

HORIZONS WIRELESS™

Wireless That Goes The Distance™



HZ1500 Wireless LAN Card User's Guide



**REVISION
VERSION
DATE**

www.direct2data.com



HZ1500 Wireless LAN Card

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FCC ID: JFE-D2D00001

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operations.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not used in accordance with the instructions, may cause harmful interference to radio communications.

If this equipment does cause harmful interference to radio/television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

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PACKAGE CONTENTS

- D2D™ Wireless LAN Card
- Manual and Driver on CD ROM
- Quick Installation Guide
- Latest software always on-line at www.direct2data.com

SYSTEM REQUIREMENTS

- Microsoft™ Windows XP or 2000
- Minimum 300MHz processor or better
- Minimum 128 Mb Ram

Horizons Wireless LAN Card works with any PC laptop with an available Cardbus-Type II Slot, 300 MHz or better processor & 128 Mb of RAM, running Microsoft™ Windows 2000 or XP. **This product is for U.S. sales only.**

CUSTOMER SUPPORT

You can access customer support 24 hours a day online at www.direct2data.com. This is the quickest way to access:

- Troubleshooting Guides
- Manuals
- Answers to Frequently Asked Questions
- Updated Drivers

You can also request help by sending an email to support@direct2data.com or calling customer support directly at 1-800-231-1759.



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INTRODUCTION

All Horizons Wireless products are designed and manufactured by Direct2Data Technologies. Products are fully compliant with IEEE 802.11b standards and are optimized to provide maximum possible speed and bandwidth through your Internet connection for fastest uploads and downloads.

The distance capabilities of your wireless network equipment directly affect your signal quality. Distance capabilities are usually stated in terms of outdoor, open field reach. However, this reach is greatly diminished indoors by walls, doors, construction techniques and appliances that may block the radio signal. A wireless network card that tests outdoors at 200 feet could, in an indoor environment, provide 20 feet in one direction and as little as 5 or 10 feet in another direction. Factors such as building materials, floor plans and furnishings can greatly impact the signal range, quality and rate of data transmission. The extent to which your signal is affected varies greatly depending on your environment.

Wireless network products powered by D2D technology will provide better performance than other products because they can achieve open field distances of up to one mile, (when a D2D enabled card is used in conjunction with a D2D enabled base station). The D2D card alone provides 3 to 10 times the distance of other leading brands. This is sufficient to reach all rooms in most homes or small offices.



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Part I

Getting Started

The following chapters are structured as a step-by-step guide to help you connect, install and setup your Horizons Wireless LAN Card.



Chapter 1

Getting to Know Your Horizons Wireless LAN Card

This chapter introduces the main features of the Horizons Wireless LAN Card

1.1 Introduction

The Horizons Wireless PC LAN Card is an 11 Mbps IEEE 802.11(b) wireless PCMCIA card and that has a standard PCMCIA adapter which fits into any standard PCMCIA Type II notebook computer slot. Its maximum 11 Mbps data rate gives equivalent Ethernet speed to access corporate networks or the Internet in a wireless environment. The Horizons Wireless PC LAN Card gives you the wireless communication with any 802.11b-compliant product, allowing you to stay connected anywhere within a coverage area.

1.2 Features of the Horizons Wireless PC LAN Card

The following are the essential features of the Horizons Wireless PC LAN Card .

- *Supports data rate of 1, 2, 5.5 and 11 Mbps*
- *Ranges up to 1600 feet in an open environment*
- *Supports Point-to-Point and Point-to-Multi-point access*
- *Seamless connectivity to wired Ethernet and computer Network LAN*
- *Helps to augment existing networks quickly and easily*
- *Direct Sequence Spread Spectrum (DSSS) technology provides robust, interference-resistant and secure wireless connections*
- *Wireless connectivity minus the cost of cabling*
- *Supports Windows 2000/XP*
- *Supports Plug and Play*
- *Ease of installation*
- *Flexibility and mobility to locate or move networked computers*

1.3 Applications

The Horizons Wireless LAN Card offers fast, reliable and cost-effective solutions for wireless networks. They include:

- Remote Access to Corporate Network Information for email, file transfer and terminal emulation access.
- Difficult to Wire Environments - For use in historical or old buildings, asbestos installations and open areas where wiring is impossible to deploy.
- Frequently Changing Environments - For retailers, manufacturers and those who frequently rearrange the workplace or change location.



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- Temporary LAN's for Special Projects or During Peak Time - For trade shows, exhibitions and construction sites where a temporary network is required. For retailers, airline and shipping companies who need additional workstations during peak periods. For auditors requiring workgroups at customer sites.
- Access to Database for Mobile Users - Doctors, nurses, retailers who need to access their data bases on the move in a hospital, retail store, office or campus.
- SOHO (Small Office and Home Office) Users - SOHO users who need easy and quick installation of a small computer network.
- High Security Connection - Flexible, secure and quick installations.

Chapter 2

Software Installation

This chapter will guide you through the installation of the Horizons Software

**Make sure that you install the software onto your computer
BEFORE you install the Horizons Wireless LAN Card!**

The Horizons D2D Wireless LAN Card works with Windows XP and 2000 Operating Systems.

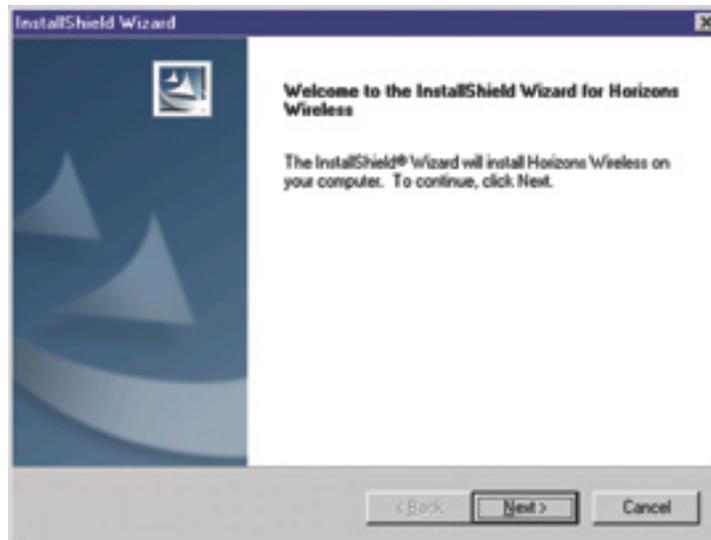


Insert the CD ROM into the CD ROM drive.

