RoamAbout®

Wireless Networking

11a/b/g Wireless Ethernet Adapter User Guide RBTSA-AA / RBTSA-AB

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Networks that Know

CONTENTS

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REGULATORY INFORMATION

ABOUT THIS GUIDE

This guide provides all the information you need to install and use the Enterasys Networks 11a/b/g Wireless Ethernet Adapter in its default state.

The guide is intended for use by IT managers and experienced network installation and administration professionals who have a basic knowledge of current networking concepts.

i *If the information in the release notes that are shipped with your product differ from the information in this guide, follow the instructions in the release notes.*

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the Enterasys Networks World Wide Web site:

`http://www.enterasys.com/products/wireless/`

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
$\boxed{i\!\!>}$	Information note	Information that describes important features or instructions.
$\triangle\!\!!$	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
$\triangle\!\!!$	Achtung	Verweist auf wichtige Informationen zum Schutz gegen Beschadigungen.
$\triangle\!\!\!/\!\!/$	Warning	Information that alerts you to potential personal injury.
$\triangle\!\!\!/\!\!/$	Warnung	Warnung vor samtlichen Handlungen, die zu Verletzung von Personen oder Todesfallen - hervorgerufen durch elektrische Spannung - fuhren konnen!

Table 2 Text Conventions

Convention	Description
Screen displays	This typeface represents information as it appears on the screen.
Syntax	The word "syntax" means that you must evaluate the syntax provided and then supply the appropriate values for the placeholders that appear in angle brackets. Example:
	To change your password, use the following syntax:
	system password <password>
	In this example, you must supply a password for <password>.
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example:
	Press Ctrl+Alt+Del

Table 2   Text Conventions (continued)

Convention	Description
Words in *italics*	Italics are used to:
	■ Emphasize a point.
	■ Denote a new term at the place where it is defined in the text.
	■ Identify menu names, menu commands, and software button names. Examples:
	From the *Help* menu, select *Contents*.
	Click *OK*.

Related Documentation

In addition to this guide, each Ethernet Adapter documentation set includes the following:

- Quick Start Guide—printed guide that describes basic installation.
- Online Help—product help systems that describe how to use the Configuration Management System and Enterasys Networks Wireless Infrastructure Device Manager.
- Release Note—printed note that describes important product information.
- README.TXT file—text file located on the Enterasys Networks Installation CD that describes last-minute product information.

Accessing Online Documentation

The CD supplied with your Ethernet Adapter contains the following online documentation:

- Enterasys Networks 11a/b/g Wireless Ethernet Adapter User Guide
- Enterasys Networks Wireless Infrastructure Device Manager Online Help
- Enterasys Networks 11a/b/g Wireless Ethernet Adapter Configuration Management System Online Help

To access the online documentation from the CD:

1 Insert the Enterasys Networks Installation CD supplied with your Ethernet Adapter in the CD-ROM drive.

   The setup menu appears. If it does not appear, you can start the setup menu from the Windows Start menu. For example: *Start > Run > d:launch.exe.*

2 In the menu, click *View the Documentation* to view the Ethernet Adapter User Guide.

   To view the online help, install and launch the Wireless Infrastructure Device Manager or Configuration Management System. See Chapter 3 for instructions.

Product Registration and Support

To register your product with Enterasys Networks, go to the following Web page:

http://www.enterasys.com/support

For support information, see "Obtaining Support for Your Enterasys Networks Product" on page 55 or log on to the Enterasys Networks Web site at **http://www.enterasys.com/products/wireless** and navigate to the product support page.

1 **INTRODUCTION**

Enterasys Networks wireless technology has all of the benefits of a local area network (LAN) without the constraints and expense of network wiring.

Enterasys Networks 11a/b/g Wireless LAN products provide easy, affordable, flexible ways to extend wireless networks to more users. This guide shows how you can use the Enterasys Networks 11a/b/g Wireless Ethernet Adapter in your office or classroom to connect groups of wired Ethernet client devices to your wireless LAN.

Product Features

The Enterasys Networks 11a/b/g Wireless Ethernet Adapter includes a robust suite of standards-based security features, and supports wireless network standards including 802.11a and 802.11g.

Security

To protect sensitive data broadcast over the radio, Enterasys Networks supports Wireless Equivalent Privacy (WEP) RC4 64-bit, 128-bit and 152-bit shared-key encryption. Enterasys Networks strengthens this basic security mechanism with additional security features, including:

- MAC address access control lists
- IEEE 802.1x per-port user authentication with RADIUS server authentication support
- Temporal Key Integrity Protocol (TKIP)
- Advanced Encryption Standard (AES)
- WiFi Protected Access (WPA)
- Extensible Authentication Protocol (EAP) support: EAP-TTLS and PEAP

Wireless Network Standards
Understanding the characteristics of the 802.11a and 802.11g standards can help you make the best choice for your wireless implementation plans.

802.11a

Ratified in 2002, 802.11a is IEEE's more recent wireless standard. It operates at the 5 GHz band and supports data rates at up to 54 Mbps. Because there are fewer devices in the 5 GHz band, there's less potential for RF interference. However, because it is at an entirely different radio spectrum, it is not compatible with 802.11g.

The higher spectrum provides about 50 m (164 ft) of coverage—about half what 802.11g offers.

Consider 802.11a when you need high throughput in a confined space and you are:

- Running high-bandwidth applications like voice, video, or multimedia over a wireless network that can benefit from a five-fold increase in data throughput.
- Transferring large files like computer-aided design files, preprint publishing documents or graphics files, such as MRI scans for medical applications, that demand additional bandwidth.
- Supporting a dense user base confined to a small coverage area. Because 802.11a has a greater number of non-overlapping channels, you can pack more wireless devices in a tighter space.

802.11g

802.11g operates in the 2.4 GHz band at up to 54 Mbps. Ratified in 2003, it supports the widest coverage—up to 100 m (328 ft). However, is subject to a greater risk of radio interference because it operates in the more popular 2.4 GHz band.

802.11b operates at up to 11 Mbps and supports coverage up to 100 m (328 ft).

Consider 802.11g when you need wider coverage and vendor compatibility and you are:

■ Maintaining support for existing 802.11b users and the existing wireless investment while providing for expansion into 802.11g.

■ Implementing a complete wireless LAN solution, including Ethernet Adapters, gateways, access points and clients; Wi-Fi certification guarantees compatibility among vendors.

■ Providing access to hot spots in public spaces such as coffee shops or university cafeterias.

Network Configuration and Planning

The Ethernet Adapter can operate in either *infrastructure* or *ad-hoc* mode, and can support a stand-alone wireless network configuration or an integrated configuration with 10/100 Mbps Ethernet LANs.

Operating in *infrastructure* mode and connected to an Ethernet hub, a single Ethernet Adapter can combine up to 16 client devices—such as computers with network adapters and printers—into a multiclient *workgroup*. The workgroup associates with the wired network through a wireless LAN access point such as the Enterasys Networks 11a/b/g Wireless LAN Access Point. Infrastructure configurations extend your wireless LAN to devices that would otherwise have to be connected to the wired network.

Operating in *ad-hoc* mode, two or more Ethernet Adapters can associate among themselves and communicate with one another at close range without an access point. You may wish to set up an ad-hoc network, for example, if a group is working away from the office, or if a group in the office needs to share files apart from the wired LAN.

Example Configurations

The following examples illustrate ways you can use the Ethernet Adapter to configure Ethernet client devices into workgroups. (Details for setting up specific configurations are in "Installing the Ethernet Adapter" on page 11.)

Wireless Infrastructure Network

You can connect several computers, including those with non-Windows operating systems, and network printers, as shown in Figure 1.

Figure 1 Wireless Infrastructure Network
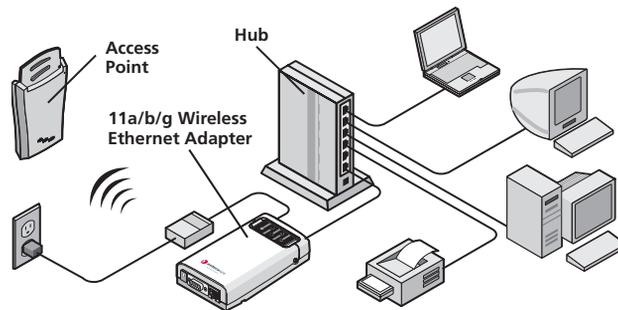
Workgroup Ad-Hoc Network

You can provide flexible wireless network association for small groups in areas that cannot be wired, as shown in Figure 2.

Figure 2 Workgroup Ad-Hoc Network
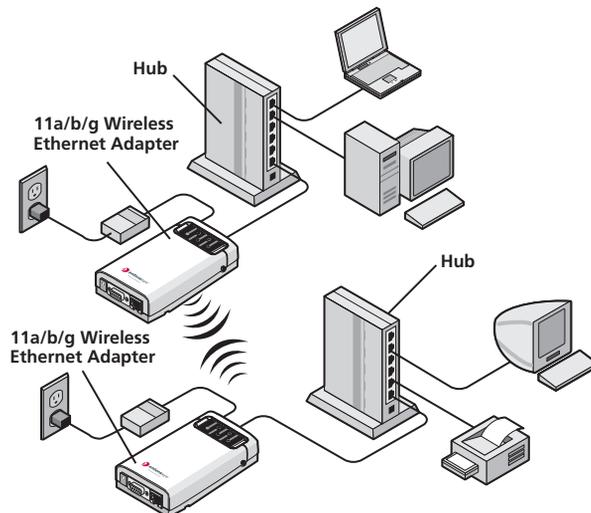
2 **INSTALLING THE ETHERNET ADAPTER**

This chapter contains the information you need to install and set up the Ethernet Adapter. It covers the following topics:

- Unpacking the Ethernet Adapter
- Observing Safety Precautions
- Deciding Where to Place the Ethernet Adapter
- Connecting the Ethernet Adapter
- Checking the LED Indicators
- Attaching An External Antenna
- Determining if you Need to Configure the Ethernet Adapter
- Using the Enterasys Networks Installation CD

Unpacking the Ethernet Adapter

Make sure that you have the following items, which are included with the Ethernet Adapter:

- Power adapter and power cord.
- Standard Category 5 unshielded twisted pair (UTP) Ethernet cable.
- Rubber feet (four; used for a flat-surface installation).
- Enterasys Networks Installation CD.

For wall-mounting installations, you need the following items, which are not included with the Ethernet Adapter:

- Mounting screws.
- Plastic anchors (for drywall mounting).

Figure 3 shows the front view of the Ethernet Adapter, including the LEDs and connecting ports. It also shows the cradle, which is used to mount the Ethernet Adapter to a wall or to install the Ethernet Adapter on a flat surface.

