User's Guide

for

PN15 802.11g Wireless LAN Module

Shuttle®

User's Guide for Wireless LAN module

Manual Version 1.0

FCC Regulation Information

The equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this 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:

- Reorient 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 to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The equipment is for home or office use.

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1. INTRODUCTION

The 802.11g Wireless LAN module aims to let your XPC quickly and seamlessly communicate with a 802.11g (at up to 54 Mbps) networks. Wireless LAN is local area networking without wires, which uses radio frequencies to transmit and receive data between PC's or other network devices. With this Wireless LAN module, surfing on the Internet couldn't be any easier. Simply install the USB Module into the reserve area, launch the attached friendly-interfaced program – Shuttle Wireless LAN to configure the Module, and you will be ready to experience how the LAN (local area network) can be accessed anywhere. You can operate the network in either an independent mode or an infrastructure mode. The former, which is also known as peer-to-peer or ad-hoc network, lets you directly make connection with other wireless-equipped computers, and the later, the so-called infrastructure network, allows you to communicate with wired LAN via an access point.

To obtain the complete benefits your 802.11g Wireless LAN module provides, please read this manual carefully before using it.

1.1 Features

With 802.11g Wireless LAN Module, you can

- exchange data over the air, which minimizes the need for wired connections
- possess the portability and mobility of wireless networking connectivity wherever you are
- operate Ad-Hoc or Infrastructure modes
- utilize up to 128-bit WEP,WPA encryption
- enjoy high-speed data transfer rate up to 54 Mbps
- employ automatic data rate switching which offers maximum reliability, throughput and connectivity
- monitor and configure the network via the supplied friendly-interfaced application ~ **Shuttle Wireless LAN Tool**
- Segue Software Access Point Function.

1.2 Package Contents

Before starting installation, please make sure the package you purchased includes the following items:

- One 802.11g Wireless LAN Module
- One Antenna
- Two Washers
- One Daughterboard
- One USB data cable
- 4 x Screws
- One Setup Wizard CD-ROM with Sague SoftAP
- One User Manual

If any of the items listed above are missing or damaged, please contact your distributor.

1.3 System Requirements

To properly operate your 802.11g Wireless LAN Module, your computer must meet the following minimum requirements:

- 300 MHz processor or higher
- 32 MB RAM or above
- A CD-ROM drive
- Microsoft Windows 98 SE/ Me/ 2000 or Windows XP

1.4 The 802.11g Wireless LAN Module

Your 802.11g Wireless LAN Module should be located in the USB port on the back panel of your XPC.

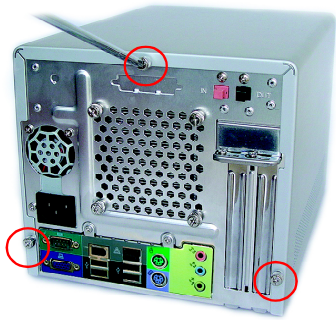
2. INSTALLATION OF THE 802.11g WIRELESS LAN MODULE

Installing the the PN15 is quick and easy. Simply follow the steps below to install the hardware, followed by a few clicks of the mouse and you will be up and running on your own wireless network.

2.1 Hardware Setup

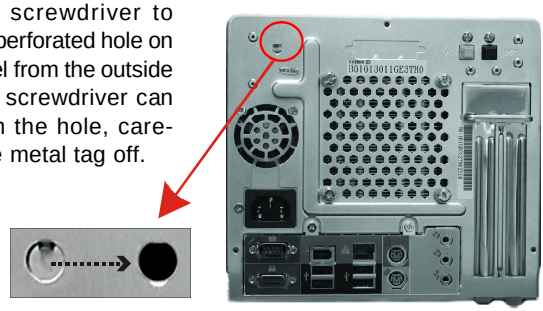
✸ *STEP1.*

Unfasten the three screws on the back panel and remove the case.



✸ *STEP2.*

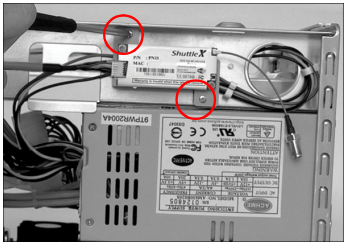
Use a 6mm screwdriver to puncture the perforated hole on the back panel from the outside in. Once the screwdriver can pass through the hole, carefully snap the metal tag off.

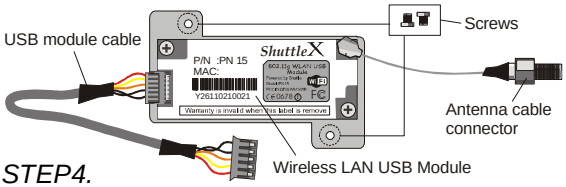


Note : *If the cover still does not detach, carefully bend it by pushing down from the inside of the chassis.*

✸ *STEP3.*

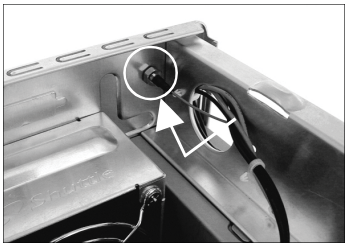
Screw the Wireless LAN Module to the two holes on the outside of the chassis arm, near the rear of the XPC.



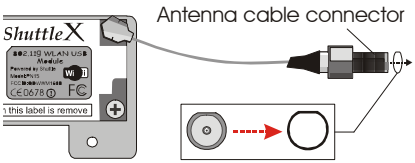


✸ *STEP4.*

Weave the antenna cable connector through the reserve hole and insert it flush into the back of the chassis.

