Aria™ extreme 54 Mbps Wireless LAN CardBus Card or PCI Card

Windows User's Manual

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About This Manual

The following terms and abbreviations are used interchangeably:

- Access Point – AP
- Peer-to-Peer (Computer-to-Computer) – Ad-Hoc
- Wireless LAN – WLAN
- Ethernet network – LAN – network

This User's Manual contains information on how to install and configure your Aria extreme CardBus card or Aria extreme PCI card. From this point forward, you will be guided through the correct configuration steps to get your device up and running.

802.11g Compliance Notice

This wireless device supports the final draft 802.11g specification, which has been ratified by the IEEE.

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Chapter 1—Introduction

The Aria extreme is a cross-platform, high-speed 802.11g wireless LAN adapter (CardBus or PCI) card. It enables your computer to connect to a wireless network and access the Internet, and share resources, such as files and networked printers, without being bound to network wires.

Operating in 2.4GHz Direct Sequence Spread Spectrum (DSSS) radio transmission range, the Aria extreme transfers data at speeds up to 54Mbps when communicating with other 802.11g devices, but is also backward compatible with 802.11b (Wi-Fi) devices. Both Ad-Hoc and Infrastructure modes are supported, and for network security concerns, the 64/128-bits Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any 802.11b/g network.

Wireless LAN Basics

This section contains some basic information to help you better understand how the Aria extreme works with other devices to create and operate within a wireless network.

Local Area Network (LAN)

Simply put, a LAN is a network that exists in a relatively limited area. A network consists of two or more computers connected together, sharing files and peripheral devices such as printers.

The Aria extreme enables your computer to interact with other computers without connecting cables normally associated with networks. This makes it possible for you to move your computer around while staying connected to your network.

There are two ways to use the Aria extreme. One way is to connect directly to one or more Wireless LAN Card-equipped computers, forming an Ad-Hoc wireless network. The second way is to connect to an Access Point, which gives you access to an existing wired LAN, forming an Infrastructure wireless network.

Ad-Hoc Mode

The Ad-Hoc Group offers peer-to-peer (computer to computer) connections between workstations, enabling communication between computers within range that have a Wireless LAN Card installed. A wireless Ad-Hoc network can also access a wired LAN's TCP/IP services (such as e-mail and the Internet) by using a TCP/IP software router on an Ethernet equipped Macintosh PowerBook or Windows notebook computer.

Note: Using the Aria extreme card in Ad-Hoc mode, your target peer can be a 802.11b or 802.11g- compatible wireless station, but not an 802.11a wireless station, since 802.11a devices are not compatible with 802.11b/g devices.
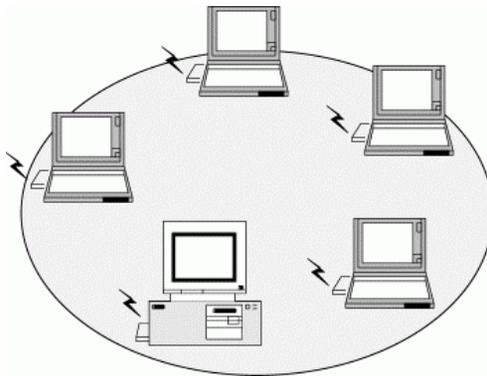
Figure 1-1 Ad-Hoc Mode

Infrastructure Mode

The Infrastructure network uses an Access Point (AP) or several APs as a gateway, linking the wireless network to a wired LAN. As a result, portable and desktop computers on your wireless network have access to all of the features of your wired LAN, including e-mail, Internet access, networked printers and file servers.

Note: Using the Aria extreme in Infrastructure mode, you can connect to 802.11b and 802.11g compatible Access Points, but not to an 802.11a AP, since 802.11a devices are not compatible with 802.11b/g devices.
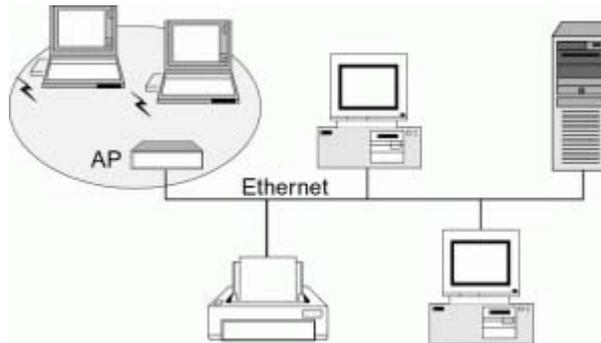
Figure 1-2 Infrastructure Mode

Roaming (Aria extreme CardBus)

Multiple Access Points can be installed to extend the wireless service coverage area for seamless wireless access. Within an extended service area, all Access Points and wireless clients must use the same Service Set Identity (SSID). When roaming among different Access Points, wireless connectivity is maintained automatically at all times.
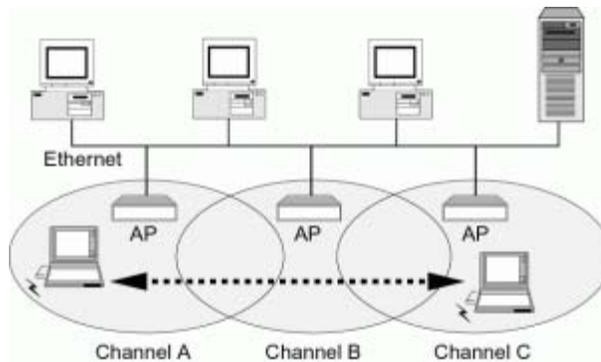
Figure 1-3 Roaming Across Multiple Access Points

Chapter 2—Installing the Aria extreme Card and Software

This chapter describes the process of driver and utility software installation for Aria extreme CardBus and PCI cards; this chapter also describes the process of hardware installation for the Aria extreme PCI card. The driver software enables the card to operate in your computer, while the utility software, Wireless LAN Utility, helps you configure and monitor your Aria extreme.

System Requirements

To use the Aria extreme, your computer must meet the following minimum requirements:

- Pentium (or equivalent) processor, 300 MHz or better recommended
- 64MB of RAM, additional memory recommended
- 30 MB or more hard disk space
- Windows® 98SE/Me/2000/XP
- For Aria extreme (CardBus card): 32-bit CardBus expansion slot
- For Aria extreme PCI: One available PCI slot

Installing the Aria extreme PCI Adapter Card

This section covers the installation of the Aria extreme PCI into a desktop computer. If this does not apply to you, skip to the page 11.