Figure 3   Ethernet Adapter

**11a/b/g Wireless
Ethernet Adapter**

Power Port
Serial Port
Ethernet Port
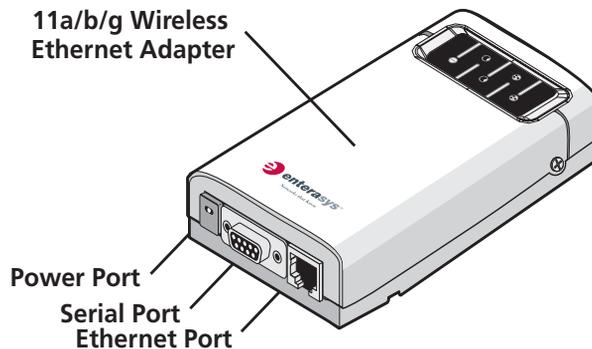
Observing Safety Precautions

This equipment must be installed in compliance with local and national building codes, regulatory restrictions, and FCC rules. For the safety of people and equipment, only professional network personnel should install the Ethernet Adapter.

WARNING: To comply with FCC radio frequency (RF) exposure limits, a minimum body-to-antenna distance of 20 cm (8 in.) must be maintained when the Ethernet Adapter is operational.

WARNING: To avoid possible injury or damage to equipment, you must use either the provided power supply or power supply equipment that is safety certified according to UL, CSA, IEC, or other applicable national or international safety requirements for the country of use. All references to power supply in this document refer to equipment meeting these requirements.

WARNUNG: In Übereinstimmung mit den von der FCC (Federal Communications Commission) festgelegten Grenzwerten für die Einwirkung von Radiowellen muss bei Betrieb des Ethernet-Adapters der Abstand zwischen Körper und Antenne 20 cm betragen.

WARNUNG: Zur Vermeidung möglicher Verletzungen oder Schäden am Gerät muss entweder das mitgelieferte Netzteil oder ein Netzteil verwendet werden, das von der UL (Underwriters Laboratories Inc.), CSA

(Canadian Standards Organisation), IEC (International Electrotechnical Commission) oder von anderen, nationalen oder internationalen Sicherheitsvorschriften für das entsprechende Land zugelassen wurde. Alle Verweise auf Netzteile in diesem Dokument beziehen sich auf Netzgeräte, die diesen Anforderungen entsprechen.

⚠ **CAUTION:** *The Enterasys Networks power supply (part number 61-0107-000) input relies on a 16A rated building fuse or circuit protector for short circuit protection of the line to neutral conductors.*

⚠ **VORSICHT:** *Der Eingang des Enterasys Networks-Netzteils (Teilenummer 61-0107-000) benötigt zum Schutz vor Kurzschlüssen in den Nullleitern eine 16-A-Sicherung oder eine Überstromsicherung.*

Deciding Where to Place the Ethernet Adapter	Place the Ethernet Adapter in a dry, clean location near the hub, computer, or printer that will be connected to the Ethernet Adapter. The location must have a power source and be within the following distance of a Wi-Fi compliant wireless LAN access point or ad-hoc wireless station:

- For 802.11a compatibility, place the Ethernet Adapter within 50 m (164 ft) of a Wi-Fi compliant wireless LAN access point.

- For 802.11b/g compatibility, place the Ethernet Adapter within 100 m (328 ft) of a Wi-Fi compliant wireless LAN access point.

The location should be away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators, or other equipment that could cause radio signal interference.

Wall-Mounting the Ethernet Adapter	The Ethernet Adapter comes with two plastic anchors and two flat head mounting screws for mounting on a wall.

To wall-mount the Ethernet Adapter:

1 1 Place the two plastic anchors into a wall, then place two flat head mounting screws inside the plastic anchors, as shown in Figure 4.

Figure 4   Place the screw on the wall
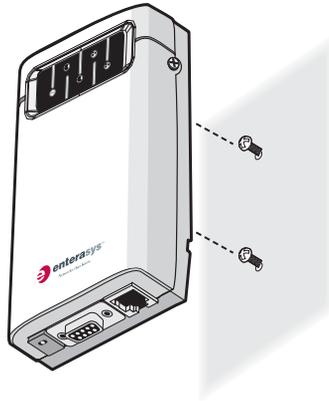
2 Place the Ethernet Adapter onto the wall, as shown in Figure 5.

Figure 5   Place the unit onto the wall
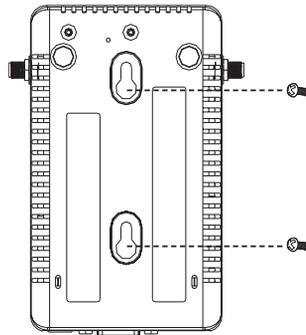
⚠ *CAUTION: Do not place the Ethernet Adapter on any type of metal surface. Select a location that is clear of obstructions and provides good reception.*

⚠ *VORSICHT: Legen Sie den Ethernet-Adapter nicht auf Metallflächen ab. Wählen Sie einen Ort ohne Störungen und mit gutem Empfang aus.*

Connecting the Ethernet Adapter

The Ethernet Adapter has power, Ethernet, and serial ports, as shown in Figure 6. Before connecting the Ethernet Adapter to an Ethernet device, connect the power.

Figure 6   Connecting the Power
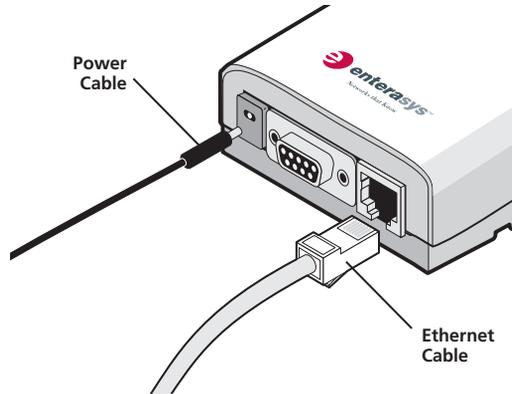
Connecting to a Serial Device

The Ethernet Adapter can also be connected to a serial device, as shown in Figure 7. Serial cables come with a variety of connector sizes.

Figure 7   Connecting a Serial Cable
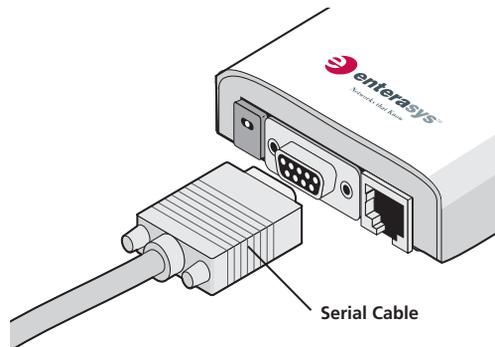
Connecting to an Ethernet Device   The Ethernet Adapter is designed to be connected to an Ethernet client device such as a hub, computer, or printer.

⚠ *CAUTION: To avoid the possibility of a transmission loop situation between the Ethernet Adapter and an access point, which could disrupt network operation, do not connect a Ethernet Adapter that is set in Wireless Client (Infrastructure) mode directly to the LAN (for example, through a wall port or through a hub that is connected directly to the LAN).*

⚠ *VORSICHT: Um eine Übertragungsschleife zwischen dem Ethernet-Adapter und einem Access Point zu verhindern, die den Netzwerkbetrieb stören könnte, darf ein im Modus Wireless Client (Infrastructure) (Drahtloser Client [Infrastruktur]) eingerichteter Ethernet-Adapter nicht direkt mit dem LAN verbunden werden (z. B. über eine Wandbuchse oder über einen direkt mit dem LAN verbundenen Hub).*

About the Client List   The Ethernet Adapter supports up to 16 specific Ethernet client devices. It uses a *client list* of MAC addresses to keep track of specific devices that have been connected.

After 16 different devices have been connected, the client list is full, and you must clear it before the next new device can associate with the network through the Ethernet Adapter.

To clear the list, you must access the Ethernet Adapter's Configuration Management System. Details are in "Clearing the Ethernet Client List" on page 49.

Connecting to a Hub   You can supply network connections for up to 16 devices, such as computers and network printers, by connecting the Ethernet Adapter to an Ethernet hub, as shown in Figure 8.

Figure 8   Connecting to a Hub
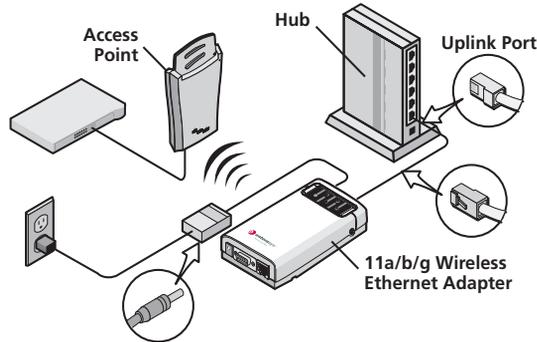
> *You can directly connect the Ethernet Adapter to a hub that does not have an uplink (MDIX) port, without the need of an Ethernet crossover cable.*

Connecting to a Network Printer   You can connect a network printer directly to the Ethernet Adapter or to a hub that is connected to the Ethernet Adapter. Used this way, the Ethernet Adapter allows you to place network printers in areas that are not wired for Ethernet.

1 Configure the network printer as you would for connecting it to the wired LAN. For details on configuring the printer, see your printer documentation.

2 If necessary, configure the Ethernet Adapter to associate with your access point.

3 Connect the Ethernet Adapter to the power supply in its permanent location.

4 Connect the network printer directly to the Ethernet Adapter as shown in Figure 9, or to a hub that is connected to the Ethernet Adapter as shown in "Connecting to a Hub" on page 17.

Figure 9   Connecting to a Network Printer
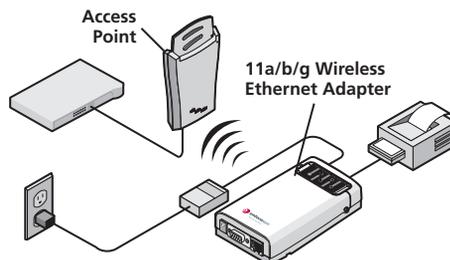
Connecting to a Computer

You can connect the Ethernet Adapter directly to a computer through Ethernet as shown in Figure 10. Used this way, the Ethernet Adapter can convert a desktop computer to a wireless computer. This connection also allows you to configure a Ethernet Adapter before connecting it to another device.

Figure 10   Connecting to a Computer
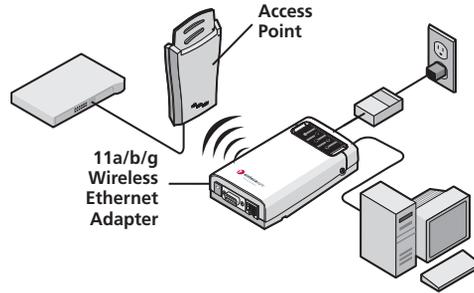
Checking the LED Indicators

When the Ethernet Adapter is connected to power, LEDs indicate activity as follows:

Figure 11   LED Indicators
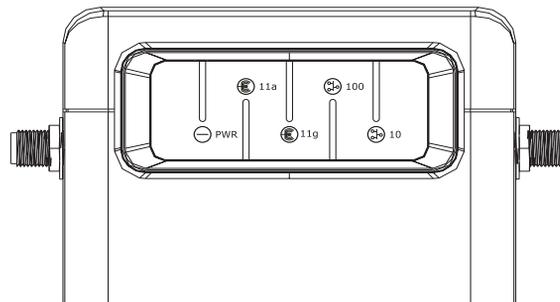
Table 3 LED Descriptions

LED	Color	Indicates
Power	Green	The Ethernet Adapter is powered up and operating normally.
	Off	The Ethernet Adapter is not receiving power or there is a fault with the power supply.
11a	Green (solid)	The Ethernet Adapter has an 802.11a 5 GHz radio band connection.
	Green (blinking)	The Ethernet Adapter has WLAN frame transmission over the 802.11a 5 GHz radio band.
	Off	No link is present.
11b/g	Green (solid)	The Ethernet Adapter has an 802.11g 2.4 GHz radio band connection.
	Green (blinking)	The Ethernet Adapter has WLAN frame transmission over the 802.11g 2.4 GHz radio band.
	Off	No link is present.
100	Green (solid)	The Ethernet Adapter has a 100 Mbps Fast Ethernet connection.
	Green (blinking)	The Ethernet Adapter has 100 Mbps Fast Ethernet activity.
	Off	No link is present.
10	Green (solid)	The Ethernet Adapter has a 10 Mbps Ethernet connection.
	Green (blinking)	The Ethernet Adapter has 10 Mbps Ethernet activity.
	Off	No link is present.

