



MINSTREL 540™

User Guide



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Welcome

Welcome to the **Minstrel 540 User Guide**. This guide provides information on the many components and features of your Minstrel 540 Wireless IP modem, including the following:

- A general overview of the Minstrel 540 modem and software
- Instructions to help get you started with your Minstrel 540 so you can download web pages and send and receive email almost immediately
- Detailed information about working with your Minstrel 540

Caution

To satisfy FCC RF exposure compliance requirements for portable transmitting devices, the user should generally maintain a separation distance of 4 cm between the person's body, and the device and its antenna. The hands and wrists have a higher exposure limit because they are extremities, and the device should be used in a hand-held, hand-operated configuration only.

This device has been tested for compliance with a separation distance of 4 cm from a person's body. The operating configurations of this device generally do not support normal transmissions while it is carried in pockets or holsters next to a person's body.

Technical Support

If you have any questions or comments about your Minstrel 540, please contact the Novatel Wireless Technical Support team.

WWW: www.novatelwireless.com/support/index.html

Email: support@novatelwireless.com

Phone: 1-888-888-9231

Fax: 1-888-812-2888



Getting Started



Requirements

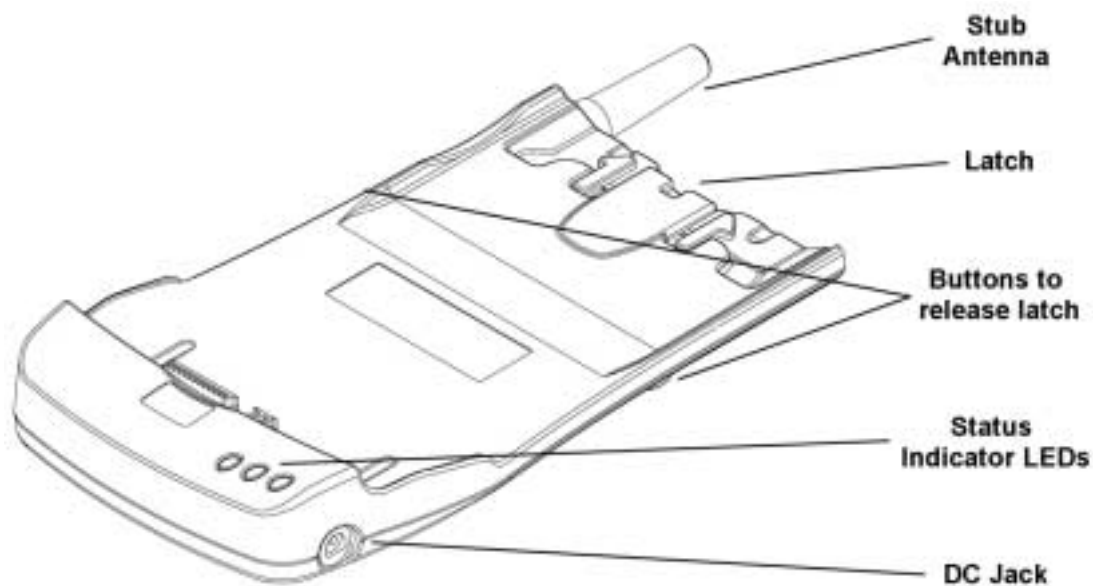
The following is required to set up and use your Minstrel 540 for sending and receiving data across the Internet:

- An HP Jornada 540-series Pocket PC
- *Microsoft® ActiveSync®* software to allow you to communicate between your desktop PC and the Jornada
- Modem application software for the Jornada (included with your Minstrel)
- An account with a Wireless IP service provider in your area
- Application software for your Jornada such as an email client and web browser

Wireless IP service is available from your local cellular carrier in most North American cities. Check your product packaging or www.novatelwireless.com for service provider contact information.

Overview of the Minstrel 540 Modem

The Minstrel 540 Wireless IP modem has many important features, including three status indicator LEDs, a latch for attaching the unit to the Jornada, and a DC jack for powering the unit and charging the battery using the supplied AC adapter.



Information on the LEDs is provided in the section following. For more information on the latch and the DC jack, refer to sections ***Attaching the Minstrel to the Jornada*** and ***Charging the Battery***, respectively.

Status Indicator LEDs

The Minstrel 540 has three LED indicators that allow you to easily determine the status of various modem parameters.

Service LED

The LED labeled with the icon below indicates the status of the connection to the Wireless IP network.



The table below explains the various states of this LED.

