Ripwave™ MX Modem User Guide

For use with all Ripwave™ MX Modem models

Part Number 40-00382-00
Revision B, Version 1.0, PV1.6
February 10, 2006

TABLE OF CONTENTS

Permissions, Trademarks & Distribution

Copyright© 2001 - 2006, Navini Networks, Inc. All information contained herein and disclosed by this document is confidential and the proprietary property of Navini Networks, Inc. and all rights therein are expressly reserved. Acceptance of this material signifies agreement by the recipient that the information contained in this document is confidential and that it will be used solely for the purposes set forth herein. Acceptance of this material signifies agreement by the recipient that it will not be used, reproduced in whole or in part, disclosed, distributed, or conveyed to others in any manner or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems – without the express written permission of Navini Networks, Inc.

Navini Networks is a registered trademark. The Navini Networks logo, Zero-Install, Ripwave, and Unwired by Navini are trademarks of Navini Networks, Inc. Other product and company names mentioned herein may be trademarks and/or service marks of their respective owners.

Except for the hardware warranty, nothing herein constitutes any representation, warranty, assurance, or guaranty of any kind.

Because of continuing developments and improvements in design, manufacturing, and deployment, material in this document is subject to change without notification and does not represent any commitment or obligation on the part of Navini Networks, Inc.

Navini Networks, Inc. shall have no liability for any error or damages resulting from the use of this document.

All Navini Networks logos and trademarks are the property of Navini Networks, Inc. Unauthorized usage is strictly prohibited without the express written permission of Navini Networks, Inc.

Safety

To optimize safety and expedite installation and service, read this document thoroughly. Follow all warnings, cautions, and instructions marked on the equipment and included in this document.

To aid in the prevention of injury and damage to property, cautionary symbols have been placed in this document to alert the reader to known potentially hazardous situations, or hazards to equipment or procedures. The symbols are placed before the information to which they apply. However, any situation that involves heavy equipment and electricity can become hazardous, and caution and safety should be practiced at all times when installing, servicing, or operating the equipment.

Caution Symbol - possible equipment or property damage

Warning Symbol - could cause personal injury or otherwise be hazardous to your health

Navini Networks, Inc., expressly requires that when using Navini electronic equipment always follow the basic safety precautions to reduce the risk of electrical shock, fire, and injury to people and/or property.

1. Follow all warnings and instructions that come with the equipment.
2. Do not use the equipment while you are in a bathtub, shower, pool, or spa. Exposure of the equipment to water could cause severe electrical shock or serious damage to the equipment.
3. Do not allow any type of liquid to come in contact with the equipment. Unplug the equipment from the power source before cleaning. Use a damp cloth for cleaning. Do not use any soaps or liquid cleaners.
4. Follow all airport and FAA regulations when using the equipment on or near aircraft.
5. Only operate the equipment from the type of power source(s) indicated in this manual (110/220 VAC, 60/50 Hz or Navini supplied battery). Any other type of input power source may cause damage to the equipment.
6. Power the equipment using only the battery or the AC adapter cable provided, and in accordance with the instructions specified in the User Guide.
7. Do not use a frayed or damaged power cord. Do not place the power cord where it can be stepped on or tripped over.
8. Do not touch wires where the insulation is frayed or worn unless the equipment has been disconnected from its power source.
9. Do not overload wall outlets, power strips, or extension cords. This can cause serious electrical shock

or fire.
10. Do not place the equipment on an unstable surface. It can fall and cause injury or damage to the equipment.
11. Do not disassemble the equipment. Removing covers exposes dangerous voltages or other risks and also voids the warranty. Incorrect reassembly can cause equipment damage or electrical shock. Only an authorized repair technician should service this product.
12. Do not expose the equipment to extreme hot or cold temperatures.
13. Do not use the equipment under the following conditions:
   - When the equipment has been exposed to water or moisture.
   - When the equipment has been damaged.
   - When the power cord is damaged or frayed.
   - When the equipment does not operate properly or shows a distinct change in performance.

Battery Caution & Procedures

 WARNING! To reduce risk of injury or fire, follow these instructions when handling a battery.

1. Risk of explosion is possible if the battery is replaced with one not supplied by Navini Networks.
2. Do not dispose of the battery in a fire. It may explode. Check with the local codes for battery disposal guidelines.
3. Do not open or mutilate the battery. The battery contains substances that are toxic, corrosive, or harmful to humans. If battery substances come in contact with the skin, seek medical help immediately.
4. Do not attempt to recharge the battery by any means except per the instructions in this manual.
5. Remove the battery from the equipment if the equipment is not going to be used for a long period of time. The battery could leak and cause damage to the equipment.
6. Exercise care when handling the battery to prevent shorting the battery with conducting materials such as bracelets, rings, and keys.
7. Store the battery pack in a dry place, 0 to +40 degrees Celsius.
8. Dispose of used batteries according to environmental guidelines.

Regulatory Information

FCC Notice

CAUTION: This device is a Radio Frequency transmitter. It is required to comply with FCC RF exposure requirements for transmitting devices. For all LMX Modems except for the 2.6 LMX with window mount, a minimum separation distance of 8 inches (20 cm) or more must be maintained between the antenna and all persons during device operations to ensure compliance with the FCC's rules for Radio Frequency Exposure. For the 2.6 LMX Modem with a window mount, a minimum of 8.3 inches (21 cm) or more must be maintained between the window mount antenna and all persons during device operations. If this minimum distance cannot be maintained, exposure to RF levels that exceed the FCC's limits may result.

FCC Compliance and Advisory Statement

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

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. The operation is subject to the following two conditions:
(1)   This device may not cause harmful interference, and
(2)   This device must accept any interference received, including interference that may cause undesired operation.
If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user should try to correct the interference by one or more of the following measures:
1)   Reorient or relocate the receiving antenna,
2)   Increase the separation between the equipment and the receiver,
3)   Connect the equipment to an outlet on a circuit that is different from the one to which the receiver is connected,
4)   Consult the dealer or an experienced radio/TV technician for additional suggestions.

This product has been tested and found to be safe in accordance with the Australian Standard for Human Exposure to Radiation where the user or other parties are 20 cm or more from the aerial.

INFORMATION TO USER
This device has been authorized as a radio frequency transmitter under the appropriate rules of the Federal Communications Commission. Any changes or modifications not expressly approved by Navini Networks could void the user's authority to operate the equipment.

INFORMATION REGARDING ANTENNAS
This device has three embedded antennas: one upright antenna with approximately 2 dBi gain and two patch antennas, one on each side of the device. Each patch antenna has approximately 6 dBi gain.

Introduction

Congratulations! Your Ripwave™ MX Modem (also referred to as the LMX) is a user-friendly, easy-to-install device that helps you connect wirelessly to the Internet. It provides complete broadband Internet access to residential and small office/home office (SOHO) customers without requiring professional hardware installation. The Modem also provides portable service. A computer with this Modem can move from room-to-room, location-to-location, or even city-to-city as long as there is coverage in the area.

This manual will guide you through the simple process of installing the Modem and its monitoring software.

Package Inventory

Please verify the contents of your Modem package. Your package should contain the following:

- Modem
- Modem AC power adapter
- Ethernet straight cable (for PC-to-Modem connection)
- Ripwave MX Modem User Guide (on CD)
- Ripwave MX Modem Quick Installation Guide
- Navini Diagnostics Installation CD

If you do not find all of these items in your package, notify the supplier from whom you obtained it.

Modem Models

Your Modem comes in several models. The model indicates the frequency the Modem will operate in (either the 2.3 GHz, 2.4 GHz, 2.5-2.6 GHz, 3.4 GHz, or 3.5 GHz range). The various models are detailed on the next page.

2.3, 2.4, 2.5-2.6, 3.4 & 3.5 GHz LMX Modem

Operating Frequencies

Modem	Model	Frequency Range	Operating Band
2.3 GHz LMX	2305-2360 LMX E	2.305 GHz – 2.360 GHz	WCS
2.4 GHz LMX	2400-2483 LMX E	2.400 GHz – 2.483 GHz	ISM
2.5–2.6 GHz LMX	2.5-2.6 LMX E	2.500 GHz – 2.686 GHz	EBS-BRS
3.4 GHz LMX	3410-3525 LMX E	3.410 GHz – 3.525 GHz	WLL
3.5 GHz LMX	3475-3600 LMX E	3.475 GHz – 3.600 GHz	WLL

The "E" in the model name stands for Ethernet. Your computer should have an Ethernet port for connecting the Modem. An **Ethernet** connection will function with any Win32® Operating System (Windows® 98 or later).

