

Intel[®] PRO/Wireless 2011 LAN Utilities

Users Guide

July 2000

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Patents

This product is covered by one or more of the following U.S. and foreign Patents:

U.S. Patent No.

4,387,297; 4,460,120; 4,496,831; 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461; 5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163; 5,280,164; 5,280,498; 5,304,786; 5,304,788; 5,306,900; 5,321,246; 5,324,924; 5,337,361; 5,367,151; 5,373,148; 5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812; 5,420,411; 5,436,440; 5,444,231; 5,449,891; 5,449,893; 5,468,949; 5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621; 5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803; 5,675,139; 5,693,929; 5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731; 5,808,287; 5,811,785; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,850,078; 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478; 5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659; 5,946,194; 5,959,285; 6,002,918; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581; D414,171; D414,172; D419,548

Invention No. 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875; 1,955,269 (Japan); European Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832; France 81/03938; Italy 1,138,713

A28553-01

Revision A

About This Document

Reference Documents

This reference guide refers to the following documents:

Part Number	Document Title
A28551-01	Intel® PRO/Wireless 2011 Access Point Product Reference Guide
A28555-01	Intel® PRO/Wireless 2011 LAN PC Card Product Reference Guide

Conventions

Keystrokes are indicated as follows:

ENTER	identifies a key.
FUNC, CTRL, C	identifies a key sequence. Press and release each key in turn.
Press A+B	press the indicated keys simultaneously.
Hold A+B	press and hold the indicated keys while performing or waiting for another function. Used in combination with another keystroke.

Typeface conventions used include.

<angles>	indicates mandatory parameters in a given syntax.
[brackets]	for command line, indicates available parameters; in configuration files brackets act as separators for options.
GUI Screen text	indicates the name of a control in a GUI-based application.
<i>Italics</i>	indicates the first time a term is used, a book title, variables, and menu titles.
'single quotes'	indicates the exact setting for a parameter.
Screen	indicates monitor screen dialog. Also indicates user input. A screen is the hardware device on which data appears. A display is data arranged on a screen.
Terminal	indicates text shown on a radio terminal screen.
URL	indicates Uniform Resource Locator.

This document uses the following for certain conditions or types of information:



Indicates tips or special requirements.



Indicates conditions that can cause equipment damage or data loss.



Indicates a potentially dangerous condition or procedure that only a trained personnel should attempt to correct or perform.

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Chapter 1 **Installing the Intel[®] PRO/Wireless 2011 LAN Utilities**

The Intel Wireless LAN Utilities support adapters operating in an Intel[®] PRO/Wireless 2011 LAN. Install the Wireless LAN Utilities (WLAN Monitor, WLAN Info, WLAN Update, AP Discovery and WLAN Places) from the installation CDROM as a bundled tool suite.



The Intel[®] PRO/Wireless 2011 LAN Utilities support Windows 95, 98, NT 4.0. and Windows 2000.

Use the WLAN Monitor utility for adapter signal quality and power management status. WLAN Monitor automatically starts on the system task tray each time the system is booted.

Use the WLAN Info utility to obtain detailed adapter diagnostic and statistical information without rebooting.

Use the WLAN Update utility for upgrading the firmware in the WLAN adapter.

Use the *Access Point Discovery* (AP Discovery) utility to view the properties of neighboring access points within the network.

Use the *My Wireless LAN Places* (My WLAN Places) utility to create a profile of WLAN adapter network address and device information that can be downloaded by system administrators to selected WLAN adapters.

To install the Intel® PRO/Wireless 2011 LAN Utilities from a CDROM:

1. Insert the installation CDROM in the computer CD drive.
2. Click **Start** and select **Run**.
3. Enter `x:\pluspack\setup.exe`
Where `x` represents the letter assigned to the CD drive.
4. Click **OK**.
5. Complete the installation by following the instructions displayed by the Windows operating system.
6. Restart the computer when prompted by the Windows operating system.
If the PC Card is installed, WLAN Monitor appears in the system task tray when the system reboots.

Chapter 2 **WLAN Monitor**

WLAN Monitor provides signal, transmission quality and power management status for an Intel® PRO/Wireless 2011 LAN adapter. WLAN Monitor contains two different adapter status-checking tools. The taskbar tray icons convey real-time signal strength and service quality information. The WLAN Monitor property pages display driver and firmware revision data, power management information and adapter transmission and signal quality statistics.

WLAN Monitor starts automatically and appears in the task tray when the system boots.

To start WLAN Monitor manually:

1. Click the **Start** button and select **Programs**.
2. Click **Intel Wireless LAN** and select **Wireless LAN Utilities**.
3. Click on **WLAN Monitor** to launch the utility.

WLAN Monitor displays on the system task tray.

Right click the WLAN Monitor icon in the task tray to display the WLAN Monitor menu. Select one of the following menu items:

- **Intel® PRO/Wireless 2011 LAN Adapter Status**
- **About Adapter Status**
- **Exit Intel® PRO/Wireless 2011 LAN Adapter Status.**

Selecting **Exit Intel® PRO/Wireless 2011 LAN Adapter Status** removes WLAN Monitor from the task tray.



To prevent WLAN Monitor from launching and displaying in the task tray, press and hold the Shift key when the computer boots.

2.1 WLAN Monitor Task Tray Icons

WLAN Monitor task tray icons display adapter signal strength.

ICON

Status



Excellent signal strength (Green Bar)



Very good signal strength



Good signal strength



Fair signal strength



Poor signal strength



Out-of-network range



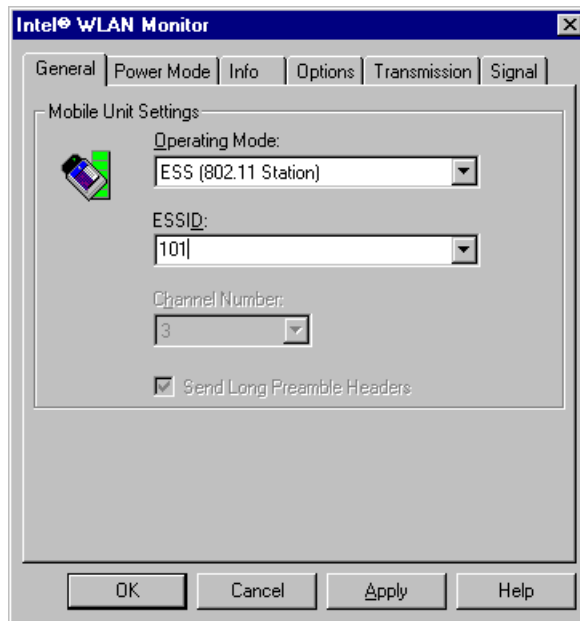
Adapter not found

2.2 WLAN Monitor Property Pages

The WLAN Monitor property pages contain wireless network and service quality information.

2.2.1 General Properties

Use the **General** properties page to set the operational mode and ESSID used by the adapter.



Note

The operating mode and ESSID set for the adapter in WLAN Monitor override the operating mode and ESSID settings in NCPA and WLAN Info.

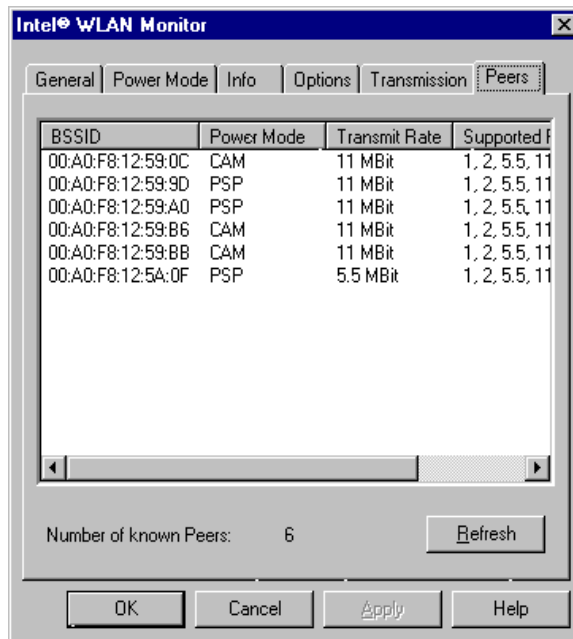
Use the **Operating Mode** pull-down menu to select one of the following operating modes for the adapter:

ESS (802.11 Station) - Select **ESS (802.11 Station)** to enable the adapter to transmit and receive data with an access point. The **Channel Number** field and the **Send Long Preamble Headers** checkbox are disabled when the adapter is in ESS mode. ESS is the MU default mode.

Pseudo IBSS (Proprietary Ad Hoc) - Select **Pseudo IBSS** when the highest throughput is required in an IBSS network for testing MU throughput. Pseudo IBSS does not support PSP MUs and does not use beacons or authentication. Use the **Channel Number** field to enter the channel for the network. Each MU is required to be on the same channel. Pseudo IBSS is not recommended as a normal operational mode or for MUs operating on battery power. When Pseudo IBSS is selected the **Signal** or **Peers** property page is no longer available.

IBSS (802.11 Ad Hoc) - Select **IBSS (802.11 Ad Hoc)** to enable MUs to form their own local network where adapters communicate peer-to-peer without access points. Use IBSS to create networks where needed within established cells. In IBSS, MUs take turns generating beacons and handling probe responses. The adapter starting the IBSS network (the first station transmitting a beacon) sets the channel in the **Channel Number** field.

When **IBSS (802.11 Ad Hoc)** is selected, the WLAN Monitor **Signal** property page turns into the **Peers** property page. Select **Peers** to view the BSSID or MAC addresses of the other MUs in the network, their operating mode (PSP or CAM), their transmit rate, their supported data rate and the length of time MUs have been out of the IBSS network. Click **Refresh** to update the **Peers** property page to the latest IBSS network performance and MU membership data.



Enter a adapter ESSID in the **802.11 ESSID** field. The ESSID is the 802.11 Extended Service Set Identifier. The ESSID is a 32-character (maximum) string identifying the wireless local area network. The ESSID assigned to the adapter is required to match the access point ESSID for the adapter to communicate with the access point.

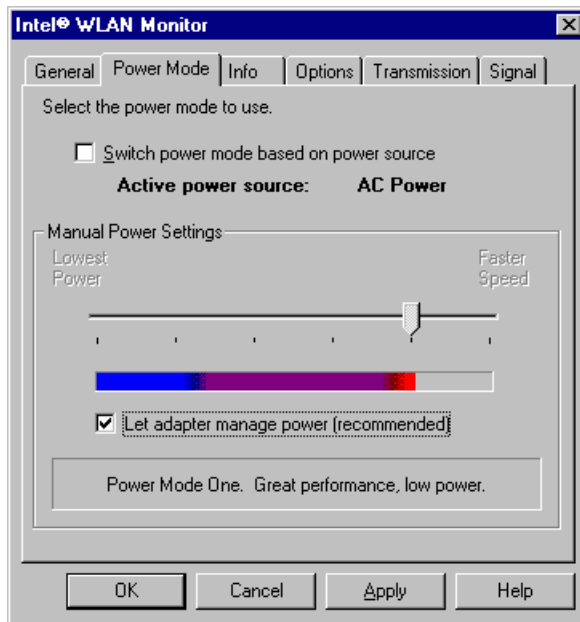
2.2.2 Power Mode

Use the **Power Mode** property page to control adapter power settings. An Intel® PRO/Wireless 2011 LAN adapter has two power consumption modes, Continuous Access Mode (CAM) and Power Save Poll (PSP) mode. Selecting CAM yields the best performance but uses the most power. CAM is the preferred mode for systems running on AC power.

