



USER GUIDE



EZ Connect™ N
11n Wireless PCI Adapter

SMCWPCI-N3

REV: 1.0.0

FCC STATEMENT



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. 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 communications. 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.

This 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.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The manufacturer is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in

conjunction with any other antenna or transmitter.”

CE Mark Warning



Countries of Operation & Conditions of Use in the European Community

SMC contact for these products in Europe is:

SMC Networks Spain, S.L.
Edificio Conata II,
Group CTSG
Fructuos Gelabert 6-8 2o2a
08970 Sant Joan Despi, Barcelona, Spain

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN 55022:2006+A1:2007 Class B

EN 55024:1998+A1: 2001+A2: 2003

IEC 61000-4-2: 2001

IEC 61000-4-3: 2006

IEC 61000-4-4: 2004

IEC 61000-4-5: 2005

IEC 61000-4-6: 2006

IEC 61000-4-8: 2001

IEC 61000-4-11: 2004

LVD: EN60950-1:2006/A11:2009

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

National restrictions

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

| Country | Restriction | Reason/remark |
|----------|---|--|
| Bulgaria | None | General authorization required for outdoor use and public service |
| France | Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz | Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012 |

| | | |
|--------------------|-------------|---|
| Italy | None | If used outside of own premises, general authorization is required |
| Luxembourg | None | General authorization required for network and service supply(not for spectrum) |
| Norway | Implemented | This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund |
| Russian Federation | None | Only for indoor applications |

Note: Please don't use the product outdoors in France.

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Package Contents

The following contents should be found in your box:

One SMCWPCI-N3 EZ Connect™N 11n Wireless PCI Adapter

- Quick Installation Guide
- Low Profile Bracket
- One Resource CD for SMCWPCI-N3, including:
 - SMCWPCI-N3 Wireless N Client Utility (SWCU) and Drivers
 - User Guide
 - Other Helpful Information

 **Note:**

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact your local SMC Networks reseller or distributor.

Conventions:

The SMCWPCI-N3 300Mbps Wireless N PCI Adapter will be referred to as the “Adapter” in this user guide.

Chapter 1 Introduction

Thank you for purchasing the **SMCWPCI-N3 300Mbps Wireless N PCI Adapter**.

1.1 Overview of the product

The adapter is designed to provide a high-speed and unrivaled wireless performance for your PC. With a faster wireless connection, you can get a better Internet experience, such as downloading, gaming, video streaming and so on.

The SMCWPCI-N3's auto-sensing capability allows high packet transfer rate of up to 300Mbps for maximum throughput. It has good capability on anti-jamming; it can also interoperate with other wireless (802.11b/g/n) products. The adapter supports WEP, WPA and WPA2 encryption to prevent outside intrusion and protect your personal information from being exposed.

The Quick Setup Wizard guides you step by step through the installation process; the SMCWPCI-N3 Wireless N Client Utility helps you create a wireless connection immediately.

With unmatched wireless performance, reception, and security protection, the SMCWPCI-N3 is the best choice for easily adding or upgrading wireless connectivity.

1.2 Features

- Compatible with IEEE 802.11n, IEEE 802.11g, IEEE 802.11b standards
- Supports WPA/WPA2 data security, IEEE 802.1x authentication, TKIP/AES encryption, WEP encryption
- Based on IEEE 802.11n wireless technology to provide a wireless data rate of up to 300Mbps
- Supports auto-fallback to lower network speeds due to distance or other operating limitations
- Provides PCI interface
- Supports Ad-Hoc and Infrastructure modes
- Good capability on anti-jamming
- Supports roaming between access points when configured in Infrastructure mode
- Easy to configure and provides monitoring information
- Supports Windows 2000/XP/Vista/Windows 7

1.3 LED Status

| LED Indications | Status | Working Status |
|-----------------|------------------|---|
| Status | Solid Light | The adapter is inserted in the slot and the power is on. |
| Activity | Flashing Slowly | The adapter is trying to scan a networking connection; The adapter is already connected but is not transmitting or receiving data. |
| | Flashing Quickly | The adapter is transmitting or receiving data. |

Chapter 2 Installation Guide

2.1 Hardware Installation

To install the adapter, please follow the steps listed below:

1. Turn off your desktop PC and disconnect the power.
2. Remove your PC case and locate an available PCI slot on the motherboard. Remove the metal slot cover on the back of the PC. Check with your computer manufacturer for instructions if needed.
3. Slide the PCI Adapter into the PCI slot. Make sure that all of its pins are touching the slot's contacts. Once the adapter is firmly in place, secure its fastening tab to your PC's chassis with a mounting screw. Then, close your PC case.
4. Reconnect your PC's power and turn on your desktop PC.

2.2 Software Installation

2.2.1 Overview

The Adapter's Setup Wizard will guide you through the Installation procedure for Windows XP. The Setup Wizard will install the SMCWPCI-N3 Wireless N Client Utility (SWCU) and drivers.

If you install the hardware before installing the software, the system will prompt "Found New Hardware Wizard", click **Cancel**, and run the Setup Wizard program on the CD-ROM.

The Setup steps for Windows 2000 and XP are similar. This user guide takes Windows XP as an example to explain the process.

2.2.2 Software Installation in Windows XP

1. Insert the provided CD into your CD-ROM drive, and open the folder named **SMCWPCI-N3**. Double-click **Setup.exe** to start the installation. After that the following screen for preparing setup will appear.