Most systems will begin an auto-run setup sequence once the CD is inserted. The InstallShield Wizard screen will appear.

Note: If your computer displays a message regarding this software not being certified for use with XP, you can safely answer yes and allow the installation to proceed. This software has been tested to work with Windows.

Click **NEXT** to continue.



If the InstallShield does not automatically start, click the "My Computer" icon, navigate to the CD-ROM drive, and find the file "setup.exe" on the CD.

Double click this file, and the installation process should begin as shown above.

**STEP
2**

The License Agreement screen will appear. The License Agreement must be accepted to continue.

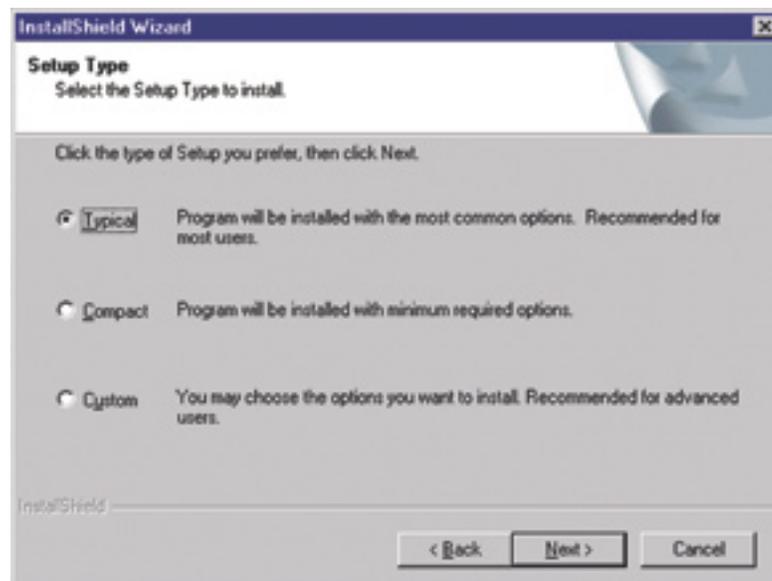
Click **NEXT** to continue.

**STEP
3**

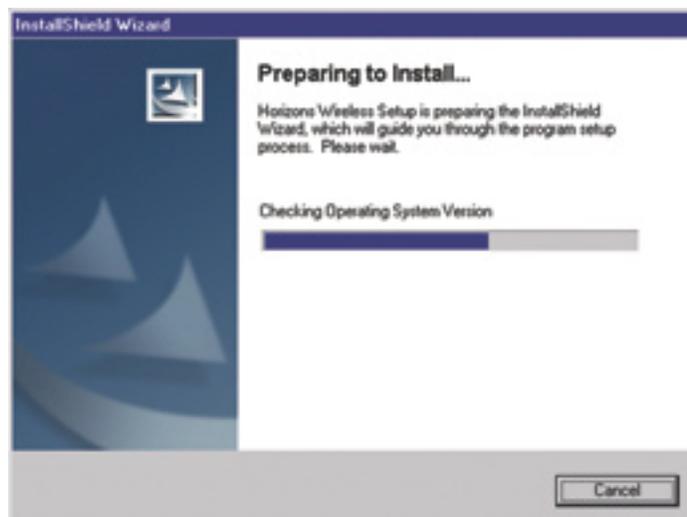
Select the type of install to be performed.

There are three options: *Typical*, *Compact* and *Custom*. Choose *Typical* for most installations. If you are an advanced user, you can choose *Custom*, which will give you the opportunity to select certain options.

Click **NEXT** to continue.



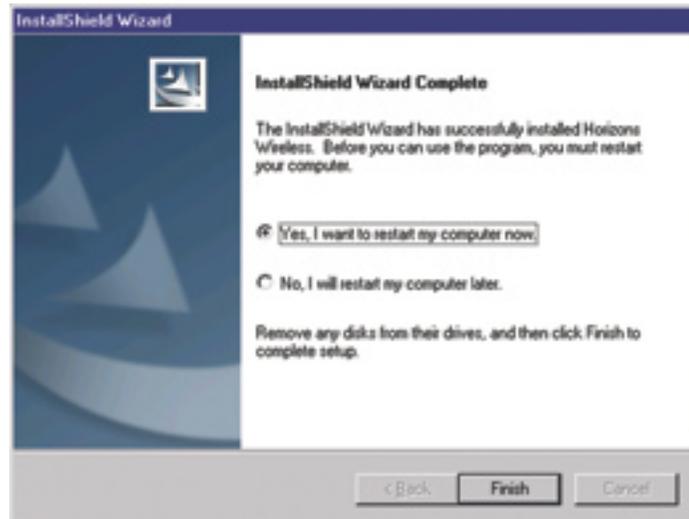
The following screen will appear and the software will be installed onto your computer.



STEP 4

RESTART YOUR COMPUTER

Select **FINISH** to Restart your computer and complete the installation of the software.



Now go to the next section of this Manual to begin hardware installation and configuration.

Chapter 3

Hardware Installation

This chapter will guide you through the installation of the Horizons Wireless LAN Card into your computer

3.1 System Requirements

- PCMCIA Type II slot
- PCMCIA card and socket service that is Revision 2.1-compliant to PCMCIA specification (or higher)
- Windows 2000/XP Operating System.
- 500 Kbytes free hard disk space (minimum) for driver and utility program installation.

3.2 Installing the Horizons Wireless LAN Card

Follow the procedure shown next to install the Horizons Wireless LAN Card. Refer to the appendix for important safety instructions.

Step 1. Locate available Type II or Type III PCMCIA slot in your notebook computer.

Step 2. With the Horizons Wireless LAN Card adapter's 68-pin connector facing the PCMCIA slot and its label side and LED's facing up, slide the Horizons Wireless LAN Card completely into the PCMCIA slot as shown next.

