Compaq iPAQ

Connection Point CP-2E
User Guide

COMPAQ

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1

Introduction

Congratulations! As the owner of a new Compaq iPAQ Connection Point CP-2E, you are taking advantage of the most advanced network technology available to manage your home or small office network. The iPAQ Connection Point will be the focal point of your network, providing secure broadband Internet connectivity to all of your networked computers and devices.

This guide is designed to help you:

> Understand the networking features of your iPAQ Connection Point CP-2E

> Install the product correctly

> Find additional information, as needed

Features and Benefits

Share a Single High-Speed Internet Connection

> **Network address translation (NAT)** allows a single public IP address to be shared across many devices

> **DHCP server** automatically provides up to 253 IP addresses on the local area network

> **Supports dynamic IP, static IP, and PPPoE** connections via an external DSL or cable modem, providing high-speed Internet access (up to 50 times faster than a 56K modem)

> **MAC Spoofing** makes connection easy to those ISPs that register MAC addresses

Ethernet Networking

> **Built-in 4-port Fast Ethernet switch** connects up to four PCs with Ethernet cables for high-speed data transmission (up to 100 Mbps), enhancing gaming and audio/video streaming

> **Auto-sensing 10/100 ports** automatically configure to 10Mbps or 100Mbps Ethernet transmissions

> **Auto-sensing MDI/MDI-X cabling** automatically configures for use with normal or crossover Ethernet cables

Security and Advanced Management

> **NAT firewall** hides local PCs from external hackers by translating IP addresses from public to private local addresses

> **Secure VPN pass-through** allows users to tunnel into a corporate network from behind the Connection Point CP-2E firewall

> **Internet protocol and port filtering** enable you to block or allow data based on individual protocols or ports

> **Web DMZ** allows an IP address to be set up outside the firewall for web page serving or other services

> **Virtual server** enables a virtual port for such services as FTP, while the host device remains behind the firewall

> **Internal web-based management pages** allow you to manage and configure the Connection Point CP-2E through a web browser for easy access and navigation

> **NTP** allows CP-2E to track events based upon your time zone.

What's in the Box?

> Connection Point CP-2E

> An Ethernet cable

> **An AC-to-12VDC power adapter**

> **A Quick Setup Guide**

> **iPAQ Connection Point CP-2E Utilities CD** containing the following:

◆ *Firmware Update Utility* to update your Connection Point CP-2E with the latest firmware or repair the system in the case of failure

◆ *Product Registration* option walks you through the registration of your Connection Point CP-2E to help ensure that you get support information for this product

◆ *Connection Point CP-2E User Guide* that provides detailed information regarding the configuration and use of your Connection Point CP-2E

◆ *Safety and Comfort Guide* that provides information about personal safety and comfort

> A limited warranty booklet

What Else Do I Need?

To use the Connection Point CP-2E, you need:

> Microsoft® Windows® 98/98SE, NT 4.0, 2000, ME, XP or higher

> A CD-ROM drive

> An external cable or DSL modem with an RJ45 Ethernet port

> Internet Explorer 4.0 or higher, Netscape Navigator 6 or higher, or MSN Explorer

> One network adapter for each PC

— Ethernet: Any 10Mbps or 100Mbps compatible Ethernet adapter.

> Additional Ethernet equipment:

— The Connection Point CP-2E comes with a built-in four-port Ethernet switch, so you can connect up to four PCs without purchasing an additional hub or switch. More than four Ethernet PCs will require an additional hub or switch.

— Ethernet cabling to connect each PC to the Connection Point CP-2E. Use Category 3 cabling or better for 10 Mbps, Category 5 cabling or better for 100 Mbps.

What's in Front?

Before you begin installation, familiarize yourself with your Connection Point CP-2E.
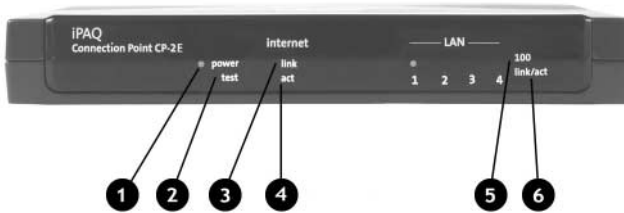
Your Connection Point CP-2E has the following LED indicators:

Item	Description	Significance
❶	Power LED	Steady indicates power on
❷	Test LED	Steady indicates self test in progress Off indicates normal operation
❸	Internet link LED	Steady indicates valid Internet link
❹	Internet act LED	Blinking indicates data transmission
❺	LAN 100 LED	Steady indicates Fast Ethernet connection
❻	LAN link/act LED	Steady indicates valid Ethernet link Blinking indicates Ethernet activity

What's in Back?

The Connection Point CP-2E has the following components on the back.

Item	Description	Function
❶	Power input (DC12v 1.2A)	Power adapter connector
❷	RJ 45 (1-4)	Individual Ethernet LAN ports
❸	RJ 45 (Internet)	Ethernet port for broadband Internet connection
❹	Reset button	Used to manually restart the Connection Point CP-2E

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Installation and Configuration

Installing and configuring the Connection Point CP-2E involves the following steps:

> Installing the Connection Point CP-2E hardware
> Configuring a PC client
> Running the Installation Wizard

◆ Configure the Connection Point CP-2E Internet connection
◆ Establish a unique user name and password

Note: If you forget your user name and password, you will be unable to modify the Connection Point setup. It is advisable to record your user name and password and store in a secure location.

> Installing the firmware update utility
> Registering the Connection Point CP-2E

In this chapter, you will find step-by-step instructions to help you complete the installation and configuration quickly and easily.

Installation

First, you must establish the physical connections between your Connection Point CP-2E and:

> The Internet
> Your PC
> A power source

Connecting to the Internet

1. Power down your broadband (cable or DSL) modem.
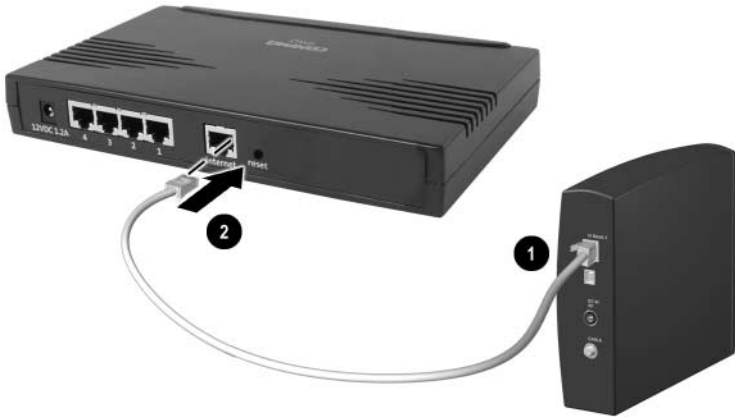
2. Disconnect the existing Ethernet cable from PC. Leave the other end of the cable connected to your modem. ❶

3. Connect the existing cable to the port labeled *Internet* on the back of the Connection Point CP-2E. ❷

Connecting to Your PC
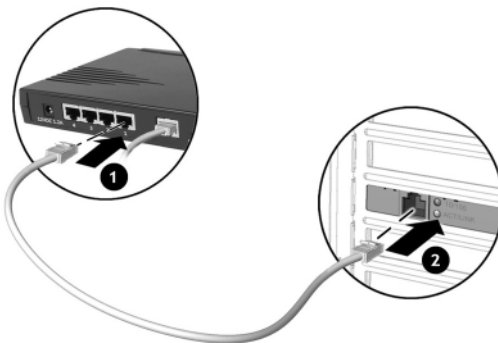
1. Plug one end of the supplied Ethernet cable into the port labeled 1 on the back of the Connection Point CP-2E. ❶

2. Plug the other end of the Ethernet cable into the Ethernet port on the PC. ❷

Powering Up

1. Plug the power adapter into an AC power outlet. ❶

2. Connect the output of the power adapter to the 12V DC power input on the rear of the Connection Point CP-2E. ❷

The Power LED on the front panel should light up immediately.

The Connection Point CP-2E runs a series of self-tests to verify that it is operating properly. The Test LED on the front panel remains lit while the self-tests are running. The Connection Point CP-2E is ready to use when the Test LED turns off.

Client PC Configuration

The configuration procedure for Windows 98 and ME clients is described below.

> **Note:** The configuration procedure for Windows XP, 2000 and NT4.0 are described in Chapter 3, *Adding PCs to Your Network*.

The Connection Point CP-2E automatically provides the following TCP/IP configuration information to your PC:

> IP address of the PC
> Subnet mask of the PC
> IP address of default gateway, which is the IP address of the DHCP server itself
> Domain name system (DNS) server

Note: If your PC provides Internet access to other computers on your network, you must uninstall your Internet sharing software now in order for your Connection Point to be the Internet sharing device.
You may also wish to uninstall the Internet sharing software from other PCs on the network for consistency and to avoid confusion.

Configuring Windows 98 and ME Clients

To configure other clients, refer to Chapter 3.

1. From the taskbar, select **Start > Settings > Control Panel**. The Control Panel window is displayed.

2. Double-click the **Network** icon. The Network window is displayed.
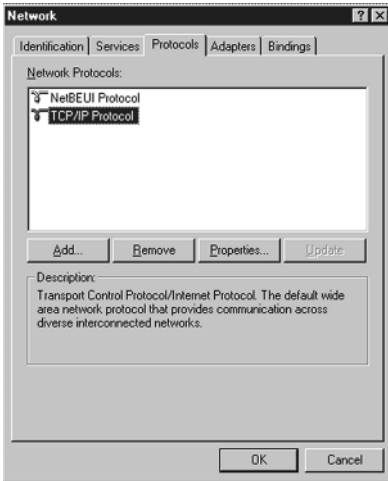
3. In the list of installed network components on the Configuration tab, double-click **TCP/IP**. If more than one TCP/IP entry is listed, select the entry for the network adapter you will use to connect to the Connection Point CP-2E. The TCP/IP Properties window is displayed.
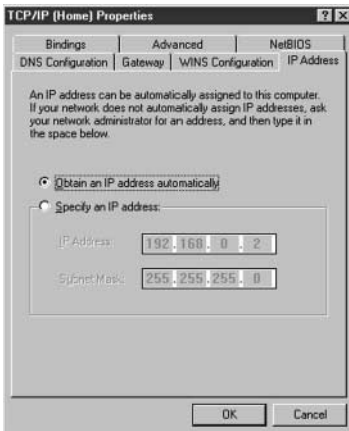
4. Click the **IP Address** tab.

5. Click the **Obtain an IP address automatically** radio button.

6. Click **OK**. The Network window is displayed again.

7. Click **OK**.

8. Restart the PC to complete the process.

   Note: You must restart your PC before continuing, even if you are not prompted to reboot.

Setting Up Connection Point CP-2E

To set up your Connection Point CP-2E you will use a web browser such as Microsoft Internet Explorer or Netscape Communicator.