Minimum Computing Requirements
(See, also, Addendum 1)

The following table lists the minimum requirements your computer should meet before connecting to the Ripwave MX Modem.

Operating System[1]:	Any Win32 Operating System (OS) - Windows NT, Windows 98[2], Windows 98SE[2], Windows 2000, Windows ME[2], Windows XP[3], or later version. **General Information:** ▪ Ensure that the pc network port is enabled.
CPU:	Pentium level or higher
RAM:	32 MB or the Operating System minimum, whichever is greater
Hard Drive:	50 MB free disk space for the Navini Diagnostics monitoring software[4]
Monitor:	256 colors, 800 x 600 resolution

[1]*Note:* To upgrade your Operating System after loading the Navini Diagnostics software, you must first uninstall Navini Diagnostics prior to upgrading the OS. Otherwise, Navini Diagnostics will not work. See Uninstall instructions in this Guide.
[2]*Note:* The Modem must be left powered ON whenever you shut down or restart any Windows 98 or ME platforms. If the Modem is off, a blue screen appears on the monitor. In the event that happens you will most likely have to power cycle the PC.
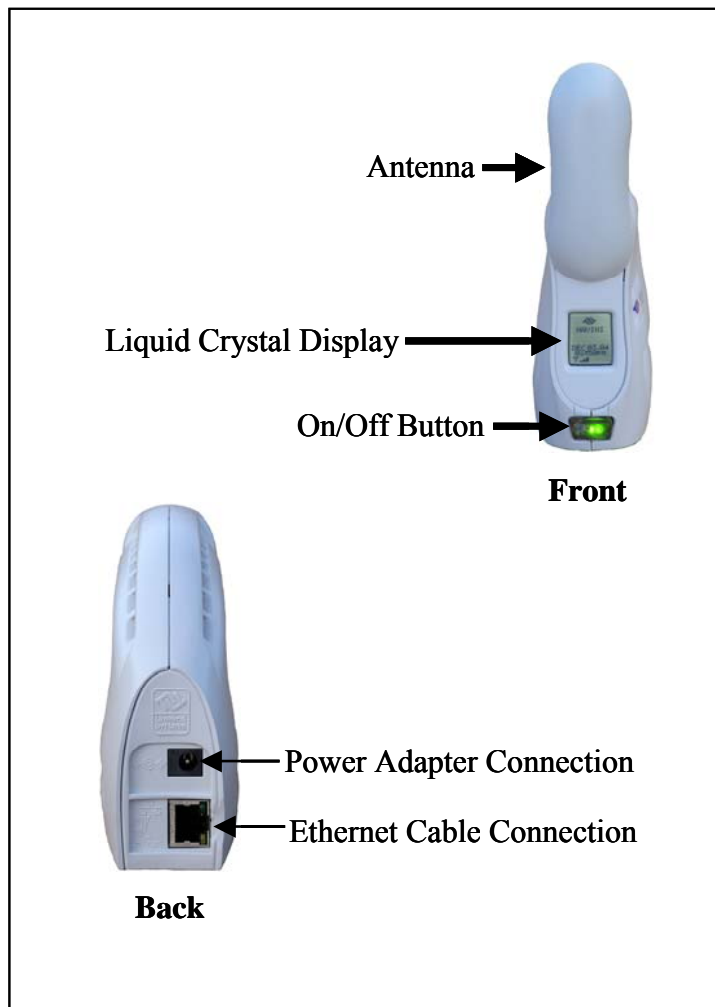[3]*Note:* Windows XP must be Service Pack Level 1 or higher.
[4]*Note:* Navini Diagnostics software is supported on Win98, Win98SE, Win2000, WinME, WinXP or higher, Mac X (also called Mac10) or higher, or Red Hat Linux 8.0 or higher. Mac users must have the Snuffit extraction software.

Physical Characteristics

The following figure shows the physical characteristics of the Modem.

LMX Modems (2.3, 2.4, 2.5-2.6, 3.4, & 3.5 GHz)

Antenna

Liquid Crystal Display

On/Off Button

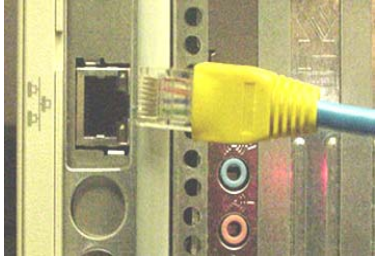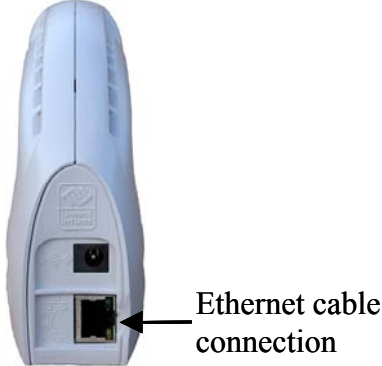**Front**

Power Adapter Connection

Ethernet Cable Connection

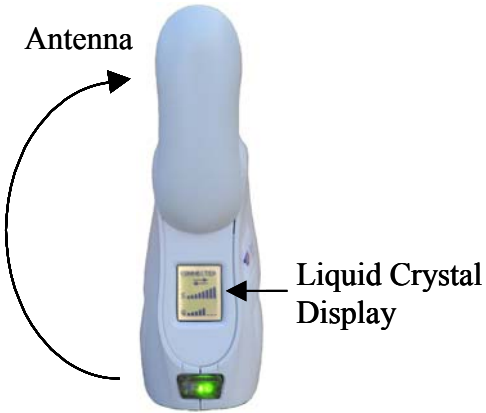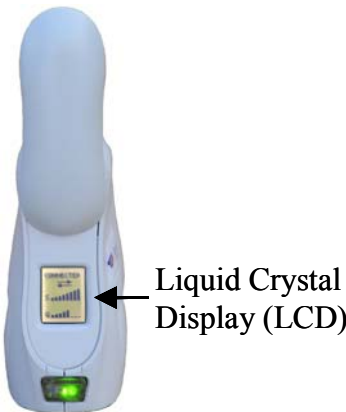**Back**

Installing the Modem
(See, also, Addendum 1)

The following instructions explain how to install your Modem. Please read all instructions before installing the Modem. Also, turn off the computer and the Modem before installing the Modem.

Note: The Modem should be positioned to minimize interference with other equipment when transmitting. Also, Australian requirements state the Modem should be placed 30 cm or more from any person or user. If the antenna is closer than 20 cm from the user, Australian safety conditions are violated.

Step	Action	Illustration
1.	Connect the Ethernet cable to the Ethernet port on the computer.	
2.	Connect the other end of the Ethernet cable to the Modem.	Ethernet cable connection
3.	Connect the AC power adapter to the Modem. Plug the other end of the power adapter into a 110/220 VAC 60/50 Hz outlet. **CAUTION!** Use *only* the AC power adapter supplied with the Modem. Using any other adapter can damage the Modem.	Power adapter connection

Installing the Modem, continued

Step	Action	Illustration
4.	Rotate the Modem's antenna clockwise 180° to the UP position. When the antenna is in the UP position, the Modem's liquid crystal display (LCD) can be seen. **CAUTION!** Rotating the antenna up in any other direction can damage the Modem.	Antenna Liquid Crystal Display
5.	Turn the Modem ON by pushing the On/Off button in.	On/Off Button
6.	If the LCD turns on, proceed to Step 7. If the LCD does not turn on, there is a problem with the Modem or the AC power adapter. Check all cables for proper connection. If there is still a problem, contact the supplier who gave you the package.	Liquid Crystal Display (LCD)
7.	Turn your computer on and log in.	