Uncheck the **Let adapter manage power checkbox** and use the sliding scale in the **Manual Power Settings** field to select a PSP performance index (1 to 5) suited to the intended operation of the adapter. Selecting PSP saves significant amounts of power over CAM. PSP is the preferred mode for systems running on battery power.



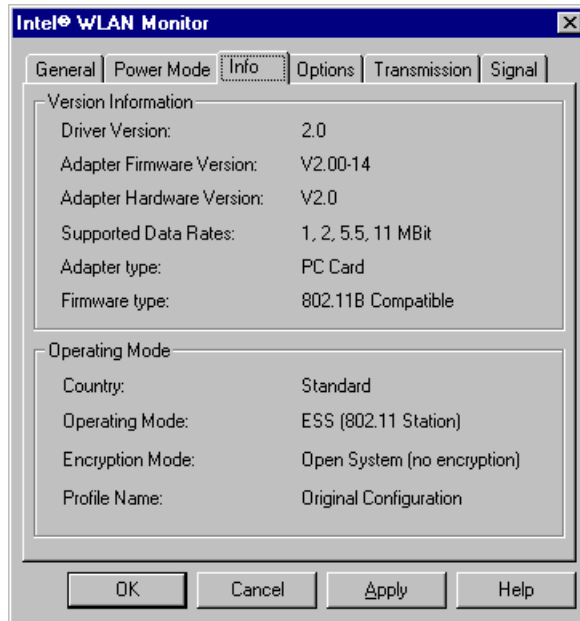
PCI adapters do not support PSP mode. Control over PSP options become disabled when using a PCI Adapter. The *Switch power mode* feature is unavailable in Windows NT 4.0.



2.2.3 Info

Use the **Info** property page to view adapter version and operating mode information.

Use the **Version Information** field to view the adapter driver version, adapter firmware version, supported data rate, adapter type and firmware type.



Use the **Operating Mode** field to view the adapter operating country, operating mode (ESS, IBSS or Pseudo IBSS) Encryption mode and the profile name created for the adapter using the My Wireless LAN Places utility.

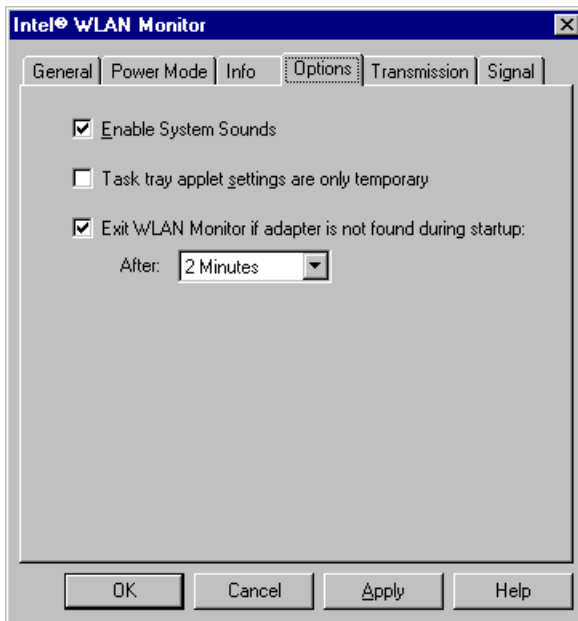


Note

The operating mode set for the adapter in WLAN Monitor overrides the operating mode settings made in NCPA and WLAN Info.

2.2.4 Options

Enable or disable WLAN Monitor system sounds within the **Options** properties page. WLAN Monitor uses standard wave-table sounds supplied by the Windows operating system. WLAN Monitor initiates an audible signal each time it detects the host computer roaming between access points. This tone is important if the user did not want the MU to roam to another AP. WLAN Monitor initiates an audible signal each time it completes a ping to a host computer.



Users can change WLAN Monitor wave file values using the *Windows Control Panel -> Sounds* applet. Two entries exist for WLAN Monitor:

- Intel WLAN Monitor Ping
- Intel WLAN Monitor Roam.

Select a wave file in the **Sounds** window for the WLAN Monitor audible response tone. The standard wave files shipped with WLAN Monitor have the following format:

SSxxxxn.wav

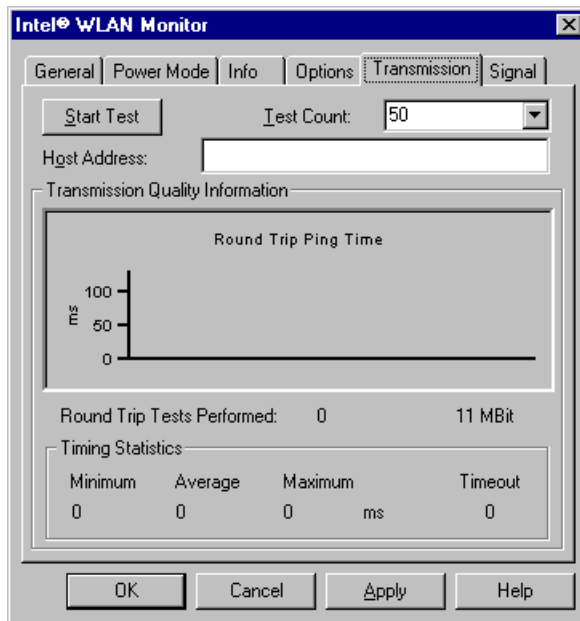
Where xxxx is either ping or roam and n is the numeric identity of the file.

Values saved to the Windows registry are used by the adapter when the computer starts. Select **Task tray applet settings are only temporary** from the **Options** property page to enter only WLAN Monitor temporary values. Temporary values apply to each WLAN Monitor property page and last until the system is restarted or the values are changed. If the checkbox is not selected, any value entered is saved and used after the system is restarted.

Select the **Exit task tray applet if adapter is not found during startup** checkbox and use the pull-down **After** menu to specify the amount of time (1 to 5 minutes) WLAN Monitor waits for the adapter to be located in the network before exiting.

2.2.5 Transmission

Use the **Transmission** property page to perform data transmission tests and display a real-time graph of the tests. The transmission quality test also displays a text-based description of the transmission quality. Transmission quality tests use an ICMP ping to test data transmission between an MU and AP. The transmission quality indication is important in determining if the MU should associate with a different AP to optimize its transmission capabilities or if the MU is properly located to communicate with that AP.



The Transmission Quality test requires the TCP/IP protocol.

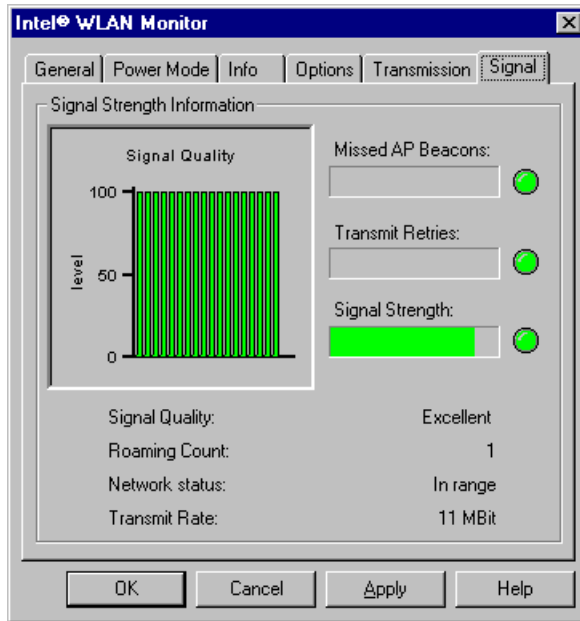
2.2.6 Signal

Use the **Signal** property page to display a real-time graph of the signal quality received by the adapter. It also displays a description of the signal quality. The **Signal** property page assists users in determining the quality of the signal from the MU to the AP, and if an association with a different AP is needed to increase signal strength. Any signal quality indication below good should be an indicator to associate with a different AP.



The **Signal** property page does not display in WLAN Monitor if **IBSS** or **Pseudo IBSS** are selected as the operating modes in the **General** property page.

Use the **Missed AP Beacons** graph to view the amount of beacons (uniform system packets broadcast by the AP to keep the network synchronized) missed by the receiving MU. The fewer missed beacons the stronger the signal.



Use the Transmit Retries graph to view the number of data packets retransmitted by the MU. The fewer transmit retries the stronger the signal.

Use the Signal graph to view the RSSI (Relative Signal Strength Indicator) of the signal transmitted from the access point to the receiving MU. Use this information to determine if the signal is strong enough to maintain the current access point association or if an association with a different access point would increase signal strength.

Chapter 3 **WLAN Info**

Use the WLAN Info utility to view and configure an Intel® PRO/Wireless 2011 LAN adapter. WLAN Info provides adapter status, mobile unit (MU) configuration settings, power management configuration settings, adapter diagnostic information, adapter event logging options and MU transmit/receive statistics.

Users select property pages from the items listed in the tree on the left side of the WLAN Info window. Adapter signal quality appears on the bottom left-hand side of each property page. The signal quality function matches that displayed by WLAN Monitor.



If the computer monitor is set to 640 x 480, WLAN Info does not display properly. Set the computer monitor to 800 x 600 for optimal resolution.

To start WLAN Info manually:

1. Click the **Start** button and select **Programs**.
2. Click **Intel Wireless LAN** and select **Wireless LAN Utilities**.
3. Select **WLAN Info** to launch the utility.

3.1 **WLAN Info Icons**

The WLAN Info icons appear on the bottom left-hand side of each property page. WLAN Info icons match the WLAN Monitor Task Tray icons described in the previous section and provide the same functionality.

3.2 **WLAN Info Property Pages**

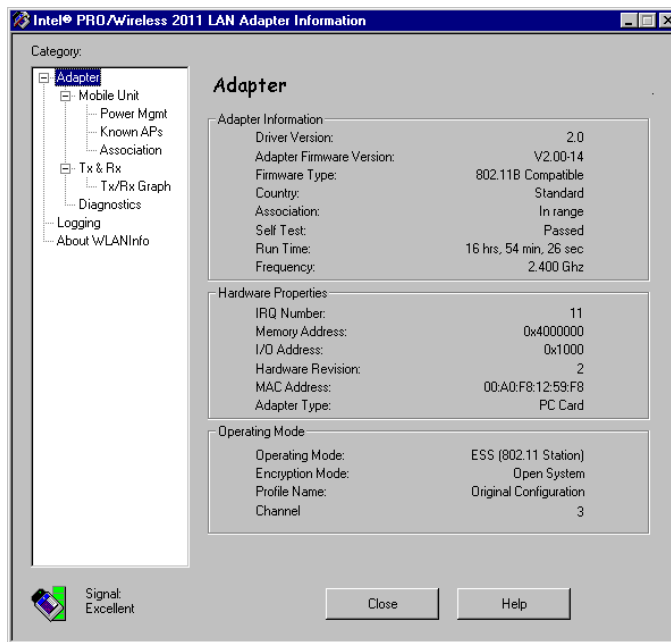
WLAN Info contains property pages dedicated to displaying and configuring adapter settings and information.