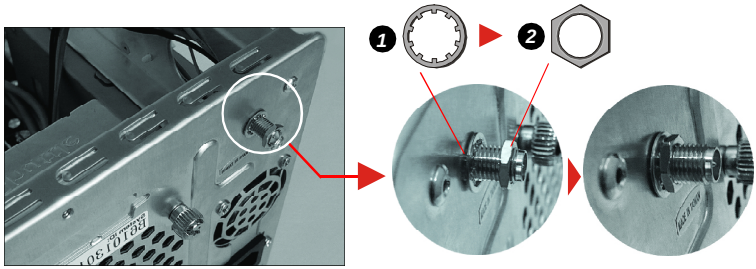


Caution : *When inserting the cable connector, check the socket alignment and only push horizontally.*
Do not *turn or twist the cable.*



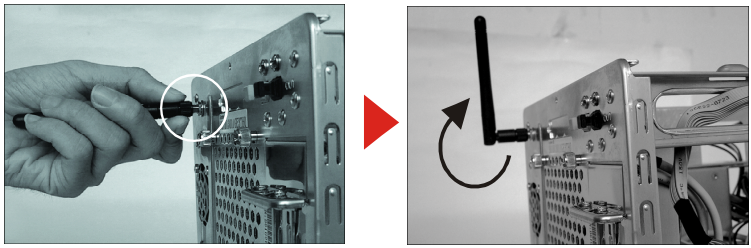
Note : *If some difficulty is found while inserting the antenna socket into the reserve hole, make sure the surface is clean. Finally, check the alignment and then use some more force .*

Use a washer and lock nut from the outside to secure the antenna in position.



✸ *STEP5.*

Screw the antenna onto the exposed thread. Set the antenna to vertical for good reception.

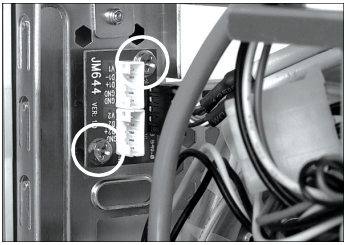


Note : *Make sure all the connectors are aligned in the correct direction.*

If you are installing this wireless module on either the ST61G4, ST62K, or SK83G, please proceed directly to step 10.

✸ *STEP6.*

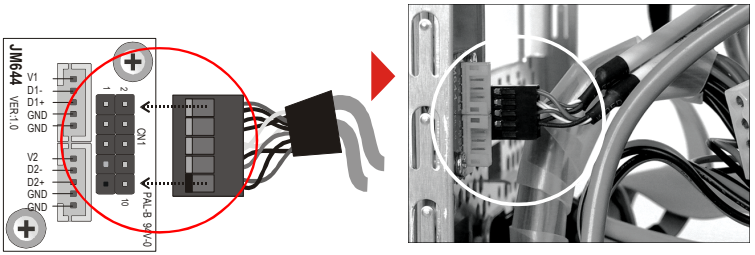
Screw the daughterboard to the front inside panel of the chassis in the position shown.



Caution : *The white USB sockets should be facing outwards as you install the daughterboard.*

✸ *STEP7.*

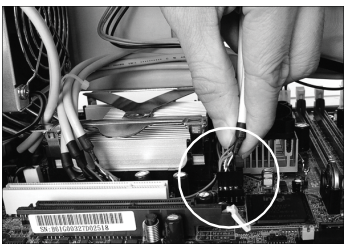
Connect the standard USB cable to the daughterboard. The standard USB cable connects to the black USB header.



Note : *Make sure all the connectors are aligned in the correct direction.*

✸ *STEP8.*

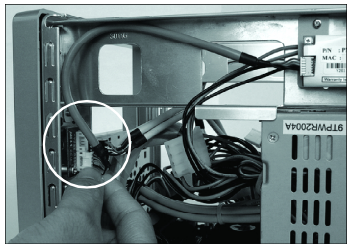
Connect the other end of the USB cable to a USB header on the motherboard.



✸ *STEP9.*

Connect the signal cable from the Wireless LAN module to the 5-pin USB header located on the daughterboard.

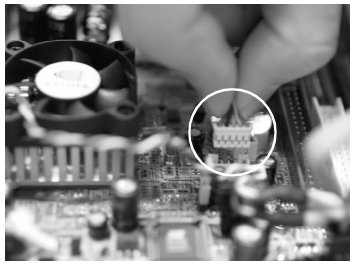
Double check all connections before continuing to step 11.



✸ *STEP10.*

Connect the signal cable from the Wireless LAN module to the 5-pin USB header located on the motherboard.

Double check all connections before continuing.



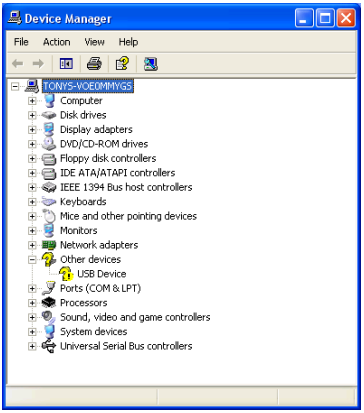
✸ *STEP11.*

Attach the case and fasten the three thumbscrews to complete the hardware installation.

2.2 Installation Precaution

Before the installation, please ensure the 802.11g WLAN USB Module has been setup in your XPC. To detect the existence of the Module, please follow the procedures below.

1. Click **Start** on the taskbar and choose **Control Panel** from the **Settings** menu.
2. Select **System** to open the **System Properties** dialog box, and then under the **Hardware** tab, click the **Device Manager** buton to open the **Device Manager** dialog box.
3. Double-click Other devices from the list to display the item, and this presents the exist ence of your 802.11g Wireless LAN USB Adapter.



The Device Manager Dialog Box

Now you may proceed with the next topic to start installing the drivers for the module.