WARNING:

When handling computer products, you must take care to prevent components from being damaged by static electricity. Before opening your computer or removing parts from their packages, always ground yourself first by touching a metal part of the computer, such as a port access cover, and work in an area free of static electricity; avoid carpeted area. Handle all electronic components by their edges, and avoid touching connector traces and component pins.

Basic Installation Procedure

1. Shut down your computer.

2. Open your computer to access the expansion card area (PCI slots); refer to your computer's user manual for specific info.

3. Locate an available PCI slot inside your computer and remove its port access cover, if present, from the rear of the computer.

4. Remove the Aria extreme PCI card from its packaging, and screw in the included antenna.
5. If you will be connecting to a closed network and access is restricted to specific users, write down the MAC number printed on a label affixed to the back of the card.
6. Install the Aria extreme PCI card into the PCI slot; make sure the card is firmly seated and secured.
7. Close your computer and replace its cover.

WARNING:

When you turn on your system after installing the card, the Windows Plug-n-Play function will detect the card and an installation dialog requesting its driver will appear; click Cancel to quit the wizard. If you use the wizard, the correct software will NOT be installed. Follow the instructions on the next page.

Installing the Wireless LAN Driver and Software

WARNING:

If you have the Aria extreme CardBus card, do not plug it into your computer before installing its driver. If you do, the Windows Plug-n-Play function will detect the card and a installation dialog requesting its driver will appear; the proper software will NOT be installed. Click Cancel to quit the wizard and remove the Wireless LAN Card from your computer, and then follow the instructions below.

Basic Installation Procedures

Windows 98SE, Me, 2000 and XP use the same setup program; however, OS- (Operating System) specific situations may occur during or after the driver installation process; the following sections only describe general installation procedures. In OS-specific situations, follow the on-screen instructions to proceed; you can refer to the general guidelines provided in the next section on page 15 for further information.

Follow these steps to install the Wireless LAN Card driver and software.

1. Close all Windows programs that are running.

2. Double-click the **Utility&Driver** folder from the software that you downloaded, and then double-click **Setup.exe** to launch the installer.

3. When the *Welcome* window pops up, click Next >.
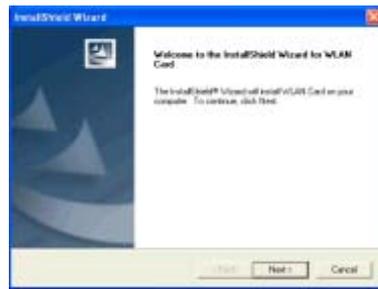
4. When the *License Agreement* window appears, click Yes.

5. To install the software to the default destination folder, click Next. If you want to install the software to a different folder, click Browse…, select another folder, and then click Next >.
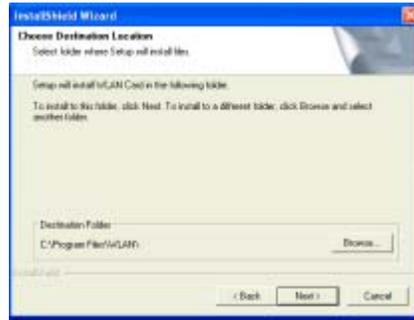
6. For the Aria extreme CardBus card only: When the *Insert adapter now…* window appears, insert the Aria extreme card label up into the slot.
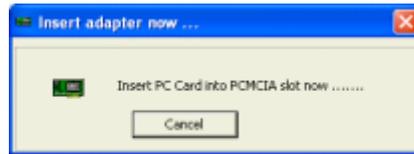
7. Click Finish when the following window appears; Windows may reboot.
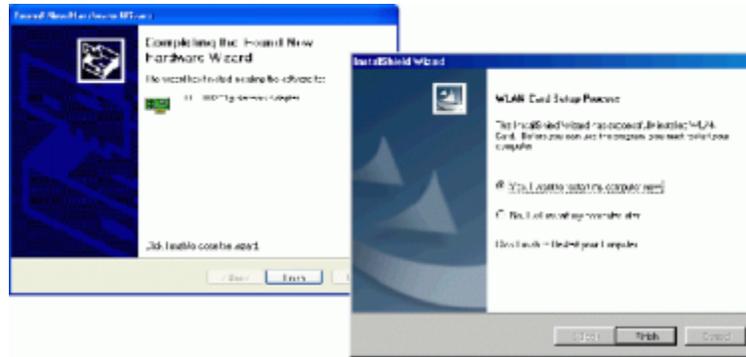
General Guidelines for OS-Specific Situations

Depending on the Windows version running on your computer, different situations will occur **during** or **after** the software installation. Follow the instructions on the next page to complete the installation.

For Windows 98SE

● When prompted for the Windows 98SE CD-ROM, click OK. Enter the path to your original Windows 98SE files (CAB files), and then click OK.

  If the original Windows 98SE files are not on your computer, you will need to insert your Windows 98SE Installation CD.

● When prompted to restart your computer, click Yes.

For Windows Me

● If you are prompted to restart your PC, click Yes.

For Windows 2000

● If the *Digital Signature Not Found* message appears, click Yes.

For Windows XP

- If a Windows logo compatibility message appears, click Continue Anyway.

- When a dialog box appears requesting a driver for the Aria extreme, select "Install the software automatically" and click Next >.

- If you are prompted to provide the driver, click OK, then click Browse to locate the directory you selected to install the Wireless LAN Utility (e.g., **C:\Program Files\WLAN\Driver\PCMCIA**) and then click OK. Verify you've selected the same path that you used to install the Wireless LAN Utility.

Once you are done with the software installation procedure, you will find the Wireless Monitor icon located on the system tray; your Aria extreme is ready to use. Proceed to the next chapter to learn how to configure your Aria extreme card's settings.

Note: If you need to set up the TCP/IP address or the subnet mask, refer to "Appendix C—Setting Up TCP/IP" for details.

Chapter 3—Using the Wireless LAN Utility

Once you have properly installed the driver software for the Aria extreme, you can configure the card using the provided Wireless LAN Utility. The utility window has five tabs:

• **Link Status** - Displays general information about the connection and activity of your current link. You can also enable or disable the card's data transmission, and change power saving settings for the card.
• **Configuration** - Displays the current network and operating mode settings. Configure your wireless connection settings here.
• **Encryption** - Displays security settings. You can change settings for secure wireless transmission.
• **Site Monitor** - Displays information for each available wireless network. You can select the network to which you want to connect.
• **About** - Displays information about the Aria extreme card and the Wireless LAN utility.

Read the following pages for more complete descriptions of the features and settings you may change from each tab.