Never force, bend or twist the Horizons Wireless LAN Card into the slot





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The PCMCIA slot supports "hot swapping" of PCMCIA adapter, allowing you to insert or remove the Horizons Wireless LAN Card from the slot whenever you like even when power to your computer is on. However, you should always disable the Horizons Wireless LAN Card prior to card removal to allow Windows to log off from the network server. Disable the Horizons Wireless LAN Card properly and disconnect power to the PC Card slot.

LED	COLOR	STATUS	DESCRIPTION
POWER	Green	On	The Horizons Wireless LAN Card is receiving power.
LINK	Orange	On	The Horizons Wireless LAN Card has a successful wireless connection.
		Blinking	The Horizons Wireless LAN Card is sending/receiving data through the wireless connection.

Windows will automatically detect the HZ1500 Wireless LAN Card and the **FOUND NEW HARDWARE** Wizard Dialog Box will appear. Follow the on-screen instructions to install the Horizons Wireless driver. If the Wireless LAN Card is not inserted properly, the following error message will appear:



To confirm proper installation of the Horizons-Wireless LAN Card:

- Right-Click **MY COMPUTER** from the Windows desktop.
- Click **PROPERTIES**
- Open **DEVICE MANAGER**
- Select the **HARDWARE** folder tab, and then click the **DEVICE MANAGER** button.
- Double-click **NETWORK ADAPTERS**. No special markers should appear next to the HZ1500 Wireless LAN Card selection.
- Double-click HZ1500 Wireless LAN Card. Refer to the tab labeled **GENERAL**. The **DEVICE STATUS** Window will indicate that the device is working properly.

For Windows 2000 users, a DIGITAL SIGNATURE NOT FOUND message may appear. Simply select YES to proceed.

For Windows XP users, a WINDOWS LOGO TESTING NOT FOUND dialog box may appear. Click CONTINUE ANYWAY to proceed. Horizons Wireless D2D software has been tested to work with Windows, and the installation should be continued with confidence.



Part II

Advanced Management

The following chapters will show you how to manage and configure advanced parameters of your Horizons Wireless LAN Card.

Chapter 4

Horizons Wireless D2D Configuration GUI

This chapter will guide you through configuring the GUI (graphical user interface) for the LAN Card

4.1 Configuration

Horizons-Wireless D2D Configuration GUI (Graphical User Interface) will assist in setting up and customizing your wireless network. The D2D Configuration GUI will provide you with information regarding signal quality and link conditions as well as let you modify various wireless parameters.

To access the Horizons-Wireless D2D Configuration GUI you must first launch the **HORIZONS STATUS MONITOR**. To do this, double-click the HZ1500 shortcut found on the desktop. The D2D Configuration GUI can also be accessed by double-clicking the **HORIZONS (H)** icon that appears in the Windows System Tray (bottom-right corner of the task bar). The shortcut as well as the icon are shown below.



Desktop
Icon



SysTray
Icons

The shortcut is automatically placed on the desktop after driver installation is complete. The Horizons (H) icon will appear in the System Tray only if the option is selected from the D2D Configuration GUI. Double-clicking either of these will launch the **HORIZONS STRENGTH INDICATOR** found below. The D2D Configuration GUI is accessed from the strength indicator.

The **System tray (SysTray)** can be found on one end of the task bar on the Microsoft Windows desktop. Icons for memory-resident applications that execute continuously in the background will be found here. These may include such things as the time-clock, anti-virus software, and speaker volume. Once the **HORIZONS** icon found in this area is double-clicked, the Horizons Strength Indicator will open. Clicking the access icon (tool button) in the lower-left corner will open the D2D Configuration GUI.





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4.2 Configuration - Using the D2D/Horizons Configuration GUI

The D2D Configuration GUI is displayed as shown below and consists of four primary sections. From here, different connections may be detected, configured, and stored.

AVAILABLE CONNECTIONS SECTION

The screenshot displays the Horizons Configuration GUI with the following sections and data:

Available Connections Section:

SSID	Type	Channel	Signal	WEP
direct2data1	AP	1	100%	Off
d2d-test	AP	11	100%	Off

Current Connection Section:

SSID	Status	Channel	Type	WEP	Speed
direct2data1	Connected	1	AP	Off	11 Mbps

Signal strength: 100% (Visual bar)

Profiles Section:

Name	SSID	Channel	WEP
Profile000	direct2data1	1	Off
Profile001	d2d-test	11	Off

Access Tray Section:

Buttons: Connect, Scan, Edit, Options, Help, Done

Checkbox: Start In System Tray

Footer: www.direct2data.com

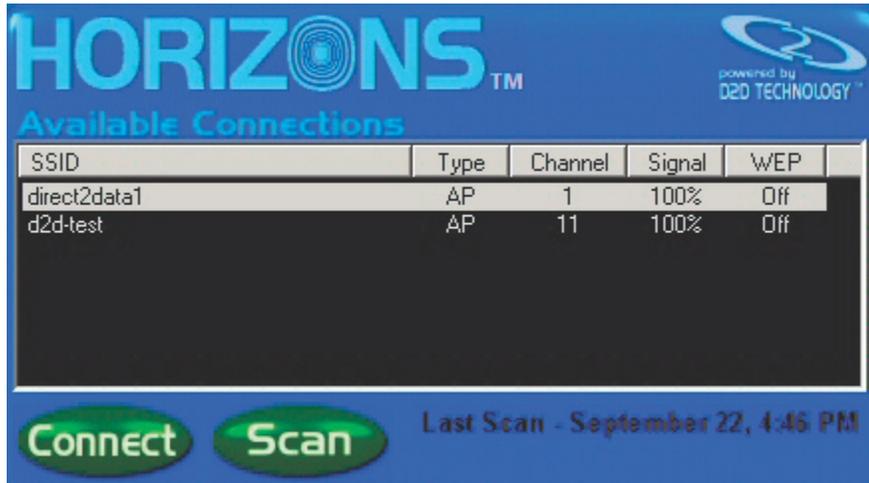
The Above Sections are covered individually on the pages that follow.