3.2.1 Adapter

Use the **Adapter** property page to display driver software and hardware information. The Adapter page is read only with no user configurable fields.

The **Adapter Information** field displays the driver version, adapter Firmware version and type, country association status, self-test status, run time and frequency.

The **Hardware Properties** field displays the IRQ number, memory address, I/O address, hardware revision, MAC address and adapter type.

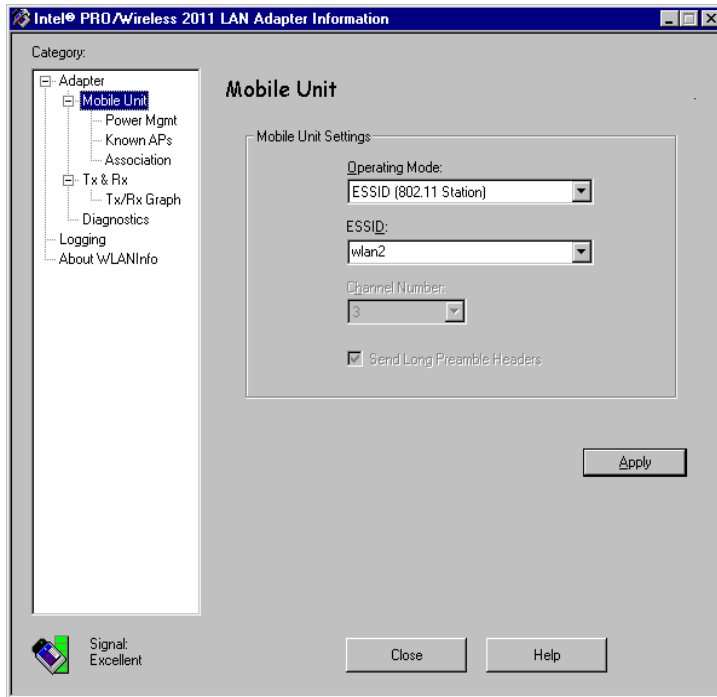


The **Operating Mode** field displays operating mode (ESS, IBSS or Pseudo IBSS) set in the **Mobile Unit** page, the Encryption mode and profile name set using the **My Wireless LAN Places** utility and the Channel number.

The operating mode set in WLAN Monitor overrides the operating mode set in WLAN Info and NCPA.

3.2.2 Mobile Unit

Use the **Mobile Unit** property page to set the adapter operating mode and ESSID.



Note

The operating mode and ESSID set for the adapter in WLAN Monitor override the operating mode and ESSID settings in WLAN Info and NCPA.

Use the **Operating Mode** pull-down menu to select one of the following operating modes for the adapter:

ESS (802.11 Station) - Select **ESS (802.11 Station)** to enable the adapter to transmit and receive data with an access point. The **Channel Number** field and the **Send Long Preamble Headers** checkbox are disabled when the adapter is in ESS mode. ESS is the MU default mode.

Pseudo IBSS (Proprietary Ad Hoc) - Select **Pseudo IBSS** when the highest throughput is required in an IBSS network for testing MU throughput. Pseudo IBSS does not support PSP MUs and does not use beacons or authentication. Use the **Channel Number** field to enter the channel for the network. Each MU is required to be on the same channel. Pseudo IBSS is not recommended as a normal operational mode or for MUs operating on battery power.

IBSS (802.11 Ad Hoc) - Select **IBSS (802.11 Ad Hoc)** to enable MUs to form their own local network where adapters communicate peer-to-peer without access points. Use IBSS to create networks where needed within established cells. In IBSS, MUs take turns generating beacons and handling probe responses. The adapter starting the IBSS network (the first station transmitting a beacon) sets the channel in the **Channel Number** field. If a single MU is sending every beacon, there are no other MUs in the IBSS network and at least one more MU is needed to communicate peer-to-peer.

Enter an ESSID in the **802.11 ESSID** field. The ESSID is the 802.11 Extended Service Set Identifier. The ESSID is a 32-character (maximum) string identifying the wireless local area network. The ESSID assigned to the adapter is required to match the access point ESSID for the adapter to communicate with the access point.

Click **Apply** to implement the operating mode and ESSID.

3.2.3 Power Management

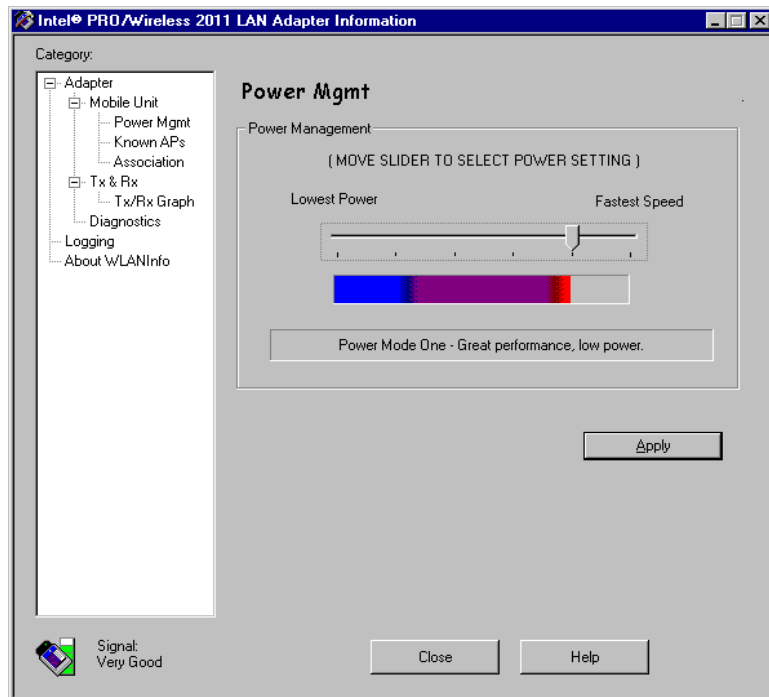
Use the **Power Mgmt** property page to display and adjust adapter power consumption settings. Users control the PSP performance index (1 to 5) in WLAN Info by adjusting a sliding scale. A display below the slider describes the selected performance power level and its rating. Users requiring fast performance can adjust the slider accordingly.



Note

CAM is not recommended for devices operating on battery power.

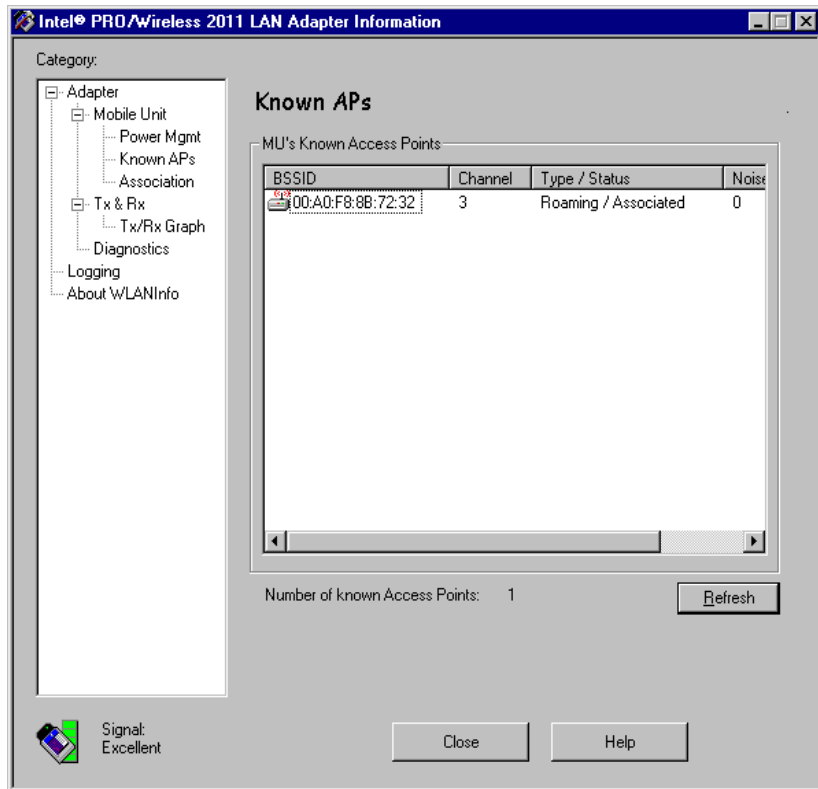
PSP mode does not have the performance of CAM, but reduces battery consumption. Click **Apply** to put the selected power setting into effect.



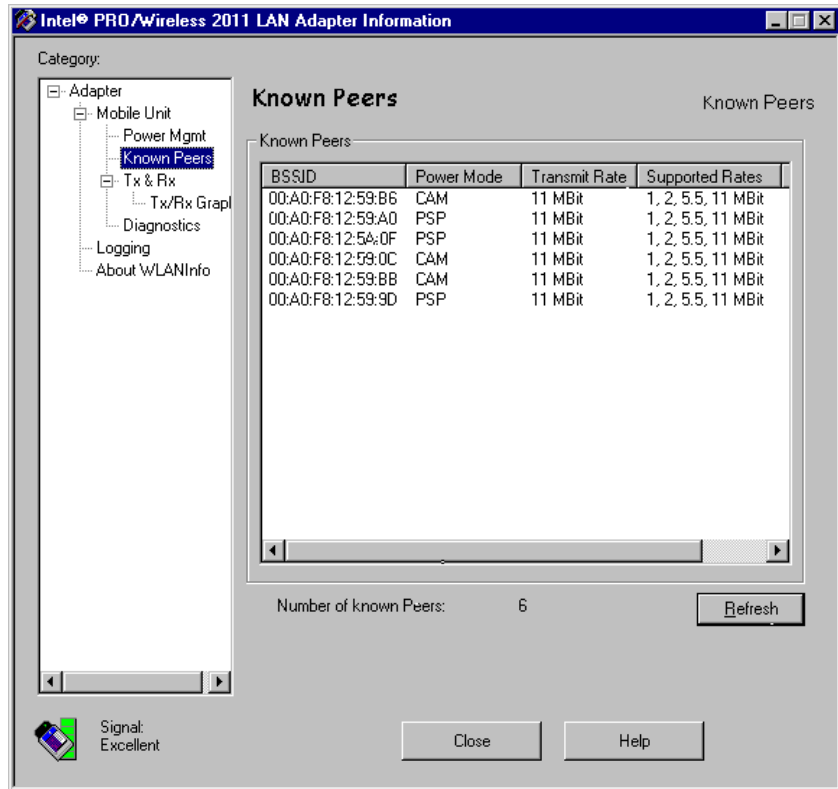
3.2.4 Known Access Points or Known Peers

Use the **Known APs** property page to view the APs with the same ESSID as the adapter within the Intel® PRO/Wireless 2011 LAN. View the BSSID, direct sequence channel and Type/Status of each available AP.