<i>Color</i>	<i>State</i>	<i>Meaning</i>
Green	Solid	The Minstrel is registered to the Wireless IP network and, therefore, data can be sent and received across the Internet.
Green	Solid but flashes off every 5 seconds	The Minstrel is registered to the network but is in <i>sleep mode</i> .
Green	Flashing quickly	The Minstrel is attempting to register to the network.
Green	Flashing slowly	The Minstrel is attempting to locate a service provider.

Data/Message Waiting LED

The LED labeled with the icon shown below is used to indicate the transfer of data and provide notification of waiting messages.



The table below shows the various states of this LED and their meanings.

<i>Color</i>	<i>State</i>	<i>Meaning</i>
Green	Flashing	The Minstrel is sending or receiving data.
Red	Flashing	The Minstrel has received a <i>push message</i> notification. Push messaging must be enabled for this to occur. For more information on push messaging, refer to the <i>Minstrel 540 Help</i> file included with the software.

Battery LED

The LED labeled with the icon below indicates the state of the Minstrel's internal battery.



The table below describes the various states of this LED.

<i>Color</i>	<i>State</i>	<i>Meaning</i>
Green	Flashing	The Minstrel's battery is being charged. The Minstrel is being powered by the AC adapter.
Green	Solid	The Minstrel's battery is fully charged and the AC adapter is still plugged in and, therefore, powering the unit.
Red	Flashing	The Minstrel's battery is low and requires charging.

For more information on charging the battery, refer to the section entitled ***Charging the Battery***.



Overview of the Minstrel 540 Software

In order for you to configure and operate your wireless modem, the software described below is provided on the CD-ROM included with your Minstrel 540. This software can be installed on your Jornada following the instructions provided in the section ***Installing the Software***.

Configuration Wizard

The *Configuration Wizard* utility is designed to guide you step-by-step through the setup of your Minstrel 540. Once you have a Wireless IP account established with a service provider, you can use the *Configuration Wizard* to enter and save the settings required for operation. For more information about this program and the configuration process, refer to the ***Minstrel 540 Help*** file.

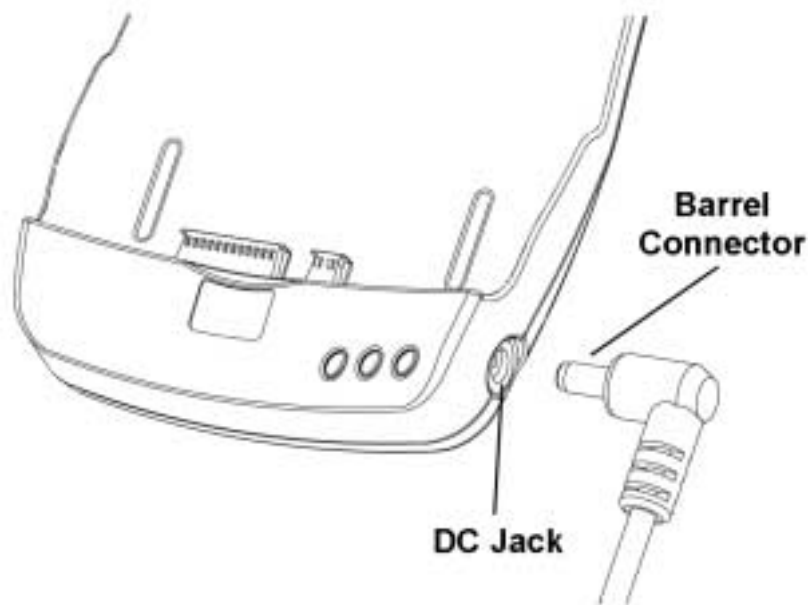
Modem Manager

The *Modem Manager* software provides you with complete status information about the Minstrel 540 and control over its connection to the Wireless IP network. It also contains screens for more advanced users to configure their modem without the use of *Configuration Wizard*. For more information about this program and its many features, refer to the ***Minstrel 540 Help*** file.

Charging the Battery

The Minstrel 540 contains a rechargeable Lithium-ion battery. This battery is shipped only partially charged, so it is necessary to charge the battery to its full capacity before using the unit.

To charge the battery, plug the supplied AC adapter into an outlet and insert the barrel connector at the end of the adapter cord into the DC jack. The DC jack is found at the bottom of the right side of the Minstrel.



It will take approximately 3 hours to charge the battery from a zero charge state. With sleep mode enabled, the battery will provide power to the unit for a full day of web browsing under normal conditions. When the battery LED starts flashing red, the battery requires charging again. If the battery charge goes lower than a pre-set threshold, the modem will automatically disconnect from the network and power off in order to preserve the settings in its internal memory.

