

**WinPoET™**

**2.1**

**USER'S GUIDE**

**EDITION 1**



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# Contents

<b>1.</b>	<b>Introduction</b> .....	1
1.1	What is WinPoET? .....	1
1.2	What's in This Guide .....	1
1.3	How to Get Help .....	2
<b>2.</b>	<b>System Requirements</b> .....	2
2.1	Ethernet Adapter .....	3
2.2	Microsoft Dial-Up Networking .....	3
2.3	Service Pack 3 or Later (Windows NT only) .....	4
<b>3.</b>	<b>Installation</b> .....	4
	Installing from the CD-ROM .....	4
	Installing from FTP File Download .....	4
	WinPoET Setup Windows .....	5
<b>4.</b>	<b>Using WinPoET</b> .....	10
4.1	Using the WinPoET Menu .....	11
4.2	Customizing the WinPoET Interface .....	12
4.3	Managing Connection Options .....	14
4.4	Connecting to the Internet .....	19

4.5	Selecting a Service Provider .....	21
4.6	Using the WinPoET Event Log .....	22
	Viewing the Event Log .....	22
	Filtering Events by Date and Time .....	25
<b>5.</b>	<b>Setup Messages</b> .....	<b>26</b>
<b>6.</b>	<b>Setup Procedures</b> .....	<b>31</b>
6.1	Removing Earlier Dial-Up Networking from Windows 95 .....	31
6.2	Installing Dial-Up Networking for Windows 95 .....	32
6.3	Installing Dial-Up Networking for Windows 98 .....	33
6.4	Installing an Ethernet Adapter for Windows 95/98 .....	33
6.5	Installing an Ethernet Adapter for Windows NT .....	34
6.6	Installing TCP/IP for Windows 95/98 .....	34
6.7	Installing TCP/IP for Windows NT .....	35
6.8	Installing the Microsoft Service Pack for Windows NT .....	36
6.9	Installing the iVasion PoET Adapter for Windows NT .....	36
6.10	Installing the iVasion PoET Adapter for Windows 2000 .....	37
6.11	Removing WinPoET from Your Windows 95/98/NT Computer .....	38
6.12	Removing WinPoET from Your Windows 2000 Computer .....	38
<b>7.</b>	<b>Troubleshooting</b> .....	<b>39</b>
7.1	FAQs .....	39
7.2	Windows RAS and DUN Errors .....	40
<b>8.</b>	<b>Glossary</b> .....	<b>44</b>
	<b>Index</b> .....	<b>59</b>

# WinPoET

## *User's Guide*

2.1

## **1. Introduction**

This introductory chapter defines WinPoET, explains what is included in the rest of the *WinPoET User's Guide*, and provides direction for seeking additional assistance.

### **1.1 What is WinPoET?**

Wind River's WinPoET is the industry's first Windows product to provide end users with authenticated access to high-speed broadband networks using the Microsoft dial-up user interface. PPP over Ethernet (PPPoE) provides Network Service Providers with a faster and more cost-effective approach to xDSL and cable network deployment.

WinPoET lowers provisioning costs because it:

- is compatible with existing computer hardware and software
- is compatible with all xDSL and broadband modems
- uses an Ethernet NIC

### **1.2 What's in This Guide**

This guide contains information on installing and running WinPoET, including:

2. *System Requirements*, p.2 What your computer needs prior to WinPoET installation

3. <i>Installation</i> , p.4	Instructions for following the Setup program
4. <i>Using WinPoET</i> , p.10	Explanation of the WinPoET dialer, options, diagnostics, and menu commands
5. <i>Setup Messages</i> , p.26	Explanation and resolution of messages that may be displayed during installation
6. <i>Setup Procedures</i> , p.31	Detailed instructions for setting up your computer for WinPoET, if it does not already meet the product's system requirements
7. <i>Troubleshooting</i> , p.39	Assistance with using WinPoET, including pointers to Frequently Asked Questions (FAQs)
8. <i>Glossary</i> , p.44	Definitions of common networking terms

### **1.3 How to Get Help**

For assistance with installing and using WinPoET, refer to this guide or the online Help file (**WinPoET.hlp**). If you need additional assistance, contact your Internet Service Provider.

## **2. System Requirements**

WinPoET can be installed on any of these operating systems:

- Windows 95
- Windows 98
- Windows NT 4.0
- Windows 2000

WinPoET also requires that your computer have at least one Ethernet adapter with TCP/IP bound to it. In addition, Windows 95/98 computers must have Dial-Up Networking, and Windows NT computers must have Service Pack 3 or later. The remainder of this section discusses these requirements in further detail.

## 2.1 Ethernet Adapter

You must have a Microsoft-compatible Ethernet adapter installed in your computer, and the adapter must use Microsoft TCP/IP as the protocol. You can check for the presence of the adapter by going to the Control Panel and opening the Network applet. If you have an Ethernet adapter installed, it will appear on the Configuration page (for Windows 95/98) or the Adapters page (for Windows NT).

If you do not have an adapter, you must install one before running the WinPoET installation. For details, see 6.4 *Installing an Ethernet Adapter for Windows 95/98*, p.33, or 6.5 *Installing an Ethernet Adapter for Windows NT*, p.34.

## 2.2 Microsoft Dial-Up Networking

The Microsoft Dial-Up Networking requirement depends on the type of operating system running on your computer:

### Windows 95

Windows 95 computers must have Microsoft Dial-Up Networking (DUN) version 1.2 or later installed. If you have an earlier version of DUN, you should remove it first and then install the DUN upgrade. You can obtain the latest version of the DUN software, DUN 1.3, from the **DUN 1.3** folder on the WinPoET CD-ROM or from the Microsoft Windows Update Web page:

**<http://microsoft.com/windows95/downloads>**

For details, see 6.2 *Installing Dial-Up Networking for Windows 95*, p.32.

### Windows 98

Windows 98 computers must have Microsoft Dial-Up Networking (DUN) installed, including Virtual Private Networking (VPN). For details, see 6.3 *Installing Dial-Up Networking for Windows 98*, p.33.

### Windows NT and Windows 2000

Windows NT and Windows 2000 computers do not require Microsoft Dial-Up Networking.

### **2.3 Service Pack 3 or Later (Windows NT only)**

Windows NT computers must have Microsoft Windows NT Service Pack 3 (SP3) or later installed before you can install WinPoET. If you do not have Service Pack 3 or later, you can download the latest Windows NT service pack from the Microsoft Web site:

**<http://www.microsoft.com/networkstation/downloads>**

For details, see *6.8 Installing the Microsoft Service Pack for Windows NT*, p.36.

## **3. Installation**

Before you install WinPoET, make sure that you close all running programs. You can install WinPoET either from the CD-ROM or from a file downloaded from the Internet to your computer.

### ***Installing from the CD-ROM***

1. Insert the WinPoET CD-ROM into your computer's CD-ROM drive. The Setup program starts automatically.
2. Follow the instructions on each Setup window.

### ***Installing from FTP File Download***

1. Unzip the WinPoET **.zip** file that you downloaded from an Internet Web site.
2. Double-click the **WinPoET.exe** file.
3. Follow the instructions on each Setup window.



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**NOTE:** If you need assistance during the WinPoET installation, press the F1 key on your keyboard to open the online Help file. If you need additional assistance, contact your Internet Service Provider (ISP).


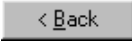
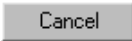
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## WinPoET Setup Windows

The WinPoET Setup program will guide you through the installation of the WinPoET product. Depending on your computer's configuration, you may not see all of the Setup windows described in this section.

Most WinPoET Setup windows contain these buttons:

	Click Next to proceed to the next step of the WinPoET installation.
	Click Back to return to the previous step of the installation. You may want to go back to a prior step to change your options.
	Click Cancel to exit the Setup program. WinPoET will not be installed on your computer.

To install WinPoET, follow these steps:

**Step 1: In the Welcome window, click Next to continue.**

Before you continue with Setup, make sure that all other programs are closed. To close running programs, press the ALT+TAB keys to access and then close each one. Then click Next to continue.

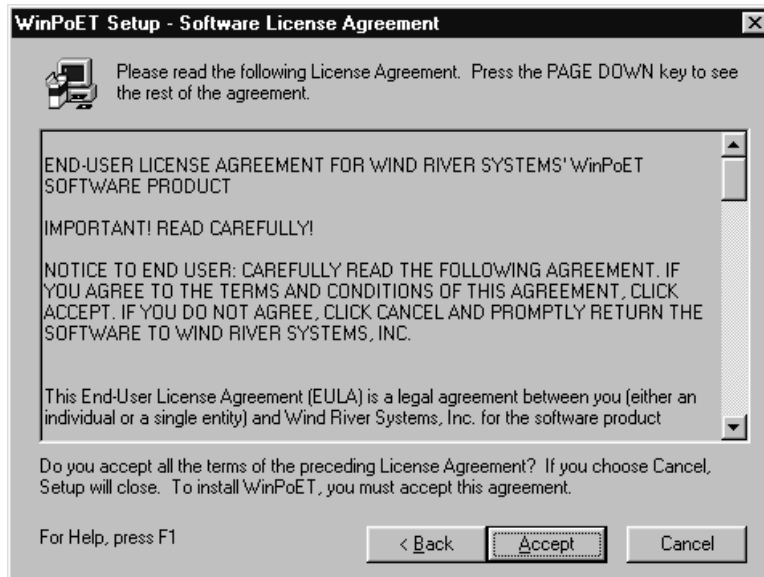
Figure 1 **Welcome Window**



**Step 2: In the Software License Agreement window, click Accept to continue.**

Read the conditions of the Wind River software license agreement and then click either Accept or Cancel. In order to continue with the WinPoET installation, you must click Accept. If you click Cancel, the Setup program will terminate and WinPoET will not be installed.

Figure 2 **Software License Agreement Window**



**Step 3: In the Configuration Analysis window, click Next.**

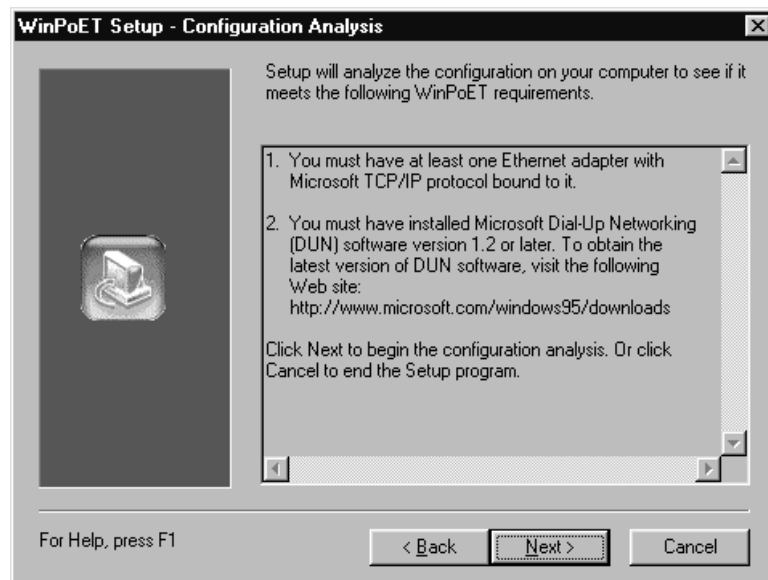
During this step, the Setup program checks your computer to determine if it meets the minimum configuration requirements to install WinPoET. The Configuration Analysis window appears differently depending on the type of operating system that your computer is running: Windows 95, Windows 98, Windows NT, or Windows 2000 (see Figures 3 through 6).

Depending on the results of the analysis, Setup may prompt you to select from additional options. Setup will also inform you if your computer does not meet the configuration requirements. For assistance in resolving configuration problems, refer to 5. *Setup Messages*, p.26. Click Next to begin the configuration analysis.

Note that WinPoET creates and maintains three versions of the configuration analysis. Each version is stored in a text file in either the **WINDOWS** folder on Windows 95/98 systems or the **WINNT** folder on Windows NT/2000 systems:

- **WinPoET\_PreInstallation.txt** shows the system configuration prior to WinPoET installation.
- **WinPoET\_PostInstallation.txt** shows the system configuration immediately following WinPoET installation.
- **WinPoET\_Runtime.txt** shows the system configuration as it exists when WinPoET is running.

Figure 3 Configuration Analysis Window for Windows 95



**Step 4: In the Destination Folder window, select where you want to install WinPoET.**

The Destination Folder box shows the drive, path, and folder name in which Setup will install WinPoET. You can either accept the default installation folder of **C:\Program Files\iVasion\WinPoET**, or you can click Browse to select a different folder. In most cases, you should accept the default folder.

Click Next to begin copying WinPoET files to your computer.