Click **Refresh** to display the list of the Known Access Points. The **Known Access Points** property page is read only with no user configurable data fields.



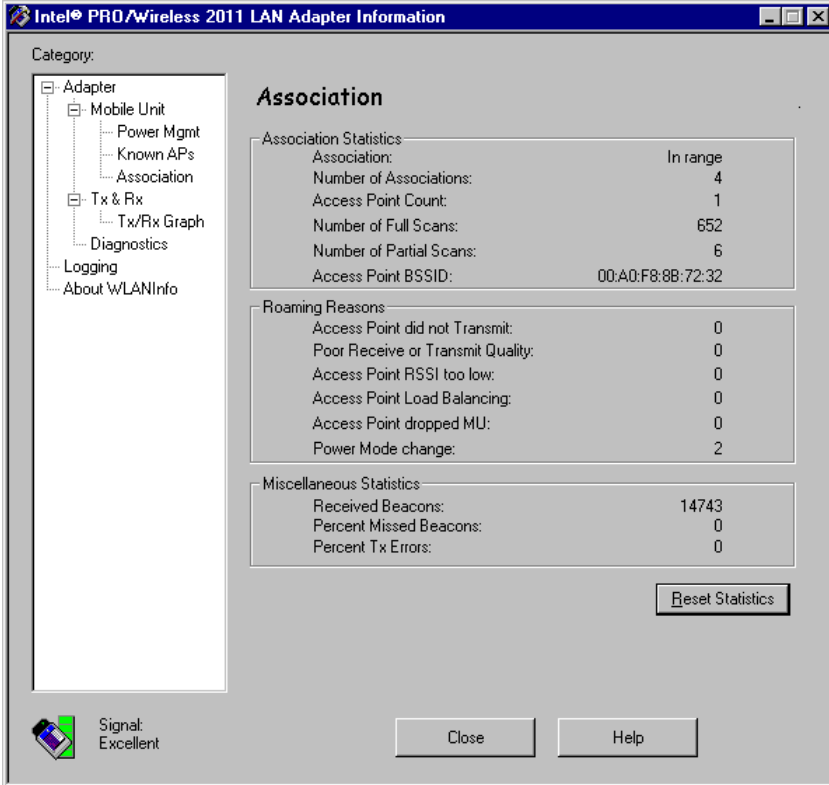
When IBSS (802.11 Ad Hoc) is selected as the operating mode, the **Known APs** property page turns into the **Known Peers** property page.



Use the Known Peers property page to view the BSSID or MAC addresses of the other MUs in the network, their power mode (PSP or CAM), their transmit rate and the length of time an MU has been out of the IBSS network. Click Refresh to update the Known Peers property page to the latest performance and membership data.

3.2.5 Association

Use the **Association** property page to display the adapter association state, AP association statistics and AP scan information. AP roaming counts and statistics also display. The values on this page update as they occur. Click **Reset Statistics** to clear the statistic counters and begin collecting new data. The information in the **Association** property page is read only with no user configurable data fields.



The screenshot shows a window titled "Intel PRO/Wireless 2011 LAN Adapter Information". On the left is a tree view under "Category:" with the following items: Adapter (expanded), Mobile Unit (expanded), Power Mgmt, Known APs, Association (selected), Tx & Rx (expanded), Tx/Rx Graph, Diagnostics, Logging, and About WLANInfo. The main area is titled "Association" and contains three sections:

- Association Statistics**

Association:	In range
Number of Associations:	4
Access Point Count:	1
Number of Full Scans:	652
Number of Partial Scans:	6
Access Point BSSID:	00:A0:F8:8B:72:32
- Roaming Reasons**

Access Point did not Transmit:	0
Poor Receive or Transmit Quality:	0
Access Point RSSI too low:	0
Access Point Load Balancing:	0
Access Point dropped MU:	0
Power Mode change:	2
- Miscellaneous Statistics**

Received Beacons:	14743
Percent Missed Beacons:	0
Percent Tx Errors:	0

At the bottom right of the main area is a "Reset Statistics" button. At the bottom left is a signal strength icon labeled "Signal: Excellent". At the bottom center are "Close" and "Help" buttons.

3.2.6 Transmit and Receive

Select the **Transmit and Receive** property page to display statistics for directed and nondirected packets and byte counts for both transmission and reception. Directed and nondirected packet statistics display for each data rate supported (1 Mbps, 2 Mbps, 5.5 Mbps and 11 Mbps). Use these statistics to determine if selecting a different data rates would result in improved adapter performance. The values on this page update in real-time. Click **Reset Statistics** to clear the statistic counters and begin collecting new data.

The screenshot shows the 'Intel PRO/Wireless 2011 LAN Adapter Information' window. The 'Tx & Rx' category is selected in the left-hand tree view. The main area displays the following statistics:

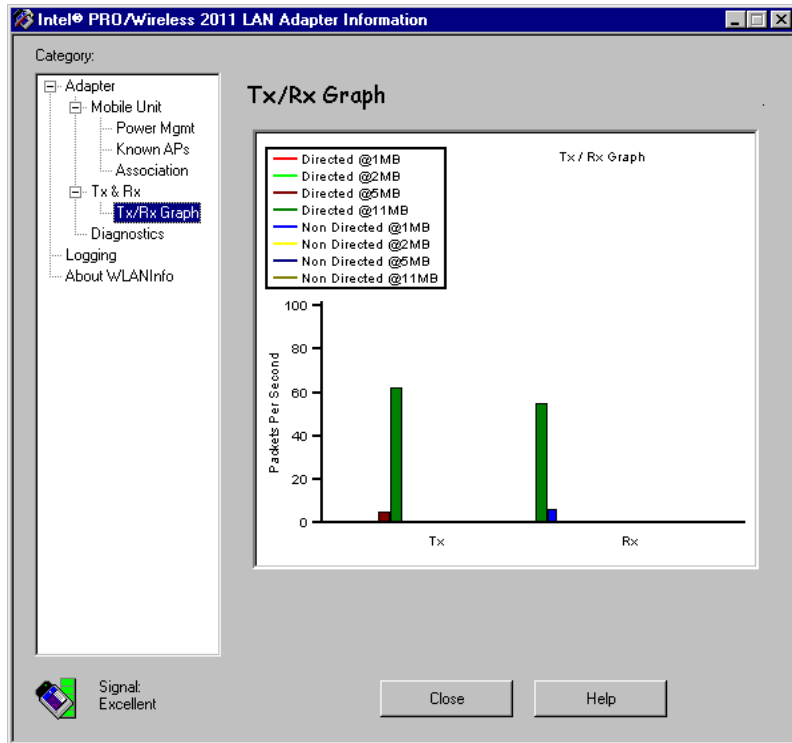
Transmit Statistics	
Total Host Packets:	1578
Non-Directed Packets:	0
@1MB:	0 (0%)
@2MB:	0 (0%)
@5.5MB:	0 (0%)
@11MB:	0 (0%)
Directed Packets:	1128
@1MB:	76 (6%)
@2MB:	45 (3%)
@5.5MB:	453 (40%)
@11MB:	554 (43%)
Total Bytes Transmitted:	77209

Receive Statistics	
Total Host Packets:	7934
Non-Directed Packets:	8913
@1MB:	8913 (100%)
@2MB:	0 (0%)
@5.5MB:	0 (0%)
@11MB:	0 (0%)
Directed Packets:	121
@1MB:	0 (0%)
@2MB:	0 (0%)
@5.5MB:	56 (46%)
@11MB:	65 (53%)
Total Bytes Received:	1297740

At the bottom right of the statistics area is a 'Reset Statistics' button. At the bottom of the window are 'Close' and 'Help' buttons. A signal strength indicator at the bottom left shows 'Signal: Excellent' with a green signal icon.

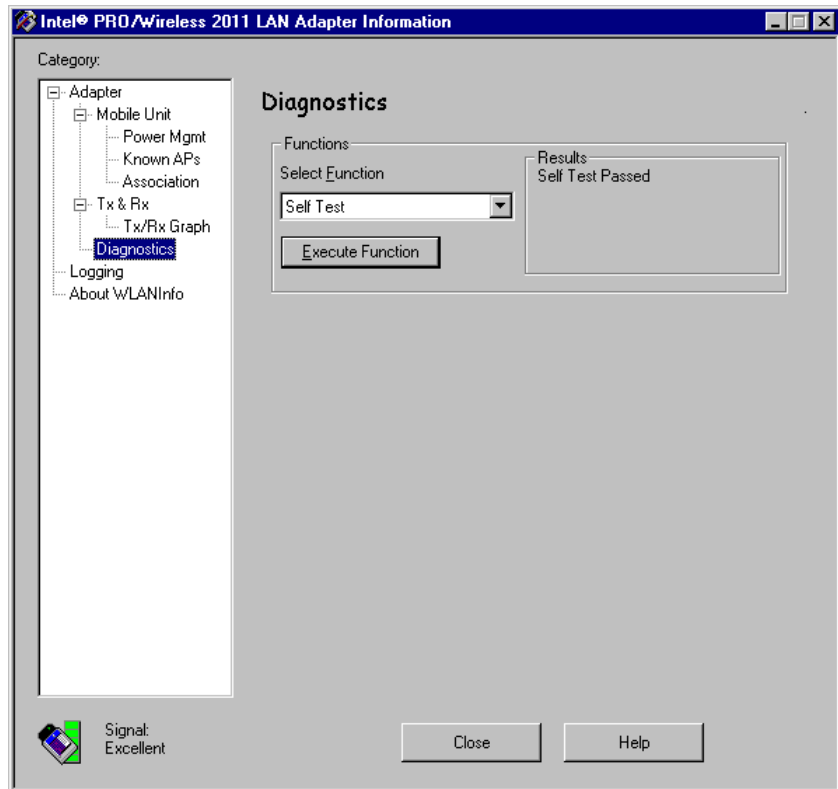
Transmit and Receive Graph

The Tx/Rx (transmit and receive) graph displays the packet per second throughput of the adapter. Colored bars display directed and nondirected packet throughput for each data rate supported (1 Mbps, 2 Mbps, 5.5 Mbps and 11 Mbps). Use these statistics to determine if selecting a different data rate would result in improved adapter performance. The graph is updated every second.



