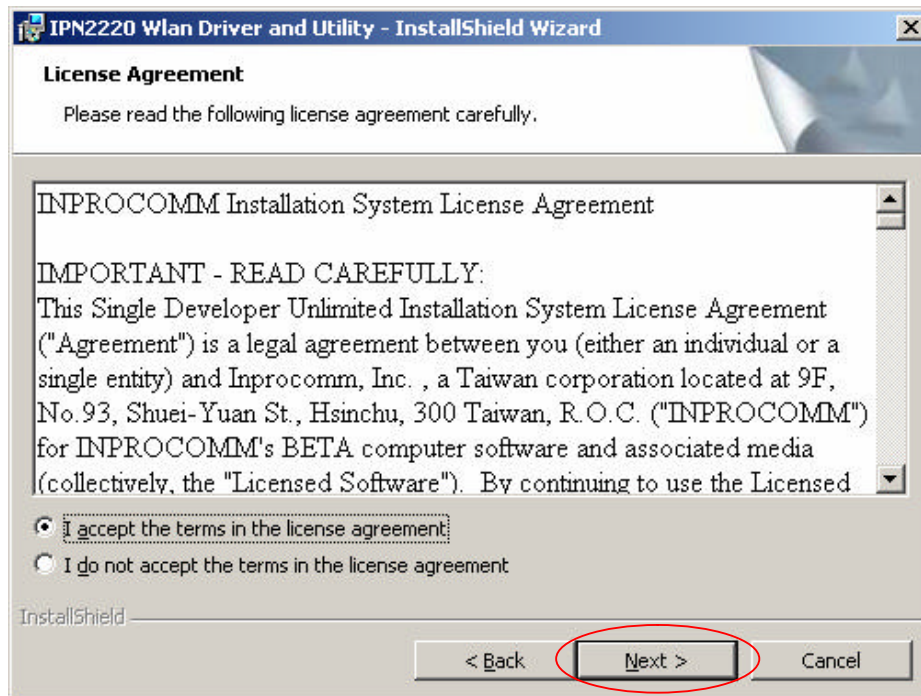
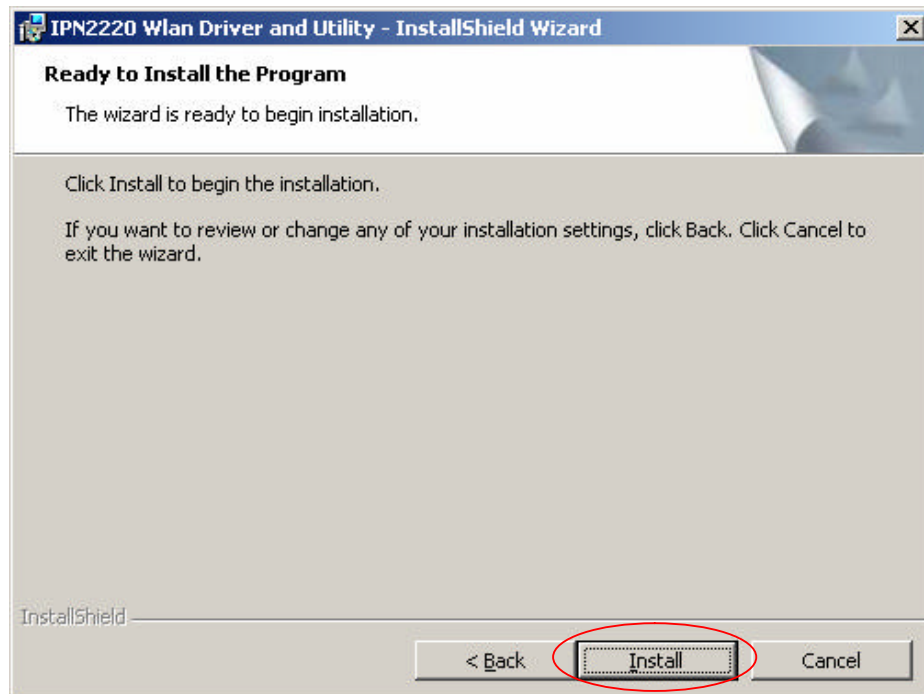


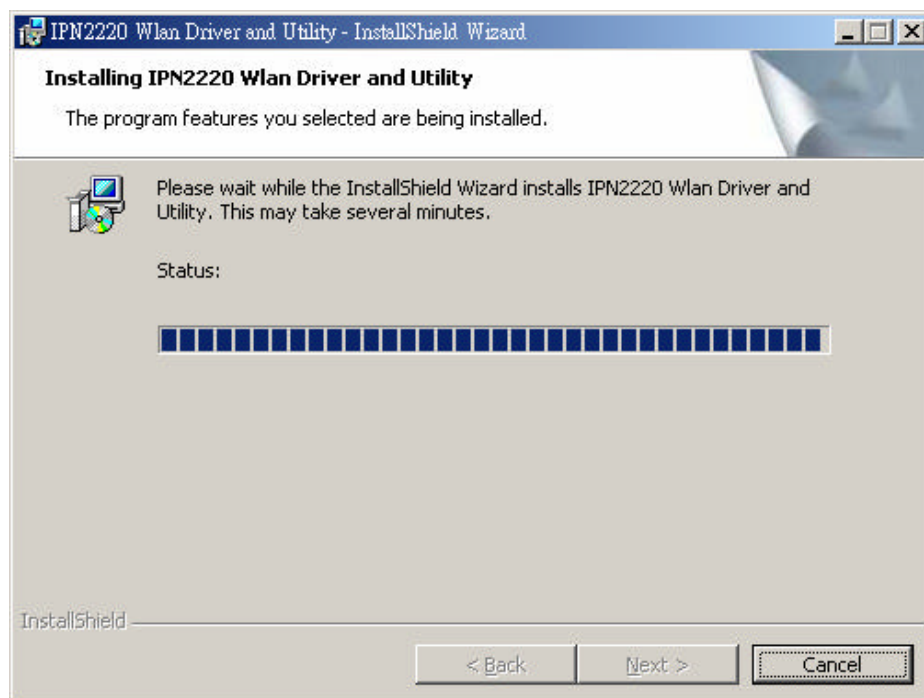
3. Licence Agreement ,Please choice "I accept the terms in the license agreement" and click "Next" to continue.



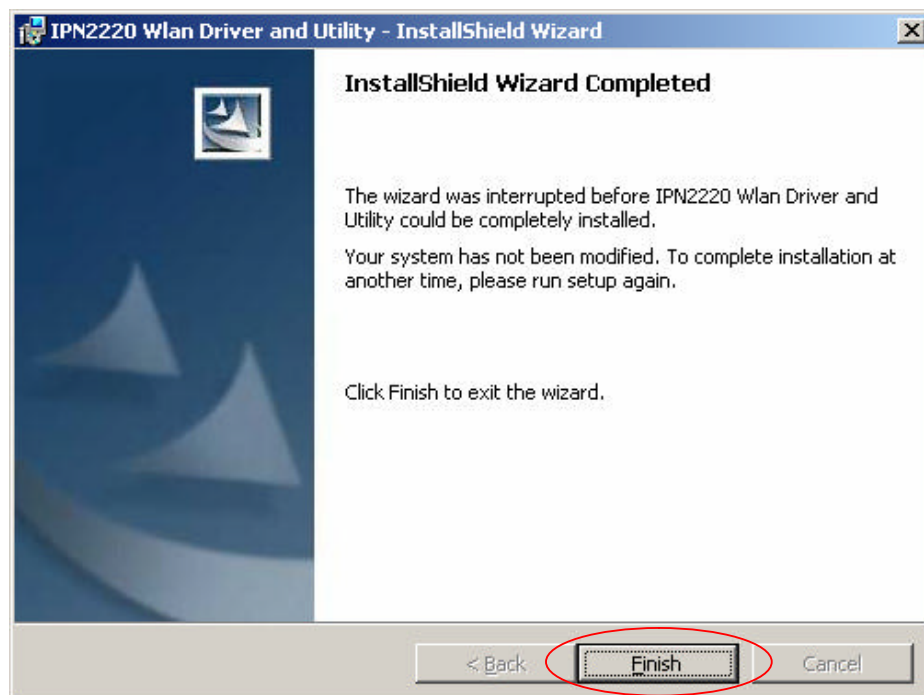
4. Click "Install" button to continue.



- The driver and utility are Installing.



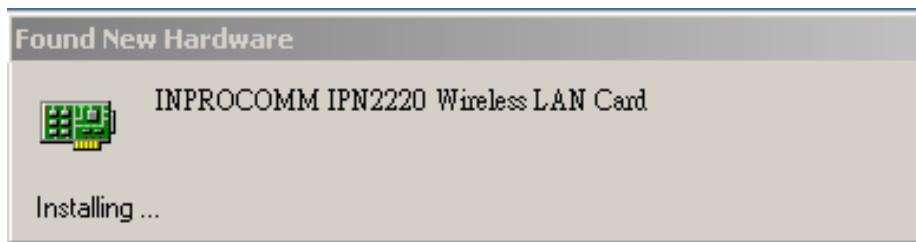
- Click Finish button to complete install procedure.



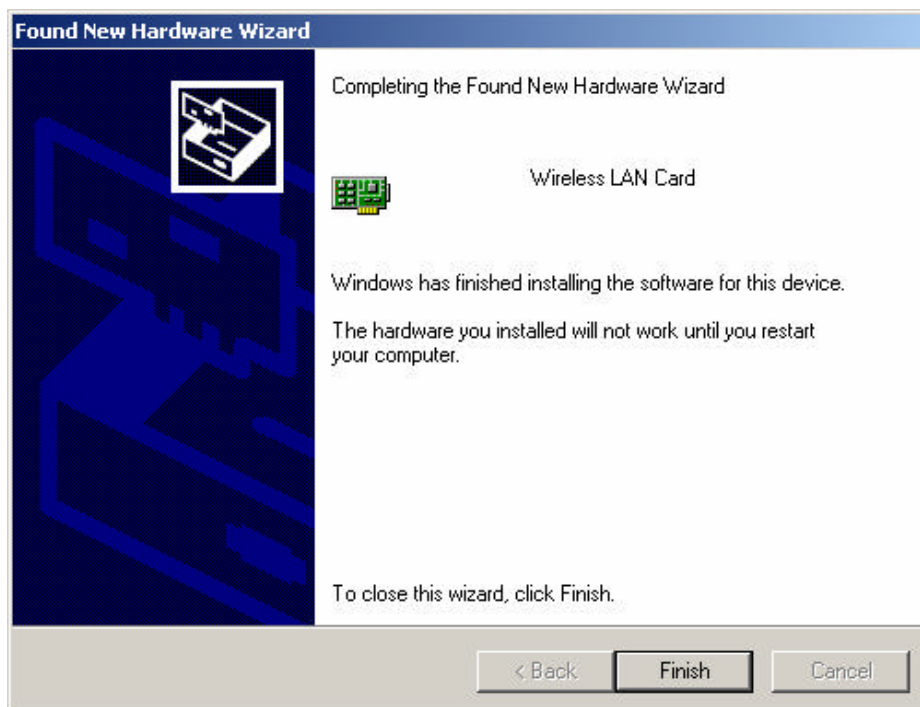
5. Insert the G101 WLAN adapter into the MiniPCI slot, the system will automatically find the device and search for its software then the InstallShield Wizard finished installation and the system tray icon is loaded in the taskbar (see illustration below).