Attaching An External Antenna	The Ethernet Adapter has two internal diversity dual-band antennas.

If you want to increase the range of the Ethernet Adapter, an external antenna can be attached to the external antenna connector on the Ethernet Adapter.

The Enterasys Networks-approved external antenna for this Ethernet Adapter is the Enterasys Networks 2.4/5 GHz Omnidirectional Workgroup Ethernet Adapter Antenna. For more information, go to **http://www.enterasys.com/products/wireless**

Determining if you Need to Configure the Ethernet Adapter

If your network has a DHCP server and no special security requirements, you can most likely use the Ethernet Adapter just as it is shipped from the factory.

> **i** *It takes approximately one to two minutes for the Ethernet Adapter to determine if there is a DHCP server on the network.*

View the Ethernet Adapter's default settings on page 22 to determine whether or not you need to configure the Ethernet Adapter for your network. If the factory defaults meet your requirements, you can connect the Ethernet Adapter as described in "Connecting the Ethernet Adapter" on page 15.

If your network does not have a DHCP server or is more complex, you may have to configure the Ethernet Adapter and organize devices so that you can manage the wireless LAN easily and keep it secure. You can use the Enterasys Networks Wireless Infrastructure Device Manager (Widman) included on the Enterasys Networks Installation CD.

> **i** *For non-U.S. versions of the Ethernet Adapter, you need to set the Country mode. This is done when you first open the Ethernet Adapter's Configuration Management System. See "Using the Configuration Management System" on page 29 for instructions.*

Networks with a DHCP Server

If your network has a DHCP server, an IP address is automatically assigned to the Ethernet Adapter. It takes approximately one to two minutes for the Ethernet Adapter to determine if there is a DHCP server on the network. Use the Enterasys Networks Wireless Infrastructure Device Manager

(Widman) included on the Enterasys Networks Installation CD to locate the Ethernet Adapter on the network and view its IP address.

Alternatively, you can enter the Ethernet Adapter's IP address into a web browser on a computer on the same subnet to view the Ethernet Adapter's system status or change its configuration. See "Configuring the Ethernet Adapter" on page 25 for instructions.

Networks without a DHCP Server

If your network does not have a DHCP server, the Ethernet Adapter uses a default IP address (169.254.2.2) that is assigned at the factory. You can use that IP address to configure the Ethernet Adapter, or you can assign a new IP address to the Ethernet Adapter.

To verify that the Ethernet Adapter is using the default IP address assigned at the factory:

1 Connect a computer directly to the Ethernet Adapter using the supplied standard Category 5 UTP Ethernet cable.

See Figure 10 on page 18 for a connection diagram.

2 Enter the Ethernet Adapter's default IP address (169.254.2.2) into the computer's web browser.

- If the Configuration Management System starts, the Ethernet Adapter is using the factory assigned IP address. You can configure the Ethernet Adapter with the following login information:
  - Login name: admin
  - Password: none (blank)

  See "Configuring the Ethernet Adapter" on page 25 for detailed instructions.

- If the Configuration Management System does not start, the Ethernet Adapter is on a different subnet than the computer. Install and start the Enterasys Networks Wireless Infrastructure Device Manager to discover the Ethernet Adapter's IP address. See "Using the Enterasys Networks Wireless Infrastructure Device Manager" on page 26 for instructions.

Ethernet Adapter Default Settings

Table 4 shows the Ethernet Adapter configuration factory defaults.

Table 4 Factory Default Settings

Property	Default Setting
Device Name	RoamAbout Ethernet Adapter - RBTSA
Device Location	None (blank)
Country	For U.S. version, United States and Canada
	For non-U.S. version, set by the user
Client Mode	Support multiple wired Ethernet clients
IP Network Setting	Obtain IP address automatically
IP Address	Obtained automatically (with a DHCP server)
	169.254.2.2 (without a DHCP server)
Subnet Mask	Obtained automatically (with a DHCP server)
	255.255.0.0 (without a DHCP server)
Gateway IP Address	Obtained automatically (with a DHCP server)
	0.0.0.0 (without a DHCP server)
Network Mode	Wireless Client (Infrastructure)
Radio Mode	Auto Select
Wireless LAN Service Area	Attach to any WLAN Service Area (ESSID) automatically
Channel Selection	Automatic Best Channel (uses access point setting)
Transmit Power	100%
Antenna Selection	Internal
Data Preamble	Long (if Network Mode is set to *Ad-Hoc*)
	Same as access point setting (if Network Mode is set to *Wireless Client [Infrastructure])*
Security Setting	Open System (no security)
802.1x Authentication State	Disabled
SNMP	Enabled
Access Control List	Disabled
Administration Login Name	admin
Administration Password	None (blank)
TFTP Server IP Address	None
FTP Server IP Address	None

Using the Enterasys Networks Installation CD

The Enterasys Networks Installation CD contains the following tools and utilities:

- **Enterasys Networks Wireless Infrastructure Device Manager**—an administration tool that helps you select Enterasys Networks wireless LAN devices and launch their configurations in your Web browser.

To use the Enterasys Networks Installation CD, you need a computer running one of the operating systems and browser listed in Table 5.

Table 5   Supported Operating Systems and Browser

Operating Systems	Windows XP
	Windows 2000
	Windows NT 4.0
	Windows Me
	Windows 98
Browser	Internet Explorer (latest version is recommended)

To install one of the tools on your computer:

1 Turn on the computer.

2 Insert the Enterasys Networks Installation CD in the CD-ROM drive.

The setup menu appears. If it does not appear, you can start the setup menu from the Windows Start menu. For example: *Start > Run > d:launch.exe*.

3 In the menu, click *Tools and Utilities*.

4 In the next screen, click the tool you want to install.

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

Reboot the computer if prompted to do so.

6 Launch the tool from the Windows Start menu.

For details on using the Wireless Infrastructure Device Manager, see "Using the Enterasys Networks Wireless Infrastructure Device Manager" on page 26.

3 CONFIGURING THE ETHERNET ADAPTER

If the Ethernet Adapter configuration that was set at the factory does not meet your network requirements, or if you want to customize the settings, you can use these tools to change the configuration:

Table 6   Configuration Tools

Configuration Tool	Description
Enterasys Networks Wireless Infrastructure Device Manager (Widman)	Helps you locate Enterasys Networks wireless LAN devices on the network, select a device and view its properties, and launch the device's configuration in your Web browser.
	See "Using the Enterasys Networks Wireless Infrastructure Device Manager" on page 26 for details.
Enterasys Networks 11a/b/g Wireless Ethernet Adapter Configuration Management System	Resides on the Ethernet Adapter and lets you configure the Ethernet Adapter through your web browser. The latest version of Internet Explorer is recommended.
	See "Using the Configuration Management System" on page 29 for details.

Using Secure Web Server Connection

The Ethernet Adapter can be configured using Secure Socket Layer (SSL) technology, which is used to encrypt data exchanged between the computer and the Ethernet Adapter during a configuration session.

Without SSL enabled, data is exchanged in the form of plain text and can be intercepted during the configuration session.

You must enable the HTTPS option to establish a secure session. See "Web GUI Protocol" in Table 9 on page 32 for instructions.

Using the Enterasys Networks Wireless Infrastructure Device Manager	The Enterasys Networks Wireless Infrastructure Device Manager (Widman) helps you locate Enterasys Networks wireless LAN devices on the network, select a device and view its properties, and launch the Configuration Management System in your Web browser.

The Wireless Infrastructure Device Manager must be installed on a computer that:

- Has a working Ethernet adapter.
- Is running Internet Explorer and one of the Windows operating systems listed in "Using the Enterasys Networks Installation CD" on page 23.
- Is on the same subnet as the Ethernet Adapter.

i   *See "Using the Enterasys Networks Installation CD" on page 23 for installation instructions.*

The device to be configured using the Wireless Infrastructure Device Manager must be:

- Connected to power.
- Wired to the network, associating with the wireless network, or, in some cases with the Ethernet Adapter, connected directly to the computer.

i   *If there is more than one device with the same name in the network (for example, RoamAbout Ethernet Adapter - RBTSA), make a note of the MAC address of the device you want to select so that you can identify it in the device manager.*

If you do not have a DHCP server on your network, it can take up to one minute for a device to become discovered after it has been powered up.

To use the Enterasys Networks Wireless Infrastructure Device Manager:

1 Launch the device manager by selecting *Start > Programs > Wireless Infrastructure Device Manager*.

If you have more than one network adapter installed on your computer, you may be prompted to choose a network adapter. Choose the appropriate adapter and click *OK*.

The Wireless Network Tree appears in the Enterasys Networks Wireless Infrastructure Device Manager window, as shown in Figure 12.

The tree lists all WLAN service areas on the network and expands to show the Enterasys Networks wireless LAN devices that are associated to each service area. Devices in a different subnet than your computer are identified with exclamation points (!). You can refresh this display by clicking *Refresh*. You should refresh the display, for example, after you change a device IP address.

Figure 12   Wireless Infrastructure Device Manager Wireless Network Tree
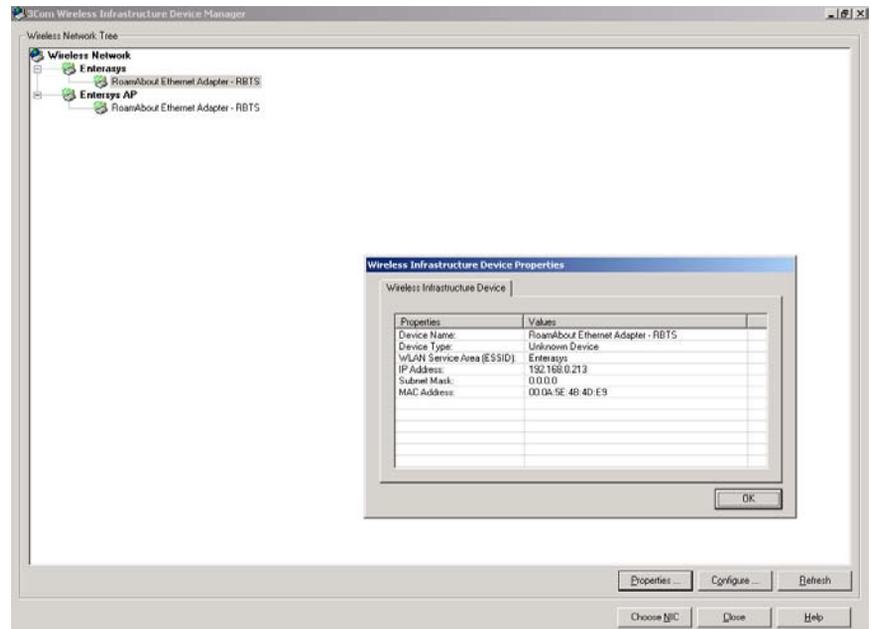
2   In the Wireless Network Tree, select the device you want to configure.

