



SX-600

Ethernet to Wireless Client Adapter Setup Guide





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United States of America



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Introduction

The SX-600 Ethernet to Wireless Client Adapter allows you to easily add 802.11 b/g wireless capabilities to any Ethernet product. It is ideal for connecting Ethernet enabled printers, scanners, and multifunction printers (MFPs) to a wireless network without having to change drivers or management utilities. The SX-600 also brings 802.11 b/g wireless capabilities to Ethernet enabled product such as desktop or laptop computers, point of sale terminals, medical devices, and networked industrial control devices.

Once configured, the SX-600 is platform independent so it will work with any operating system and any network device. It provides Ethernet pass-through to the wireless network for network features already provided by your Ethernet enabled device. The SX-600 includes an RJ-45 connector for an auto-sensing 10/100 Ethernet, a reset button, a power jack, LEDs for status indication, 802.11b/g WLAN connectivity, and a serial port for configuration or diagnostics.

Package Contents

- SX-600 Adapter
- Power supply adapter
- Installation CD
- Hardware Installation Guide
- Crossover Ethernet Cable

Windows™ System Requirements

To configure the settings of the SX-600 using the provided ExtendView Utility in Windows, your Windows-based system should include the following components:

- A PC with a 133 MHz or higher processor
- Microsoft Windows 98SE, ME, 2000, XP, or 2003 server operating system
- At least 64 MB of RAM (memory)
- At least 10 MB of free hard disk space (to install the software)
- A CD-ROM drive (to load the software)
- An Internet connection (for online product registration)

Other Operating Systems

Users can access the configuration settings for the SX-600 through a standard web browser by entering the IP address of the SX-600 into the address bar.



Wireless Requirements

The SX-600 allows you to connect to a wireless network consisting of either of the following:

- An 802.11b/g-compatible wireless-enabled PC connected directly to the serial server (Ad-Hoc or Peer-to-Peer Mode).
- An 802.11b/g-compatible wireless access point that allows wireless and wired Ethernet-enabled computers to connect to the serial server.

To configure the SX-600 to communicate with your wireless network, you will need the following information from your wireless network administrator:

- Wireless Mode used (Infrastructure or Ad-Hoc)
- The SSID (service set identifier) for your wireless network.
- Wireless Security Settings (WEP/WPA keys, 802.1x settings, etc.)

SX-600 Installation

Follow the steps below to install the SX-600.

Before attempting to install the SX-600, make sure you have installed and set up your Ethernet device and network connection as described in the documentation that came the same way you would for connecting it to the wired LAN.

Important: Before attempting to use the wireless connection with the SX-600, you must verify that your Ethernet enabled device is able to connect directly with the wired LAN. If you can not connect to the device on a wired LAN, you will not be able to connect to it and access it from the wireless network. For details on configuring the networking functions of your Ethernet enabled device, please see your device's documentation.

1. Connect the SX-600 to a computer's RJ-45 Ethernet connection using the included Ethernet cable. The SX-600 Ethernet port supports MDIX (Automatic Crossover) so you can use any crossover or standard Ethernet cable, but you will want to connect it directly to the computer.

Important: Do not connect the SX-600 to a hub or a switch. It is designed to connect with one Ethernet address and could cause network loop-back issues if connecting from a hub or switch to a wireless network.

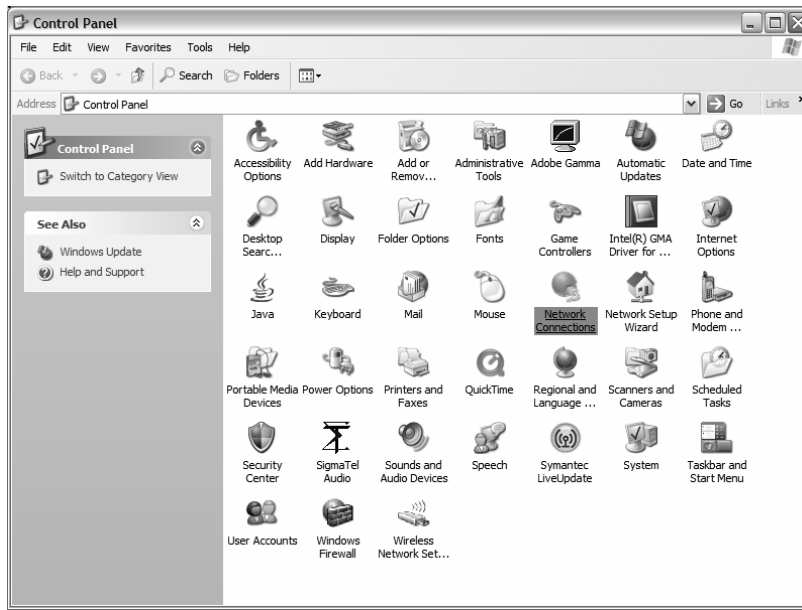
2. Plug the SX-600 power supply adapter into a suitable AC receptacle, and then plug the power supply cable into the SX-600. The SX-600 will run through a sequence of power-up diagnostics for a few seconds.
3. Configure the SX-600 to associate with your access point or wireless network.

