

Instant EtherFast® Series

EtherFast® Wireless-Ready USB PrintServer



Use this Guide to install:

Model No.: PPS1UW

User Guide



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Linksys guarantees that every Instant EtherFast® EtherFast® Wireless-Ready USB PrintServer will be free from physical defects in material and workmanship for one year from the date of purchase, when used within the limits set forth in the Specifications section of this User Guide. If the product proves defective during this warranty period, call Linksys Technical Support in order to obtain a Return Authorization number. BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. When returning a product, mark the Return Authorization number clearly on the outside of the package and include a copy of your original proof of purchase. All customers located outside of the United States of America and Canada shall be held responsible for shipping and handling charges.

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FCC STATEMENT

The Instant EtherFast® EtherFast® Wireless-Ready USB PrintServer has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These rules 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

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Chapter 1: Introduction

The Instant EtherFast® Wireless-Ready USB PrintServer

Congratulations on your purchase of the Instant EtherFast® Wireless-Ready USB PrintServer, the fastest and easiest way to network your printers. Now you can share your printing resources without tying up your workstation performance with pending print jobs.

The Instant EtherFast® Wireless-Ready USB PrintServer comes with an easy-to-use software management suite that runs seamlessly with virtually all Windows operating systems. Fully compatible with standard laser, bubble jet, ink jet, and dot matrix printers, the Instant EtherFast® Wireless-Ready USB PrintServer also supports your bi-directional printers.

Features

- Interoperable with IEEE 802.11b (DSSS) 2.4GHz-Compliant Equipment (when used with the Instant Wireless™ Network PC Card)
- Configurable Through Your Networked PC's Web Browser
- Runs with Virtually All USB-Compliant Laser, Ink Jet, Bubble Jet, and Color Printers
- Supports Multiple Print Jobs Simultaneously
- Integrates Through Both Ethernet and Wireless Connections (when used with the Instant Wireless™ Network PC Card)
- Works with Virtually All Major Operating Systems
- Stand-Alone Unit—No Dedicated PrintServer PC Needed
- Easy-to-Use Built-In Remote Management Utility
- 256KB RAM Buffer for Faster Graphics Performance
- 512KB Flash Memory for Future Upgrades

Package Contents



Figure 1-1

- One AC Power Adapter
- One User Guide (on CD-ROM)
- One Quick Installation and Registration Card (not shown)

Chapter 2: Getting to Know the EtherFast® Wireless-Ready USB PrintServer

The Wireless-Ready USB PrintServer's LEDs

LAN *Green.* The LAN LED serves two purposes. If the LED is continuously illuminated, the PrintServer is successfully connected to a device through the LAN port. If the LED is flickering, the PrintServer is actively sending or receiving data to the wired network.

WLAN *Amber.* The WLAN LED will flicker when the PrintServer is actively sending data to or receiving data from the wireless network.

ACT *Green.* The ACT LED will remain continuously lit when a printer is correctly connected to the PrintServer. The LED will flicker when print jobs are being transmitted to the printer, over both the wired and wireless networks.

Err *Red.* The Error LED lights up when there is a problem printing to the indicated printer.



Figure 2-1

The Wireless-Ready USB PrintServer's Ports



Figure 2-2

USB This USB Port connects to your printer.

LAN This port connects to your wired network using a standard Category 5 network cable.

Reset Button Press this button to reset the PrintServer to factory defaults and generate a diagnostic printout, which is discussed below.

Power This port connects the power adapter.

PCMCIA (side panel) This port, located on the side of the PrintServer, is where you will plug in the Instant Wireless™ Network PC Card for wireless functionality.

To reset the factory default settings:

1. Unplug the PrintServer.
2. Press and hold the diagnostic button. While pressing the button, plug in the PrintServer.
3. If you continue pressing the button for 10 seconds, the PrintServer will be reset to factory defaults.

To generate a Diagnostic print out

1. Ensure that both the PrintServer and the printer attached to the Printer port are ON.
2. Press the diagnostic button, and hold it in for 2 seconds.
3. The test page, containing the current settings, will be printed.

PostScript printers are unable to print this page. If you have a PostScript printer on the Printer port, the test page will not be printed.

Chapter 3: Hardware Installation

Overview

Before starting the physical installation, be sure to find the PrintServer's Default Name first. The information may be hard to access after the PrintServer is completely installed in your network and surrounded by wires and computers.



Important: Without setting up the wireless functionality with an Instant Wireless™ Network PC Card, the PrintServer will only function through your 10/100 Ethernet network. After connecting and configuring an Instant Wireless™ Network PC Card, the PrintServer will be able to take advantage of wireless functionality.

Finding the Wireless-Ready USB PrintServer's Default Name

On the bottom of the PrintServer, there is a white bar code sticker with an SC number printed on it (for example, SCA71107). This number is the *PrintServer's Default Name*, which you'll use in the PrintServer driver installation. Since it is written in hexadecimal form, the SC number may include letters as well as numbers. You can use bi-admin software to find the default name. For more information, see Chapter 5: Bi-Admin: PrintServer Management.

Connecting the Wireless-Ready USB PrintServer to Your Network

The PrintServer does not have an ON/OFF power switch. Whenever its power adapter is plugged into a power supply, the PrintServer is powered on. The PrintServer can be powered on before, during, or after your network is powered on.



Important: Only use the power adapter packaged with the PrintServer. Using a different power adapter could damage the PrintServer.

Connecting the PrintServer to Your Network

1. Plug one end of a UTP Category 5 (or better) cable into the PrintServer's LAN Port.
2. Connect the other end of the cable into a networked hub or switch. The distance between the PrintServer and the second device should not exceed 328 feet (100 meters).
3. The **LAN** LED will become active. If the **LAN** LED does not light up, see Appendix A: Troubleshooting for more information.

Connecting a Printer to the PrintServer

1. Connect your printer to the PrintServer's USB port with your USB cable.
2. Power on your printer.

Connecting the Power

1. Plug the power adapter cord into the PrintServer's Power port.
2. Plug the power adapter into the wall.

The PrintServer's hardware installation is now complete, and you are now ready to install the PrintServer's software.

Chapter 4: Windows Driver Setup

Overview

This section installs the PrintServer's software on your Windows 95, 98, Millennium, NT, 2000, or XP computers to give them PrintServer printing abilities. The PrintServer is fully compatible with Windows 95, 98, Millennium, NT 4.0, 2000, and XP environments.

At this point, you must have:

- the PrintServer hardware installed on your network. If not, see Chapter 3: Hardware Installation.
- TCP/IP installed on each of your computers.
- an IP address assigned to each of the computers on your network. If not, see Chapter 9: DHCP Support for the Wireless-Ready PrintServer.
- an IP address assigned to the PrintServer. By default the PrintServer has DHCP enabled. If you need to assign an IP address, go to Chapter 5: Bi-Admin: PrintServer Management.

This setup should be completed on the network administrator's computer before all other users' computers on the network. The PrintServer's IP address will be assigned in this first installation on the network administrator's computer only, which takes three extra steps.

It is assumed that your CD-ROM drive's letter name is designated as "D". If your CD drive is named another letter, replace all instances of "D" with the appropriate letter.

If you need to install the PrintServer's driver on computers without a CD-ROM drive, you can create a setup disk by using a computer with a CD-ROM drive to copy the contents of D:\Driver\Win9xNT onto a floppy disk.

The Autorun Bi-Admin Management Utility Installation

1. Insert the Setup Utility CD. A built-in autorun will begin the installation of the PrintServer's Bi-Admin Management Utility, and display Figure 4-1. Click the product you wish to install, followed by the **Install** tab to continue.



Figure 4-1

2. The installation routine will begin to run and display Figure 4-2. Close any other programs you might have running during this installation procedure, and click the **Next** button to continue or **Cancel** to forgo installation.



Figure 4-2

3. The next screen that appears, shown in Figure 4-3, will request you to choose a destination folder. You can either use the default folder by clicking the **Next** button or choose an alternate folder by clicking the **Browse** button and selecting a folder from the window that pops up. Click the **Back** button to take a step backward in the installation, or **Cancel** to forgo installation.

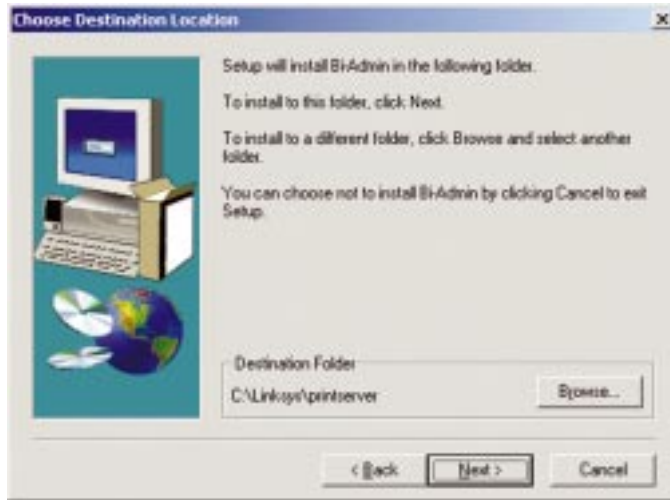


Figure 4-3

4. The Bi-Admin Management Utility will now be installed. When it is complete, you will see Figure 4-4. Click the **OK** button and continue to the next section, **Installing the Wireless-Ready PrintServer's Drivers**.