NOTE: Only Novatel Wireless-approved AC adapters should be used for charging the battery. Other third-party AC adapters may cause damage to the Minstrel or the Jornada and will void the warranty.

Charging the HP Jornada

When the Minstrel is attached to the Jornada, the supplied AC adapter will also provide power to charge the Jornada's internal battery when plugged in. When the modem is actively transmitting data, charging of the Jornada may be temporarily disabled for short periods of time to conserve power. However, charging will be re-enabled immediately once the data has been transmitted. When the Minstrel is being charged by the AC adapter and the Jornada is not attached, no power will be applied to the external connectors.



Installing the Software

To install the application software required to configure and use your Minstrel 540, first establish a connection between the Jornada and your desktop computer using the cradle or sync cable and the *Microsoft® ActiveSync®* software included with the Jornada. For information on how to connect your Jornada to your desktop computer, refer to the documentation provided with your Jornada.

Once a connection has been made, insert the Minstrel 540 Software CD into the CD-ROM drive of your desktop computer. The installation program will automatically launch, displaying the following screen.

<INSERT SPLASH SCREEN>

If the installation program does not launch automatically, view the contents of your CD-ROM drive in *Windows® Explorer* and double-click on the **autorun??** executable.

Once the installation program initializes, select **Install ...??** from the menu provided.

<INSERT FIRST SCREEN WITH INSTALL... SELECTED>

Next, select **Minstrel CDPD Modem??**.

<INSERT SECOND SCREEN WITH MINSTREL CDPD MODEM SELECTED>

Select **Pocket PC??** from the **Minstrel CDPD Modem Software Installation??** window.

<INSERT MINSTREL INSTALLATION WINDOW WITH POCKET PC SELECTED>

The ... will launch.

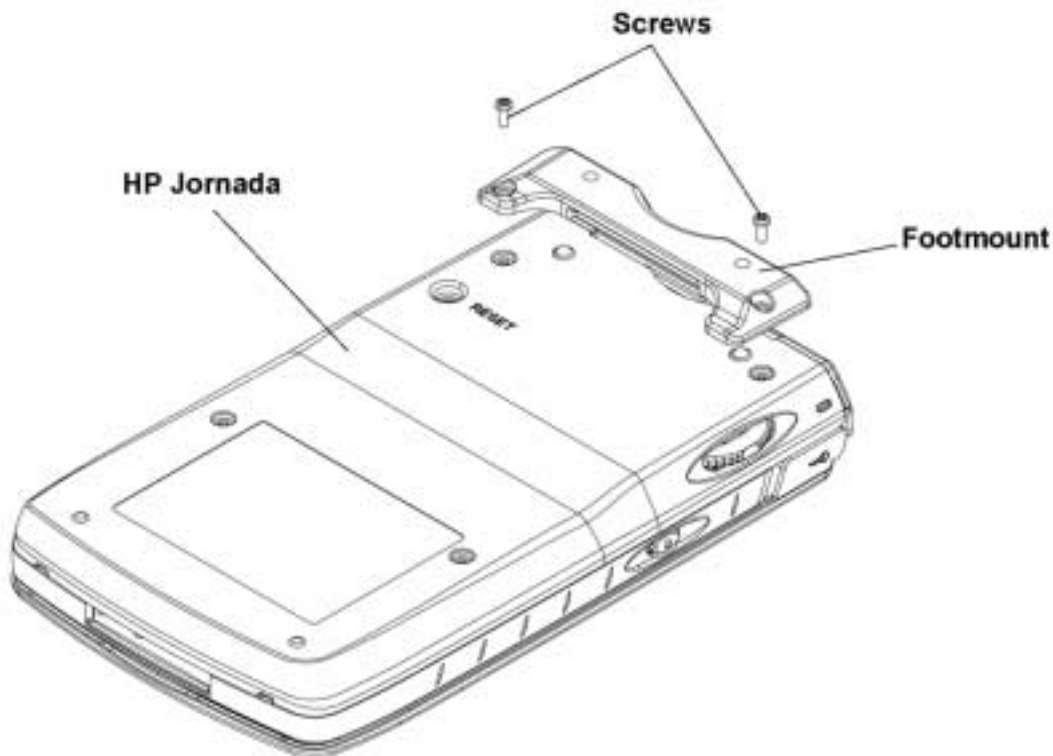
Attaching the Minstrel to the Jornada

The Minstrel 540 attaches to the HP Jornada to create a single, integrated unit using a system consisting of a footmount and a latch mechanism. The footmount is installed on the Jornada and the Minstrel latches to this footmount to secure the unit in place. In order to configure and use your wireless modem, attach the Minstrel to the Jornada as described below.