**Step 5: In the Installation Completed window, click Finish.**

Figure 4 **Configuration Analysis for Windows 98**

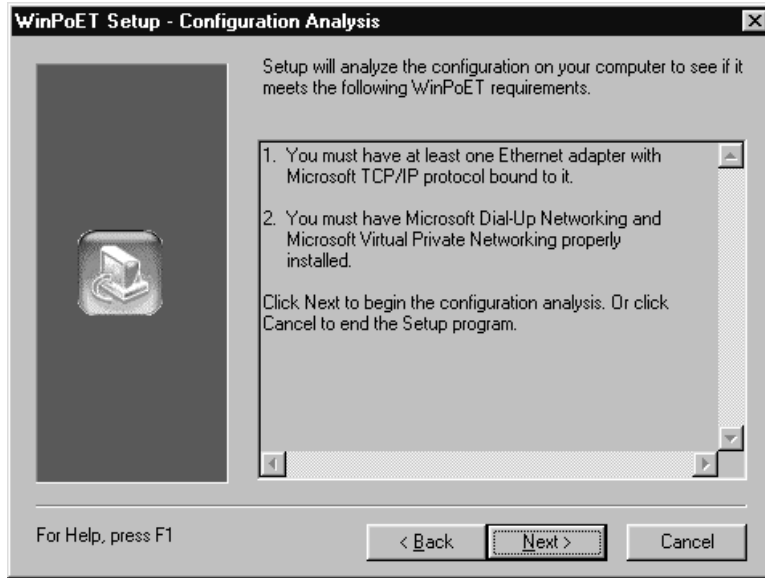


Figure 5 **Configuration Analysis Window for Windows NT**

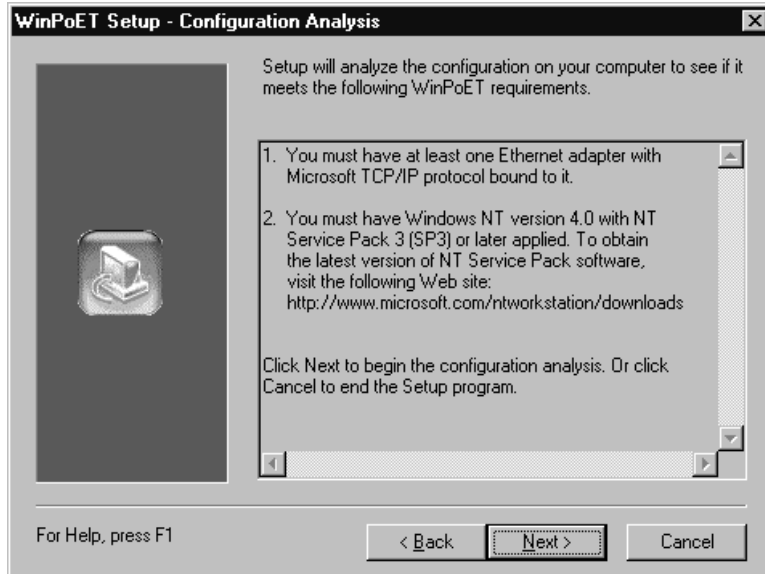


Figure 6 Configuration Analysis Window for Windows 2000

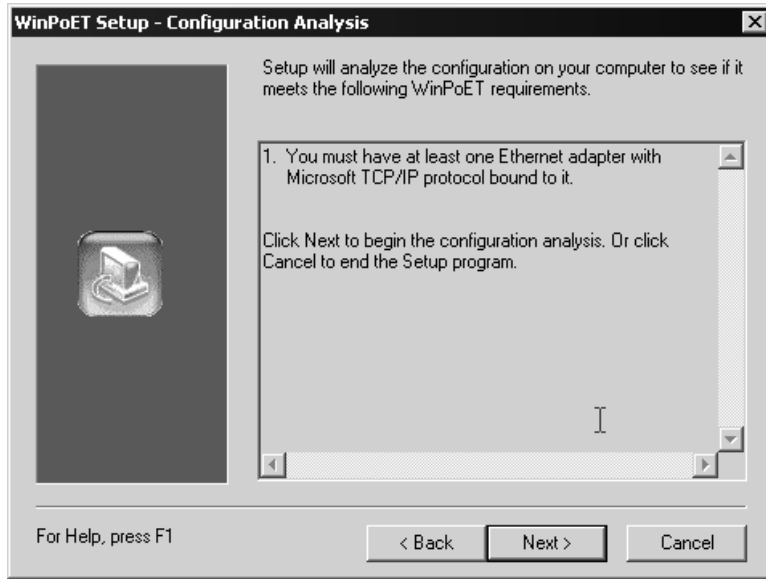
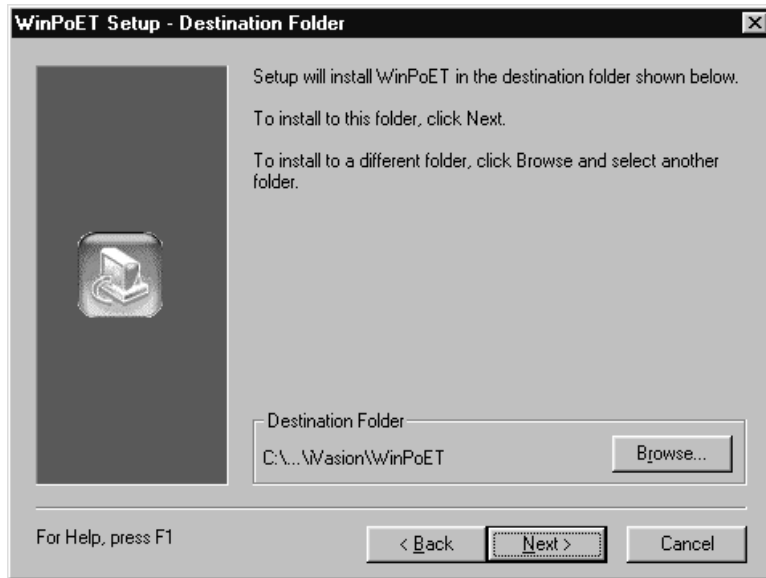


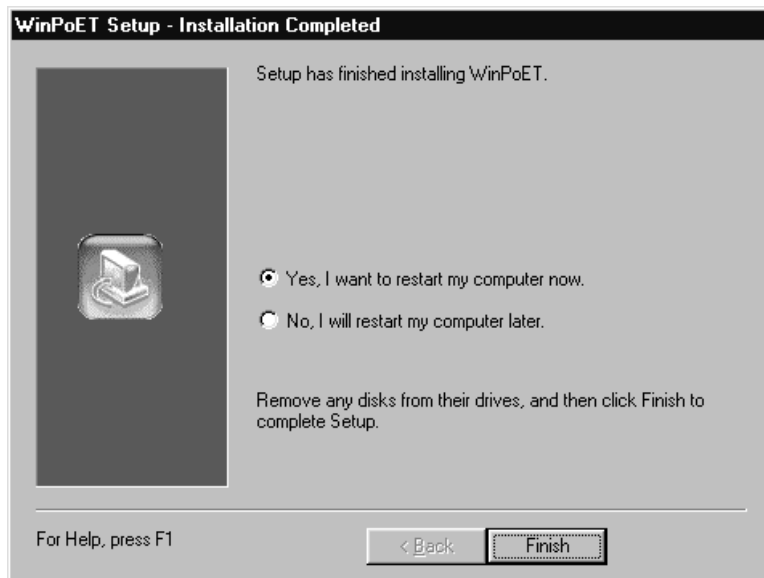
Figure 7 Destination Folder Window




The Setup program has completed copying the files to your computer. Remove the WinPoET installation CD from the drive.

You must restart Windows before you can begin using WinPoET. If you are running any operating system except Windows 2000, ensure that **Yes, I want to restart my computer** is selected, and then click **Finish**. If you want to continue working on your computer before using WinPoET, select **No, I will restart my computer later**, and then click **Finish**.

Figure 8 **Installation Completed Window**



## 4. Using WinPoET

After you complete the installation and restart your computer, you will see the WinPoET icon  in the status area of the Windows taskbar, indicating that WinPoET is running. See Figure 9 for an example.

While WinPoET is running, you can:

- access the WinPoET menu

Figure 9 WinPoET Icon on the Windows Taskbar



- customize the WinPoET interface
- manage connection options
- connect to the Internet
- select a service provider
- view the event log

Each of these options is described in the following sections.

## 4.1 Using the WinPoET Menu


Right-clicking the WinPoET icon  on the Windows taskbar brings up a menu containing the commands shown in Figure 10.

Figure 10 WinPoET Menu



### About WinPoET Command

Clicking the About WinPoET command opens a box containing the product version number, copyright information, and build information. Technical support personnel may request this information to help you resolve support issues.

### Auto-connect Command

Clicking the Auto-connect command opens the WinPoET Auto-connect dialog box, where you can choose options for automatically connecting to the Internet (see *Automatic Connection Options*, p.21).

### Shutdown or Close **Command**

The command name that appears in this position on the WinPoET menu differs depending on your computer's operating system:

- Clicking the Shutdown command (on Windows 95/98) removes the WinPoET icon from the taskbar and stops WinPoET service.
- Clicking the Close command (on Windows NT/2000) removes the WinPoET icon from the taskbar, although WinPoET service will continue to run.

To redisplay the WinPoET icon on the taskbar, click Start, point to Programs, iVasion, WinPoET, and then click WinPPPOverEthernet Service.

### Help **Command**

Clicking the Help command opens the online Help file for the WinPoET product.

To find out more about how to use Windows Help systems, click the Using Help button at the top of the Help window.

### Wind River on the Web **Command**

Pointing to the Wind River on the Web command opens a submenu containing links to pages on the Wind River Web site. There you can obtain the most current information about Wind River and WinPoET.

## **4.2 Customizing the WinPoET Interface**

Use the WinPoET Options dialog box (Figure 11) to customize your version of the WinPoET dialer interface and to access the event log. Customization options include:

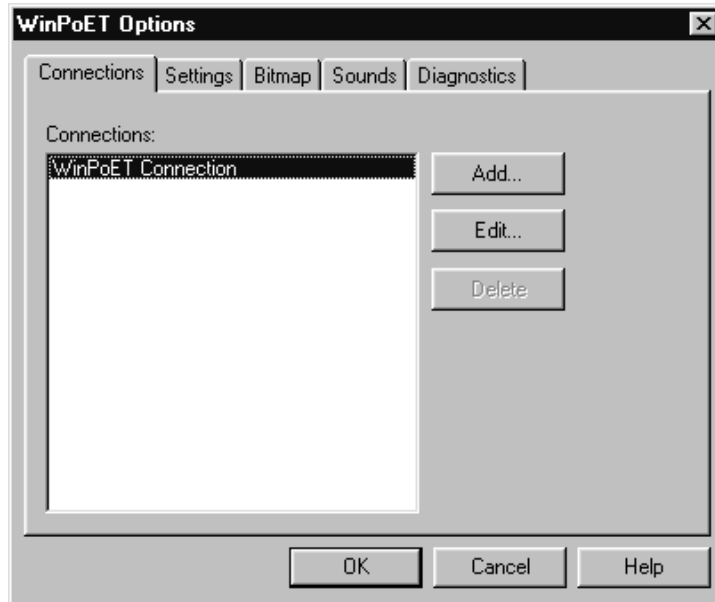
- changing the Wind River graphic
- selecting sounds to associate with events
- enabling automatic dialer launch, access to service names, and browser default

To customize the WinPoET interface, follow these steps:

1. On the WinPoET Dialer dialog box (see Figure 18), click Options to open the WinPoET Options dialog box containing multiple tabbed pages. Click a tab to bring that page to the front.
2. On the Bitmap page (see Figure 12), select the filename for the bitmapped image that you want to appear in the upper portion of the WinPoET Dialer



Figure 11 WinPoET Options Dialog Box with Tabbed Pages



dialog box. You can either type the name of the drive, path, and filename, or click Browse to locate a file.



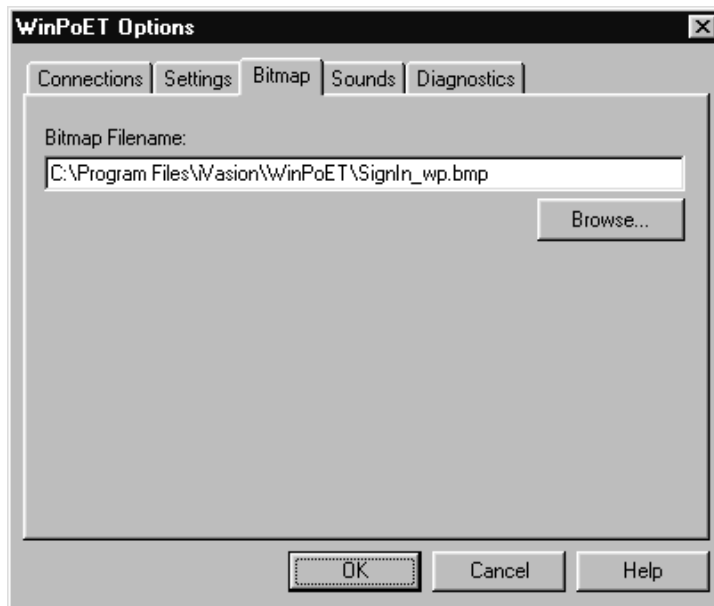
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**NOTE:** The bitmap is restricted to 256 colors and must have the dimensions of 330 pixels wide by 141 pixels high. The default bitmap file supplied with WinPoET is **C:\Program Files\iVasion\WinPoET\SignIn\_wp.bmp**.