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4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

AVAILABLE CONNECTIONS SECTION



The top-most section of the D2D Configuration GUI dialog box shows the available connections. The available connections will be displayed from a scan performed when the software was started, or when the scan button was clicked.

To begin using the HZ1500 Wireless LAN Card immediately, highlight the desired available connection and select **CONNECT.**

The following describes information found in the **AVAILABLE CONNECTIONS** area of the configuration GUI.

- **SSID (Service Set ID):** Identifies the name of the network in use through the access point that is being utilized
- **TYPE:** Indicates the operating mode of the Horizons-Wireless LAN Card. These modes are AP (Access Point/Infrastructure) and Ad-Hoc. The next section of the manual covers this in more detail.
- **CHANNEL:** Indicates the wireless channel that is currently in use.
- **SIGNAL:** Indicates the radio frequency signal strength.
- **WEP:** Indicates the encryption status (security setting) of the device. If WEP is off, there is no encryption. If it is on, settings options include 64-bit and 128-bit WEP.
- **LAST SCAN:** Gives the date and time stamp for the last successful scan.
- **CONNECT:** Connects to the selected network
- **SCAN:** Performs a check to find wireless channels available for connection



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4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

CURRENT CONNECTION SECTION

Current Connection					
SSID	Status	Channel	Type	WEP	Speed
direct2data1	Connected	1	AP	Off	11 Mbps

This section shows the connection that is currently active, giving the status of each category described in the **AVAILABLE CONNECTION SECTION** on the previous page. The **SPEED** indicates the rate of data transfer as dictated by the Access Point to which the Wireless LAN Card is connected.

PROFILES SECTION

Profiles				
Name	SSID	Channel	WEP	
Profile000	direct2data1	1	Off	
Profile001	d2d-test	11	Off	

Connect Edit >

Edit Section
Described on
Next Page

Although not required for operation of the HZ1500, **PROFILES** may be created and stored for known connections. This provides an easy mechanism to connect to known points when moving to and from various additional locations.

This area shows stored connections that can be utilized. To change or add a profile, select the **EDIT** option found below the **PROFILE** list box. To connect to an existing profile, simply select it and then select the **CONNECT** button.



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4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

EDIT SECTION

A screenshot of the 'Profile Editor' dialog box. The dialog has a blue background and contains the following fields and controls:

- Name:** A text input field containing 'Profile000'.
- SSID:** A text input field containing 'direct2data1'.
- Channel:** A dropdown menu with '1' selected.
- Connect:** A dropdown menu with 'Access Point' selected.
- WEP:** A dropdown menu with 'Off' selected.
- Password:** An empty text input field.
- At the bottom, there are three buttons: 'Delete' (red), 'OK' (blue), and 'Cancel' (blue).

To establish a profile:

- Enter a name for the profile
- Use the Scanned SSID (network name - *See Next Pages for Additional Information*), or enter the desired SSID Connection Point
- Select an appropriate wireless channel
- Select the network connection type (AP or Ad-Hoc - *See Next Pages for Additional Information*)
- Select the appropriate encryption option: **64-bit**, **128-bit**, or **NONE**
- Enter the Password for the desired access point.
- Select **OK** to store the profile, select **CANCEL** to exit the Profile Editor, or select **DELETE** to delete the described profile and begin again.



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4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

ACCESS TRAY SECTION



If the **START IN SYSTEM TRAY** option is toggled, the **HORIZONS (H)** icon will appear in the system tray on start-up.

- Click the **www.direct2data.com** button to access the Horizons-Wireless home page.
- Click the **HELP** option to view the user manual
- Click **DONE** to exit the D2D Configuration GUI

MORE ON AD-HOC AND AP MODES

Ad-Hoc Mode (Peer-to-Peer Workgroup)

The Institute of Electrical and Electronics Engineers (IEEE) standard for wireless LAN's (WLAN's), 802.11 offers two methods for configuring a wireless network — Ad-Hoc and infrastructure (Access Point). In an Ad-Hoc network, computers are brought together as needed. In this instance, there are no fixed points to the network — each node can generally communicate with any other node. There is no Access Point involved in this configuration. This enables the set up and use of a small wireless workgroup and allows workgroup members to exchange data or share printers as supported by Microsoft Networking in the various Windows operating systems. To set up an Ad-Hoc workgroup operating with standard protocols:

- Set all stations to connect in Ad-Hoc mode (or Peer-to-Peer workgroup mode).
- Set all stations to use the same network name (or SSID).
- Set all stations to use the same wireless channel for communication.
- Set all stations to either disable the WEP encryption key, or set all stations to use an identical WEP encryption key.

AP Mode (Infrastructure Mode)

With a wireless Access Point (AP), you can put the Horizons-Wireless PC LAN into AP (Infrastructure) mode. It provides wireless connectivity to multiple wireless network devices within a fixed range or area of coverage, interacting with a wireless node by way of an antenna. In AP Mode, the wireless Access Point converts airwave data into wired Ethernet data, acting as a bridge between the wired LAN and wireless clients. Connecting multiple Access Points via a wired Ethernet backbone can further extend the wireless network coverage. As a mobile computing device moves out of the range of one Access Point, it moves into the range of another. As a result, wireless clients can freely roam from one Access Point domain to another and still maintain seamless network connection. To set up an AP network operating with standard protocols, do the following:

- Set all wireless stations to connect in AP mode.
- Set all stations to use the same network name (or SSID).
- Set all wireless Access Points to use the same network name (or ESSID).
- Set all stations to disable the WEP encryption key, or set all stations to use an identical WEP encryption key as used by the Access Point.
- Set up wireless channels used by individual Access Points. (It is not necessary to set channels on the stations as the stations will automatically scan through all channels for the nearest Access Point.
- You should consult your access point documentation for the available options.



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4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

MORE ON SSID

Service Set Identification (SSID)

The Service Set Identification (SSID) is a thirty-two alphanumeric character (maximum) string identifying the wireless local area network. Horizons-Wireless refers to the SSID as network name. For stations to communicate with each other, all stations must be configured with the same SSID. A wireless LAN consisting of nodes operating in Ad-Hoc configuration without an Access Point is called a Basic Service Set (BSS). All nodes in a BSS must use the same Basic Service Set ID (BSSID). In an AP (Access Point) configuration, multiple BSS can be configured to form an Extended Service Set (ESS). In this configuration, the Access Points are configured with the same Extended Service Set ID (ESSID). Wireless clients configured with the same ESSID can freely roam from one Access Point domain to another and still maintain a seamless connection to the network.