Installing the Footmount

To install the footmount, remove the top two screws on the back of the Jornada using the screwdriver included in the Footmount Installation Kit. Next, place the footmount flat against the back of the Jornada, with the hollow side facing down. Ensure that the holes in the footmount are aligned with the newly opened screw holes on the Jornada. Insert the screws provided in the installation kit through the holes in the footmount and into the holes on the Jornada. Tighten the screws with the included screwdriver to secure the footmount in place.

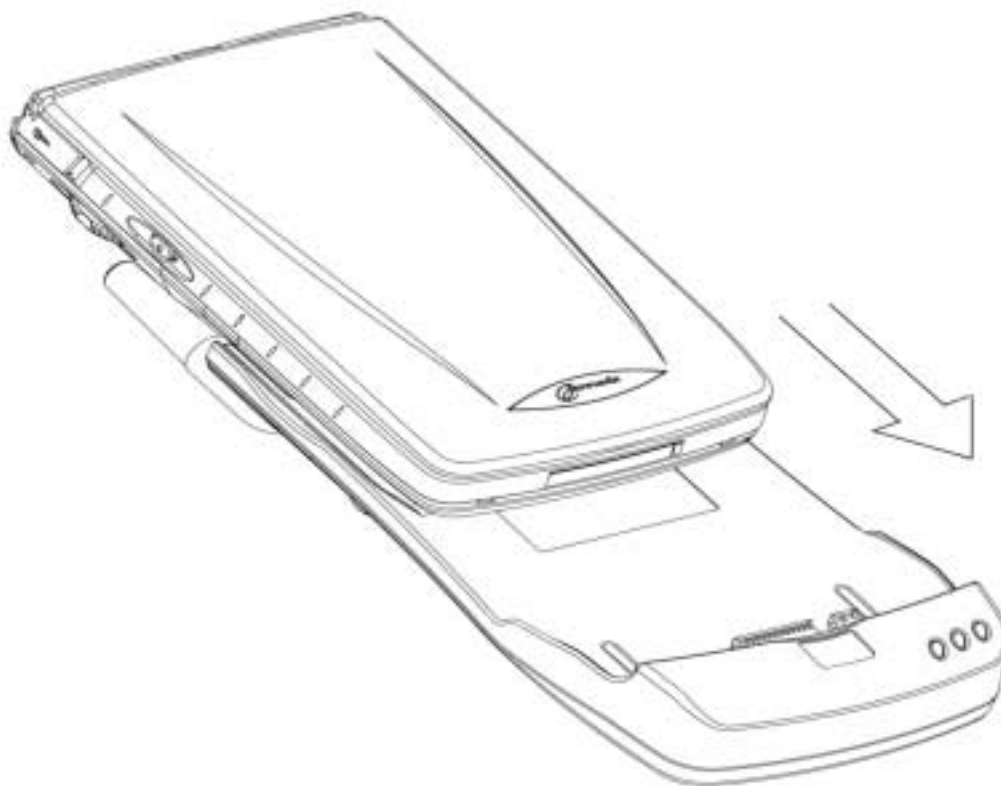
NOTE: The screws provided in the installation kit must be used for installing the footmount. The screws removed from the Jornada unit cannot be used. However, be sure to keep the original Jornada screws in a safe place as they must be used in the Jornada if the footmount is removed.



The steps provided on the previous page will only need to be completed once, as the footmount is designed to stay permanently attached to the Jornada. Once the footmount is installed, the Jornada can be inserted into and removed from the Minstrel quite easily.