Using the Installation Wizard

1. Open a web browser.

2. Type *cp.home* into the **Address** field and press **Enter**. You may also type in the base address, which is 192.168.1.1. The **Quick Setup Wizard** will begin.

Choosing the Internet Connection Method

Connection Point will automatically attempt to connect to the Internet. If connection is established, proceed to the Timezone setup section. If connection is not established, perform the following procedures:

1. On the Connection Method screen, if you are unsure of which method to use, click **I'm not sure**. A **Help** screen appears giving you additional information to assist in your selection.
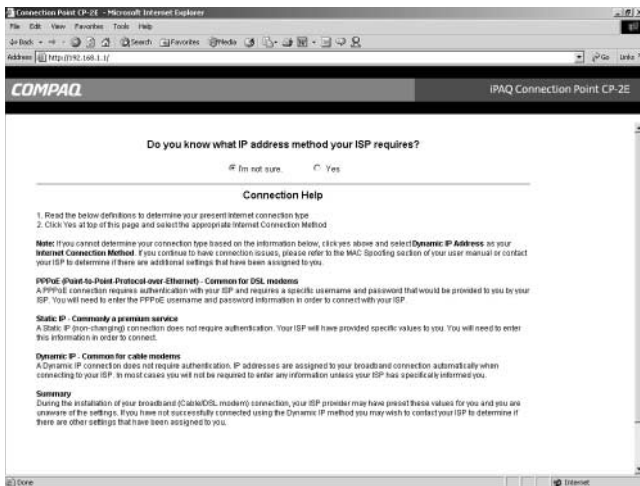
2. Click **Yes** on the Connection Method screen. Choose the appropriate Internet Connection Method:

   > **Dynamic Internet IP:** This is the default setting for the Connection Point CP-2E. If your internet service provider (ISP) automatically assigns you a public IP address (common among cable providers) or if you are unsure of the other options, select this option.

   > **Static Internet IP:** If your ISP provided you with a static IP address, select this option.

   > **PPPoE:** The point-to-point over Ethernet (PPPoE) connection is the most likely choice for DSL service. A PPPoE user name and password must be provided to you by your ISP.

Dynamic Internet IP

This setting configures your Connection Point CP-2E to automatically obtain an IP address from your ISP. This is the most common setting, and should be used unless your ISP provided specific instructions for use of a static IP address or point-to-point protocol over Ethernet (PPPoE).

Configuring Dynamic Internet IP

1. Click the **Dynamic Internet IP.** The Dynamic Internet IP page is displayed.

2. If your ISP requires a specific domain name or computer name to be used when you establish a connection, type the required domain or computer name into the **Domain Name** or **Computer Name** field, as appropriate. Otherwise, leave these fields blank.

3. If your ISP requires you to specify the IP address of its primary/secondary DNS server(s), click the **Manual** radio button, then type the IP address(es) for the DNS servers into the fields below the radio buttons. Otherwise, leave these fields blank.

4. Click **Next**. The Reboot dialog box is displayed. The Connection Point CP-2E must be rebooted for applied changes to take effect.

Static Internet IP

This setting configures your Connection Point CP-2E to use a static (fixed) IP address to access the Internet. The static IP address is provided to you by your ISP.

Configuring Static Internet IP

1. Click the **Static IP.** The Static Internet IP page is displayed.
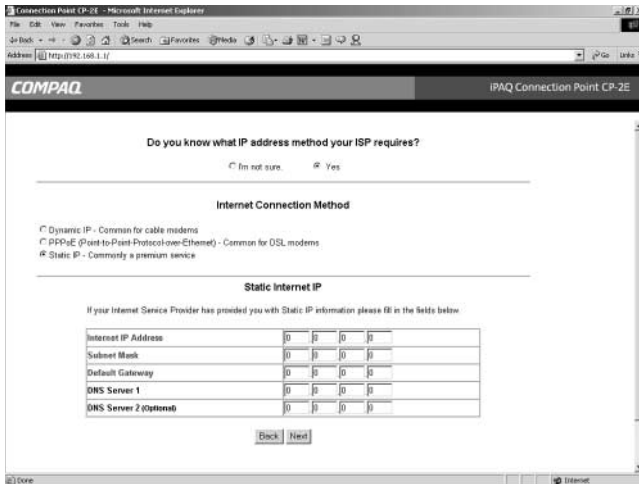
2. Type the static IP address provided by your ISP into the **Internet IP Address** field.

3. Type the subnet mask provided by your ISP into the **Subnet Mask** field.

4. Type the IP address of the default gateway provided by your ISP into the **Default Gateway** field.

5. Type the IP address of a primary DNS server provided by your ISP into the **DNS Server 1** field. If an address for a secondary DNS server is provided, type that into the **DNS Server 2** field.

6. Click **Next**. The Reboot dialog box is displayed. The Connection Point CP-2E must be rebooted for applied changes to take effect.

PPPoE

This setting configures your Connection Point CP-2E to connect to a DSL service using PPPoE. A PPPoE password is provided by your ISP.

Configuring PPPoE

1. Click the **PPPoE.** The PPPoE page is displayed.

2. Type your ISP user name into the **User Name** field.

3. Type your ISP password into the **Password** field.

4. Type your ISP password into the **Confirm Password** field.
   Note: The above three entries are required, and may be case-sensitive.

5. If a service name is required by your ISP, type the service name into the **Service Name** field. Otherwise, leave the field blank.

6. If your ISP requires you to specify the IP address of a DNS server, click the **Manual** radio button and type the IP address into the **DNS Server 1** field. If there is a second DNS server IP address, type it into the **DNS server 2** field.

7. Click **Next**. The Reboot dialog box is displayed. The Connection Point CP-2E must be rebooted for applied changes to take effect.

Timezone Setup

1. On the Timezone Setup screen, select the appropriate timezone from the pulldown menu.
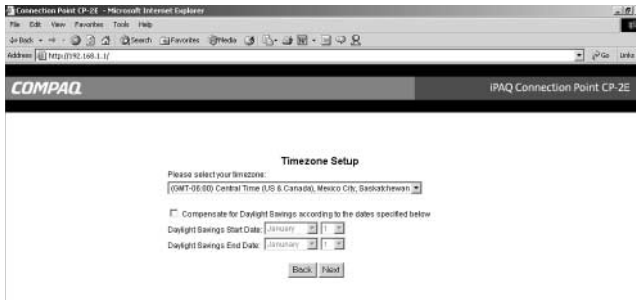
2. Click the checkbox to activate Daylight Savings time compensation functionality. Enter appropriate Daylights Savings time start and end dates for your locale using the pulldown menus.

3. Click **Next**.

Administrator Password Settings

The default Administrator login name is "admin" and the default administrator password is left blank. To ensure the security of your network, a unique administrator login name and password should be entered.
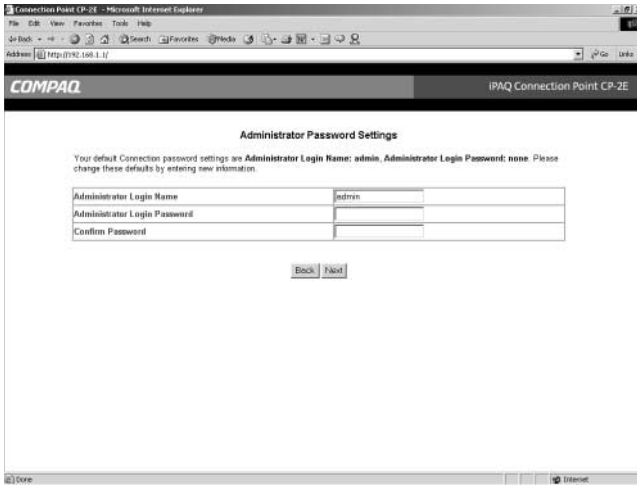
1. Type desired **Administrator Login Name**, **Administrator Login Password** into the appropriate field. Confirm password in the **Confirm Password** field.

   Note: Do not use cut and paste operations in the **Confirm Password** field.

2. Click **Next**.

3. The **Congratulations! You have completed the Quick Setup Wizard** screen appears. Your Connection Point will reboot automatically.

Confirming Successful Setup

After your Connection Point reboots, the Home Page appears.
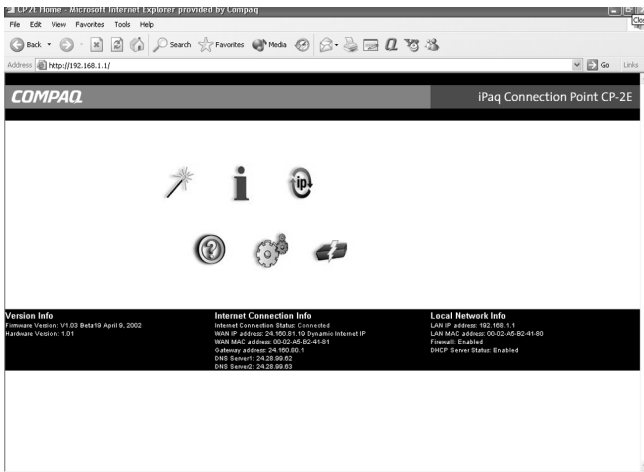
1. On the web browser toolbar, click on the **Refresh** icon.

2. If Internet Connection Status reads **Connected** in green print, your setup has been successful. If Internet Connection Status does not read Connected in green letters, click the **Refresh** button on your web browser. If still not connected, proceed to Step 3.

3. If your connection status reads **Disconnected** in red print, click on the **Help** icon to troubleshoot configuration problems. If the problem continues, it is possible that your ISP is tracking a MAC address. Please refer to Chapter 5 for a full discussion of MAC Spoofing.

Installing the Firmware Update Utility

The Connection Point CP-2E firmware update utility enables you to repair the system in case of failure.

It is recommended that you install the utility during initial set-up.

1. Insert the CD into the CD-ROM drive of a network PC. The menu is displayed.

2. Click **Install Firmware Update Utility**.

3. Follow the instructions presented by the Update Utility Wizard.

Registering the Connection Point CP-2E

You can register your new iPAQ Connection Point CP-2E at **www.compaq.com/register**.

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Adding PCs To Your Network

Once you have set up the Connection Point CP-2E, you can add more PCs to your Connection Point CP-2E network. PC client configuration for Windows XP, 2000 and NT 4.0 are included in this chapter. Refer to your operating system's online help for instructions to set up file sharing.

Ethernet PCs

The Connection Point CP-2E has a built-in 4-port 10/100 Ethernet switch. Any of the Ethernet LAN ports can be connected to a computer that has an Ethernet adapter installed. Each of the four Ethernet LAN ports supports auto-sensing of MDI or MDI-X (crossover) connections. You can connect the Connection Point CP-2E directly to personal computers or indirectly through an Ethernet hub or switch. The Connection Point CP-2E automatically determines the type of cable connection and configures itself accordingly.