Note: Please turn-off computer before user insert G101.

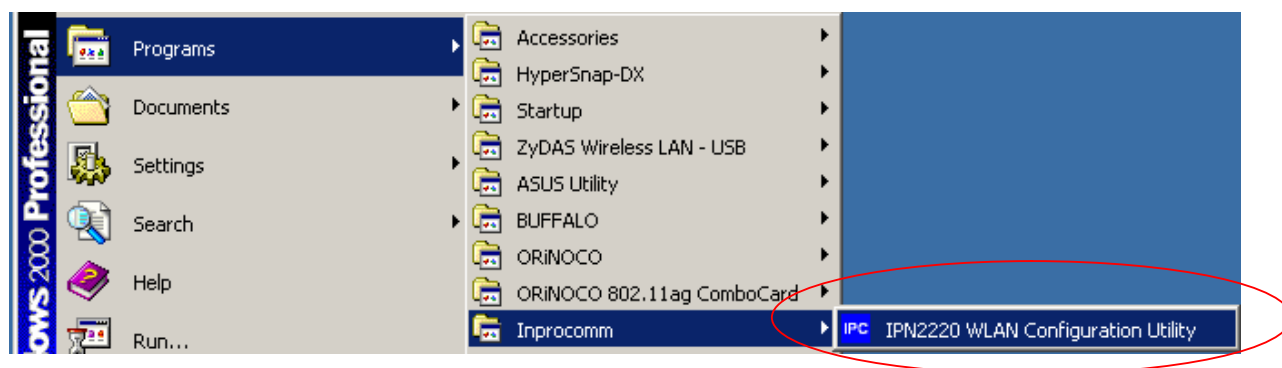
- Found New Hardware and Installing.



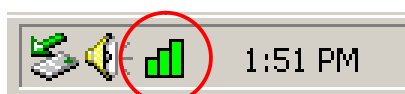
- Complete device install.



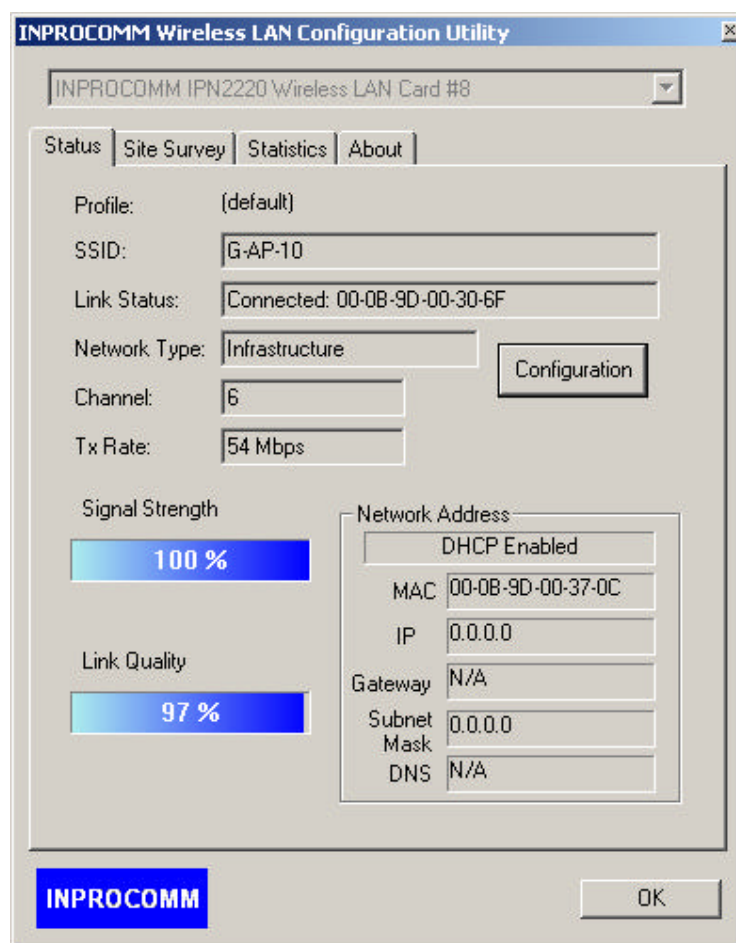
6. Please click “Start-> programs-> Inprocomm->IPN2220 WLAN Configuration Utility”.



- The WLAN icon will appear.



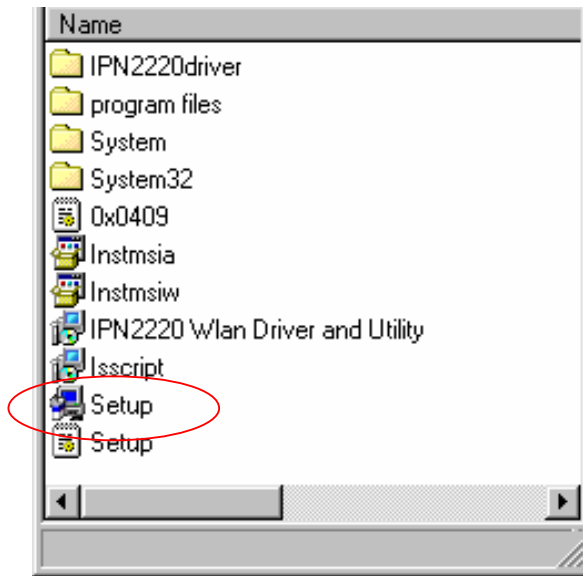
7. The “WLAN Configuration Utility” screen will appear.