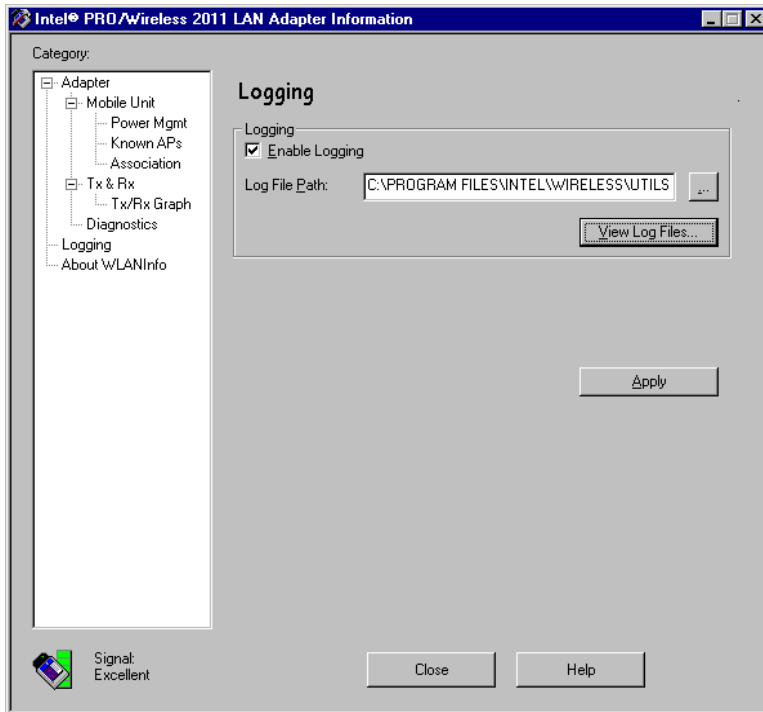
3.2.7 Adapter Diagnostics

Use the **Adapter Diagnostics** property page to execute tests assessing adapter functionality. The user can perform a self-test or reset the adapter by selecting a diagnostic from the **Select Function** pull-down menu. Click the **Execute Function** button to initiate the test.



3.2.8 Logging

Select the **Logging** property page to enable or disable WLAN Info logging capabilities. When WLAN Info gathers WLAN adapter statistics, WLAN Info can save the information to a log file. Log files are saved in HTML format. If users run WLAN Info after midnight, the log file closes and a new log file is automatically created for the next day. Click **View Log Files** to view the log file contents using a default browser.



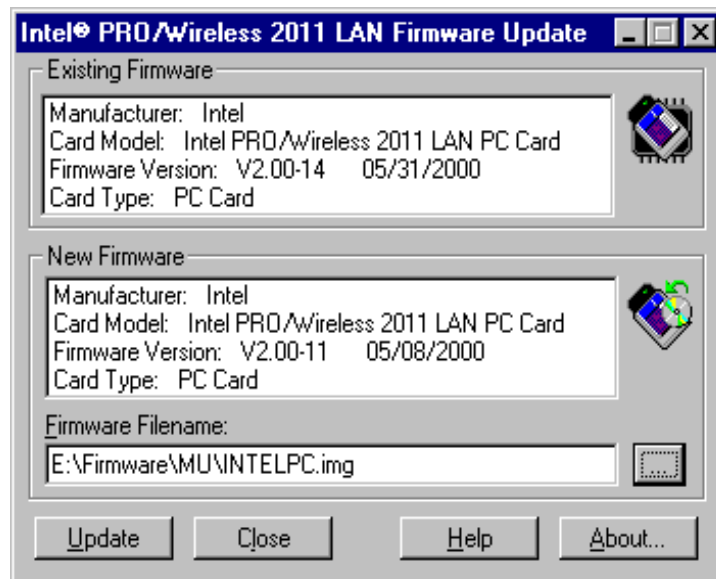
Chapter 4 WLAN Update

Intel periodically releases adapter firmware to provide improved performance over existing firmware. Use the WLAN Update utility to upgrade the firmware in an Intel® PRO/Wireless 2011 LAN adapter.

To start WLAN Update manually:

1. Click the **Start** button and select **Programs**.
2. Click **Intel Wireless LAN** and select **Wireless LAN Utilities**.
3. Select **WLAN Update** to launch the utility.

WLAN Update upgrades the firmware in an adapter by specifying a firmware file for the adapter used in the system.



WLAN Update displays existing firmware information in the **Existing Firmware** field. Select a firmware file then click **Update**. The results display in the **New Firmware** field.

The WLAN Update dialog box provides the following options:

Existing Firmware	The Existing Firmware field displays the firmware manufacturer, model number, firmware version and serial number of the firmware. The Existing Firmware field is read only with no useconfigurable parameters.
New Firmware	Use the New Firmware window to view the version number and date of the selected firmware file.
Firmware Filename	Click the Firmware Filename ellipsis (...) button to browse for a valid firmware file for the adapter.
Update	Starts the Update process. A warning to close open applications appears. Users can cancel the Update process at this point. A message displays advising users that the Update process has started. A subsequent message displays whether the Update was successful. A message advising the user to reboot follows a successful Update.
Close	Click Close to exit the WLAN Update program.
Help	Click the Help button. A page of WLAN Update help information displays.
About	Click the About button to display a window describing WLAN Update revision data.

Chapter 5 **Access Point Discovery (AP Discovery)**

Use the Access Point Discovery (AP Discovery) utility to view the properties of neighboring access points. Select an access point and use AP Discovery to configure the access point system name, ESSID, IP address and Gateway.

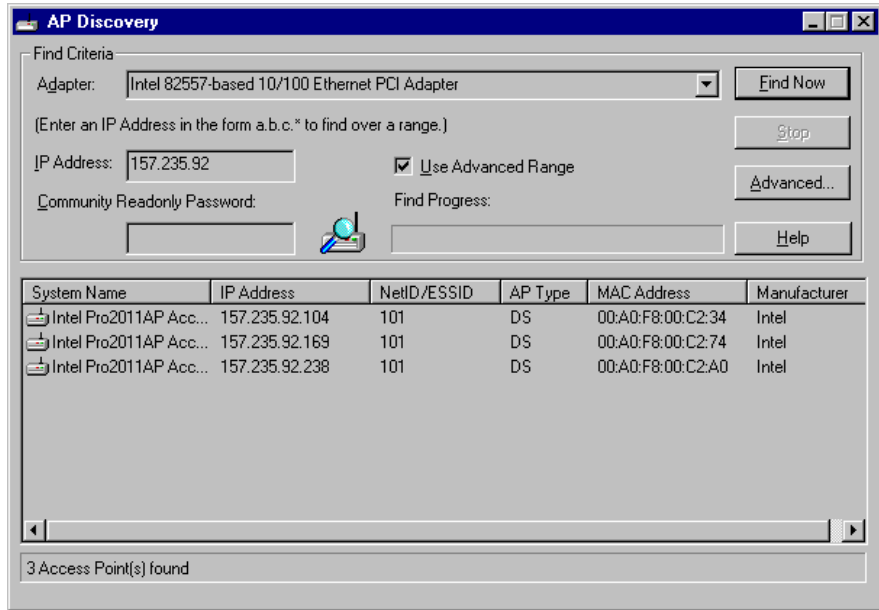
The AP Discovery utility is useful for selecting access point search criteria and conducting a search. Once a number of access points have been found meeting the search criteria, an access point can be selected and its properties displayed. The properties of the selected access point can be configured, the access point can be grouped with a different set of access points or the access point can be used to communicate with an access point not part of the original search.

To start AP Discovery:

1. Click the **Start** button and select **Programs**.
2. Click **Intel Wireless LAN** and select **Wireless LAN Utilities**.
3. Select **AP Discovery** to launch the utility.

5.1 Finding Access Points

The AP Discovery dialog box displays when the utility is started.



Use the pull-down **Adapter** combobox to select the wired or wireless WLAN adapter to be used as the target MU for an access point search.

Enter a partial IP address in the **IP Address** edit field. Enter an IP address that is at least three character fields in length (157.235.92.). AP Discovery searches for access points with an IP address within 250 characters of the partial IP address entered. The partial IP address should correspond to the IP address range of access points grouped in a specific location of the building (retail, sales, manufacturing).

The partial IP address entered in the **IP Address** field has a password created by the system administrator to prevent unauthorized users from accessing configuration information for the group of access points the partial IP address represents. Enter the password in the **Community Readonly Password** field.

Select the **Find Now** button to display data for each wired or wireless access point located by AP Discovery. The **Find Progress** status bar displays the progress of the access point search. The number of access points located is displayed in the bottom left-hand corner of the **AP Discovery** dialog box.

Once the access points are located, the **AP Discovery** dialog box displays the user assigned system name (name of the access point), the **Net_ID** or **ESSID** and the manufacturer of those access points operating in wired mode.

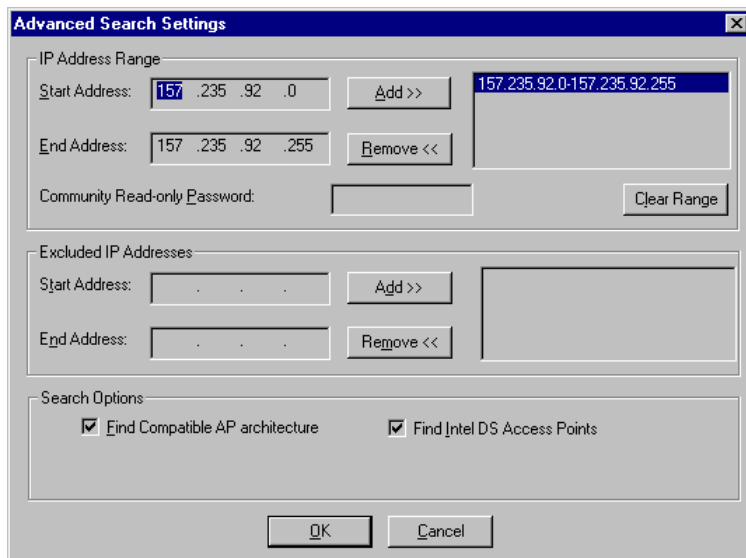
Click the **Advanced** button to specify a specific range of access point search parameters. Once an advanced search range is specified, that range can be used by selecting the **Use Advanced Range** checkbox and clicking **Find Now**.

5.1.1 Conducting an Advanced Search

Click the **Advanced** button within the AP Discovery dialog box to display the **Advanced Search Settings** dialog box.

Use the **IP Address Range** field to set an access point IP address search range. The search range could be confined to the access points within the sales or manufacturing areas of a building or broad enough to include the access points within the entire building. This information is helpful in determining if access points within a certain area of a building require a different configuration. Click **Clear Range** to clear the search range.

Click **Add** to include the selected range of IP addresses into a list if IP address ranges that can be selected again or click **Remove** to remove the range of excluded access point IP addresses from the list.



Use the **Excluded IP Addresses** field to enter an IP address range to be excluded from the access point search. If there are access points within an area of the building (finance, marketing) that are not subject to the search or possible configuration, then that range of access point IP addresses should be entered in the **Excluded IP Addresses** field.

Click **Add** to exclude the selected range of IP addresses from the search or click **Remove** to add the range of excluded access point IP addresses back into the search range.

Use the **Search Options** field to specify the particular access points to be included in the access point search.