If more than one wireless LAN device appears in the tree and you are not sure that you have selected the right one, click *Properties* and check the MAC address to verify that it is the one you want.

3   Click *Configure*.

■   If the selected device is on the same subnet as your computer, the Configuration Management System main page appears in your Web browser. See "Using the Configuration Management System" on page 29, for details.

■   If the selected device is on a different subnet, the device manager helps you to assign an IP address on the same subnet as your computer, as shown in Figure 13. You may accept the address offered or enter an address and click *Next*.

Figure 13   Wireless Infrastructure Device Manager Pre-IP Configuration
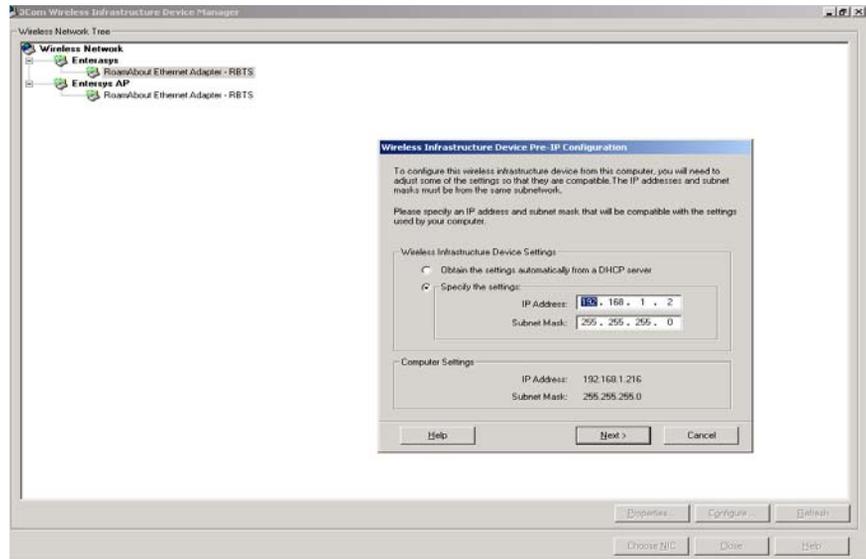
4 The next window prompts for an administrative password to allow the new IP address to be set. If this is the first time the device is being configured, leave the password field blank and click *Next*.

The configuration main page appears in your Web browser. See "Using the Configuration Management System" on page 29 for details.

Table 7 describes the functions of the buttons in the Enterasys Networks Wireless Infrastructure Device Manager window.

Table 7   Infrastructure Device Manager Options

Button	Description
Properties	Displays the following properties of the selected device: Device Name, Device Type, Wireless LAN Service Area (ESSID), IP Address, Subnet Mask, and MAC Address.
Configure	Launches the Configuration Management System for the selected device. If the selected device is on a different subnet, you are prompted to assign an address on the same subnet as your computer.
Refresh	Scans the network and displays the connected Enterasys Networks 11a/b/g Wireless LAN devices.
Choose NIC	If your computer has more than one network interface card installed, allows you to choose which card to use.
Close	Closes the device manager window and ends the session.
Help	Launches the device manager help page in your browser.

| **Using the Configuration Management System** | The Enterasys Networks11a/b/g Wireless Ethernet Adapter Configuration Management System resides on the Ethernet Adapter and lets you configure the Ethernet Adapter through your Web browser. |

To use the Configuration Management System, the computer you are using to connect to the Ethernet Adapter must be located on the same subnet as the Ethernet Adapter.

There are two ways to access the Configuration Management System:

- Enter the IP address of the Ethernet Adapter in your computer's web browser.
- Start the Enterasys Networks Wireless Infrastructure Device Manager, locate the Ethernet Adapter, and then click *Configure*.

> **i** *For non-U.S. versions of the Ethernet Adapter, when you first open the Configuration Management System you are prompted to select the country in which the Ethernet Adapter is operating. Select the country in which the Ethernet Adapter is installed to ensure compliance with local regulations, and then click Apply.*

When you first open the Configuration Management System, you are prompted for a user name and password:

- User name — admin
- Password — blank (press enter)

The Configuration Management System displays the Connection Status page, as detailed in Table 8.

Table 8 Connection Status Page

Property	**Description**	**Default Value**
Connection	The MAC address of the associated access point.	N/A
Network Type	The type of network for which the Ethernet Adapter is configured: *Wireless Client (Infrastructure)* or *Ad-hoc (Peer-to-Peer)*.	Wireless Client (Infrastructure)
SSID	The Service Set ID.	Varies
Radio Mode	The way in which the Ethernet Adapter selects a radio band.	Auto-Select

Table 8   Connection Status Page (continued)

Current Channel	The channel over which the Ethernet Adapter is communicating with clients.	Varies
Security	The type of security for which the Ethernet Adapter is configured.	Open System (no security)
Rx Data Rate (Mbps)	The most recent data reception rate.	N/A
Tx Data Rate (Mbps)	The most recent data transmission rate.	N/A
Link Quality	The normalized transmitted data rate (that is, the current data rate over the maximum data rate). Note: Link Quality is shown in Infrastructure mode only.	N/A
Received Signal Strength	The strength of the radio signal that the Ethernet Adapter detects. Note: Received Signal Strength is shown in Infrastructure mode only.	N/A
Activity (Packets Rx)	The number of packets the Ethernet Adapter has received.	N/A
Activity (Packets Tx)	The number of packets the Ethernet Adapter has transmitted.	N/A
IP Address	The IP address of the Ethernet Adapter.	Varies

Clearing and Applying System Configuration Settings

The pages in the Configuration Management System have two buttons: *Clear* and *Apply*.

- *Clear* returns the settings to the values they were when you last clicked *Apply*.

- *Apply* stores the settings permanently in the nonvolatile flash memory. After you click *Apply*, the new settings take effect and you can see the changes on the System Summary page.

⚠ *CAUTION: Your changes are lost if you forget to click* Apply *before moving to a new configuration page.*

⚠ *VORSICHT: Wenn Sie nicht auf "Apply" (Übernehmen) klicken, bevor Sie zu einer neuen Konfigurationsseite wechseln, gehen Ihre Änderungen verloren.*

Changing System Properties

Under System Configuration, click *System Properties*. The System Properties page displays the properties of the selected Ethernet Adapter. You can change properties by entering a value in a field (see Table 9). When you are finished, click *Apply*. Table 9 describes the properties.

Table 9   System Properties Page

Property	Description	Default Value
Device Name	This name appears in the System Summary window. You can change the default name to one of your choice.	RoamAbout Ethernet Adapter - RBTSA
Device Location	If you use the default device name, entering the location is optional.	None
Client Mode	This setting allows the Ethernet Adapter to support single or multiple Ethernet clients attached to the Ethernet Adapter.	Support multiple wired Ethernet clients
	Support Single Wired Ethernet Client is used only when the Ethernet Adapter is used for replacement of a Enterasys Networks Ethernet Client Ethernet Adapter. Select a MAC option:	
	■ *Capture*: Each time the Ethernet Adapter is powered on, it captures its MAC address from the first packet it receives on the Ethernet port. The Ethernet Adapter detects and uses the same MAC address as the device plugged into the Ethernet port.	
	The Ethernet Adapter uses the previously captured MAC address upon power-on until the first packet is received on the Ethernet port.	
	■ *Dynamic*: The Ethernet Adapter changes its MAC address each time the device plugged into the Ethernet port changes.	
	The Ethernet Adapter detects the MAC address of the device plugged into the Ethernet port and uses that as its own. The Ethernet Adapter uses the built-in MAC address upon power-on until a packet is received on the Ethernet port.	
	■ *Built-in*: The Ethernet Adapter uses the manufacturing radio MAC address as default.	

Table 9   System Properties Page (continued)

Property	Description	Default Value
Web GUI Protocol	This setting allows users to enable the secure data exchange scheme over SSL during a configuration session.	HTTP
	■ HTTPS — enables SSL technology.	
	■ HTTP — disables SSL technology.	

Setting IP Network Properties

Under System Configuration, click *IP Network*. The IP Network Properties page appears, where you can change the settings shown in Table 10.

If you change the IP address and click *Apply*, you cannot continue to configure the device using the old IP address. Therefore, you must do the following steps after changing the IP address:

1 Close your browser.

2 Return to the Enterasys Networks Wireless Infrastructure Device Manager and click *Refresh*.

3 Select the device and click *Configure* to start a new configuration session.

Table 10 describes the IP Network properties.

Table 10   IP Network Properties Page

Setting	Description
IP Network Setting	This setting allows you to change the IP address of the device.
	To let the device get an IP address automatically from a DHCP server, select *Obtain an IP address automatically* and click *Apply*.
	To specify an IP address, select *Specify an IP address*, enter the IP address parameters in the spaces provided, and click *Apply*.
IP Address	When *Specify an IP address* is selected, enter the IP address in the space provided, and click *Apply*.
Subnet Mask	When *Specify an IP address* is selected, enter the Subnet Mask in the space provided, and click *Apply*.
Gateway IP Address	When *Specify an IP address* is selected, enter the Gateway IP Address in the space provided, and click *Apply*.

Setting Wireless Network Properties

Under System Configuration, click *Wireless Network*. The Wireless Network Properties page appears, where you can select different wireless settings, as described in Table 11. When you are finished, click *Apply*.

The Ethernet Adapter supports *Dynamic* and *Static Turbo* modes and boosts throughput up to 108 Mbps.

The *Dynamic Turbo* mode allows automatic switching between normal and turbo modes without modification by the user. The feature increases throughput when bandwidth demands are high. When bandwidth demands are low and at regular intervals, normal mode allows legacy connectivity and new associations. The *Dynamic Turbo* mode connection between the Ethernet Adapter and the access point may turn to normal mode connection if another station associates with the access point in normal mode.

The *Static Turbo* mode operates by using two radio channels and does not switch to normal mode. *Static Turbo* mode must be configured by the user on both the access point and the station.

Table 11   Wireless Network Page

Setting	Description
Network Mode	Select *Wireless Client (Infrastructure)* to associate with an access point.
	Select *Ad-hoc (Peer-to-Peer)* to join or form an ad-hoc network.
Radio Mode	See "Network Configuration and Planning" on page 9 for information on selecting the best Radio Mode for your network.
	■ Select *Auto Select* to have the Ethernet Adapter select the best Radio Mode automatically.
	■ Select *802.11a* to set the Ethernet Adapter to operate with either 802.11a mode or 802.11a Dynamic Turbo mode. Dynamic Turbo mode is entered only when the channel is set to 40, 48, 56, 153, or 161 for 802.11a networks.
	■ Select *802.11a Turbo* to set the Ethernet Adapter to operate with 802.11a Static Turbo mode. Do not select this mode unless the access point you intend to associate with is running in 802.11a Static Mode.
	■ Select *802.11b/802.11g* to set the Ethernet Adapter to operate with either 802.11b/g mode or 802.11g Dynamic Turbo mode. Dynamic Turbo mode is entered only when the channel is set to 6 for 802.11g networks.
	■ Select *802.11g Turbo* to set the Ethernet Adapter to operate with 802.11g Static Turbo mode. Do not select this mode unless the access point you intend to associate with is running in 802.11g Static mode.