> ***Note :*** *If you don't find the module, please turn off the XPC and replug the module, or contact your dealer immediately.*

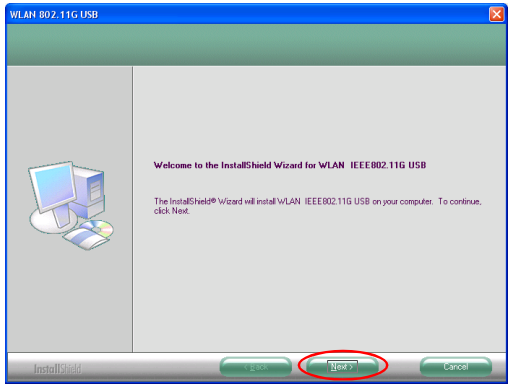
2.3 Installing the WLAN Driver

a) Insert the supplied CD into your CD-ROM drive, and open Utility \Wireless LAN folder to run **AutoRun.exe**.

b) From the prompted startup window, choose **Install Driver** to begin the installation.

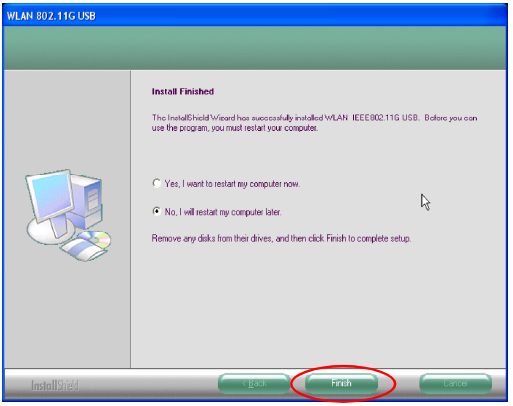
The Startup Window

c) Click **Next** in the **Shuttle Wireless LAN** window to proceed. The system will start to copy the drivers found.



The Shuttle Wireless LAN Window

d) On the **Maintenance Complete** screen, choose **Yes, I want to restart my computer now**, and then click **Finish** to restart the computer.



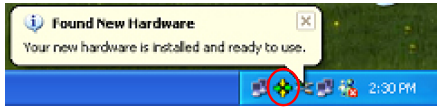
The Maintenance Complete Screen

> ***Note :*** *Instead, if the system displays the **Update WLAN Driver Failed** message box, click **OK**, and then refer to the last topic - **Installation Precaution** for more details.*

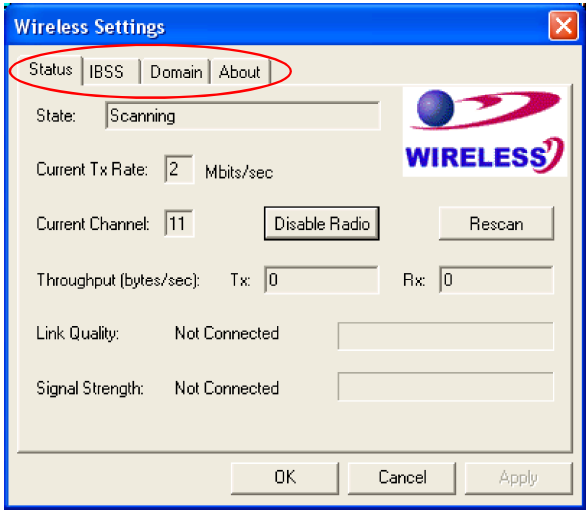
e) After rebooting, you shall find the **Shuttle Wireless LAN** icon appearing in the system tray. The installation is entirely finished at the moment. Double-click the icon to launch the application and open the **Wireless Settings** dialog box, in which you may freely arrange your network connection afterwards.

2.4 Installation Notes - Windows XP

If your current system is running Windows XP, you shall find that two tabs are contained in the **Wireless Settings** dialog box after you've followed the instructions above and successfully installed the drivers. However, normally, the dialog box should consist of five tabs. This is because Windows XP has its built-in configuration tools – **Windows XP Zero Configuration** to assist you in networking activities. It is recommended to utilize the attached **Shuttle Wireless LAN** to enjoy the maximum benefits it can bring. Thus, to employ your **Shuttle Wireless LAN** under Windows XP, please proceed to the next step to change the default settings of **Windows Zero Configuration to Shuttle Wireless LAN**.

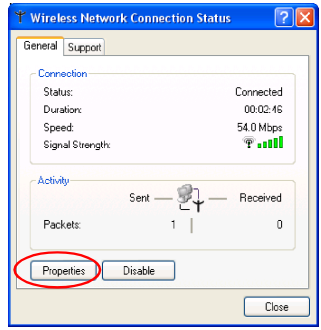


The Shuttle Wireless LAN Tray Icon



The PRISM Wireless Settings Dialog Box

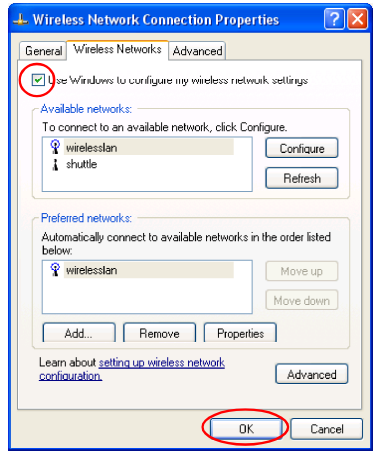
a) Right-click the **Network Connections** icon on the task bar to open the **Wireless Network Connection Status** dialog box, then select **Properties**.



The Wireless Network Connection Status Dialog Box

b) Choose the **Wireless Networks** tab in the **Wireless Network Connection Properties** dialog box, and remove the tick from the **Use Windows to configure my wireless network settings** checkbox.

c) Click **OK**. Now, you have successfully removed the **Windows Zero Configuration**.