Launching the Wireless LAN Utility

To launch the Wireless LAN Utility, go to the Windows Start menu and select Programs >
WLAN Utility > WLAN Utility.
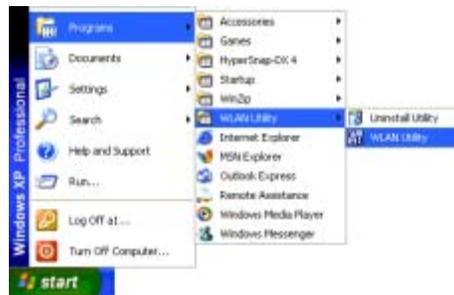
If you are using Windows XP, go to the next page. Otherwise, skip to page 22.

Note About Using the Wireless LAN Utility Under Windows XP

Instead of using the Wireless LAN Utility for configuring your Aria extreme, you may also configure it using the Wireless Zero Configuration Utility included with Windows XP. By default, the Windows utility manages your Aria extreme. As a result, you may find that the **Configuration** and **Encryption** tabs are not available in the Wireless LAN Utility.
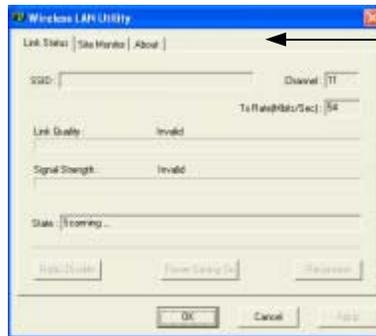
Configuration and Encryption tabs are not visible when Windows XP overrides the Wireless LAN Utility.

You can configure the Aria extreme using either the Wireless LAN Utility or Windows XP's utility.

Using the Wireless LAN Utility

In order to use the Wireless LAN Utility for configuration purposes, you must follow these steps to disable Windows XP's Wireless Zero Configuration Utility:

1. Double-click the Wireless Zero Configuration Utility tray icon, click Properties (or Advanced), and then select the Wireless Networks tab.

Wireless Zero Configuration ———→ ←——— Sonnet s WLAN utility icon
                    Utility icon

2. Uncheck the "Use Windows to configure my wireless network settings" box on the **Wireless Connection Properties** tab, and then click OK; the **Wireless Networks** tab in the Wireless LAN Utility will be restored.
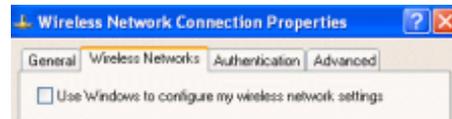
Reverting to Windows XP's Wireless Zero Configuration Utility

Double-click the Wireless Zero Configuration Utility icon (not the Wireless LAN Utility icon), and then click Advanced (or Properties). Click the **Wireless Networks** tab, check the "Use Windows to configure my wireless network settings" box, and then click OK.
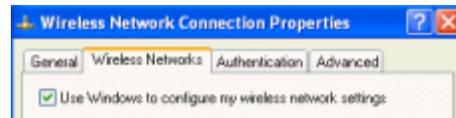
Link Status Tab

The **Link Status** tab displays general information about the connection and activity of your current link. The following table describes the items found on the **Link Status** screen.

Screen Item	Description
SSID	Displays the name of the wireless network to which your computer is currently connected.
Channel	Displays the channel currently in use.
Tx Rate	Displays the data transmission rate.
Link Quality	Displays the measured link quality.
Signal Strength	Displays the signal strength as a number (in dBm), and in a graph.
State	Displays the current status, e.g. scanning or successful association.

In addition, there are three buttons on this tab:

- **Radio/Disable:** Enables or disables the Aria extreme's RF transmission.
- **Power Saving On:** Reduces the Aria extreme CardBus card's power consumption to extend your laptop's battery life.

● **Reconnect:** Reconnects your computer to its target wireless network.
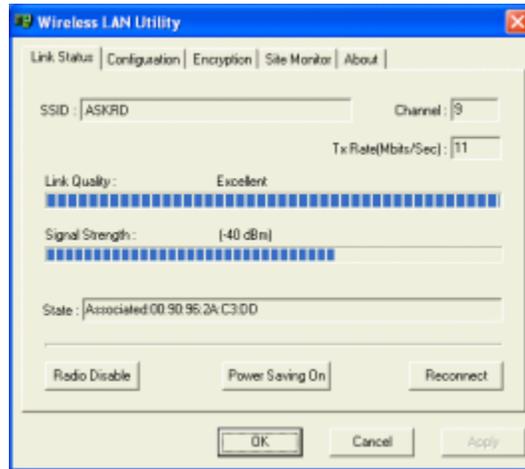
Figure 3-1 Link Status Tab

Configuration Tab

The **Configuration** tab displays the current network and operating mode settings for the Aria extreme. The following table describes the items found on the **Configuration** screen.

Screen Item	Description
Profile Name	Name of your current settings.
Operating Mode	Infrastructure or Ad-Hoc (peer-to-peer).
Network Name	Specifies the name of the WLAN group in which you want to participate. **For Ad-Hoc mode:** A network name **must** be entered; the SSID for all computers in a single Ad-Hoc network must be same. **For Infrastructure mode:** If using the special SSID "**ANY**"(case sensitive), your Wireless LAN Card will connect to the first compatible and "open" AP with the best signal strength within the connection range.

Screen Item	Description
Peer-to-Peer Channel	**Ad-Hoc mode ONLY.** Specifies the selected channel for your wireless network. Note that the channels you are allowed to use are different according to your geographic location. Make sure you select a legal channel that is allowed in your regulatory domain. ● US, Canada - Channels 1–11 (FCC) ● Japan - Channels 1–14 (TELEC) ● Europe - Channels 1–13 (ETSI) ● Channels 10–13 for France
Transmit Rate	Determines the data transmission speed. The default setting (**Fully Automatic**) enables the Aria extreme to automatically adjust its data transmission rate as the signal strength warrants. Note that the available rates vary according to the supported rates of the associated AP or wireless client: **For 802.11b AP or wireless client:** 1, 2, 5.5 and 11 Mbps rates are supported.