Adding Ethernet PCs

1. Use an Ethernet cable to connect your PC to the next available Ethernet port on the Connection Point CP-2E.

2. Find the TCP/IP settings for the Ethernet client-adapter on your PC and verify that it is set to obtain an IP address automatically. Instructions for Windows 98 and ME are found in Chapter 2. Instructions for various Microsoft operating systems are found below.

3. Restart the PC to complete the process.

   Note: You must restart your PC before continuing, even if you are not prompted to reboot.

Windows XP Configuration

Windows XP automatically configures itself to connect to CP-2E. If you are having problems connecting to the network, verify the client setup by following the steps below.

Configuring the Client

1. From the taskbar, select **Start > Control Panel**. The Control Panel window is displayed.
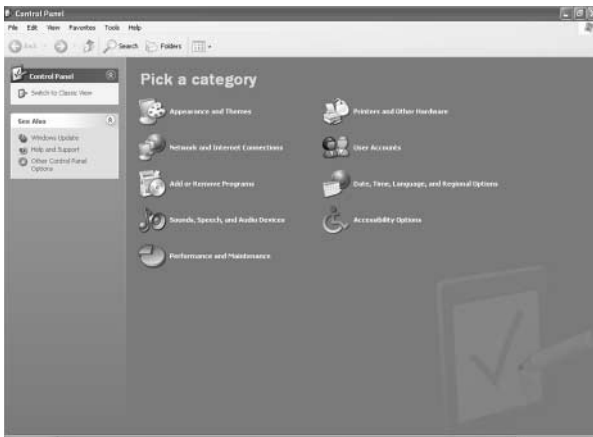
2. Double-click the **Network Connections** icon. The Network Connections window is displayed.

3. Double-click the icon for the individual connection you wish to configure. The Network Connection Status window is displayed.

4. Click **Properties**. The Local Area Connection Properties window is displayed.

5. Select **Internet Protocol (TCP/IP)** from the list. Components checked are used by this connection.

6. Click **Properties**. The Internet Protocol (TCP/IP) Properties window
   is displayed.

7. Click the **Obtain an IP address automatically** radio button.

8. Click the **Obtain DNS server address automatically** radio button.

9. Click **OK**. The Network Connection Properties window is displayed.

10. Click **OK**.

11. Restart the PC to complete the process.

Windows 2000 Configuration

Configuring the Client

1. From the taskbar, select **Start > Settings > Control Panel**. The Control Panel window is displayed.

2. Double-click the **Network and Dial-Up Connections** icon. The Network and Dial-Up Connections window is displayed.

3. Double-click the **Local Area Connection** icon. The Local Area Connection Status window is displayed.

4. Click **Properties**. The Local Area Connection Properties window is displayed.
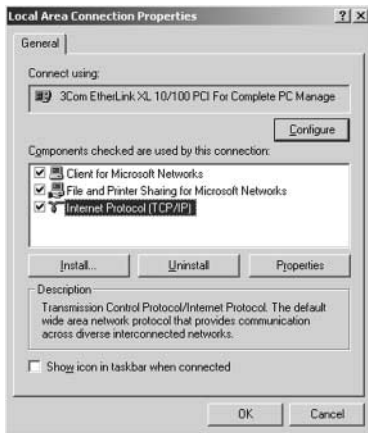
5. Select **Internet Protocol (TCP/IP)** from the list. Components checked are used by this connection.

6. Click **Properties**. The Internet Protocol (TCP/IP) Properties window is displayed.
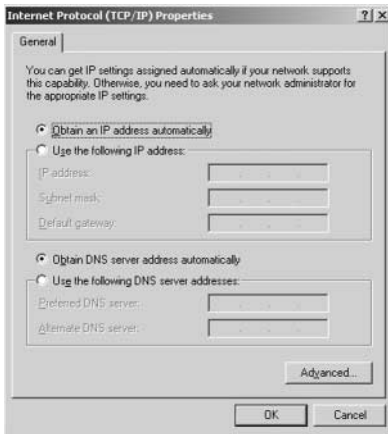
7. Click the **Obtain an IP address automatically** radio button.

8. Click the **Obtain DNS server address automatically** radio button.

9. Click **OK**. The Local Area Connection Properties window is displayed.

10. Click **OK**. The Local Area Connection Status window is displayed.

11. Click **OK**.

12. Restart the PC to complete the process.

Windows NT4.0 Configuration

Configuring the Client

1. From the taskbar, select **Start > Settings > Control Panel**. The
   Control Panel window is displayed.

2. Double-click the **Network** icon. The Network window is displayed.
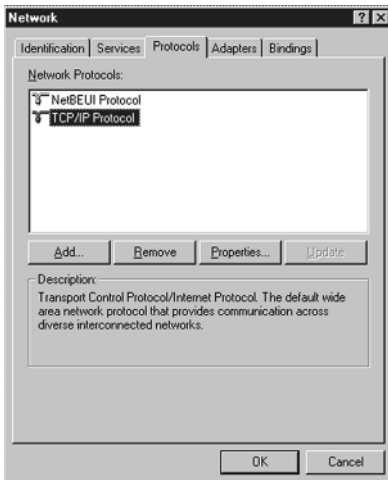
3. Select **TPC/IP Protocol** and click **Properties**.The TCP/IP Properties window is displayed.
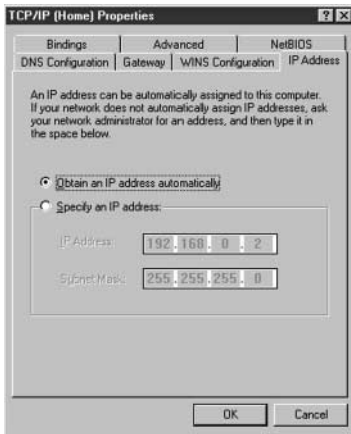
4. Click the **Obtain an IP address from a DHCP** server radio button.

5. Click **OK**. The Network window is displayed again.

6. Click **OK**.

7. Restart your PC to put the change into effect.

4

Connection Point CP-2E Home Page

The Connection Point CP-2E home page is accessed using your computer
Internet browser (Windows IE, Netscape Navigator, etc.). The Home Page
is a centralized point to access all of your system information, manage
network configuration settings and provide help and useful information
whenever you need it. To access the Home Page:

1. Open a web browser.

2. Type *cp.home* into the **Address** field and press **Enter**. You may also
   type in the base address, which is 192.168.1.1.
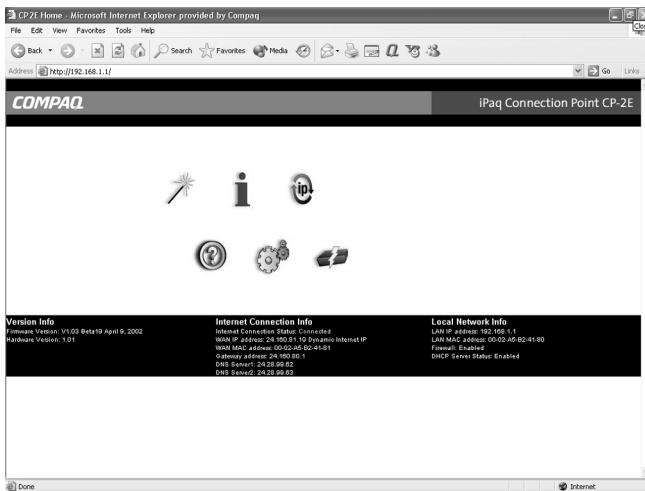
Home Page Information Bar

The Information Bar on the bottom of the Home Page contains Internet
connection settings and status, Local Network connection settings and
status, and Version information about your CP-2E.

Management Icons

The Management Icons are shortcuts to all of your configuration and connection settings. When using the icons, you are required to enter your Admin Login and Admin Password to change any settings of your CP-2E.

Quick Setup Icon

The Quick Setup Icon accesses the initial setup screens to configure Internet connection method, SSID, WEP encryption, timezone setup and Administrator Login and Password settings. Refer to Chapter 2 for a complete discussion of these screens.

System Info Icon

The internal web pages provide system information to help you understand the operating status and network configuration of your Connection Point CP-2E.

General Information

This page displays hardware and software version information, as well as the status of the LAN and Internet connections.

Hardware Version: Displays the hardware version of your Connection Point CP-2E.

Software Version: Displays the version of the software installed on the Connection Point CP-2E. This changes whenever you install a software upgrade.

Current Time: Displays current time based upon timezone.

Time since last boot: Displays the time that has elapsed since the Connection Point CP-2E was last started.

LAN Status

LAN MAC Address: Displays the Ethernet MAC address of the LAN interface of the Connection Point CP-2E. A MAC address is expressed in six 2-digit hexadecimal number pairs.

IP Address: Displays the IP address of the local LAN interface of the Connection Point CP-2E. This IP address is also used as the LAN gateway address and DNS server address.

Subnet Mask: Displays the local subnet mask of the LAN interface of the Connection Point CP-2E. The default subnet mask is 255.255.255.0.

DHCP: Displays the status (enabled or disabled) of the internal DHCP server.

DHCP Start Address: Displays the first IP address in the DHCP allocation pool. The internal DHCP server allocates IP addresses to client computers with the start address as the low end of the address range.

DHCP End Address: Displays the last IP address in the DHCP allocation pool. The internal DHCP server allocates IP addresses to client computers with the end address as the high end of the range.

Internet Status

MAC Address: Displays the Ethernet MAC address of the Internet interface of the Connection Point CP-2E. A MAC address is expressed with six 2-digit hexadecimal number pairs. You may have to provide this value to your ISP to establish a connection to the Internet (especially for certain cable ISPs).

IP Address: Displays the IP Address of the CP-2E as seen by devices outside your network (including your ISP and other devices on the Internet). The IP address is provided by your ISP.

Subnet Mask: Displays the local subnet mask of the internet interface of the Connection Point. The default subnet mask is 255.255.255.0.

Gateway: Displays the IP address of the current internet gateway. The gateway address is provided by your ISP.

DNS Server 1: Displays the IP address of the primary domain name server for internet access. The DNS address is provided by your ISP.

DNS Server 2: Displays the IP address of the secondary domain name server for Internet access. The DNS address is provided by your ISP.

Network Information

This page displays the IP address of the internal DHCP server. It also lists the hostname, LAN IP address and MAC address for each PC on the LAN.
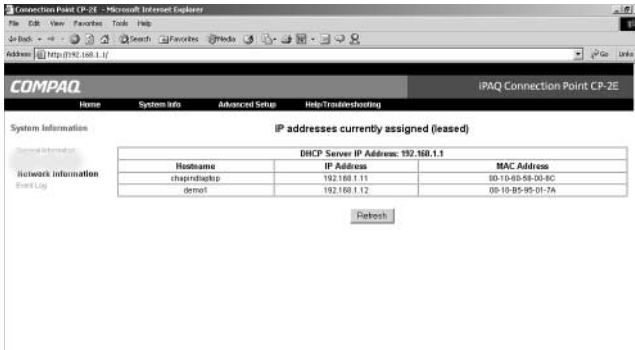
> Click **Refresh** to update the list and display any changes that may have occurred.