Table 11   Wireless Network Page (continued)

Setting	Description
Wireless LAN Service Area	Select *Attach to any WLAN Service Area (ESSID) automatically* to allow the Ethernet Adapter to associate with any access point without specifying the ESSID. In this mode, the Ethernet Adapter uses the ESSID of the access point with the best signal strength. This mode is not available when the network mode is *Ad-hoc* (Peer-to-Peer).
	Select *Specify the Wireless LAN Service Area* to allow the Ethernet Adapter to associate only with access points with the same service area. You may enter the WLAN service area name or select it from the list. You must specify the WLAN service area when the network mode is *Ad-hoc* (Peer-to-Peer).
	To maintain a wireless association, the WLAN service area on a Ethernet Adapter and the access point with which it is associated must match exactly. Therefore, if the Ethernet Adapter is set to *Specify the WLAN Service Area* and you change the access point WLAN service area, make sure to also change the Ethernet Adapter WLAN service area.
Channel Selection	If Radio Mode is set to *Auto Select*, you do not have the following options to choose from.
	When the network mode is *Wireless Client (Infrastructure)*, a user may have the Ethernet Adapter automatically select an appropriate channel by using *Automatic Best Channel* or specify the channels by using *Specify Channel*.
	When the network mode is *Ad-hoc* (Peer-to-Peer) you may specify channel selection as follows:
	■ *Automatic Best Channel*—When this option is enabled, the Ethernet Adapter scans the primary channels. If the Ethernet Adapter is establishing a new ad-hoc network, it chooses the channel with the least number of packets. If the Ethernet Adapter is joining an existing ad-hoc network, it selects the channel in use.
	■ *Specify Channel*—Click the button preceding this option and enter the Advanced Wireless Network page. On this page, you can choose channels from the Channel list.
Transmit Power	This option specifies the level of transmission power. Select one of the values (100%, 50%, 25%, 12%, min) from the drop-down menu.
	Decrease the Transmit Power setting if more than one Ethernet Adapter is using the same channel frequency.

Table 11   Wireless Network Page (continued)

Setting	Description
Antenna Selection	Select an antenna for the radio signal:
	■ *Internal*—this default setting should be used in most circumstances.
	■ *External and one internal antenna*—this setting automatically determines which antenna is best for sending packets to individually attached clients. Choose this setting if the Ethernet Adapter is located in a place that is surrounded or hindered by metal paths or walls.
Data Preamble	To increase performance, click *Short (Enhanced performance)*. When equipment that does not support short preamble is also being used, click *Long (Wi-Fi Interoperable)*.
	Note: The Data Preamble option is available in ad-hoc mode only. However, the *Short* Data Preamble option is not available for 802.11a and 802.11a Turbo modes in ad-hoc mode.

Manually Selecting Radio Channels

On the Advanced Wireless Network page, you can manually select the radio channels and radio modes. The Ethernet Adapter only looks for a best SSID that matches the specified radio mode on the specified channels.

Setting Up an Ad-Hoc Network

Operating in ad-hoc mode, two or more Ethernet Adapters can associate among themselves to form an ad-hoc network without the intervention of an access point. You may wish to set up an ad-hoc network, for example, if a group is working away from the office, or if a group in the office needs to share files apart from the wired LAN.

⚠ **CAUTION:** *To ensure correct operation, the settings on the two Ethernet Adapters must match exactly. To avoid the possibility of losing wireless association while you are configuring, Enterasys Networks recommends that you connect the Ethernet Adapter directly to the computer.*

⚠ **VORSICHT:** *Um einen fehlerfreien Betrieb zu gewährleisten, müssen die Einstellungen auf den beiden Ethernet-Adaptern genau übereinstimmen. Es wird empfohlen, den Ethernet-Adapter direkt mit dem Computer zu verbinden, um während der Konfiguration die drahtlose Verbindung nicht zu verlieren.*

1 Connect the first Ethernet Adapter to power and use the Ethernet cable to connect it to the computer.

2 Use the Enterasys Networks Wireless Infrastructure Device Manager to select the Ethernet Adapter and launch the Configuration Management System.

3 Under System Configuration, click *Wireless Network*.

4 In the Wireless Network page:

  a Locate the Network Mode field and select *Ad-hoc (Peer-to-Peer)*.

  b Specify the Wireless LAN Service Area and the Channel Selection as described in "Setting Wireless Network Properties" on page 33.

  c Set the *Data Preamble*.

  To increase performance, select *Short (Enhanced performance).* When equipment that does not support short preamble is also being used, select *Long (Wi-Fi Interoperable)*. When you are finished, click *Apply.*

  Security settings default to *Open System* (no security). Optionally, you can set different WEP settings as described in "Changing Wireless Security Settings" on page 36.

5 When you are finished, click *Apply.*

6 End the browser session.

7 Repeat steps 1–6 with the second Ethernet Adapter. Make sure you configure Ethernet Adapter settings to match exactly. When you are finished, click *Apply* and end the browser session.

8 Connect the Ethernet devices to the Ethernet Adapters. If you use hubs, make sure that the Ethernet Adapters are connected through the hub uplink ports.

Changing Wireless Security Settings

Under *System Configuration*, click *Wireless Security*. The Wireless Security Settings page appears, where you can select the type of security to be used on the Ethernet Adapter.

The Ethernet Adapter can be configured to support three types of data encryption: WEP, TKIP, and AES. After selecting a data encryption type, you can select an authentication type.

The following sections describe the settings. To maintain wireless association, the settings on clients and the access points they associate with (or other members of an ad-hoc network) must match exactly.

No Security (Open System)

No encryption is used. Network communications could be intercepted by unintended recipients.

40/64-bit Shared Key (WEP)

This option encrypts the wireless transmissions to protect data, but still allows communication among compatible wireless LAN clients and access points from third-party manufacturers that are Wi-Fi certified.

This type of security requires you to set up encryption in one of the following ways:

- Shared keys—Hexadecimal keys are sequences of hexadecimal digits arranged into four keys. A hexadecimal digit may be a letter from A to F or a number from 0 to 9. This type of encryption is compatible with equipment from other manufacturers that use Wi-Fi certified 40-bit encryption. To enter the keys, select *Specify shared keys and which to use*. In the shared keys window, enter all the keys in the provided spaces, then select a radio button in the Selected Key column to specify which key to use and select *Apply.*

104/128-bit Shared Key

This option can be used with other Enterasys Networks 11a/b/g Wireless LAN devices and with equipment from certain manufacturers that also support 128-bit shared key encryption. It provides a higher level of security than the 40-bit Shared Key (Wi-Fi) option and uses a more complicated type of encryption. This type of security requires you to set up encryption using a string or shared keys as described in "40/64-bit Shared Key (WEP)" on page 37.

128/152-bit Shared Key

This option can be used with other Enterasys Networks 11a/b/g Wireless LAN devices and with equipment from certain manufacturers that also support 152-bit shared key encryption. It provides a higher level of security than the 128-bit Shared Key option and uses a more complicated type of encryption. This type of security requires you to set up encryption using a string or shared keys as described in "40/64-bit Shared Key (WEP)" on page 37.

> *Click the button preceding* Specify Shared Keys and Which Key to Use *to create or modify WEP keys.*

TKIP

The Temporal Key Integrity Protocol (TKIP) option improves data encryption over WEP scheme by dynamically updating the encryption keys every 10,000 packets. TKIP provides per-packet key mixing, a message integrity check, and a re-keying mechanism.

To use TKIP:

1 On the Wireless Security page, select *TKIP*.

2 Select *WPA-PSK* for home network or *WPA* for the scenarios where RADIUS servers are employed:

   ■ WPA-PSK: Enter a pass-phrase key or hexadecimal key. The key can be generated based on a pass-phrase or a sequence of manually entered 64 hexadecimals. The 64 hexadecimals can be automatically generated by selecting *Generate a Random Key*.

   ■ WPA: Select an authentication scheme (TTLS or PEAP) and a relevant authentication type, and enter a user name and a password.

3 Select *Apply*.

Click the button of TKIP to set TKIP relevant parameters.

AES

The Advanced Encryption Standard (AES) option uses the highest security cipher for data encryption.

To use AES:

1 On the Wireless Security page, select *AES*.

2 Select *WPA-PSK* for home network or *WPA* for the scenarios where RADIUS servers are employed:

   ■ WPA-PSK: Enter a pass-phrase key or hexadecimal key. The key can be generated based on a pass-phrase or a sequence of manually entered 64 hexadecimals. The 64 hexadecimals can be automatically generated by selecting *Generate a Random Key*.

> **i** *If the network mode is set to* Ad-hoc (Peer-to-Peer)*, the option* WPA-NONE *appears, instead of* WPA-PSK.

   ■ WPA: Select an authentication scheme (TTLS or PEAP) and a relevant authentication type, and enter a user name and a password.

3 Select *Apply*.

Click the button of AES to set or modify AES relevant parameters.

Changing RADIUS Settings

Under *System Configuration*, click *RADIUS*. The RADIUS page appears, where you can set the primary and secondary RADIUS Server settings.

This page allows for configuration of a Remote Access Dial-in User Service (RADIUS) server for authentication purposes in 802.1x networks. You can change the settings by entering values in the fields as described in Table 12. When you are finished, select *Apply*.

Table 12   RADIUS Authentication Server Settings

Setting	Description
802.1x Authenticator State	Enable or disable RADIUS authentication by selecting *Enable* or *Disable*.
Primary RADIUS Server	Enter the IP address of the primary RADIUS Authentication Server. Make sure this address matches the address set in the RADIUS Authentication software.
Primary RADIUS Port	Enter the port number of the primary RADIUS Authentication Server. Make sure this number matches the number set in the RADIUS Authentication software. The default port is 1812.
Primary RADIUS Secret	Enter the password of the primary RADIUS Authentication Server. Make sure this password matches the password set in the RADIUS Authentication software.
Secondary RADIUS Server	Enter the IP address of the secondary RADIUS Authentication Server. Make sure this address matches the address set in the RADIUS Authentication software.
Secondary RADIUS Port	Enter the port number of the secondary RADIUS Authentication Server. Make sure this number matches the number set in the RADIUS Authentication software. The default port is 1812.
Secondary RADIUS Secret	Enter the password of the secondary RADIUS Authentication Server. Make sure this password matches the password set in the RADIUS Authentication software.

Changing SNMP Settings   Under System Configuration, click *SNMP* to display and change settings for the Simple Network Management Protocol.

To communicate with the Ethernet Adapter, the SNMP agent must first be enabled and the Network Management Station must submit a valid community string for authentication. Select *SNMP Enable* and enter data into the fields as described below. When you are finished, click *Apply*.