The Wireless Network ConnectionProperties Dialog Box

To monitor and configure the network via **Shuttle Wireless LAN**, double-click its tray icon, and you shall find four tabs contained in the popped up **Wireless Settings** dialog box this time.

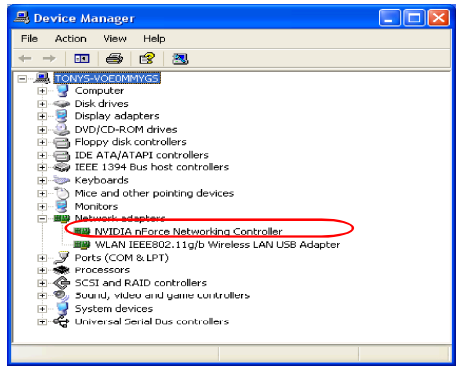
2.5 Verifying a Successful Installation

To confirm that your 802.11g Wireless LAN Module is properly installed, please follow the procedures below.

1. Right-click the **My Computer** desktop icon and choose **Properties** from the opened menu.
2. In the **System Properties** dialog box, choose **Device Manager** if you are under Windows 98 or Me. If you are operating Windows 2000 or XP, click the **Hardware** tab, and then choose the **Device Manager** button.
3. In the opened window, expand **Network adapters** to find the

   USB Module-802.11g USB2.0 Wireless Network Adapter. Right-click on the item and choose **Properties**.
4. From the opened dialog box, on the **General** tab, find the descriptions under the **Device Status** panel to learn if the module is working properly. However, if there's an error message shown, right-click the USB Adapter item and choose **Uninstall** from the opened menu, to which a red or yellow icon is attached beside, in the **Device Manager** dialog box. Then restart your system and go through the installation procedures again.

The following picture indicates a successful installation of the 802.11g Wireless LAN module.



The Device Manager Dialog Box

Note : *For more details about software configuration, please check your install disc or visit* ***http://www.shuttle.com***

3 SOFTAP USER'S GUIDE

3.1 Executive Summary

The PCTEL SoftAP dramatically enhances the capabilities of Wi-Fi. Wi-Fi is a convenient networking solution, but its users are often forced to purchase and configure extra hardware. In addition, users will usually have to install the access point (AP) in a fixed location. The PCTEL SoftAP is a software based AP solution, providing the typical desktop or laptop PC with the capacities of a fully functional, high performance wireless access point.
SoftAP also supports advanced security features such as WEP, Mac filtering, and automatically configures Microsoft ICF (Internet Connection Firewall – Windows XP only). A desktop or laptop PC, the PCTEL SoftAP application, and a SoftAP supported USB, PCI, or PCMIA wireless adapter provide all the functionality of a typical hardware AP, making the PCTEL SoftAP a cost effective and secure wireless Access Point solution.

3.2 PCTEL™ SoftAP Introduction

Today, millions of home and business users are installing 802.11 (Wi-Fi) Access Points for wireless networking. Although Wi-Fi is a convenient networking solution, it comes at the cost of having to purchase and configure additional hardware; typically, the AP has to be installed in a fixed location as well. The PCTEL™ SoftAP adds a new dimension to the 802.11 wireless phenomena by providing the capability to turn a typical desktop or laptop PC into a fully functional, high performance wireless access point. PCTEL™ SoftAP provides this capability without any additional hardware other than the users PC and a SoftAP supported wireless LAN adapter [1].

Easy Installation
Cost Effective AP Solution
Security
Portability
Supports AP and Client modes
SoftAP is More Reliable and Easier to Use than Ad-Hoc networks

3.3 SOFTAP INSTALLATION – EXPRESS AND MANUAL SETUP

During installation of the PCTEL™ SoftAP, the installation process initiates a network configuration and discovery routine and sets SoftAP into a mode that is appropriate for your current network environment. It is important to understand the modes available, and why SoftAP has defaulted to the particular mode during setup. It is also important to understand these modes from the perspective that the SoftAP host can be portable AP device that will be run under varying network conditions.
The following sections describe the basic functionality of SoftAP network modes and provide an essential foundation for ongoing configuration of SoftAP in a “real-world” environment.

The three network modes available are:

- Access Point Only Mode
- Network Bridge Mode
- MS ICS Mode (Microsoft Internet Connection Sharing Mode)

3.3.1 Access Point Only Mode - Overview

Access Point only mode provides basic access point functionality in a closed network environment. Typically, this mode is configured when an external LAN is not available. This mode is the default mode that is configured if the SoftAP host PC is not connected to an external network through a wired LAN adapter.

From a network topology, AP only mode appears as:

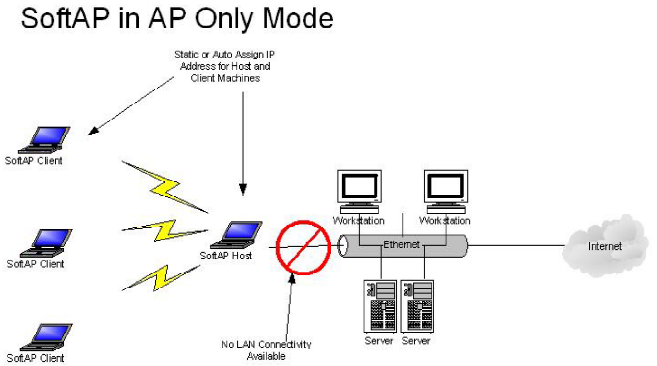


Figure 1: SoftAP in AP Only Mode

NOTE: In AP only mode there is no connectivity to an external LAN; therefore, there are no DHCP services available to clients that are configured to obtain IP addresses from the network. Both clients and SoftAP host must have a valid IP address or communication between clients or clients to host will not occur. An IP address must be assigned to the host and client either by automatic IP address assigning (XP only) or by assigning a static private IP address to each client.