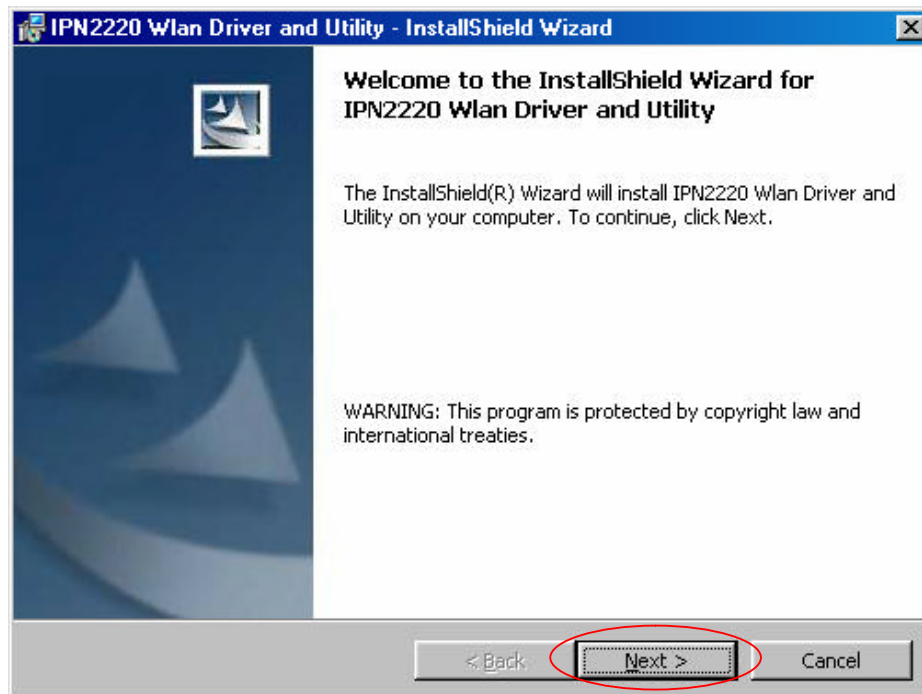
For Windows 98SE

Install the Driver and Utility

1. Insert the CD into the CD-ROM device and execute the "setup.exe" program for G101 series to select.

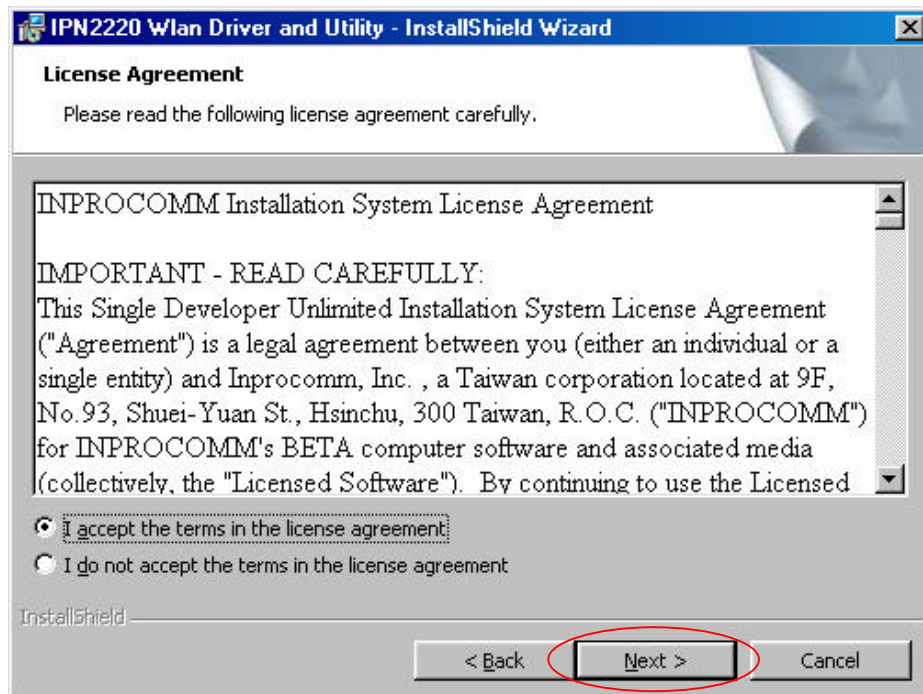


2. The InstallShield Wizard box will appear, click "Next" to continue.

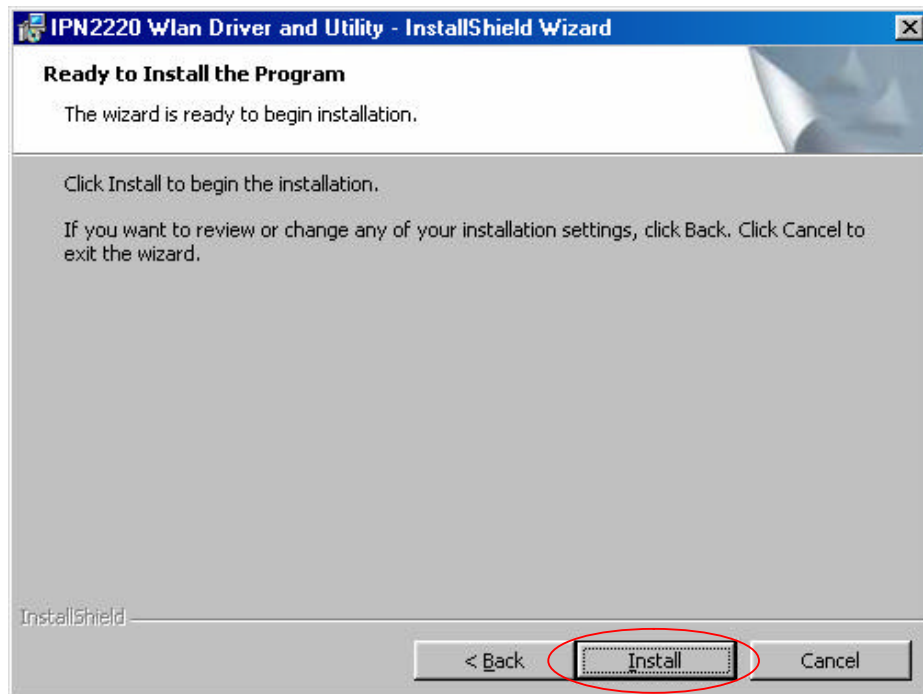


3. Licence Agreement appears. Please choice "I accept the terms in the license agreement" and click

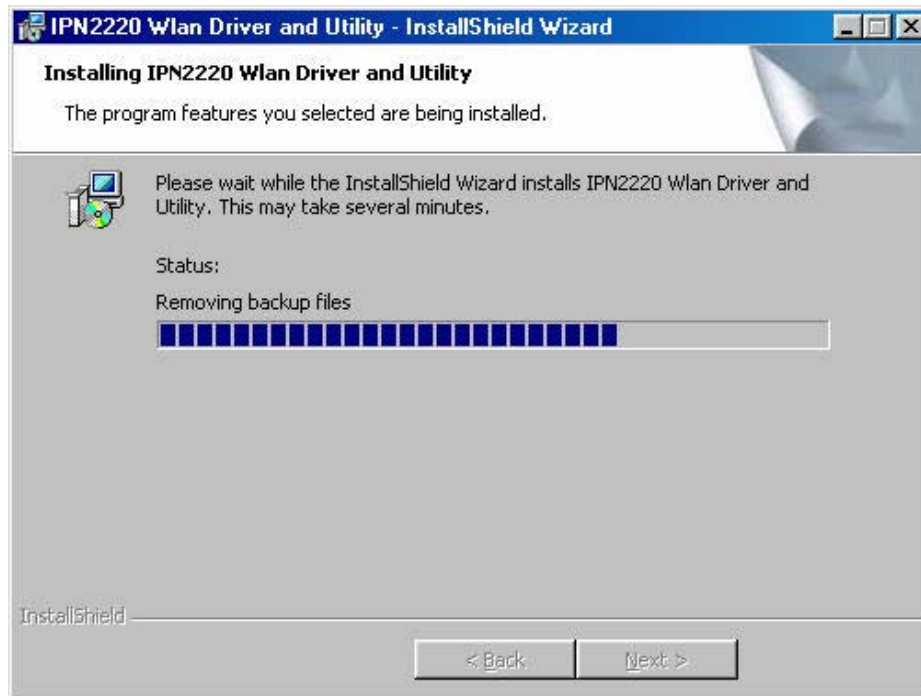
"Next" to continue.



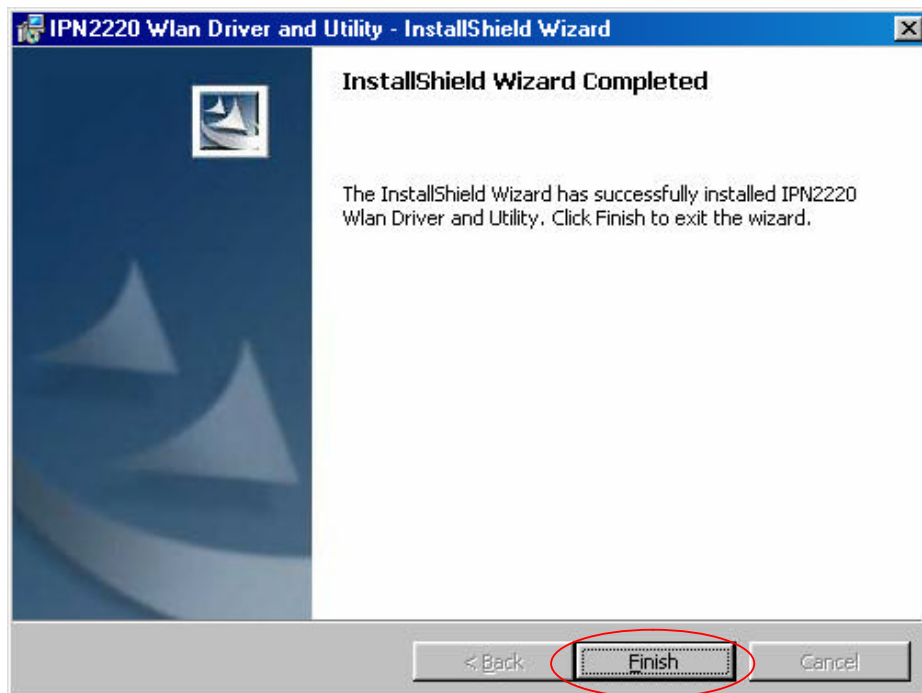
4. Click "Install" button to continue.



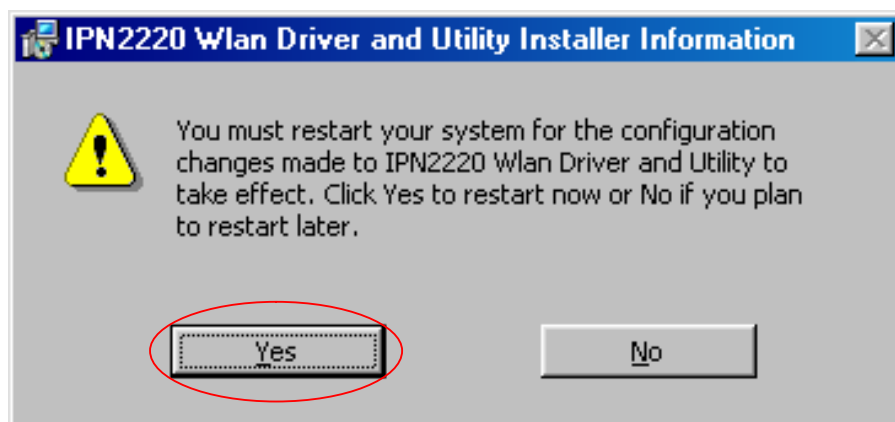
- The driver and utility are Installing.



- Click Finish button to complete install procedure.



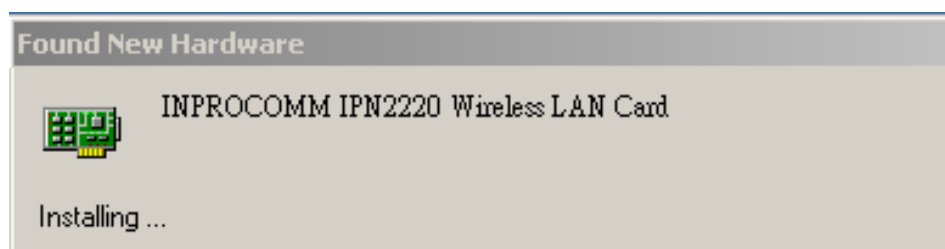
5. After running the driver package, it will be requested restart Win98 OS.



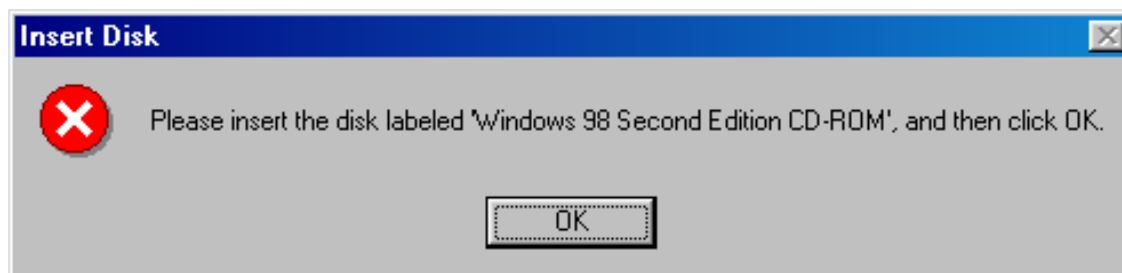
6. Insert the G101 WLAN adapter into the MiniPCI slot. The system will automatically find the device and search for its software then the InstallShield Wizard finished installation and the system tray icon is loaded in the taskbar (see illustration below).

Note: Please turn off the power before you insert G101.

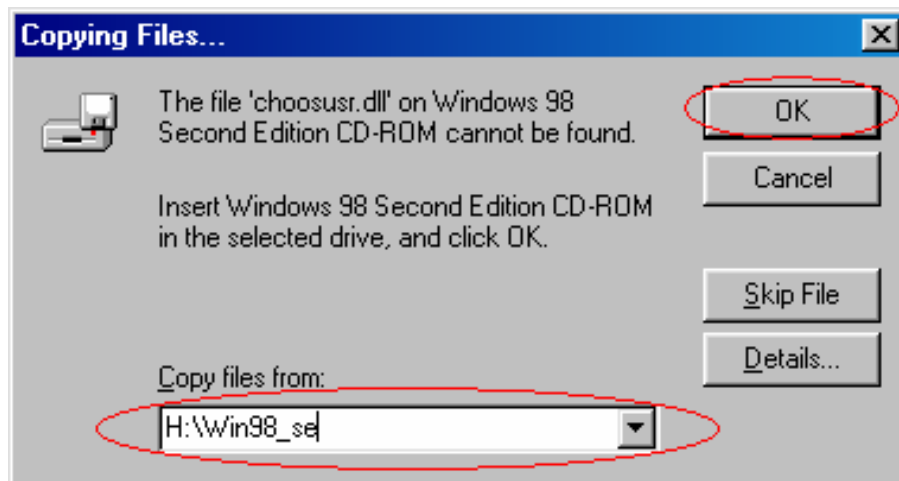
- New Hardware Found



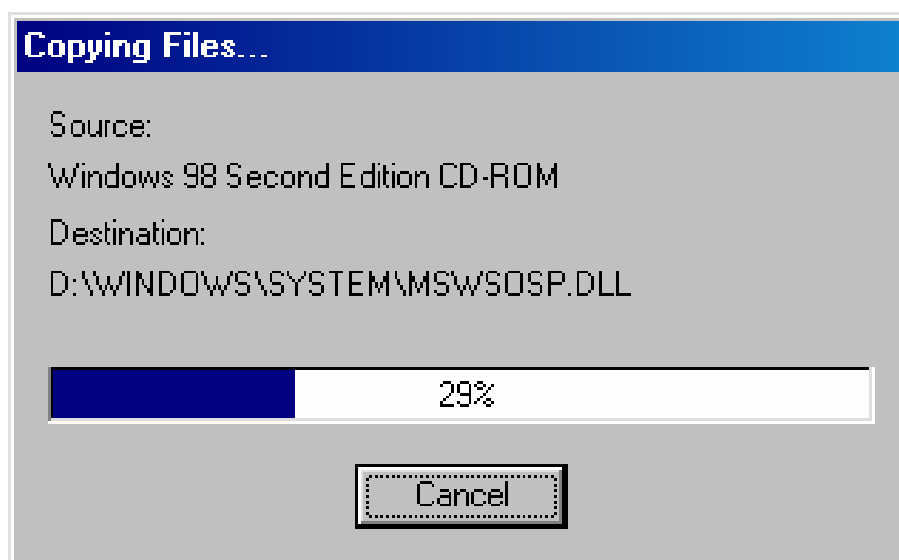
7. Please insert the disk labeled "Windows 98 Second Edition CD-ROM."