Table 13   SNMP Settings

Setting	Description
SNMP	Enables or disables SNMP.
Contact	Sets the location string that describes the system location. Maximum length: 255 characters.
Community Name (Read Only)	Specifies a community string with read-only access. Authorized management stations are able to retrieve MIB objects. Maximum length: 23 characters.
Community Name (Read/Write)	Specifies a community string with read-write access. Authorized management stations are able to both retrieve and modify MIB objects. Maximum length: 23 characters.
Trap Destination IP Address	Enter the IP address of the trap manager that will receive these messages.
Trap Destination Community Name	Enter the community name of the trap manager that will receive these messages.

Using the Access Control List   You can use the Access Control List to allow or prohibit access to the wireless network from Ethernet clients.

Follow these steps to build the Access Control List:

1 Under System Configuration, click *Access Control List*.

2 On the Access Control List page, click *Add*.

The Access Control List New ACL page appears.

3 On the New ACL page, enter the MAC address of the client you want to add to the Access Control List, select the permission type, and click the Add button to substantially add it.

4 Repeat steps 2 and 3 for each client.

5 Select the System Default Mode:

- Allow—allows the client to access the Ethernet Adapter.

- Deny—prohibits the client from accessing the Ethernet Adapter.

⚠ **CAUTION:** *With the Allow option of the* System Default Mode *selected, the Ethernet Adapter allows all Ethernet frames except those carrying the MAC addresses that are specified in the Access Control List and have the permission type Deny. Similarly, with the Deny option of the* System Default Mode *selected, the Ethernet Adapter denies all Ethernet frames except those carrying the MAC addresses that are specified in the Access Control List and have the permission type Allow.*

Make sure that the MAC address of the computer through which you are configuring the Ethernet Adapter is not specified in the Access Control List with the permission type Deny *if you want to set the access control type to Allow. If you want to set the Access Control Type to* Deny, *make sure that the MAC address of the computer is included in the Access Control List with the permission type* Allow. *Failure to do so results in access to the Ethernet Adapter being blocked; the Ethernet Adapter will no longer be configurable through the computer.*

⚠ **VORSICHT:** *Wenn im System Default Mode (Standardsystemmodus) die Option "Allow" (Zulassen) aktiviert ist, werden im Ethernet-Adapter alle Ethernet-Frames außer denen zugelassen, die in der Zugriffssteuerungsliste angegebene MAC-Adressen enthalten und den Berechtigungstyp "Deny" (Blockieren) besitzen. Wenn im System Default Mode (Standardsystemmodus) die Option "Deny" (Blockieren) aktiviert ist, werden im Ethernet-Adapter dementsprechend alle Ethernet-Frames außer denen gesperrt, die in der Zugriffssteuerungsliste angegebene MAC-Adressen enthalten und den Berechtigungstyp "Allow" (Zulassen) besitzen.*

Die MAC-Adresse des Computers, über den der Ethernet-Adapter konfiguriert wird, darf daher in der Zugriffssteuerungsliste nicht den Berechtigungstyp "Deny" (Blockieren) besitzen, wenn Sie den Zugriffssteuerungstyp auf "Allow" (Zulassen) festlegen möchten. Soll der Zugriffssteuerungstyp auf Deny (Blockieren) festgelegt werden, muss die MAC-Adresse des Computers in der Zugriffssteuerungsliste enthalten sein und den Berechtigungstyp "Allow" (Zulassen) aufweisen. Andernfalls wird der Zugang zum Ethernet-Adapter blockiert, der dann nicht mehr über den Computer konfiguriert werden kann.

6 Click *Apply.*

To delete one or more than one client(s) from the Access Control List, select the client(s) and then click *Delete*.

Serial Port   Under System Configuration, click *Serial Port* to set up network serial port operation.

About UART

A Universal Asynchronous Receiver/Transmitter (UART) is the fundamental hardware for serial communication, controlling the speed and method of data transfer of the serial port.

Applications utilizing a network serial port between an RS-232 interface and a wireless device use a TCP/IP socket connection. Any program that uses standard TCP/IP network sockets may be used to communicate with the serial port of the Ethernet Adapter. Once a socket is established to the Ethernet Adapter, any data written to the socket is sent out the serial port of the Ethernet Adapter. At the same time, any data received by the serial port of the Ethernet Adapter is returned via the socket connection. The serial port communicates to the wireless port only. The serial port cannot communicate with the wired Ethernet port.

The Ethernet Adapter network serial port may be used in two modes:

■ Server Mode — TCP Listen Port
■ Client Mode — TCP Connect Port

In Server Mode, the Ethernet Adapter waits for a TCP/IP socket connection to be made over the wireless port by the network program with which it will communicate. Server mode should be used if you have a central server that expects to open a TCP/IP socket connection to the Ethernet Adapter.

In Client Mode, the Ethernet Adapter establishes socket connection over the wireless port to the IP address and port number specified in the configuration. Client mode should be used if your system expects the Ethernet Adapter to open a TCP/IP socket connection to a central server.

Configuring Operation Mode

Attach your computer to the serial port on the Ethernet Adapter, and then configure the Ethernet Adapter through the computer.

■ Select *Enable* to establish a TCP/IP socket with a remote computer in either infrastructure or ad-hoc mode. This allows you to do data communication with the remote computer.
■ Select *Disable* to disable the Network Serial Port.

Configuring UART Settings

For proper operation, it is imperative that these settings always match the settings of the device to which the Ethernet Adapter is connected via the RS-232 port. There are two groups of parameters that need to be configured to accomplish this task: UART Settings and Flow Control Settings.

Flow control is the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data.

To configure the UART settings:

1 Select the baud rate of your device.

  The baud rate indicates the data transfer rate of the serial port.

2 Determine the data bits setting of the device you are connecting to the Ethernet Adapter, then set the *Data Bits* setting for the Ethernet Adapter that matches the data bits setting of that device.

  The Data Bits setting determines the number of bits used to transmit data. The possible values are 7 and 8.

3 Determine the stop bits setting of the device you are connecting to the Ethernet Adapter, then set the *Stop Bits* setting on the Ethernet Adapter that matches the stop bits setting of that device.

  The *Stop Bits* setting determines the number of bits used to represent an end of a character. The value can be 1 or 2.

4 Determine the parity bit setting of the device you are connecting to the Ethernet Adapter, then set the *Parity Bit* setting on the Ethernet Adapter that matches the parity bit setting of that device.

  The *Parity Bit* setting is used to check for correct data transmission. Options are: none, even, and odd.

Configuring Network Serial Port Settings

For Server Mode, click *Server Mode* and enter the port number to which the Ethernet Adapter connects in the *List on port* field. The default port number is 4000.

For Client Mode, select *Client Mode* and enter the IP address and port number to which the Ethernet Adapter connects. The default port number is 4000.

After configuring the port mode, you also need to configure the following options:

■ *Line Length* – As data arrives on the serial port it is accumulated in a buffer in the Ethernet Adapter. The Line length parameter sets the maximum size for this buffer. When the number of characters in the buffer reaches the Line length value the entire buffer is sent as the data in a single network packet.

The value of Line length can range from 1 to 1,408 bytes. The default value is 1,408.

> *Do not use values of line length less than 5 with a serial baud rate of 115,200 or greater.*

■ *Timeout* – Often serial data arrives in small bursts of characters. When the Ethernet Adapter receives a burst of data it will wait for a certain period of time for additional data to be received. If additional data is received, it is added to the receive buffer, and the Ethernet Adapter begins to wait again. If additional data is not received for longer than the period specified by the Timeout value, then the buffer of characters received is sent in a single network packet, and the process begins again.

The value of timeout is in units of milliseconds, and should be specified in 10 millisecond increments. The valid range for timeout is from 10 (0.01 second) to 65,000 (650 seconds). The default value is 10.

■ *Delimiters* – Some serial devices transmit and receive data in a known structure. In these cases, there are often special characters that the transmitting device uses to indicate a complete message has been sent. These characters are referred to as delimiters. You can specify up to five different delimiting characters to the Ethernet Adapter. When the Ethernet Adapter adds one of these characters to its buffer of serial received characters, it will immediately send that buffer as a network packet.

The value of delimiters is specified as a list of hexadecimal values separated by spaces. You may specify up to five different delimiter values. For example, if you want to use the delimiter **41375**, you must type the following hex values:

0x34 0x31 0x33 0x39 0x35

If you are unsure of the hex value for your delimiter character, consult the Web page `www.asciitable.com` for reference.

Applying Settings

After you set the UART settings, network serial port settings, and operation mode, select *Apply* to make the settings take effect.

Resetting the Ethernet Adapter

If the Ethernet Adapter stops responding correctly, you can perform a reset, which disrupts the network association temporarily, but does not affect Ethernet Adapter configuration settings that have already been applied with *Apply*.

To reset the Ethernet Adapter, under Tools, click *Reset Wireless Ethernet Adapter*. In the next page, click *Reset*.

The Ethernet Adapter can also be reset using the Wireless Infrastructure Device Manager (Widman). Right-click the Ethernet Adapter in Widman, and then select *Reset*.

Restoring the Ethernet Adapter to Factory Defaults

You can restore Ethernet Adapter settings to the defaults that were set at the factory either manually or through software.

To restore the settings manually, insert a pointed object (such as the end of a straightened paper clip) into the reset hole on the back of the Ethernet Adapter, and hold for five seconds.

Figure 14   Manually Resetting the Ethernet Adapter
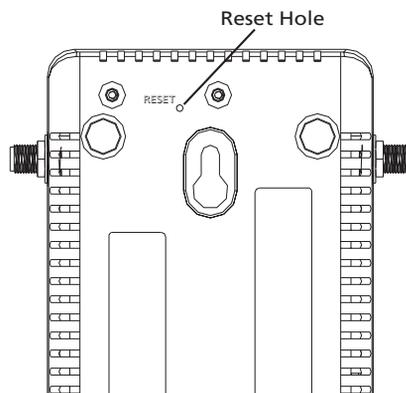
To restore the settings through software:

1 Under Tools, click *Restore Factory Defaults*.

2 Click *Restore*.

If the Ethernet Adapter was using an IP address setting other than the default, restoring the factory defaults will change the IP address. If you want to continue configuring the Ethernet Adapter, do the following:

1 Close your browser.

2 Return to the Enterasys Networks Wireless Infrastructure Device Manager and click *Refresh*.

3 Select the device and click *Configure* to start a new configuration session.

Upgrading the System   You can download firmware updates or updates to the Configuration Management System from the Enterasys Networks Web site and install these on the Ethernet Adapter.

Options for upgrading the system include using a Trivial File Transfer Protocol (TFTP) server or File Transfer Protocol (FTP) server. The Ethernet Adapter acts as a TFTP or FTP client to receive the download. Alternatively, you an use the HTTP option and upload the firmware from a downloaded file placed on your computer.