Accessing the Internet

Now that your Modem is installed and both the Modem and computer are powered on, you should be able to access the Internet (that is, assuming you have signed up with a Service Provider). To access the Internet, open the web browser that is installed on your computer.

Troubleshooting

If you are experiencing difficulties with your Internet connection after installation, please review the Minimum Computing Requirements and Addendum 1. Ensure your computer meets those requirements. Also review the installation procedures and ensure all the steps were completed properly.

If you are still experiencing difficulties, look at the Modem's LCD.

The Liquid Crystal Display (LCD)

The LCD is a text-based display that provides valuable information about the Modem's operation. When you use the LCD in conjunction with the Navini Diagnostics (NavDiag) monitoring software, you can troubleshoot signal issues, network connections, and power problems.

Below is a picture of the Modem's LCD and the various indications you will see on the LCD.
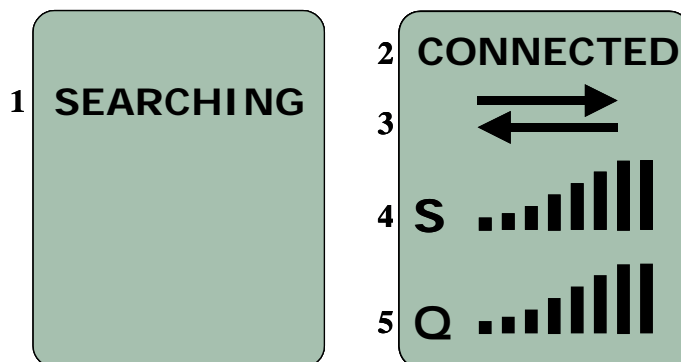
The following table defines the indicators that appear on the LCD.

The LCD, continued

	LCD Indicators:	
1	**SEARCHING:** Blinking flash: The Modem is syncing with a BTS.	
2	**CONNECTED:** The Modem has locked-on to a BTS.	
3	**Activity Indicator:** Both arrows flashing: **There is traffic activity.** **Blank: There is no traffic activity**	
4	**S: Signal Strength Indicator (SSI)**	
	0 bars	S < 100 dBm
	1 bar	-99 < S ≤ -100 dBm
	2 bars	-96 < S ≤ -99 dBm
	3 bars	-92 < S ≤ -95 dBm
	4 bars	-88 < S ≤ -91 dBm
	5 bars	-84 < S ≤ -87 dBm
	6 bars	-80 < S ≤ -83 dBm
	7 bars	-76 < S ≤ -79 dBm
	8 bars	-70 < S ≤ -75 dBm
5	**Q: Signal-to-Noise Ratio (SNR)**	
	0 bars	Q < 10 dB
	1 bar	10 < Q ≤ -12 dB
	2 bars	13 < Q ≤ -14 dB
	3 bars	15 < Q ≤ -16 dB
	4 bars	17 < Q ≤ -18 dB
	5 bars	19 < Q ≤ -20 dB
	6 bars	21 < Q ≤ -22 dB
	7 bars	23 < Q ≤ -24 dB
	8 bars	Q ≥ 24 dB

Installing Navini Diagnostics (NavDiag)

The NavDiag software assists you in solving connection problems and provides other valuable information. This software is provided on a CD that came in your Modem package. This section explains how to install this software.
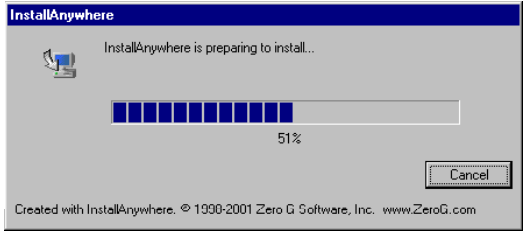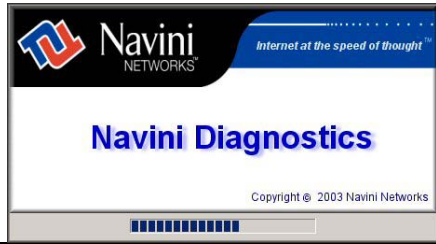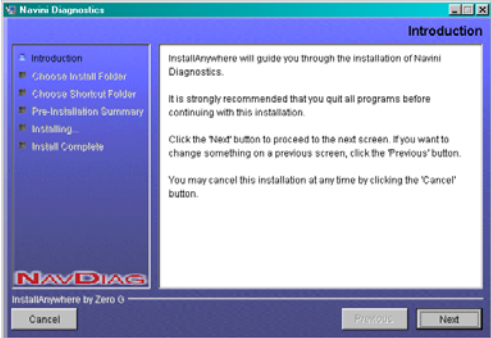
Note: To install NavDiag on a Windows 2000, you must have administrative privileges. To check your account privileges, open your Control Panel. Double-click on the Users and Passwords symbol. You should see Administrator under the Users tab.
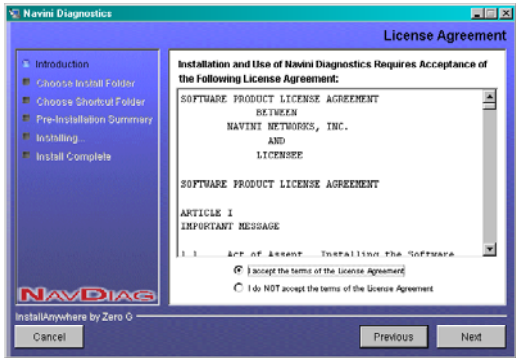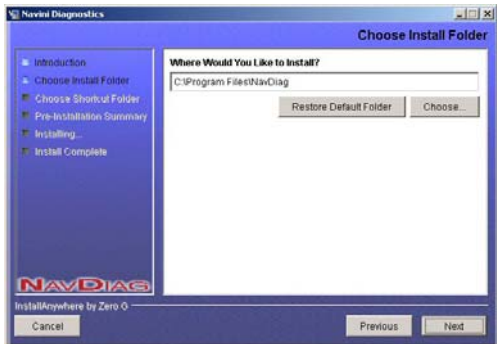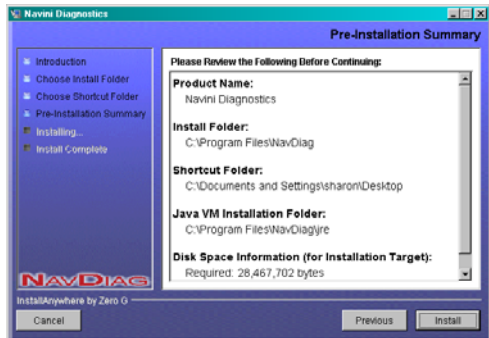
*Note***:** The screenshots shown in these instructions were taken from a laptop with Windows 2000. If you have a Windows 98, XP, or ME operating system, the screens you see may vary from the screens shown in the instructions.

Step	Action	Illustration
1.	Before installing the NavDiag software, shut down all programs, including anti-virus software programs.	
2.	Insert the Navini Diagnostics Installation CD into the CD-ROM drive.	
3.	Open the CD by clicking on the **My Computer** icon. Double-click on the folder named Navini_Diagnostics.	
4.	Double-click on the icon for the file **navdiag_windows.exe***. This will automatically start the installation of the Navini Diagnostics. *If your PC is running Mac or Linux software, you will need the navdiag_mac.sit or navdiag_linux.bin file. Mac users will need the Snuffit extraction software.	*Example:*

Installing NavDiag, continued

Step	Action	Illustration
5.	The InstallAnywhere window appears. The progress bar indicates that InstallAnywhere has initialized.	
6.	The Navini Diagnostics Language screen appears*. Select a language and click **OK** to continue.	Windows 2000 Screen
7.	The progress bar indicates the files being installed.	Windows 2000 Screen
8.	The Navini Diagnostics Introduction screen appears. Click **Next** to continue.	Windows 2000 Screen

Installing NavDiag,
continued

Step	Action	Illustration
9.	The License Agreement screen appears. Read the Licensing Agreement. Select the **I Accept** option, and click **Next** to continue. *Note*: If the License Agreement is *not* accepted, you cannot install the software.	
10.	The Choose Install Folder screen appears. Enter the name of the folder where you wish to install the software. Click **Next** to continue. *Note:* The default installation folder provided by the software is shown in the illustration.	Windows 2000 Screen
11.	The Choose Shortcut Folder screen appears. Select the default, In a new Program Group, and click **Next** to continue.	Windows 2000 Screen
12.	The Pre-Installation Summary screen appears. Review the contents for accuracy. Click **Install** to continue. For your installation and computer, this screen may have different information than what is shown in the illustration.	Windows 2000 Screen

Installing NavDiag,
continued

Step	Action	Illustration
13.	The Installing screen displays as the application files are loaded.	
14.	At the Install Complete screen, click **Done** to close the window.	Windows 2000 Screen

Troubleshooting Using Navini Diagnostics (NavDiag)

To open the Navini Diagnostics software application, double-click on the Navini Diagnostics icon on your desktop.