3.3.2 Microsoft ICS Mode Overview

MS ICS (Microsoft Internet Connection Sharing) mode provides wireless AP connectivity to SoftAP clients and Internet Connection Sharing to an existing LAN through the SoftAP hosts LAN adapter. When SoftAP is configured in MS ICS mode, SoftAP clients are leased IP addresses using DHCP services from the SoftAP host. The range of IP addresses assigned to clients in this mode are 192.168.0.0-255.

A typical scenario for configuring SoftAP in ICS mode is when the SoftAP host computer is leased a single IP address from an ISP and multiple computers need to share a single network connection through the ISP. The SoftAP host will provide wireless AP functionality, DHCP service, and NAT services to SoftAP clients in such an nvironment.

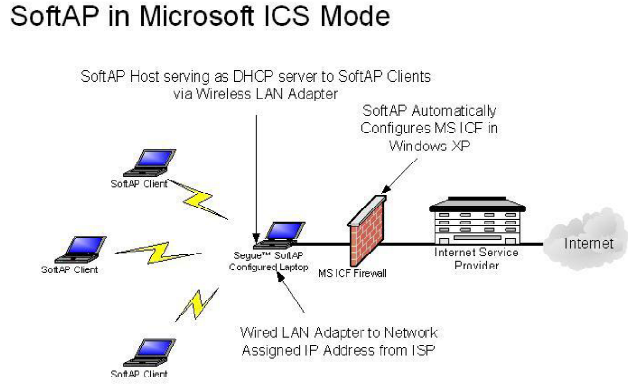


Figure 2: SoftAP in Microsoft ICS Mode

3.3.3 Bridge Mode Overview

Bridge mode provides wireless AP connectivity to SoftAP clients, and bridges the existing wired LAN segment(s) with the SoftAP host's wireless LAN adapter. Typically, a bridge is used to interconnect physical LAN segments on a network that already provides DHCP and routing services.

In a typical use case, SoftAP will run on a PC to provide wireless AP functionality to client devices. When run on a laptop, SoftAP is essentially a portable device that provides wireless AP functionality on virtually any network. Because each network configuration may be different, the SoftAP host will attempt to adapt to varying network configurations. When a network is running a DHCP service you will not want to introduce a node that is also running DHCP, therefore the SoftAP host should be configured in bridge mode if the LAN or any LAN segment uses DHCP.

SoftAP in Bridge Mode

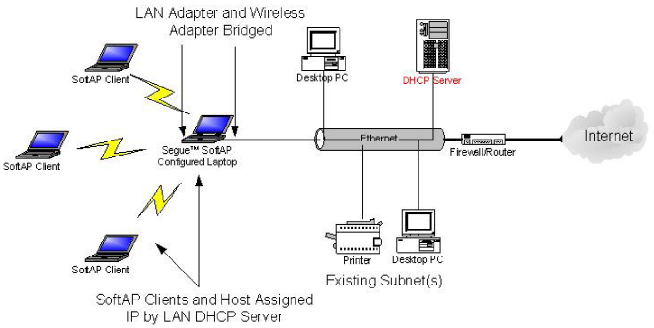


Figure 3: SoftAP in Bridge Mode

4 SOFTAP OPTIONS MENU

The SoftAP options menu provides three configuration interfaces:

- Wireless AP
- Devices
- MAC Filtering

To access the “Options” menu select Tools>Options from the SoftAP menu bar (Figure 4).

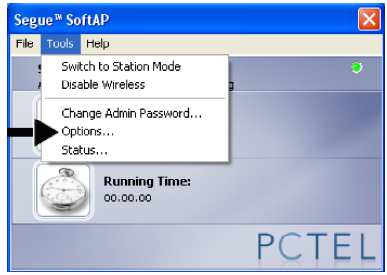
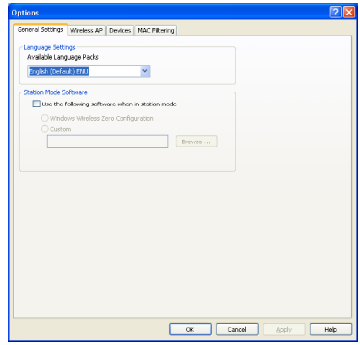


Figure 4: Accessing SoftAP Options

4.1 General Settings

The Wireless AP interface provides an interface for general configuration settings for language and station mode client configuration (Figure 5).



Language Settings: Use the pull down menu to select the language pack for SoftAP.

Station Mode Software: SoftAP provides the capability to operate in station mode to access wireless access points. If a wireless access / discovery client is installed check “Use the following software when in station mode” and select the appropriate client software to use when in station mode. SoftAP will automatically launch your client utility when switched into station mode.

4.2 Wirekess AP Interface

The Wireless AP interface provides configuration options related to SoftAP's wireless AP functionality.

SSID: Serive Set Identifier(SSID) is the names that clients will see when attempting to connect to the SoftAP.

Encryption Type: Relates to the security features of SoftAP. Security features are discussed in detail in Section 6: SoftAP Security.

Region: The geographic region where SoftAP is currently being used. Region is required for SoftAP to operate in accordance to regional regulations and specifications of use. You must select the region you are currently using SoftAP in.