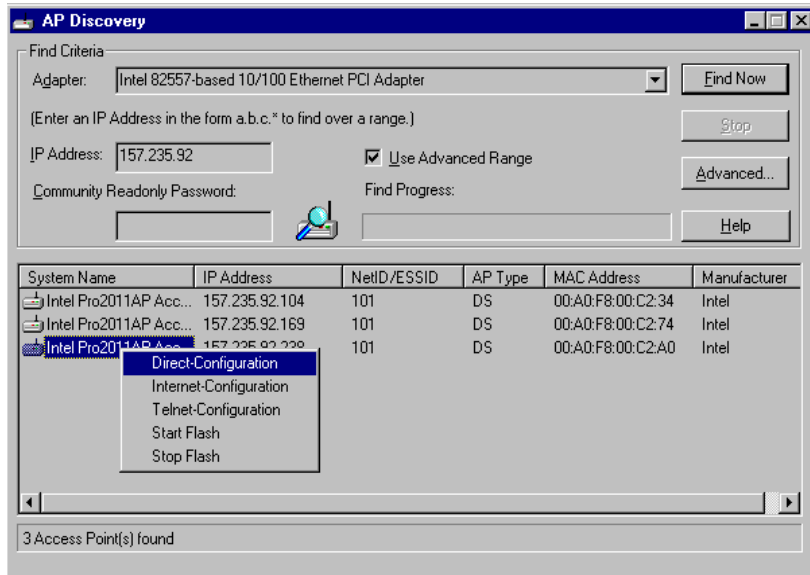


A frequency-hopping mobile unit cannot associate with a direct-sequence access point and a direct-sequence mobile unit cannot associate with a frequency-hopping access point. AP Discovery allows users to configure some operational parameters of the access points found in a search, but does not enable frequency-hopping mobile units to communicate with direct-sequence access points or direct-sequence mobile units to communicate with frequency-hopping access points.

Click **OK** to save the access point search parameters specified within the **Advanced Search Settings** dialog box. From the **AP Discovery** dialog box, select the **Use Advanced Range** checkbox and click **Find Now** to conduct a search using the advanced search parameters.

5.2 Selecting and Configuring an Access Point

Use the list of access points displayed in the **AP Discovery** dialog box to select and configure an individual access point.



Right-click on an access point to display an access point configuration menu with the following options:

- Direct Configuration
- Internet Configuration
- Telnet Configuration
- Start Flash
- Stop Flash

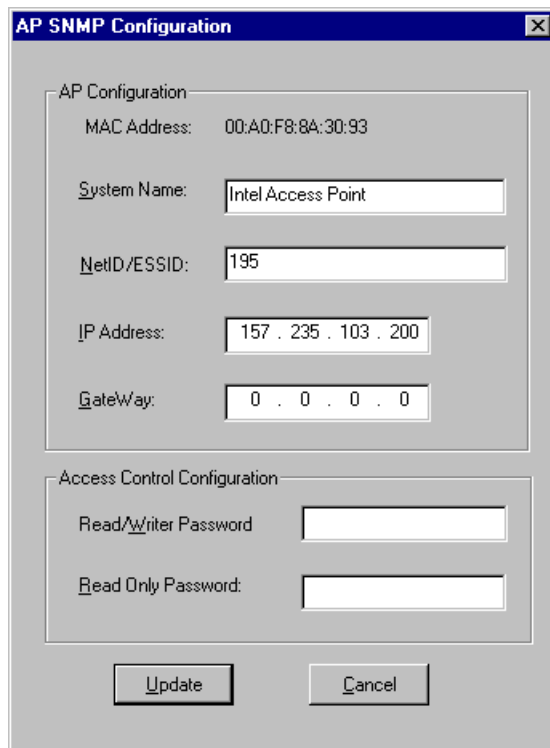
If one of these configuration options is grayed out, it is unavailable for the selected access point.

5.2.1 Direct Configuration

Use the **Direct Configuration** option to gain access to the access point UI (User Interface).

Right-click on an access point and select **Direct Configuration** to display the **AP SNMP Configuration** dialog box if the selected access point is operating through SNMP.

Use the AP SNMP Configuration dialog box to change the access point system name, ESSID (Net_ID), IP address and gateway.



The image shows a dialog box titled "AP SNMP Configuration" with a close button (X) in the top right corner. The dialog is divided into two main sections: "AP Configuration" and "Access Control Configuration".

AP Configuration:

- MAC Address: 00:A0:F8:8A:30:93
- System Name: Intel Access Point
- NetID/ESSID: 195
- IP Address: 157 . 235 . 103 . 200
- GateWay: 0 . 0 . 0 . 0

Access Control Configuration:

- Read/Writer Password: [Empty text box]
- Read Only Password: [Empty text box]

At the bottom of the dialog, there are two buttons: "Update" and "Cancel".



The MAC Address field of the **AP SNMP Configuration** dialog box is read only and cannot be modified.

Use the access point **System Name** field to name the access point by its location (manufacturing, retail, engineering) or to give the access point a name that distinguishes it from other access points in its location.

Use the **NetID/ESSID** field to change the Extended Service Set (ESS) ID or to give the access point a nickname. A nickname can be helpful in instances where the access point is located at a personal workstation, since the nickname serves as an indicator of the access point location.

Use the **IP Address** field to change the IP address of the access point to group the access point with a different set of access points or to change the IP address if it is conflicting with other devices operating in the area.

If the access point is intended to transmit to a different network segment a gateway (router) address is required. Enter the address in **Gateway** field.

The **Access Control Configuration** section of the **AP SNMP Configuration** dialog box contains two fields for confirming administrator or user privilege passwords. These passwords are assigned in the **System Configuration** and **Change System Parameters** screens of the access point. Use the **Read/Writer Password** field to enter the access point read and write privilege password. This password is required if the access point configuration has been modified. Use the **Read Only Password** field to enter the access point read privilege password. Leave these two password fields empty if no changes have been made to the access point configuration.

Click **Update** to commit the changes to the access point configuration. When changes are made to the access point configuration the **Confirm AP Password** dialog box displays.

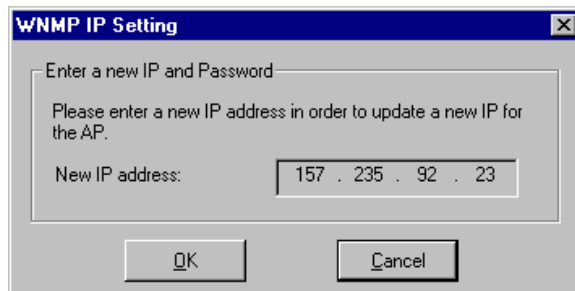


Enter a password and click **OK** to commit the changes made in the **AP SNMP Configuration** dialog box.



System/User passwords are case-sensitive and do not exceed 32-characters.

If an access point is selected for direct configuration from the **AP Discovery** dialog box and it is operating through **WNMP**, the **WNMP IP Setting** dialog box displays.



Use the **New IP address** field to change the IP address of the access point to group the access point with a different set of access points or to change the IP address if it is conflicting with other devices operating in the area. Click **OK** to implement the new access point IP address. No other access point parameters can be configured using **AP Discovery** when the access point is operating through **WNMP**.

5.2.2 Internet Configuration

Use the **Internet Configuration** option to gain access to the access point UI through a Web browser.

Right-click on an access point and select **Internet Configuration** (if enabled) to display the **Access Point Configuration Management System** page.



Access the different pages using the nodes located in the left frame of the page. Refer to the online help file (the Help button is located in the top right-hand corner of the page) for Web page navigation, page contents and parameter use.

5.2.3 Telnet Configuration

Use the Telnet Configuration option to gain access to the access point UI through a dial-up connection.

Right-click on an access point and select **Telnet Configuration** (if enabled) to display a Telnet login password screen. Enter the Telnet login case-sensitive password.

Press the ESC key to display the access point main menu. Use the main menu options to view statistics and set the access point system configuration.

5.2.4 Flashing an Access Point

Right-click on an access point and select **Start Flash** to flash the LEDs on the selected access point. Use the **Start Flash** function to locate an access point and determine if its location is appropriate for the mobile units it supports. Select **Stop Flash** to stop the flashing on the access point LEDs and return them to their normal operational state.



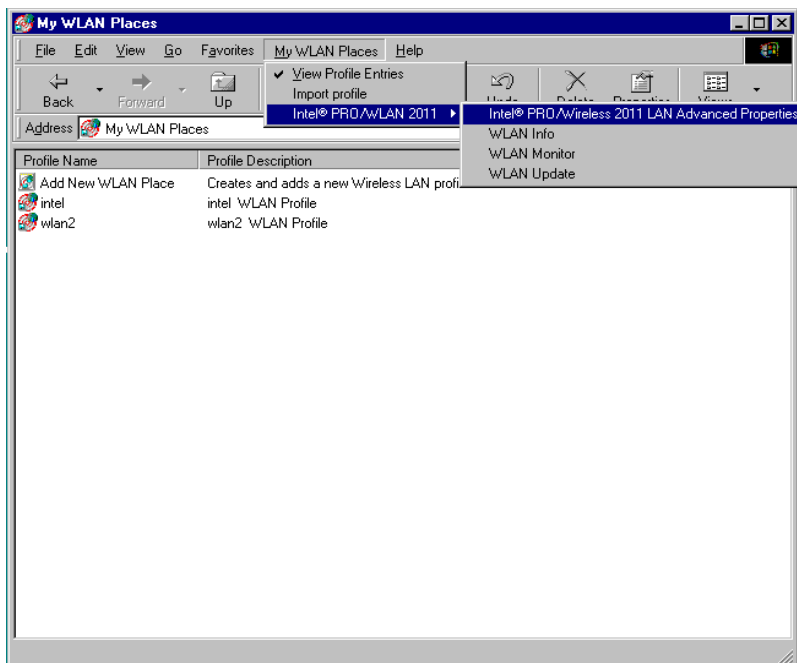
The **Start Flash** function can only be used on one access point at a time.

Chapter 6 My Wireless LAN Places

Use the My Wireless LAN Places (My WLAN Places) utility to create a profile of WLAN adapter network address and device information that can be downloaded by system administrators to selected WLAN adapters.

Use a completed profile as a set of WLAN adapter operational settings that can be used in different locations with the MU to connect to an Intel® PRO/Wireless 2011 LAN. Once created, WLAN profiles display in the My WLAN Places program window for use as necessary in the various networks existing throughout the workplace or home office environment.

Use the My WLAN Places pull-down menu and select one or all of the Wireless LAN Utilities as necessary to determine the settings to be used with the WLAN adapter using the My Wireless LAN Places utility.



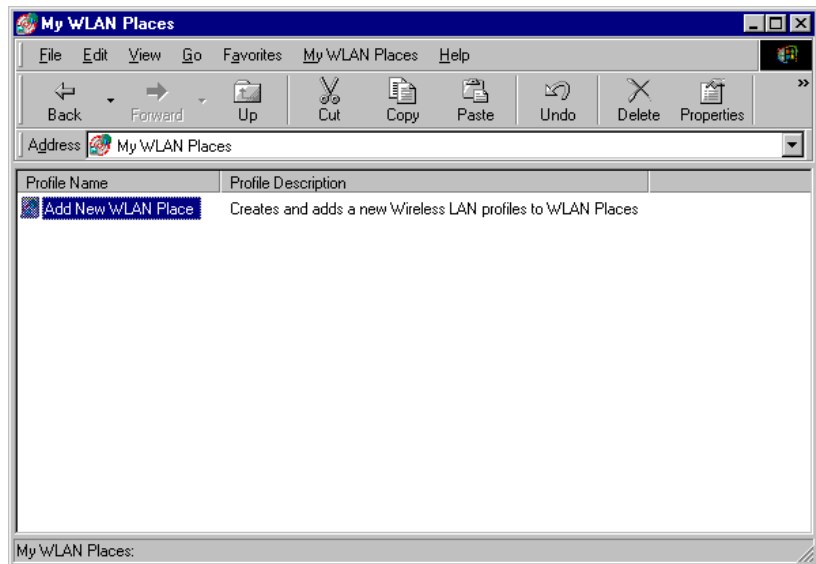


The settings used in NCPA and WLAN Monitor override the settings used in My WLAN Places. Do not use different settings in My WLAN Places.