Event Log

This screen displays a list of operating events and exceptions (in chronological order) that have occurred during the operation of the Connection Point CP-2E since last started. Each event is listed with a time stamp to indicate when the event or exception occurred.
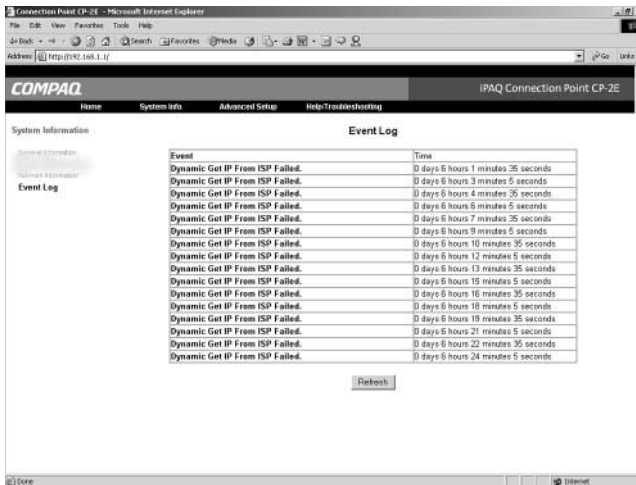
The event log records such occurrences as:

> System restart (power-on or reboot)

> Failure to get an IP address from the DHCP server of the ISP

> Failure to log in to a PPPoE connection (usually due to an incorrect user name or password)

> Attempts to access your network from the Internet

> DHCP Request Information

Renew Internet IP Icon

The Renew Internet IP Icon accesses the functionality for quickly requesting a new IP address from your ISP. This is occasionally necessary when access to your ISP has been interrupted and you can no longer connect to the Internet.

Help/Troubleshooting Icon

The Help/Troubleshooting Icon accesses the online help pages of the CP-2E.

Firmware Update Icon

The Firmware Update icon accesses the Update utility.

Locate and download the latest firmware update from the **www.compaq.com/athome/support** website and save it in a temporary folder.

1. Click the **Firmware Update** icon.
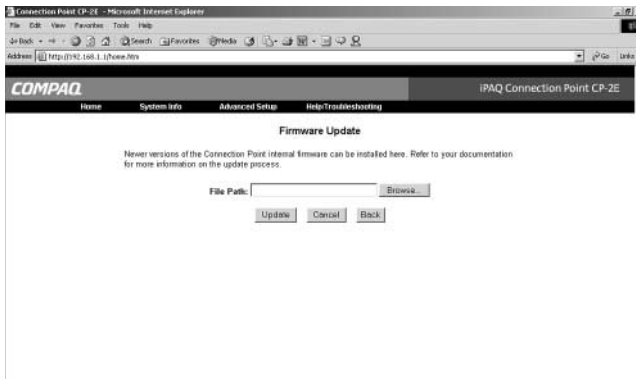
2. Click the **Update** button. If you are updating from a CD or downloaded file, use the **Browse** button. Select the file from the **Choose file** screen, then click OK.

   Note: For a full discussion of using the Firmware Utility for System Recovery, refer to Chapter 7.

5

Advanced Setup Icons

The Advanced Setup icon allows you to perform configuration and maintenance tasks.

Accessing Advanced Configuration Options

1. Click the **Advanced Setup** icon

System Settings

Password

The default login name for the Connection Point CP-2E is *admin*, with the password field left blank.

> **Note:** You should change the administrator's user name and password from the
> default setting immediately for security reasons. Make note of the new user
> name and password so that you can access the Management Icons of the
> Connection Point CP-2E in the future.

1. To change the default user name, type a new user name into the
   Administrator Login Name field.

2. To set a password, type the new password once into the
   Administrator Login Password field, and again into the **Confirm
   Password** field.

   > **Note:** Passwords are case-sensitive. Each time you log in, you must use upper
   > and lower-case letters exactly as you entered them when you created the
   > password.

3. Click **Apply**. The Connection Point CP-2E must be rebooted for
   applied changes to take effect.

4. Click **OK**. You can reboot the Connection Point CP-2E at any time by
   clicking the **Reboot** button at the left.

Resetting to Factory Default

This procedure restores all factory defaults to the Connection Point
CP-2E. Any configuration changes you have made will be lost.

1. On the Connection Point CP-2E Homepage, click **Reset Factory
   Defaults**. A confirmation dialog box is displayed.
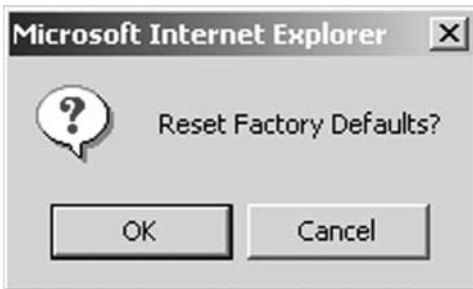
2. Click **OK**. The default factory settings are restored. A Changes Saved message is displayed.
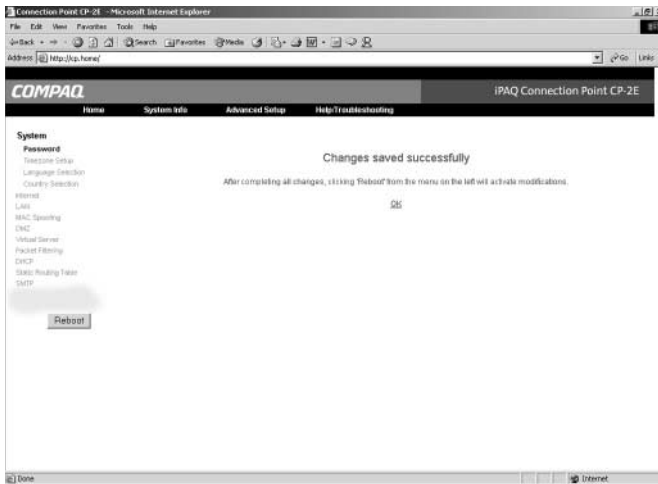
3. Click **OK**.

4. Click the **Reboot** button at the left. A confirmation message is displayed.
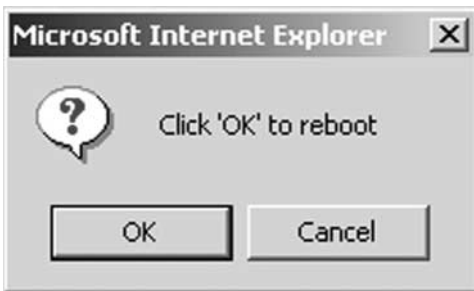
5. Click **OK**. The system restarts, then resumes operation with the new configuration.

Timezone Setup

For a full discussion of the Timezone setup, please refer to Chapter 2.

Internet

For a full discussion of the Internet Connection method setup, please refer to Chapter 2.

LAN

The LAN page allows you to adjust the TCP/IP settings of the Connection Point CP-2E.

The default network IP address of the Connection Point CP-2E is 192.168.1.1. This IP address is also the default gateway and DNS server that local clients use to access the Internet, leaving 253 IP addresses to be assigned to LAN computers by the DHCP server.

You can change the IP address of the LAN interface on the Connection Point CP-2E. You can also change the subnet mask, but if you do, you must ensure that the new subnet includes the addresses your DHCP server uses.

Note: If you choose a LAN interface subnet that doesn't include the current range of the DHCP server, the DHCP server is automatically disabled. The current DHCP server range is listed at the bottom of the page (DHCP Start Address and DHCP End Address).

MAC Address: Displays the Ethernet Media Access Control (MAC) address of the LAN interface on the Connection Point CP-2E. It is expressed in six 2-digit hexadecimal number pairs (set at the factory) and cannot be changed.

LAN IP Address: Displays the current IP address assigned to the LAN interface on the Connection Point CP-2E. The IP address is written in dotted decimal notation (four octets separated by decimal points). This IP address serves as the DNS server/relay and the default gateway for computers on the local network.

Subnet Mask: Displays the subnet mask that determines which parts of the IP address are used in the packet routing process. The default subnet mask of the LAN interface on the Connection Point CP-2E is 255.255.255.0. The first three octets of the subnet mask are unchangeable. A zero entry for the fourth octet defines a full Class C local network. You can scale the network down from a full Class C by entering a number other than zero in the fourth octet in the mask.

Changing the Subnet

1. Click the **LAN** link at the left. The LAN page is displayed.
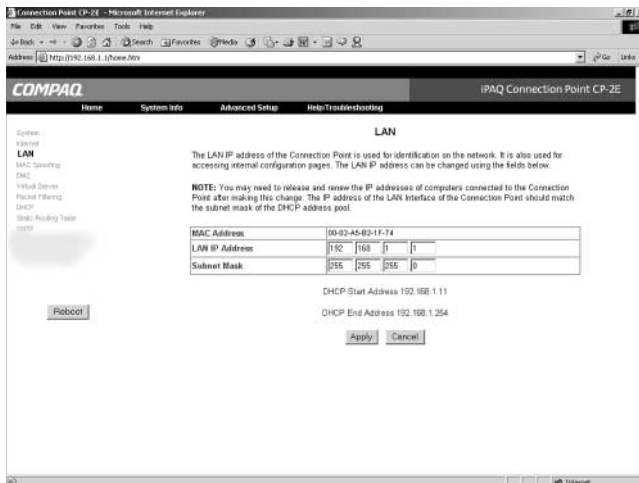
2. To change the IP address of the LAN interface, type new octets into the **LAN IP Address** field.

3. To change the subnet mask, type new octets into the **Subnet Mask** field.

4. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

5. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

MAC Spoofing

MAC Spoofing allows you to specify the MAC address that is presented to your ISP from the Connection Point. Some ISPs track the MAC address of devices that connect to them.

> **Note:** MAC (media access control) Address is a unique hardware address that identifies each node of a network.

The MAC address of the PC previously connected to your ISP may be registered with that ISP. To avoid any connection problems, activate the Connection Point MAC Spoofing functionality.

1. Ensure that the PC with the MAC Address to emulate is connected to your CP-2E.

2. Open a web browser. Type cp.home into the Address field and press Enter. You may also type in the base address, which is 192.168.1.1.