Note: The SX-600 will only allow configuration from one network interface at a time. While both network interfaces (wired and wireless) are enabled to transmit and receive raw packets, only one interface can be active for configuration (HTTP, Telnet or SNMP) purposes at a time. The default interface is wired, but it can be changed to the wireless interface by depressing the button on the back of the SX-600 for less than 5 seconds or in the software configuration using either ExtendView or the web browser interface.

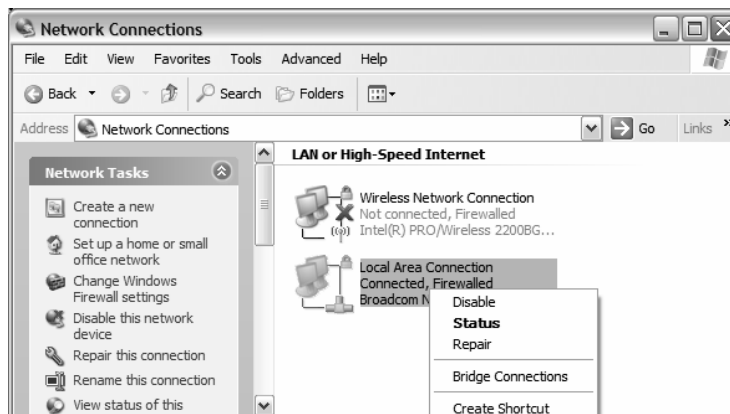
Configure the Network Settings on your Computer

The default IP Address of the SX-600 is 169.254.111.111. You should set your computer to automatically receive an IP Address so it will acquire an Auto-IP Address in order to be on the same subnet as the SX-600 to configure it. Below are the instructions for configuring a Windows XP PC:

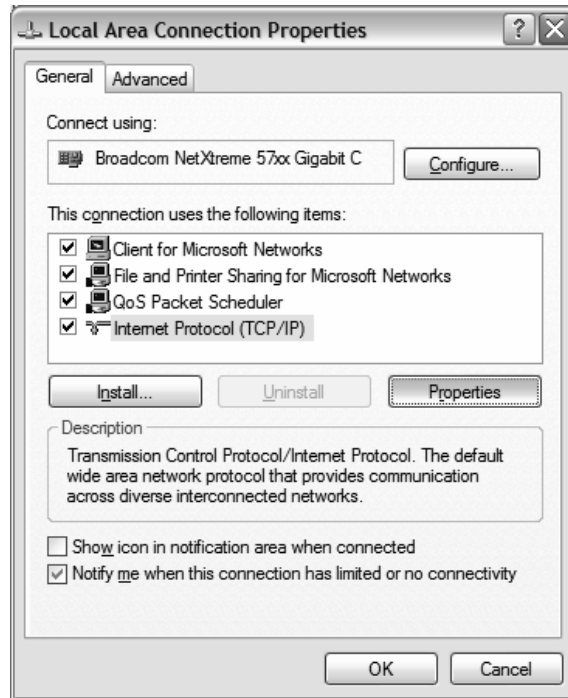
1. Click on **Start**, and then **Control Panel**. Go to **Network Connections**.