Screen Item	Description
	For 802.11g AP or wireless client: 1, 2, 5.5, 6, 9,11, 12, 18, 24, 36, 48 and 54 Mbps rates are supported.
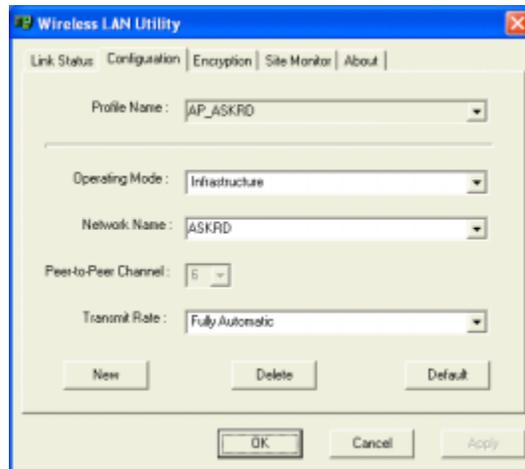
Figure 3-2 Configuration Tab

Encryption Tab

In the **Encryption** tab, you may change settings to secure your network by using WEP (Wired Equivalent Privacy). If encryption isn't necessary, select **Disable** from the **Encryption (WEP security)** drop-down menu. To enable WEP, follow the steps below:

1.   Select **64 bits** or **128 bits** as the WEP key length from the **Encryption (WEP security)** drop-down menu.

2.   From the **Type** list, select the required authentication type. (You should use the same authentication method as used by your target wireless network.)

- **Open Key:** If your target wireless network uses **Open Key**, your authentication request will be always accepted.

- **Shared Key:** If your target wireless network uses **Shared Key**, your Aria extreme must be set to use correct WEP key to pass the authentication. If selected, your Aria extreme must use identical WEP keys as the target wireless network.

3.   Choose **Alphanumeric** or **Hexadecimal** as the key format, and then enter up to four keys in the provide fields. When using **Hexadecimal** format, only digits 0–9 and letters a–f, A–F are allowed. Make sure to enter the characters matching the required key format and length as below:

	ASCII characters	Hexadecimal digits
64 bits	5 alphanumeric characters	10 hexadecimal digits
128 bits	13 alphanumeric characters	26 hexadecimal digits
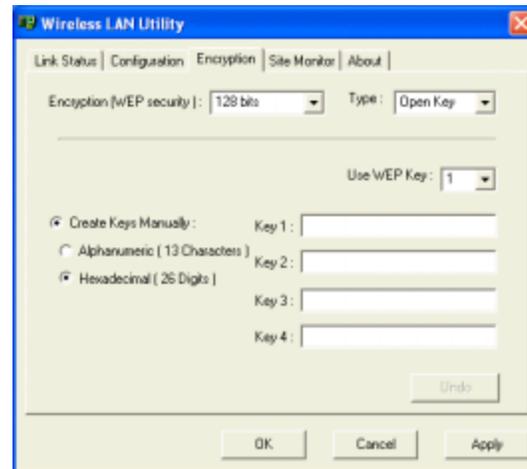
Figure 3-3 Encryption Tab

4.   From the **Use WEP Key** list select which key you want to use to encrypt your
      transmitting data.

5.   After you have finished entering all the encryption settings, click **Apply** to activate the
      changes.

Note: When setting WEP keys for data encryption, all the wireless stations and/or Access Points must use the same encryption key values. For example, if you use Key 1 on your wireless adapter and a value is assigned, then the same value must be assigned to Key 1 for all the users in a wireless network.

Site Monitor Tab

The **Site Monitor** tab displays general information for each available wireless network you can access, and you can select the network to which you want to connect by double-clicking the network's name. In addition, you can use the **Site Monitor** feature to display the communications quality between your computer and multiple APs or clients in its vicinity. The **Site Monitor** enables you to conduct a site survey to:

- Determine the overall wireless coverage of your wireless network.
- Optimize placement of the Access Point(s), to provide seamless connectivity to mobile stations.
- Roam throughout the wireless network environment with your station to identify areas that may not have adequate coverage, or that suffer from (wireless) interference by other equipment such as microwave ovens, cordless phones, etc.

The list will update automatically to display all visible networks. Click **Freeze** checkbox to freeze the list box so that you can read the information inside it; it will also stop the search for available networks. To only display Ad-Hoc networks, select the **Ad-Hoc networks only** checkbox.

For each network, the following information will be displayed:

Field	Description
Network Name	Displays the name(s) of the wireless network(s).
Channel	Lists the channel used by the AP or wireless station.
WEP	Displays whether WEP is ON or OFF.
Signal	Displays the signal strength in dBm.
Link Quality	Measures the signal level.
Network Address	The MAC address of the AP or wireless client.
AP band	The frequency band used by the AP. You can identify whether the AP or wireless client supports 802.11b & 11g or only 802.11b.
Infra.	Describes the operating mode (Infrastructure or Ad-Hoc)
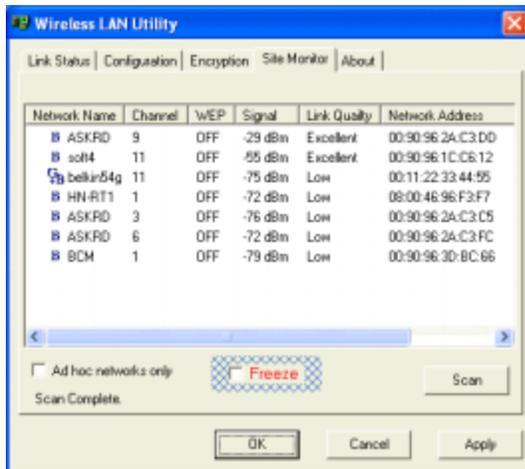
Figure 3-5 Site Monitor Tab

About Tab

The **About** tab displays information about the Aria extreme card and the Wireless LAN utility, including the Utility, Driver and Firmware version details.

Figure 3-6 About Tab

Chapter 4—Using Wireless Tray Icon Functions

Viewing Signal Strength Information

Whenever you start Windows, you should be able to find the wireless monitor icon loaded in the system tray, located near the clock on the task bar.

While connected to a network, you can place your cursor over the icon to view the pop-up text that gives information about the wireless link and signal strength.

System Tray Icon Information

The wireless icon graphic changes to reflect the quality of your system's wireless connection. The table below describes the radio connection quality indicated by the icon, and lists suggestions on how to improve the quality:

Graphic	Radio Connection Quality
	Very Good Your Aria extreme card has an excellent radio connection with the network, enabling excellent network communication at the highest transmit rate.
	Good Your Aria extreme card has a good radio connection with the network, enabling normal network communication.
	Low The radio signal is low. Moving your computer closer to your target Access Point or wireless station can result in better signal strength.
	Poor The radio signal is very weak. You should move your computer closer to your target Access Point or wireless station for better signal strength.