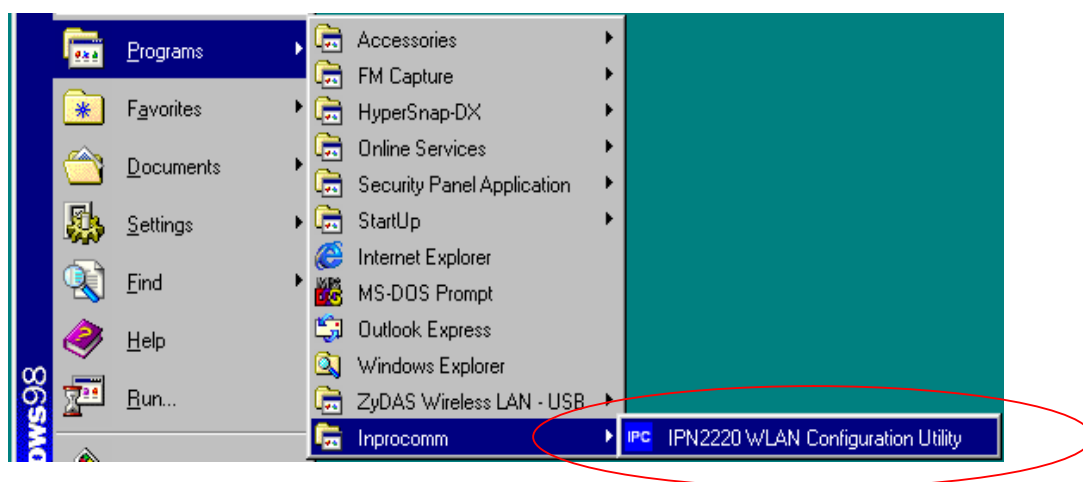
8. To choose Windows 98SE installing folder
-



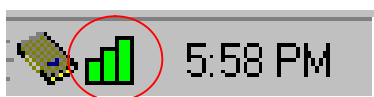
9. Copying Files



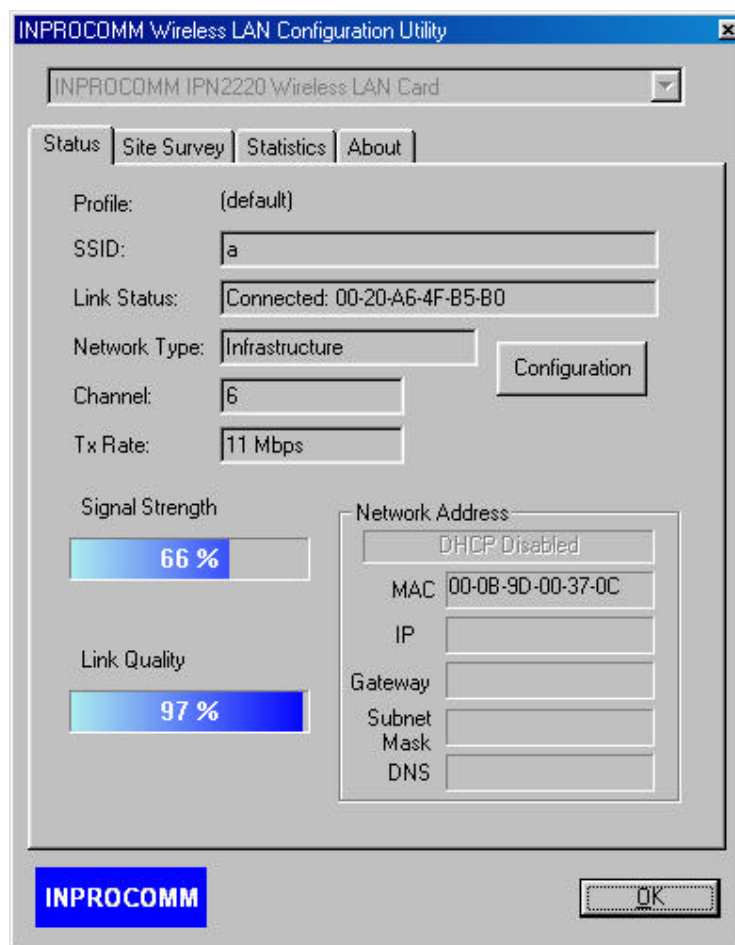
10. Please click **'Start-> programs-> Inprocomm->IPN2220 WLAN Configuration Utility'**.



- The WLAN icon will appear.



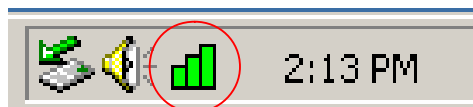
11. The “WLAN Configuration Utility” screen will appear.



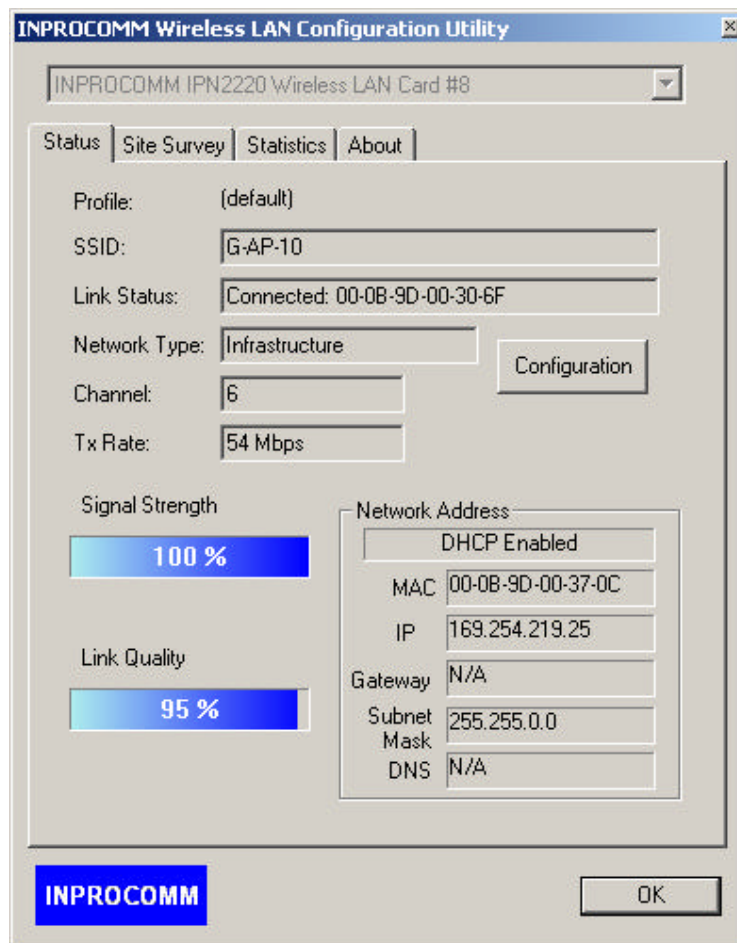
CONFIGURATION UTILITY

Note: The following Configuration Utility was operated under Windows 2000. (Procedures will be the same for Windows 98SE/XP)

G101 uses the Configuration Utility as the management software. The utility provides an easy interface to change any settings related to the wireless adapter. When the computer is started, the Configuration Utility starts automatically and the system tray icon is loaded in the toolbar (see illustration below.) Clicking on the utility icon will start the Configuration Utility.



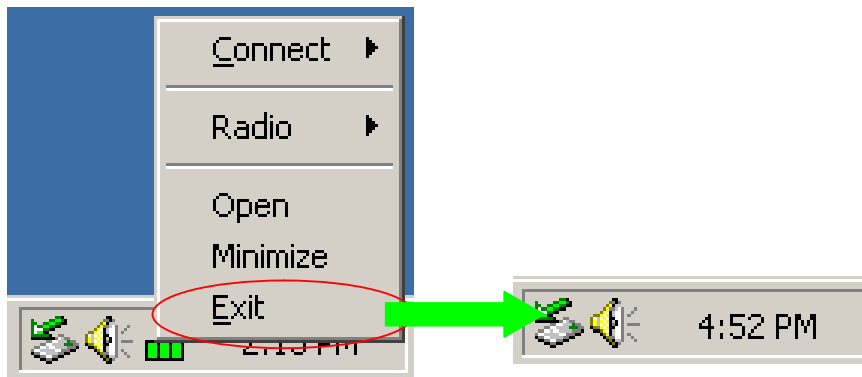
Double-click on the icon shown above. The screen below will appear.



Right-click on the icon shown below. The function of utility icon will appear.

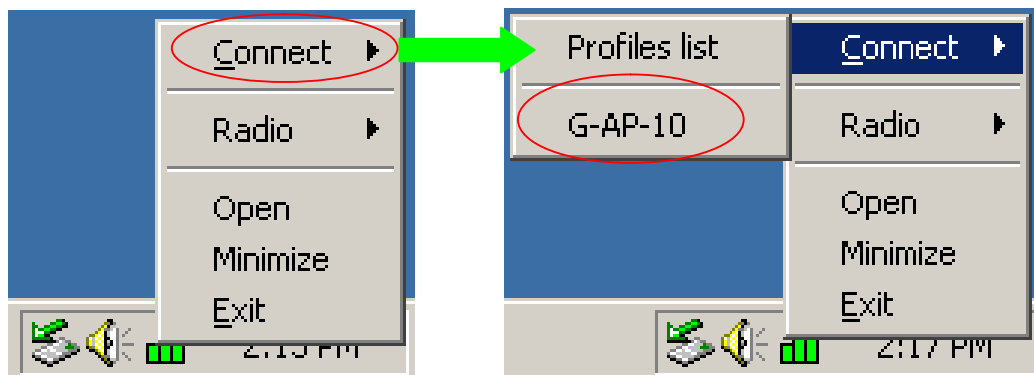
Exit

Clicking on the “Exit” Button will leave the Configuration Utility.