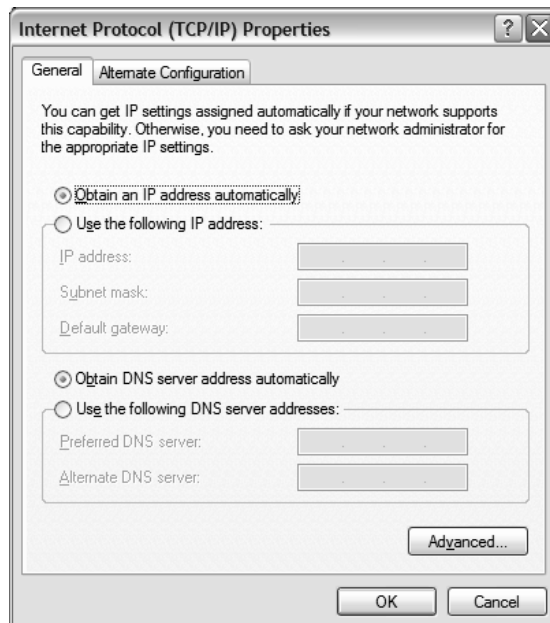
2. Right-Click on your **Local Area Network** connection and select **Properties**.



3. Select **Internet Protocol (TCP/IP)** and click **Properties**.



4. Select **Obtain an IP Address Automatically** in the TCP/IP properties and click **OK**, then **OK** again.





Configure the SX-600

The SX-600 can be configured a variety of ways.

ExtendView for Windows

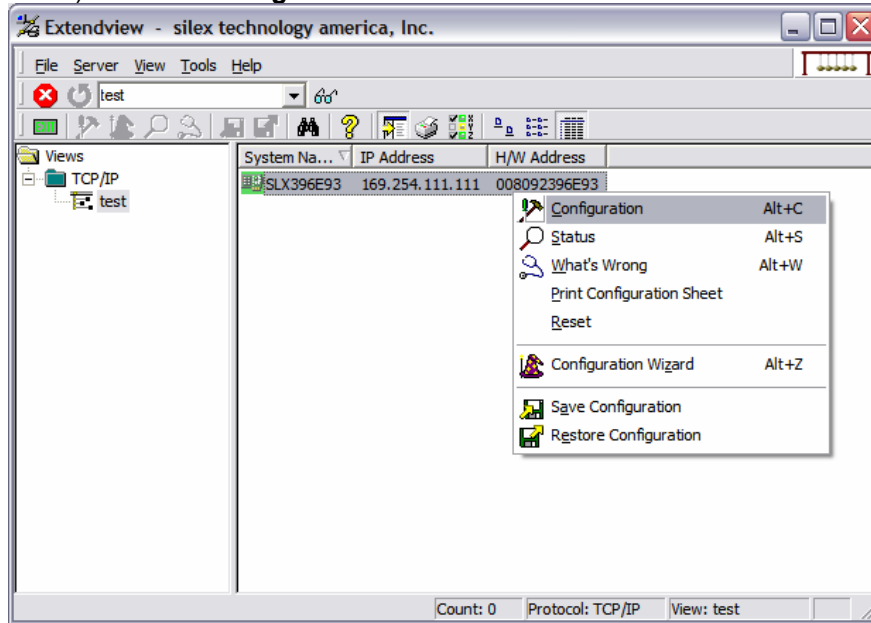
1. Insert the CD supplied into the CD-ROM drive of your computer. The CD should automatically start and display a menu screen.

Note: If it does not start automatically, click the Start button on the bottom left of your screen, click Run, and type D:/Install.exe (where "D" corresponds to the letter associated with your CD-ROM).