Figure 4-4

For more information about Bi-Admin Management, go to Chapter 5: Bi-Admin: PrintServer Management.



Note: After you have run the Autorun program and installed the Bi-Admin Management Utility, the Autorun will still run every time you insert the CD. Do NOT install the Bi-Admin Management Utility again. Click the **EXIT** tab to prevent duplicate installation.

Installing the Wireless-Ready USB PrintServer's Drivers



Note: Make sure you have an IP address for the computer and an IP address for the PrintServer. If you need to assign an IP address to the PrintServer, go to Chapter 5: Bi-Admin: PrintServer Management.

1. To begin driver installation, click the **Start** button, and select **Run**. Type **D:\Driver\Win9xnt\setup.exe** (where "D" is the letter of your CD-ROM drive) in the **Open** field that appears. Click the **OK** button.

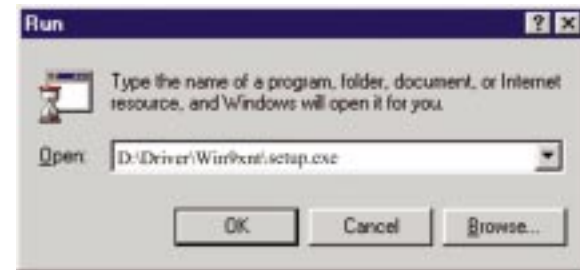


Figure 4-5

2. The Welcome screen appears. Read the text that appears, and click the **Next** button.



Figure 4-6

3. Click **Next** to accept the default Destination Directory, shown in Figure 4-7 (recommended). If you choose to utilize another directory, click the **Browse** button, and choose the appropriate directory. Then, click the **Next** button.



Figure 4-7

4. The following screen, shown in Figure 4-8, will assign a **Program Folder** to the Windows Taskbar. The default Program Folder is the **Linksys PrintServer Driver**. If you would like to use another name for the Program Folder, type it in the **Program Folders** field or select one from the **Existing Folders** field. Click the **Next** button to continue.



Figure 4-8

5. Driver installation is now completed, but the Print Driver still needs to be configured. The PrintServer will not function properly until the Print Driver is configured. Check the box beside **Configure Print Driver Now**, and click the **Finish** button to continue.



Figure 4-9

6. Before setting up and configuring the Printer Port, follow the directions on the screen, as shown in Figure 4-10, and click the **OK** button to continue.

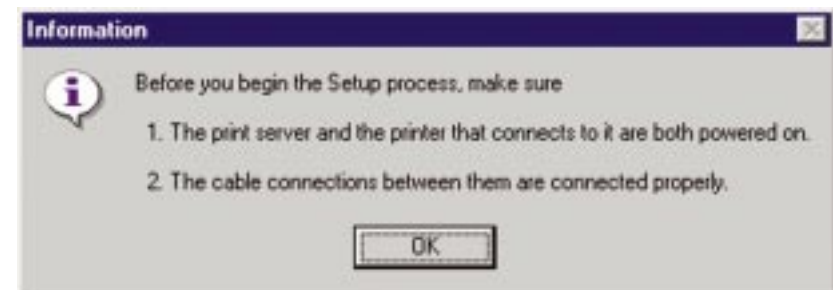


Figure 4-10

7. The Printer Port Setup screen will display the PrintServer and all of the printers with which it communicates. Here, you have the option of installing the printer by highlighting its description and clicking the **Next** button. You can also close this screen by clicking the **Close** button.

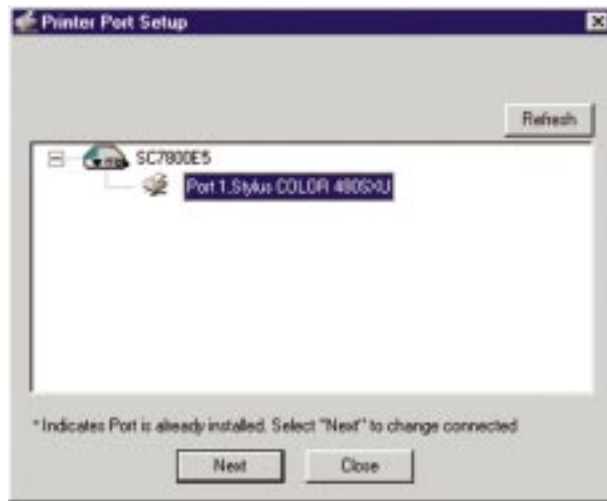


Figure 4-11

8. This will display the Configure Printer Port screen. Any installed printers will be displayed in the **Existing Printers** field. To connect a printer, select the printer from this field, and click the **Connect** button. You can install a printer by clicking the **Add New Printer** button.

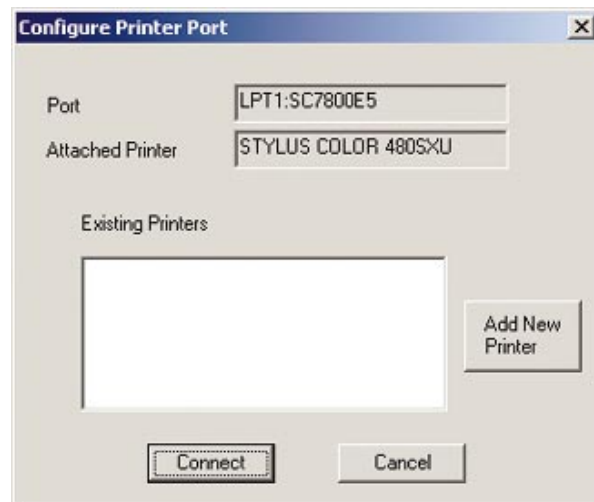


Figure 4-12

9. The Add Printer Wizard screen will come up at this point. Follow the standard procedure for adding printers under Windows. If you have any questions on adding printers, please refer to your printer's documentation.



Figure 4-13

10. After your printer(s) have been added, you will return to the Configure Printer Port screen. Click the **Connect** button to connect the printer(s).

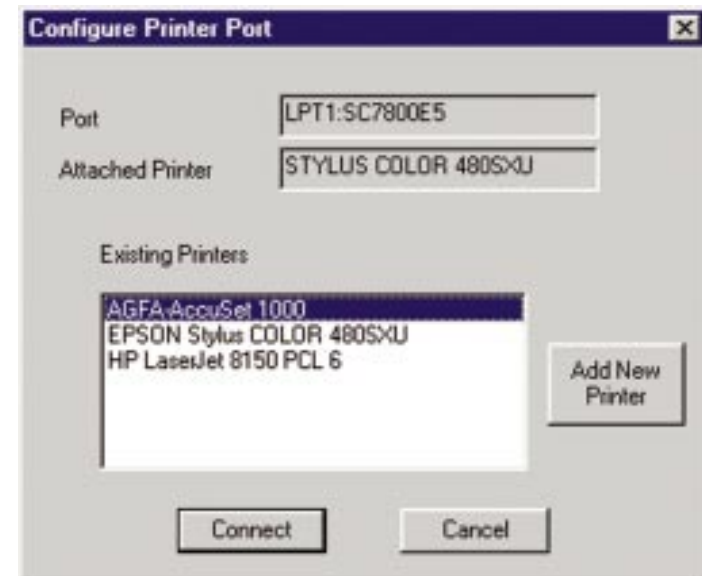


Figure 4-14

11. The Printer Port Setup screen will appear again, displaying the printers which are now communicating with the PrintServer. Click the **Next** button to add any more printers or **Close** to complete the installation and configuration procedure.

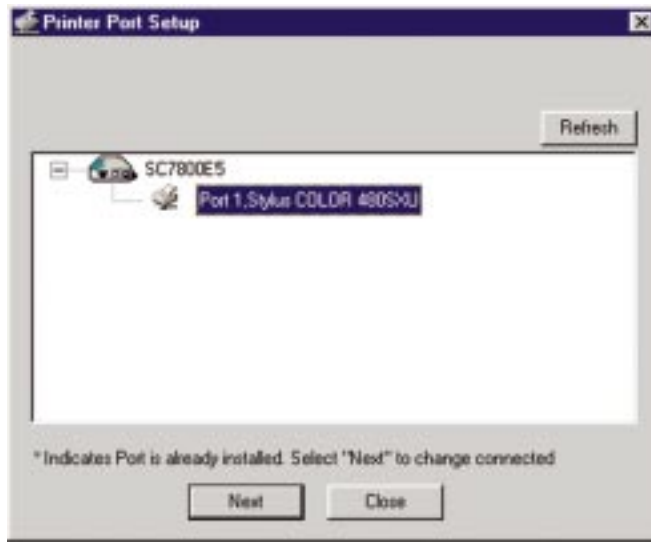


Figure 4-15

Chapter 5: Bi-Admin: PrintServer Management

Overview

The PrintServer is managed by a utility program called Bi-Admin on the Wireless-Ready PrintServer's Setup CD. Fully compatible with Windows 95, 98, Millennium, NT, 2000, and XP, Bi-Admin allows you to change the Wireless-Ready PrintServer's internal settings, check on the unit's status, and perform basic diagnostic tests. Note that the Bi-Admin program must be installed only on the network administrator's computer.