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3. On the Sounds page (see Figure 13), select the Enable Sounds check box to turn on the ability to play sounds for dialer events. Or, clear this check box to turn off this feature.
4. In the Event Sound box, select the sound file to associate with the currently selected Event Name. You can either type the name of the drive, path, and filename, or click Browse to locate a file. To listen to the sound file that is associated with currently selected event, click Play Sound.
5. On the Settings page (see Figure 14), choose from one or all of the following options:

Figure 12 WinPoET Options Dialog Box – Bitmap Page

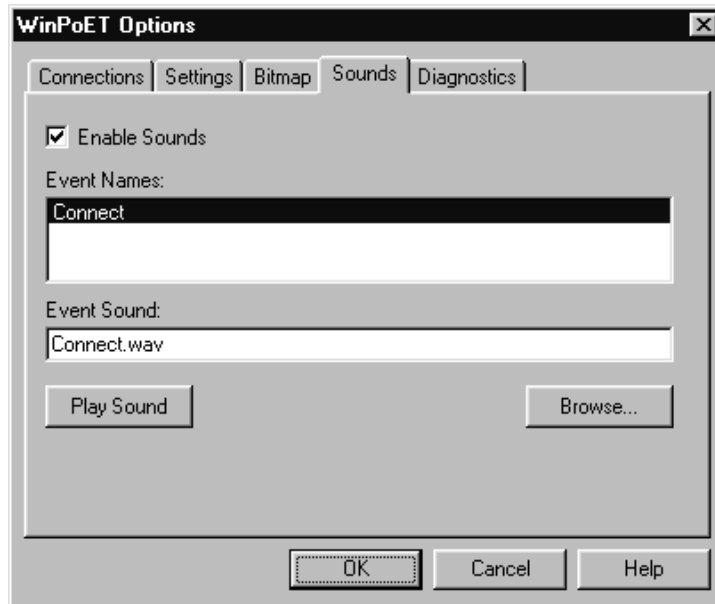


- (a) Select the Launch WinPoET Dialer at Windows startup check box to automatically open the dialer dialog box when you start the Windows operating system.
  - (b) Select the Enable Service Names before connection check box to turn on the service name selection option. With service names enabled, the WinPoET Service Names dialog box (see Figure 20) will prompt you to select from a list of ISPs when you click Connect on the WinPoET Dialer dialog box.
  - (c) Select the Launch default browser after connection check box to automatically open your default Web browser following a successful connection with WinPoET. In the URL box, type the Web address of the Web site that you want to display in the browser window when it opens.
6. Click OK to accept any changes made to the WinPoET options and close this dialog box.

### 4.3 Managing Connection Options

Use the Connections page (see Figure 15) of the WinPoET Options dialog box to add, remove, and change Dial-Up Networking (DUN) connections. On Windows

Figure 13 WinPoET Options Dialog Box – Sounds Page



NT 4.0 and Windows 2000, you can also select from several Remote Access Service (RAS) options.

To manage your dial-up connections:

1. On the WinPoET Options dialog box, click the Connections tab to bring that page to the front.  
The Connections box lists all of the Dial-Up Networking (DUN) connections set up on your computer.
2. Modify connections as follows:
  - To create a connection, click Add. The Add Connection Properties dialog box opens, as shown in either Figure 16 (for Windows 95/98) or Figure 17 (for Windows NT/2000).
  - To change a connection, select it and then click Edit. The Edit Connection Properties dialog box opens, as shown in either Figure 16 (for Windows 95/98) or Figure 17 (for Windows NT/2000).
  - To remove a connection, select it and then click Delete.

Figure 14 WinPoET Options Dialog Box – Settings Page

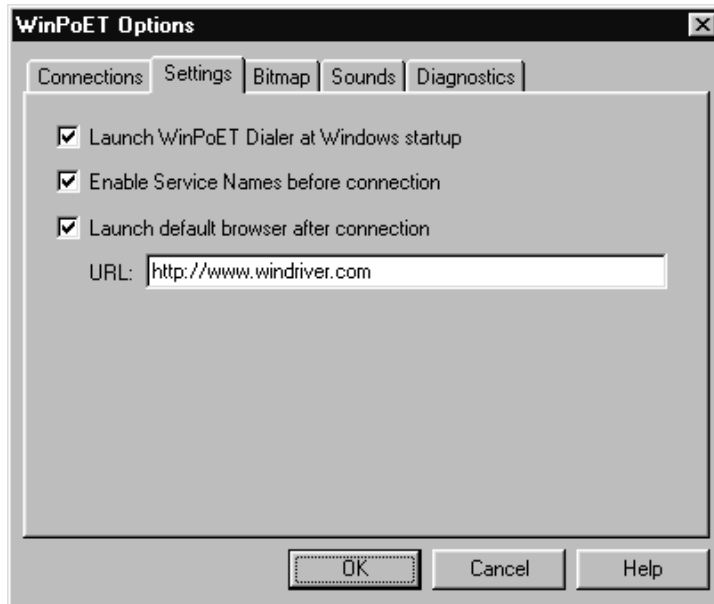


Figure 15 WinPoET Options Dialog Box – Connections Page

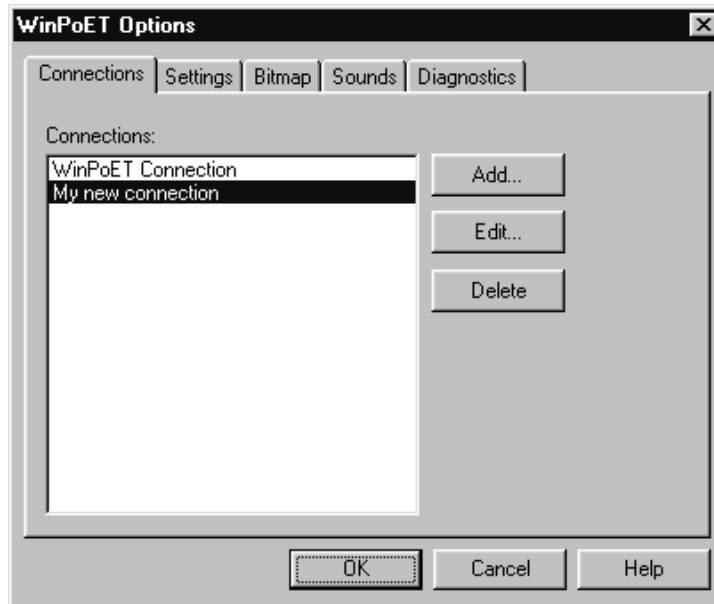


Figure 16 Add/Edit Connection Properties Dialog Box for Windows 95/98

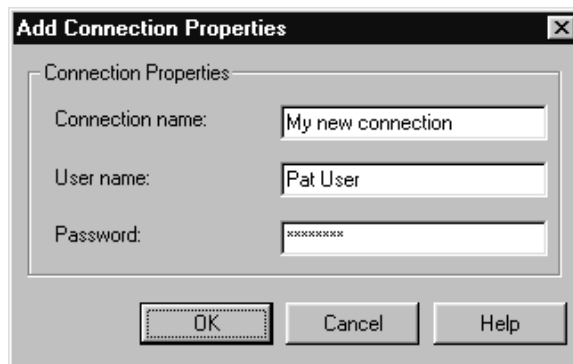
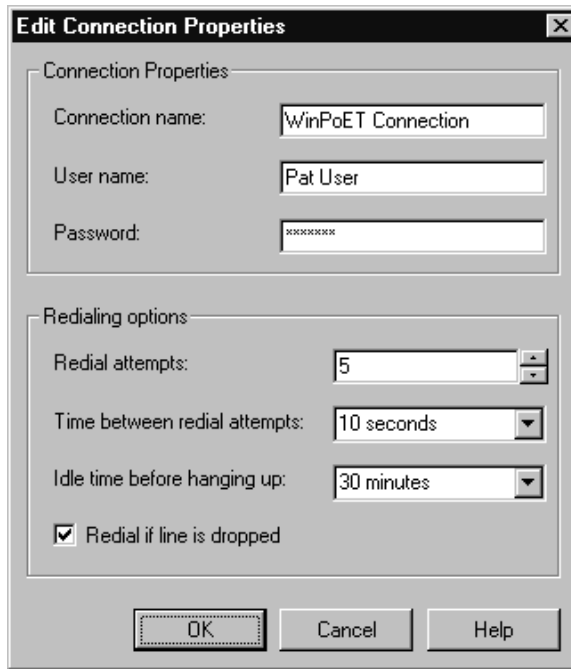


Figure 17 Add/Edit Connection Properties Dialog Box for Windows NT/2000



**NOTE:** The title bar of this dialog box is either Add Connection Properties (if you are creating a connection) or Edit Connection Properties (if you are modifying an existing connection).

3. On the Add/Edit Connection Properties dialog box for Windows 95/98/NT/2000, change the connection properties shown in Table 1 as needed.

Table 1 **Connection Properties**

Parameter Name	Description	Default
Connection name	Descriptive name for this connection.	<b>WinPoET Connection</b>
User name	Login user name to display by default in the User name box on the WinPoET Dialer dialog box.	n/a

Table 1 **Connection Properties** (Continued)

Parameter Name	Description	Default
Password	Password to display by default in the Password box on the WinPoET Dialer dialog box.	n/a

- On Windows NT/2000 only, change the redialing options shown in Table 2 as needed.

Table 2 **Redialing Options**

Parameter Name	Description	Default
Redial attempts	Indicates the number of times that WinPoET will redial the ISP if the first connection attempt is unsuccessful. Possible values range from 0 to unlimited redial attempts.	3
Time between redial attempts	Indicates the time interval to wait between redial attempts. Possible values range from 1 second to 10 minutes.	30 seconds
Idle time before hanging up	Indicates how long WinPoET will remain idle before automatically disconnecting from the ISP. Possible values range from "never" (meaning WinPoET will not automatically disconnect) to 24 hours.	5 minutes
Redial if line is dropped	Select the check box to have WinPoET automatically redial the ISP if problems cause the connection to be dropped. Or, clear the check box to prevent redialing after a dropped connection.	cleared

- Click OK to save your changes and close the Add/Edit Connection Properties dialog box.

## 4.4 Connecting to the Internet


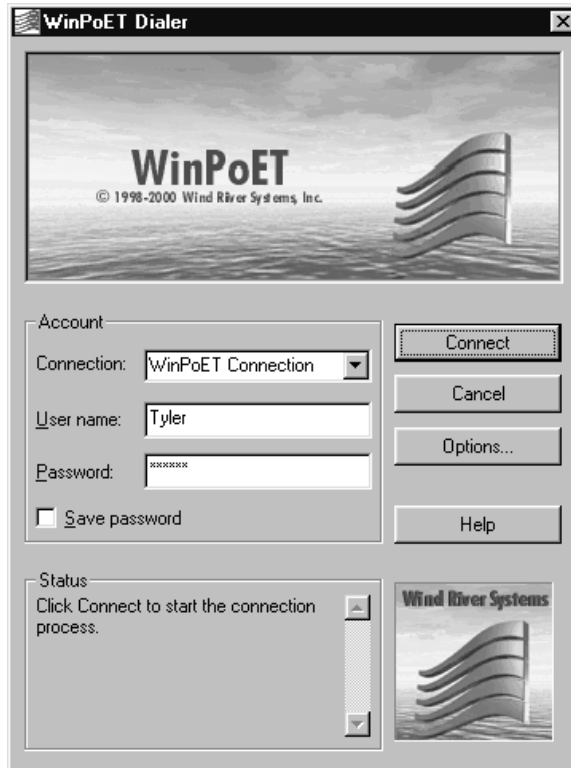
Following successful installation of WinPoET, the WinPoET Dialer shortcut  is displayed on your Windows desktop. Use the WinPoET Dialer dialog box (see Figure 18) to connect to the Internet, as follows:

Figure 18 WinPoET Dialer Dialog Box



1. Double-click the shortcut to open the WinPoET Dialer dialog box. (You can also access the dialer by clicking Start, pointing to Programs, iVasion, WinPoET, and then clicking WinPoET Dialer.)
2. In the Connection box, select the name of the connection that you want to use to link to the Internet. (To create, change, or remove WinPoET connections, see *4.3 Managing Connection Options*, p.14.)
3. In the User name and Password boxes, type your login user name and password as established with your Internet Service Provider (ISP).
4. If you want to store your password in the WinPoET program so that you need not type it during future sessions, select the Save password check box.
5. Click Connect.

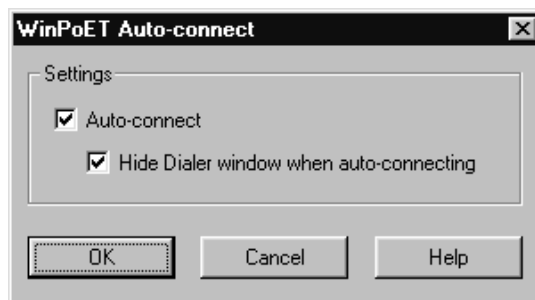


Note that the Status box provides prompts to guide you. It may also indicate system messages regarding server errors. If you are unable to connect because of a remote server error, consult the list of Remote Access Service (RAS) and Dial-up Networking (DUN) error messages shown in *7.2 Windows RAS and DUN Errors*, p.40, or contact your ISP for assistance.

### Automatic Connection Options

Use the WinPoET Auto-connect dialog box (see Figure 19) to select options for automatically connecting to the Internet. To access this dialog box, click the Auto-connect command on the WinPoET menu (see *4.1 Using the WinPoET Menu*, p.11).