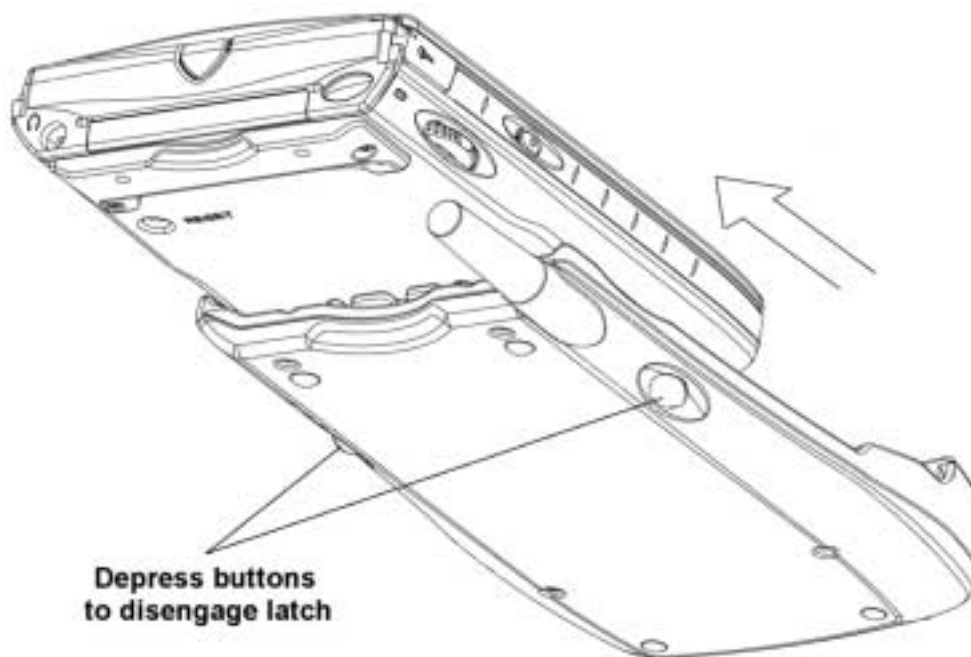
Inserting the Jornada

To insert the Jornada into the wireless modem cradle, position the devices so that the back of the Jornada lies flat against the front of the Minstrel. Ensure the two connectors of the Minstrel are aligned with the connector slots on the bottom edge of the Jornada. Then, slide the Jornada downwards until the latching mechanism “clicks” into place.



Removing the Jornada

To remove the Jornada from the wireless modem, depress the two buttons on the sides of the Minstrel and slide the Jornada in an upwards direction.



The footmount is designed to stay permanently attached to the Jornada unit. There is no need to remove the footmount when the Jornada is not inserted into the Minstrel.

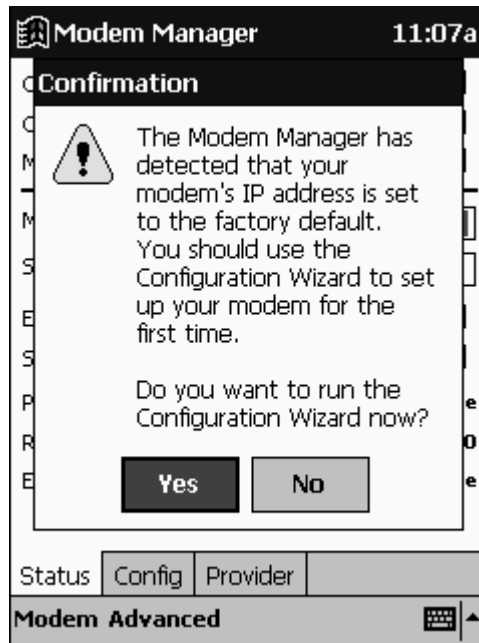
Configuring the Minstrel

In order to connect to the Internet, the Minstrel 540 must first be configured with the necessary parameters to be able to register to the Wireless IP network. The *Configuration Wizard* utility guides you through this configuration.

To configure the Minstrel, first connect the Minstrel to the Jornada as explained in **Attaching the Minstrel to the Jornada**. Then, start the *Configuration Wizard* utility. To start the Configuration Wizard, select **Programs** from the **Start** menu and then tap the **Modem Manager** icon.



Once *Modem Manager* starts, a window will appear stating that the modem requires configuration and asking if you wish to run *Configuration Wizard*. Tap **Yes**.



NOTE: If your modem has been configured previously, this prompt will not appear. Select **Configuration Wizard** from the **Modem** menu to start the *Configuration Wizard* utility in this case.

The *Configuration Wizard* will launch, displaying the *Welcome* screen. To configure the modem, complete the steps provided on each of the screens that follow, tapping the **Next >** and **< Back** buttons to move between screens.



Once the modem has been configured successfully, the *Successful!* screen will appear. Tap **Finish** to close the *Configuration Wizard* and return to the *Modem Manager*.





For more information on *Configuration Wizard* and the configuration process, refer to the ***Minstrel 540 Help*** file included with the *Configuration Wizard* software on your HP Jornada. The section entitled ***Using the Minstrel 540 Help*** contains information on how to access this file.