Starting the Bi-Admin Management Utility

1. To start the Bi-Admin program, click on **Start, Programs, Linksys, PrintServer Bi-Admin**, and then **Bi-Admin**. If the Bi-Admin icon has been created, you can just double-click on it instead. You can drag the shortcut icon onto your Desktop for easy access to the Bi-Admin program.
2. When the Bi-Admin program appears, it will ask for the Connected Protocol. Make sure the box next to **TCP/IP** is checked. Click the **OK** button. Then the Bi-Admin program will automatically scan the network for available Wireless-Ready PrintServer hardware. Any hardware found on the network will appear in the Default Name, Device Name, and Printer Port categories on the righthand side of the window, as shown in Figure 5-1. The Default Name is the SC number located on the back or bottom of the Wireless-Ready PrintServer unit, and it cannot be changed.

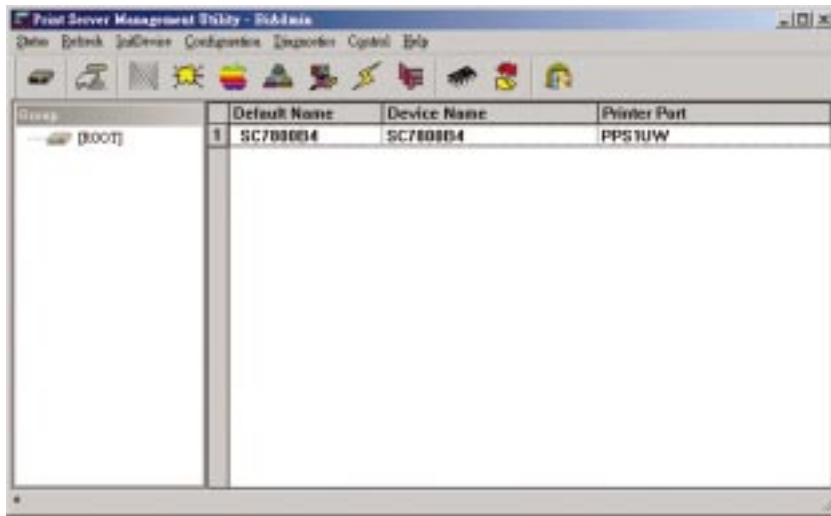


Figure 5-1

- When any change or operation is executed, you will be prompted for a password. Enter the password, making sure to use the same case (e.g., upper or lower) that you used when creating the password. If no password has been created, press the **Enter** key to continue.

Device Name is a nickname that you can give the PrintServer to make it more user-friendly for users on the network. It can be changed with Bi-Admin by clicking on **Configuration** and then **System**.

Printer Port displays the model of the PrintServer that you are using.

Bi-Admin Help Files

The Help files for the Bi-Admin program can be accessed by clicking on **Help** in the Menu bar. These help files offer extensive advice and details about all of the PrintServer's functions and capabilities.



Note: Sometimes the Wireless-Ready PrintServer's **Err** or **ACT** LED may light up or flicker as it accepts your configuration changes; this is normal.

Using Bi-Admin

Obtaining Device Information: The Device Information Icon



Figure 5-2

To access information about the Wireless-Ready PrintServer, either click on it in the Device List window (on the right side of the Bi-Admin window), or highlight the PrintServer and click on the **Device Information** icon, shown in Figure 5-2. You can also highlight the PrintServer and then click on **Status** to select **Backup/Restore Device Information**. The Bi-Admin program displays the Wireless-Ready PrintServer's information in a read-only window, and gives you the following information:

```

Hardware ID: 00F04B8C28
Firmware Version: 6030
Protocol ID: 803E
Default Name: SC7800E5
Server Name: SC7800E5
AppleTalk Info:
  Printer Type:
    SC7800E5:LaserWriter
TCP/IP Info:
  IP Address: 192.168.0.50
  Subnet Mask: 255.255.255.0
  Gateway Address: 192.168.0.1
  Email Server IP Address: 0.0.0.0
  Printing Account Name: N/A
  Redirect Account Name: N/A
SMB Info:
  Domain Name:
WIRELESS Info:
  Station Name: 00-C0-02-78-00-E5
  SSID: Jim
  BSSID: 00:04:5A:0E:1D:08
  Channel No: 1
  Network Type: Infrastructure
  Primary Firmware: p40003c0.hex
  Secondary Firmware: s10008c0.hex
  
```

You can save this information to a text file by clicking **Save to Text** in the **Backup/Restore Device Information** window and giving Bi-Admin the location to which the file should be saved.

Refreshing the Device List: The Refresh Icon

To force Bi-Admin to refresh its list of PrintServers on the network, click **Refresh**, and Bi-Admin will scan the network for available PrintServers to update the Default Names, Device Names, and Printer Port charts.



Figure 5-3

Checking the Status of a Printer Port: Printer Status Icon

The Printer Port icon let you check the name, status, and printing details of each printer attached to the PrintServer. A password may be required to access this information. You may be able to configure some printers' settings within the **Printer Status** window.



Figure 5-4

The PrintServer only shows as many parallel port icons as it has ports. For example, with this model, only two parallel port icons will show. Because Wireless-Ready USB PrintServers do not support serial printing,, the serial port icon will always remain gray and inaccessible.

Logical Port Configuration: Logical Port Configuration Icon

To set or change the PrintServer's logical port settings, highlight the PrintServer to be changed, and click on the **Logical Port** icon (shown in Figure 5-5). The Logical Port Configuration screen will appear. Make any changes to the settings, and click on **Save to Device** when you are finished.



Figure 5-5

Upgrading the Firmware: The Firmware Upgrade Icon

To make sure that the PrintServer is running its most current version of firmware, upgrade the device's ROM chip regularly. To do so, you must be able to access the PrintServer device from your computer. Click on the **Upgrade Firmware** icon and follow the instructions on the screen.



Figure 5-6

Exiting Bi-Admin: The Application Exit Icon

To exit the Bi-Admin program, just click on the **Exit** icon.



Figure 5-7

Configuring Wireless Settings: The Wireless Icon

To configure the wireless settings, just click on the **Wireless** icon. The Wireless Configuration screen will appear. Settings include SSID, Channel Number, Network Type, and WEP encryption options. Make any changes to the settings, and click on **Save to Device** when you are finished.



Figure 5-8

Setting the Wireless-Ready USB PrintServer's IP Address

The PrintServer's IP address can be easily changed at any time. Click once on the **Device Name** of the Wireless-Ready PrintServer whose address you want to change, and then click on **Init Device** and **Set IP Address**. This will bring up the **Set IP Address** window. By default, the PrintServer has DHCP enabled.

If the **Default Name** field is empty, enter the PrintServer's SC number, which you copied from the PrintServer's bar code sticker. Enter the new **IP Address**, **Subnet Mask**, and **Gateway Address** (optional) for the PrintServer, and then click **Set**. The new settings will be written to the PrintServer unit.

Also, if you have a DHCP server, you can enable DHCP and leave all the IP, Gateway, and Subnet values on zero. See Chapter 9: DHCP Support for the Wireless-Ready USB PrintServer for more information.

Changing the Device Name

The PrintServer comes with a default device name printed on the bottom of the unit, it always starts with the prefix SC (for example, SC489392). The SC name is the name of the PrintServer any time users on the network query it. To make the PrintServer more user-friendly, you can give it a *unique* device name to help identify its location. (for example, Marketing).

To change the PrintServer's device name, click once on the **Device Name** of the PrintServer you want to affect, then click on **Configuration**, and then **System**. The **System Configuration** window will appear. To include the PrintServer in a group (for administrative use), use the **Group Name** option, which appears in a drop-down menu.

Enter a new device name for the PrintServer in the **Device Name** field. When you finish, click on **Save**. The new setting will be stored in the PrintServer unit. To verify the change, click on the **Refresh** icon in the Bi-Admin menu bar. Bi-Admin will search the network for available PrintServers and report back with their device names.

Enabling and Disabling Protocols

If you are not using multiple protocols on your network, you may want to disable one or more of the PrintServer's internal protocols; this may help reduce unwanted network traffic.



Important: Always leave at least one protocol enabled on the Wireless-Ready PrintServer. Disabling all protocols could leave you without a way to communicate with the unit.

Unless you require TCP/IP to be disabled, leave it alone.

To disable one of the Wireless-Ready PrintServer's protocols, click once on the **Device Name** of the Wireless-Ready PrintServer you want to change, and then click **Configuration**, followed by **System**. The **System Configuration** window will appear. Each protocol is listed, along with **Enable** and **Disable** buttons. Enable or disable the protocols you want, and then click on **Save to device** to save the changes.