Using FTP (default)

The general instructions for installing the upgrade using FTP are:

1 Launch the Configuration Management System.

2 Under Tools, click *Upgrade System*.

3 Select FTP.

4 Enter the IP address of the FTP server where the upgrade files are located.

5 Enter the user name, password, path and filename in the appropriate fields.

6 Click *Upgrade*.

Using TFTP

The general instructions for installing the upgrade using TFTP are:

1 Launch the Configuration Management System.

2 Under Tools, click *Upgrade System*.

3 Select TFTP.

4 Enter the file name for the firmware.

5 Enter the IP address of the TFTP server where the upgrade files are located.

6 Click *Upgrade*.

Using HTTP

The general instructions for installing the upgrade using HTTP are:

1 Launch the Configuration Management System.

2 Under Tools, click *Upgrade System*.

3 Select HTTP.

4 Click *Browse* to locate the downloaded firmware file.

5 Click *Upgrade* to start the upgrade process.

The upgrade takes place through the HTTP protocol from the local computer.

Changing the Administration Login Name and Password

Enterasys Networks recommends that you set a password to protect against unauthorized access. After you set the password, you must enter it each time you launch the configuration for the device.

Under Tools, click *Change Administration Password*. The Change Administration Password page appears, where you can change the login name and administration password for the device. Enter the current password and new password in the spaces provided and click *Save*.

Backing up a Configuration   As part of system maintenance, you should save and back up the configurations of individual Ethernet Adapters in case you need to reload them in the future. The backup saves all the parameters of the selected Ethernet Adapter in a file on your computer. The file can be used later to restore the configuration on this or another Ethernet Adapter.

1 Set the Ethernet Adapter parameters in the System Configuration pages.

2 Under Tools, click *Backup Wireless Ethernet Adapter*.

3 In the next page, click *Backup Now*.

4 Specify a name and location for the backup, and click *OK*.

Restoring a Configuration   If you have stored a backup configuration on your computer, you can restore the configuration as follows:

1 Under Tools, click *Restore Wireless Ethernet Adapter.*

2 In the next page, click *Browse* and select the backup file to upload.

3 Click *Restore*.

The configuration is restored and activated on the Ethernet Adapter. This operation may cause the Ethernet Adapter to reboot.

If the Ethernet Adapter was using an IP address setting other than the backup, restoring the configuration will change the IP address. If you want to continue configuring the Ethernet Adapter, do the following:

1 Close your browser.

2 Return to the Enterasys Networks Wireless Infrastructure Device Manager and click *Refresh*.

3 Select the device and click *Configure* to start a new configuration session.

Logging Out   To log out of the Configuration Management System, click *Logout* under Tools.

Clearing the Ethernet Client List   The Ethernet Adapter supports up to 16 specific clients (for example, computers and printers) and keeps track of the clients with a list of their MAC addresses.

After the client limit is reached, you must clear the client list to allow a new client to associate with the network. For example, in a hub configuration with 16 clients connected, if you disconnect a desktop computer and connect a new laptop in its place, you must clear the client list to establish network association for the laptop.

To clear the Ethernet Client List:

1 Disconnect a client by unplugging its Ethernet cable from the hub or the Ethernet Adapter.

2 Launch the Configuration Management System.

3 Under System Status, click *Ethernet Client List*.

4 In the Ethernet Client List page, click *Clear Client List*.

The Ethernet Adapter erases the client list. Clients that remain connected to the Ethernet Adapter are added to the list automatically when they next interact with the network.

5 Connect the new client by plugging its Ethernet cable into the hub or the Ethernet Adapter.

Viewing Connection Status   Under System Summary, click *Connection Status* to view a summary of the Ethernet Adapter's current connection information. See Table 8 on page 29 for details.

Viewing System Summary

Under System Summary, you can view the following information:

Table 14   System Summary Page

Property	Description	Default Value
Device Name	The name assigned to the Ethernet Adapter. You can change the default name to one of your choice by clicking *System Properties* under System Configuration.	RoamAbout Ethernet Adapter - RBTSA
Device Location	If you use the default device name, entering the location is optional.	None
Country Code	The Country Code determines the available channels and transmission power level based on regulatory restrictions in the county where the Ethernet Adapter is installed.	Varies
Transmit Power	The level of transmission power (100%, 50%, 25%, 12%, or Min). You can change this setting by clicking *Wireless Network* under System Configuration.	100%
MAC Address	The MAC address of the Ethernet Adapter.	N/A
Serial Number	The serial number of the Ethernet Adapter.	Varies
Firmware Version	The version of firmware the Ethernet Adapter is currently using.	N/A
DHCP Client	Determines if the Ethernet Adapter obtains its IP address from the DHCP server on the network.	On
IP Address	The IP address of the Ethernet Adapter. You can change this address by clicking *IP Network* under System Configuration.	Varies
Subnet Mask	The subnet mask address of the Ethernet Adapter. You can change this address by clicking IP Network under System Configuration.	Varies
Data Preamble	The data preamble setting (*Short [Enhanced performance]* or *Long [Wi-Fi Interoperable])*. To change this setting, click *Wireless Network* under System Configuration.	Long
System Up Time	The elapsed time since the Ethernet Adapter booted up.	Day 0, 0:00:00
Date Manufactured	The date the Ethernet Adapter was manufactured.	N/A

Click *Refresh* to update the information.

4 **TROUBLESHOOTING**

Diagnosing Problems

If you have difficulty with the Ethernet Adapter, try the solutions in the following table.

Table 15 Troubleshooting

Symptom	Solution(s)
16 devices have been connected to the Ethernet Adapter, either simultaneously or sequentially. After connecting another device, the new device cannot associate with the network.	The Ethernet Adapter supports up to 16 specific clients (for example, computers and printers) and keeps track of them using a client list of MAC addresses. After the client limit is reached, you must clear the client list to allow a new client to associate. For example, in a hub configuration with 16 clients connected, if you disconnect a desktop computer and connect a laptop in its place, you must clear the client list to establish network association.
	1 Disconnect a client by unplugging its Ethernet cable from the hub.
	2 Use the Enterasys Networks Wireless Infrastructure Device Manager to select the Ethernet Adapter and launch its Configuration Management System.
	3 Under System Configuration, click *Ethernet Client List*. The Ethernet Client List page appears. Click *Clear Client List*.
	4 Connect the new client by plugging its Ethernet cable into the hub.

Table 15   Troubleshooting (continued)

Symptom	Solution(s)
After you change the IP address, after you restore a backup configuration, or after you reset the Ethernet Adapter to factory defaults, the Configuration Management System stops responding and you cannot continue configuring the Ethernet Adapter.	If you change the IP address and click *Apply*, you cannot continue to configure the device using the old IP address. Similarly, after you restore a backup configuration or reset the Ethernet Adapter to factory defaults, the IP address setting may be changed. To recover from this situation and continue configuring the Ethernet Adapter: **1** Close your browser. **2** Return to the Enterasys Networks Wireless Infrastructure Device Manager and click *Refresh*. **3** Select the device and click *Configure* to start a new configuration session and set its IP address.
The Ethernet Adapter cannot associate with an access point.	■ Adjust the position of the Ethernet Adapter to improve reception. ■ Launch the Ethernet Adapter Configuration Management System and make sure the security settings on the Ethernet Adapter match those on the access point.
The Wireless Network Tree does not appear in the Enterasys Networks Wireless Infrastructure Device Manager window.	Verify that you are using the correct network adapter. In the device manager window, click *Choose NIC*. Select the network adapter for the network you want to scan, and click *OK*.
The Ethernet Adapter has a yellow exclamation point (!) next to it in the Wireless Infrastructure Device Manager.	The Ethernet Adapter is on a different subnet than the computer attempting to configure it. To recover from this situation and continue configuring the Ethernet Adapter: **1** Close your browser. **2** Return to the Enterasys Networks Wireless Infrastructure Device Manager and click *Refresh*. **3** Select the device and click *Configure* to start a new configuration session. **4** Make sure the subnet address matches that of the computer.
Two Ethernet Adapters cannot communicate in ad-hoc mode.	■ Adjust the positions of the Ethernet Adapters to improve reception. ■ To ensure correct operation in ad-hoc mode, the settings on the two Ethernet Adapters must match exactly. Launch the Ethernet Adapter Configuration Management System and make sure that the Wireless LAN Service Area, channel selections, Data Preamble setting, and security setting are the same on both Ethernet Adapters.

Table 15 Troubleshooting (continued)

Symptom	Solution(s)
You are running Windows NT. After you connect the Ethernet Adapter, your computer cannot obtain a valid IP address.	The Ethernet Adapter configuration settings may not be compatible with the network. If they are not, and your Windows NT computer is set up to obtain its IP address from a DHCP server, the Ethernet Adapter is unable to associate with the network to obtain the IP address.
	To work around this, set a static IP address on your computer. Then set the Ethernet Adapter configuration to match the network. When the Ethernet Adapter is able to associate, reset your computer to obtain its IP address from the DHCP server. If the Ethernet Adapter should also obtain its IP settings from the DHCP server, make sure this is configured properly on the IP Network page and applied just before ending the session.
Access to the Ethernet Adapter through Ethernet is blocked because of incorrect settings in the Access Control List.	Restore the Ethernet Adapter to factory default settings (see "Restoring the Ethernet Adapter to Factory Defaults" on page 45). The factory default setting for the Access Control List is *disabled*. After the factory default settings are restored, the Ethernet Adapter can be accessed through Ethernet again.

Disconnecting the Ethernet Adapter

To disconnect the Ethernet Adapter:

⚠ *CAUTION: Disconnecting the Ethernet Adapter ends the network association. To avoid possible data loss, exit all networking applications on connected devices before you disconnect the Ethernet Adapter.*

⚠ *VORSICHT: Wird die Verbindung des Ethernet-Adapters getrennt, wird damit auch die Netzwerkverbindung unterbrochen. Zur Vermeidung von eventuellen Datenverlusten müssen alle Netzwerkanwendungen auf verbundenen Geräten beendet werden, bevor die Verbindung des Ethernet-Adapters getrennt wird.*

1 Unplug the Ethernet Adapter Ethernet cable from the hub or other device.

2 Unplug the Ethernet Adapter power cord.

Uninstalling Software and Documentation

If you want to uninstall the Enterasys Networks 11a/b/g Wireless Ethernet Adapter software and documentation, you can either use the standard operating system procedure for removing programs or use the following shortcut:

1 For WIN2000: select *Start>Settings>Control Panel>Add/Remove Programs* Click "Change/Remove" button on "Wireless Infrastructure Device Manager"

For WinXP: select *Start>Control Panel>Add/Remove Programs*

2 Click "Change/Remove" button on "Wireless Infrastructure Device Manager"

3 When prompted to confirm, click *OK*.

Upgrading Ethernet Adapter Firmware

Firmware is the software that is installed on the Ethernet Adapter at the factory. Some problems can be solved by installing a new version of the firmware.

For details on how to download a firmware update from the Enterasys Networks customer support Web site and install it on your Ethernet Adapter, see "Upgrading the System" on page 46.

A OBTAINING SUPPORT FOR YOUR ENTERASYS NETWORKS PRODUCT

Getting Help

For additional support related to this device or document, contact Enterasys Networks using one of the following methods.

World Wide Web:	`www.enterasys.com/support`
Phone:	(603) 332-9400 1-800-872-8440 (toll-free in the U.S. and Canada) For the Enterasys Networks Support toll-free number in your country: www.enterasys.com/support/gtac-all.html
Email:	**support@enterasys.com** To expedite your message, please type **[wireless]** in the subject line.