To start WLAN Places:

1. Double-click on **My Computer** from the Windows desktop.
2. Select the **My WLAN Places** icon from the group of icons displayed.

The **My WLAN Places** program window displays.



3. Use this program window to create a new profile or edit the properties of an existing profile.

6.1 Creating a New Profile

A WLAN adapter profile is the unique network address and device information that is downloaded by the system administrator to selected WLAN adapters to support the coverage area of an access point.

To create a new profile:

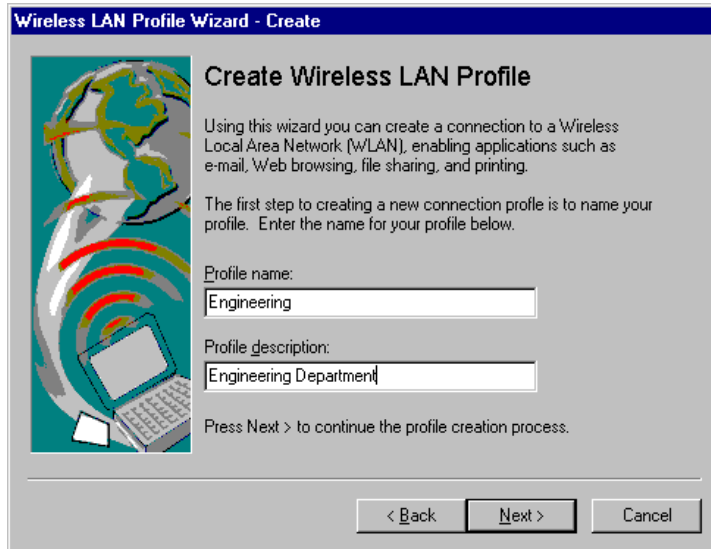
1. Select **Add New WLAN Place** from the **MY WLAN Place** program window.

The **Welcome** dialog box displays.



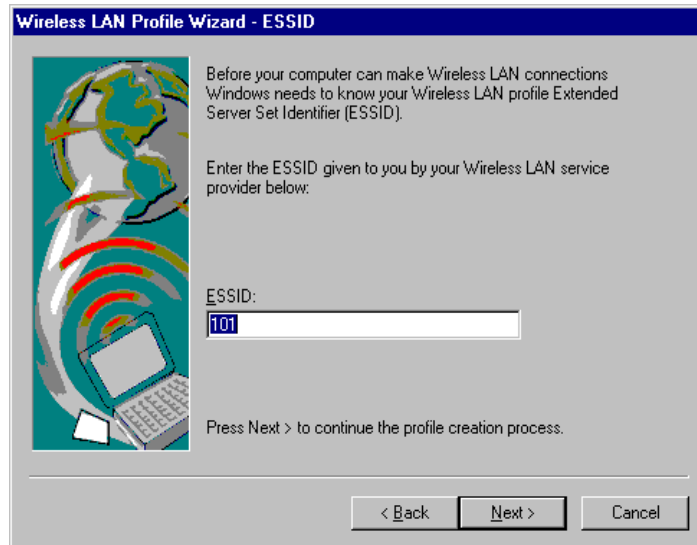
2. From the Welcome dialog box click Next.

The Wireless LAN Profile Wizard - Create dialog box displays.



3. Type a name for the new profile in the Profile name field.
The name of the profile can be up to 128 characters and contain any printable characters.
4. Enter a description of the profile in the Profile description field.
The profile description enables the user to keep the profile name short while providing additional information on what the profile entails.
5. Click Next to continue in the creation of the profile, click Back to return to the Welcome dialog box or click Cancel to close the profile wizard and cancel the creation of the new profile.

When **Next** is clicked, the **Wireless LAN Profile Wizard - ESSID** dialog box displays.



6. Enter an ESSID in the ESSID field.

The ESSID should be the same as the access point(s) that the MUs support once the profile is installed. The ESSID can be from 0 to 32 characters in length.

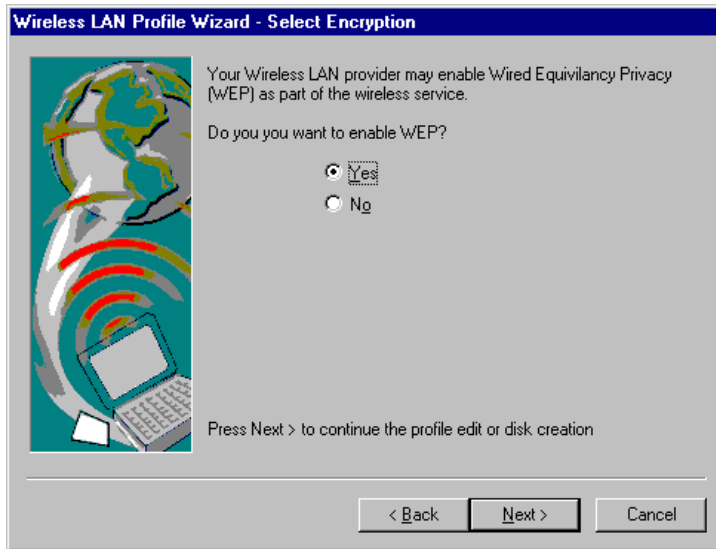


Note

If the ESSID cannot be determined, 101 can be used as a default ESSID value.

7. Click **Next** to continue in the creation of the profile, click **Back** to return to the **Wireless LAN Profile Wizard - Create** dialog box or click **Cancel** to close the profile wizard and cancel the creation of the new profile.

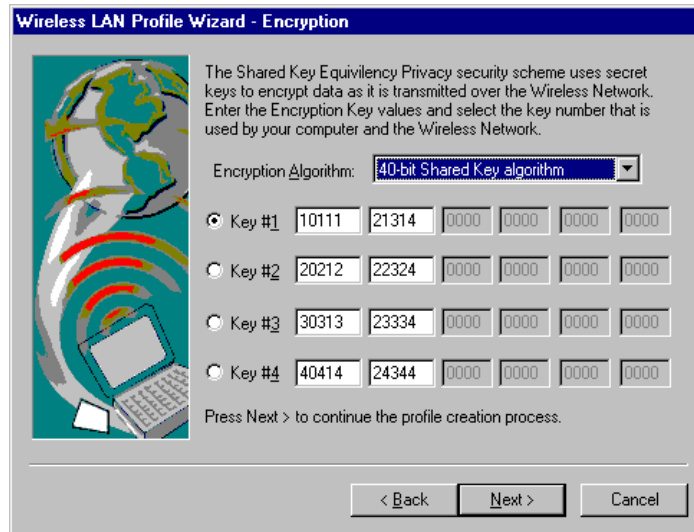
When Next is clicked, the Wireless LAN Profile Wizard - Select Encryption dialog box displays.



The Wireless LAN Profile Wizard - Select Encryption dialog box prompts the user whether or not the target WLAN adapter(s) uses Wireless Equivalency Privacy (WEP). The absence of a physical connection makes wireless links vulnerable to information theft. WEP is an efficient method of preventing data theft and improving security.

8. Select Yes to display the Wireless LAN Profile Wizard - Encryption dialog box. Select No to provide no Encryption for the data transmitted between access point and MU.
9. Click Next to continue with the creation of the profile, click Back to return to the Wireless LAN Profile Wizard - ESSID dialog box or click Cancel to close the profile wizard and cancel the creation of the new profile.

If Yes is selected and Next is clicked, the Wireless LAN Profile Wizard - Encryption dialog box displays. If No is selected and Next is clicked, the Wireless LAN Profile Wizard - Password dialog box displays.



10. Use the Encryption Algorithm pull-down menu to select the 40-bit or 128-bit Encryption algorithm to be used with profile.

When 40-bit Encryption is selected, the user is required to enter a 10 Hex digit password. The password can be entered by spreading the 10 Hex digit password between the two fields provided per Encryption key.



128-bit Encryption is subject to export restrictions. An access code could be required in the NCPA Encryption property page to enable 128-bit Encryption. Ensure 128-bit Encryption is enabled in NCPA before setting Encryption to 128-bit in My Wireless LAN Places.

When 128-bit Encryption is selected, the user is required to enter a 26 Hex digit password. The password can be entered by spreading the 26 Hex digit password between the six fields provided per Encryption key.

If **Open System** is selected, data packets are transmitted between the access point and MU with no encryption.

11. Click **Next** to continue with the creation of the profile, click **Back** to return to the **Wireless LAN Profile Wizard - Select Encryption** dialog box or click **Cancel** to close the profile wizard and cancel the creation of the new profile.

When **Next** is clicked, the **Wireless LAN Profile Wizard - Password** dialog box displays. The **Wireless LAN Profile Wizard - Password** dialog box provides the user with the option of creating a password to protect the data within the profile.



12. Click **Yes** to create a password for the profile. Click **No** if a password is not needed for the profile.

If no password is required, click **Next** to complete the profile.

13. Enter a password in the **Password** field.
14. Enter an identical password in the **Confirm Password** field.
15. Click **Next** to continue with the creation of the profile, click **Back** to return to the **Wireless LAN Profile Wizard - Encryption** dialog box or click **Cancel** to close the profile wizard and cancel the creation of the new profile.

When **Next** is clicked, the **Wireless LAN Profile Wizard - Profile Complete** dialog box displays.



16. Select **Yes** to reboot the computer and complete the profile creation process.

Click **Finish** to restart the computer and implement the new profile, click **Back** to return to the **Wireless LAN Profile Wizard - Password** dialog box or click **Cancel** to close the profile wizard and cancel the creation of the new profile.

6.2 Working with Existing Profiles

Existing WLAN profiles can be edited, renamed and deleted using the WLAN Places utility.

6.2.1 Editing an Existing Profile

WLAN adapter profiles can be edited by selecting property pages from the Wireless LAN Profile Properties dialog box.

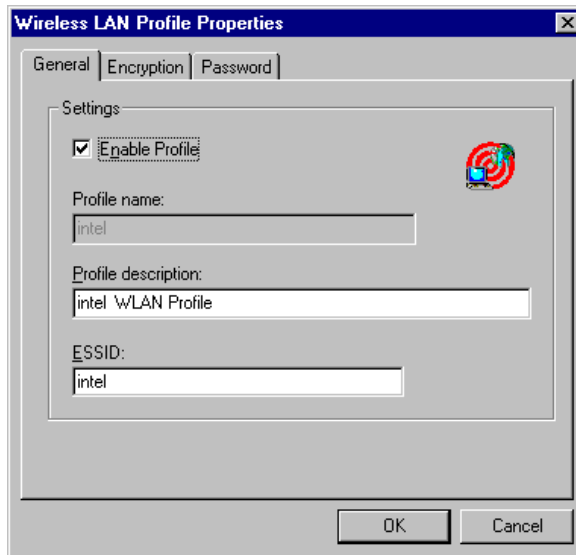
To edit an existing profile:

1. Select the profile to be edited from the MY WLAN Places program window.

If a password was created for the profile the Enter Password dialog box displays.