Graphic	Radio Connection Quality
	No signal. You are out of range of the wireless network, or there may be network configuration errors (such as your SSID or WEP encryption key doesn't match that of the target AP or wireless station). Move your device closer to your target Access Point or wireless station, or verify your SSID or WEP settings.
	Radio if OFF (no transmission). You have manually disabled the RF signal.
	Disconnected. There is no wireless connection available

Other Functions

Right-click the wireless icon to display the menu shown below:
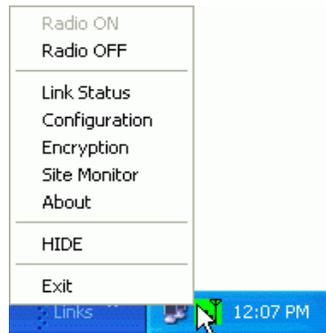
Each item on the context menu is described as below:

Radio ON/Radio OFF: Enables or disables the RF signal.

Link Status/Configuration/Encryption/Site Monitor/About: Opens the Wireless LAN Utility.

HIDE: Closes the menu.

Exit: Shuts down the Wireless LAN Utility

Chapter 5—Windows XP Wireless Zero Configuration Utility

Windows XP provides the built-in **Wireless Zero Configuration** utility for wireless configuration and monitoring. You can choose to configure your wireless network via either the included Wireless LAN Utility as described in previous section, or the Windows XP **Wireless Zero Configuration** utility described in this chapter.

This section only provides the basic instructions for using the Windows XP wireless utility to establish your wireless network. For more detailed information, please refer to Windows XP online help.

Connecting to an Access Point or Wireless LAN Card

To connect to an existing Access Point or Wireless LAN card, perform the following steps:

1. Right-click the **Wireless Connection** icon on the system tray and select **View Available Wireless Networks** from the context menu.
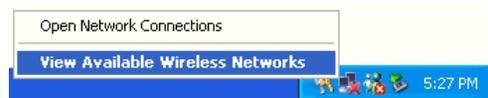
> **Note:** Depending on whether your wireless network is established, the context menu may show different items.

2. When the **Connect to Wireless Network** window pops up, you will see all of the nearby Access Points and Wireless LAN cards that are broadcasting. Select the wireless network to which you want to connect.

Figure 5-1 Windows XP Configuration Utility-Connect to Wireless Network

3. If the selected Access Point or Wireless LAN Card has been set up using a WEP key, you must enter the same WEP key in the **Network key** field. Otherwise, leave it blank.

4. Click **Connect**, and then you will join the target network; this dialog window will disappear. When your wireless connection is established, the connection icon appears as shown below:

Note: If the wireless connection can't be established, double-click the connection icon and then click **Properties**. Go to **Authentication** tab first to make sure that you have entered the correct authentication type for the Aria extreme. For more information, refer to "Authentication" on page 47.

Viewing the Wireless Connection Status

After successfully connecting to a wireless network, double-click the wireless connection icon in the system tray again; the **Wireless Network Connection Status** window will open. You can view general configuration information for the Aria extreme, such as Status, Duration, Speed, Signal Strength, etc.
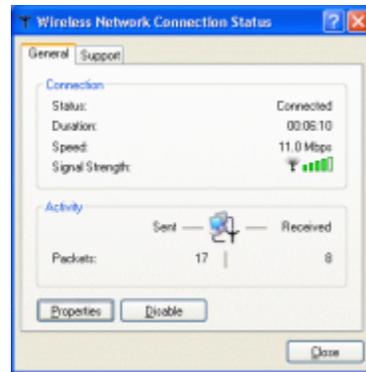
Figure 5-2 Windows XP- Connection Status

Configuring the Wireless Connection Properties

To configure the wireless connection properties, open the **Wireless Network Connection Status** window as described above, and then click the **Properties** button; the **Wireless Network Connection Properties** window will open. You can configure the Aria extreme card's more advanced settings. The following describes the contents of each of the properties window's tabs to enable you to configure the Aria extreme to suit your needs.

General

With this tab selected, you can specify the network connection method to be used with your Aria extreme. The network policy depends on your wireless network. For TCP/IP protocol, you should configure its properties as instructed by your network administrator. For more information on TCP/IP setting, please refer to "Appendix C—Setting Up TCP/IP" on page 65.

Figure 5-3 Windows XP Connection Properties -General

Wireless Networks

This tab contains two sections: **Available networks** and **Preferred networks** described as below.

Under **Available networks** section, you can also see all the available nearby Access Points and Wireless LAN Cards. Click **Refresh** to update the list of Access Points and Wireless LAN Cards.
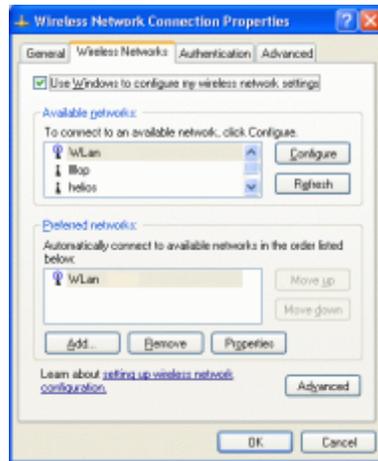
Figure 5-4 Windows XP Connection Properties-Wireless Networks

Under **Preferred networks** section, you can add any wireless networks to which you wish to connect. To do this, just click **Add** to add more Access Points or Wireless LAN Cards to the list.

After you click the **Add** button, the **Wireless Network Properties** window pops up. Type your network name (SSID) and, if needed, the wireless network WEP settings. If the Access Point or Wireless LAN Card that you want to connect to has been set with WEP key, you must type the same WEP key as the Access Point's or Wireless LAN Card's.
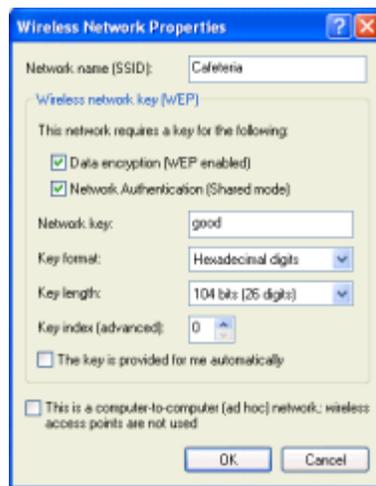
Figure 5-5 Windows XP-Add Preferred Networks

After you add several profiles into **Preferred networks,** you can change the order in which connection attempts to preferred networks are made. Just select the target wireless network and click **Move up** or **Move down** to move it to a desired position.