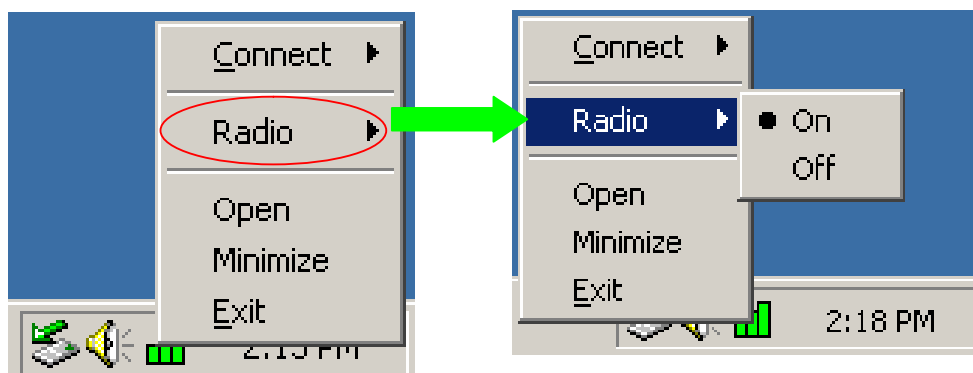
Connect

From “Profiles list” to select one of all profiles name (G-AP-10) to connect.



Radio

- **On** – Turn Radio on.
- **Off** – Turn Radio off.



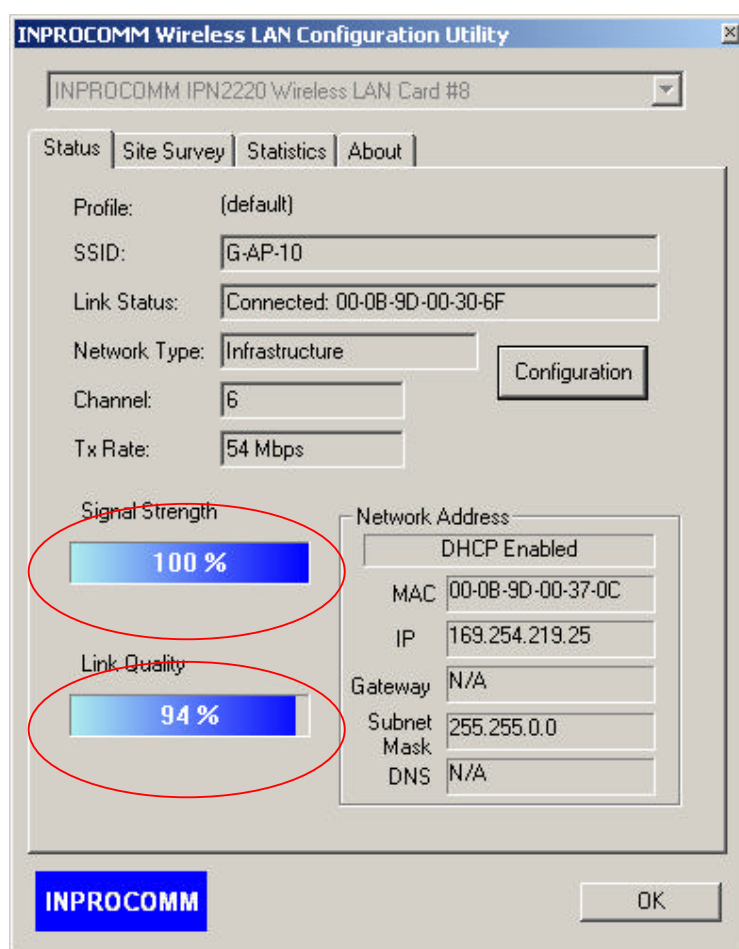
Status Tab

Signal Strength

This bar shows the signal strength level. The higher percentage shown in the bar, the more radio signal been received by the adapter. This indicator helps to find the proper position of the wireless device for quality network operation.

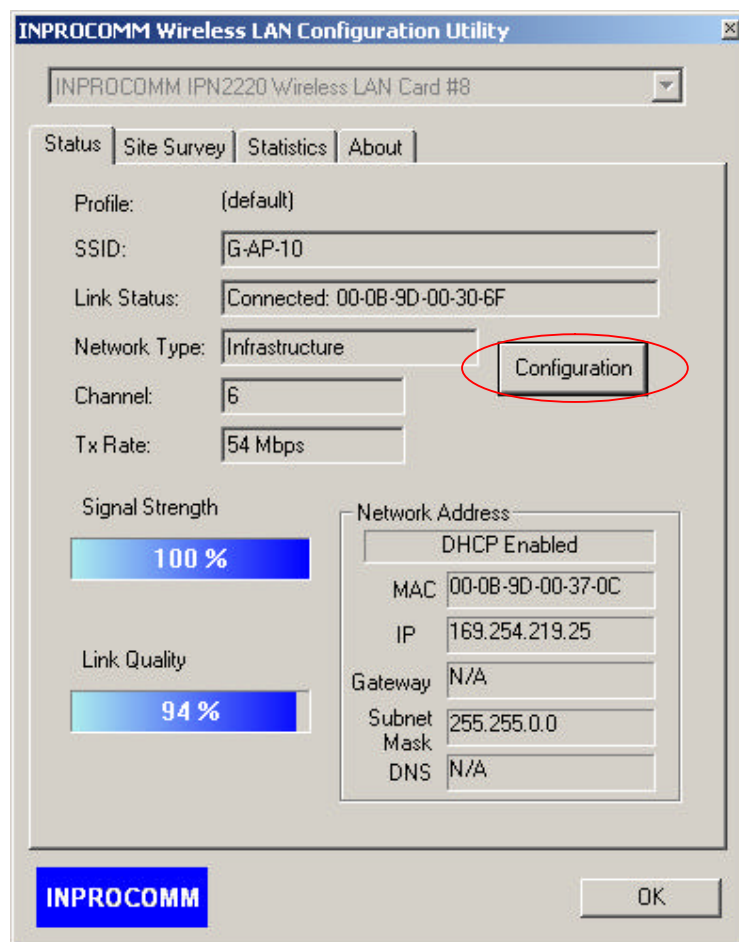
Link Quality

This bar indicates the quality of the link. The higher the percentage, the better the quality.



Configuration Table

Click the “Configuration Button” to get into the Configuration Table, as shown below.



General Tab

Any of the fields shown below can be changed without re-starting the OS.

The image shows a 'Configuration' dialog box with three tabs: 'General', 'Encryption', and 'Advanced'. The 'General' tab is selected. It contains the following fields:

- Profile Name:** A text input field.
- Network Type:** A dropdown menu currently showing 'Infrastructure'.
- SSID:** A text input field containing 'G-AP-10'.
- Channel:** A dropdown menu currently showing '6'.
- Desired Rate:** A dropdown menu currently showing 'Automatic'.

At the bottom right of the dialog are 'Apply' and 'Cancel' buttons.

Profile name

A profile is a named set of operating parameters for the **G101** WLAN adapter to display the available profiles for the **G101** WLAN adapter.

Network Type

The **G101** WLAN adapter can operate in one of two modes, which are specified in the Mode field of the Configuration menu. Clicking the down arrow at the right of the Mode field displays the available modes.

- **Ad-Hoc Station-** This is the 802.11b/g Ad-Hoc mode of operation. In “Ad-Hoc” mode, only one wireless “cell ” is supported for each different NETWORK NAME. All communication is done from client to client without the use of an Access Point. “Peer-to-Peer” networking uses the same NETWORK NAME for the wireless adapters in establishing the network connection. When “Ad-Hoc ” mode is selected, the utility will provide a selection for setting the channel.

- **Infrastructure Station-** This mode of operation requires the presence of an 802.11b/g Infrastructure. All communication is done through the Infrastructure, which relays packets to other wireless clients as well as to nodes on a wired Ethernet network.

SSID

The name of the wireless network. This name cannot be longer than 32 characters. The default value is “any”, which will automatically scan and connect the best performance Access point nearby. User may specify a SSID for the adapter and then only the device with the same SSID can interconnect to the adapter.

Channel

When communicating in Ad-Hoc mode, User must specify a channel on which communications will take place. This field is grayed in infrastructure mode because the Access Point automatically selects the channel.

Desired Rate

The Transmit Rate field specifies the rate at which the radio in user’s *G101* WLAN adapter transmits and receives data. User can set this to the following fixed rates: 1 Mbps; 2 Mbps; 5.5 Mbps; 6 Mbps; 9 Mbps; 12 Mbps; 18 Mbps; 24 Mbps; 36 Mbps; 48 Mbps or 54 Mbps.

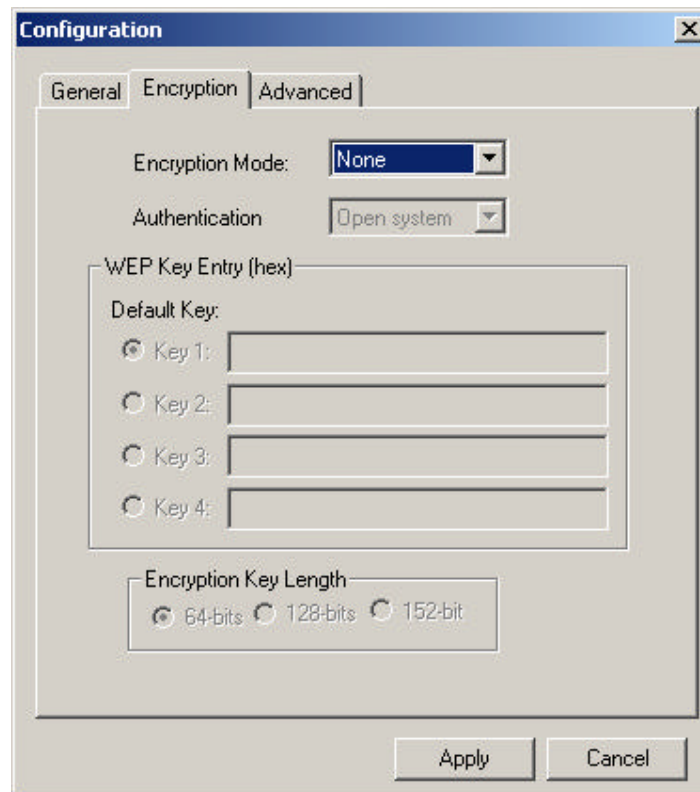
Automatic - When it is enabled, the device will choose the most suitable transmission rate automatically.

Apply

Click “Apply” button to save and implement the new settings.

Encryption Tab

To allow enhancing the security of a network. Every station in a secured network should enable the Encryption function and the values of the Network Key should be the same.



Encryption Mode

- **None** – Disable to Encryption Tab.
- **WEP** – Enable to Encryption Tab.

Authentication

This setting has to be consistent with the wireless devices, which the adapter intends to connect.

- **Open System** – No authentication is needed among the wireless devices.
- **Shared Key** – Only wireless devices using a shared key (WEP Key identified) are allowed to connecting each other. Setup the same key as the wireless devices, which the adapter intends to connect.
- **Auto Switch** – Auto switch the authentication algorithm depending on the wireless devices, which the adapter is connecting to.

Default Key

Select one of the keys (1~4) as the encryption key.