- Americas
- Singapore
- Taiwan
- Japan
- Europe
- Israel
- China
- France
- Spain

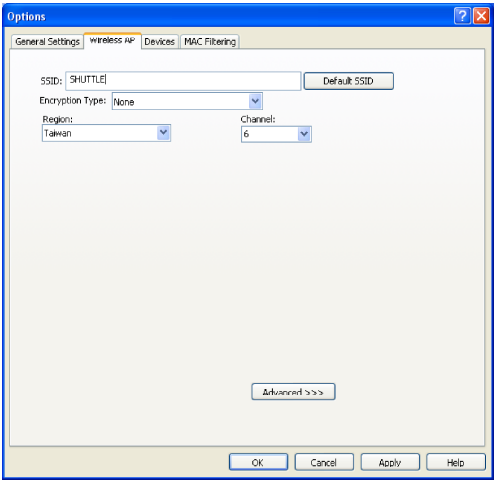


Figure 6: Wireless AP

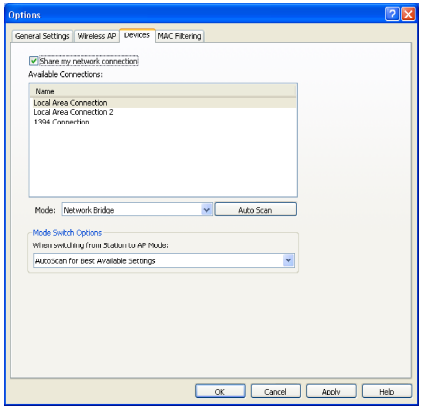
Channel: The 802.11 wireless channel that SoftAP will use to broadcast traffic.

Advanced Settings(Button): Fine tuning of SoftAP network settings-primarily for network troubleshooting or expert users.

4.3 Device Settings

Although the installation process will automatically configure SoftAP correctly based on the current network conditions, there will be times when the configuration will require modification.

Figure 12 is an example of the network mode configuration page. The user has the capability to modify the SoftAP configuration based on changing network conditions. Please refer to Section 3: SoftAP Network Modes for detail on the typical network configurations that SoftAP supports.



Share My Network Connection (Check Box): To enable Internet Connection Sharing (ICS). Typically, you will use this setting when the network does not support DHCP services, i.e. on your network at home.

Available Connections: The window displays available network connections that can be configured through SoftAP.

Mode: The current network mode that SoftAP is currently set to when sharing an Internet Connection:

- **MS Internet Connection Sharing:** This mode provides Internet Connection Sharing to client connected to SoftAP through Microsoft ICS services. Clients connecting to SoftAP must be configured to obtain IP addresses automatically. This option is set in the TCP/IP interface on the client computer's network configuration for their wireless adapter.

➢ **Bridge Mode:** This setting will be used to share Internet connectivity by bridging the current LAN adapter connected to the wired network and the wireless adapter SoftAP utilizes to provide wireless Access Point services. Typically, this mode is used on networks that provide DHCP services i.e. your office network.

Auto Scan: SoftAP will configure settings based on a scan of your current network conditions. In most cases, you will choose this option for best results.

Mode Switch Options: This setting allows you to configure SoftAP to automatically scan for the best available settings when you switch from station to Access Point mode. Use the pull down menu to choose the mode switch.

- Auto Scan for Best Available Settings
- Prompt for Connection Settings
- Use Previous Settings

Note: When switching to “Station Mode” the SoftAP client utility will be invoked, see Section 4.1 for more details.

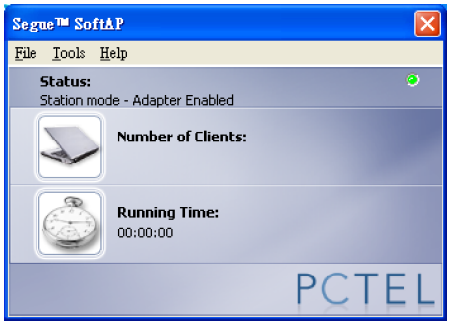


Figure 8: SoftAP Configuration Utility

4.4 MAC Filtering

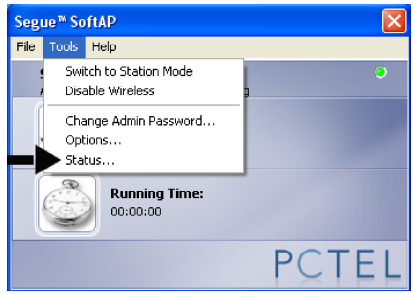
The MAC filtering interface provides the capability to explicitly allow or deny a client device access to the SoftAP enabled network. MAC filtering is a security feature of SoftAP that is discussed in detail in Section 5: SoftAP Security.

5 SOFTAP STATUS MENU

The SoftAP status menu provides various interfaces that allow the SoftAP administrator quick and easy access to the overall configuration details of SoftAP. The Status menu provides three interfaces:

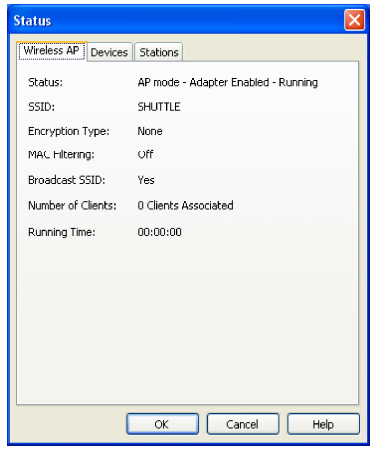
- Wireless AP Status
- Devices Status
- Stations (Status of connected clients).

To access the “Status” menu select Tools>Status from the SoftAP menu bar (Figure 9).