Limit Access to Specific Wireless Network Types

If you only want to access certain wireless network types, click the **Advanced** button on the **Wireless Networks** tab to open the **Advanced** window. You can choose to connect to the following networks:

- Any available network (access point preferred)
- Access point (infrastructure)
- Computer-to-computer (Peer-to-Peer Group)

The default network type is **Any available network (access point preferred)**. In this network type, your device will connect to any nearby available Access Points or Wireless LAN Cards, but Access Point connection attempts receive higher priority.

Once you finish changing the Advanced settings, your Aria extreme will then connect to your desired network, and the connected network will be listed under **Available networks**.

Figure 5-6 Windows XP Configuration Utility-Set up a Network to Aceess

Authentication

With this tab selected, you can configure your Aria extreme card's authentication settings. Be sure to disable **Enable network access control using IEEE802.1X** to ensure successful connection between the Aria extreme and Access Points or other wireless LAN Cards. **You must disable this function**. Otherwise, problems may occur during connection. For other settings, we recommend you keep the default settings to minimize the problems during connection.

Make sure to disable **Enable network access control using IEEE 802.1X**.

Figure 5-7 Windows XP Connection Properties – Authentication

Chapter 6—Uninstalling the Aria extreme

Should you need to uninstall the Aria extreme and its application software for any reason, you should uninstall the associated software first, and then remove the hardware from your computer. Please proceed as follows.

Uninstalling the Wireless LAN Card Software

Note: Before uninstalling the Wireless LAN Card software, please disable the utility by right-clicking the utility tray icon and select **Exit** from the context menu. The icon will disappear to indicate that the utility is not in operation.

1. Close all programs that are currently running.

2. Click the Windows **Start** button, point to **Programs** > **WLAN Utility** > **Uninstall Utility**.
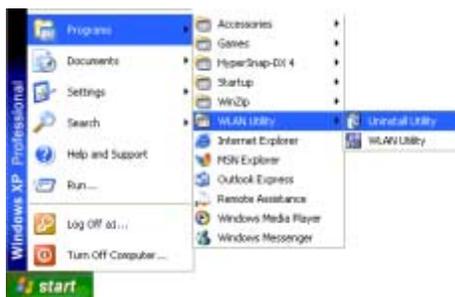
3. Click **OK** to proceed with the software uninstall procedure.

4. Click **Finish** to complete the software uninstallation. Depending on which Windows version is running, your computer may reboot.
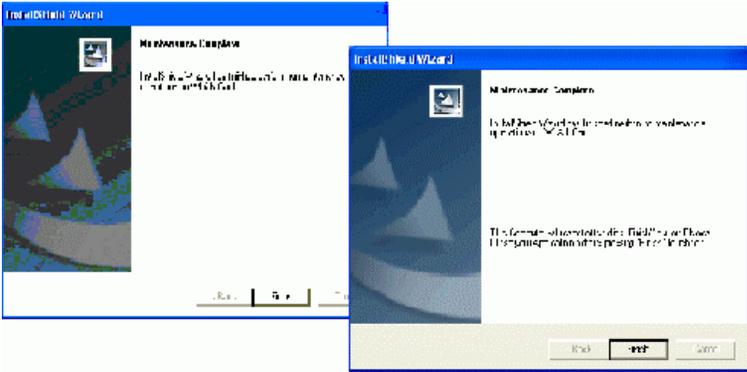
Removing the Aria extreme Card

To permanently remove the Aria extreme card from your computer, make sure that you have uninstalled the software before you remove the hardware. If you have an Aria extreme PCI card, follow the procedure described in your computer's owner's guide.

The Aria extreme CardBus card complies with the PCMCIA standard that allows devices to be inserted into and removed from the computer's PCMCIA slot when the computer is powered on. To remove the Aria extreme, it is recommended that you follow the standard Windows procedure for disconnecting a PCMCIA device from your computer. The following steps describe a Windows 98 environment:

1. On the system tray, right-click the PCMCIA icon, and then click **Adjust PC Card Properties**.

2. Select the Wireless LAN Card that you want to remove, click **Stop**.

3. When the message appears that tells you it is safe to remove device, click **OK** and remove the Wireless LAN Card from the computer.

4. Click **OK** to exit the PC Card (PCMCIA) Properties window.

Chapter 7—Troubleshooting

Verify the Aria extreme is functioning properly

After installation you can verify whether the Aria extreme is properly installed and functioning by followings these steps:

1. Launch the **Device Manager** as below:

    - For Windows 98/Me: Under **Control Panel**, click **System** > **Device Manager**.

    - For Windows 2000/XP: Under **Control Panel**, click **System** > **Hardware** > **Device Manager**.

2. In the **Device Manager** window, double-click **Network adapters** to display your Aria extreme.

3. If there is no exclamation mark next to the Aria extreme, it is working properly. Otherwise, you will need to remove and reinstall the wireless adapter.

Cannot Install under Windows 2000

When attempting to install the software under Windows 2000, the error message "1608: Unable to create InstallDriver instance" is displayed, and the program stopped installing.

This error occurs when the **Microsoft Network Client** is not installed under Windows 2000. To install this network component:

1. Go to **Control Panel** and double-click the **Network and Dial-up Connections** icon. Right-click on the **Local Area Connection**, then select **Properties**.

2. Click **Install** > **Client** > **Add** > **Client for Microsoft Networks** > **OK**.

3. The **Microsoft Network Client** is now installed. Manually restart your computer to enable the changes.

4. Try to install the software again, following the steps in this manual.

Radio Interference

You may be able to eliminate or reduce interference by trying the following:

- Reseat the Aria extreme card in its slot.
- Increase the distance between your computer and the device causing the radio interference.

- Plug your computer into an electrical outlet on a different branch circuit than that used by the affecting device.

- Consult your dealer or an experienced radio technician for help.

- Keep your away from microwave ovens and large metal objects.

Card Not Detected

If Windows does not detect the Aria extreme, try the following:

- Make sure the Aria extreme is properly inserted in the computer.

- For the Aria extreme CardBus card, make sure you are using a 32-bit CardBus expansion slot, and that the slot is working.

- Contact your dealer for additional testing if there is a hardware problem with the Aria extreme.

Cannot Connect to Another Wireless LAN Card

If you cannot make a connection to another Wireless LAN Card from your computer, it could be due to one of the following reasons:

- *Incorrect network name (SSID).* Make sure the SSID is the same for all computers that have a Wireless LAN Card.

- *Your computer is not recognizing changed settings*. Restart your computer.

- If in Ad-Hoc mode, make sure the **Log on to Windows NT domain** check box is NOT selected in the **Client for Microsoft Networks Properties** dialog box in the **Network Configuration** tab.