Connecting to the Internet

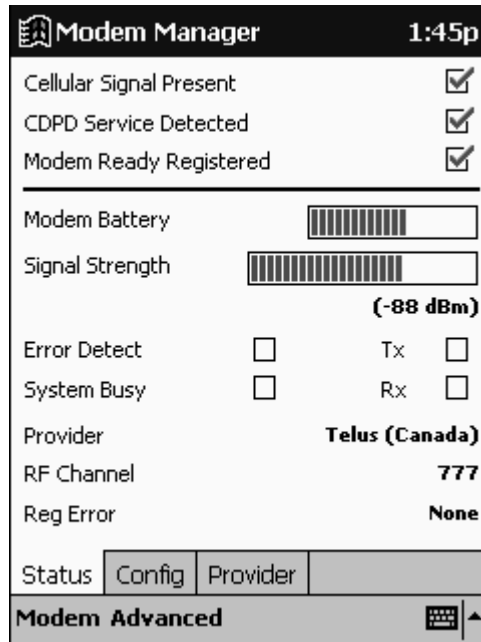
In order to send and receive data across the Internet, the Minstrel register to the Wireless IP network. To connect to the network once configuration has been completed, start the *Modem Manager* program. When *Modem Manager* launches, the modem will automatically attempt to register.

To start *Modem Manager*, select **Programs** from the **Start** menu and then tap the **Modem Manager** icon.





The *Modem Manager* will launch, displaying status information about the Minstrel and its connection to the Wireless IP network in the *Status* tab. When all three check boxes at the top of the *Status* tab are checked, the modem is registered and ready to send and receive data.



You can now start any third-party applications you have installed to send and receive email and download web pages. For more information on using the software provided with the Jornada for this purpose, refer to the section entitled ***Using the HP Jornada Software***.

For information on the *Modem Manager* software, refer to the ***Minstrel 540 Help*** file included with the *Modem Manager* software. The section ***Using the Minstrel 540 Help*** provides information on accessing this file.

Working with the Minstrel 540

Managing the Network Connection

In order to send and receive data across the Internet, the modem must be connected, or registered, to the Wireless IP network. The *Modem Manager* software allows you to control this connection in the following ways:

- establishing the network connection
- disconnecting from the network
- closing the PPP session

Connecting to the Network

To establish a connection to the Wireless IP network, start the *Modem Manager* program. When *Modem Manager* launches, the modem will automatically attempt to register to the Wireless IP network. Select **Programs** from the **Start** menu and then tap the **Modem Manager** icon to start *Modem Manager*.





The *Modem Manager* will launch, displaying status information about the Minstrel and its connection to the Wireless IP network in the *Status* tab. When all three check boxes at the top of the *Status* tab are checked, the modem is registered and ready to send and receive data.

Modem Manager 1:45p

Cellular Signal Present	☒
CDPD Service Detected	☒
Modem Ready Registered	☒

Modem Battery

Signal Strength (-88 dBm)

Error Detect ☐ Tx ☐

System Busy ☐ Rx ☐

Provider **Telus (Canada)**

RF Channel **777**

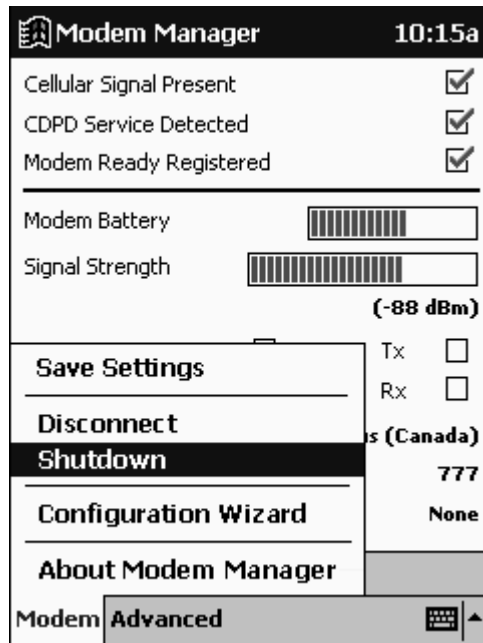
Reg Error **None**

Status | Config | Provider

Modem Advanced

Disconnecting from the Network

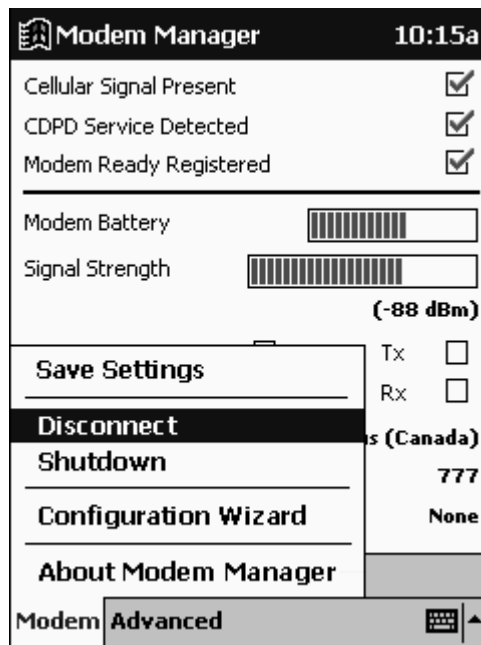
To disconnect, or de-register, from the Wireless IP network and power off the modem, select **Shut-down** from the **Modem** menu of the *Modem Manager* software.