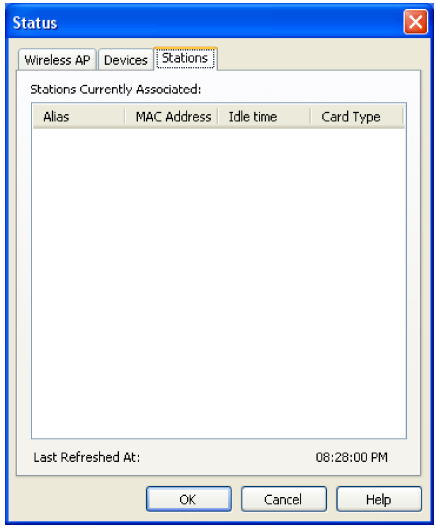
5.1 SoftAP Wireless AP Status

The current configuration of the SoftAP can be viewed in the “Wireless AP” interface (Figure 10). This interface provides a single view of the network status, security settings, number of clients currently associated, and how long SoftAP has been running.



5.2 SoftAP Stations Interface

The SoftAP “Stations” interface provides details on each client that is currently associated with the SoftAP AP. The interface provides the following information about connected clients:



- **Alias** – A user-friendly name that is associated with the device. The Alias must be configured using the MAC filtering interface (See Section 4.4).
- **MAC Address** – The MAC (Media Access Control) address of the client device.
- **Idle Time** – The elapsed time since SoftAP has received any active traffic from the client.
- **Card Type** – The manufacturer or vendor name of the clients wire less network adapter.

6 SOFTAP SECURITY FEATURES

As mentioned in the SoftAP introduction, securing your SoftAP enabled network is essential in a wireless network environment.

Security for the SoftAP enabled wireless network is maintained through three primary features:

- Support for WPA-Personal Security (Wi-Fi Protected Access) AES and TKIP
- Support for the Wired Equivalency Protocol (WEP)
- Support for MAC address filtering
- Automatically enables MS ICF (MS Internet Connection Firewall)

6.1 WPA-Personal Overview (Wi-Fi Protected Access)

Wi-Fi Protected Access (WPA) is a subset of the IEEE (Institute for Electrical and Electronics Engineers) 802.11i amendment to the 802.11 standard. WPA is an enhancement to the original security implementation for Wi-Fi called WEP (Wired Equivalency Protocol). Although WEP provides a modest level of security, primarily to keep casual eavesdroppers out of a Wi-Fi network, it has been determined that WEP has significant enough flaws to mandate a revision to the standard. The revised IEEE 802.11 standard included the WPA security mechanism, which fixes many of WEP's flaws, and significantly increases the level of wireless security in an Enterprise or SOHO environment.

WPA provides two security modes, a mode suitable for Enterprise deployment and a mode suitable for SOHO networks referred to as WPA-Personal previously called WPA-PSK or **P**re-**S**hared **K**ey). Because WPA for the Enterprise requires the configuration of backend RADIUS authentication servers and certificates, it is out of scope of SoftAP's primary use-case scenario. SoftAP's primary goal is to provide a quick and easy method to set up a robust Wi-Fi network, and WPA-Personal augments SoftAP's ease of use with very robust security.

6.1.1 SoftAP and WPA-Personal Security

The SoftAP configuration interface (Figure 12) provides a quick and easy method to set up a WPA enabled network. Simply enter a 6-32 character alphanumeric key-phrase using the WPA interface. The key-phrase can be a simple sentence or password that's easy for users to remember. WPA does not require HEX or ASCII notation common with WEP keys.

When users attempt to connect to the SoftAP network using a WPA compatible client (such as the Segue™ Roaming Client), they simply enter the key-phrase to authenticate to the network.

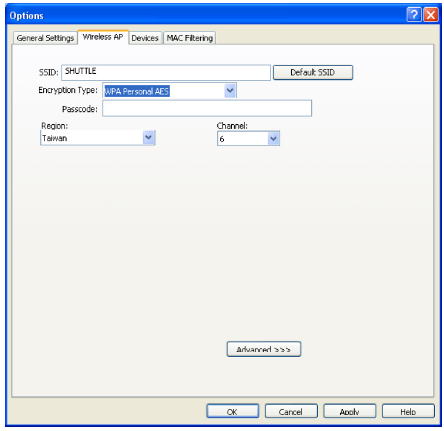


Figure 12: WPA Configuration

WPA utilizes 802.1x for authenticating and distributing keys, and a data encryption mechanism called TKIP (Temporal Key Integrity Protocol). Up to 500 trillion key combinations are used to encrypt each packet, removing WEP's security issues of using a single static key for encryption. WPA also provides a message integrity check that allows the receiver to verify that the data has not been tampered with.

6.2 WEP Key Configuration

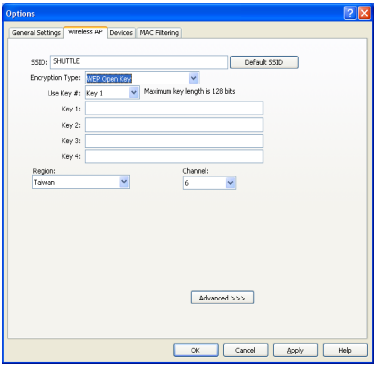
The wired equivalency protocol or WEP is an 802.11 encryption standard that provides a moderate level of security for wireless LAN's. Using WEP will provide enhanced security to your SoftAP powered network, providing network authentication and data encryption.

SoftAP allows the user to enter a 40 or 128 bit WEP key when installing SoftAP. The user simply enters the WEP key in either ASCII or Hex format and SoftAP automati cally configures the SoftAP host to use WEP with the provided key. Clients that attempt to associate with the SoftAP host will be required to supply the WEP key.

SoftAP allows you to enter and store up to 4 keys, although you may only use one key at any given time. The interface provides the capability to quickly switch keys using the pull down dialog box "Use Key #".

Clients that connect to SoftAP must be configured to use WEP, and they must be configured with the correct WEP key before attempting to connect to SoftAP.