- *Incorrect IP Address or Subnet Mask settings*. Check these in the **TCP/IP Properties** dialog box in the **Network Configuration** tab.

- Make sure you are not trying to connect to an 802.11a wireless adapter. 802.11a and 802.11b/g standards are not interoperable.

Poor Link Quality

If the Link Quality display stays in the poor range, it could be due to one of the following reasons:

- For Aria extreme PCI cards, verify the antenna is screwed in securely; try moving the antenna to a different position.

- *Radio/object interference*. To minimize this problem, move the devices within the line of sight.

- *Distance between the Aria extreme and the target Access Point or wireless client is too great*. Decrease the distance between devices.

Cannot Connect to Access Point

If you cannot make a connection to an Access Point, it could be due to one of the following reasons:

- *Physical connection problems at the Access Point*. Check the AP and verify all the connectors are plugged or screwed in securely.

- *Incorrect network name (SSID)*. Make sure the SSID used is the same for both the Aria extreme and the Access Point.

- *Security settings different*. Make sure the security settings are the same for both the Aria extreme and the Access Point.

- *Operation mode not configured properly*. Make sure the Aria extreme is configured to allow Infrastructure connections.

- Make sure you are not trying to connect to an 802.11a Access Point. 802.11a and 802.11b/g standards are not interoperable.

- *The Access Point has reached its maximum number of supported clients*.

- *MAC address access control is enabled on the Access Point*. If this is the case, make sure your Aria extreme card's MAC address is on the "Allow Access" list.

Appendix A—Limited Warranty

Wireless LAN Hardware

Sonnet Technologies, Inc. warrants that its product(s) shall be free from defects in materials and workmanship for a period of three years following the date of original purchase. Sonnet's liability under this warranty shall be limited, at its option, to repairing or replacing product(s) shown to be defective either in materials or workmanship. The sole and exclusive remedy under this warranty shall be such repair or replacement.

A claim of defective materials or workmanship in product(s) shall be allowed only when it is submitted to Sonnet within the warranty period. No claim shall be allowed in respect to product(s) which have been altered, neglected, damaged or stored in any manner which adversely affects them. No product(s) shall be returned to Sonnet for any reason without a return authorization from Sonnet. You bear the responsibility for shipping product(s) to Sonnet within 30 days of authorization and paying for associated shipping and insurance costs. Sonnet will pay the cost to ship repaired or replaced product(s) back to you.

This warranty shall also apply to product(s) that replace defective product(s) but only for the original warranty period. The warranty period shall not be extended by reason of defect, or

any period of time during which the product(s) are not available to you because of defects, without the express written consent of Sonnet.

EXCEPT FOR THE EXPRESS WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP CONTAINED HEREIN, SONNET MAKES NO WARRANTY OF

ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY SONNET. Without limitation of the foregoing, Sonnet expressly disclaims any liability whatsoever for any damages incurred, directly or indirectly, in connection with its product(s), including without limitation, loss of profits and special, incidental or consequential damages, whether caused by Sonnet's negligence or otherwise.

Appendix B—Regulatory Compliance

FCC Part 15 Declaration of Conformity (DoC)

The following equipment:

Product Name: Aria extreme

is herewith confirmed to comply with the requirements of FCC Part 15 rules. The 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.

FCC Rules and Regulations - Part 15

Warning: This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Relocate your WLAN equipped computer.
- Increase the separation between the WLAN equipped computer and other electronics.
- Connect the WLAN equipped computer into an outlet on a circuit different from that of other electronics.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

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

Appendix C—Setting Up TCP/IP

This section contains instructions for configuring the TCP/IP protocol for the Aria extreme. The IP address policy depends on your wireless network; you should configure the TCP/IP protocol as instructed by your network administrator.

For Windows 98/ME

1. Double-click the **Network** icon on the **Control Panel**.

2. Click the **Configuration** tab in the **Network** dialog box.

3. In the network components list, select the TCP/IP protocol for the Aria extreme, e.g., **TCP/IP** ->**Broadcom 802.11g Network Adapter** and then click **Properties**.
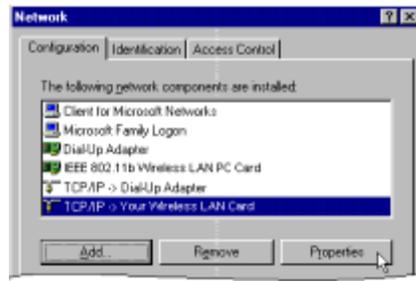
4. With the **IP Address** tab selected, choose one of the methods as required:

    Option A: Click **Specify an IP address**.

    In the **IP Address** box, enter a valid four-component IP address, either a public or private one as required.

    In the **Subnet Mask** box, enter a valid four-component IP address.

    Then select the **Gateway** tab and enter your gateway information.

    Option B: Select **Obtain an IP address automatically**.

    An IP address will be automatically assigned to your computer.

5. Click **OK** to return to the **Network** dialog box and click **OK** again to finish the configuration procedure. If your TCP/IP properties have been modified, you will be prompted to restart your computer. Click **Yes** to have new settings take effect.

For Windows 2000/XP

1. Double-click **Network Dial-up Connections** (Windows 2000) or **Network Connections** (Windows XP) on **Control Panel,** then **Network Connections**.

2. Right-click the **Broadcom 802.11g Network Adapter** icon and click **Properties**.

3.   With the **General** tab selected, highlight **Internet Protocol (TCP/IP)** and then click **Properties**.

     Option A: Use a fixed IP address.

     Enable the **Use the following IP Address** option. Enter the **IP address**, **Subnet Mask** and **Default gateway**. Then click **OK**.

     Option B: Use a dynamic IP address

     Select **Obtain an IP address automatically**.

4.   Close the **Local Area Connection Properties** window. For Windows 2000, if prompted, click **Yes** to restart your computer.