Figure 19 **Auto-connect Dialog Box**



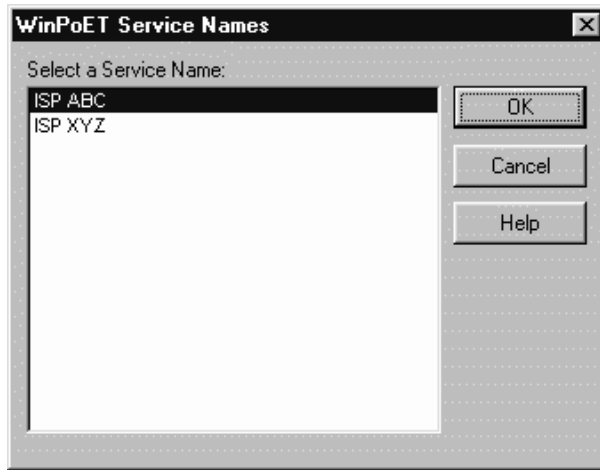
To have WinPoET automatically connect to the Internet whenever you log on to your computer, select the Auto-connect check box. When the Auto-connect check box is selected, the Hide dialer window when auto-connecting check box becomes available also. Select this check box to prevent the WinPoET Dialer dialog box from being displayed during automatic connection.

## 4.5 Selecting a Service Provider

WinPoET provides the WinPoET Service Names dialog box (Figure 20) to select the Internet Service Provider (ISP) that you will use to connect to the Internet. If you have more than one ISP, this feature enables you to choose which one to use for this connection. The ISP name that you select here must correspond to the user name and password that you entered in the WinPoET Dialer dialog box (Figure 18).

To select a service provider, follow these steps:

Figure 20 WinPoET Service Names Dialog Box



1. To access the WinPoET Service Names dialog box, enter the appropriate user name and password on the WinPoET Dialer dialog box and then click Connect.



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**NOTE:** The WinPoET Service Names dialog box appears only if the service name selection option is enabled in the Settings page of the WinPoET Options dialog box (see 4.2 *Customizing the WinPoET Interface*, p.12).

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2. Under Select a Service Name, click the name of the ISP that you want to connect to for this session. Listed are all ISPs for which you are currently signed up.
3. Click OK to accept the ISP that you have selected and begin connecting to the Internet.

## 4.6 Using the WinPoET Event Log

The event log provides diagnostic information about WinPoET sessions. You can use the event log filter to limit the amount of information displayed.

### Viewing the Event Log

Access the log by clicking Event Log on the Diagnostics page of the WinPoET Options dialog box (see Figure 21).

Figure 21 WinPoET Options – Diagnostics Page

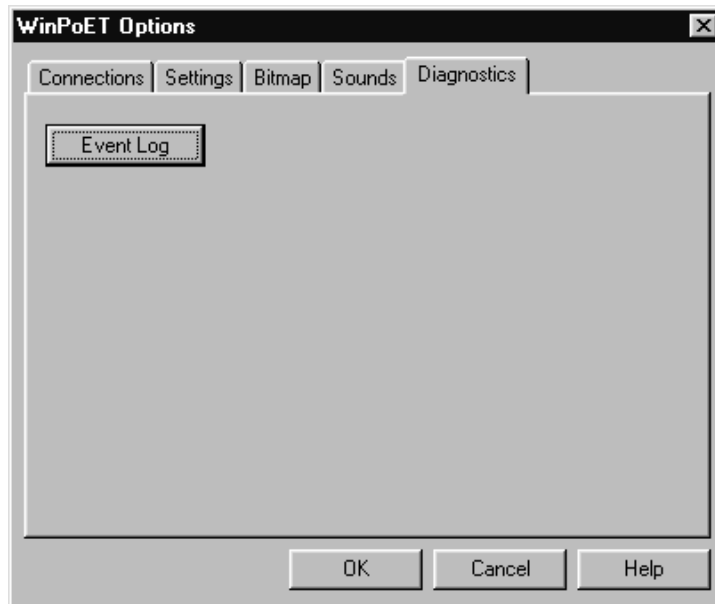


Figure 22 shows an example of the event log window.

To sort the log by either the date, time, source, event, or text, click the appropriate column heading. Event log columns include the following:

**Date**

Month and day that the event occurred.

**Time**

Time in hours, minutes, and seconds that the event occurred.

Figure 22 WinPoET Event Log Example

Date	Time	Source	Event	Text
12-13	11:30:54.401	WrOS	Console	INFO: Starting service WinPPoverEthernet.
12-13	11:30:54.491	WrOS	Console	INFO: Loading WrOS (C:\Program Files\Wasion\WinPoET\WrOS.EXE) version
12-13	11:30:56.944	WrRT	INFO	Opening Module instance Mac Frames Manager\.
12-13	11:30:57.044	WrRT	INFO	Opening Module instance PoE\.
12-13	11:30:57.315	WrNet...	ERROR	::GetServiceKeyName(WrKPoET2000) failed. Error = The specified service doe:
12-13	11:30:58.517	WrRT	INFO	WR thread 1 is opened.
12-13	11:30:58.647	WrRT	INFO	WR thread 2 is opened.
12-13	11:30:58.707	WrRT	INFO	WR thread 3 is opened.
12-13	11:30:58.837	WrRT	INFO	WR thread 4 is opened.
12-13	11:30:58.947	WrOS	INFO	WinPPoverEthernet process is running with 2 module(s).
12-13	11:30:58.967	WrRT	INFO	WR thread 2 is started.
12-13	11:30:58.967	WrRT	INFO	WR thread 3 is started.
12-13	11:30:58.967	WrRT	INFO	WR thread 4 is started.
12-13	11:30:58.967	WrRT	INFO	WR thread 1 is started.
12-13	11:30:59.408	PPPOE	INFO	Forwarder informed a PortUp event on port; name: \Device\{99B2AEE3-6CE4-4
12-12	14:02:59.042	PPPOE	INFO	Sending PADI packet on all ports
12-12	14:02:59.102	PPPOE	INFO	Received PADO packet from port: ffac9c8
12-12	14:02:59.142	PPPOE	INFO	PADO packet; AC Name:
12-12	14:02:59.162	PPPOE	INFO	Sending PADR packet on port: ffac9c8
12-12	14:02:59.202	PPPOE	INFO	Received PADS packet from port: ffac9c8
12-12	14:02:59.232	PPPOE	INFO	PADS packet; session id: 125 , Accepted Service Name: Joe
12-12	14:03:02.326	PPPOE	INFO	sending Discovery terminate packet, session id: 125
12-12	14:03:02.366	PPPOE	INFO	Session Control 125 closed
12-12	14:03:02.417	PPPOE	INFO	Received DISCOVERY_TERMINATE packet, session_id: 7d

**Source**

Application that generated the event, including these sources:

- PPPOE: **WinPPoverEthernet.exe**
- WrNetworkDriver: **WrNetworkDriver.dll**
- WrOS: **WrOS.exe**
- WrRT: **WrRT.exe**

**Event**

Type of event, including these event log types:

**INFO**

An INFO event describes the successful operation of an application, driver, or service. For example, an information event is logged when a network driver loads successfully.

**WARNING**

A WARNING event is not necessarily significant, but may indicate a possible future problem. For example, a warning is logged when disk space on your computer is low.

**ERROR**

An ERROR event indicates a significant problem, such as loss of data or loss of functionality. For example, an error is logged if a service fails to load during startup.

**Text**

Description of the event.



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**NOTE:** For more information about PPP, refer to the following book:

Carlson, James, *PPP Design and Debugging*, Addison-Wesley Publishing Co., Reading, MA, 1997.

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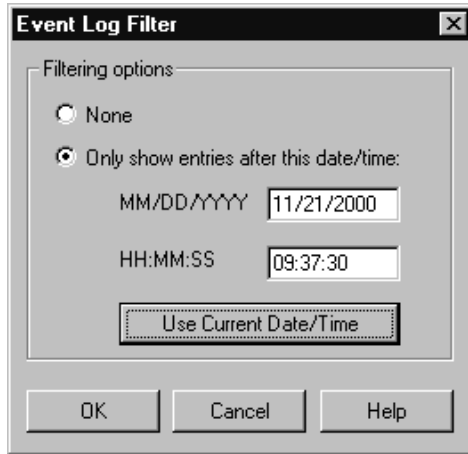
**Filtering Events by Date and Time**

Use the Event Log Filter dialog box (see Figure 23) to include events that occur only after a user-specified date and time. To access this dialog box, click Filter on the WinPoET Event Log.

The default filtering option is None, meaning that all events recorded by WinPoET are shown in the log window. To limit the display of events in the log, follow these steps:

1. Click Only show entries after this date/time.
2. In the MM/DD/YYYY box, type a date for which you want events occurring after to be displayed in the log. Use two integers for the month, two integers for the day, and four integers for the year. For example, type 03-17-2001 to display events occurring on and after March 17, 2001.
3. In the HH:MM:SS box, type a time for which you want events occurring after to be displayed in the log. Use two integers for the hour, two integers for the minutes, and two integers for the seconds. For example, type 18:00:00 to

Figure 23 **Event Log Filter Dialog Box**



display events occurring on and after 6:00 PM on the date specified in the MM/DD/YYYY box.

4. As an alternative to steps 2 and 3, you can click Use Current Date/Time to automatically enter the current system date and time in the MM/DD/YYYY and HH:MM:SS boxes.
5. Click OK to save the event log filter parameters and return to the WinPoET Event Log. The log now lists only those events that occur after the specified date and time parameters.

## 5. Setup Messages

If your computer is not properly configured with the required components (see 2. *System Requirements*, p.2) before you begin WinPoET installation, you may encounter one or more of the messages shown in this section during the Setup program. The ID number and text of each message is followed by its probable cause and the suggested resolution. In addition, a more detailed, step-by-step procedure for each resolution is available in 6. *Setup Procedures*, p.31.

**Message ID: WINPOET:001**

**This program supports only Microsoft Windows 95/98/NT 4.0 and Windows 2000. Setup cannot proceed.**

**Cause:** You are trying to install the WinPoET program on a computer that is not compatible with the program. WinPoET is designed for computers running one of these operating systems: Windows 95, Windows 98, Windows NT 4.0, or Windows 2000.

**Action:** None. You cannot install WinPoET on this computer. The Setup program will terminate.

**Message ID: WINPOET:003**

**Setup is not complete because the iVasion PoET adapter is not yet installed. To install and configure the iVasion PoET adapter, either click Help or follow the instructions in the User's Guide in the WinPoET destination directory.**

**Cause:** The Setup program is unable to automatically install the iVasion PoET adapter on your Windows NT computer. You must manually install this adapter.

**Action:** Follow these steps:

1. Install the iVasion PoET adapter. For details, see *6.9 Installing the iVasion PoET Adapter for Windows NT*, p.36.
2. Restart your computer before running WinPoET.

**Message ID: WINPOET:004**

**Setup is not complete because the iVasion PoET adapter is not yet installed. To install and configure the iVasion PoET adapter, either click Help or follow the instructions in the User's Guide in the WinPoET destination directory.**

**Cause:** The Setup program is unable to automatically install the iVasion PoET adapter on your Windows 2000 computer. You must manually install this adapter.

**Action:** Follow these steps:

1. Install the iVasion PoET adapter. For details, see *6.10 Installing the iVasion PoET Adapter for Windows 2000*, p.37.
2. Restart your computer before running WinPoET.

**Message ID: WINPOET:005**

**Setup found an earlier version of WinPoET on this computer. However, Setup is**

**unable to obtain all necessary information to suggest an upgrade. You must remove the earlier version of WinPoET, restart your computer, and then run Setup again.**

**Cause:** You have an earlier version of WinPoET already installed on this computer. However, additional changes have been made to the computer's configuration since the original WinPoET installation, preventing the Setup program from upgrading the existing WinPoET version to the current version.

**Action:** Follow these steps:

1. Remove the earlier version of WinPoET. For details, see *6.11 Removing WinPoET from Your Windows 95/98/NT Computer*, p.38.
2. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:007**

**Setup found an earlier version of WinPoET on this computer. You must remove WinPoET, restart your computer, and then run Setup again.**

**Cause:** You have an earlier version of WinPoET already installed on this computer and Setup cannot upgrade to the new version.

**Action:** Follow these steps:

1. Remove the earlier version of WinPoET. For details, see *6.11 Removing WinPoET from Your Windows 95/98/NT Computer*, p.38.
2. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:008**

**Setup found an earlier version of WinPoET on this computer. However, the configuration has been changed since the earlier installation. You must remove WinPoET, restart your computer, and then run Setup again.**

**Cause:** You have an earlier version of WinPoET already installed on this computer. However, additional changes have been made to the computer's configuration since the original WinPoET installation, preventing the Setup program from upgrading the earlier WinPoET version to the current version.

**Action:** Follow these steps:

1. Remove the earlier version of WinPoET. For details, see *6.11 Removing WinPoET from Your Windows 95/98/NT Computer*, p.38.
2. Restart your computer and then run the WinPoET Setup program again.



**Message ID: WINPOET:009**

**Setup found an earlier version of WinPoET on this computer. However, Setup is unable to verify the current configuration. You must remove WinPoET, restart your computer, and then run Setup again.**

**Cause:** You have an earlier version of WinPoET already installed on this computer. However, Setup is unable to use the configuration found in the earlier version for this current version.

**Action:** Follow these steps:

1. Remove the earlier version of WinPoET. For details, see *6.11 Removing WinPoET from Your Windows 95/98/NT Computer*, p.38.
2. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:010**

**Setup found an earlier version of WinPoET on this computer. However, Setup is unable to obtain the current configuration. You must remove WinPoET, restart your computer, and then run Setup again.**

**Cause:** You have an earlier version of WinPoET already installed on this computer. However, Setup is unable to use the configuration found in the earlier version for this current version.