MORE ON WEP ENCRYPTION

Authentication and WEP Encryption

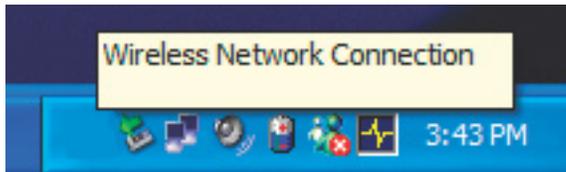
Wireless links are vulnerable to information theft. To provide a certain level of security, IEEE 802.11 standard has defined two types of authentication methods, Open System and Shared Key. Open System authentication is a null algorithm. Shared Key authentication is an algorithm where both the transmitting node and the receiving node share an authentication key to perform a checksum on the original message. By default, IEEE 802.11 wireless devices operate in an open system network. Wired Equivalent Privacy (WEP) data encryption is utilized when the wireless nodes or access points are configured to operate in Shared Key authentication mode. Horizons-Wireless utilizes the following 802.11b solutions: the standard based 64-bit WEP data encryption and 128-bit WEP data encryption. The 64-bit WEP data encryption method allows for a five-character (40 bits) KEY. Additionally, 24 factory-set bits are added to the 40-bit input to generate a 64-bit encryption key. (The 24 factory-set bits are not user configurable.) This encryption key will be used to encrypt/decrypt all data transmitted via the wireless interface. The 128-bit WEP data encryption method consists of 104 configurable bits. Similar to the 64-bit WEP data encryption method, the remaining 24 bits are factory set and not user configurable.



