected Access) in PSK (Pre-Shared Key) mode

A WPA (WiFi Protected Access) key is like a password and must meet the following criteria: If using Hex characters, valid keys are at least 24 characters long; if using ASCII, valid keys are at least 20 characters long.

Data Encryption mode. You can use one of the following protocols for data encryption:

- None
- WEP (RC4)

The wireless network may use anywhere from one to four WEP keys. A WEP key is like a password and must meeting the following criteria: If using Hex characters, valid keys are either 10 or 26 characters long; if using ASCII, valid keys are either 5 or 13 characters long.

Channel number. The channel number automatically defaults to 'Auto'. You can select a channel if your configuration requires. In the US, valid channel numbers range from 1 to 11; in Europe, they range from 1 to 13.