**Action:** Follow these steps:

1. Remove the earlier version of WinPoET. For details, see *6.11 Removing WinPoET from Your Windows 95/98/NT Computer*, p.38.
2. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:011**

**Setup detected that the Dial-Up Networking (DUN) software on your computer is not properly installed. Setup cannot proceed.**

**Cause:** Setup found Dial-Up Networking (DUN) on your Windows 95 computer, but determined that DUN is not installed correctly.

**Action:** Follow these steps:

1. Remove the earlier version of Dial-Up Networking. For details, see *6.1 Removing Earlier Dial-Up Networking from Windows 95*, p.31.

2. Install Dial-Up Networking version 1.3 or later. For details, see *6.2 Installing Dial-Up Networking for Windows 95*, p.32.
3. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:012**

**Setup detected that the Dial-Up Networking (DUN) software is not installed on your computer. Setup cannot proceed.**

**Cause:** Setup did not find Dial-Up Networking (DUN) installed on your Windows 98 computer.

**Action:** Follow these steps:

1. Install Dial-Up Networking for Windows 98. For details, see *6.3 Installing Dial-Up Networking for Windows 98*, p.33.
2. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:018**

**Setup requires at least one Ethernet adapter to be installed on the computer. Setup cannot proceed.**

**Cause:** Setup did not find at least one Ethernet adapter with TCP/IP bound to it on this computer.

**Action:** Follow these steps:

1. Install an Ethernet adapter. For details, see *6.4 Installing an Ethernet Adapter for Windows 95/98*, p.33 or *6.5 Installing an Ethernet Adapter for Windows NT*, p.34.
2. Install TCP/IP. For details, see *6.6 Installing TCP/IP for Windows 95/98*, p.34 or *6.7 Installing TCP/IP for Windows NT*, p.35.
3. Restart your computer and then run the WinPoET Setup program again.

**Message ID: WINPOET:020**

**Setup detected that the Dial-Up Networking (DUN) software on your computer has not been upgraded to version 1.2 or higher. Setup cannot proceed.**

**Cause:** The Setup program found an earlier version of Dial-Up Networking (DUN) on your Windows 95 computer, instead of the 1.2 or higher version required by WinPoET.

**Action:** Follow these steps:

1. Remove the earlier version of DUN. For details, see *6.1 Removing Earlier Dial-Up Networking from Windows 95*, p.31.
2. Obtain Dial-Up Networking version 1.3 from either the WinPoET CD-ROM or the Microsoft downloads Web site, and then install it on your computer. For details, see *6.2 Installing Dial-Up Networking for Windows 95*, p.32.
3. Restart your computer and then run the WinPoET Setup program again.

## 6. Setup Procedures

These step-by-step procedures provide a more detailed explanation of how to resolve messages that you may have encountered during the WinPoET installation program (see *5. Setup Messages*, p.26), as well as other WinPoET-related tasks. Because some procedures may differ depending on your computer's operating system, make sure that you follow the steps for either Windows 95, Windows 98, Windows NT, or Windows 2000, as applicable.

### 6.1 Removing Earlier Dial-Up Networking from Windows 95

If you have Microsoft Dial-Up Networking (DUN) version 1.1 or earlier on your Windows 95 computer, you must remove it before you install the DUN 1.3 upgrade.



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**NOTE:** Due to a problem with Microsoft Windows, Steps 1 through 8 of this procedure may not always remove the entire set of older DUN components. To ensure that all related components are removed, be sure to complete all of the steps in this procedure.

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#### To remove DUN 1.1 or earlier

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Add/Remove Programs.
3. On the Install/Uninstall page, select Dial-Up Networking 1.1 (or earlier).

4. Click Add/Remove to remove those files and copy the original files back to your computer.
5. Click the Windows Setup tab to bring that page to the front.
6. Under Components, ensure that the Communications check box is cleared (no check mark is in the box).
7. Click OK to close Add/Remove Programs Properties.
8. Restart your computer, and then continue with the following steps.

**To verify that all DUN components have been removed**

9. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
10. Double-click Network.
11. On the Configuration page, confirm that the following components are *not* listed:
  - Dial-Up Adapter
  - Dial-Up Adapter #2
  - Microsoft Virtual Private Networking Adapter
  - NDISWAN
12. If any of the above components are listed, select each one and then click Remove.
13. Click OK to close the Network applet and update your settings, if necessary.
14. Restart your computer and then install DUN 1.3, as shown in 6.2 *Installing Dial-Up Networking for Windows 95*, p.32.

## **6.2 Installing Dial-Up Networking for Windows 95**

The Dial-Up Networking (DUN) 1.3 upgrade is available for your convenience on the WinPoET CD-ROM, or you can download it from the Microsoft Web site. If you have an earlier version of DUN, you must first remove it by following the procedure, 6.1 *Removing Earlier Dial-Up Networking from Windows 95*, p.31, before installing DUN 1.3.

**To install DUN 1.3 from the CD-ROM**

1. On the WinPoET CD-ROM, open the **DUN 1.3** folder.

2. Double-click the **Msdun13.exe** file and follow the instructions on the screen.

#### **To install DUN 1.3 from Microsoft**

1. Open your Web browser and navigate to the Microsoft Windows Update Web page:  
**<http://microsoft.com/windows95/downloads>**
2. Under the Networking heading, click Dial-Up Networking 1.3 Performance & Security Update.
3. Review the information on the Dial-Up Networking (DUN) 1.3 update provided by Microsoft, and then follow the instructions to download the **Msdun13.exe** file to your computer.
4. Install DUN 1.3 by double-clicking the **Msdun13.exe** file.

### **6.3 Installing Dial-Up Networking for Windows 98**

Before you install WinPoET on a Windows 98 computer, ensure that you have Dial-Up Networking (including Virtual Private Networking) installed.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Add/Remove Programs.
3. Click the Windows Setup tab to bring that page to the front.
4. Click Communications and then click Details.
5. In the Communications dialog box, select (add a check mark in front of) the Dial-Up Networking component.
6. Click OK two times to begin copying the networking (both Dial-Up Networking and Virtual Private Networking) files.
7. After the files are copied, close the Control Panel and then restart your computer.

### **6.4 Installing an Ethernet Adapter for Windows 95/98**

If you do not have an Ethernet adapter on your Windows 95 or Windows 98 computer, you must install one before installing WinPoET.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Network.
3. Click the Configuration tab to bring that page to the front.
4. On the Configuration page, click Add.  
The Select Network Component Type dialog box opens.
5. From the list of component types, click Adapter and then click Add.  
The Select Network Adapter dialog box opens.
6. Click the manufacturer and model names for your Ethernet adapter.
7. Click OK to begin installation.
8. When the adapter installation is completed, close all dialog boxes.

### **6.5 Installing an Ethernet Adapter for Windows NT**

If you do not have an Ethernet adapter on your Windows NT computer, you must install one before installing WinPoET.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Network.
3. Click the Adapters tab to bring that page to the front.
4. On the Adapters page, click Add.  
The Select Network Adapter dialog box opens.
5. Click the manufacturer and model names for your Ethernet adapter.
6. Click OK to begin installation.
7. When the adapter installation is completed, close all dialog boxes.

### **6.6 Installing TCP/IP for Windows 95/98**

If you do not have TCP/IP on your Windows 95 or Windows 98 computer, you must add this protocol before installing WinPoET.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Network.
3. Click the Configuration tab to bring that page to the front.
4. On the Configuration page, click Add.  
The Select Network Component Type dialog box opens.
5. From the list of component types, click Protocol and then click Add.  
The Select Network Protocol dialog box opens.
6. Under Manufacturers, click Microsoft.
7. Under Network Protocols, click TCP/IP.
8. Click OK to begin installation.
9. When TCP/IP installation is completed, close all dialog boxes and the Control Panel.

### **6.7 Installing TCP/IP for Windows NT**

If you do not have TCP/IP on your Windows NT computer, you must add this protocol before installing WinPoET.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Network.
3. Click the Protocols tab to bring that page to the front.
4. On the Protocols page, click Add.  
The Select Network Protocol dialog box opens.
5. Under Network Protocol, click TCP/IP Protocol.
6. Click OK to begin installation.
7. When TCP/IP installation is completed, close all dialog boxes and the Control Panel.

## **6.8 Installing the Microsoft Service Pack for Windows NT**

Microsoft Service Pack 3 or later is required if you are installing WinPoET on a Windows NT 4.0 computer. You can obtain the latest service pack from the Microsoft Web site.

1. Open your Web browser and navigate to this page:  
**<http://www.microsoft.com/networkstation/downloads/>**
2. On the Microsoft Windows NT Workstation downloads page, go to the Service Packs section.
3. Click Windows NT 4.0 Service Pack # (where # indicates the number of the latest service pack).
4. Review the information on the service pack update provided by Microsoft, and then follow the instructions to download the file to your computer. (Make sure that you note the name of the file that you are downloading.)
5. Install the service pack by double-clicking the downloaded file and following the installation instructions.
6. Restart your computer.

## **6.9 Installing the iVasion PoET Adapter for Windows NT**

Following WinPoET installation on a Windows NT computer, you may need to install the iVasion PoET adapter and configure ports for that adapter in Remote Access Service (RAS).

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Network.
3. Click the Adapters tab to bring that page to the front.
4. On the Adapters page, click Add.
5. On the Select Network Adapter dialog box, click Have Disk.
6. In the Insert Disk dialog box, type the drive, path, and folder name for the location where you installed WinPoET (the default path and folder is **C:\Program Files\iVasion\WinPoET**). Then click OK.
7. In the Select OEM Option dialog box, select iVasion PoET Adapter and then click OK.



When the adapter installation is completed, a Setup message will prompt you to configure the iVasion PoET ports in Remote Access Service (RAS).

8. Click OK to close the message box and begin Remote Access Setup.
9. If the Add RAS Device dialog box is not already displayed, click Add to open it.
10. When the Add RAS Device dialog box is displayed, select iVasion PoET1 - iVasion PoET from the list. Then click OK.
11. Click Network to open the Network Configuration dialog box.
12. Under Dial-out Protocols, ensure that the NetBEUI check box is cleared and the TCP/IP check box is selected. Then click OK.
13. In the Remote Access Setup dialog box, click Clone to duplicate the iVasion PoET1 device.

A second port, iVasion PoET2, is added to the port list.

14. Click Continue to close the Remote Access Setup dialog box and begin RAS installation.
15. Close the Network applet to update the bindings, and then restart your computer.
16. Reapply the Windows NT service pack and then start your computer once again.

### **6.10 Installing the iVasion PoET Adapter for Windows 2000**

Following WinPoET installation on a Windows 2000 computer, you may need to manually install the iVasion PoET adapter.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.
2. Double-click Add/Remove Hardware to open the Add/Remove Hardware Wizard.
3. On the Welcome screen, click Next.
4. Click Add/Troubleshoot a Device and then click Next.
5. Under Devices, click Add a new device and then click Next.
6. Click No, I want to select the hardware from a list, and then click Next.
7. Under Hardware types, click Network adapters and then click Next.

8. Click **Have Disk** to open the **Install From Disk** dialog box.
  9. Enter the full path to the iVasion PoET adapter driver files and then click **OK**. You can enter the path by either:
    - Browsing for the location where you installed WinPoET (the default drive, path, and folder is **C:\Program Files\iVasion\WinPoET**).
    - OR –
    - Typing the drive, path, and folder name for the location where you installed WinPoET.
- The iVasion PoET adapter is now shown under **Network Adapter**.
10. Click **Next** two times and then click **Finish**.

### **6.11 Removing WinPoET from Your Windows 95/98/NT Computer**

You may need to remove an earlier version of WinPoET before installing the latest version.

1. On the Windows taskbar, click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **Add/Remove Programs**.
3. On the **Install/Uninstall** page, look in the software list and click **WinPoET** (if you have a pre-2.1 version of the program, it is listed as **iVasion WinPoET Version n.n**).
4. Click **Add/Remove**.
5. When a message box asks if you are sure that you want to completely remove WinPoET, click **OK** or **Yes**.
6. After the WinPoET program is removed, click **OK** to close all dialog boxes.
7. Restart your computer.

### **6.12 Removing WinPoET from Your Windows 2000 Computer**

You may need to remove an earlier version of WinPoET before installing the latest version.

1. On the Windows taskbar, click **Start**, point to **Settings**, and then click **Control Panel**.

2. Double-click Add/Remove Programs.
3. Under Currently installed programs, click WinPoET (if you have a pre-2.1 version of the program it is listed as iVasion WinPoET Version *n.n*).
4. Click Change/Remove.
5. In the Confirm File Deletion message box, click OK.
6. In the WinPoET Uninstallation (“Uninstallation is complete.”) message box, click OK.
7. In the Setup Complete window, click Yes, I want to restart my computer now and then click Finish.
8. Close the Add/Remove Programs dialog box.
9. Restart your computer.

## 7. Troubleshooting

This troubleshooting section provides assistance with using WinPoET after it has been successfully installed. The *FAQs* section includes pointers to several sources of the WinPoET FAQs (Frequently Asked Questions). The *Windows RAS/DUN Errors* section provides information about error messages that may occur in conjunction with Windows Remote Access Service (RAS) or Dial-Up Networking (DUN).



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**NOTE:** If you need help with messages that occur during WinPoET installation, refer to 5. *Setup Messages*, p.26.