The *Modem Manager* software will exit as the modem de-registers.

Closing the PPP Session

To close the active PPP session but remain registered to the Wireless IP network, tap the **Menu** icon and select **Disconnect** from the **Minstrel** menu.



The *Modem Manager* software will exit as soon the PPP session closes.

Closing the PPP session means that the modem cannot send and receive data across the Internet. However, because the modem is registered, it can still communicate with the Wireless IP network, including receiving push message notifications.

NOTE: If *Auto Power-Off* is enabled, tapping **Disconnect** will close the active PPP session causing the modem to de-register from the Wireless IP network and power off. If *Auto Power-Off* is disabled, tapping **Disconnect** will close the PPP session but the modem will remain registered to the Wireless IP network. For more information on the *Auto Power-Off* and *Push Messages* features, refer to the **Minstrel 540 Help** file included with the *Modem Manager* software.

Using the Minstrel 540 Help

For easy reference, the *Minstrel 540 Help* file is included with the *Modem Manager* software.



This Help file provides general information about the Minstrel 540, as well as detailed information about the *Modem Manager* and *Configuration Wizard* applications, including the following:

- Detailed descriptions of the various parameters displayed by the software
- Instructions on entering values for the various network settings required by the modem during configuration
- Information about the function of menu bars and buttons

Accessing the Help File

To access the *Minstrel 540 Help*, select **Help** from the **Start** menu.

If the *Modem Manager* or *Configuration Wizard* applications are active, the Help system will automatically open to the section specific to the screen you are working with at the time. Otherwise, select **All Installed Help** from the **View** menu once the Help system is active. Then, select **Minstrel 540 by Novatel Wireless** from the list displayed.

Working with the Help File

At the bottom of each page, navigation icons are included to help you move through the topics easily.



To advance to the next topic, tap the right-facing arrow. Tap the left-facing arrow to move to the previous topic and tap the home icon to display the main contents of the *Minstrel 540 Help*.

Using the HP Jornada Software

The HP Jornada comes with a variety of applications that can be used with the Minstrel 540. Due to the fact these applications are constantly being upgraded, please download the most recent version of any third-party software from the software vendors' web sites. Having the most recent version will ensure that the applications work effectively with the Minstrel.

Microsoft® Pocket Internet Explorer

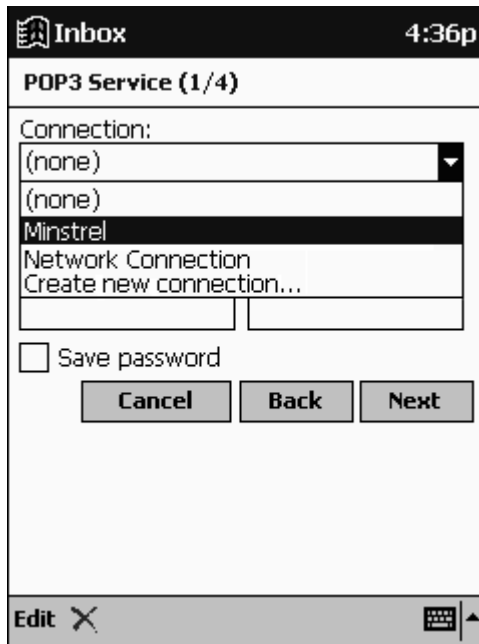
To use *Microsoft® Pocket Internet Explorer* to download web pages, you must first set up the application to use the Minstrel 540 for the remote connection. To do this, select **Internet Explorer** from the **Start** menu. Then, select **Options...** from the **Tools** menu. Tap on the **Connections** tab and select **Minstrel** from the **Type:** drop-down list.



The **Minstrel** connection is automatically created the first time you start the *Modem Manager* software and it contains the settings required for communication between your Jornada and various networks using the Minstrel 540. Once it is selected, tap **OK** to close the window. You can now use *Microsoft® Pocket Internet Explorer* with your configured Minstrel.