Attaching Bi-Admin to a Remote Linksys PrintServer

The Bi-Admin program can locate Linksys PrintServers on networks other than your own, given your network is running TCP/IP across a WAN or other network-to-network link via a router. To attach Bi-Admin to a remote Linksys PrintServer located on a remote network, click on **Init Device**, and then **Attach**. The **Add Cross Segment PrintServer** window will appear. Enter the IP address of the remote unit, and then click **Set**. The remote Linksys PrintServer will appear in the list of available PrintServers, allowing you to configure it.

Resetting the Wireless-Ready USB PrintServer

If the PrintServer seems locked up for any reason, you can reset it from the Bi-Admin program. To reset a PrintServer, click once on the **Device Name** of the PrintServer you want to reset, followed by **Init Device**, then **Reset Device**. You can also reset it by pressing the **Reset** button on the back of the unit, or by unplugging its power cord.

Restoring Factory Default

If you have made irreversible changes in configuration that have rendered the PrintServer unusable, or if you simply want to start over from scratch, you can set the Wireless-Ready PrintServer back to the default mode so that the device will operate just as it did when you purchased it. Click on **Init Device**, and then **Restore Factory Default**.



Important: Restoring Factory Default will **erase ALL** of the work that you have done on this unit since purchasing it.

Chapter 6: Configuring the EtherFast® Wireless-Ready USB PrintServer Using the Web-Based Utility

Accessing the Web-Based Utility

You can use the PrintServer's built-in Web-based Utility to configure the PrintServer. In order to open the Utility, follow the instructions below.

Open your web browser and type `http://` followed by the

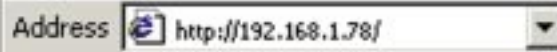


Figure 6-1

PrintServer's IP address in the browser's Address box. Use the Bi-Admin software to find the IP address. Press **Enter**.

The Password Screen will appear next. Leave the **User Name** field blank. The **Password** field will be blank as well. If you want to password protect the PrintServer, enter a password now. If you don't want to be required to enter this password every time you log on, check the box next to **Save this password in your password list**. This will automatically log you in when you return to this page. (If you change your password, the automatic login will not work until you save the new password over the old one.) If you decide to enter a password, do so and click the **OK** button. Otherwise, just click the **OK** button.



Figure 6-2

The Server Page

When the **Configure Server** screen appears, enter the PrintServer name (in Figure 6-3, the example is SCA71107). Then enter your password (if you created one) into the **Password** field, and type it again in the **Verify Password** field to confirm it. Check all boxes that apply to your network next to the **Enable** area

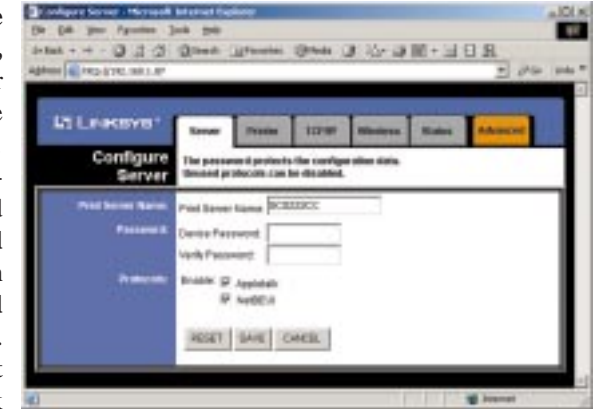


Figure 6-3

under **Protocols**. Generally, **AppleTalk** is only for Macintosh networks. If you are unsure, however, you may check all boxes. This option, while giving you the greatest chance of connection, increases network traffic. Once you've made all your choices, click the **Save** button. Then click the **Reset** button to apply your changes.

The Printer Page

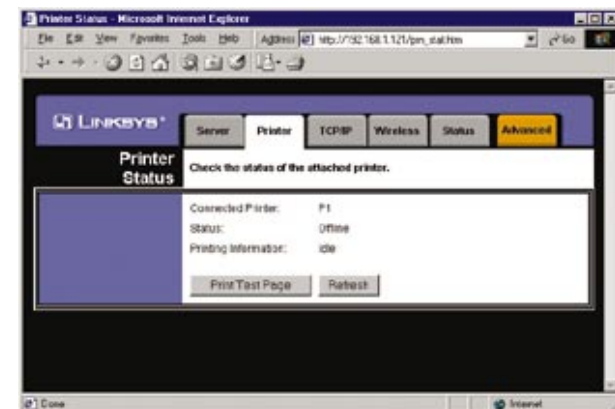


Figure 6-4

Click the **Printer** tab to open the Printer Status screen. On this screen, you will be able to see the status of any printers connected to the PrintServer. You can also test the printers by clicking the **Print Test Page** button corresponding to the printer you want to test.

The TCP/IP Page



Figure 6-5

Click the **TCP/IP** tab to view or change the TCP/IP values of the PrintServer. If you are using DHCP to assign IP addresses, select **DHCP Client**. By default, DHCP is enabled. If you need to assign the PrintServer a **Fixed IP Address** (also known as Static IP Address), select this option, and enter the appropriate values under **Device IP Address**, **Subnet Mask**, and **Gateway IP Address**. To find your router's IP address, consult your router's documentation. The Device IP Address and Subnet Mask are the same as those of any PC connected to the network. If you change the PrintServer's IP address, make sure you that you reconnect to the PrintServer using that new IP address. Otherwise, you will not be communicating with the PrintServer. The Gateway IP Address is not necessary for using the PrintServer.

Under the **Connection** settings, you can set how long you want the PrintServer to delay between attempting connections to the network. You can also specify the number of times that the PrintServer will attempt to make a connection. Enter your chosen values in the fields provided.

If you want to reset the settings for this screen, you can click the **Retrieve Defaults** button to return to the factory default settings.

If you make any mistakes prior to saving, you can simply hit the **Cancel** button to exit the screen without making any changes.

Once you are certain of any changes you have made, click the **Save** button to implement the changes.

The Wireless Page

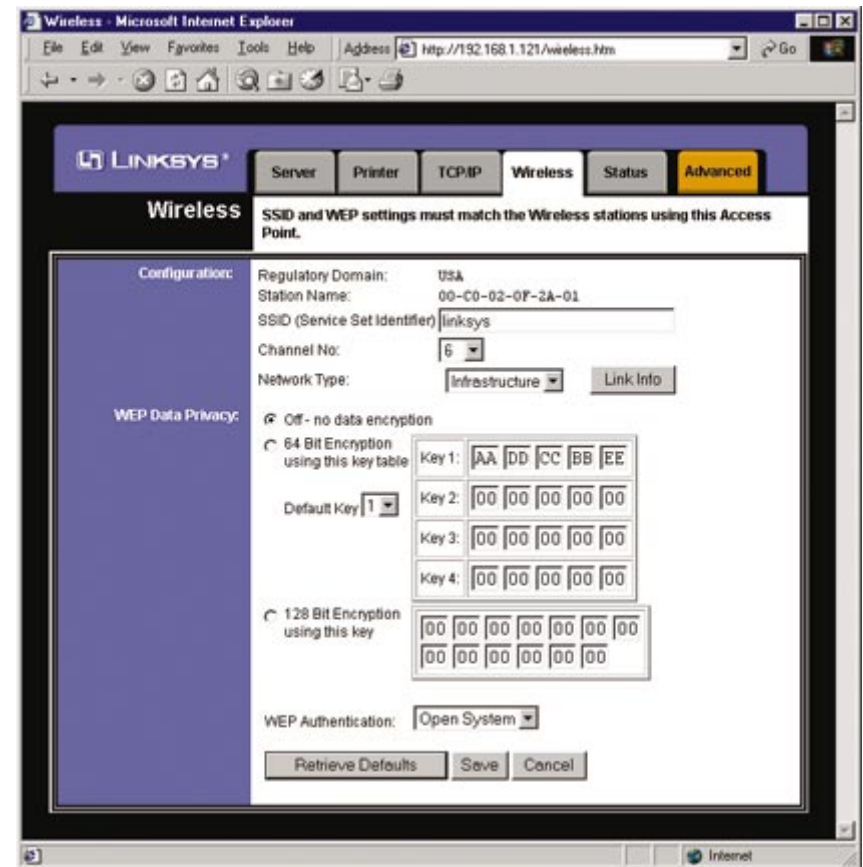


Figure 6-6

Click the **Wireless** tab to allow you to configure information about the PrintServer. The values on this screen are configured through your Instant Wireless™ Network PC Card. See the Card's documentation for instructions on configuration. Clicking the **Refresh** button causes the PrintServer to retrieve this information again.



Important: Without setting up the wireless functionality with an Instant Wireless™ Network PC Card, the PrintServer will only function through your 10/100 Ethernet network. After connecting and configuring an Instant Wireless™ Network PC Card, the PrintServer will be able to take advantage of wireless functionality.