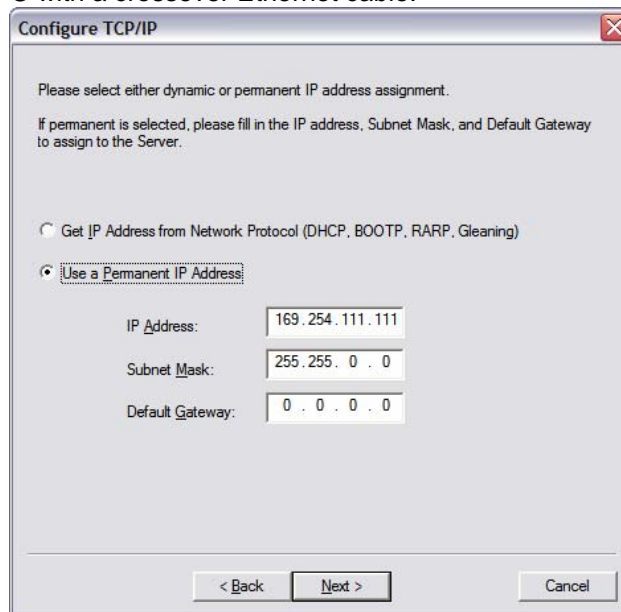
2. Click on Install Software.
3. Select ***ExtendView***, and then click on Install. Follow the prompts in the installation wizard. After the installation is complete, you can start the ExtendView utility by clicking on Start, Programs, silex technology, then ExtendView.
4. When you start the ExtendView utility, You will be asked to create a new View. Type in any View Name you want. Check ***Automatically create a view with default settings*** (unless you want to customize your view) and click ***Next***.

A screenshot of a Windows-style dialog box titled "New View". The dialog box has a standard title bar with a close button (X) in the top right corner. The main area contains the following text: "Enter a descriptive name for the new view and select the protocol that will be used to locate and communicate with the print servers." followed by "Press Next to set customized view options or check the box to create a view with default settings (the view settings can be modified later).". Below this is a "View Name:" label followed by a text input field containing the text "test". Below that is a "Discovery Protocol:" label followed by a dropdown menu showing "TCP/IP". At the bottom of the main area is a checkbox labeled "Automatically create a view with default settings." which is currently unchecked. At the very bottom of the dialog box are four buttons: "< Back", "Next >", "Cancel", and "Help".

5. You should see the SX-600 in the list. If you do not see the SX-600 in the list, start again and verify all the steps were made correctly for the installation up to this point again. **Right-Click the SX-600** (where the H/W address matches the one on the back label of the SX-600) and click **Configuration**.



6. The IP Address settings of the SX-600 are for configuration purposes only. These will not effect the network device you are connecting to. You do not normally need to change these settings if you want to continue to make future configuration changes by connecting directly from a PC with a crossover Ethernet cable.





7. Configure your wireless settings to match that of your wireless network. First choose the Wireless Mode and type in the SSID of your wireless network.

Mode

For Mode, AD-HOC means the wireless network is composed of stations without access points. INFRASTRUCTURE mode means all data is being passed through a central access point.

SSID

The Service Set Identifier is used by stations to select the wireless network with which to communicate.

Configure Bridge via:

The SX-600 will only allow configuration from one network interface at a time. While both network interfaces (wired and wireless) are enabled to transmit and receive raw packets, only one interface can be active for configuration (HTTP, Telnet or SNMP) purposes at a time. The default interface is wired, but it can be changed to the wireless interface by clicking on **Wireless Connection**.

Once you have entered the correct wireless mode and SSID for your wireless network, click on Wireless Security. The other settings on this page don't normally need to be changed.

8. Enter your wireless security settings to match that of your wireless network network.

Key Selection

If WEP encryption is selected, and the authentication mode is not an EAP (802.1x) mode, select the desired WEP key to be used, one through four.

WEP Key

These fields are ignored unless the encryption mode is 64 or 128 bit WEP. Enter up to 10 hexadecimal digits for 64 bit WEP, or 26 hexadecimal digits for 128 bit WEP.

Authentication Type

Choose type of authentication to be performed with the network access point, or with a peer unit in Ad-hoc mode.

User ID

Enter the logon user ID that the server uses to authenticate to the 802.1x-enabled network. The user ID and password must be in the authentication server database, and is used in TTLS, LEAP, and PEAP configurations. The default user ID is 'anonymous'. A realm defines a grouping of users. If a realm is required for your network, it is separated from the user ID by a '@' character. Realms make it easier to segregate user groups into independently administered databases, to apply policies on a user group basis, and to establish roaming agreements to name a few applications. The default realm if not specified is 'anonymous'. Realm is used with TTLS configurations, and sometimes with PEAP.

Password

Enter the logon password that the server uses to authenticate to the 802.1x enabled network. The user ID and password must be in the authentication server database, and is



used in TTLS, LEAP, and PEAP configurations. The password may be a text string, or a string of hex bytes prefixed with '\x'. The default password is 'anonymous'.