Navini Diagnostics.lnk

The Connection Status screen opens and displays data if the Modem is in session. The screen refreshes live data every second.
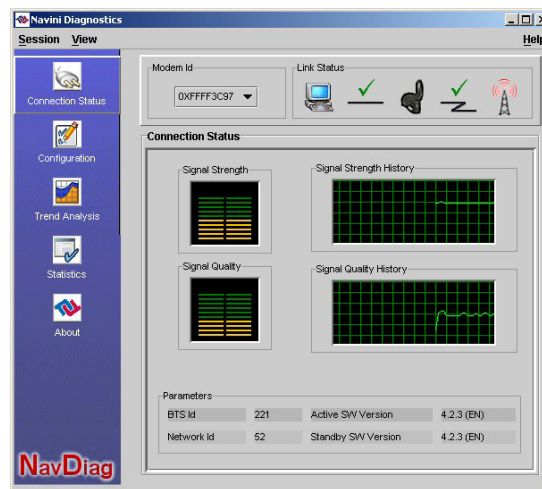
The following sections describe the various parts of the Connection Status screen.

The Icons

The icons that appear on the top right side of the screen represent the PC, the connection between the PC and the Modem, the Modem, the connection between the Modem and the Base Station, and the Base Station to which the Modem is communicating. Check marks over the connections indicate working connections.

Connection between
PC & Modem

Connection between
Modem & Base Station

PC   Modem   Base Station
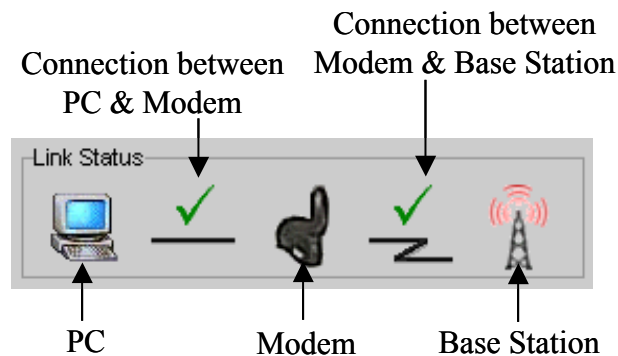
An "X" is positioned over the corresponding icon indicates the connection between the PC and the Modem or between the Modem and the Base Station is interrupted.

***The Signal
Strength and
Signal Quality Bars***

Signal Strength and Signal Quality are dynamic bar areas that indicate how well your Modem is receiving signals from the Base Station.
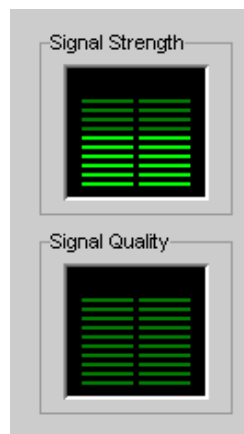
The Signal Strength and Signal Quality Bars, continued

In particular, the Signal Strength bar area graphically represents the strength of the synchronization signal your Modem is receiving from BTS. The strength of the signal is represented by a group of colored bars. The higher the pile of bars goes, the stronger the signal is. The color of the bars also gives an indication of the strength of the signal. Green lines indicate an excellent signal. Orange lines indicate a good signal while red lines indicate a weak signal.

The Signal Quality bar area graphically represents the Signal-to-Noise Ratio (SNR) received by your Modem. Again, the quality of the signal is represented by a group of colored bars. The higher the pile of bars goes, the better the SNR of the signal. The color of the bars also gives an indication of the quality of the signal. Green lines indicate an excellent signal or an SNR greater than 21. Orange lines indicate a good signal or an SNR greater than or equal to 13 but less than or equal to 21. Red lines indicate a weak signal or an SNR less than 13.

How to Increase the Strength and Quality of the Signal

To increase the strength and quality of the signal, change the location of your Modem. Try moving it closer to a window, to a higher location, away from other wireless devices (microwave ovens, cordless phones), and away from metal objects (shelves, file cabinets). As you reposition your Modem, watch the Signal Strength and Signal Quality bars on the NavDiag screen. Place your Modem in the location where you receive the most green signal strength and quality bars.

The History Graphs

The History graphs plot the change in signal strength and signal quality over time. The graphs cover the last minute and are updated every second. Read the graphs from right to left. The right side of the graph represents the most recent status of your Modem.
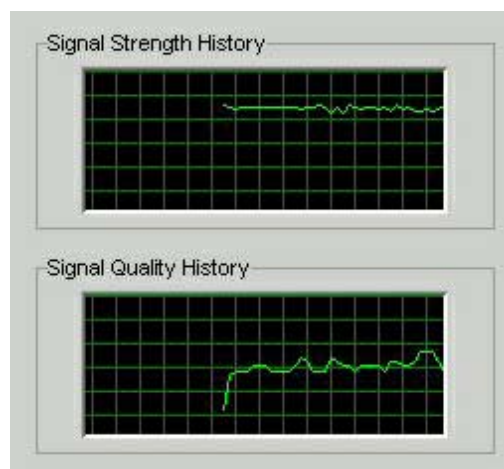
The Parameters

At the bottom of the Connection Status screen, are four parameters. These parameters are BTS ID, Network ID, Active SW Version, and Standby SW Version.

The BTS ID indicates the BTS to which the Modem is currently synchronized. The Network ID indicates the network in which the Modem is operating. Active SW Version and Standby SW Version indicate the version number of the software currently loaded in the "active side" and "standby side" of the Modem's flash memory. The two letters in parenthesis following the release number indicate the type of software load: JD indicates Joint Detection, while EN indicates Enhanced Nulling.

The Screen Option Buttons

On the left-hand side of the screen, there are five screen option buttons: Connection Status, Configuration, Trend Analysis, Statistics, and About. Each of these screens provides unique capabilities.

The Configuration Screen

The Configuration screen enables you to update your Modem's software if your Service Provider directs you to do so. To access the Configuration screen, press the Configuration button.
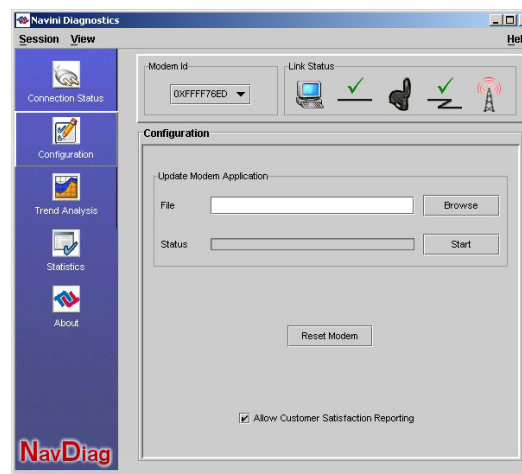
If you must update your Modem's software, your Service Provider will provide you with instructions regarding what to do.

The Configuration Screen, continued

At the bottom of the screen is an Allow Customer Satisfaction Reporting box. This box gives you control over whether your Service Provider is allowed to monitor your Modem's performance using the remote CPE Logging function and store the log files created by the CPE Logging function on your computer. By default, this box is checked which means the Service Provider can monitor your Modem.