The Status Page

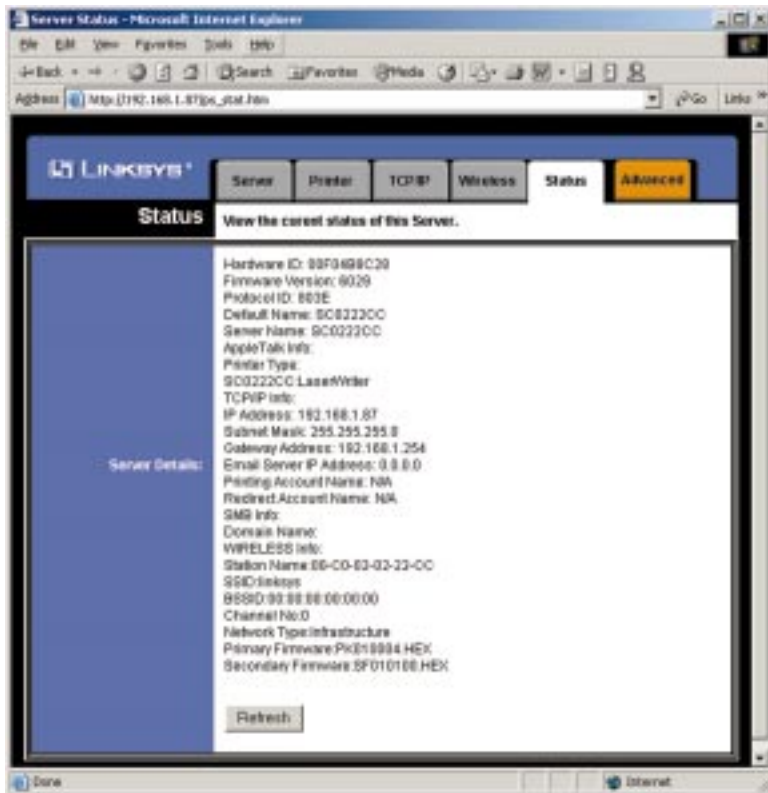


Figure 6-7

Click the **Status** tab to allow you to view information about the PrintServer. No values can be changed on this screen. This screen is for information only. Clicking the **Refresh** button causes the PrintServer to retrieve this information again.

Chapter 7: Advanced Properties

The Advanced Properties section of the Web-based Utility is for users who have a thorough understanding of networks and network settings. Changing these settings can cause interruption of network communication and make the PrintServer cease to function properly. To access the Advanced Properties, click the **Advanced** tab in the Web-based Utility.

The AppleTalk Page



Figure 7-1

AppleTalk is a network communications protocol that allows computers to talk to each other using Ethernet. Typically only Macintoshes use AppleTalk, although other platforms can be made to use it with extra software.

AppleTalk Zones (if available) can be seen in the Chooser, the AppleTalk Control Panel, and the Network Browser. Once you have determined the AppleTalk Zone that you want the PrintServer to be associated with, enter its name in the field next to **AppleTalk zone**.

The Printer Object type can be obtained from the manufacturer of the printer. For each printer connected to the PrintServer, you will choose the Communications Protocol that allows the devices on the network to communicate. Choose either **ASCII** or **Binary** for each printer, according to the recommendation of the printer's manufacturer.

If you make any mistakes prior to saving, you can simply hit the **Cancel** button to exit the screen without making any changes. Once you are certain of any changes you have made, click the **Save** button to implement the changes.



Note: Linksys does not support its products in an Apple networking environment. If you encounter trouble, consult your printer documentation for possible help with settings.

The Internet Printing Page

Click the **Internet Printing** tab to view or change the Internet Printing values of the PrintServer.

Internet Printing allows you to automatically print any e-mails that are sent to a specific e-mail account on your network. This is especially useful for printing information when you are not connected to the network. You can print from anywhere that you can access e-mail.

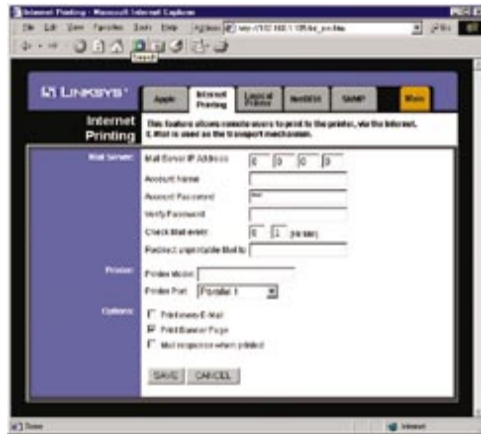


Figure 7-2

The **Mail Server IP Address** is where you will enter the address of your mail server. (This value must be a fixed IP address.) The **Account Name** and **Account Password** must be entered next. Enter the password again in the **Verify Password** field. Then, enter the time interval for the PrintServer to check for e-mail to be printed, in hours and minutes in the **Check Mail every:** field. You may even specify an e-mail address to which mails that cannot be printed are routed; this is useful for both graphic-intensive e-mails and for troubleshooting purposes. Enter this e-mail address in the **Redirect unprintable Mail to:** field.

Under the Printer settings, enter the **Printer Model** in the box provided. You can find this in the Device Manager. Then choose the **Printer Port** from the drop down box.

Then, choose from the Options by placing a check mark next to your preferences. You can **Print every E-Mail**, choose to **Print Banner Pages** (default), or **Mail response when printed**.

If you make any mistakes prior to saving, you can simply hit the **Cancel** button to exit the screen without making any changes. Once you are certain of any changes you have made, click the **Save** button to implement the changes.



Note: Linksys does not provide any technical support for problems with e-mail printing.

The Logical Printers Page

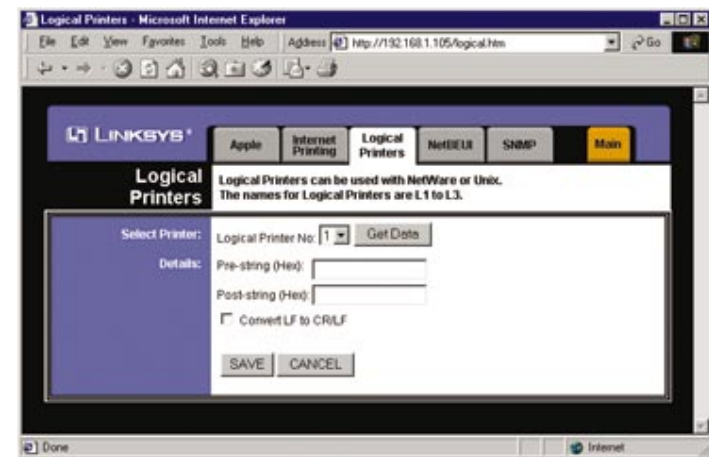


Figure 7-3

Click the **Logical Printers** tab to view or change the logical printer settings of the PrintServer.

For each Logical Printer, the following fields are available:

Logical Printer(Port) - Select the Logical Printer Port you wish to configure. (L1 to L8). Click the **Get Data** button to update the display with the current data for the selected logical printer.

Port - Select the Printer Port which the Logical printer will use.

Pre-string - The printer control string (in hex) to be sent to the printer before each print job. This string cannot exceed 30 characters.

Post String - The printer control string (in hex) to be sent to the printer after each print job. This string cannot exceed 30 characters.

Convert LF to CR+LF - If checked, LF (line feed) characters are changed to CR+LF (carriage return + line feed).

If you make any mistakes, you can simply hit the **Cancel** button to exit the screen without making any changes. Once you are certain of any changes you have made, click the **Save** button to implement the changes.



Note: Linksys does not provide any technical support for logical printers configuration.

The NetBEUI Page



Figure 7-4



Note: Linksys does not provide technical support for the NetBEUI protocol.

Click the **NetBEUI** tab to view or change the NetBEUI connection settings of the PrintServer.

Enter the name of the domain that you want the PrintServer associated with in the **Domain Name** field. If you are unsure of the Domain Name, you can find it out by looking on any computer already on the network. In Windows 95, 98 and NT, right click **Network Neighborhood** and select **Properties**. Under the Identification tab, there will be listed that computer's name, and the Domain to which it is connected. For Windows Millennium and 2000, right click **My Network Places**. In Windows Millennium, choose **Properties** from the menu that appears. In Windows 2000 or XP, choose **Properties** from the menu that appears. Then, right click **Local Area Connection** and choose **Properties**. The Domain name will appear. If you want the PrintServer to be connected to that same Domain, enter that Domain name here. If no Domain name exists there, you will use the Workgroup name from that window.

Under Options, you can also specify the **Response Time** that you prefer for the PrintServer. This is the amount of time (measured in seconds) that the PrintServer will wait for a response from the network before “timing out.”

You also have the option to **Abort Print Job if Error**. Selecting **Yes** here will terminate the printing if there is an error of any kind. If you select **No**, print jobs that have errors will be sent to the printer, but might not print properly.

If you make any mistakes prior to saving, you can simply hit the **Cancel** button, to exit the screen without making any changes. Once you are certain of any changes you have made, click the **Save** button to implement the changes.