Key Value

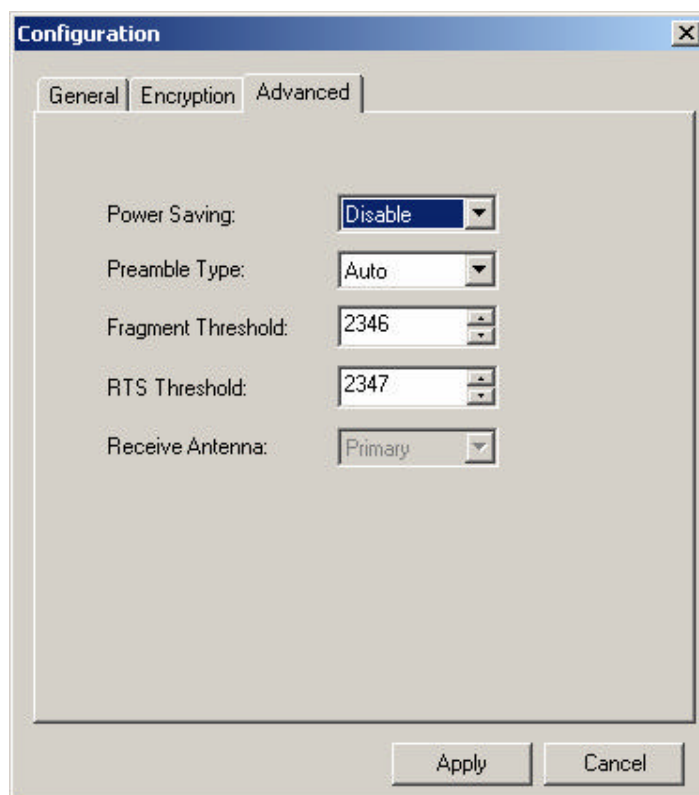
The keys are used to encrypt data transmitted in the wireless network. Fill the text box by following the rules below.

- **64-bit** – Input 10 digit Hex values (in the “A-F”, “a-f” and “0-9” range) as the encryption keys. For example: “0123456aef”.
- **128-bit** – Input 26 digit Hex values (in the “A-F”, “a-f” and “0-9” range) as the encryption keys. For example: “01234567890123456789abcdef”.
- **152-bit** – Input 32 digit Hex values (in the “A-F”, “a-f” and “0-9” range) as the encryption keys. For example: “012345678901234567890123456789ab”.

Encryption Key Length

One may select the 64-bit or 128-bit or 152-bit to encrypt transmitted data. Larger key length will provide higher level of security, but the throughput will be lower.

Advanced Tab



Power Saving

Power Saving mode allows to using reduced power during idle time by going into “sleep” mode, saving energy costs.

- **Disable** –The card will always set in active mode.
- **Enable(Fast)** –Enable the card in the power saving mode when it is idle, but some components of the card is still alive. In this mode, the power consumption is larger than “Max“ mode.
- **Enable(Max)** –Enable the card in the power saving mode when it is idle.

Preamble Type

defines the length of CRC block in the frames during the wireless communication.

- **Long** –“Long ” can provide more reliable communication.
- **Short** –“Short ” is suitable for high traffic wireless network.
- **Auto** –the card will auto switch the preamble mode depending on the wireless networks card is connecting to.

Fragment Threshold

The value defines the maximum size of packets, any packet size larger than the value will be fragmented. If user have decreased this value and experience high packet error rates, user can increase it again, but it will likely decrease overall network performance. Select a setting within a range of 256 to 2346 bytes. Minor change is recommended.

RTS Threshold

Minimum packet size required for an RTS (Request To Send). For packets smaller than this threshold, an RTS is not sent and the packet is transmitted directly to the WLAN. Select a setting within a range of 0 to 2347 bytes. Minor change is recommended

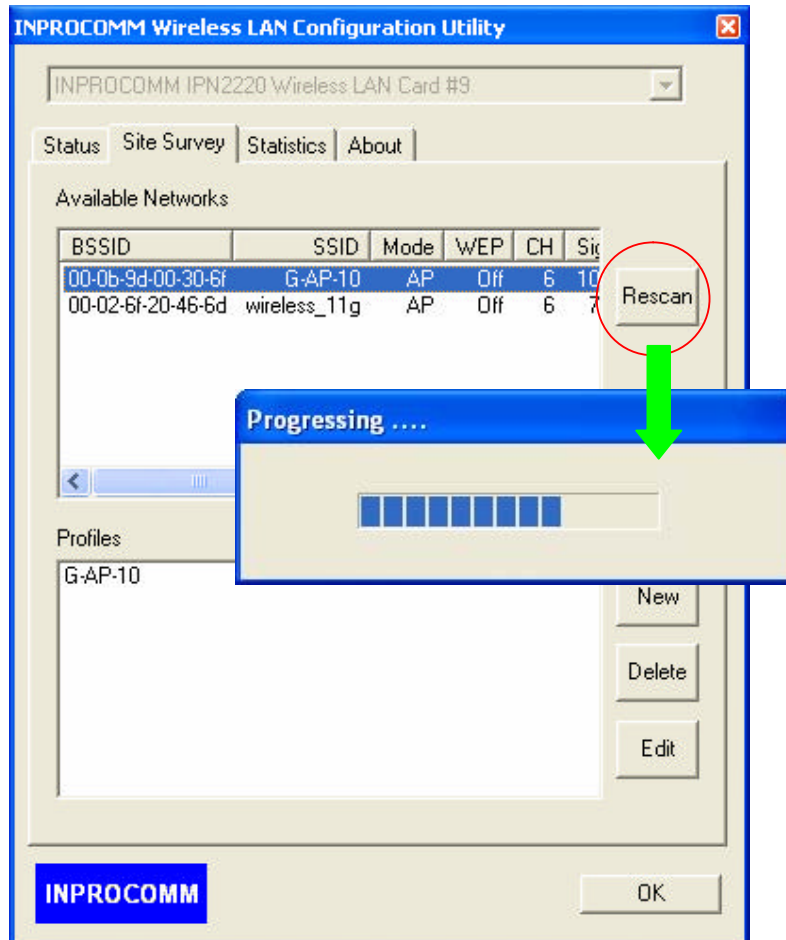
Receive Antenna

Define the receive antenna. If “Diversity” is selected, the card will auto switch to the antenna with high signal strength to receive data.

Site Survey Tab

Available Network

This screen shows all Access Points or Adapters nearby when operating in Infrastructure Station mode. If it is intended to connect to any device on the list, double-click the item on the list, and the adapter will automatically connect to the selected device.

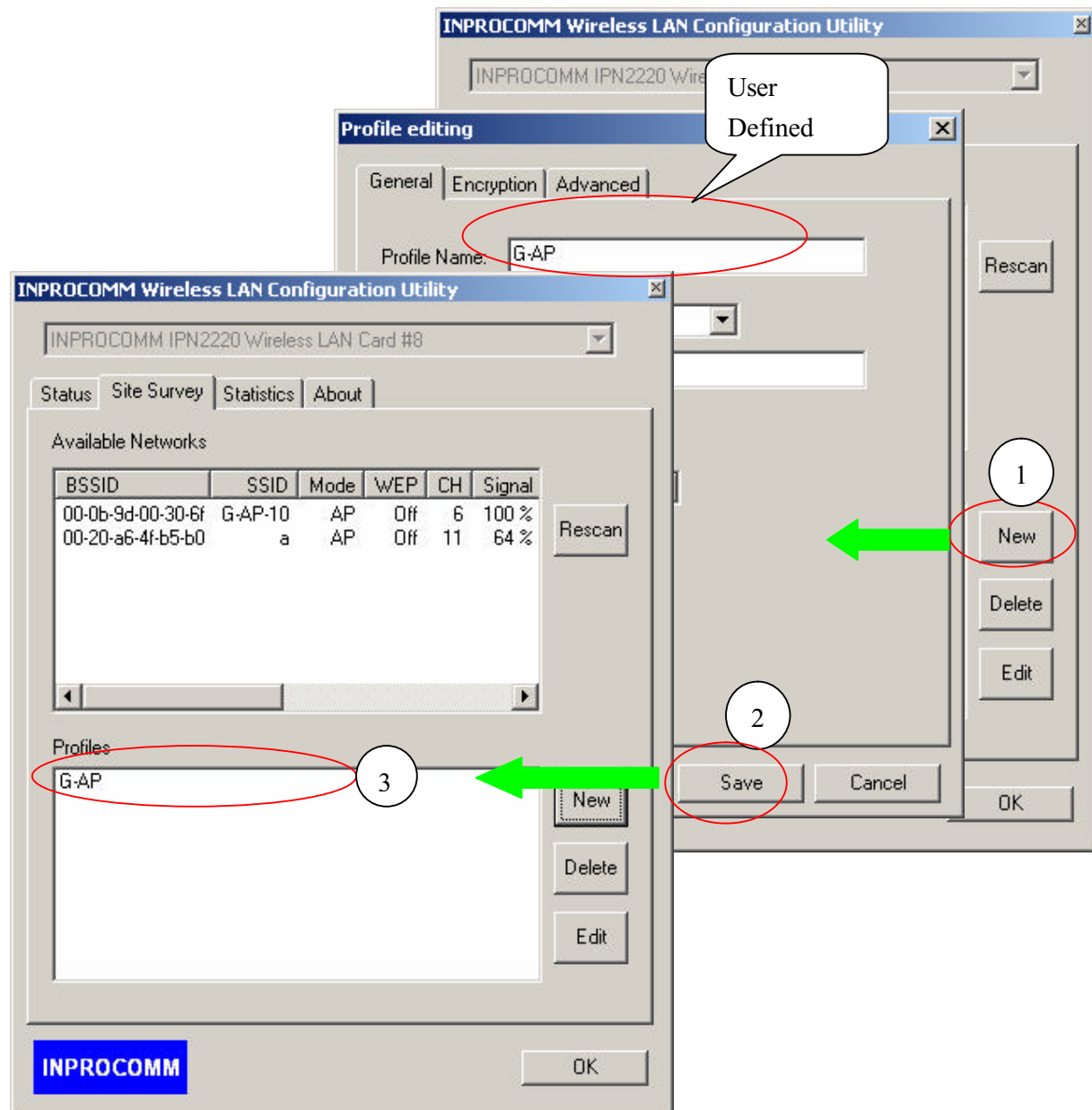


- **Rescan** –Click “Rescan” button to collect the BSSID, SSID, Mode, WEP, CH, Signal and Support Rates information of all the wireless devices nearby.