Certificate Common Name

Enter the name of the certificate on the primary authentication server. If both of the common names are set to null, all certificates are accepted. The default is null. Certificate common name is used in TLS, TTLS and PEAP configurations.

Certificate Root Key

Enter the authentication key used to verify the root certificate in the certificate chain provided by the authentication server. To set to null, leave this field blank. Certificate Root Key is used in TLS, TTLS and PEAP configurations. The Certificate Root Key can be extracted by clicking Browse and selecting the actual certificate if you don't want to type it in manually.

Certificate Root Key Exponent

This value must match the authentication server certificate value. The default is 65537 (x10001). Certificate Root Key Exponent is used in TLS, TTLS and PEAP configurations. The Certificate Root Key Exponent can be extracted by clicking Browse and selecting the actual certificate if you don't want to type it in manually.

Authentication Protocol

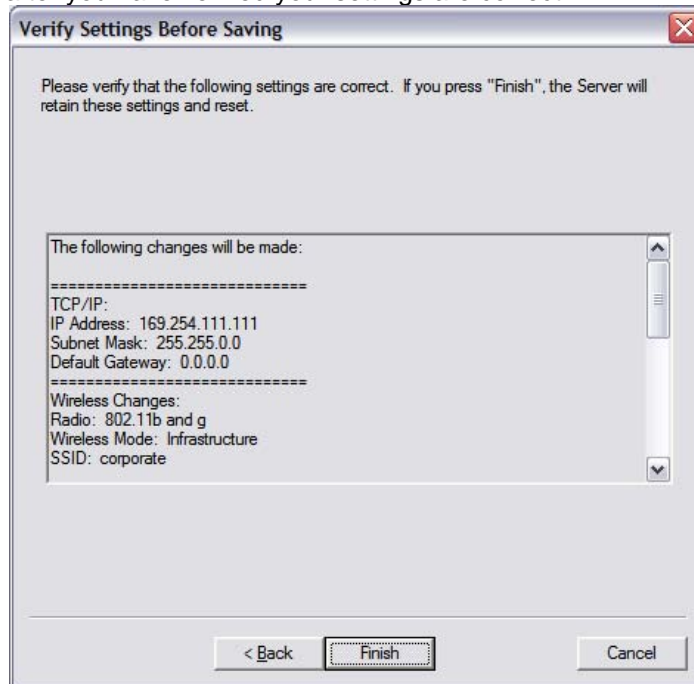
This field determines how the server authenticates itself to the 802.1x enabled network after an 802.1x session is established. The default is PAP. Sometimes referred to as inner-authentication protocol, it is used in TTLS and PEAP configurations.

Pre-Shared Key

If the PSK mode of authentication is selected with WPA or WPA2 encryption, the key value or pass-phrase entered here is used to initialize the session with the access point. If a key value is entered, it must be exactly 64 hex characters. A pass-phrase must be 8 to 63 displayable characters.



9. Click **Finish** after you have verified your settings are correct.





Web Browser Interface

Open any web browser from your PC (eg: Internet Explorer or Firefox) and type the IP Address of the SX-600 for the Address (default is 169.254.111.111). Click **Login** from the main menu in the left frame, and type in the password (default is ACCESS) and follow these steps for configuration:

1. Click on **Wireless** from the main menu in the left frame.
2. Select Infrastructure or Ad-Hoc to match the Wireless mode and type in the correct SSID.
3. Click Submit.
4. On the Configure Wireless screen, click on **Configure Network Security**. See the *ExtendView* section above for details on the settings.

Command Line Console Configuration

The command line console can be access either using the serial port on the SX-600, or by using Telnet.

Serial Port

1. Attach a null modem serial cable to the DB9 serial port of the print server, and the other side to the COM port on your computer
2. Start a terminal emulation program, make sure you are connecting with the relevant COM port. (*Hyperterminal* on Windows systems)
3. Use the following settings for the connection:

BITS PER SECOND:	115200
DATA BITS:	8
PARITY:	NONE
STOP BITS:	1
FLOW CONTROL:	NONE

This should connect you. Once connected, hit **ENTER**, you will be asked for a user name, no user name is needed, so you can just hit **ENTER**. This will bring you to a Local> prompt. This is where you can type your commands. Type **HELP** for a list of commands.