The SNMP Page

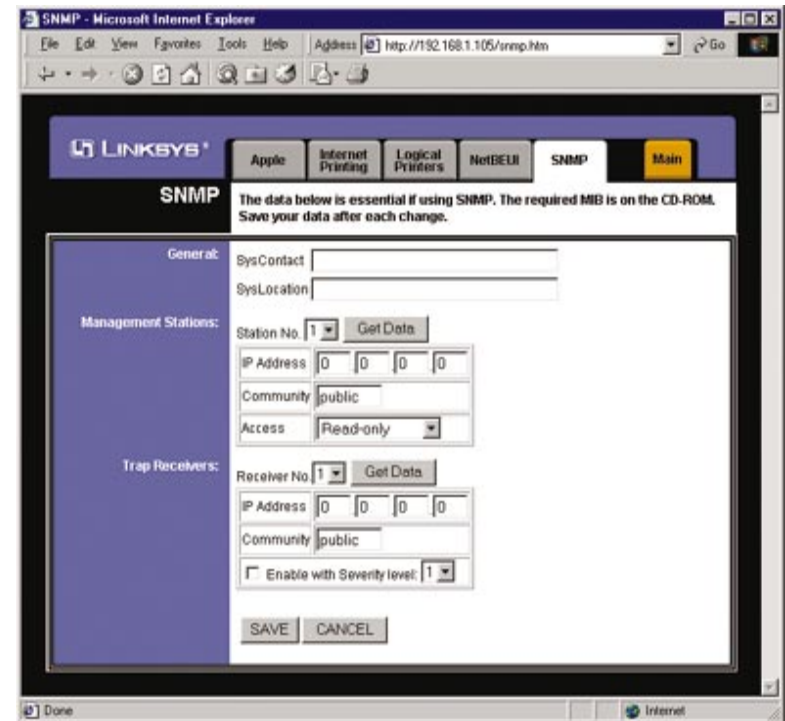


Figure 7-5



Note: Linksys does not provide technical support for SNMP management.

Click the **SNMP** tab to view or change the SNMP settings of the Wireless-Ready PrintServer.

The PrintServer supports SNMP (Simple Network Management Protocol). This allows network supervisors to monitor and control the PrintServer using network management platforms such as HP OpenView, IBM SystemView, etc.

The appropriate MIB file must be imported into your SNMP management program using the Import-Compile command. Check your management program for details on this procedure. The MIB file is provided in the Mib folder on the CD-ROM. The name of the file is **Mib1p.mib**.

General

SysContact Text Field - Name of the contact person.

SysLocation Text Field - Location of the contact person.

Management Stations

Station No. Select the Management station (1..4), and click the **Get Data** button to update the display for the selected item.

IP Address Enter the IP Address of the management station that has the SNMP program installed.

Community This is a text field. Enter the name of the community, normally “public” or “private” .

Access Select the desired level of access.

Trap Receivers

Receiver No. Select the Trap Receiver number (1..4), and click the **Get Data** button to update the display for the selected item.

IP Address Enter the IP Address of the Trap Receiver that will be sent the Trap message.

Community This is a text field. Enter the name of the community, normally “public” or “private”.

Enable with Severity Level Check to enable, and select the severity level. Currently, all traps are level one.

If you make any mistakes, you can simply hit the **Cancel** button to exit the screen without making any changes. Once you are certain of any changes you have made, click the **Save** button to implement the changes.

Chapter 8: Internet Printing Protocol (IPP)

IPP (Internet Printing Protocol) is a new standards-based system to allow remote printing from a PC to any accessible printer. Normally, the printer will be attached to a computer or other device that functions as an IPP Server. For client PCs, it is necessary to install a compatible IPP Client program. The Client must also know the IP Address or URL of the IPP Server.

The PrintServer contains the necessary firmware to act as an IPP Server. No additional configuration is necessary. However, the following requirements must be met:

- The PrintServer must have a valid IP Address. For printing via the Internet, the PrintServer's IP Address must be external (allocated by your ISP), rather than an IP Address on your local LAN.
- Any Router, Gateway, or Firewall linking your LAN to the Internet must NOT block the IPP protocol. (IPP Protocol uses Port Services 631/TCP.)
- You must advise clients of the correct URL or IP Address of the IPP Server. To use a URL rather than an IP Address, you need to register the domain name for the URL.
- Unless clients are using Windows 2000, you must provide your clients with the supplied IPP Client software. If it is not convenient to provide the CD-ROM, supply the IPP CLIENT.EXE file, located in the IPP folder.



Note: Linksys does not provide technical support for Internet printing.

Windows IPP Client Setup

Installing using IPP CLIENT.EXE

1. Run this program, located at **d:\driver\ipp\ipp client.exe**, to unzip the included files.
2. The IPP Setup program will then run.
3. Follow the prompts to complete the installation.

IPP Client Configuration for Windows 95, 98, Millennium, NT 4.0, 2000, and XP

1. Run the **Add IPP Port** program entry created by the installation. A screen like the one shown in Figure 8-1 will be displayed.

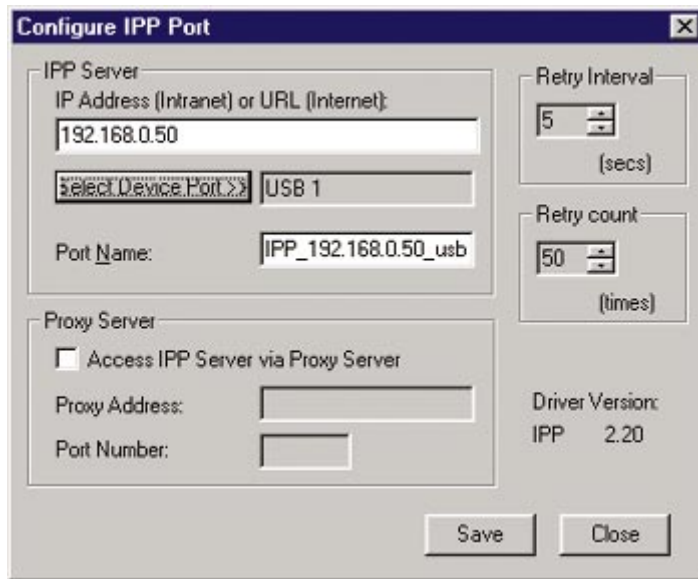


Figure 8-1

2. If Internet access from your location is via a Proxy Server, check **Access IPP Server via Proxy Server**, and enter details of your Proxy Server. (This will be the same as your Browser configuration.)
3. Enter the **IP Address** or **URL** of the IPP Server.
4. Click **Select Device Port** to view the available ports on the IPP Server, and select the appropriate port. A connection to the IPP Server will be established at this time.



Note: Verify that **USB 1** appears in the field beside the **Select Device Port** button. If it does not, click the **Select Device Port** button, and select **USB 1**.

5. Click **Save** to create the IPP port on your system. You will see a message confirming that the port has been created and then Figure 8-2.

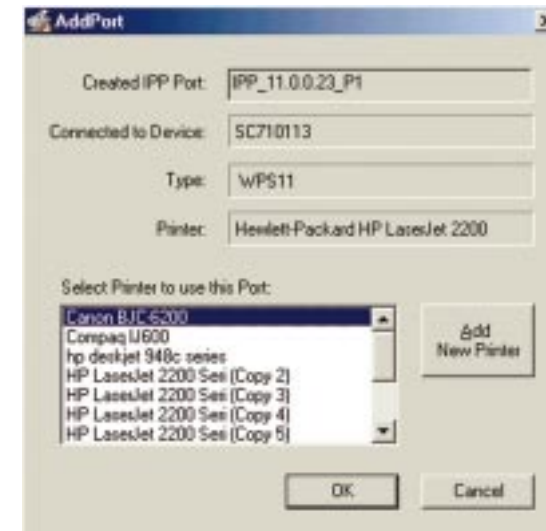


Figure 8-2

6. Perform one of these steps. Select an existing printer to use the new port, and click **OK**.

OR

Click the **Add New Printer** button to create a new printer to use the IPP port. This will start the Add Printer Wizard. Follow the prompts to complete the process. Make sure that the new printer uses the IPP port.

Installation is now complete.

- To create additional IPP ports, repeat the entire procedure.
- The Proxy Server and other options are set individually for each IPP Port.

Changing the IPP Port Settings

After the IPP port is created, you can reach the Configure IPP Port screen by performing these steps:

1. Open the **Printers** folder (**Start => Settings => Printers**).
2. Right-click the **IPP Printer** and select **Properties**.
3. Click the **Port Settings** or **Configure Port** button (Details or Port tab, depending on your version of Windows). The Configure IPP Port screen (shown in Figure 8-3) will appear.

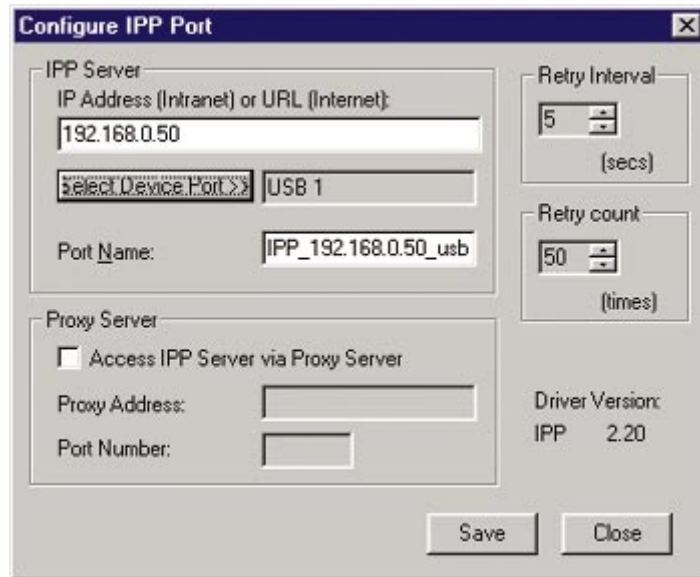


Figure 8-3



Note: Verify that **USB 1** appears in the field beside the **Select Device Port** button. If it does not, click the **Select Device Port** button, and select **USB 1**.