HZ1500 Wireless LAN Card

4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

ACHIEVING MAXIMUM PERFORMANCE ON YOUR COMPUTER WITH THE HZ1500 WIRELESS LAN CARD

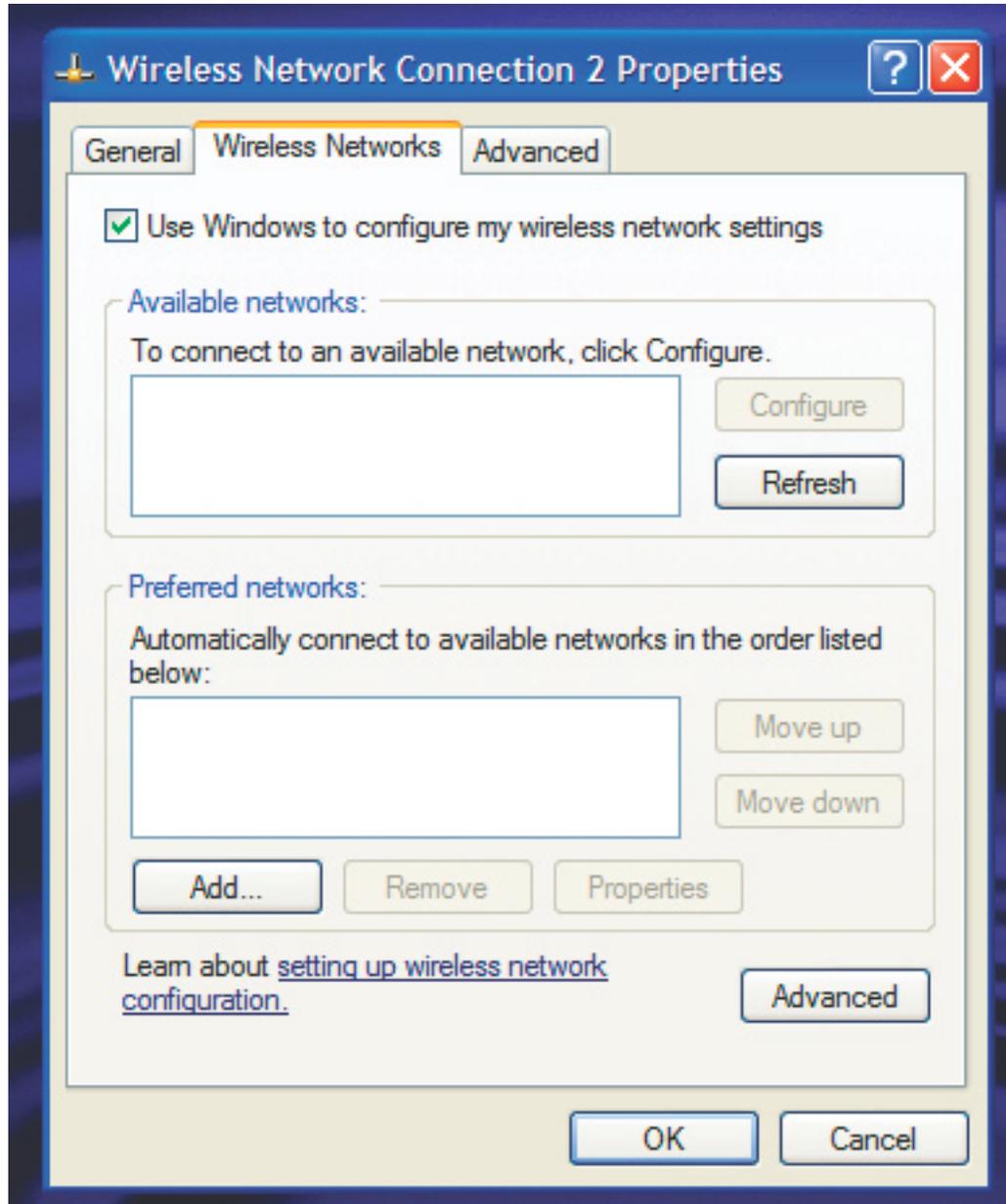




HZ1500 Wireless LAN Card

4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

ACHIEVING MAXIMUM PERFORMANCE ON YOUR COMPUTER WITH THE HZ1500 WIRELESS LAN CARD - Continued

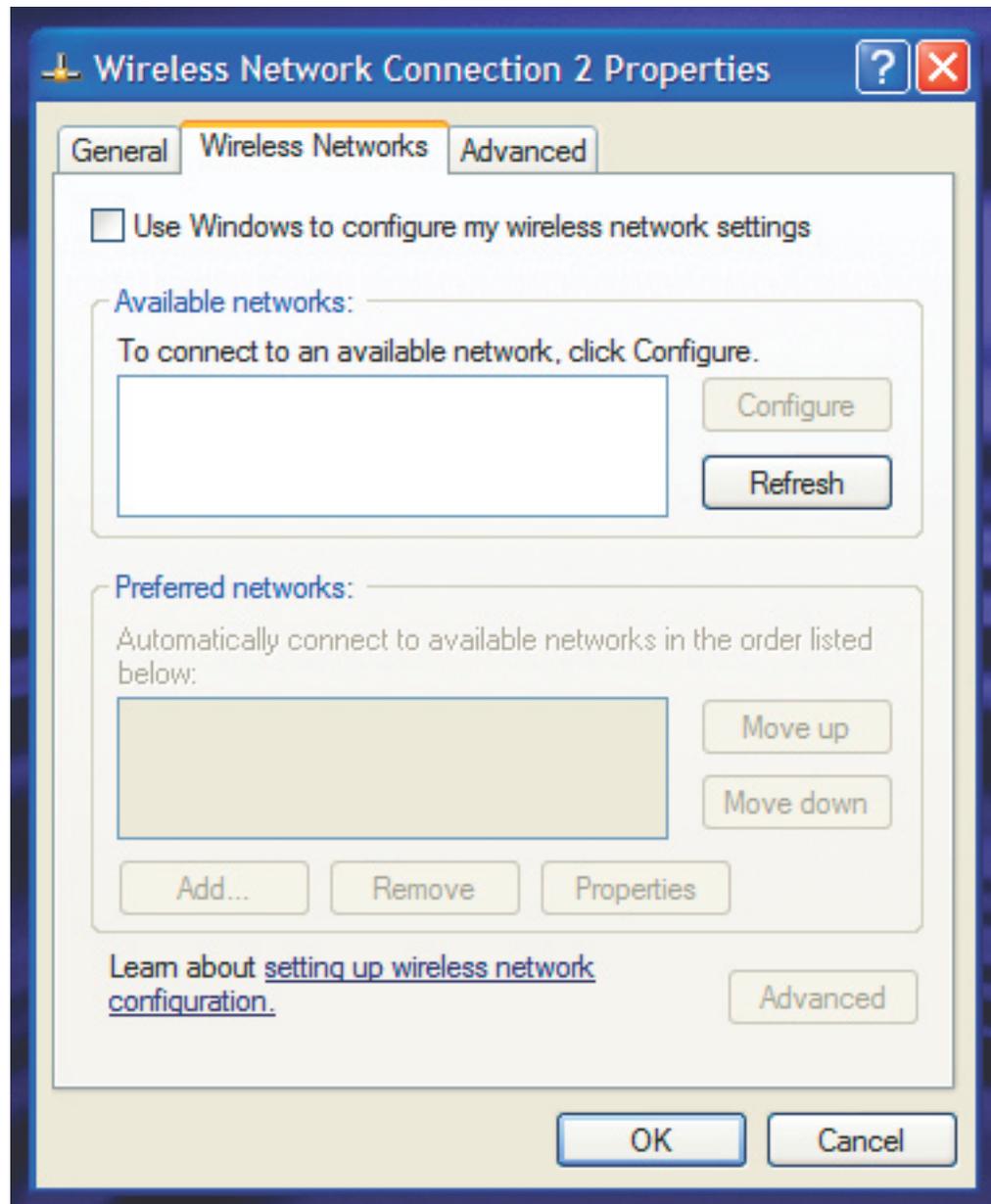




HZ1500 Wireless LAN Card

4.2 Configuration - Using the D2D/Horizons Configuration GUI - Continued

ACHIEVING MAXIMUM PERFORMANCE ON YOUR COMPUTER WITH THE HZ1500 WIRELESS LAN CARD - Continued





Part III

Additional Information

This part includes Troubleshooting, Appendices, and the Index



HZ1500 Wireless LAN Card

Chapter 5

Troubleshooting

This chapter covers potential problems and the possible remedies. After each problem description, some instructions are provided to help you diagnose and solve the problem.

5.1 Problems During Driver Installation

PROBLEM	CORRECTIVE ACTION
The Horizons Wireless LAN Card is not working after the driver installation	<p>Insert the PCMCIA adapter into your notebook computer's slot again. The Power and Link LED should be on if the adapter is properly inserted.</p> <p>Make sure there is no hardware conflict between your Horizons Wireless LAN Card and other hardware in your computer. If there is a conflict, you need to set your I/O and IRQ manually.</p> <p>For Windows 2000/XP operating system, make sure that the PCMCIA adaptor driver is installed on your computer.</p>
Windows does not auto-detect the Horizons Wireless LAN Card	<p>Restart your computer.</p> <p>Do a manual scan of your computer hardware.</p> <p>In Windows 2000, click Start, Settings, Control Panel, System, Hardware, Hardware Wizard.</p> <p>In Windows XP, click Start, Control Panel, Performance and Maintenance, System, Hardware, Device Manager. Then Right-click on your computer name and select Scan for Hardware Changes.</p> <p>Check your PCMCIA adapter and make sure there is no hardware conflict.</p> <p>Contact Horizons Customer Support</p>

5.2 Problems With the Utility Configuration

PROBLEM	CORRECTIVE ACTION
Problems encountered with the utility configuration.	<p>Click Loopback in the Loop Back window to check the link status with the AP it is associated with (in Infrastructure mode).</p> <p>Click on the Site Survey tab to check whether there is high interference around the environment.</p> <p>Make sure that you have set the correct IP address for the Horizons Wireless LAN Card. Use the Ping command to ping the unit itself.</p> <p>Netbeui must be installed and relevant parameters properly set. Double click Network Neighborhood on your Windows desktop. You should see your computer name.</p>



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This chapter covers potential problems and the possible remedies. After each problem description, some instructions are provided to help you diagnose and solve the problem.