2. Enter the password assigned to that profile and click **OK**.

The **Wireless LAN Profile Properties** dialog box appears with the **General** property page displayed.



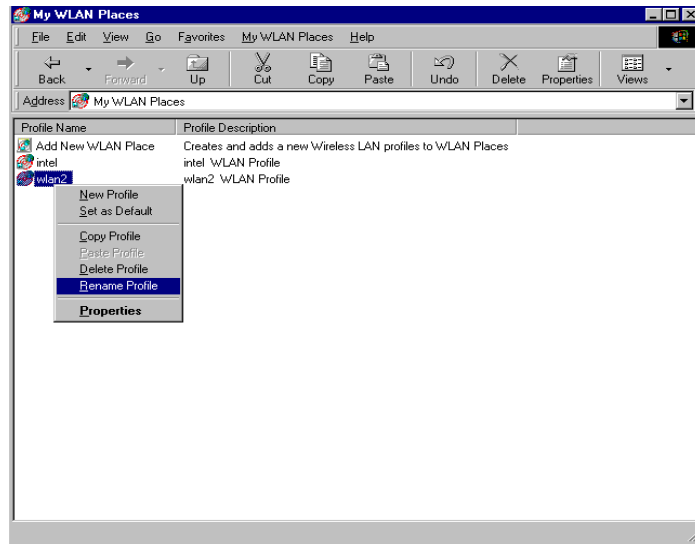
3. Edit the Profile name, Profile description and ESSID fields as needed.
4. Select the Encryption and Password property pages as necessary to edit the profile settings.
5. Click OK to save the changes to the profile. Click Close to exit.

6.2.2 Deleting or Renaming an Existing Profile

Profiles with identical filenames cannot exist. Users have the option of deleting or renaming an existing profile.

To delete or rename a profile:

1. Select the profile from the MY WLAN Places program window.
2. Right-click on the profile to display a pull-down menu with profile configuration options.



3. Select **Rename Profile** and type the new profile name.

To delete the profile, select **Delete Profile** from the pull-down menu.



Note

A deleted WLAN adapter profile does not go into the Recycle Bin and cannot be retrieved.

Appendix A

Customer Support

A.1 Intel Automated Customer Support

You can reach Intel automated support services 24 hours a day, every day at no charge. The services contain the most up-to-date information about Intel products. You can access installation instructions, troubleshooting information, and general product information.

User Guide on Your Product CDROM

For more information about installing drivers or troubleshooting other topics, see the online User Guide. To view the guide, insert the Intel CD in your drive and wait for the Autorun to display. Click the User Guide button to view the guide. Note that a web browser is required to view the guide.

Web and Internet Sites

- Support: <http://support.intel.com>
- Network Products: <http://www.intel.com/network>
- Corporate: <http://www.intel.com>
- Newsgroups: <news://cs.intel.com>
- FTP Host: <download.intel.com>
- FTP Directory: </support/network/adapter/>

Customer Support Technicians

US and Canada: 1-916-377-7000 (7:00 - 17:00 M-F Pacific Time)

Worldwide access: Intel has technical support centers worldwide. Many of the centers are staffed by technicians who speak the local languages. For a list of all Intel support centers, the telephone numbers, and the times they are open, download document 9089 from one of the automated services.

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A.3 Limited Lifetime Hardware Warranty

Intel warrants to the original owner that the adapter product delivered in this package will be free from defects in material and workmanship. This warranty does not cover the adapter product if it is damaged in the process of being installed or improperly used.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF NONINFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

This warranty does not cover replacement of adapter products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation, or improper testing. If the adapter product is found to be defective, Intel, at its option, will replace or repair the hardware product at no charge except as set forth below, or refund your purchase price provided that you deliver the adapter product along with a Return Material Authorization (RMA) number (see below), along with proof of purchase

(if not registered), either to the dealer from whom you purchased it or to Intel with an explanation of any deficiency. If you ship the adapter product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge.

Intel may replace or repair the adapter product with either new or reconditioned parts, and any adapter product, or part thereof replaced by Intel becomes Intel's property. Repaired or replaced adapter products will be returned to you at the same revision level as received or higher, at Intel's option. Intel reserves the right to replace discontinued adapter products with an equivalent current generation adapter product.

Returning a defective product

From North America:

Before returning any adapter product, contact Intel Customer Support and obtain a Return Material Authorization (RMA) number by calling +1 916-377-7000.

If the Customer Support Group verifies that the adapter product is defective, they will have the RMA department issue you an RMA number to place on the outer package of the adapter product. Intel cannot accept any product without an RMA number on the package.

All other locations:

Return the adapter product to the place of purchase for a refund or replacement.

Intel Adapter Money-back Guarantee (North America Only)

Intel wants you to be completely satisfied with the Intel adapter product that you have purchased. Any time within ninety (90) days of purchase, you may return your Intel adapter to the original place of purchase for a full refund of the purchase price from your dealer. Resellers and distributors, respectively,

accepting returns and refunding money back to their customers may return Intel adapters to their original place of purchase. Intel guarantees that it will accept returns under this policy and refund the original purchase price to customers purchasing directly from Intel.

Limitation of Liability and Remedies

INTEL'S SOLE LIABILITY HEREUNDER SHALL BE LIMITED TO DIRECT, OBJECTIVELY MEASURABLE DAMAGES. IN NO EVENT SHALL INTEL HAVE ANY LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL, AND SPECIAL DAMAGES) INCLUDING, BUT NOT LIMITED TO, INFRINGEMENT OF INTELLECTUAL PROPERTY, REPROCUREMENT COSTS, LOSS OF USE, BUSINESS INTERRUPTIONS, LOSS OF GOODWILL, AND LOSS OF PROFITS, WHETHER ANY SUCH DAMAGES ARISE OUT OF CONTRACT NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, INTEL'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE PRODUCT PRICE. INTEL NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

Critical Control Applications: Intel specifically disclaims liability for use of the adapter product in critical control applications (including, for example only, safety or health care control systems, nuclear energy control systems, or air or ground traffic control systems) by Licensee or Sublicensees, and such use is entirely at the user's risk. Licensee agrees to defend, indemnify, and hold Intel harmless from and against any and all claims arising out of use of the adapter product in such applications by Licensee or Sublicensees.

Software: Software provided with the adapter product is not covered under the hardware warranty described above. See the applicable software license agreement which shipped with the adapter product for details on any software warranty.

Appendix B

Regulatory Compliance

To comply with U.S. and international regulatory requirements, the following information has been included. The document applies to the complete line of Intel products. Some of the labels shown, and statements applicable to other devices might not apply to all products.

Radio Frequency Interference Requirements

This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radio Frequency Interference Requirements - Canada

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

CE Marking & European Union Compliance



Products intended for sale within the European Union are marked with the CEMark which indicates compliance to applicable Directives and European Normes (EN), as follows. Amendments to these Directives or ENs are included: Normes (EN), as follows.

Applicable Directives:

- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

Applicable Standards:

- EN 55 022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information technology Equipment
- EN 50 082-1 - Electromagnetic Compatibility - Generic Immunity Standard, Part 1: Residential, commercial, Light Industry
- IEC 801.2 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 2: Electrostatic Discharge Requirements
- IEC 801.3 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 3: Radiated Electromagnetic Field Requirements
- IEC 801.4 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 4: Electrical Fast Transients Requirements
- EN 60 950 + Amd 1 + Amd 2 - Safety of Information Technology Equipment Including Electrical Business Equipment
- EN 60 825-1 (EN 60 825) - Safety of Devices Containing Lasers

RF Devices

Intel RF products are designed to be compliant with the rules and regulations in the locations into which they are sold and will be labeled as required. The majority of Intel's RF devices are type approved and do not require the user to obtain license or authorization before using the equipment. Any changes or modifications to Intel equipment not expressly approved by Intel could void the user's authority to operate the equipment.

Telephone Devices (Modems)

United States

If this product contains an internal modem it is compliant with Part 68 of the Federal Communications Commission Rules and Regulations and there will be a label on the product showing the FCC ID Number and the REN, Ringer Equivalence Number. The REN is used to determine the quantity of devices which maybe connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most but not all areas, the sum of the RENs should not exceed 5.0. To be certain of the number of devices that may be connected to the line, as determined by the total number of RENs, contact the telephone company to determine the maximum REN for the calling area.

If the modem causes harm to the telephone network, the telephone company will notify you in advance; however, if advance notice is not practical, you will be notified as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the modem. If this happens the telephone company will provide advance notice so you may make any necessary modifications to maintain uninterrupted service.

Canada

If this product contains an internal modem it is compliant with CS-03 of Industry Canada and there will be a Canadian certification number (CANADA: _____) on a label on the outside of the product. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line, individual service maybe extended by means of a certified convector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

User should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



User should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop which is used by the device, to prevent overloading. The termination of a loop may consist of any combination of devices, subject only to the requirement that the total of the Load Numbers of all devices not exceed 100.

The Load Number is located on a label on the product.

Si ce produit contient un intérieur modem duquel est conformité avec le code CS-03 de l'industrie canadien alors il aura un numéro de la certification canadienne (CANADA: _____) sur l'étiquette affiché au produit. L'étiquette d'Industrie Canada a identifiée le matériel homologué. Cette étiquette a certifiée que le matériel est conformé aux certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Toutefois, le Ministère n'assure pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit assurer qu'il soit permis de raccorder aux installations de l'entreprise télécommunications locales. Le matériel doit être également installé au suivant d'une méthode de raccordement. Dans certains cas, les fils intérieurs de l'entreprises utilisés pour un service individuel à la ligne unique peuvent être prolongés au moyen d'un dispositif de raccordement homologué (cordon rallongé téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans les certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériels à des jacks d'abonnés, sauf dans les cas précis et prévus pas les tarrifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite des réparations ou des modifications effectuées par l'utilisateur, ou à cause des mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit assurer que tous les fils de mise à terre de la source d'énergie électrique, lignes téléphoniques et les canalisations d'eau métalliques, s'il y en a, soient raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.



AVERTISSEMENT: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours aux services d'électronicien.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordé au circuit téléphonique bouclé d'utiliser par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge dans l'ensemble des dispositifs ne dépassent pas 100.

L'indice de charge se trouve sur le produit.

Laser Devices

Intel products using lasers comply with US 21CFR1040.10, Subchapter J and IEC825/EN 60 825 (or IEC825-1/EN 60 825-1, depending on the date of manufacture). The laser classification is marked one of the labels on the product.

Class 1 Laser devices are not considered to be hazardous when used for their intended purpose. The following statement is required to comply with US and international regulations:



Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous visible or invisible laser light exposure.

Class 2 laser scanners use a low power, visible light diode. As with any very bright light source, such as the sun, the user should avoid staring directly into the light beam. Momentary exposure to a Class 2 laser is not known to be harmful.