Microsoft® Pocket Outlook

To use the *Inbox* portion of Microsoft® *Pocket Outlook* for sending and receiving email with your wireless modem, you must first set up the application to use the Minstrel 540 for the remote connection to your mail server. To do this, select **Minstrel** from the **Connection:** drop-down list on page **(1/4)** when setting up the new service.



Inbox 4:36p

POP3 Service (1/4)

Connection:

(none)

(none)

Minstrel

Network Connection

Create new connection...

☐ Save password

Cancel Back Next

Edit X

For information on setting up new services, consult the Help file included with the *Inbox* program or the documentation provided with the HP Jornada.

Glossary

Glossary A-Pp

auto power-off

Auto power-off is a feature of the Minstrel 540 that, when enabled, will cause the modem to de-register and power off whenever the active PPP session is closed.

CDPD

CDPD, or Cellular Digital Packet Data, is a Wireless IP technology developed for use on cellular phone frequencies. CDPD uses unused cellular channels to transmit data in packets. To send and receive data across the Internet, the Minstrel 540 must first register to the CDPD network.

channel

The range of Wireless IP frequencies used to transmit and receive data is broken up into channels, which act as individual paths for communication. Each of these channels is assigned a number.

de-registration

De-registration involves disconnecting and closing the communication path being used on the CDPD network. When the modem is de-registered, it can no longer send or receive data across the network.

Equipment Identifier (EID)

Every Wireless IP modem manufactured has a unique serial number associated with it, which is referred to as the Equipment Identifier or EID. Each EID consists of six sets of two hexadecimal numbers that are often separated by a period ("."), as in the sample EID **00.60.D6.04.BC.FE**.

IP address

As with personal computers that access the Internet, modems using CDPD technology also have a static Internet Protocol (IP) address, which is used to identify the node or access point for the modem on the Internet. The service provider assigns this IP address.

ping

PING stands for Packet Internet Groper and is a utility used to determine if a specific IP address is accessible. It works by sending a packet of data to the IP address in question and waiting for a reply.

PPP session

PPP, or Point-to-Point Protocol, is a method of connecting a device to the Internet. In order for the Minstrel to send and receive information across the Internet, a PPP session must first be established. A session is automatically opened when the modem registers to the network.



Glossary Pr-Si

primary DNS address

As with personal computers that access the Internet, modems using CDPD technology must also have access to a Domain Name Server (DNS). The DNS translates Universal Resource Locators (URLs) such as World Wide Web addresses or domain names into IP addresses and is shared by multiple devices. In order to get the translated IP addresses, the modem will try to connect to the primary DNS. If the modem cannot connect to this address, it will try to connect to the secondary DNS.

push messaging

Push messaging is a technology that allows you to receive notification of a waiting message through the Wireless IP network without having a PPP session open. Auto power-off mode must be disabled for this feature to work.

registration

In order to send and receive data across the Internet, a CDPD modem must first register to the CDPD network. This involves selection of an appropriate channel to use and interaction with various systems in the CDPD network to set up a path for communication.

scanning

The Minstrel 540 will look for the best cellular channel to use for data transmission by scanning through the channels. This involves measuring the signal strength of various channels to determine which is the strongest and, therefore, most reliable.

secondary DNS address

As with personal computers that access the Internet, modems using CDPD technology must also have access to a Domain Name Server (DNS). The DNS translates Universal Resource Locators (URLs) such as World Wide Web addresses or domain names into IP addresses and is shared by multiple devices. If the modem cannot connect to the primary DNS, it will try to connect to the secondary DNS.

service provider

The Minstrel 540 modem works with the Wireless IP network. To access the Internet using this network, an account with a service provider must be set up. For information on availability and rates, contact a service provider in the area.

side

Each Wireless IP service area is divided into two sides, which are labeled **A** and **B**. A single carrier or service provider is assigned to each side. However, the side associated with a selected service provider may change with the service area.



Glossary SI-Z

sleep mode

The Minstrel 540 can be configured to automatically enter sleep mode when the modem is not actively transmitting or receiving data. In this mode, the modem will consume very little power, thus extending the host device's battery life.

SPI

The SPI is an identifier for a Wireless IP service provider and is called the *Service Provider Identifier*. This number is used globally for each specific service provider.

SPNI

The SPNI is the *Service Provider Network Identifier*, which is used to identify a specific network region or domain for a Wireless IP service provider.

WASI

The WASI, or Wide Area Service Identifier, is a unique identifier for a group of service providers that have agreed to provide service over a large geographic area comprising of many SPNIs.

Wireless IP

Wireless IP is a group of wireless protocols used to access the Internet. CDPD, which is used by the Minstrel 540, is one of these protocols.