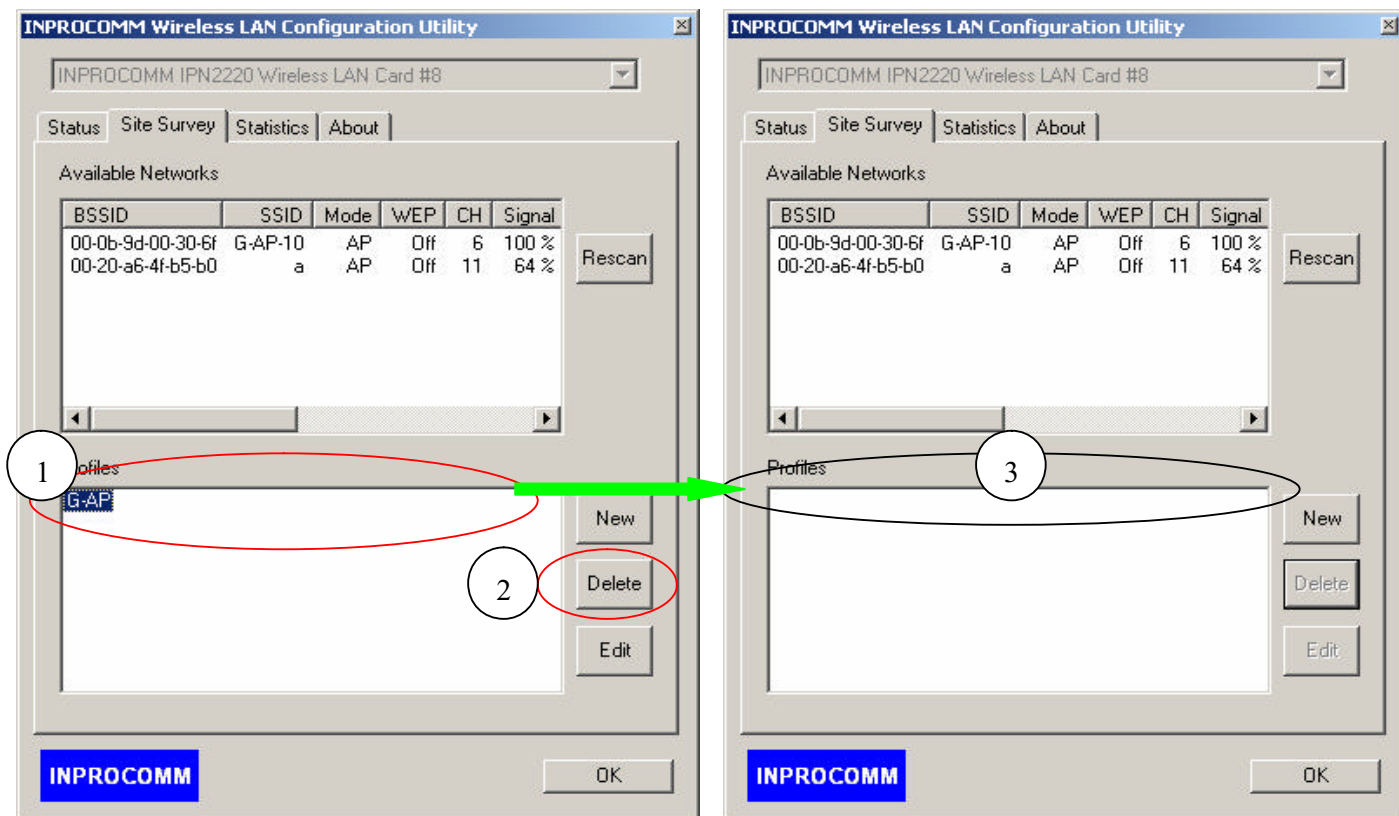
Profiles

A profile is a named set of operating parameters for user's **G101** WLAN adapter. The Profile Page lets user set values for all parameters by selecting a previously defined profile. Profile Page to display the available profiles for user's **G101** WLAN adapter.

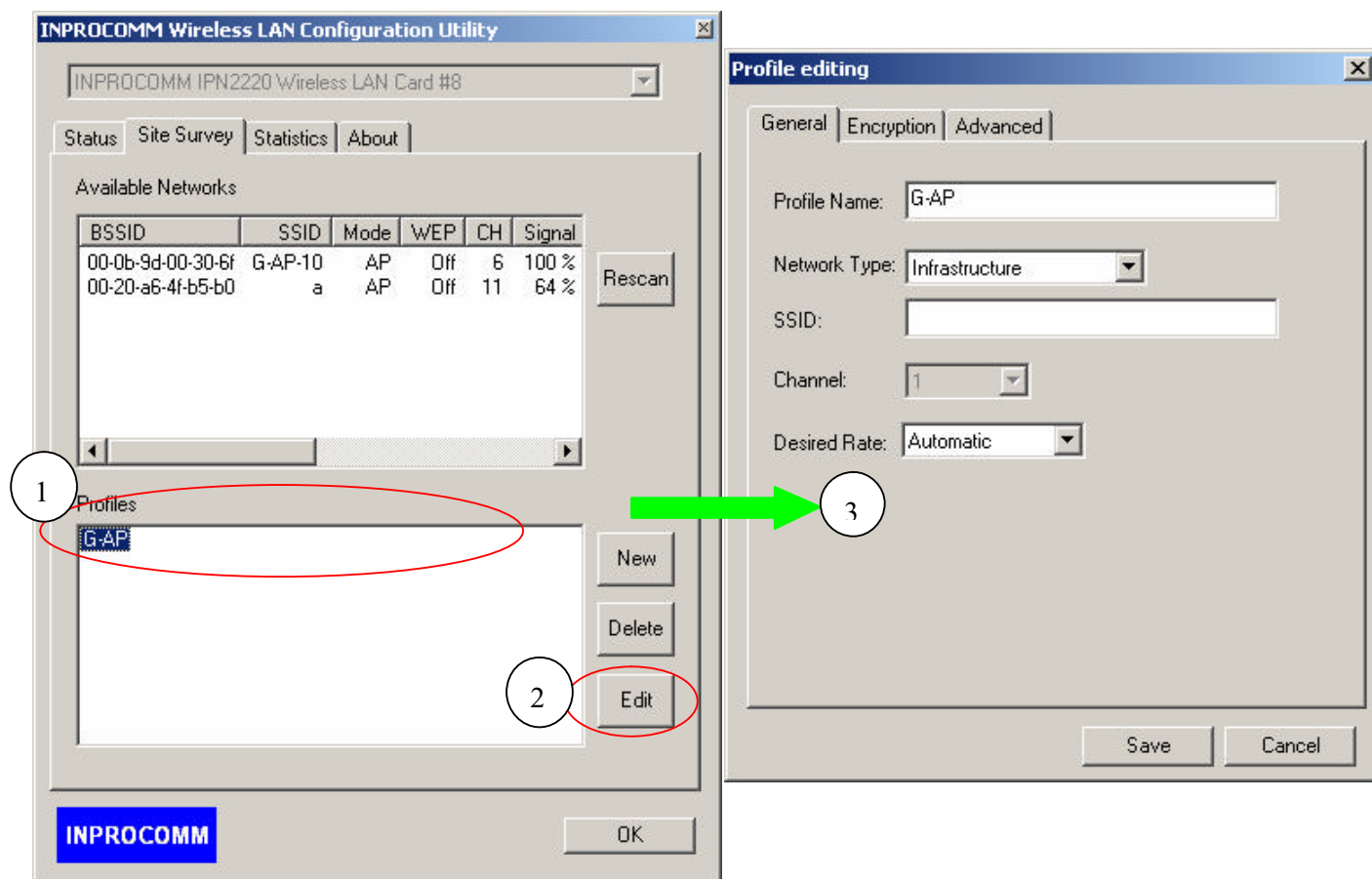
- **New** – 1. Click the “New” button to edit information of operating parameters for user's **G101** WLAN adapter.
2. Click the “Save” button to save information of operating parameters for your “G-AP” profiles of user defined
3. The Profiles Page shows “G-AP”



- **Delete** – 1. Click the item on the list.
2. Click “Delete” button.
3. delete “G-AP-10” profiles.

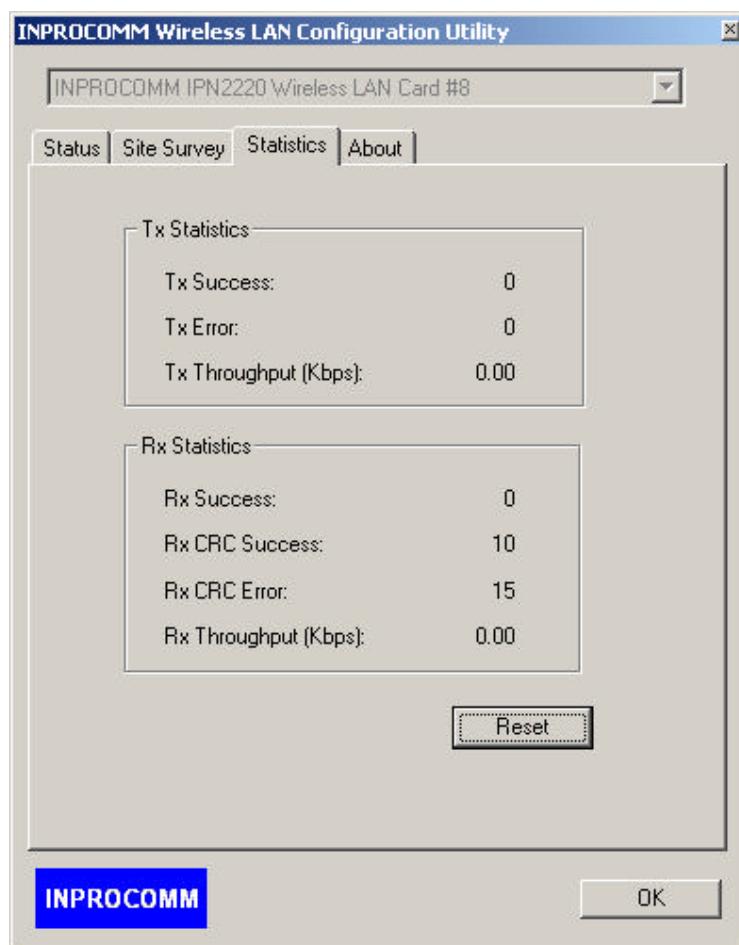


- **Edit** – 1. Click the item on the list.
2. Click “Edit” button.
3. Edit values for all parameters to “G-AP” profiles.



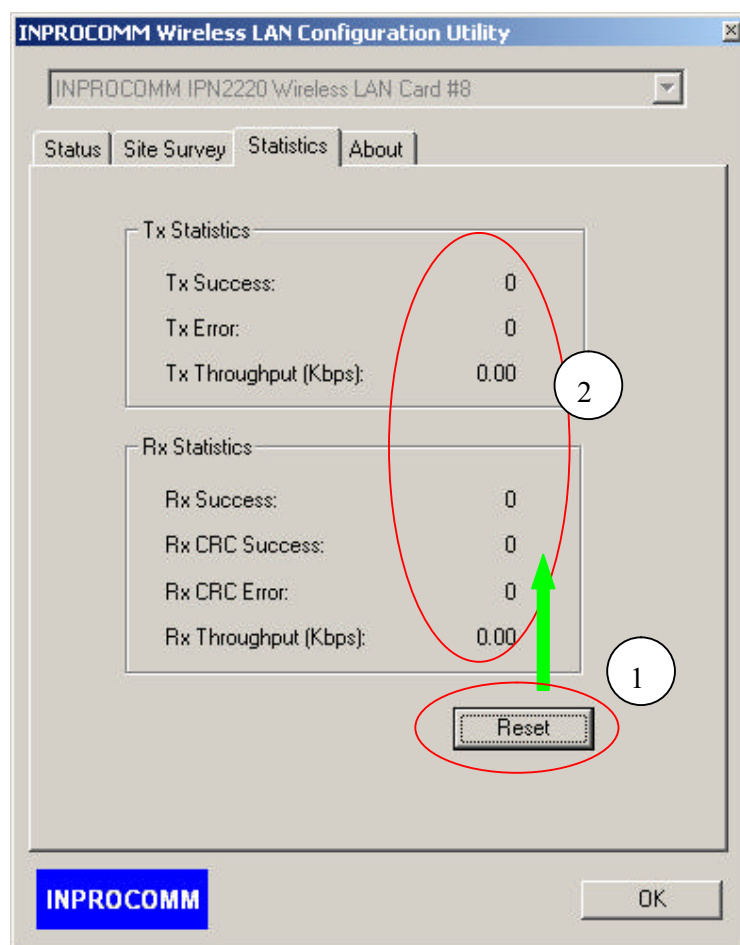
Statistics Tab

This option enables user to view the available statistic information with its Tx counts (Tx success, Tx error), Tx throughput, and its Rx counts (Rx success, Rx error), Rx Throughput.