The Trend Analysis Screen

The Trend Analysis screen lets you view how some Modem parameters evolve over time. With this screen, you can select up to three parameters to plot. To view the Trend Analysis screen, press the Trend Analysis button.
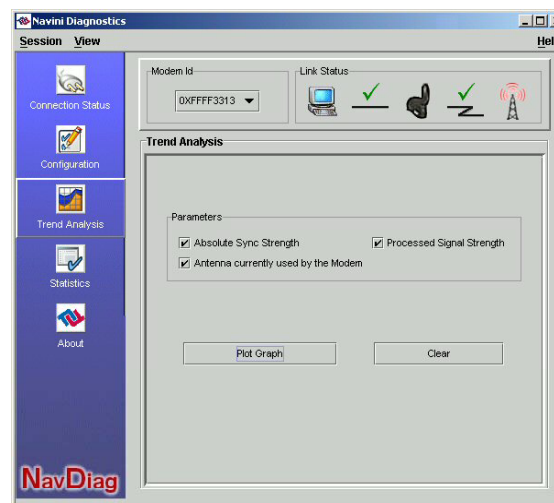
By pressing the Plot Graph button, the following screen appears. This screen displays the value of the selected parameters over the last five minutes and updates once every second. The graphic scrolls from right to left.
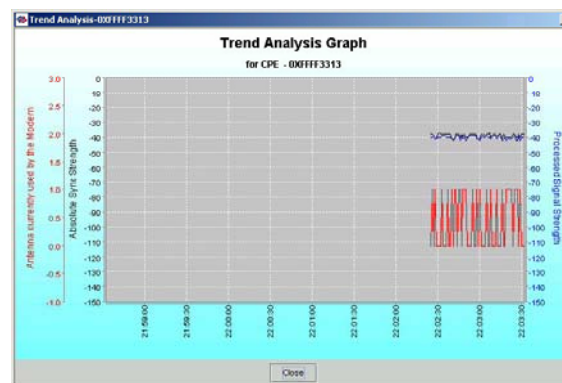
The Statistics Screen

The statistics screen lets you view the current value of selected parameters. These values are updated as they change over time. To view the Statistics screen, press the Statistics button.
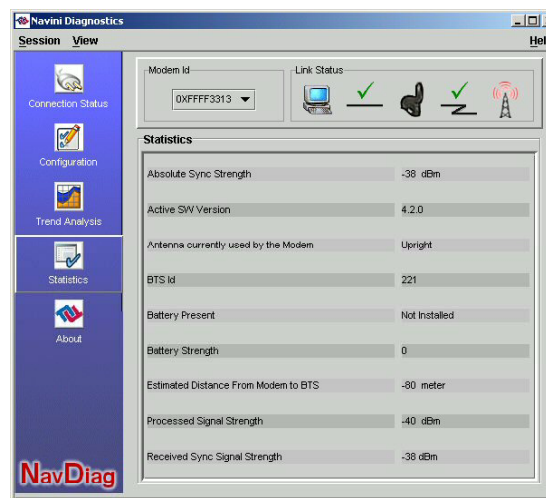
The About Screen

The About screen provides vital information such as the version of the Navini Diagnostics software currently installed on your computer. It also provides a website address and telephone number where you can contact your Service Provider. To view the About screen, press the About button.

The Help Button

A Help button appears on the top right corner of all the NavDiag windows. The Help button gives you two options. The first option, On NavDiag, provides help text on the functionality of the NavDiag program. The second option, About NavDiag, is equivalent to clicking on the About icon.

Uninstalling Navini Diagnostics (NavDiag)
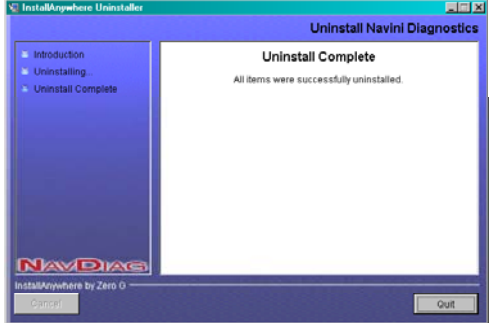
If for some reason you need to uninstall the Navini Diagnostics software, e.g., to upgrade your Operating System software, follow the procedure below.

Note: The screen shots shown in these instructions were taken from a laptop with Windows 2000. If you have a Windows 98, XP, or ME operating system, the screens you see may vary from the screens shown in the instructions.

Step	Action	Illustration
1.	On your computer screen lower left corner, click on **Start > Programs > NavDiag > Uninstall**.	Windows 2000 Screen
2.	The Install-Anywhere Uninstaller screen appears. Click **Uninstall**.	Windows 2000 Screen
3.	The screen indicates when the application files are uninstalled.	Windows 2000 Screen

Uninstalling NavDiag, continued

Step	Action	Illustration
4.	The Uninstall Complete screen appears when finished. Click on **Quit** to close the Uninstall screen.	Windows 2000 Screen
5.	Restart the PC to complete the uninstall process. This ensures the uninstall process completes successfully.	

Optional Battery Packs

Two optional external battery packs are available for your Modem. These battery packs are the Standard External Battery Pack (S-EBP) and the Heavy Duty-External Battery Pack (HD-EBP). Both batteries can be used with any of the LMX Modems.

The S-EBP provides 16 Watt-Hours of power while the HD-EBP provides 44 Watt-Hours of power.

How long the battery packs can operate before recharging varies. As the table below shows, this time is dependent of the type of usage you run on your Modem.

Usage	Approximate Hours of Usage Before Recharge Required	
	S-EBP	**HD-EBP**
Standard	Up to 2.5	Up to 8
Moderate	1.2	Approximately 4
Heavy	Up to 1	Up to 3

Connecting the S-EBP

The optional battery packs are not installed inside the Modem. Instead they are connected to the Modem. To connect the S-EBP to your Modem, plug the battery pack's pig-tail cord into the input socket located on the back of the Modem.

The Indicator Light on the S-EBP

The S-EBP has one indicator light that resides on top of the unit. This light has four states associated with it. The states are described below.

Battery LED	Battery Charger Connected	Modem Connected & Switched On	Modem On/Off Button is Lit	Comments
Green	Yes	Not applicable	Not applicable	Battery fully charged.
Amber	Yes	Not applicable	Not applicable	Battery charging.
Off	No	Yes	Yes	Normal. Battery is supplying power to Modem. No power is wasted on the battery LED.
Red	No	Yes	Yes	Battery is supplying power to Modem. Battery is low. 5% charge left.[1]
Off	No	Yes	No	Battery is out of power.
Off	No	No	No	Battery LED is off. Status of battery is unknown.

The Indicator Light on the S-EBP, continued

Note[1]: As with any battery, when the S-EBP is left unused for a long period of time, it tends to lose its charge. When this happens and when the charge drops to approximately 5% of the full charge level, the red LED comes on to indicate that the battery's charge level is low. After a limited duration, the internal circuitry will shut down both the LED and the battery to prevent the battery from going into a deep-discharge state. Recharging the battery will restore it to its normal healthy state.

Charging the S-EBP

The S-EBP needs to be recharged when the battery is connected to a Modem and the Modem is turned on but the LED on top of the battery remains off (indicating the battery has no power) or is red (indicating the battery level is low).

To recharge the S-EBP, use *only* the 12V charger that came with the S-EBP. Using any other charger can damage the battery. To charge the S-EBP, plug the 12V adapter into the 12V input socket on the S-EBP.

Note: The battery may charge while it is connected to a Modem.

Note: Do not attempt to plug the 12V adapter into the Modem as this can harm the Modem.

Connecting and Disconnecting the HD-EBP

If you have a HD-EBP, the battery pack is installed in the bottom of the Modem. To install and or remove the battery pack, follow the steps below.

Step	Action	Illustration
1.	Depress the front button on the battery so that the front prong moves in towards the center of the battery.	
2.	Place the back slot of the Modem over the back prong of the battery.	Front slot Back slot Front prong Back prong Front button
3.	Place the front part of the opening on the Modem over the front prong on the battery.	
4.	Release the button on the battery.	
5.	Press firmly down on the Modem so that the Modem firmly connects with the battery.	

Connecting and Disconnecting the HD-EBP, continued

Step	Action	Illustration
6.	Plug the battery pack's pig-tail cord into the power slot on the Modem.	
7.	To remove the battery pack from the Modem, unplug the pig-tail cord. Depress the front button on the battery pack. Lift the Modem off of the battery pack.	