To send comments or suggestions concerning this document to the Technical Publications Department: **techpubs@enterasys.com**
To expedite your message, please include the document Part Number in the email message.

Before calling Enterasys Networks, please have the following information ready:

- Your Enterasys Networks service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (for example, layout and cable type.)
- Network load and frame size at the time of trouble (if known)

- The device history (for example, have you returned the device before, is this a recurring problem.)
- Any previous Return Material Authorization (RMA) numbers

End User License Agreement

Customer shall take all steps necessary to protect Wind River's and its licensors' proprietary rights in the Run-Time Module and to ensure that each Run-Time Module distributed by Customer will be accompanied by a localized copy of an End User License Agreement.

Such End User License Agreement shall prohibit the End User from: (i) copying the Run-Time Module, except for archive purposes consistent with the End User's archive procedures; (ii) transferring the Run-Time Module to a third party apart from the Target Application; (iii) modifying, decompiling, disassembling, reverse engineering or otherwise attempting to derive the Source Code of the Run-Time Module; (iv) exporting the Run-Time Module or underlying technology in contravention of applicable U.S. and foreign export laws and regulations; and (v) using the Run-Time Module other than in connection with operation of the Target Application.

In addition, the End User License Agreement shall: (i) state that the Run-Time Module is licensed, not sold and that Customer and its licensors retain ownership of all copies of the Run-Time Module; (ii) expressly disclaim all implied warranties, including without limitation the implied warranties of merchantability, fitness for a particular purpose, title and non-infringement; (iii) exclude liability for any special, indirect, punitive, incidental and consequential damages; and (iv) require that any further distribution of the Run-Time Module be subject to the same restrictions set forth herein.

The End User License Agreement shall also state that, with respect to the Run-Time Module, Wind River and its licensors are third party beneficiaries of the End User License Agreement and that the provisions related to the Run-Time Module are made expressly for the benefit of, and are enforceable by, Wind River and its licensors.

REGULATORY INFORMATION

The Enterasys Networks 11 a/b/g Wireless Ethernet Adapter (Model RBTSA-AA / RBTSA-AB) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. This device complies with the following radio frequency and safety standards.

This product contains encryption. It is unlawful to export out of the U.S. without obtaining a U.S. Export License.

This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate Enterasys Networks's warranty and all applicable regulatory certifications and approvals.

CAUTION: EXPOSURE TO RADIO FREQUENCY RADIATION.

This device generates and radiates radio-frequency energy. In order to comply with FCC radio-frequency exposure guidelines for an uncontrolled environment, this equipment must be installed and operated while maintaining a minimum body to antenna distance of 20 cm (approximately 8 in.).

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb.

USA - RADIO FREQUENCY REQUIREMENTS.

This device is for indoor use only when using channels 36, 40, 44 or 48 in the 5.15 to 5.25 GHz frequency range.

High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.

USA-FEDERAL COMMUNICATIONS COMMISSION (FCC)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it 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 tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna

■ Increase the distance between the equipment and the receiver

■ Connect the equipment to outlet on a circuit different from that to which the receiver is connected

■ Consult the dealer or an experienced radio/TV technician for help

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-0034504.

Enterasys Networks is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this Enterasys Networks 11a/b/g Wireless Ethernet Adapter (Model WL-560), or the substitution or attachment of connecting cables and equipment other than specified by Enterasys Networks.

The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

MANUFACTURER'S DECLARATION OF CONFORMITY

Enterasys Networks, Inc.
50 Minuteman Road
Andover, MA 01810 USA
1-800-872-8440 (toll-free in the U.S. and Canada)

Date: June 30, 2004

Declares that the Product:
Brand Name: Enterasys Networks, Inc.
Model number: RBTSA-AA / RBTSA-AB
Equipment Type: 11a/b/g Wireless Ethernet Adapter

Complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FC Enterasys 11a/b/g Wireless Ethernet Adapter
Model RBTSA-AA / RBTSA-AB

CANADA – INDUSTRY CANADA (IC)

This device complies with RSS 210 of Industry Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device."

L ' utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit étre prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication. To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Pour empecher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit etre utilize a l'intierieur et devrait etre place loin des fenetres afin de Fournier un ecram de blindage maximal. Si le matriel (ou son antenne d'emission) est installe a l'exterieur, il doit faire l'objet d'une licence.

High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.

INDUSTRY CANADA (IC) EMISSIONS COMPLIANCE STATEMENT

This Class B digital apparatus complies with Canadian ICES-003.

AVIS DE CONFORMITé à LA RéGLEMENTATION D'INDUSTRIE CANADA

Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

SAFETY COMPLIANCE NOTICE

This device has been tested and certified according to the following safety standards and is intended for use only in Information Technology Equipment which has been tested to these or other equivalent standards:

- UL Standard 60950 (3rd Edition) or 60950-1
- CAN/CSA C22.2 No. 60950 or 60950-1
- IEC 60950 or 60950-1
- EN 60950 or 60950-1

CE (!)

Marking by the above symbol indicates compliance with the Essential Requirements and other relevant provisions of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:

EN300 328, EN301 893, EN301 489-17, EN60950

NOTE: To ensure product operation is in compliance with local regulations, select the country in which the product is installed. Refer to "Configuring the Ethernet Adapter" in the user guide.

EUROPE - DECLARATION OF CONFORMITY IN LANGUAGES OF THE EUROPEAN COMMUNITY

English	Hereby, Enterasys Networks, Inc., declares that this 11a/b/g Wireless Ethernet Adapter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Enterasys Networks, Inc. vakuuttaa täten että 11a/b/g Wireless Ethernet Adapter tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Enterasys Networks, Inc. dat het toestel 11a/b/g Wireless Ethernet Adapter in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG
	Bij deze verklaart Enterasys Networks, Inc. dat deze 11a/b/g Wireless Ethernet Adapter voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	Par la présente Enterasys Networks, Inc. déclare que l'appareil 11a/b/g Wireless Ethernet Adapter est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE
	Par la présente, Enterasys Networks, Inc. déclare que ce 11a/b/g Wireless Ethernet Adapter est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables
Swedish	Härmed intygar Enterasys Networks, Inc. Company att denna 11a/b/g Wireless Ethernet Adapter står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Enterasys Networks, Inc. Company erklærer herved, at følgende udstyr 11a/b/g Wirelss Workgroup Ethernet Adapter overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
German	Hiermit erklärt Enterasys Networks, Inc., dass sich dieser/diese/dieses 11a/b/g Wireless Ethernet Adapter in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)
	Hiermit erklärt Enterasys Networks, Inc. die Übereinstimmung des Gerätes 11a/b/g Wireless Ethernet Adapter mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	Ì Å ÔÇÍ ÐÁÑÏ ÖÓÁ Enterasys Networks, Inc. ÄÇËÙÍÅÉ Ï ÔÉ 11a/b/g Wireless Workgroup Birdge ÓÕÌ Ì Ï ÑÖÙÍÅÔÁÉ ÐÑÏ Ó ÔÉÓ Ï ÔÓÉÙÄÅÉ ÁÐÁÉÔÇÓÅÉÓ ÊÁÉ ÔÉÓ ËÏ ÉÐÅÓ Ó×ÅÔÉÊÅÓ ÄÉÁÔÁÎÅÉÓ ÔÇÓ Ï ÄÇÃÉÁÓ 1999/5/ÅÊ
Italian	Con la presente Enterasys Networks, Inc. dichiara che questo 11a/b/g Wireless Ethernet Adapter è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Spanish	Por medio de la presente Enterasys Networks, Inc. declara que el 11a/b/g Wireless Ethernet Adapter cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE
Portuguese	Enterasys Networks, Inc. declara que este 11a/b/g Wireless Ethernet Adapter está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

EUROPE – RESTRICTIONS FOR USE OF 2.4GHz FREQUENCIES IN EUROPEAN COMMUNITY COUNTRIES

België/ Belgique:	For private usage outside buildings across public grounds over less than 300m no special registration with IBPT/BIPT is required. Registration to IBPT/BIPT is required for private usage outside buildings across public grounds over more than 300m. For registration and license please contact IBPT/BIPT.
	Voor privé-gebruik buiten gebouw over publieke groud over afstand kleiner dan 300m geen registratie bij BIPT/IBPT nodig; voor gebruik over afstand groter dan 300m is wel registratie bij BIPT/IBPT nodig. Voor registratie of licentie kunt u contact opnemen met BIPT.
	Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.
Deutschland:	License required for outdoor installations. Check with reseller for procedure to follow
	Anmeldung im Outdoor-Bereich notwendig, aber nicht genehmigungspflichtig.Bitte mit Händler die Vorgehensweise abstimmen.
France:	Restricted frequency band: only channels 1 to 7 (2400 MHz and 2454 MHz respectively) may be used outdoors in France. Please contact A.R.T. (http://www.arttelecom.fr) for applicable procedures to follow.
	Bande de fréquence restreinte: seuls les canaux 1- 7 (2400 et 2454 MHz respectivement) doivent être utilisés endroits extérieur en France. Vous pouvez contacter l'Autorité de Régulation des Télécommuniations (http://www.art-telecom.fr) pour la procédure à suivre.
Italia:	License required for indoor use. Use with outdoor installations not allowed.
	E'necessaria la concessione ministeriale anche per l'uso interno.
	Verificare con i rivenditori la procedura da seguire.
Nederland:	License required for outdoor installations. Check with reseller for procedure to follow.
	Licentie verplicht voor gebruik met buitenantennes. Neem contact op met verkoper voor juiste procedure.

EUROPE – RESTRICTIONS FOR USE OF 5GHZ FREQUENCIES IN EUROPEAN COMMUNITY COUNTRIES

European Community Countries	5150-5250 MHz	5250-5350 MHz	5470-5725MHz
	Channels: 36, 40, 44, 48	Channels: 52, 56, 60, 64	Channels: 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
	Indoor Only	Indoor Only	Indoor/Outdoor
Austria	✔	X	X
Belgium, France, Switzerland, Liechtenstein	✔	✔	X
Denmark, Finland, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, UK	✔	✔	✔

✔ allowed   X not allowed

- To remain in conformance with European spectrum usage laws for Wireless LAN operation, the above 2.4GHz and 5GHz channel limitations apply. The user should check the current channel of operation. If operation is occurring outside of the allowable frequencies as listed above, the user must cease operating the 11a/b/g Wireless Ethernet Adapter at that location and consult the local technical support staff responsible for the wireless network.

- The 5GHz Turbo mode feature is not allowed for operation in any European Community country.

- This device must not be operated in ad-hoc mode using channels in the 5GHz bands in the European Community. Ad-hoc mode provides a direct communication between two client devices without a Wireless LAN Access Point.

- This device must be used with Access Points that have employed and activated a radar detection feature required for European Community operation in the 5GHz bands. This device will operate under the control of the Access Point in order to avoid operating on a channel occupied by any radar system in the area. The presence of nearby radar operation may result in temporary interruption in communications of this device. The Access Point's radar detection feature will automatically restart operation on a channel free of radar. You may consult with the local technical support staff responsible for the wireless network to ensure the Access Point device(s) are properly configured for European Community operation.