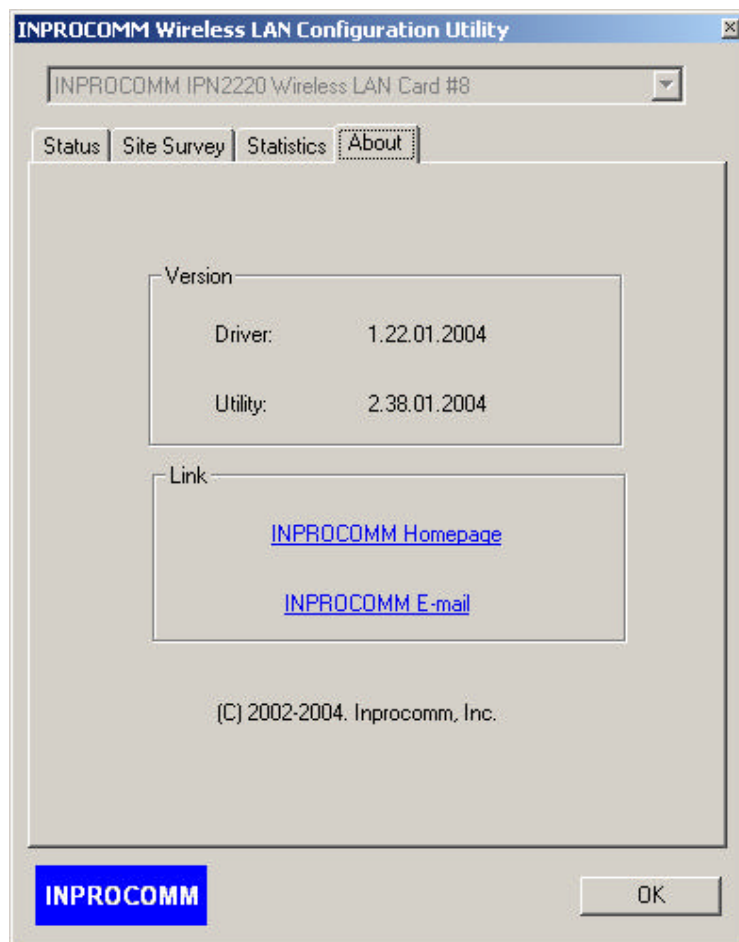
Reset– 1.Click “Reset” button

2.All content of Tx Statistics and Rx Statistics are being zero.



About Tab

The Information Page provides information on the version of the Network Driver, the Configuration Utility. In addition, this page also provides the HomePage and E-mail for service, as shown in the following illustration.



SOFTWARE INSTALLATION FOR LINUX

NOTE 1: *Before driver install, Please make sure below.*

- **System Environment:**

Linux kernel 2.4

Wireless tool 16.

NOTE 2:

- **Feature list:**

1. Full compliance with IEEE 802.11b/g standard
2. Support short preamble
3. Support RTS/CTS mechanism
4. Support de-fragmentation at receiving
5. Auto channel selection at system startup
6. Support static WEP keys of 64 and 128 bits

- **Known issues:**

1. Multicast Test is not supported.
2. Power save has not been implemented yet.
3. Data payload has not been tested yet.
4. Support for big-endian platform has not been implemented.

The Station Driver provides IEEE 802.11g station functionality. This document covers its available I/O control commands on Linux platform.

To describe I/O control command support by IPN2220 Station on Linux platform. This can be a user interface developer's reference to provide users a WEB or command-line based control environment.

1. Installation steps:

Step 1: Execute `"insmod -f IPN2220STA.o "`

at the directory where the IPN2220STA.o is located. By default, the STA will find a non-WEP AP with the most powerful signal strength to join.

Step 2: Execute `"./iwconfig"`

to display connection status

Step 3: Execute `"ifconfig wlan0 192.168.xxx.xxx"`

to assign an IP to STA. Notice that "wlan0" is the device name of our STA.

-
- After step 3, the connection is established.

2. Network related setting:

- **Item 1:** To change the MAC address of IPN2220 station, execute
“`./ifconfig wlan0 hw ether xxxxxxxxxxxx`” (xxxxxxxxxxxx denotes the new MAC address user want to set)
before user specify an IP address to the IPN2220 station.
 - **Item 2:** To perform site survey,
execute
“`./iwlist wlan0 scanning`”
to scan all channels and display the scan results. Notice that the wireless-extension version should be at least 15 for iwlist/iwconfig utilities to execute this command.
 - **Item 3:** To join a different BSS,
execute
“`./iwconfig wlan0 essid XXX`” (XXX denotes the essid of AP you want to join)
 - **Item 4:** To specify the channel of the ad-hoc network user want to create,
execute,
“`./iwconfig wlan0 channel N`” (N denotes the channel of the ad-hoc network user want to create, from 1 to 11)
 - **Item 5:** To change from infrastructure mode to ad-hoc mode,
execute
“`./iwconfig wlan0 mode ad-hoc`”
then execute
“`./iwconfig wlan0 essid XXX`” (XXX means the essid user want to set/join to the IBSS network)
 - **Item 6:** To change from ad-hoc mode to infrastructure mode,
execute
“`iwconfig wlan0 mode managed`”
then execute
“`./iwconfig wlan0 essid XXX`” (XXX means the essid of AP you want to join)
 - **Item 7:** To join different BSS,
execute
-

`"/iwconfig wlan0 essid XXX"` (XXX means the essid of AP you want to join)

3. Network related setting:

- **To enable WEP or change WEP key, please refer to the instructions below:**
 - (1) To set WEP key to key set \$i, enable WEP and use key set \$i as WEP key, the command is `"/iwconfig wlan0 key xxxxxxxxxxxx [$i]"`, (xxxxxxxxxxx denotes WEP key) (\$i: 1~4)
 - (2) If user execute `"/iwconfig wlan0 key xxxxxxxxxxxx"`, (xxxxxxxxxxx denotes the WEP key) without specifying the key ID `"[$i]"`, then the default WEP key ID will be 1.
 - (3) To disable WEP at any time, the command is `"/iwconfig wlan0 key off"`.
 - (4) To enable WEP that you have set before via (1) or (2) or (3), the command is `"/iwconfig wlan0 key on"`.
 - (5) To enable WEP and use key set \$i as WEP key. (\$i can be 1~4) that you have set before via (1) or (2) or (3), the command is `"/iwconfig wlan0 key [$i]"`
- **If user want to join a BSS with different WEP key setting, execute the following two command.**
 - (1) `"/iwconfig wlan0 key xxxxxxxxxxxx"`, (xxxxxxxxxxx denotes WEP key)
 - (2) `"/iwconfig wlan0 essid XXX"`, (XXX denotes the essid of AP you want to join)
 - (3) Notice, the executing sequence is unrelated in infrastructure mode. But in ad-hoc mode, user must execute (1) first or user will create an ad-hoc network with the same SSID but different WEP setting.

4. Remove step:

- **To turn off STA and remove the module,**
execute
`"ifconfig wlan0 down"` then execute
`"rmmod IPN2220STA"`

TROUBLESHOOTING

If there is any problem *G101* WLAN adapter or it is required to confirm whether the adapter is installed properly or not, the following procedure is applicable to check the various components after the adapter has been installed. The first part suggests checking the various properties of the card for checking the proper installation. The second part lists the various problems, which might be possibly encountered during the installation, and provides the possible solution. Check the first part to guess the probable reason of unsuccessful installation.

Please check the followings when encountering a problem on installing the *G101*, or when the *G101* is non-functional.

In Windows 2000:

To check if the *G101* is installed properly, please do the following:

1. Check the Windows 2000 Diagnostics. See if there is any conflict in the Resource allocation or the I/O Address, IRQ allocations. If it is found that the IRQ or I/O Addresses are already assigned to some other devices, change that value.
2. Go to the Control Panel. Double click on the Network Adapter, and “*G101* Wireless Adapter” is shown. Double clicking on that will show the status of the *G101* network adapter. If there are no error signs, the adapter has been installed properly.

In Windows XP:

To check if the *G101* is installed properly, please do the following:

1. Go to START>CONTROL PANEL. Double-click on Network Connections. Right-click on LAN. Click Properties.
2. The *G101* network adapter will appear, indicating proper installation.

TECHNICAL SPECIFICATIONS

Networking Characteristics

Compatibility	● IEEE 802.11 Standard for WLAN (DSSS) ● Wi-Fi certified by Internal
Host OS	Windows 98SE/ME/2000/XP, Linux
Media Access Protocol	CSMA/CA with ACK
Network Protocol	TCP/IP, IPX, NetBEUI

RF Characteristics

Frequency Range	2.400-2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)
Operating Channels	● 1-11 United States (FCC) ● 1-11 Canada (DOC) ● 1-14 Japan (MKK) ● 1-13 Europe (Except Spain and France) (ETSI)
Modulation Technique	● OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) ● DBPSK, DQPSK, CCK (11b)
Spreading	11-chip Barker Sequence
Transmit Power	● 17 dBm @ 11Mbps ● 13 dBm @ 54Mbps
Receive Sensitivity	● 11 Mbps 10^{-5} BER @ -83 dBm ● 54 Mbps 10^{-5} BER @ -67 dBm
Security	● 64/128/152-bit WEP Encryption ● WPA, TKIP, AES Data Encryption
Operating Range	Open Space : 100 ~ 300m; Indoor: 30m ~ 100m The transmission speed varies in the surrounding environment.
EMC Certification	FCC Class B part 15B, 15C; R&TTE

The equipment version marketed in US is restricted to usage of the channels 1-11 only.

FCC CAUTION

1. The device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference, and
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
2. FCC RF Radiation Exposure Statement: The equipment complies with FCCRF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
3. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
4. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

NOTE:

This device is approved for OEM installation. It is the responsibility of the Installer to comply with the separation distance for satisfying RF exposure compliance and 15.19 labeling requirement that the final end product must be labeled in a visible area with the following: "Contains TX FCC ID: QS3WGBPR1"