3. Click **Advanced Setting** icon.

4. Click **MAC Spoofing** on the left.
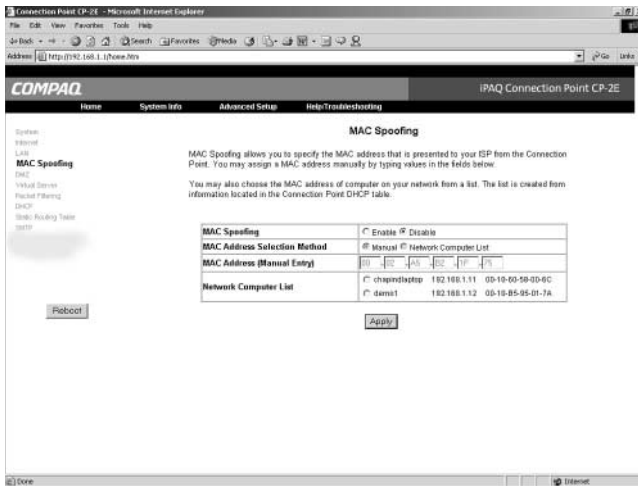
5. Click on **Enable**.

6. Click **Network Computer List**.

7. Use the pulldown button in the Network Computer List field. Select the computer with the MAC address to emulate.

   Note: There are two methods of enabling MAC Spoofing, Manual or Network Computer List. Please refer to Appendix B for a full discussion of the Manual Identification method for a MAC address.

8. Click **Apply**.

9. Click **OK**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

10. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the Reboot button at the left.

11. Click **Reboot**. Connection Point will reboot to the Home Page.

DMZ

The De-Militarized Zone (DMZ) allows you to specify the IP address of one PC on your local network to be exposed to the Internet. This is commonly used for Internet gaming or video conferencing. It also opens potential security holes on your local network.

Designating a DMZ Host

1. Click the **DMZ** link at the left. The DMZ Host page is displayed.
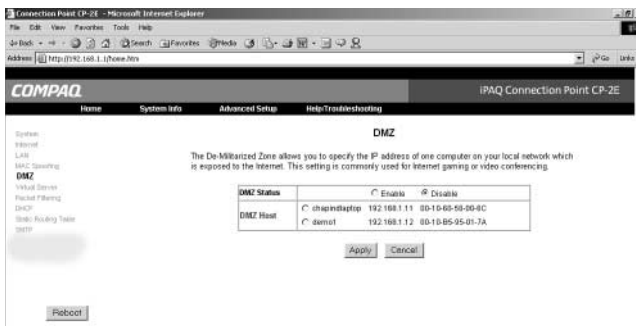
2. Select **Enable** in the DMZ Status field.

3. Select **Manual** or **Network Computer List** in the DMZ Host Selection Method field.

4. If you selected **Manual** in Step 3, enter the IP address of the DMZ PC in the DMZ Host (Manual Entry) field.

5. If you selected **Network Computer List** in Step 3, click the radial button next to the computer name of the DMZ PC in the **Network Computer List** field.

6. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

7. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Virtual Server

Virtual servers allow you to redirect incoming data on a specific port to a server on the local network. You can configure multiple servers on your local network, such as HTTP and FTP servers, and make them accessible to users on the Internet without fully removing them from behind the Connection Point CP-2E firewall.

Server Status: Displays the status of the virtual server, either enabled or disabled.

Global Port: Displays the TCP or UDP port number that is visible to external users on the Internet. This is also known as the external port number. The port is mapped to a computer on your LAN.

Local IP: Displays the IP address on the local network to which the incoming data from the Internet should be redirected.

Local Port: Displays the IP port number to which incoming data is redirected. This port is mapped to the global port.

Protocol: Displays the protocol used on the specified port.

Comment: Displays a user-defined description of the virtual server. This field is optional.

Adding a Virtual Server

1. Click the **Virtual Server** link at the left. The Virtual Server page is displayed.
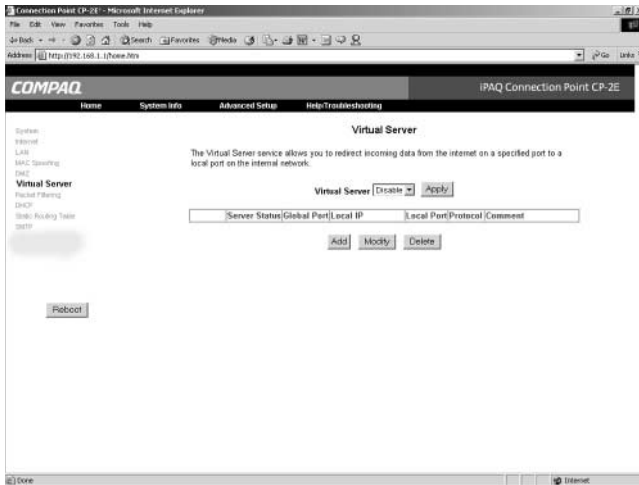
2. Use the pulldown to select **Enable** in the Virtual Server field.

3. Click **Add**. The Add Virtual Server Table will appear.
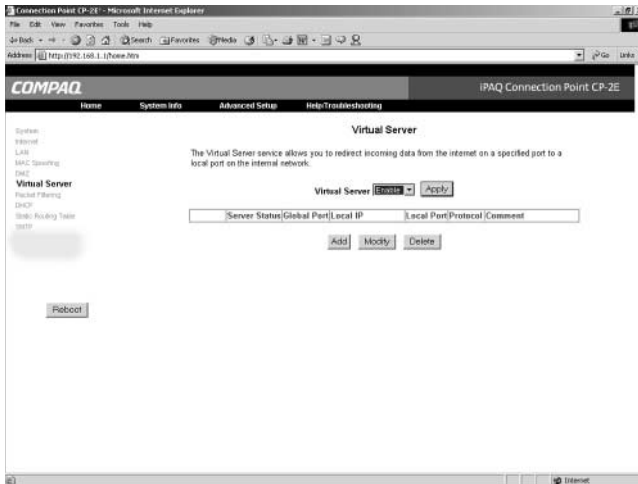
4. Type or select the information you wish to add or change into the relevant fields.

5. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

6. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Packet Filtering

Packet filtering allows you to block specific services, applications, and Internet locations by IP addresses and port numbers. For example, you can deny users access to SMTP/POP3 email services on the Internet, while allowing them access to Web/HTTP services. You can add new packet filtering rules based on the destination IP address. Packets en route from the LAN or private network to the WAN or public network are evaluated against these rules.

Packet Filtering: Enable or disable all packet filtering processes. This affects IP and port filtering rules.

IP Rules: The IP Rules Status page shows destination IP addresses that are blocked. Packets that have destinations matching any of these addresses are discarded.

Port Rules: The Port Rules page displays port and protocol combinations that are blocked. Packets of the matching port number and protocol type are discarded. You can add new port/protocol filtering combinations. Several predefined port mappings are included.

Enabling Packet Filtering

1. Click the **Packet Filtering** link at the left. The Packet Filtering page is displayed.
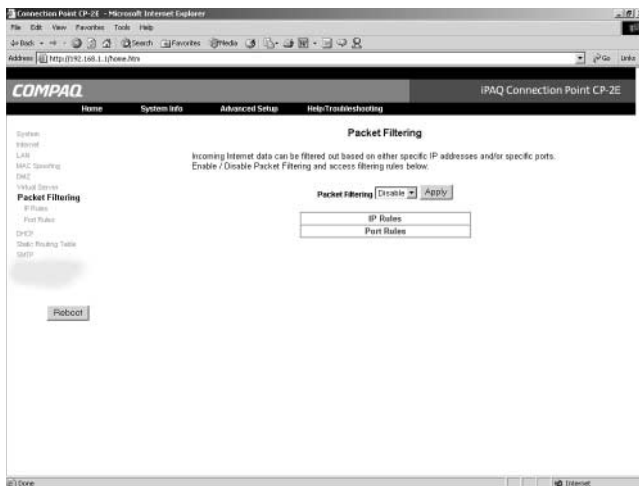
2. Use the pulldown menu to select **Enable** in the **Packet Filtering** field.

3. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

4. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Adding an IP Rule

1. Click the **IP Rules** link. The IP Rules page is displayed.
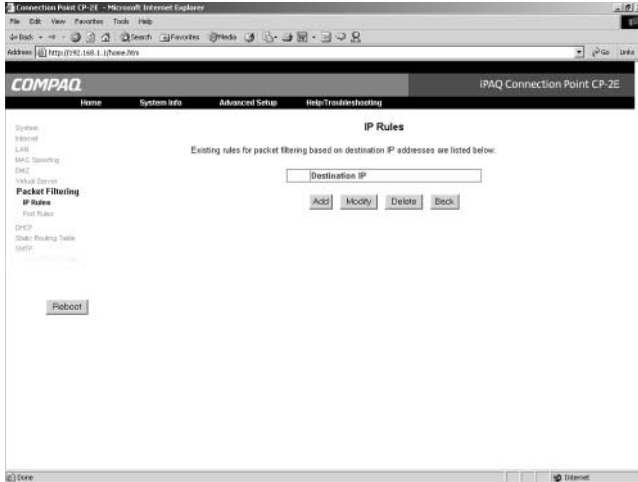
2. Click **Add**. The Add IP Rules page is displayed.
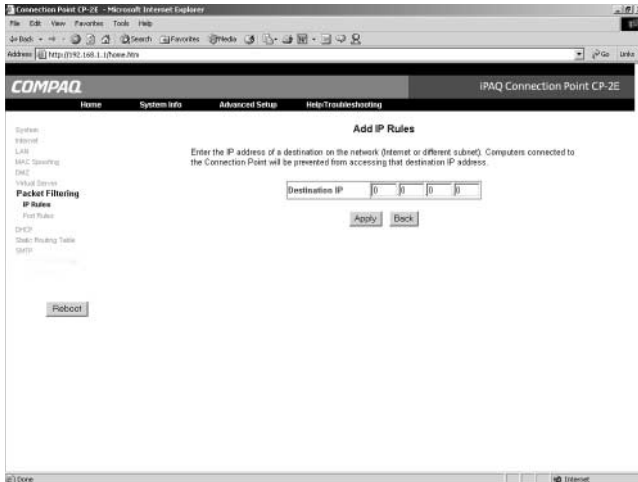
3. Type the IP address of the public network device to be filtered out into the **Destination IP** field.

4. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

5. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Adding Port Rules

1. Click the **Port Rules** link. The Port Rules page is displayed.
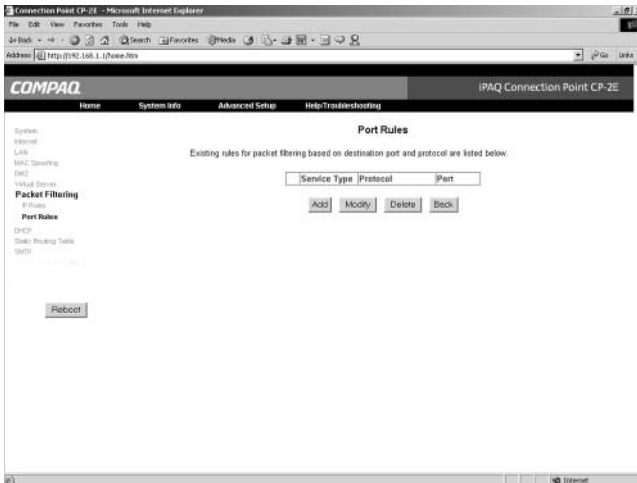
2. Click **Add**. The Add Port Rules page is displayed.