5.3 Problems With Access Point Settings

PROBLEM	CORRECTIVE ACTION
Problems with AP settings.	<p>Make sure that the AP is on and that all the LED's are working properly.</p> <p>Click Ping in Loop Back window to ping any other host. If the host does not respond, your Access Point might not be connected to the network.</p> <p>Check to see if the access point is displayed in the available connections section of the D2D CONFIGURATION GUI.</p> <p>From a Windows Command Prompt, use the Ping Command to test connectivity to the Access Point. Consult your Access Point manual for the appropriate IP Address.</p> <p>Consult your Access Point Manual for additional troubleshooting tips.</p>

5.4 Problems Communicating With the Computer

PROBLEM	CORRECTIVE ACTION
The Horizons Wireless LAN Card client cannot communicate with the other computer in the Ethernet when the Infrastructure mode is configured.	<p>Make sure that the AP and the associated computer are on.</p> <p>Use the Site Survey utility to verify operating radio channel has low interference. Change the AP and all the stations within the BSS to another radio channel if interference is high.</p> <p>Make sure that the computer and the AP share the same security option and key.</p> <p>Make sure your computer and the AP use the same SS ID.</p>
Horizons Status Utility Button displays No Signal.	<p>Move your computer closer to the AP within the transmission range.</p> <p>There is too much radio interference (for example microwave) around your wireless network.</p> <p>Relocate or reduce the radio interference.</p>

Appendix A

Network Configuration

The Horizons Wireless LAN Card 100 supports the same network configuration options of Legacy Ethernet LAN's as defined by the IEEE 802 standard. The Horizons Wireless LAN Card 100 can be configured as:

- Ad-hoc for departmental or SOHO LAN's.
- Infrastructure for enterprise LAN's.
- LAN-interconnection for point-to-point link as a campus backbone.

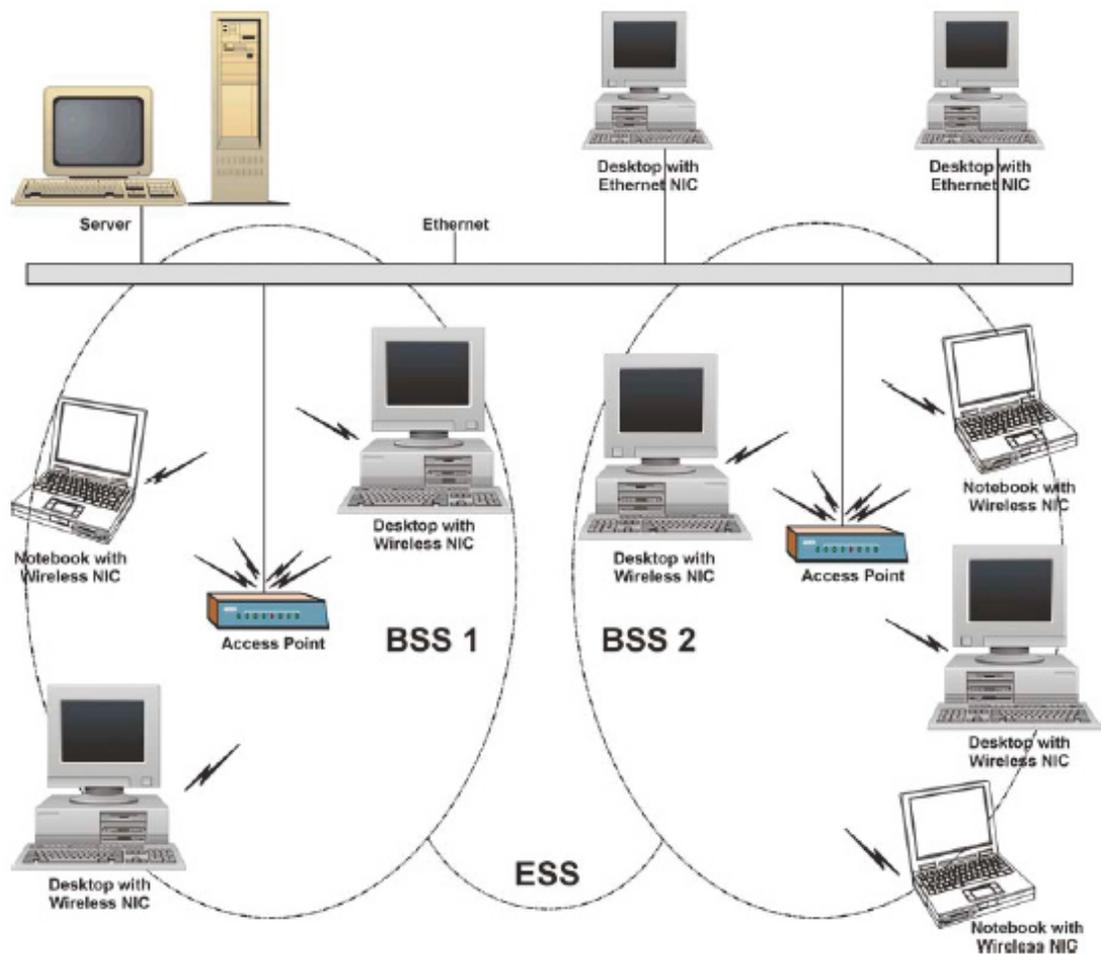
Ad-hoc Wireless LAN Topology



Ad-hoc Wireless LAN Topology - Continued

An Ad-hoc wireless LAN is a group of computers, each equipped with one wireless adapter, and connected as an independent wireless LAN. Computers in a specific Ad-hoc wireless LAN must be configured on the same radio channel. An Ad-hoc wireless LAN is available at a departmental scale for a branch or SOHO operation.