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### 7.1 FAQs

In the WinPoET FAQs (Frequently Asked Questions) list, Wind River Technical Support staff provides answers to some of the more commonly asked questions from WinPoET users. If you encounter a problem using WinPoET, you may find the solution in the FAQs.

You can view the WinPoET FAQs from any of these locations:

- From the WinPoET CD-ROM, open the **DOC** folder and then click the **WinPoETFAQs.pdf** file.
- From the Start menu on the Windows taskbar, point to Programs, iVasion, WinPoET, Help, and then click WinPoET FAQ. (This option is available only after successfully installing WinPoET and restarting your PC.)
- From the Wind River Support Web page, select WinPoET from the Networking Products family list, and then click the WinPoET FAQ link. The Support page is at the following URL:

**<http://www.wrs.com/corporate/html/tsmain.html>**



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**NOTE:** The Wind River Support Web page will include the most recent version of the FAQs.

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## 7.2 Windows RAS and DUN Errors

While using WinPoET, the error messages shown in Table 3 may be generated by one of the following:

- Microsoft Windows Remote Access Service (RAS) on Windows NT 4.0 (Workstation or Server)  
– OR –
- Microsoft Windows Dial-Up Networking (DUN) on Windows 95/98.

Table 3 **Windows RAS and DUN Errors**

<b>Error Number</b>	<b>Message Text</b>	<b>Reason and Resolution</b>
602	The port is already open.	This error usually occurs under Windows 95/98 and indicates that there is no dial-up adapter present in the Network applet of the Control Panel. To resolve the problem, remove WinPoET, add a dial-up adapter, and then restart the PC. You may also receive this error if you attempt to connect when WinPoET is already connected.
604	Wrong information specified.	You have entered an incorrect user name or password. Try again.

Table 3 Windows RAS and DUN Errors (Continued)

Error Number	Message Text	Reason and Resolution
617	The port or device is already disconnecting.	This error usually occurs under Windows 95/98 and indicates that there is no dial-up adapter present in the Network applet of the Control Panel. To resolve the problem, remove WinPoET, add a dial-up adapter, and then restart the PC.
618	The port is not open.	This error usually occurs on Windows 95/98 and indicates that there is no dial-up adapter present in the Network applet of the Control Panel. To resolve the problem, remove WinPoET, add a dial-up adapter, and then restart the PC.
619	The port is disconnected. – OR – The specified port is not connected.	This error could indicate a problem with your Internet Service Provider (ISP). Contact your ISP for assistance.
621	Cannot open the phone book file.	This error occurs on Windows NT 4.0 Workstation or Server. To resolve the problem, go the RAS settings and configure the iVasion PoET adapters for dial-out only.
622	Cannot load the phone book file.	Same as error 621.
623	Cannot find the phone book entry.	Same as error 621.
624	Cannot write the phone book file.	Same as error 621.
625	Invalid information in the phone book.	Same as error 621.
629	The port was disconnected by the remote machine.	You have entered an incorrect user name or password. Try again. – OR – The connection is not valid (for example, the cable is unplugged).
630	The port was disconnected due to hardware failure.	This error occurs if you try to connect when <b>WinPPPoEoverEthernet.exe</b> is not running or is not fully loaded. Wait a moment and try again.
631	The port was disconnected by the user.	You clicked <b>Cancel</b> on the WinPoET Dialer dialog box (see Figure 18).

Table 3 Windows RAS and DUN Errors (Continued)

Error Number	Message Text	Reason and Resolution
633	The port is already in use or is not configured for Remote Access dial out.	On Windows 95/98, refer to error number 602 for information. On Windows NT 4.0, refer to error number 621 for information.
634	Cannot register your computer on the remote network.	You have entered an incorrect user name or password. Try again. – OR – There is a problem with your ISP. Contact them for assistance.
645	Internal authentication error.	Typically this error occurs if you have not appended your user name with the correct AC-specified context. – OR – No dial-up adapter is installed. See 6.9 <i>Installing the iVasion PoET Adapter for Windows NT</i> , p.36.
646	The account is not permitted to log on at this time of day.	Your account is time-restricted. Try again during your designated time period.
647	The account is disabled.	Your account is disabled. Contact your ISP for assistance.
648	The password has expired.	Your password has expired. Contact your ISP for assistance.
649	The account does not have Remote Access permission.	You probably have entered an incorrect user name or password. Try again.
651	Your modem (or other connecting device) has reported an error.	You may have either installed WinPoET incorrectly or removed the iVasion PoET adapter (in Windows 95/98). Remove WinPoET, restart your PC, and then install WinPoET again.
652	Unrecognized response from the device.	You may have either installed WinPoET incorrectly or removed the iVasion PoET adapter (in Windows 95/98). Remove WinPoET, restart your PC, and then install WinPoET again.
665	The port is not configured for Remote Access.	This error occurs on Windows NT (WKS or SVR). The solution is to go into the RAS settings and configure the iVasion PoET adapters for dial-out only, as well as the TCP/IP protocol only.
691	Access denied because username and/or password is invalid on the domain.	You have entered an incorrect user name or password. Try again.

Table 3 Windows RAS and DUN Errors (Continued)

Error Number	Message Text	Reason and Resolution
692	Hardware failure in port or attached device.	This error occurs if you try to connect when <b>WinPPPOverEthernet.exe</b> is not running or is not fully loaded. Wait a moment and try again. – OR – On Windows NT, you may have reinstalled WinPoET without removing the previous installation's adapters.
708	The account has expired.	Your account has expired. Contact your ISP for assistance.
711	RasMan initialization failure. Check the event log.	This error may occur on Windows NT. Reapply the Microsoft Windows NT Service Pack.
718	PPP timeout.	You have entered an incorrect user name or password. Try again. – OR – The connection is not valid (for example, the cable is unplugged).
719	PPP terminated by remote machine.	Although a valid connection is detected, it is not working. Contact your ISP for assistance.
720	No PPP control protocols configured.	This error is generated when there is an Access Concentrator (AC) problem with your ISP; contact them for assistance.
721	Remote PPP peer is not responding.	You have entered an incorrect user name or password. Try again. – OR – The connection is not valid (for example, the cable is unplugged).
734	The PPP link control protocol has been terminated.	This error occurs on Windows NT if NetBIOS is not installed. In the Network applet of the Control Panel, install the NetBIOS Interface service.
735	The requested address was rejected by the server.	You may have entered an IP address in the phone book entry. Remove the IP address and try again.
739	The remote server cannot use the Windows NT encrypted password.	You may have selected an NT encrypted password in the phone book entry. Clear this check box and try again.
751	Error occurred during dialing. Error code = 751. Extended error code = 0.	Both dial -up adapters are already in use by other connections.
752	Error occurred during dialing. Error code = 752. Extended error code = 0.	This errors occurs if the TCP/IP bindings have been removed from the Ethernet card. To resolve the problem, restart your computer.

## 8. Glossary

This section provides definitions of some of the networking terms associated with WinPoET.

### *adapter*

A printed circuit board that you can insert into a personal computer to support a particular device, such as a graphics monitor, CD-ROM drive, internal modem, or sound card. Adapters can be built into the main circuitry of a computer or they can be separate add-ons. A single adapter card can have more than one type of adapter on it. Also called interface card and expansion board.

### *algorithm*

A detailed, finite sequence of steps for accomplishing some task. The steps must be unambiguous and have a clearly-defined stopping point.

### *auto dial*

A feature that enables a modem to open a telephone line and initiate a call by transmitting a stored telephone number as a series of tones or pulses.

See also: *Dial-Up Networking (DUN)*

### *authentication*

The security measure used to verify the identity of an individual by validating a user's logon information, usually a user name and password. Some Web sites restrict access to users whose identities have been authenticated.

### *broadband network*

A local area network (LAN) on which transmissions travel as radio-frequency signals over separate inbound and outbound channels. Stations on a broadband network are connected by coaxial or fiber-optic cable, which can carry multiple signals by dividing the total capacity of the medium into multiple, independent bandwidth channels. A broadband network is capable of high-speed operation and is based on the same technology used by cable television (CATV).

### *byte*

A unit of data that consists of usually eight bits and that is the smallest storage unit on the computer. A byte can represent a single character, such as a letter, a digit, or a punctuation mark. Because a byte represents such a small amount of data, amounts of computer memory and storage are usually expressed in kilobytes (1,024 bytes), megabytes (1,048,576 bytes), or gigabytes (1,073,741,824 bytes).



*cable modem*

A type of modem that operates over cable TV lines. Because it uses a coaxial cable, it provides a much greater bandwidth than the telephone lines used with a standard modem, thus providing extremely fast access to the Internet. For example, a cable modem can transfer data at 500 kilobits per second (Kbps) or higher, compared with 28.8 Kbps for common telephone line modems. However, the actual transfer rates may be lower, depending on the number of other people using the cable at the same time.

See also: *modem*

*default*

A value or setting that a program or device selects automatically unless you make a different choice. For example, the default destination folder is the location in which Setup installs a new program, unless you select another location. The default can also be an action that a program or device performs if you do not specify an alternative. For example, some word processors automatically create backup files by default.

*DHCP*

An acronym for Dynamic Host Configuration Protocol. A TCP/IP protocol used for allocating temporary, dynamic IP addresses to computers on a local area network. Dynamic addressing allows each computer on the network to use a different IP address (within the administrator-assigned range) every time it connects to the network. DHCP eliminates the need to manually assign a unique IP address to each computer.

See also: *IP address, Local Area Network (LAN), TCP/IP*

*Dial-Up Networking (DUN)*

A Windows component that enables you to connect your computer to a network by using a modem. If your computer is not connected to a LAN and you want to connect to the Internet, you must configure Dial-Up Networking (DUN) to dial a Point of Presence (POP) and log into your Internet Service Provider (ISP). Your ISP will need to provide certain information, such as the gateway address and your computer's IP address.

To access DUN, double-click the My Computer icon on the desktop. You can configure a different profile (called a connectoid) for each different online service that you use.

See also: *Internet Service Provider (ISP), IP address, Local Area Network (LAN), modem*

### *domain*

On a network, refers to a group of computers and devices that are administered as a unit with common rules and procedures. On the Internet, refers to a group of computers and devices sharing a common part of the IP address. The domain is the last component or suffix of the domain name in a network address, and it identifies the type of entity that owns the address.

Examples of domains include:

<b>.com</b>	Commercial business
<b>.edu</b>	Educational institutions
<b>.gov</b>	Government agencies
<b>.mil</b>	Military
<b>.net</b>	Network organizations
<b>.org</b>	Nonprofit organizations
<b>.us</b>	United States
<b>.yu</b>	Yugoslavia

See also: *domain name, Internet*

### *domain name*

A name that identifies one or more IP addresses. In a network connection, the format that identifies the owner of that address in the hierarchical format *server.organization.type*. Domain names are used in URLs to identify particular Web pages. For example, in the following URL the domain name is **wrs.com**:

**<http://www.wrs.com/ivasion/index.html>**

See also: *domain, Domain Name System (DNS), IP address, URL (Uniform Resource Locator)*

### *Domain Name System (DNS)*

The hierarchical system by which hosts on the Internet have both domain names (such as **windriver.com**) and IP addresses (such as 123.45.6.7). Basically, DNS maintains a database for figuring out and finding (or resolving) domain names (host names) and IP addresses. This allows users to specify remote computers by host names rather than numerical IP addresses.

The domain name is an alphabetic, easy-to-remember address used by human users, and a DNS service automatically translates the domain name into the numerical IP address, which is used by the packet-routing software. Because the DNS is its own network, if one DNS server doesn't know how to translate a particular domain name, it asks another one, and so on, until a matching IP address is found.

See also: *domain name, Internet, IP address*

*encryption*

The basis of network security, including sending credit card numbers over the Internet. Encryption is any procedure that makes data unreadable to everyone except the intended recipient. Encryption turns plain text into cipher text. To read an encrypted file, you must have a secret key or password that enables you to decrypt it.

See also: *Internet*

*Ethernet*

A Local Area Network (LAN) protocol developed in 1976 by Xerox PARC in cooperation with DEC and Intel. Ethernet is one of the most widely implemented LAN standards used in the computer industry. Ethernet uses a bus or star topology, supports data transfer rates of 10 megabits per second (Mbps), and relies on the CSMA/CD access method to regulate simultaneous demands. The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers.

Newer versions of Ethernet include 100Base-T or “Fast Ethernet,” which supports data transfer rates of 100 Mbps, and Gigabit Ethernet, which supports data rates of 1 gigabit (1,000 megabits) per second.

See also: *Local Area Network (LAN), protocol*

*gateway*

A networking device used to exchange information across networks that are otherwise incompatible because they each use a different communications protocol. A gateway can transfer information and convert it to a form that is compatible with the receiving network. For example, gateways between many e-mail systems allow users on different systems to exchange messages over the Internet.

See also: *Internet, protocol*

*host*

(1) A computer system to which a user working at a remote location connects by means of a telephone modem. The system that holds the data is called the host, while the computer at which the user sits is called the remote terminal.

(2) Any computer that has full two-way access to other computers on the Internet, specifically a computer that is connected to the Internet using TCP/IP. A host has a specific “local or host number” that, together with the network number, forms its unique IP address.

See also: *IP address, TCP/IP*

*host name*

A unique site name for a specific server on a specific network within the Internet or other network. The host name is the leftmost portion of the complete host specification; for example, `www.wrs.com` indicates the server called “www” within the network at Wind River Systems, Inc. The host name must be in the host table or be known by a DNS server for that host to be found by another computer attempting to communicate with it.