3. Select the protocol (or application) from the **Protocol** pulldown menu. If you select a pre-defined protocol from the list, the corresponding port number and service type are automatically set. The Port edit box is disabled unless you choose the User-Defined option at the bottom of the protocol list. This allows you to enter a port number that is not on the pre-defined protocol list.

4. For user-defined protocols, select the **Service Type** (TCP or UDP) to block. This will not block all TCP or UDP traffic, just that traffic of the matching protocol type or port number.

5. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

6. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

DHCP

The Connection Point CP-2E has an integrated DHCP server that allows you to automatically configure TCP/IP settings on computers attached to the local network. The DHCP server can provide the following settings to PCs on the local network:

> IP address

> Subnet mask

> Default gateway (which is the LAN interface IP address of the Connection Point CP-2E)

> DNS server

DHCP: Displays the status (enabled or disabled) of the integrated DHCP server. If you disable the integrated DHCP server, you must configure the TCP/IP networking settings on each of your PCs manually.

DHCP Start Address: Displays the first IP address to be leased out by the DHCP server. The default is 192.168.1.11.

DHCP End Address: Displays the last address to be leased out by the DHCP server. The default is 192.168.1.254.

Changing DHCP Server Settings

1. Click the **DHCP** link at the left. The DHCP page is displayed.
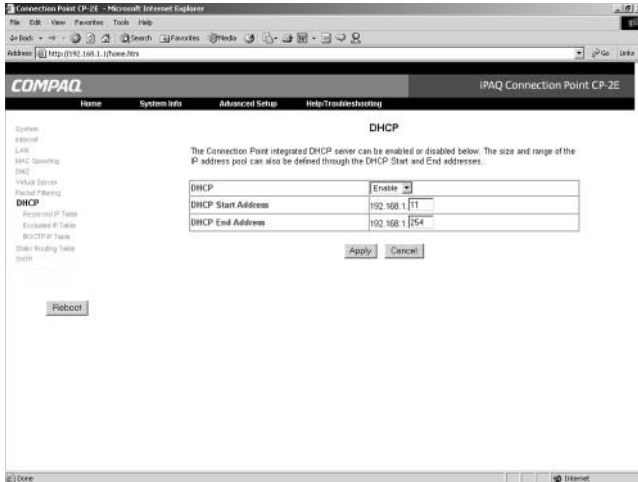
2. Type the information you wish to change into the relevant fields.

3. Select **IP Lease Time** from pulldown list.

4. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

5. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left of the Advanced Setup tab.

Reserved IP Table

The Reserved IP Table allows you to assign a specific IP address to a PC on your local network based on its MAC address. The DHCP server assigns the same IP address to the PC every time a new address is requested by the PC. The main page shows IPs that are mapped to specific MAC addresses.

You can add reserved IP addresses; however, you must have the MAC address of each client PC for which you wish reserve an IP address.

Adding a Reserved IP Address

1. Click the **Reserved IP Table** link on the left. The Reserved IP Table page is displayed.
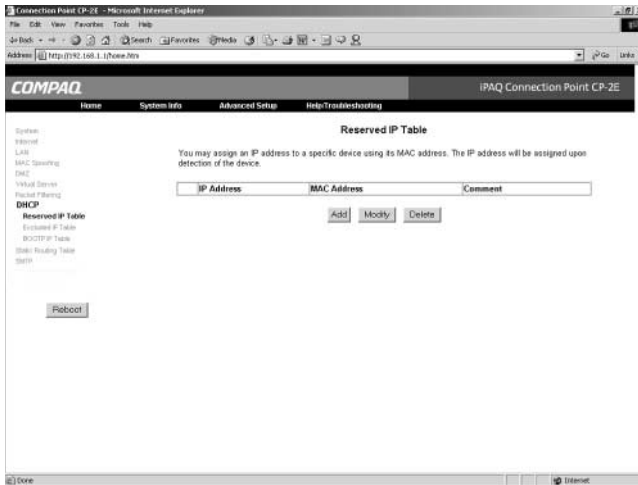
2. Click **Add**. The Add Reserved IP page is displayed.
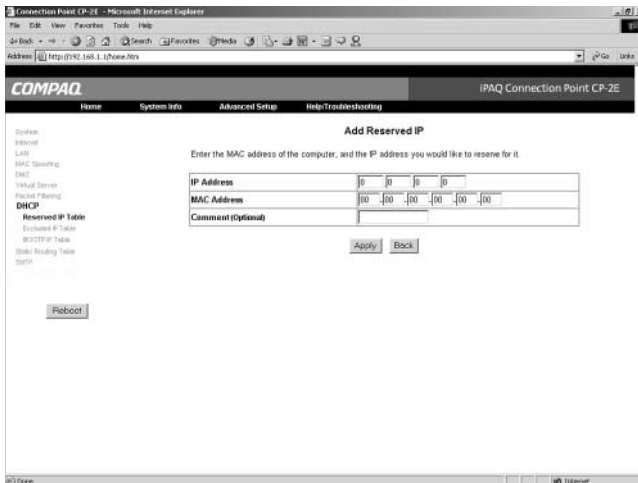
3. Type the IP address that you wish to reserve into the **IP Address** field. The IP address you specify must be within the pool of valid IPs available to the integrated DHCP server.

4. Type the MAC address of the PC on the local network for which you wish to reserve the specified IP address into the **MAC Address** field. Refer to Appendix B for a complete discussion of identifying MAC addresses.

5. If you wish, you can type a brief description into the **Comment** field.

6. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

7. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Excluded IP Addresses

You can exclude a specific IP address within the DHCP server leasing pool from being leased out. This is useful for assigning static IP addresses to devices on the local network. IP addresses listed in the Excluded IP Table are not assigned to client devices by the DHCP server.

Adding an Excluded IP Address

1. Click **Excluded IP Table** on the left. The Excluded IP Table page is displayed.
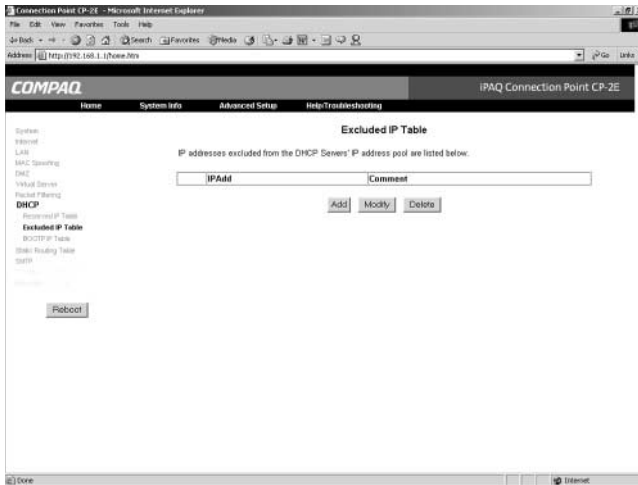
2. Click **Add**. The Add Excluded IP Address page is displayed.
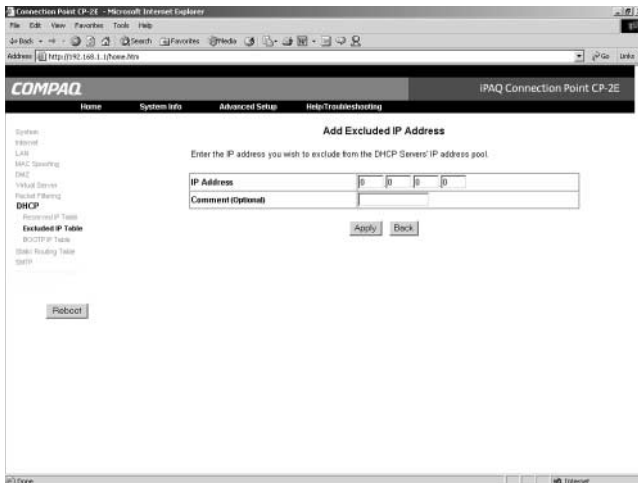
3. Type the IP address that you wish to exclude into the **IP Address** field.

4. If you wish, you can type a brief description into the **Comment** field.

5. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

6. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

BOOTPIP Table

The BOOTP IP Table allows you to reserve IP addresses for devices that use the BOOTP protocol for TCP/IP network configuration. These values are based on MAC addresses.

You must have the MAC address of each client device for which you wish reserve an IP address.

Adding a BOOTP IP Address

1. Click **BOOTP IP Table**. The BOOTP IP Table page is displayed.
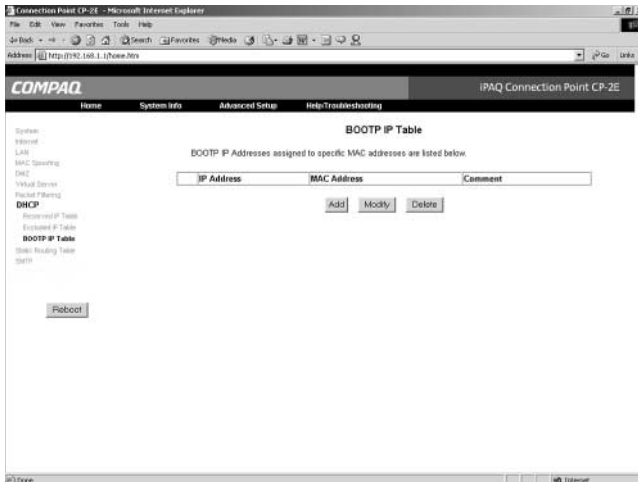
2. Click Add. The Add BOOTP IP page is displayed.

3. Type the IP address that you wish to assign to the specified MAC address into the **IP Address** field. The IP Address you specify must be within the pool of valid IPs available to the integrated DHCP Server.

4. Type the MAC address of the PC to which you wish to assign the specified IP address into the **MAC Address** field. Refer to Appendix B for a complete discussion of identifying MAC addresses.

5. If you wish, you can type a brief description into the **Comment** field.

6. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

7. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

Static Routing Table

The Static Routing Table defines pre-determined routes that Internet data packets use when they are addressed to specific destination computers. These entries are based on the IP address of the destination computer. It may be necessary to define static routes when your Connection Point CP-2E is connected to more than one local network, or when a site on the Internet cannot be reached because too many hops are needed to route the IP packet dynamically.