Telnet

Go to the command prompt on your PC and type **TELNET ipaddress** (where ipaddress is the IP Address configured in the print server). You should get a # prompt, type in the password (default is ACCESS, this will not echo on your screen as you type it). Hit **ENTER** a couple times until you get a Local> prompt. This is where you can type your commands. Type **HELP** to get a list of commands.



Connecting to your network enabled device

Once you have configured the SX-600 to communicate with your wireless network, you can connect any Ethernet enabled device directly to the SX-600 and it will communicate with the wireless network.

1. Configure your Ethernet enabled device the same way you would for connecting it to a wired LAN.
Important: Before attempting to use the wireless connection with the SX-600, you must verify that your Ethernet enabled device is able to connect directly with the wired LAN. If you can not connect to the device on a wired LAN, you will not be able to connect to it and access it from the wireless network. For details on configuring the networking functions of your Ethernet enabled device, please see your device's documentation.
2. Make sure the SX-600 is configured to associate with your access point or wireless network. Detailed configuration steps are provided in the SX-600 manual on the CD.
3. Connect your Ethernet enabled device directly to the SX-600 with a network cable.

Important: Do not connect the SX-600 to a hub or a switch. It is designed to connect with one Ethernet address and could cause network loop-back issues if connecting from a hub or switch to a wireless network.

Verifying Successful Installation

- Verify that both the Ethernet device and the SX-600 are powered on and ready, and that a network cable is properly connected between them.
- Check that the LEDs on the SX-600 (refer to the LED chart on the next page) are displaying a successful network and wireless link.

Troubleshooting

- If you are having trouble accessing the connected network device, ensure you can ping your Ethernet device using the DOS command PING *ipaddress* (where *ipaddress* is the IP address of your network device connected to the SX-600). If you cannot ping the device, you will not be able to access the device.
- Verify that your access point is configured properly – note the settings, paying special attention to the wireless mode, SSID or network name, and security settings so you can configure the SX-600 to the same wireless settings.
- Make sure you have a good wireless signal from your PC and from the SX-600, that they are within range (90 meters or 300 feet), and that they are away from metal objects and other devices that generate radio signals (like Bluetooth devices, cordless phones, and microwave ovens).
- Make sure you are set to infrastructure mode if you are connecting through an access point, or ad-hoc mode if you have a wireless network without an access point. See the documentation for your wireless networking products for details.
- If you are experiencing slow performance or are having intermittent problems connecting, try changing the RF channel of your wireless network. See your wireless adapter and/or access point documentation for more information on configuration. When changing the RF channel, it is recommended that you select a channel that is at least three channels lower or higher than any other wireless networks within range.



- You can reset the unit to factory default by holding in the button on the back of the SX-600 for more than 5 seconds and letting go.



Rear Button Function

Depressed for > 1/8 second & < 5 seconds	Toggle wired configuration mode – each time toggles the network interface (wired or wireless) from which the network configuration applications (ExtendView, HTTP & TELNET) are accessible.
Depressed for > 5 seconds	Reset configuration to factory defaults. The unit will re-initialize itself after updating the configuration memory.

LED Function

Status	Orange	Off	Power Off
		On	Device Ready
		Blinking	Error
Network	Green	Off	No Wired Network Link
		Green On	Wired network link active
		Green Blinking	Wired Configuration mode
	Yellow	Off	No Wireless Network Link
		On	Wireless Link active
		Blink	Wireless data activity



Where to Get Help

silex offers several customer support options to assist you in the event you experience difficulties with your print server, including telephone support, repair services, and warranty.

The worldwide web site provides a quick and easy way to answer many common technical questions. It includes a wide variety of technical support tips, as well as copies of product manuals, product literature, and firmware load images. The web site is located at www.silexamerica.com.

Your first point of contact for technical support is the Distributor or Dealer from whom you bought your product. They are familiar with your needs, and will generally be able to provide you with the fastest and most comprehensive support.

If your Distributor or Dealer is unable to answer your questions or is for some reason not available, then contact silex directly at (801) 748-1199. Or you can send an e-mail to: support@silexamerica.com.

Before contacting Technical Support, please refer to the troubleshooting suggestions or the web site in this manual to isolate any problems, and be sure to write down any error messages. Also, make sure that you have the serial number of the product (located on the product label on the card).