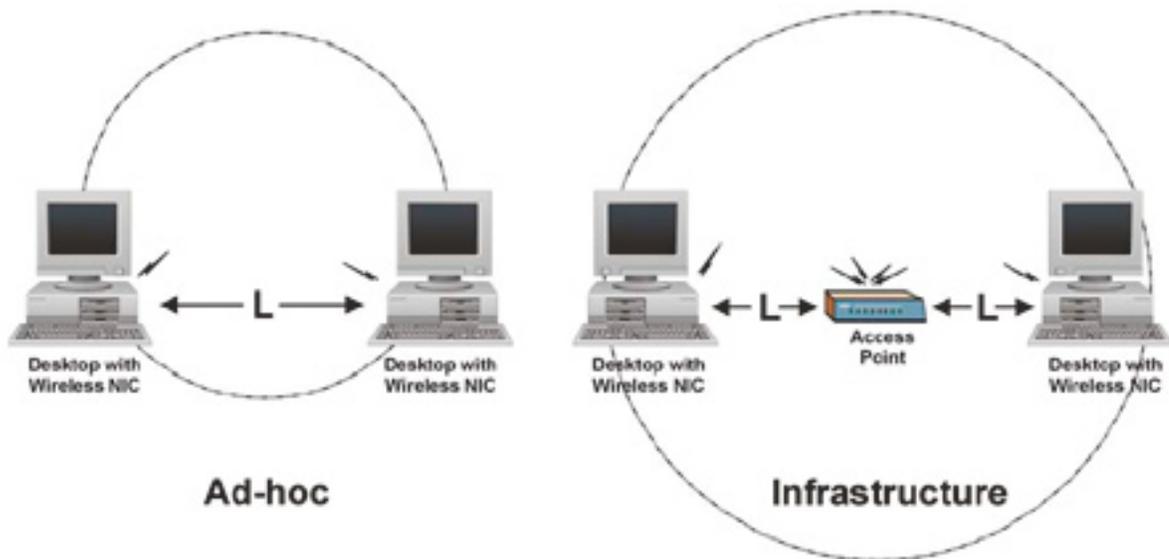
Wireless LAN Topology Infrastructure



Ad-hoc Wireless LAN Topology - Continued

The Horizons Wireless LAN Card 100 provides access to a wired LAN for wireless computers. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of wireless LAN computer users and an Access Point constitute a Basic Service Set (BSS). Each wireless-equipped computer in this BSS can talk to any computer in the wired LAN infrastructure via the Access Point.

Infrastructure configuration will extend the accessibility of a wireless station to the wired LAN. Multiple Access Points will allow roaming and it will increase the transmission range. The Access Point is also able to forward data within its BSS. The effective transmission range in an Infrastructure LAN is doubled.

Effective Transmission Range Example



HZ1500 Wireless LAN Card

Appendix B

Hardware Specifications

General Horizons HZ1500 Wireless LAN Card Specifications

Operating Systems Supported	Windows 2000, and XP
Standards	IEEE 802.11b; WIFI Compliant
Host Interface	PC Card Type II Slot Extended
Data Rates	1, 2, 5.5, 11 Mbps, with Auto-Fall-back Support
Modulation	BPSK, QPSK, CCK
Range (typical)	Open Environment: 3500 feet Closed Environment: 450 feet
Frequency Range	ISM Band (2.4 to 2.4835 GHz)
Channels	1-11 United States (Approved for use only in the United States)
Wireless Security (WEP)	Off, 64-bit, 128-bit
Transmit Power	Greater than +20dbm



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Appendix C

Important Safety Instructions

The following safety instructions apply to the Horizons Wireless LAN Card 100 Wireless PCMCIA Card:

1. Be sure to read and follow all warning notices and instructions.
2. Do not service the product by yourself. Refer all servicing to qualified service personnel.
3. Generally, when installed after the final configuration, the product must comply with the applicable safety standards and regulatory requirements of the country in which it is installed. If necessary, consult the appropriate regulatory agencies and inspection authorities to ensure compliance.
4. A rare condition can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate building are interconnected, the voltage potential can cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and if necessary, implement corrective action before interconnecting the products. If the equipment is to be used with telecommunications circuit, take the following precautions:
 - Never install telephone wiring during a lightning storm.
 - Never install telephone jacks in wet location unless the jack is specially designed for wet location.
 - Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
 - Use caution when installing or modifying telephone lines (other than a cordless telephone) during an electrical storm. There is a remote risk of electric shock from lightning
5. In order to limit Radio Frequency (RF) exposure, the following rules should be applied:
 - Install the antenna in a location where a distance of 20 cm from the antenna may be maintained.
 - While installing the antenna in the location, please do not turn on the power of wireless card.
 - While the device is working (transmitting or receiving), please do not touch or move the antenna.
 - Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.
6. For Laptop (notebook) computer users, in order to comply with the FCC RF exposure limits, it is recommended when using a laptop with a wireless LAN adapter card that the card's integrated antenna should not be positioned closer than 5 cm (2 inches) from your body or nearby persons for extended periods of time while it is transmitting (or operating). If the antenna is positioned less than 5 cm (2 inches) from the user, it is recommended that the user limit exposure time.



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Glossary

Channel: The radio channel of a wireless network, 1 through 11.

Connect: Connect to an available network, or connect to a network using a specific profile.

Delete: Delete a named profile.

Done: Save changes and close the window.

Edit: Edit a named profile.

Name: Profile name, such as, "Work" or "Home".

Options: Used to create ad hoc and infrastructure networks, and start the Horizons-D2D user interface in the system tray.

Password: Enter a password, if required, to connect to a wireless network.

Profile: A record that contains information about a wireless network such as SSID, WEP keys, channel, and type of connection, e.g. AP or ad hoc.

Scan: Activates a search of all channels (1 through 11) searching for wireless networks.

Scanning...: Active indication of the scanning activity. If the radio seems to be in a state of continuous "Scan", it is likely that there are no wireless networks available.

Signal: Signal strength.

Status: State of the wireless connection, either connected or not connected.

Speed: The speed of the connection measured in Mbps, (Megabits per second).

SSID: Service Set Identifier. An identification broadcast, (or not), by an access point or ad hoc node.

Type: Type of network, either infrastructure/access point, (AP), or ad hoc.

WEP: Wired equivalent privacy. A means of encrypting the radio signals, can be 40 bit, 64 bit, or 128 bit encryption.