See also: *Internet, network*

*Internet*

A global collection of networks and gateways connecting millions of computers and currently more than 100 million users worldwide. The Internet enables more than 100 countries to exchange data and messages. TCP/IP protocols enable computers to communicate with one another on the Internet.

The Internet's decentralized system relies on high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial (**.com** or **.co**), government (**.gov**), educational (**.edu**), military (**.mil**), and other computer systems around the world.

You can gain access to the Internet through a commercial Internet Service Provider (ISP), or through online services such as America Online. The Internet gives users access to such services as e-mail, the World Wide Web, FTP, Usenet news, IRC, telnet, and others.

See also: *Internet Service Provider (ISP), TCP/IP*

*Internet Service Provider (ISP)*

A company that supplies individuals, businesses, and other organizations with Internet services for use with computers. ISPs (also called Internet Access Providers or IAPs) can range in size from large national or multinational corporations that offer access in many locations, to smaller companies limited to a single city or region.

For a monthly or annual fee, individuals using a telephone modem or cable modem can log on to the Internet, send and receive e-mail, and browse (“surf”) the World Wide Web and Usenet. Large companies may use the ISP to provide a direct connection from the company's networks to the Internet.

See also: *cable modem, Internet, modem*

*IP address*

Short for Internet Protocol address. A 32-bit binary number that uniquely identifies a computer or device on a TCP/IP network or the Internet. It is

usually formatted in a “dotted decimal” or “dotted quad” notation (for example, 128.121.4.5), in which each number can be between zero and 255.

Within an isolated network, you can assign IP addresses at random as long as each one is unique. However, when you connect a private network to the Internet, you must use registered IP addresses to avoid duplicates.

#### *IPSec*

Short for IP Security, a new set of protocols designed to support secure exchange of packets at the IP layer and to implement virtual private networks (VPNs). Encryption methods supported by IPSec include both Transport mode (in which only the data or payload portion of the packet is encrypted) and the more secure Tunnel mode (in which both the header and the data/payload portion are encrypted).

See also: *encryption, protocol, virtual private network (VPN)*

#### *ISDN (Integrated Services Digital Network)*

A worldwide digital communications network in which a single wire or optical fiber carries voice, digital network services, and video. ISDN is rapidly becoming available in much of urban USA and Europe by local telephone companies, and is intended to eventually replace the “plain old telephone system” (POTS) from which it evolved. Most ISDN lines give you two lines at once, enabling you to use one line for voice and the other for data, or to use both lines for data to give you very fast data rates of up to 128 Kbps.

#### *Layer Two Forwarding (L2F)*

A tunneling protocol that enables organizations to set up virtual private networks (VPNs) that use the Internet to transfer packets. The L2F protocol developed by Cisco Systems is similar to the PPTP protocol developed by Microsoft. The two companies merged their respective protocols into a single, standard protocol called Layer Two Tunneling Protocol (L2TP).

See also: *Layer Two Tunneling Protocol (L2TP), Point-to-Point Tunneling Protocol (PPTP), tunneling, virtual private network (VPN)*

#### *Layer Two Tunneling Protocol (L2TP)*

An extension to the PPP standard protocol that allows Internet Service Providers (ISPs) to run virtual private networks (VPNs). L2TP merges the best features of two other tunneling protocols: Microsoft’s PPTP and Cisco Systems’ L2F.

See also: *Layer Two Forwarding (L2F) Point-to-Point Tunneling Protocol (PPTP), tunneling, virtual private network (VPN)*

*Local Area Network (LAN)*

A group of computers and other devices (such as laser printers, large hard disks) dispersed over a relatively small area, usually within a single building or group of buildings. This network of computers and devices are connected by a communications link that enables them to interact with each other and share data and devices. The various devices, known as "nodes" on the LAN, are connected by cables through which data and messages are transmitted.

Although there are many types of LANs, Ethernets are the most common for personal computers. When one LAN is connected to other LANs over any distance using telephone lines or radio waves, it is called a Wide Area Network (WAN).

See also: *Wide Area Network (WAN)*

*modem*

Short for modulator-demodulator. A communications program or device that enables a computer to transmit information over a standard telephone line. Modems convert digital information stored on the computer to a format that can be transmitted via the telephone line which uses analog waves, and vice versa. When transmitting, modems impose (modulate) a computer's digital signals onto a continuous carrier frequency on the telephone line. When receiving, modems sift out (demodulate) the information from the carrier and transfer it in digital form to the computer.

In addition to transmitting and receiving, many modems also provide features such as automatic dialing, answering, redialing, data compression, and fax capability. However, modems must be used in conjunction with the appropriate communications software in order to perform any useful work.

Modems can be external or internal devices. External modems are connected to computers using as the standard interface an RS-232 port, which almost all personal computers have. Internal or onboard modems come as an adapter or expansion board that can be inserted into the computer's vacant expansion slot.

*NAT*

Acronym for Network Address Translation or Network Address Translator. An Internet standard that enables a local area network (LAN) to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. NAT converts an Internet Protocol (IP) address that is used within one network to a different IP address known within another network.

NAT provides security by hiding internal IP addresses, allows you to use multiple internal IP addresses, and enables you to combine multiple modem connections into a single Internet connection.

See also: *Internet, IP address, Local Area Network (LAN), modem*

*network*

A group of computers and associated devices (printers, for example) that are connected by communications facilities. A network can involve permanent connections, such as cables, or temporary connections made through telephone or other communication links. Networks are often classified according to their geographical extent: local area network (LAN), metropolitan area network (MAN), wide area network (WAN), and according to the protocols used.

See also: *Local Area Network (LAN), Wide Area Network (WAN)*

*network adapter*

An expansion card or other device used to connect a computer to a local area network (LAN).

See also: *Local Area Network (LAN)*

*network interface card (NIC)*

An expansion board that is inserted into a personal computer so that the computer can be connected to a network. Most NICs are designed for a particular type of network, protocol, and media, although some can serve multiple networks.

See also: *adapter, network, protocol*

*Network Service Provider (NSP)*

A company that provides Internet access to Internet Service Providers (ISPs). Sometimes called backbone providers, NSPs offer direct access to the Internet backbone and to Network Access Points (NAPs).

See also: *Internet Service Provider (ISP)*

*operating system (OS)*

The foundation program that runs on every personal computer. The operating system provides the platform on which other programs (applications) can run, provided that those programs have been written to be compatible with the operating system. The operating system performs basic tasks, such as controlling disk drives and printers, tracking files and folders, sending output to the monitor, and receiving input from the keyboard. Examples of popular operating systems include Windows 95, Windows 98, Windows NT, Mac OS, and UNIX.

*packet*

A unit of information transmitted as a whole from one device to another on a network. One of the important features of a packet is that it contains the destination address in addition to the data. In Internet protocol (IP) networks, packets are often called datagrams.

See also: *packet switching, protocol*

*packet switching*

The method used to move data around on the Internet. In packet switching, all of the data coming out of a device is broken up into chunks, each chunk has the address of where it came from and where it is going. This method allows chunks of data from many different sources to co-exist on the same lines, and then be sorted and directed to different routes by special machines along the way.

See also: *Internet*

*peer*

A communication device on a layered network that operates on the same protocol level as another device. Although two protocol stacks may be connected only at the lowest physical layer, they are considered to be virtually connected at each higher level. Peer-to-peer communication is the connection between corresponding systems in each layer.

See also: *network, protocol*

*phonebook entry*

A configuration used by Microsoft Dial-Up Networking to define a specific remote destination on the Internet to which you want to make a connection, including connections to Internet Service Providers (ISPs) or corporate VPN servers. The phonebook entry contains such information as your user name and password, access phone number for the ISP or DNS name/IP address of the VPN server, modem or adapter type, connection speed, and other options and preferences.

See also: *Dial-Up Networking (DUN), Internet Service Provider (ISP)*

*ping (packet Internet groper)*

*(noun)* A program used to troubleshoot Internet connections by verifying that the host computer that you are trying to reach exists or is accessible. Ping operates by sending a packet to a specified address and waiting for a reply.

*(verb)* The act of using a ping utility or command. To ping your company's host server, for example, from your computer, go to Start, Run, and type the word "ping," followed by a space, and then followed by either the IP address or the



user-friendly host name. If you get a reply back from the host server, you will know that it is operating.

*Point-to-Point Protocol (PPP)*

A data link protocol for dial-up telephone connections, such as between a computer and the Internet. PPP provides greater protection for data integrity and security than does SLIP, at a cost of greater overhead. PPP is designed to operate both over asynchronous connections and bit-oriented synchronous systems, can dynamically configure connections to a remote network, and test that the link is usable. It can also be configured to encapsulate different network layer protocols.

See also: *protocol, Serial Line Internet Protocol (SLIP)*

*Point-to-Point Protocol over Ethernet (PPPoE)*

A protocol that provides the ability to connect a network of hosts over a simple bridging access device to a remote Access Concentrator. With this model, each host utilizes its own PPP stack and the user is presented with a familiar user interface. Access control, billing, and type of service can be done on a per-user, rather than a per-site, basis. PPPoE includes a discovery protocol to provide a point-to-point connection over Ethernet. The discovery protocol enables each PPP session to learn the Ethernet address of the remote peer, as well as to establish a unique session identifier.

*Point-to-Point Tunneling Protocol (PPTP)*

The technology for creating virtual private networks (VPNs) that enable computer users to connect to a Windows NT 4.0 server over Remote Access Service (RAS). Because the Internet is essentially an open network, PPTP is used to ensure that messages transmitted from one VPN node to another are secure. Using PPTP as the tunneling protocol, users can connect to their corporate network via the Internet.

See also: *Internet, network, Remote Access Service (RAS), virtual private network (VPN)*

*port*

One of the logical network input/output channels of a computer running TCP/IP. On the World Wide Web, port usually refers to the port number a server is running on. A computer can have many Web servers running on it, but only one server can be running on each port. The default port for Web servers is 80, but they can use other ports as well.

See also: *World Wide Web (WWW)*

*port number*

Identifies a distinct process to which a message sent via a network or the Internet is to be forwarded when it arrives at a server. For TCP, a port number is a 16-bit integer that is put in the header appended to a message unit. This port number is passed logically between client and server transport layers and physically between the transport layer and the Internet Protocol layer and forwarded on.

*protocol*

An agreed-upon format used to transmit data between two devices (for example, computers, printers). Your computer or device must support the right protocol in order to communicate with other computers or devices. The protocol determines the type of error checking to be used, the data compression method (if any), how the sending device will indicate that it has finished sending a message, and how the receiving device will indicate that it has received a message.

Programmers can choose from several standard protocols to implement in either software or hardware. Each protocol has different advantages, such as ease-of-use, speed, and reliability.

See also: *protocol stack / protocol suite, TCP/IP*

*protocol stack / protocol suite*

A set of protocols that work together on different levels to enable communication between computers or devices on a network. TCP/IP, the protocol stack on the Internet, incorporates more than 100 standards including FTP, IP, SMTP, TCP, and Telnet.

See also: *protocol, Internet, TCP/IP*

*Remote Access Service (RAS)*

A service provided by Windows NT and Windows 2000 that allows you to gain remote access to a computer or network server over a modem link. The service includes support for dial-up and logon, and then presents the same network interface as the normal network drivers. It is not necessary to run Windows NT on the client. RAS works with several major network protocols, including TCP/IP, IPX, and NetBEUI.

See also: *network, protocol, TCP/IP*

*Serial Line Internet Protocol (SLIP)*

A data link protocol that allows transmission of IP data packets over dial-up telephone connections. SLIP enables a computer or a local area network (LAN) to be connected to the Internet or some other network.

See also: *Internet, Local Area Network (LAN), Point-to-Point Protocol (PPP), Point-to-Point Tunneling Protocol (PPTP)*

*subnet*

A portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 100.100.100. would be part of the same subnet. Dividing a network into subnets is useful for both security and performance reasons. IP networks are divided using a subnet mask.

See also: *subnet mask (address mask), TCP/IP*

*subnet mask (address mask)*

A mask used to determine which bits in an IP address correspond to the network address and subnet portions of the address. The network portion of the address can be determined by the class inherent in an IP address. The address mask has ones in positions corresponding to the network and subnet numbers and zeros in the host number positions.

See also: *IP address*

*taskbar*

A part of the Windows interface, usually located at the bottom of the window. The taskbar can contain the Start button; buttons representing currently running programs (Microsoft Word, for example); and the Status area (application icons and clock are located here).

*TCP*

TCP is an acronym for Transmission Control Protocol, a transport layer protocol nearly always seen in combination with IP in TCP/IP networks. TCP controls how data messages on the Internet are divided into packets, which are delivered via IP, and then reassembles and verifies the individual packets into complete messages at the receiving end. TCP is a connection-oriented and stream-oriented protocol, as opposed to UDP (User Datagram Protocol).

See also: *TCP/IP, UDP*

*TCP/IP*

Acronym for Transmission Control Protocol/Internet Protocol. A communications protocol developed by the Department of Defense for communications between computers. TCP/IP is built into the UNIX system and has become the de facto standard for transmitting data over networks, including the Internet. TCP/IP uses several protocols, including mainly TCP and IP, at specific protocol layers. TCP/IP is often used to refer to the entire suite of protocols, including FTP, RDP, UDP, and telnet.