Figure 13 details the "Wireless AP" interface where WEP security is configured.



Note: Use the following guidelines for entering WEP keys in ASCII or Hex format:

HEX: 10 characters in HEX notation for 40 bit, or 26 characters for 128 bit.

ASCII: 5 characters for 40 bit, 13 characters for 128 bit.

Figure 13: SoftAP WEP Configuration Interface

6.3 MAC Address Filtering

PCTEL™ SoftAP supports MAC address filtering for either allowing or denying access to individual clients. A MAC address (Media Access Control) is a unique hardware address for networking equipment. The MAC address is used by the network for associating an IP addresses to a users networking hardware, in this case their wireless LAN adapter. Because each MAC address is unique, it is suitable to use a MAC address for filtering purposes.

6.3.1 MAC Filtering User Interface

Figure 14 is the MAC Filter configuration interface that allows the SoftAP host user the ability to configure SoftAP to explicitly “Deny” or “Allow” access to the SoftAP network based on MAC address of the client adapter.

When “Allow Access” method is chosen, only the listed MAC addresses that are checked will be granted access to the SoftAP enabled network (This is also true even if WEP is enabled and the user enters the correct key).

When “ Deny Access” is the method chosen, listed MAC addresses that are checked will be denied access to the SoftAP enabled network.

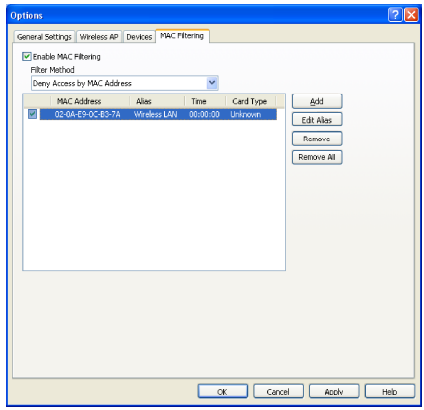


Figure 14: MAC Filtering Interface

Adding MAC Addresses

Simply press “Add” from the main MAC filtering interface . A dialog will appear that allows the user to add an explicit MAC address to filter, or the user can “Scan” currently connected users MAC addresses (Figure 14).

Using a MAC Alias

The “Add MAC Address” interface (Figure 15) provides the ability to add a user-friendly id to the MAC address,making it easier to identify a user when viewing the connected station list (See Section 4.2, Figure 9).

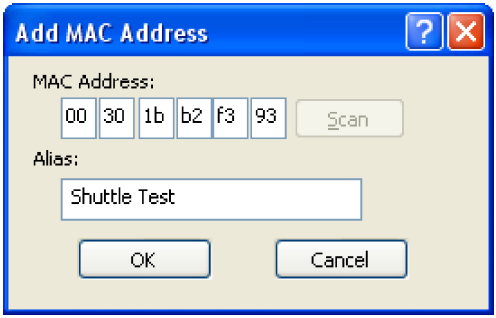


Figure 15: Adding A MAC Address

7 APPENDIX A: SOFTAP HELP INTERFACE

7.1 SoftAP Help Interface

SoftAP features a comprehensive “Help” interface that provides quick answers to common questions concerning SoftAP network modes and configuration.

To access the SoftAP “Help” interface, simply select Help from the main toolbar menu (Figure 16).

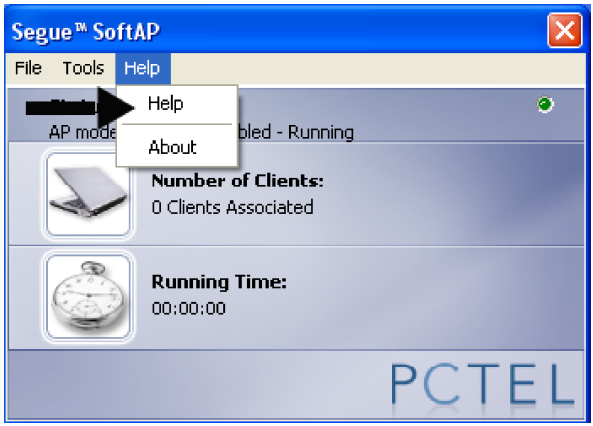


Figure 16: Accessing Help

8. Appendix B: PN15 Specifications

Product Name	**PN15 802.11g Wireless LAN Module**
Model Name	WM168g
Host Interface	Standard USB2.0 Interface
Dimensions	25 (W) x 60 (L) x 4.3 (H) mm
Weight	130g
Frequency Band	2.400 ~ 2.4835GHz (subject to local regulations)
Operating Voltage	5V
Current Consumption	Tx: 500mA / Rx: 450mA / Standby: 10mA
Spreading	OFDM (Orthogonal Frequency Division Multiplexing)
Data Rate	1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 9Mbps, 11Mbps, 12Mbps,18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Transmit Power	Typ. 12 dBm @ Nominal Temperature Range
Receive Sensitivity	11 Mbps @ -82 dBm, Typical
Modulation	11 CCK(802.11b), BPSK, QPSK, 16-QAM, 64-QAM(802.11g)
Security	64/128 bit WEP Encryption, WPA Encryption
Antenna	Two GSC Type RF Connector
Supplied Driver	Windows 98SE/ME/2K/XP
Standards	IEEE 802.11g
Media Access Protocol	CSMA/CA with ACK
Temperature Range	0 ~ 65°C (Operating), -20 ~ 70°C (Storage)
Humidity	Max. 95% Non-condensing
Operating Range	Open Space: Up to 400m; Indoor: Up to 100m The transmission speed varies in the surrounding environment.
Management Utility	Link Configuration for network join and diagnostics
EMC certification	FCC, CE
Warranty	1 year