The Indicator Light on the HD-EBP

The HD-EBP has one indicator light that resides on the back end of the unit near the pig-tail cord. This light has four states associated with it. The states are described in the following table.

Battery LED	Battery Charger Connected	Modem Connected & Switched On	Modem On/Off Button is Lit	Comments
Green	Yes	Not applicable	Not applicable	Battery fully charged.
Amber	Yes	Not applicable	Not applicable	Battery charging.
Off	No	Yes	Yes	Normal. Battery is supplying power to Modem. No power is wasted on the battery LED.
Red	No	Yes	Yes	Battery is supplying power to Modem. Battery is low. 5% charge left.[1]
Off	No	Yes	No	Battery is out of power.
Off	No	No	No	Battery LED is off. Status of battery is unknown.

Charging the HD-EBP

The HD-EBP needs to be recharged when the battery is connected to a Modem and the Modem is turned on but the LED on the back of the battery remains off (indicating the battery has no power) or is red (indicating the battery level is low).

To recharge the battery pack, use *only* the 12V charger that came with the HD-EBP. Using any other charger can damage the battery. To charge the HD-EBP, plug the 12V adapter into the 12V input socket on the HD-EBP. Plug the other end of the adapter into an electrical wall socket.
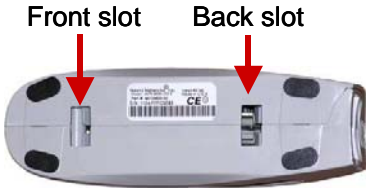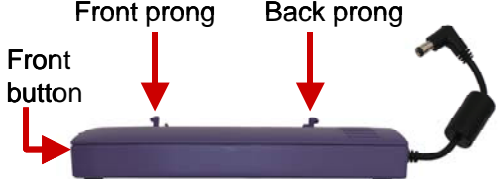

Pig-tail Cord

Plugs into Wall Socket

12V Input Socket
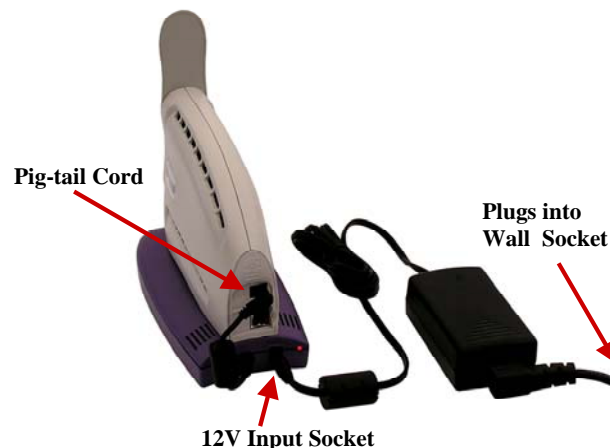
Note: Do not attempt to plug the 12V adapter into the Modem as this may harm the Modem.

Note: The battery may charge while it is connected to a Modem.

Care and Maintenance

Your Modem is designed to give you years of trouble-free service. To ensure operation, read the following care and maintenance instructions.

- Keep the Modem free of dust and moisture. If the Modem gets wet, use a towel to dry it immediately.

- Handle the Modem gently. Dropping it or mishandling it can cause damage to the plastic shell or the electronic circuitry.

- Keep the Modem away from high temperatures. Heat can cause damage to the plastic shell or the electronic circuitry.

Care & Maintenance,
continued

- Use only a mild detergent and a soft, damp cloth to clean the Modem. Do not use any chemicals or abrasives to clean the plastic shell.

- If there is a problem with the Modem, do not attempt to repair it yourself. Report the problem to your Service Provider.

- If you are going to upgrade your Operating System after loading the Navini monitoring software (Navini Diagnostics), you must first uninstall the monitoring software prior to upgrading the OS. Otherwise, the monitoring software will not work. See Uninstall instructions in this Guide.

- The Modem must be left powered ON whenever you shut down or restart any Windows 98 or ME platforms. If the Modem is off, a blue screen appears on the monitor. In the event this happens you will mostly likely have to power cycle the PC.

Upgrading the Modem

There are three different ways to upgrade the software that makes the Modem work.

- Your Service Provider may perform an over-the-air (OTA) upgrade, where the up-to-date software files are transferred wirelessly from the Base Station to your Modem.

- Your Service Provider may provide a downloadable web file or CD-ROM with software to be installed on your PC and used to upgrade the Modem. This method is used for systems that have a software release *prior* to 4.0.

- Your Service Provider may instruct you to use your Navini Diagnostics Tool to upgrade your Modem software load. This method is used for systems that have a software release of 4.0 or greater.

The latter two methods are used only if the Modem was not powered on during the OTA upgrade process. The OTA upgrade is normally transparent to the user; in other words, there should be no noticeable service interruption. The web or CD upgrade comes with instructions and takes a minimal amount of time to complete.

Note: If you use the Navini Diagnostics Tool to upgrade your Modem software load, the computer connected to your Modem

must already have an IP address. If your computer does not have an IP address, contact your Service Provider. If you attempt to upgrade your Modem software through the Navini Diagnostics Tool and the computer does not have an assigned IP address, you may see one of the following error messages:
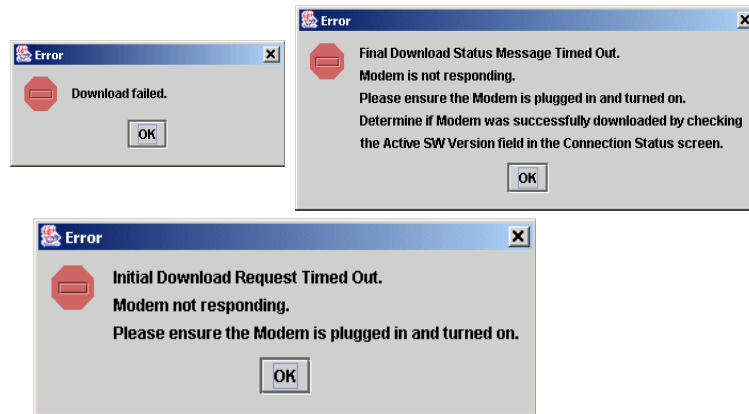
ADDENDUM 1: Ripwave™-MX Modem - PC Troubleshooting

- For Use With All Ripwave-MX LMX Modems and Navini Diagnostics Software -

PC Operating Systems
Prior to installing the Navini Diagnostics software, please check to insure that the PC Operating System meets the criteria given in the table below. If these criteria are not met, unpredictable problems may occur as a result of installation. It is recommended that the user have the latest Windows© updates installed prior to installing the Navini Diagnostics software.

Operating System	Ethernet interface	Notes
Win95	Supported	1, 2
Win98	Supported	2
Win98, 2nd ed.	Supported	2
WinME	Supported	2
Win 2000	Supported	2
Win NT 3.0/4.0	Supported	1, 2
Win XP	Supported	3

Note 1: Internet Explorer 3.0 or higher is required
Note 2: Requires Service Pack 1
Note 3: To load the Navini Diagnostics software, the user MUST have Administrative privileges.

Ethernet Interface
The Ethernet Modem may be connected to a PC via an Ethernet connection. Also, it is possible to connect multiple PC devices to a single Modem. The multi-PC configuration is transparent to the PC users and is analogous to a multi-PC configuration on a normal Ethernet LAN. Check with your Service Provider if multiple IP addressing is required for your particular configuration. The distinct advantage of the Ethernet Modem is that it connects to any device that has an Ethernet interface. This makes it ideal for small businesses that have a mix of devices, such as Unix machines, Apple Computers, etc. IP addresses can be assigned to the devices dynamically via a DHCP server, or as Fixed IP assignments, or Point-to-Point Protocol Over Ethernet (PPPoE).

Multiple Interface Environments
When a PC has an internal interface (for example, a Wireless Ethernet interface) in addition to the LMX Modem, you should do the following:

- If the wireless connection is not required, disable the internal wireless connection
- If the built-in wireless connection is required for local networking and wireline Ethernet is used via the LMX Modem for Internet connection, change the interface metric configuration so that the wireline interface's default gateway is used. (See your Operating System's User Guide.)