There are two settings—Retry Interval and Retry Count—that can be adjusted if you have problems connecting to the IPP Server.

- **Retry Interval** sets the time interval (in seconds) between connection attempts. Increase this number if you have a poor connection, or the remote server is very busy.
- **Retry Count** sets how many connection attempts will be made. Increase this number if you have a poor connection, or the remote server is very busy.

IPP Client Setup for Windows 2000 and XP

Windows 2000 and XP have their own IPP Client, and there is no need to install the supplied IPP Client Software. To use this IPP Client with the PrintServer, follow this procedure:

1. Start the Add Printer Wizard.
2. Select **Network Printer** and click **Next** to see the Locate your Printer screen, as shown in Figure 8-4.



Figure 8-4

3. Select **Connect to a printer on the Internet or on your intranet**, and enter the URL of the IPP Server as follows, where **ip_address** represents the IP Address of the IPP Server, and **631** represents the port number.

Port 1 ip_address:631/ipp/P1



Note: These entries are case sensitive. They must be entered as shown, with “ipp” in lowercase, and P1 in UPPERCASE.

4. If the connection can be established, and the printer on that port is online, the dialog box shown in Figure 8-5 will be displayed. This screen notifies you that the printer driver is not installed. Click the **OK** button.

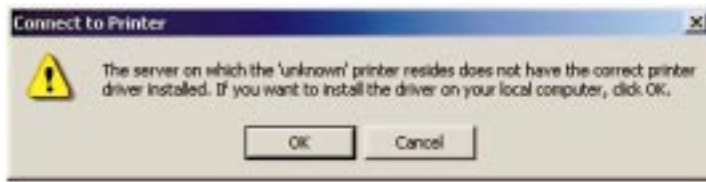


Figure 8-5

5. Select the printer manufacturer and model to match the printer connected to the port on the IPP Server.
6. Click **Next** and complete the Wizard.

The IPP printer is now ready for use.

Using IPP Printers

The IPP Printer can be selected and used like any other Windows printer. If the IPP Server is not on your network, your Internet connection needs to be active.

If you wish to check the availability of the remote IPP Server, you can use the Query IPP Printer program installed with Add IPP Port.

An IPP Server may be unavailable for any of the following reasons:

- It is powered off.
- A printer problem has caused the IPP Server to cease responding, and a restart (reboot) is required.
- The Server's IP Address has changed.
- The Internet connection for the IPP Server is down.
- Network congestion causes the connection attempt to time out.

If using the supplied IPP Client software, there are two settings—Retry Interval and Retry Count—that can be adjusted if you have problems connecting to the IPP Server.

See the previous section, **Changing the IPP Port Settings**, for details.

Chapter 9: DHCP Support for the EtherFast® Wireless-Ready USB PrintServer

To use DHCP, which assigns non-static IP addresses, you must have a DHCP server and DHCP management software. Otherwise, the PrintServer's IP address will remain unknown, and connecting to it will be impossible. In this case, ignore DHCP and configure the PrintServer for a static IP address as described in previous sections.

To enable DHCP, you must run the Bi-Admin program. By default, DHCP is enabled. When Bi-Admin loads, it scans the network for PrintServers and displays a list of PrintServers. Highlight the PrintServer to be set up, and enter the PrintServer's password if one has been assigned. Then click **OK**.

After entering the program and selecting the PrintServer to be configured, click on **Configuration** in the menu and choose **TCP/IP** from the drop-down field. The **TCP/IP Configuration** window will appear. Select **Enable** to enable DHCP, and then click **Save to Device**. You can exit the Bi-Admin program. To install the PrintServer driver, see Chapter 4: Windows Driver Setup.

Appendix A: Troubleshooting

If the PrintServer is not working correctly, follow the advice in this chapter. If you have trouble printing, see Chapter 3 first, and then go to Chapter 5. If this Troubleshooting section does not resolve your problem, please see Appendix H to contact Technical Support.

Hardware Issues

1. All the LEDs on the front of the PrintServer are off.
 - Check the power supply and the power connection.
2. The PrintServer's Status LED stays lit continuously.
 - Reset the Wireless-Ready PrintServer by unplugging the power supply and plugging it back in or pressing the Reset button on the back of the PrintServer.
3. I am using DHCP, and the PrintServer gets an IP Address conflict involving the PrintServer.
 - If the PrintServer is left on when the DHCP server is turned off, the PrintServer will retain its IP Address without informing the DHCP server. Reset the PrintServer so it will obtain a new IP Address. This problem also arises if you assigned a static IP Address within the range used by the DHCP server. If so, use another address NOT within the range used by the DHCP server.
4. The PrintServer's LAN LED is not lighting up.
 - Check your cabling and make sure that the Link LED on your hub or switch is lit up.

General Printing Issues

1. A printer connected to the PrintServer cannot print or prints garbage.
 - Check the following:
 1. Cable connection between the PrintServer and printer.
 2. The printer driver in the application program or Windows matches the printer.
 3. Cabling distance is too long if it exceeds 10 feet.
2. The Configuration button on the Printer Status screen in Bi-Admin is grayed out, even though my printer is bi-directional.
 - The button is unavailable until the printer has finished its print jobs and sits idle.

Appendix B: About Bi-Directional Printing

Normal printing only sends print signals from a PC to a printer. **Bi-directional printing**, also called bitronic printing, refers to a printer's ability to do just the opposite—talk back to a PC to notify it of a print job status, paper jams, etc. This two-way communication technology can be found in HP, IBM, Panasonic, and other laser or color printers where close contact between the PC and printer is key. In color printing, for example, the printer “informs” the PC of its constant status in order to mix color inks correctly for optimal quality output.

Bi-directional communication, communication from a printer to a PC, is normally handled by a combination of the printer hardware and special software on your computer. Bi-directional printers generally have highly advanced parallel interfaces. These printers often require special parallel ports in order to take full advantage of their features.

Using a bi-directional printer on a network poses unique challenges. Unlike a direct PC-to-printer connection in which a bi-directional printer can easily send its signals back to the host PC through the computer's **parallel port** (which is normally located only a few feet away from the printer), a networked printer faces the problem of having to route messages bound for a particular PC through a large array of hubs, switches, file servers, and computers. Unfortunately, most printers are not equipped to handle the complexities of printer-to-PC communication across a network. That does not mean that they can't be used on a network, however.

Linksys designed the PrintServers to function with both regular as well as bi-directional printers. Standard print servers cannot work with bi-directional printers, but the PrintServer features a custom design to support both parallel as well as bi-directional parallel interfaces. However, the PrintServer cannot pass messages from the printer back to the printing PC—this limitation is simply an industry standard, and not one of the PrintServer itself.

However, the PrintServer can check any printer's online and printing status on the network using the Bi-Admin management utility software packaged with the PrintServer. The status-checking feature built into the management software does not require a bi-directional printer to function. If your printer came with special bi-directional software allowing you to monitor printer status, do

not use it with the PrintServer—the software is most likely not network-capable. For best results, turn off the printer's bi-directional function either by (1) removing any bi-directional printing software from your network computers, and/or (2) turning off the printer's bi-directional print feature inside of the printer's on-board menus (if it has menus). Your printer's user guide should be able to provide specific instructions for doing this.

Appendix C: About the Wireless-Ready USB PrintServer's Software

The PrintServer is fully compatible with Windows 95, 98, Millennium, NT, 2000, and XP.

When used with Windows, the PrintServer uses the TCP/IP protocol for network communication. Each computer on your network that needs PrintServer access will need to have the TCP/IP protocol installed. TCP/IP installation files are included on your original Windows CD-ROM.

Please be aware that although Linksys provides instructions for the setup of the TCP/IP protocol, these instructions are provided for reference only. Linksys will not provide technical support for the configuration and troubleshooting of the TCP/IP protocol. For full instructions on using TCP/IP, consult your operating system's user guide.



Note: A Default Gateway is not required.

Appendix D: Glossary

AppleTalk - An Apple Computer networking system that support Apple's proprietary local talk.

Bit - A binary digit. The value—0 or 1—used in the binary numbering system. Also, the smallest form of data.

Boot - To cause the computer to start executing instructions. Personal computers contain built-in instructions in a ROM chip that are automatically executed on startup. These instructions search for the operating system, load it and pass control to it.

Browser - A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web or PC. The word "browser" seems to have originated prior to the Web as a generic term for user interfaces that let you browse text files online.