Adding a Static Route

1. Click the **Static Routing Table** link at the left. The Static Routing Table page is displayed.
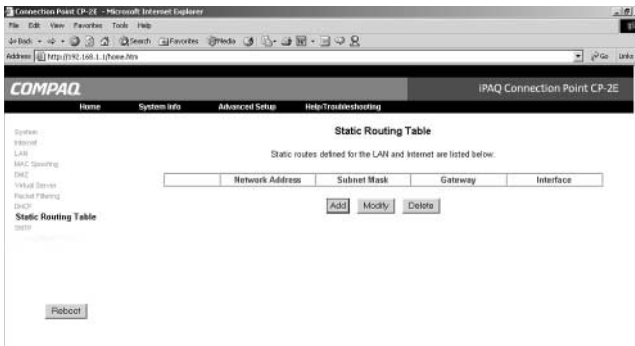
2. Click **Add**. The Add Static Routing Table page is displayed.
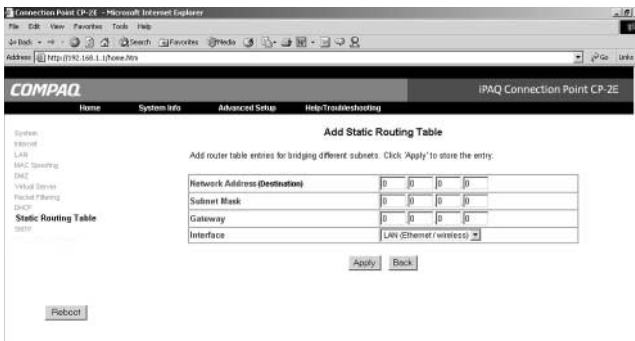
3. Type the destination IP address to which you wish to assign a specified route into the **Network Address** field.

4. Type the subnet mask associated with the destination IP address into the **Subnet Mask** field. This determines which part of the destination IP address is the network portion, and which is the host portion.

5. Type the IP address of the gateway device that is used to contact the destination IP address into the **Gateway** field. If the destination address is on the LAN, this gateway IP address must be in the range of the assigned DHCP addresses for the LAN.

6. Select the LAN Ethernet or WAN from the **Interface** pulldown menu. If you are connecting to a local subnet, select LAN. If you are connecting to another computer through the internet, select WAN.

7. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

8. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

SMTP

Connection Point can send an e-mail containing log events.

1. Click on SMTP at the left. The SMTP page is displayed.

2. Click **Enable**.

3. Under the **Address Info** section, enter your information in the required fields.

   Note: Mail Server name is provided by your ISP.

4. Under the **Send Log or Alert** section, enter the desired timeframe in which you want to recieve the e-mail.

5. Click **Apply**. The Connection Point CP-2E must be rebooted for applied changes to take effect.

6. Click **OK**. You can reboot the Connection Point CP-2E at any time by clicking the **Reboot** button at the left.

6

System Recovery

The Connection Point CP-2E Firmware Update Utility allows you to perform emergency recovery in case of critical system failure.

Using the Firmware Update Utility

To perform emergency recovery using the Firmware Update Utility, locate and download the latest firmware update from the **www.compaq.com/athome/support** website and save it to a temporary folder. If Internet access is unavailable to obtain the latest firmware, the default factory firmware will automatically be used for emergency recovery.

1. From the Windows taskbar, select **Start>Programs>Connection Point>CP-2E Firmware Update Utility**.The Welcome window is displayed.

2. Click **Next**. The Firmware Update Utility detects whether a normal firmware update or emergency recovery is required.
   Note: If prompted for a filename, locate and select the update file.

3. Follow the wizard directions.

Restore Factory Defaults

There are three ways to restore factory defaults:

> Use the firmware update procedure described above.

> Click the **Reset Factory Defaults** button on the *System* page of the Advanced Setup tab. Refer to Chapter 6 for more information.

> Hold down the reset button on the back of the Connection Point CP-2E for ten seconds. Refer to Chapter 1 for the location of the reset button.

Each of these procedures restores all factory defaults to the Connection Point CP-2E. Any configuration changes you have made will be lost.

7

Troubleshooting

Symptom	Possible Cause	Solution
Cannot access internal web pages.	Connection Point CP-2E not working properly. The 'Test' light stays on.	Reset factory defaults: Press the reset button for 10 seconds. If this does not fix the problem, use update/recovery utility to reinstall firmware.
	Network adapter on PC not properly installed.	Verify that network adapter is properly installed and has TCP/IP bound to it.
	PC does not have IP address.	For Windows 9x, select **Start > Run** and type *winipcfg*. Select the adapter that is connected to the Connection Point CP-2E. Click **Release**, then **Renew**. Verify that the PC gets an address in the appropriate range (192.168.1.xxx) and a subnet of 255.255.255.0 (assuming that the default IP of the router was not changed). For Windows 2000, open a DOS prompt. Type *ipconfig /release* and press **Enter**. Type *ipconfig /renew* and press **Enter**. Type *ipconfig* and press **Enter** to verify address.
	Proxy settings enabled on browser.	Disable browser proxy settings.

Symptom	Possible Cause	Solution
Cannot access Connection Point CP-2E configuration pages through an Ethernet adapter.	Network cables not properly connected to the PC or the Connection Point CP-2E.	Verify that network cables are properly connected at both ends and that Connection Point CP-2E is plugged in. The Connection Point CP-2E act LEDs should be flickering on corresponding cable connections when PCs are on and connected.

Symptom	Possible Cause	Solution
Cannot access access access Internet (external web pages) on my PC through the Connection Point CP-2E (but *can* access the configuration pages).	Modem is not on.	Turn on DSL or cable modem.
	No valid IP address on Connection Point CP-2E.	Go to Connection Point CP-2E Home Page. Click **Renew Internet IP Address** icon. Then, **Renew Internet IP**.
	ISP service is down.	Verify that DSL or cable modem is on and working properly by checking the modem's LEDs. Consult modem documentation or ISP for information regarding modem status.
	Previous MAC address was not released by cable or DSL modem.	Reset the cable or DSL modem: unplug power to modem for anywhere from several minutes to several hours. Contact ISP for more information.
	Connection Point CP-2E Internet settings not properly configured.	ISP may require additional configuration information: PPPoE account user name and password, DNS, device name, or MAC address. Contact ISP for specific requirements and add them to your configuration.
	ISP requires MAC address of device connected to Internet.	Refer to Chapter 5 section on MAC Spoofing.

Symptom	Possible Cause	Solution
Cannot see other users on network.	Operating system database that tracks names of machines has not been synchronized, or an update to the database is pending.	Select **Start > Run**. Type \\<*computername*> or \\<*PC IP address*> (replacing "computername" and "PC-IP-address" with actual values). Click **OK**. When the operating system database updates (usually less than an hour) this may no longer be necessary.
	Firewall on PC prevents access to other systems on network.	Disable firewall. Connection Point CP-2E provides firewall protection for PCs connected to it.
Cannot access files or printers of other computers on the network.	File and printer sharing not enabled.	Open **Control Panel**. Double-click **Network** icon. Click **Add Service**. Select **File and printer sharing**. Click **OK**. Reboot as required.
	No files or printers are shared.	Go to PC with resource you want to share. Right-click resource. Select **Sharing**. Select **Share this folder or printer** and create share name. Apply appropriate permissions to folder.
	Users not entered in Windows 2000 user list.	Open **Control Panel** on Windows 2000 PC. Double-click **Users and Passwords** icon. Add each user name that should have access to resources on Windows 2000 PC. On PCs attempting to access Windows 2000 PC, log on using one of the user names that was added for resource access on the Windows 2000 PC.

8

Regulatory Compliance

Federal Communications Commission Notice

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

> > Reorient or relocate the receiving antenna.

> > Increase the separation between the equipment and receiver.

> > Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

> > Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Declaration of Conformity for products marked with the FCC logo - United States only

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.

For questions regarding your product, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000
Or, call 1-800- 652-6672 (1-800-OK COMPAQ)

For questions regarding this FCC declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000
Or, call (281) 514-3333

To identify this product, refer to the part, series, or model number found on the product.

A

Appendix A: Specifications

Standard features	• NAT • NTP • SMTP • DHCP server (up to 253 IP addresses) • Supports dynamic IP, static IP and PPPoE Internet connections • Built-in 4-port Fast Ethernet switch • Auto Sensing 10/100 ports • Auto Sensing MDI/MDI-X cabling • Secure VPN pass-through (IPSec & PPTP) • Internet protocol and port filtering • Web DMZ • Virtual server • MAC Spoofing • HTML-based management pages
Ports	WAN Internet interface: Qty 1 -RJ 45 10Mbps (10/100 BaseT-Ethernet) LAN interface: Qty 4 -RJ 45 10Mbps (10/100 BaseT-Ethernet), MDI/MDI-X
Environment	Operating temperature 0 ~ 55 ° C Storage temperature -20 ~ 70 ° C Humidity (non-condensing) 5 ~ 80%
Power	12VDC 1.2A wall adapter
Dimensions and weights	Unit: 8.75 x 6 x 1.375 in. (1.1lbs.) Package: 13.563 x 7.185 x 2.563 in. (2.9 lbs.)

B

Appendix B: MAC Address Manual Identification

Identify Media Access Control (MAC)

A MAC address is a physical address that uniquely identifies each node of your network.

For Windows XP

1. Click **Start>Run**.
2. In the Run dialog box, enter **CMD**. Click **OK**. The DOS Window is displayed.
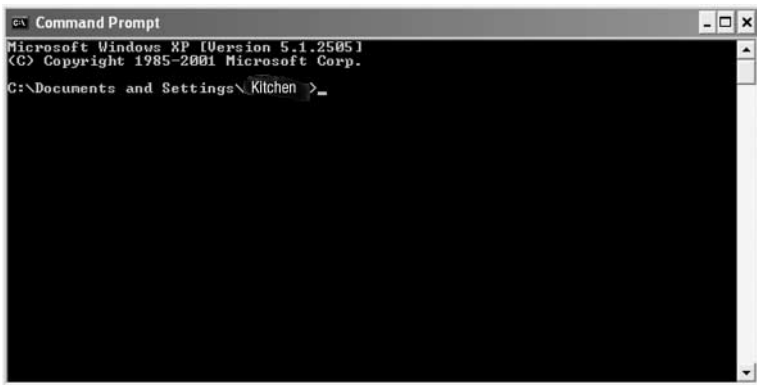
3. At the c: prompt, type *ipconfig /all* and press **Enter**.
4. Locate the network adapter connected to the Connection Point CP-2E in the list displayed.
5. Note the MAC address listed next to Physical Address.