Routers

Neither the Navini LMX Monitor nor the Navini Diagnostics software will work if it goes through a router.

Configuration Options
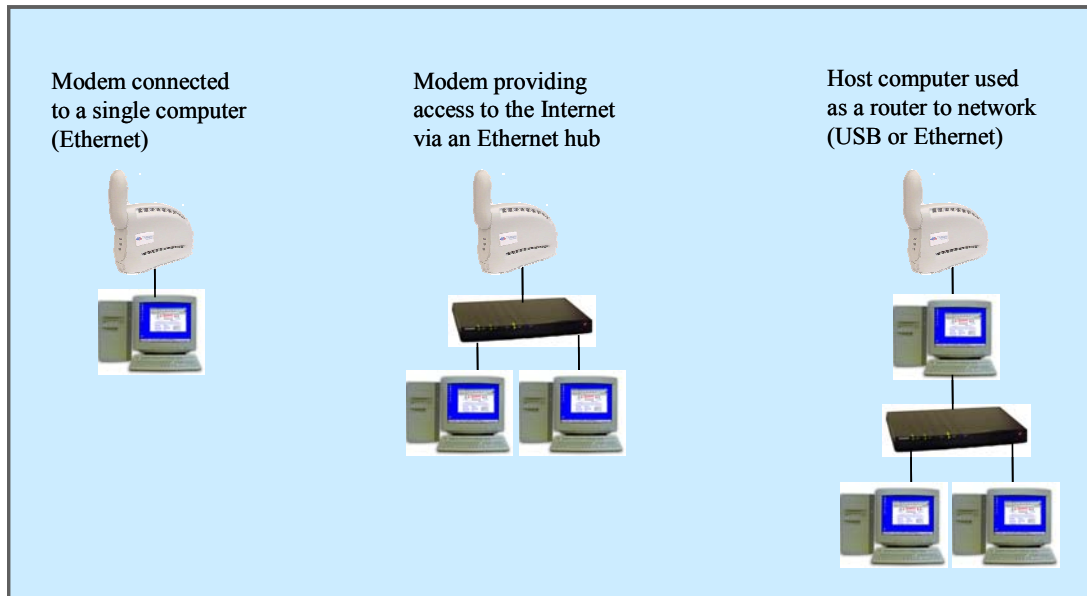
Results of Correct Navini Diagnostics Installation

Experienced PC users can check the results of the Navini Diagnostics installation by looking at the log file that is created during the installation process. The log file is named "Navini_Diagnostics_InstallLog.log." It is located under **c:\Program Files\Navini Diagnostics**.

Install Begin: Tue Jul 20 12:15:22 CDT 2004
Install End: Tue Jul 20 12:15:30 CDT 2004

Created with Zero G's InstallAnywhere 4.5.3 Enterprise Build 1394

Summary

Installation: Successful with warnings.

2 SUCCESSES
1 WARNINGS
0 NONFATAL ERRORS
0 FATAL ERRORS

Action Notes:

None.

Install Log Detail:

Check Disk Space: C:\Program Files\NavDiag
                    Status: SUCCESSFUL
                    Additional Notes: NOTE - Required Disk Space: 29,363,315; Free Disk Space: 30,806,179,840

Install Directory: C:\Program Files\NavDiag\
                    Status: SUCCESSFUL

Get Registry Entry: Key: HKEY_LOCAL_MACHINE\SOFTWARE\Navini Networks\NavDiag, ValueName:
InstallDirectory
                    Status: WARNING
                    Additional Notes: WARNING - Win32Exception

Make Registry Entry: Key: HKEY_LOCAL_MACHINE\SOFTWARE\Navini Networks, Value Name: , Value Data:
                    Status: SUCCESSFUL

Make Registry Entry: Key: HKEY_LOCAL_MACHINE\SOFTWARE\Navini Networks\NavDiag, Value Name: , Value
Data:
                    Status: SUCCESSFUL

Make Registry Entry: Key: HKEY_LOCAL_MACHINE\SOFTWARE\Navini Networks\NavDiag, Value Name:
InstallDirectory, Value Data: C:\Program Files\NavDiag
                    Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\Uninstall\
                    Status: SUCCESSFUL

Install Uninstaller: Navini Diagnostics (Install All Uninstaller Components)
                    Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\jre
                    Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Uninstall\Uninstall NavDiag.exe
                    Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Uninstall\Uninstall NavDiag.lax
                    Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\Uninstall\resource\
                    Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Uninstall\resource\iawin32.dll
                    Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Uninstall\resource\remove.exe
                    Status: SUCCESSFUL

Make Registry Entry: Key:
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\Navini Diagnostics, Value Name:
DisplayName, Value Data: Navini Diagnostics
            Status: SUCCESSFUL

Make Registry Entry: Key:
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\Navini Diagnostics, Value Name:
UninstallString, Value Data: "C:\Program Files\NavDiag\Uninstall\Uninstall NavDiag.exe"
            Status: SUCCESSFUL

Install Uninstaller: Navini Diagnostics (Install All Uninstaller Components)
            Status: SUCCESSFUL

Create LaunchAnywhere: Navini Diagnostics.exe (Install All LaunchAnywhere Java Executable Components)
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Navini Diagnostics.exe
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\Navini Diagnostics.lax
            Status: SUCCESSFUL

Create LaunchAnywhere: Navini Diagnostics.exe (Install All LaunchAnywhere Java Executable Components)
            Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\data\
            Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\data\images\
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\billboard.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\splash.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\buttonbar.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\about2.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\about1.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\about.gif
            Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\images\uninstall.gif
            Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\data\log\
            Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\data\lib\
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\lib\ctl.jar
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\lib\navDiag.jar
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\lib\jfreechart-0.9.13.jar
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\lib\jcommon-0.8.8.jar
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\data\lib\log4j.jar
                  Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\data\doc\
                  Status: SUCCESSFUL

Install Directory: C:\Program Files\NavDiag\config\
                  Status: SUCCESSFUL

Install File: C:\Program Files\NavDiag\config\NavDiag.lcf
                  Status: SUCCESSFUL

Install Directory: C:\Documents and Settings\luis\Start Menu\Programs\NavDiag\
                  Status: SUCCESSFUL

Create Shortcut: C:\Documents and Settings\luis\Start Menu\Programs\NavDiag\Navini Diagnostics.lnk
                  Status: SUCCESSFUL

Create Shortcut: C:\Documents and Settings\luis\Start Menu\Programs\NavDiag\Uninstall.lnk
                  Status: SUCCESSFUL

Install Directory: C:\Documents and Settings\luis\Desktop\
                  Status: SUCCESSFUL
                  Additional Notes: NOTE - Directory already existed

Create Shortcut: C:\Documents and Settings\luis\Desktop\Navini Diagnostics.lnk
                  Status: SUCCESSFUL

ADDENDUM 2: End User Software License Agreement
between
Navini Networks, Inc.
and
Buyer

ARTICLE 1
IMPORTANT MESSAGE

1.1   <u>Act of Assent.</u> Installing the Software indicates that you have read, understand and accept this License Agreement.

ARTICLE 2
LICENSES

2.1   <u>Grant of License</u>. The Software and related Documentation, are the intellectual property of Navini Networks, Inc. and are protected by law. Navini Networks, Inc. grants to Buyer a personal, nonexclusive, nontransferable worldwide license, for revocable use (as permitted herein) of the Software based on the terms and conditions of this License Agreement and the Master Supply Agreement to which it is attached. Buyer is permitted to install and use the Software on its server, but only in conjunction with the Navini Hardware. Buyer is not permitted to rent, sell or otherwise transfer the Software to any third parties.

2.2   <u>Ownership Rights</u>. Under this Agreement, Buyer does not acquire any rights of ownership in the Software and related Documentation and subsequent releases and versions licensed by Navini Networks, Inc. to Buyer pursuant to this License Agreement, whether in printed or machine-readable format. Buyer acquires only the right to use the Software and related Documentation subject to the terms and conditions of this Agreement. Buyer promises to keep the Software in confidence for the benefit of Navini Networks, Inc. and agrees to destroy or return the Software and all copies at such time as Buyer chooses to cease using the Software or upon termination or cancellation of this License Agreement for any reason.