See also: *Internet, protocol*

### *tunneling*

Encapsulation of one network protocol within packets carried by another protocol, in order to use the Internet as part of a private, secure network. The “tunnel” is the particular path along which a message or file travels through the Internet. Microsoft’s Point-to-Point Tunneling (PPTP) technology is used to send data on the Internet across a virtual private network (VPN).

See also: *Point-to-Point Tunneling Protocol (PPTP), protocol, virtual private network (VPN)*

### *UDP*

UDP is an acronym for User Datagram Protocol, a transport layer protocol that runs on top of IP networks and, together with IP, is sometimes referred to as UDP/IP. UDP provides a direct way to send and receive datagrams over the Internet and is an alternative to TCP. Unlike TCP, UDP is a connectionless protocol and is not responsible for verifying or acknowledging that packets are received correctly, nor does it provide error processing or retransmission. It does, however, provide port numbers and offer a checksum capability.

See also: *TCP, TCP/IP*

### *URL (Uniform Resource Locator)*

Acronym for Uniform Resource Locator (previously called Universal Resource Locator). A global address used by Web browsers to locate documents, files, and other resources on the Internet. The URL may consist of several parts:

- The first part of the address (before the colon) indicates the access scheme or protocol; for example, a URL with the prefix **ftp://** is accessed using the FTP protocol, and a URL with the prefix **http://** is accessed using HTTP protocol. Other less commonly used schemes include news, telnet, or mailto (for e-mail).
- The second part (after the colon) specifies the IP address or domain name where the resource is located; for example, **wrs.com** is the domain for Wind River.
- The third part is optional and specifies a particular resource; for example, an HTML document or a file on that server.
- The last part is also optional and may be a query string preceded by “?” or a “fragment identifier” preceded by “#” (the latter indicating a specific position within the document).

Example URLs:

**http://www.wrs.com**  
**http://www.w3.org/default.html**  
**http://www.acme.co.uk:8080/images/map.gif**  
**ftp://wuarchive.wustl.edu/mirrors/msdos/graphics/gifkit.zip**  
**ftp://spy:secret@ftp.acme.com/pub/topsecret/weapon.tgz**  
**mailto:dbh@doc.ic.ac.uk**  
**news:alt.hypertext**  
**telnet://dra.com**

*virtual private network (VPN)*

A private network of computers that makes use of the public telecommunications infrastructure, maintaining privacy by using encryption and secure protocols like PPTP to prevent data transmissions from being intercepted and understood by unauthorized users. Using a virtual private network involves encrypting data before sending it through the public network and decrypting it at the receiving end. An additional level of security involves encrypting not only the data but also the originating and receiving network addresses.

See also: *encryption, network, Point-to-Point Tunneling Protocol (PPTP)*

*Web browser*

A program that enables you to view HyperText Markup Language (HTML) documents on the World Wide Web, another network, or your computer; to navigate between them using the hyperlinks; and to transfer files. Popular browsers for the World Wide Web include Microsoft Internet Explorer and Netscape Navigator. Text-based Web browsers, such as Lynx, show you only the text elements of an HTML document. However, most Web browsers can also display graphics, present multimedia (play audio and video files), and run small programs, such as Java applets or ActiveX controls (some Web browsers require helper applications called “plug-ins” to accomplish these tasks). In addition, most current Web browsers permit users to send and receive e-mail and to read and respond to newsgroups.

See also: *World Wide Web (WWW)*

*Wide Area Network (WAN)*

A communications network, usually constructed with serial lines, that spans a relatively large geographic area. A WAN typically consists of multiple Local Area Networks (LANs). Computers can be connected to a WAN through public networks, such as the telephone system, or through leased lines or satellites. The Internet is an example of the largest WAN in existence.

See also: *Internet, Local Area Network (LAN)*

#### *World Wide Web (WWW)*

An information retrieval system consisting of worldwide Internet servers that support a set of interlinked hypertext documents. These documents are written in a language called HTML (HyperText Markup Language) and identified by URLs (Uniform Resource Locators). HTML supports links to other documents, as well as graphics, audio, and video files. This means that you can jump from one document to another that may be halfway around the world simply by clicking on a hotspot. A client program known as a Web browser (for example, Internet Explorer or Netscape Navigator), runs on the your personal computer and makes it easy to access and navigate the World Wide Web.

The World Wide Web was developed by Timothy Berners-Lee in 1989 for the European Laboratory for Particle Physics (CERN) in Geneva, Switzerland. An organization called the World Wide Web Consortium, or W3C, is attempting to develop standards so that the Web evolves in a single direction, rather than being splintered among competing factions.

See also: *URL (Uniform Resource Locator), Web browser*

#### *xDSL*

Refers collectively to all types of digital subscriber lines (DSLs), including ADSL (Asymmetric DSL), SDSL (Single-line DSL), HDSL (High-data-rate DSL), and VDSL (Very high bit-rate DSL). DSL technology allows high speed data communication over the existing copper telephone lines between end-users and telephone companies. Although xDSL is similar to ISDN, xDSL offers much higher speeds: up to 32 Mbps for downstream traffic, and from 32 Kbps to over 1 Mbps for upstream traffic.

# Index

## A

- About WinPoET command, WinPoET menu 11
- adapter
  - installing Ethernet for Windows 95/98 33, 34
  - installing Ethernet for Windows NT 34
  - installing iVasion PoET for Windows 2000 37
  - installing iVasion PoET for Windows NT 36
- Add Connection Properties dialog box 15, 18
- adding new connection 15
- analysis of configuration 6
- Auto-connect command, WinPoET menu 11
- automatic connection options 21

## B

- Back button 5
- bitmap, customizing WinPoET dialer 12
- .BMP files
  - customizing graphic in dialer 12

## C

- Cancel button 5
- changing
  - dialer event sounds 13

- dialer graphic 12
  - WinPoET connection 15
- Close command, WinPoET menu 12
- closing running programs
  - before installing WinPoET 4
- closing WinPoET 12
- commands, on WinPoET menu 11
- configuration analysis 6–7
- configuring your computer for WinPoET 31
- connecting to the Internet 19
- connection parameters, modifying 14
- contacting your ISP 2
- creating WinPoET connection 15
- customizing WinPoET dialer interface 12

## D

- definition of WinPoET 1
- definitions of networking terms 44
- deleting
  - WinPoET connection 15
  - WinPoET program 38
- destination folder 7
- diagnostics
  - filtering events 25
  - viewing event log 22
- dialer *see* WinPoET Dialer dialog box
- dialing ISP with WinPoET dialer 19

dialing options 19  
dialog boxes  
    Add Connection Properties 15  
    Edit Connection Properties 15  
    Event Log Filter 25, 26  
    WinPoET Auto-connect 21  
    WinPoET Dialer 20  
    WinPoET Event Log 23  
    WinPoET Options 12, 14  
    WinPoET Service Names 21, 22  
dial-up adapter *see* Dial-Up Networking  
dial-up connections, managing 14  
Dial-Up Networking  
    downloading for Windows 95 32, 33  
    installing for Windows 95 32, 33  
    installing for Windows 98 33  
    managing connections 14  
    removing earlier version 31  
    requirement for WinPoET 3  
    resolving error messages from 40  
downloading  
    Dial-Up Networking 1.3 32, 33  
    Windows NT service pack 34  
DUN *see* Dial-Up Networking

## E

Edit Connection Properties dialog box 15, 18  
editing WinPoET connection 15  
ERROR event type 25  
error messages during Setup 26–31  
Ethernet adapter  
    installing for Windows 95/98 33, 34  
    installing for Windows NT 34  
    requirement for WinPoET 3  
event log  
    filtering events 25  
    viewing session information 22  
Event Log Filter dialog box 25, 26

## F

FAQs, accessing 39  
filtering entries in event log 25, 26  
finishing WinPoET installation 7  
folder for WinPoET installation 7  
Frequently Asked Questions (FAQs) 39

## G

glossary of networking terms 44

## H

help  
    contacting your ISP 2  
    frequently asked questions 39  
    troubleshooting 39  
    using F1 Help during installation 4  
Help command, WinPoET menu 12  
hiding dialer window during auto-connect 21

## I

icon for WinPoET 10  
including event log entries by date/time 25, 26  
INFO event type 25  
installation program windows 5–10  
installing  
    Dial-Up Networking for Windows 95 32, 33  
    Dial-Up Networking for Windows 98 33  
    Ethernet adapter for Windows 95/98 33, 34  
    Ethernet adapter for Windows NT 34  
    iVasion PoET adapter for Windows 2000 37  
    iVasion PoET adapter on Windows NT 36  
    TCP/IP for Windows 95/98 34, 35  
    TCP/IP for Windows NT 35  
    WinPoET, before you begin 4  
Internet  
    connecting to 21



- connecting with WinPoET Dialer 19
- introduction to WinPoET 1
- ISP
  - connecting to 21
  - contacting for assistance 2
- iVasion PoET adapter
  - installing for Windows 2000 37
  - installing for Windows NT 36

## L

- license agreement 6
- location to install WinPoET 7
- log, viewing WinPoET session events 22

## M

- managing dial-up connections 14
- menu commands for WinPoET 11–12
- messages during Setup 26–31
- Microsoft Dial-Up Networking
  - installing for Windows 95 32, 33
  - installing for Windows 98 33
  - removing earlier version 31
  - requirement for WinPoET 3
- Microsoft Virtual Private Networking
  - installing for Windows 98 33
- Microsoft Windows NT service pack
  - downloading and installing 36
  - requirement for WinPoET 4
- modifying
  - dialer graphic 12
  - event sounds 13
  - WinPoET connection 15
- Msdun13.exe**
  - downloading from Microsoft 33
  - installing from WinPoET CD 32

## N

- Next button 5

## O

- opening WinPoET after closing it 12
- operating systems
  - installation requirements 2
- options
  - modifying for WinPoET 14
  - selecting WinPoET preferences 12

## P

- PoET adapter
  - installing for Windows 2000 37
  - installing for Windows NT 36
- preferences, customizing WinPoET interface 12
- procedures for WinPoET configuration 31
- protocol
  - installing TCP/IP for Windows 95/98 34
  - installing TCP/IP for Windows NT 35

## Q

- questions and answers 39

## R

- redialing options 19
- Remote Access Service (RAS)
  - configuring ports for iVasion PoET adapter 36
  - connection options 15
  - resolving error messages from 40
- removing
  - Dial-Up Networking 31
  - WinPoET connection 15
  - WinPoET from Windows 2000 38
  - WinPoET from Windows 95/98/NT 38
- resolving Setup messages 31
- restarting WinPoET after closing it 12
- running WinPoET 10

## S

- service names
  - enabling 12
  - selecting ISP to use 21
- service pack
  - installing for Windows NT 36
  - requirement for Windows NT 4
- Setup messages 26–31
- setup procedures 31–39
- Setup windows
  - Configuration Analysis 6
  - Destination Folder 7
  - Installation Completed 7
  - Software License Agreement 6
  - Welcome 5
- shortcut to dialer 19
- Shutdown command, WinPoET menu 12
- shutting down WinPoET 12
- software license agreement 6
- sounds, customizing WinPoET dialer 12
- source applications generating events 24
- SP3 *see* service pack
- starting WinPoET after closing it 12
- system configuration analysis 6
- system messages during Setup 26–31
- system requirements
  - for installing WinPoET 2, 3

## T

- TCP/IP
  - installing for Windows 95/98 34, 35
  - installing for Windows NT 35
  - requirement for WinPoET 3
- technical support for WinPoET 39
- terms used in this manual 44
- troubleshooting WinPoET 39
  - Frequently Asked Questions 39
  - Windows Dial-Up Networking errors 40
  - Windows Remote Access Service errors 40

## U

- uninstalling
  - earlier version of Dial-Up Networking 31
  - WinPoET from Windows 2000 38
  - WinPoET from Windows 95/98/NT 38
- using WinPoET 10

## V

- Virtual Private Networking (VPN)
  - installing for Windows 98 33
  - requirement for Windows 98 3

## W

- WARNING event type 25
- .WAV files
  - customizing sounds in dialer 12
- Wind River graphic in dialer
  - replacing with custom 12
- Wind River on the Web command, WinPoET menu 12
- Windows NT
  - installing iVasion PoET adapter on 36
- Windows NT service pack
  - downloading and installing 36
  - requirement for WinPoET 4
- WinPoET
  - customizing dialer interface 12
  - dialer 20
  - event log 22
  - icon on taskbar 10
  - installing 4
  - messages during Setup 26–31
  - modifying connections 14
  - removing from Windows 2000 38
  - removing from Windows 95/98/NT 38
  - system requirements 2
  - troubleshooting 39
  - using 10
- WinPoET Auto-connect dialog box 21

- WinPoET Dialer dialog box
  - accessing 20
  - changing options 12
  - customizing 12
  - hiding during auto-connect 21
  - signing on with WinPoET 20
- WinPoET Event Log window 22
- WinPoET menu, accessing 11
- WinPoET Options dialog box
  - accessing event log from 22
  - customizing WinPoET dialer 12
  - modifying connections 14
- WinPoET Service Names dialog box 21, 22
  - connecting to ISP 21
- WinPoET Setup
  - Configuration Analysis window 6
  - Destination Folder window 7
  - Installation Completed window 7
  - Software License Agreement window 6
  - Welcome window 5
- WinPoET\_PostInstallation.txt** file 7
- WinPoET\_PreInstallation.txt** file 7
- WinPoET\_Runtime.txt** file 7



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