BSS (Basic Service Set) - A group of Instant Wireless Network PC Card users and an Access Point.

Buffer - A buffer is a shared or assigned memory area used by hardware devices or program processes that operate at different speeds or with different sets of priorities. The buffer allows each device or process to operate without being held up by the other. In order for a buffer to be effective, the size of the buffer and the algorithms for moving data into and out of the buffer need to be considered by the buffer designer. Like a cache, a buffer is a "midpoint holding place" but exists not so much to accelerate the speed of an activity as to support the coordination of separate activities.

Default Gateway - The routing device used to forward all traffic that is not addressed to a station within the local subnet.

DHCP (Dynamic Host Configuration Protocol) - A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and,

if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a “lease” or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

Domain - A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves performance and security.

Driver - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific card, and is installed during the initial installation of a network-compatible client or server operating system.

DSSS (Direct-Sequence Spread-Spectrum) - DSSS generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

Firewall - A firewall is a set of related programs, located at a network gateway server, that protects the resources of a network from users from other networks. (The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources to which its own users have access.

Basically, a firewall, working closely with a router, examines each network packet to determine whether to forward it toward its destination.

Firmware - Code that is written onto read-only memory (ROM) or programmable read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

Full Duplex - The ability of a device or line to transmit data simultaneously in both directions.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

Hardware - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the “box” and the electronic circuitry and components of a computer from the program you put in it to make it do things. The program came to be known as the software.

HTTP (HyperText Transport Protocol) - The communications protocol used to connect to servers on the World Wide Web. Its primary function is to establish a connection with a Web server and transmit HTML pages to the client browser.

Hub - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

IEEE (The Institute of Electrical and Electronics Engineers) - The IEEE describes itself as “the world’s largest technical professional society, promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members.”

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and several large societies in special areas, such as the IEEE Computer Society.

Infrastructure Network - An infrastructure network is a group of computers or other devices, each with a wireless adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.

IP Address - In the most widely installed level of the Internet Protocol (Internet Protocol) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

IPX (Internetwork Packet EXchange) - A NetWare communications protocol used to route messages from one node to another. IPX packets include network addresses and can be routed from one network to another.

ISP - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

Mbps (MegaBits Per Second) - One million bits per second; unit of measurement for data transmission.

MIB (Management Information Base) - A set of database objects. This set contains information about a specific device for utilizing SNMP.

NetBEUI (NetBIOS Extended User Interface) - The transport layer for NetBIOS. NetBIOS and NetBEUI were originally part of a single protocol suite that was later separated. NetBIOS sessions can be transported over NetBEUI, TCP/IP and SPX/IPX protocols.

NetBIOS - The native networking protocol in DOS and Windows networks. Although originally combined with its transport layer protocol (NetBEUI), NetBIOS today provides a programming interface for applications at the session layer (layer 5). NetBIOS can ride over NetBEUI, its native transport, which is not routable, or over TCP/IP and IPX/SPX, which are routable protocols.

NetBIOS computers are identified by a unique 15-character name, and Windows machines (NetBIOS machines) periodically broadcast their names over the network so that Network Neighborhood can catalog them. For TCP/IP networks, NetBIOS names are turned into IP addresses via manual configuration in an LMHOSTS file or a WINS server.

There are two NetBIOS modes. The Datagram mode is the fastest mode, but does not guarantee delivery. It uses a self-contained packet with send and receive name, usually limited to 512 bytes. If the recipient device is not listening for messages, the datagram is lost. The Session mode establishes a connection until broken. It guarantees delivery of messages up to 64KB long.

Network - A system that transmits any combination of voice, video and/or data between users.

Node - A network junction or connection point, typically a computer or workstation.

Packet - A unit of data routed between an origin and a destination in a network.

PC Card - A credit-card sized removable module that contains memory, I/O, or a hard disk.

PCMCIA - The PCMCIA (Personal Computer Memory Card International Association) is an industry group organized in 1989 to promote standards for a credit card-size memory or I/O device that would fit into a personal computer, usually a notebook or laptop computer.

Port - A pathway into and out of the computer or a network device such as a switch or router. For example, the serial and parallel ports on a personal com-

puter are external sockets for plugging in communications lines, modems and printers.

PrintServer - A hardware device that enables a printer to be located anywhere in the network.

RJ-45 (Registered Jack-45) - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

Router - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have much lower throughput rates than bridges.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

SNMP (Simple Network Management Protocol) - A widely used network monitoring and control protocol. Data is passed from SNMP agents, which are hardware and/or software processes reporting activity in each network device (hub, router, bridge, etc.) to the workstation console used to oversee the network. The agents return information contained in a MIB (Management Information Base), which is a data structure that defines what is obtainable from the device and what can be controlled (turned off, on, etc.).

Software - Instructions for the computer. A series of instructions that performs a particular task is called a “program.” The two major categories of software are “system software” and “application software.” System software is made up of control programs such as the operating system and database management system (DBMS). Application software is any program that processes data for the user.

A common misconception is that software is data. It is not. Software tells the hardware how to process the data.

Spread Spectrum - Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast.

If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

Static IP Address - A permanent IP address that is assigned to a node in an IP or a TCP/IP network.

Subnet Mask - The method used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

Switch - 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP (Transmission Control Protocol) - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. TCP is known as a “connection oriented” protocol due to requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet resulting in transmission control.

TCP/IP (Transmission Control Protocol/Internet Protocol) - The basic communication language or set of protocols for communications over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols and not only TCP and IP.

Throughput - The amount of data moved successfully from one place to another in a given time period.

Upgrade - To replace existing software or firmware with a newer version.

URL (Uniform Resource Locator) - The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to access Web pages, and URLs are embedded within the pages themselves to provide the hypertext links to other pages.

USB (Universal Serial Bus) - A “plug and play” interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones,

scanners, and printers). With USB, a new device can be added to your computer without having to add an adapter card or even having to turn the computer off. The USB peripheral bus standard was developed by Compaq, IBM, DEC, Intel, Microsoft, NEC, and Northern Telecom and the technology is available without charge for all computer and device vendors.

USB supports a data speed of 12 megabit per second. This speed will accommodate a wide range of devices, including MPEG video devices, data gloves, and digitizers. It is anticipated that USB will easily accommodate plug-in telephones that use Integrated Services Digital Network and digital private branch exchange.

Since October, 1996, the Windows operating systems have been equipped with USB driver or special software designed to work with specific I/O device types. USB is integrated into most Windows operating systems. Today, most new computers and peripheral devices are equipped with USB.

A different “plug-and-play” standard, FireWire/IEEE 1394, is designed to support much higher data rates and devices such as video camcorders and digital video disk (digital versatile disk) players. Both standards are expected to exist together, serving different device types.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

WAN (Wide Area Network)- A communications network that covers a relatively large geographic area, consisting of two or more LANs. Broadband communication over the WAN is often through public networks such as the telephone (DSL) or cable systems, or through leased lines or satellites. In its most basic definition, the Internet could be considered a WAN.

Workgroup - Two or more individuals that share files and databases.

Appendix E: Specifications

Standards:	IEEE 802.3 and 802.3u, USB 1.0 and 1.1, PCMCIA 2.0
Protocol:	TCP/IP, NetBEUI, AppleTalk
Ports:	One 10/100 RJ-45 Port, One USB Port, One Power Port
PCMCIA:	Type II Slot (for use with WPC11 only)
Transfer Speed:	
LAN:	10Mbps or 100Mbps (Half Duplex) 20Mbps or 200Mbps (Full Duplex)
Wireless:	Up to 11Mbps
Memory:	512KB Flash Memory
Button:	Reset
Cabling Type:	Network: UTP Category 5 or better Printer: Standard USB Cable
LEDs:	LAN, WLAN, ACT, Err

Appendix F: Environmental

Dimensions:	4.76" x 3.74" x 1.18" (121 mm x 95 mm x 30 mm)
Unit Weight:	5.6 oz. (0.16 kg)
Power:	External, 12V DC, 800 mA
Operating Temp:	0°C to 40°C (32°F to 104°F)
Storage Temp:	-20°C to 70°C (-4°F to 158°F)
Operating Humidity:	10% to 85%, Non-Condensing
Storage Humidity:	5% to 90%, Non-Condensing

Appendix G: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL LINKSYS'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

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Appendix H: Contact Information

For help with the installation or operation of this product, contact Linksys Technical Support at one of the phone numbers or Internet addresses below.

Sales Information	800-546-5797 (LINKSYS)
Technical Support	866-242-8558
RMA Issues	949-271-5461
Fax	949-265-6655
Email	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

Extended Technical Support

The PrintServer supports the NetBEUI and Appletalk protocols, Internet Mail Printing, Unix support, Internet Printing, and much more. However, Linksys is neither responsible nor liable for supporting these optional features, and will not provide phone or online support for these features.

In the **Not_supp** directory on the PrintServer's Setup Utility CD, you'll find software, drivers and informative how-to guides covering the installation of the unsupported functions. The User Guides provided in the **Not_supp** directory (PDF or DOC) have all of the information you need to set up and use these functions.



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