Appendix D Specifications

Host Interfaces	CardBus, PCI Spec. 2.2
Form factors	Type III B/32bit CardBus, PCI
Chipset	Broadcom BCM 4306 & BCM 2050
Operation Voltage	3.3VDC
Network Standards	IEEE 802.11b (Wi-Fi™) standard and IEEE 802.11g standard (54G)
Modulation Techniques	DBPSK, DQPSK, CCK, 16QAM, 64QAM
Modulation Technology	OFDM, DSSS
Data Rate	802.11b – 11 Mbps maximum, Auto-ranging 1, 2, 5.5, and 11 Mbps 802.11g – 54 Mbps maximum, Auto-ranging 6, 9, 12, 18, 24, 36, 48, and 54 Mbps
Network Architectures	Infrastructure and Ad-Hoc

Operating Frequencies	2.4–2.497 GHz
Operating Channels	802.11b - North America: 11, Japan: 14, Europe (ETSI): 13 802.11g - North America, Japan, Europe (ETSI): 13
RF Output Power	15 dBm maximum output power (14 dBm nominal ± 1 dBm over operating temperature
Receiver sensitivity **(PER < 10%)**	-80dBm @ 6Mbps
Antenna Type	Hardware diversity support: transmit and receive on Main and Auxiliary antenna connectors.
Indoor Coverage Area (Typical)	802.11b: Up to 60 M at 11 Mbps, up to 125 M at 1 Mbps 802.11g: Up to 20 M at 54 Mbps, up to 75 M at 18 Mbps
Power Consumption	Tx peak: 550 ma @ 3.3VDC; Rx peak: 350 ma @ 3.3VDC; Idle: 225mA @ 3.3VDC
Security	Hardware 64/128-bit WEP engine; WEP weak-key avoidance, TKIP, hardware AES engine supporting CCM and OCB, 802.1x, SSN

Delay Tolerance	802.11b: Multipath R.M.S Delay Spread @ 1% FER: 11 Mbps > 250 nsec; 5.5 Mbps > 300 nsec
Client Utility	Automatic location profile, site monitor, current link status, and diagnostics
Software Support	Microsoft WHQL certified for Windows XP, 2000, and ME. Linux and VxWorks embedded drivers.
LED Indicators	WLAN Activity Monitor, WLAN Radio Status Indicators
Switch	Manual radio on/off in software disables transmit and receive to comply with aviation in-flight restrictions
Temperatures	Operating: 0˚–158˚ F (0˚–70˚ C) Storage: -20˚–194˚ F (-4˚–90˚ C)
Humidity (non-condensing)	5 to 95%
Certifications	FCC Part 15 CE TELEC JATE

* Specifications are subject to change with notice.

Glossary

802.11	802.11 refers to a family of specifications developed by the IEEE for wireless LAN technology. 802.11 specifies an over-the-air interface between a wireless client and a base station or between two wireless clients.
Access Point	An internetworking device that seamlessly connects wired and wireless networks. Access Points combined with a distributed system support the creation of multiple radio cells that enable roaming throughout a facility.
Ad-Hoc (Peer-to-Peer)	An 802.11 networking framework in which devices or stations communicate directly with each other, without the use of an Access Point (AP). Ad-hoc mode is useful for establishing a network where wireless infrastructure does not exist or where wired network services are not required. Ad-hoc mode is also referred to as peer-to-peer mode or an Independent Basic Service Set (IBSS).
Bit	A bit (short for binary digit) is the smallest unit of data in a computer. A bit has a single binary, either 0 or 1.
BSS	Basic Service Set. In a network where an AP is connected to wired network and is associates with a set of wireless stations, it is referred to as a BSS.
ESS	Extended Service Set. An Extended Service Set (ESS) is a set of two or more BSSs that form a single network. It's basically a roaming wireless network.
Default Gateway	The address used to forward all traffic that is not addressed to a station within a local subnet.

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Encryption   The translation of data into a secret code. Encryption is the most effective way to achieve data security. To read an encrypted file, you must have access to a secret key or password that enables you to decrypt it.

Ethernet   The most widely used medium access method, which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN; i.e., all the devices on the network segment share total bandwidth. Ethernet networks operate at 10 Mbps, 100 Mbps, or 1000 Mbps using CSMA/CD to run over 10BaseT cables.

Gateway   A network component that interconnects networks with different, incompatible communications protocols.

IEEE   Abbreviation of Institute of Electrical and Electronics Engineers, pronounced I-triple-E. Founded in 1884 as the AIEE, the IEEE was formed in 1963 when AIEE merged with IRE. IEEE is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry.

Infrastructure   An 802.11 networking framework in which devices communicate with each other by first going through an Access Point (AP). In Infrastructure mode, wireless devices can communicate with each other or can communicate with a wired network.

IP   Internet Protocol. The standard protocol within TCP/IP that defines the basic unit of information passed across an Internet connection by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

IP Address   An IP Address is a 32-bit number that identifies each sender or receiver of information sent across the Internet. An IP address has two parts: the identifier of a particular

network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network.

LAN Local Area Network. A communication network that serves users within a defined geographical area. The benefits include the sharing of Internet access, files, and equipment, such as printers and storage devices. Special network cabling (such as 10BaseT) is often used to connect the PCs together.

MAC Address The MAC (Media Access Control) Address is a 12 digit Hexadecimal number that uniquely identify your network adapter on the network.

Media The materials used to connect network devices, such as twisted-pair wire, coaxial cables, or fiber optic cables. Some networks do not use physical connecting media; communications are achieved via radio waves instead.

Mbps Stands for millions of bits per second or megabits per second and is a measurement for data transmission

Protocol The rules and encoding specifications for sending data.

RF Radio Frequency, any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space.

Roaming In an Infrastructure mode wireless network, roaming refers to the ability to move from one AP coverage area to another without interruption in service or loss in connectivity.

SSID Service Set Identifier, up to 32-character unique identifier attached to the header of packets sent over a WLAN that acts as a password when a mobile device tries to connect to the BSS. The SSID differentiates one WLAN from another; so all access points and

all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a Network Name because essentially it is a name that identifies a wireless network

Subnet Mask   A value that defines whether your computer communicates only within your LAN or communicates outside of your LAN, where it is routed out to the rest of the Internet. A Subnet Mask that has the same first three components (for example, 255.255.255.0) is the routing pattern for a Class C address.

TCP   Transmission Control Protocol. The standard transport level protocol that provides the full duplex, stream service on which many applications' protocols depend. TCP allows a process on one machine to send a stream of data to a process on another. Software implementing TCP usually resides in the operating system and uses the IP to transmit information across the network.

Topology   The geometric arrangement of devices on a network. For example, devices can be arranged in a ring, bus or star.

WEP Wired Equivalent Privacy, a security protocol for wireless local area networks defined in the 802.11b standard. WEP is designed to provide the same level of security as that of a wired LAN. LANs are more secure than WLANs because LANs are somewhat physically protected by their structure, having some or all part of the network inside a building protected from unauthorized access. WLANs, which are over radio waves, do not have the same physical structure and therefore are more vulnerable to tampering. WEP aims to provide security by encrypting data over radio waves so that it is protected as it is transmitted from one end point to another.

WLAN Wireless Local Area Network. A group of computers and devices that communicates with each other wirelessly.