Returning Products

If you need to return a product for any reason (failures, incorrect shipments, etc.), follow the steps below:

1. Contact the Technical Support group at (801) 748-1199 to request a Return Material Authorization (RMA) number.
2. Be prepared with the serial number of the unit you are returning. You will be asked for the serial number to verify warranty coverage.

Please record these serial numbers in the space provided below for future reference.

Model #: _____

Server S/N: _____



Safety and Regulatory Notices

Information for United States Users

This equipment has been tested and found to comply within the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and 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 the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

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 radiated output power of the print server is far below the FCC radio frequency exposure limits. Nevertheless, print server shall be used in such a manner that the potential for human contact during normal operation is minimized.

To satisfy RF exposure requirements, this device and its antenna(s) must operate with a separation distance of at least 20 centimeters from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users must be provided with specific operating instructions for satisfying RF exposure compliance.



Declaration of Conformity (FCC)

According to 47CFR, Part 2 and 15 for Class B Personal Computers and Peripherals; and/or CPU Boards and Power Supplies used with Class B Personal Computers:

We: silex technology america, Inc.
Located at: 157 West 7065 South
Salt Lake City, UT 84047, USA

Declare under sole responsibility that the product identified herein, complies with 47CFR Part 2 and 15 of the FCC rules as a Class B digital device FOR HOME OR OFFICE USE. Each product marketed, is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR §2.909. 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.

Trade Name: silex
Product: Ethernet to Wireless Client Adapter (802.11b and 802.11g enabled)
Model No.: SX-600

silex technology america, Inc. hereby declares that the equipment specified above conforms to the above requirements.

Standards used and met in the assessment:

EN55022: 1998 Class B; CFR Title 47, Part 15, Subpart B and Subpart C.

Information for Canadian Users (IC notice)

The term "IC" before the radio certification number only signifies that Industry of Canada technical specifications were met. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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

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 that is installed outdoors is subject to licensing.

This device has been designed to operate with an antenna having a maximum gain of 2 dB. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen than the equivalent isotropically radiated power (EIRP) is not more than the required for



successful communication.



Information for European Users

The server and its built-in 802.11b, and 802.11g wireless technology is in compliance with the Class B Information Technology Equipment requirements and other relevant provisions of European Directive 1999/5/EC. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communications devices. The internal function is a radio device using the 2.4 GHz frequency band (2.400GHz - 2.4845 GHz). It is intended for wireless communication with other 802.11b, and 802.11g-enabled devices in an indoor environment.

The use of 802.11b, and 802.11g wireless technology in certain countries may be restricted. Before using 802.11x products, please confirm with the frequency management authority in the country where you plan to use it. Many countries allow indoor use only. In Italy, general authorization is required if used outside. In France, the use of certain channels is restricted outdoors. In some situations or environments, the use of 802.11x wireless technology might be restricted by the proprietor of the building or responsible representatives of the organization, for example, in airplanes, in hospitals or in any other environment where the risk of interference with other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies to the use in a specific organization or environment, you are encouraged to ask for authorization to use 802.11x wireless technology prior to switching it on. Consult your physician or the manufacturer of personal medical devices (pacemakers, hearing aids, etc.) regarding any restrictions on the use of 802.11x wireless technology.

silex cannot be responsible for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product.

Declaration of Conformity (CE)

Manufacturer: silex technology america, Inc.
157 West 7065 South
Salt Lake City, UT 84047, USA
Telephone: (801) 748-1199

Product: Ethernet to Wireless Client Adapter (802.11b and 802.11g enabled)
Model No.: SX-600

silex technology america, Inc., Inc. hereby declares that the above-referenced product, to which this declaration relates, in is conformity with the provisions of:

Council Directives 1999/5/EC (March 9, 1999), Radio Equipment and Telecommunications Terminal Equipment.

Standards used and met in the assessment:

- EN301 489-1 (V1.5.1, 2004-11)
- EN301 489-17 (V1.2.1, 2002-08)
- EN300 328 (V1.5.1, 2004-08)
- EN60950

The documents required by this Directive are maintained at the corporate headquarters of silex technology america, Inc., 157 West 7065 South, Salt Lake City, UT 84047, USA