For Windows 98 and ME PCs:

1. Select **Start > Run**. The Run window is displayed.
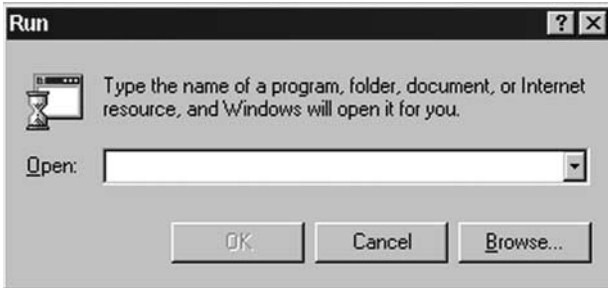
2. Type *winipcfg* into the **Open** field.
3. Click **OK**. The IP Configuration window is displayed.
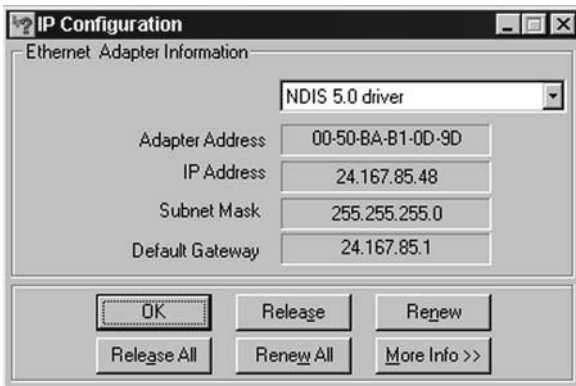
4. Select the adapter that is connected to the Connection Point CP-2E from the **pick list**.
5. Make note of the address listed in the Adapter Address field.

For Windows 2000 PCs

1. Click **Start>Run**.
2. In the Run dialog box, enter **CMD**. Click **OK**. The DOS Window is displayed.

3. At the c: prompt, type *ipconfig /all* and press **Enter**.
4. Locate the network adapter connected to the Connection Point CP-2E in the list displayed.
5. Note the MAC address listed next to Physical Address.

Accessing Security Configuration Options

1. To access the internal web pages, type *cp.home* into the **Address** field of the web browser and login to your Connection Point CP-2E.
2. Click the **Advanced Setup** tab.

G

Glossary

This glossary provides a brief list of commonly used technical terms and their definitions.

10BaseT/100BaseT. Standard local area networking protocols, which run at speeds of 10Mbps and 100Mbps, respectively. Most older networks use 10BaseT, while newer networks use 100BaseT.

Access point. The bridge between a wired network and wireless devices.

Access rate. The speed at which users connect to the network. This is generally measured in bits per second, kilobits per second, or megabits per second.

Adapter card. A device that provides network communication capaibilites when installed in a computer. Sometimes called a "network interface card."

Bit. A single unit of data. See byte and gigabyte.

BOOTP (Bootstrap Protocol). An Internet protocol that allows a diskless workstation to discover its own IP address.

Broadband. A high-speed connection to the Internet, typically defined as starting at 384 Kbps. It allows large files and rich media content (content that uses video, audio or complex graphics like those used in high-end computer games) to quickly flow across the network to and from the user's computer.

Browser. A computer program that opens and displays Web pages, including Microsoft® Internet Explorer and Netscape Communicator. You need a Web browser to access the Web.

Byte. On almost all modern computers, a byte is equal to 8 bits. Large amounts of memory are indicated in terms of kilobytes (1,024 bytes), megabytes (1,048,576 bytes), and gigabytes (1,073,741,824 bytes). See bit and gigabyte.

Data stream. A sequence of digitally encoded signals used to represent information in transmission.

DHCP (dynamic host configuration protocol). A protocol for assigning dynamic IP addresses to devices on a network that allows a device to have a different IP address every time it connects to the network.

Dial-up. An Internet connection made via a telephone line.

Download. To copy a file from a computer on the Internet to your personal computer. All Web pages are downloaded from the Internet. When you enter a URL into your Web browser, the files that accompany that URL are copied and sent to your computer, where they are displayed using your Web browser.

Driver. Software that enables the operating system to recognize and operate devices installed in or attached to the computer, such as a printer.

DSL (digital subscriber line). A technology that takes advantage of standard copper telephone lines to provide high-speed Internet access.

Ethernet. A local area network protocol used to connect devices within a single building or campus at speeds up to 10 Mbps.

Fast Ethernet. A local area network protocol used to connect devices within a single building or campus at speeds up to 100 Mbps.

Firewall. A set of related programs located at the gateway server of a network that protects information contained within the network from users outside the network (on the Internet). A company with an intranet that also allows workers to access to the wider Internet installs a firewall to prevent outsiders from accessing its data resources.

FTP (file transfer protocol). A protocol used to send files over the Internet.

Gateway. A combination of hardware and software that links two different types of networks.

Gbps (gigabits per second). A measure of bandwidth capacity or transmission speed. It represents a billion bits per second.

Gigabyte. A billion bytes of data.

HPNA. Home Phone Network Alliance.

Hub. A common connection point for devices on a network.

IEEE. The Institute of Electrical and Electronics Engineers. An organization of engineers, scientists, and students best known for developing standards for the computer and electronics industry.

ISDN (integrated services digital network). A set of standards for digital transmission capable of carrying data, voice, and video over ordinary telephone copper wire as well as over other media. ISDN protocols are used worldwide for connections to public ISDN networks or to attach ISDN devices to ISDN-capable PBX systems (ISPBXs).

Interface. A point of connection between two systems, networks, or devices.

Internet. The world's largest computer network, which originated from a research effort initiated by the U.S. Government and was initially used to connect defense contractors and U.S. universities. Today, its nature is more commercial, and it is becoming the preferred method of linking business and individual computers to one another.

Internet access. The physical connection between the subscriber and the nearest Internet access node.

ISP (internet service provider). A single computer network, connected to the Internet, that provides access for individual computers to the Internet. ISPs provide local dial-up and broadband Internet access for personal computers.

Intranet. A local network with internal Web servers that are accessible to computers in the office, but not accessible from outside the company. Many intranets are protected from exterior access by security devices such as firewalls.

IP Address. The 32-bit numeric address that identifies a computer or device on a TCP/IP network. An IP address is written as four numbers separated by periods. For example, 1.160.10.240 could be an IP address.

IPX (internetwork packet exchange). A networking protocol used for connectionless communications.

Kbps (kilobits per second). A measure of bandwidth capacity or transmission speed representing a thousand bits per second.

Kilobit. 1,024 bits for technical purposes, such as data storage. 1,000 for general purposes. Data transfer rates are measured in kilobits per second, abbreviated as Kbps, and count a kilo as 1,000 bits.

Kilobytes. In decimal systems, kilo stands for 1,000, but in binary systems, a kilo is 1,024 (2 to the 10th power). Technically, therefore, a kilobyte is 1,024 bytes, but it is often used loosely as a synonym for 1,000 bytes. In computer literature, kilobyte is usually abbreviated as K or KB. To distinguish between a decimal K (1,000) and a binary K (1,024), the IEEE has suggested following the convention of using a small k for a decimal kilo and a capital K for a binary kilo, but this convention is by no means strictly followed.

LAN (local area network). A data communications network covering a small area, usually within the confines of a building or floors within a building. Common LAN protocols are Ethernet and Token Ring.

LED (light-emitting diode). An electronic device that lights up when electricity is passed through it.

Line sharing. Allows a consumer to use his or her existing phone line for both normal phone service provided by the local phone company and high-speed digital subscriber line (DSL) Internet access through another provider.

MAC (media access control) Address. A unique hardware address that identifies each node of a network.

Mbps (megabits per second). A measure of bandwidth capacity or transmission speed. It represents a million bits per second.

MBps (megabytes per second). A measure of bandwidth capacity or transmission speed. It represents a million bytes per second.

Megabit. When used to describe data storage, 1,024 kilobits. When used to describe data transfer rates, it refers to one million bits. Network speeds are often measured in megabits per second.

Megabyte. When used to describe data storage, 1,048,576 bytes. Megabyte is frequently abbreviated as M or MB. When used to describe data transfer rates, as in MBps, it refers to one million bytes.

Microsoft Windows®. A computer operating system by Microsoft Corporation,

Modem (MOdulator/DEModulator). Equipment that converts digital signals to analog signals and vice versa. Modems are used to send data signals (digital) over the telephone network, which is usually analog.

NDIS (network driver interface specification). A Windows device driver interface that enables a single network interface card to support multiple network protocols.

NetBEUI (NetBIOS enhanced user interface). An enhanced version of the NetBIOS protocol used by network operating systems such as LAN Manager, LAN Server, Windows for Workgroups, Windows 95, and Windows NT.

NIC (network interface controller). The circuit board or other form of computer hardware that serves as the interface between a computer (or other form of data terminal equipment) and the communications network. In DSL, a common NIC is an Ethernet NIC, which serves as the interface to the DSL modem from the computer.

Node. A processing location such as a computer or other device. Every node has a unique network address.

OS (operating system). The interface that permits a person and a computer to "talk" to one another. Microsoft Windows, the most popular operating system, displays icons, menus, and dialog boxes to find out what you want. You use a mouse and keyboard to reply. See Microsoft Windows.

Packet. A sub-unit of a data stream.

Packet switched network. A network that transmits data in units called packets in a connectionless manner. Data streams are broken into packets at the front end of a transmission, sent over the best available network connection, and then reassembled in their original order at the destination endpoint.

PCMCIA (Personal Computer Memory Card International Association). The organization responsible for developing the standard for small, credit card-sized devices, called PC Cards.

PDF (portable document format). A file format that has captured all the elements of a printed document as an electronic image, which you can view, navigate, print, or forward to someone else. PDF files are created using Adobe Acrobat, Acrobat Capture, or similar products. To open the files, you need the free Acrobat Reader, which you can easily download. Once you have downloaded the reader, it starts automatically whenever you want to open a PDF file.

Router. A device used to connect other devices on a network. A router provides intelligent paths for data to flow between devices and provides identification for these devices through IP addresses.

Server. A fast, high-power computer that is used as the repository and distributor of data, and to control various applications. Servers can be used for a variety of applications including hosting websites, email databases, and other types of database applications.

SPX (sequenced packet exchange). A transport layer protocol used in Novell Netware networks to provide connection-oriented services between two nodes on the network. Used primarily by client/server applications.

STP (Shielded Twisted Pair). A type of cable that consists of two shielded wires twisted around each other. It is used extensively for local area networks and telephone connections.

Switch. A switch is essentially an intelligent hub. When a packet arrives at the switch, it looks at the packet, determines which computer the packet is directed to, and forwards the packet to that computer. By contrast, a hub regenerates the packet and broadcasts it to every computer connected through it.

TCP/IP (transmission control protocol/Internet protocol). A networking protocol that provides communication across interconnected networks, between computers with diverse hardware architectures and various operating systems. TCP and IP are only two protocols in the family of Internet protocols. However, TCP/IP is used to denote the family of common Internet protocols.

Telnet. Terminal emulation program for TCP/IP networks that runs on your computer and connects your PC to a server on the network.

Traffic. A measure of the quantity of data transferred from one computer to another computer per unit of time. Traffic is normally measured in megabytes.

Upload. To transmit files from your computer to another through a network.

UTP (Unshielded Twisted Pair). A type of cable that consists of two unshielded wires twisted around each other. It is used extensively for local area networks and telephone connections.

WLAN (wireless local area network). A type of local area network that uses high-frequency radio waves instead of wires to communicate.

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