2.3   <u>Backup Copies</u>. Buyer may copy the Software for safekeeping (archival) or backup purposes, provided that all such copies of the Software are subject to the provisions of this License Agreement, and also provided that each copy shall include in readable format any and all confidential, proprietary, and copyright notices or markings contained in the original.

2.4   <u>Assignment</u>. The rights granted in this License Agreement are restricted for use solely by Buyer and may not be assigned, transferred, or sublicensed, however Buyer may grant access to its server to End-Users. Each Buyer shall be authorized to make use of the Software in the form in which it is provided to Buyer solely for Buyer's own computer server location. Buyer represents that it will not use the Software for any purpose that is not expressly delineated in this Agreement. Further Buyer represents that it will comply with all export, re-export, and other laws in its use of the Software.

2.5   Suitability.
      a.   Buyer alone is responsible for determining which software best suits Buyer's needs, for installing and operating the Software, and for the results obtained. Accordingly, each Buyer should determine its needs, and evaluate the Software's capabilities before making a final decision about licensing the software.
      b.   Navini Networks, Inc. makes no representation that the Software conforms to or satisfies any federal, state, or local laws. Buyer is encouraged to engage professional assistance from attorneys and engineers to evaluate the suitability of the Software for Buyer's use.
      c.   Navini Networks, Inc. makes no claims that the Software is suitable for Buyer's intended purposes.

2.6   Remote Digital Access. Navini Networks, Inc. reserves the right, but is not obligated to digitally access the Software for the purposes of upgrading and maintaining the Software.

2.7   U.S. GOVERNMENT RESTRICTED RIGHTS. All Software provided to the U.S. Government pursuant to solicitations issued on or after December 1, 1995 is provided with the commercial license rights and restrictions described elsewhere herein. All Software provided to the U.S. Government pursuant to solicitations issued prior to December 1, 1995 is provided with "Restricted Rights" as provided for in FAR, 48 CFR 52.227-14 (June 1987) or DFAR, 48 CFR 252.227-7013 (Oct 1988), as applicable

ARTICLE 3
TRADE SECRETS

3.1   Trade Secret. Navini Networks, Inc. considers the licensed Software covered by this License Agreement to be a trade secret. Navini Networks, Inc. does not disclose any information to Navini Networks, Inc. competitors or potential competitors. Buyer shall not disclose any design, code, or technological know-how gained by access to the Software to Licensor's competitors. Buyer shall not use design, code, or documentation gained by access to the Software to develop a similar technology or a competing software product. To attempt to or to do so, the Parties acknowledge, understand and agree, constitute a material breach of this License Agreement.

3.2   Third Party Intellectual Property. Buyer acknowledges, understands and agrees that the licensed Software covered by this License Agreement may contain Intellectual Property owned by Third Parties and duly licensed to Navini Networks, Inc. Copyright, Patent and other laws protect Third Party Intellectual Property manufactured with, marketed with, or otherwise bundled with the licensed Software. Buyer promises to keep such Third Party Intellectual Property in confidence to the benefit of the Third Party, agrees not to reverse engineer or otherwise decompile Third Party Intellectual Property, and agrees to stop using, destroy and/or return such Third Party owned Intellectual Property under the same terms and conditions as the licensed Software as set forth in this License Agreement.

ARTICLE 4
INDEMNIFICATIONS AND WARRANTY

4.1   Intellectual Property Indemnification; Entire Liability. ARTICLE 15 OF THE SUPPLY
        AGREEMENT TO WHICH THIS AGREEMENT IS ATTACHED STATES THE ENTIRE
        LIABILITY OF NAVINI NETWORKS, INC. WITH RESPECT TO INFRINGEMENT OF
        COPYRIGHTS, TRADE SECRETS, TRADEMARKS, PATENTS, AND OTHER
        INTELLECTUAL PROPERTY RIGHTS BY THE LICENSED SOFTWARE,
        DOCUMENTATION, OR ANY PARTS THEREOF, AND NAVINI NETWORKS, INC.
        SHALL HAVE NO ADDITIONAL LIABILITY WITH RESPECT TO ANY ALLEGED OR
        PROVEN INFRINGEMENT.

4.2   Warranty. EXCEPT AS GRANTED IN THE BODY OF THE SUPPLY AGREEMENT TO
        WHICH THIS LICENSE AGREEMENT IS ATTACHED, THE LICENSED SOFTWARE IS
        PROVIDED BY NAVINI NETWORKS, INC. "AS IS" AND WITHOUT WARRANTY OF
        ANY KIND OR NATURE, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING
        (WITHOUT LIMITATION) THE IMPLIED WARRANTIES OF MERCHANTABILITY AND
        FITNESS FOR A PARTICULAR PURPOSE. THIS LIMITATION OF WARRANTIES WAS A
        MATERIAL FACTOR IN THE ESTABLISHMENT OF THE LICENSE FEE CHARGED FOR
        EACH SPECIFIC ITEM OF SOFTWARE LICENSED.

ARTICLE 5
LIMITATION OF LIABILITY

5.1   Consequential Damages. TO THE MAXIMUM EXTENT PERMITTED BY THE APPLICABLE
        LAW, IN NO EVENT SHALL NAVINI NETWORKS, INC. OR ANY THIRD PARTY
        INVOLVED IN THE CREATION, PRODUCTION, DELIVERY, OR LICENSING OF THE
        SOFTWARE BE LIABLE FOR ANY LOST REVENUES, PROFITS OR DATA OR OTHER
        SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES,
        HOWEVER CAUSED AND REGARDLESS OF THEORY OF LIABILITY, EVEN IF NAVINI
        NETWORKS, INC. HAS, OR SHOULD HAVE HAD ANY KNOWLEDGE, ACTUAL OR
        CONSTRUCTIVE, OF THE POSSIBILITY OF SUCH DAMAGES.

5.2   License-Fee Limitation. Except for the indemnification provisions of Article 15, Navini
        Networks, Inc.'s maximum liability for damages is limited to the license fees paid by Buyer under
        this Agreement for the particular licensed Software that caused the damages.

5.3   Loss of Data. Software error can cause a significant loss of data. Navini Networks, Inc. shall not
        be responsible for any loss of data. Navini Networks, Inc.'s responsibility is to correct the
        Software error as provided in this License Agreement or the Supply Agreement to which it is
        attached.   It is Licensee's responsibility to have adequate backup procedures to protect Buyer
        from significant loss of valid data.

ARTICLE 6
OBJECT CODE ONLY-NO MODIFICATIONS

6.1   Modifications. In order to maintain the "trade secret" status of the information contained in the Licensed Software, Navini Networks, Inc. provides the Software in object-code form only. Buyer shall not modify, enhance, adapt, disassemble, translate, decompile or otherwise decode any portion of the object code of the Software module. Buyer shall not use the Software without a license to the Software object code. The object code contains the license number, date of license, and other license information. This information is placed in the object-code portions to prevent unauthorized and unlicensed distributions of the Software. Buyer shall not subvert or change any of this information. Further Buyer shall not make, full or partial, copies of any documentation whether printed or machine- readable media supplied with the Licensed Software unless expressly granted prior written permission by Navini Networks, Inc.

6.2   Responsibility for Damages. Buyer is subject to the provisions of the Supply Agreement with respect to the Software (including Section 16). Buyer is fully liable and responsible for any damages, indirect or direct, and costs that Navini Networks, Inc. may incur if Buyer appoints a subcontractor who accesses the Software without Navini's prior written consent. Buyer shall defend, indemnify, and hold Navini Networks, Inc., its directors, officers, employees, agents, Authorized Partners, and other representatives harmless accordingly for all costs and direct and indirect damages sustained by Navini Networks, Inc. However, if the subcontractor is pre-approved by Navini in writing for access to the Software, then this Section shall not apply.

6.3   Copyright Notices. Buyer shall not remove any copyright or proprietary rights notice or identification that indicates Navini Networks, Inc. ownership from any part of the licensed Software, it being expressly understood and agreed that the existence of such copyright notice should not be construed as an admission or presumption that publication of the licensed Software has occurred.

END OF AGREEMENT