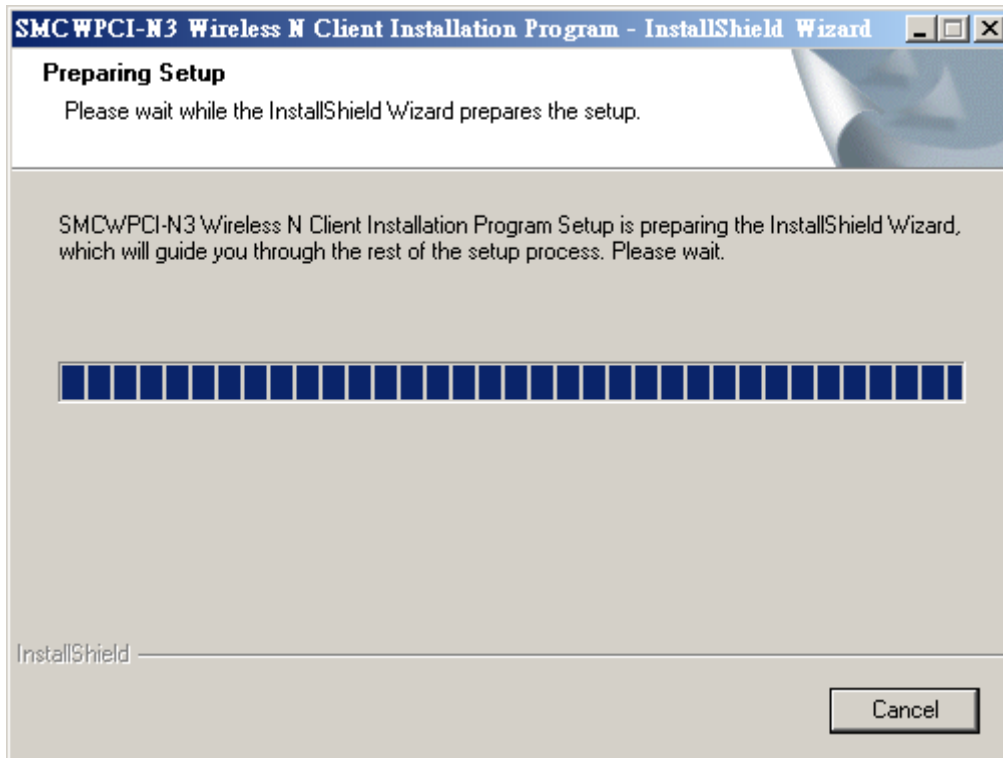


Figure 2-1

2. After a few seconds, Figure 2-2 will appear. Click **Next** to continue.

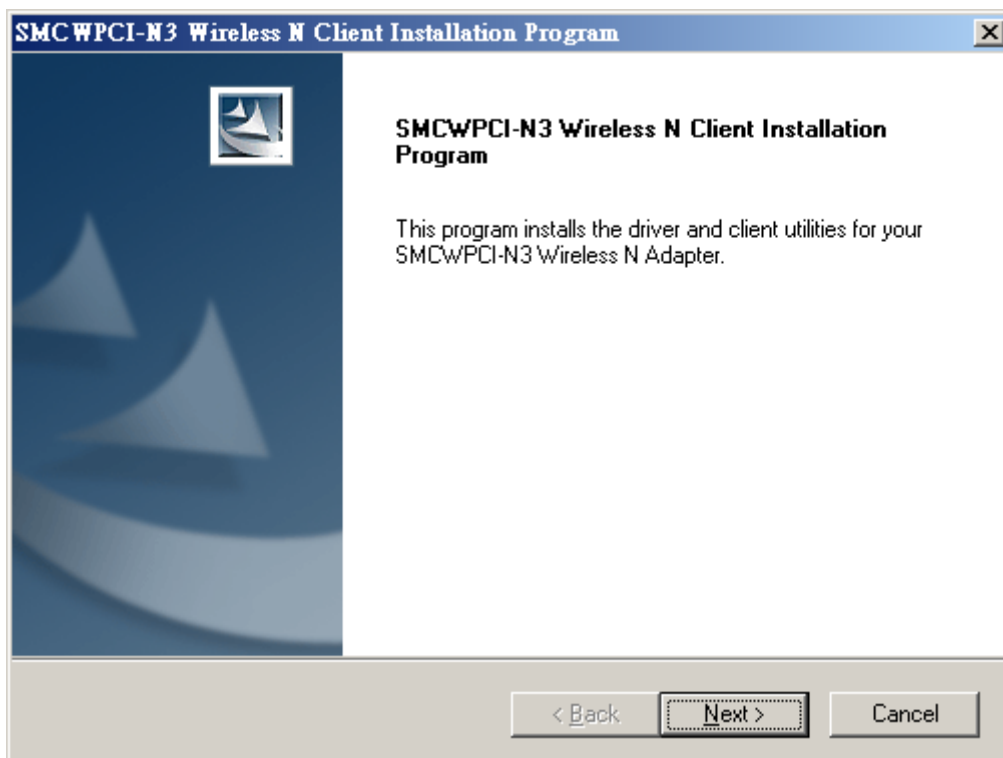


Figure 2-2

3. Please select what should be installed in the “Setup type” window. It is recommended that you select **Install Client Utilities and Driver**. Select **Install Driver Only** to install the driver

without installing the Client Utility. Click **Next** to continue.

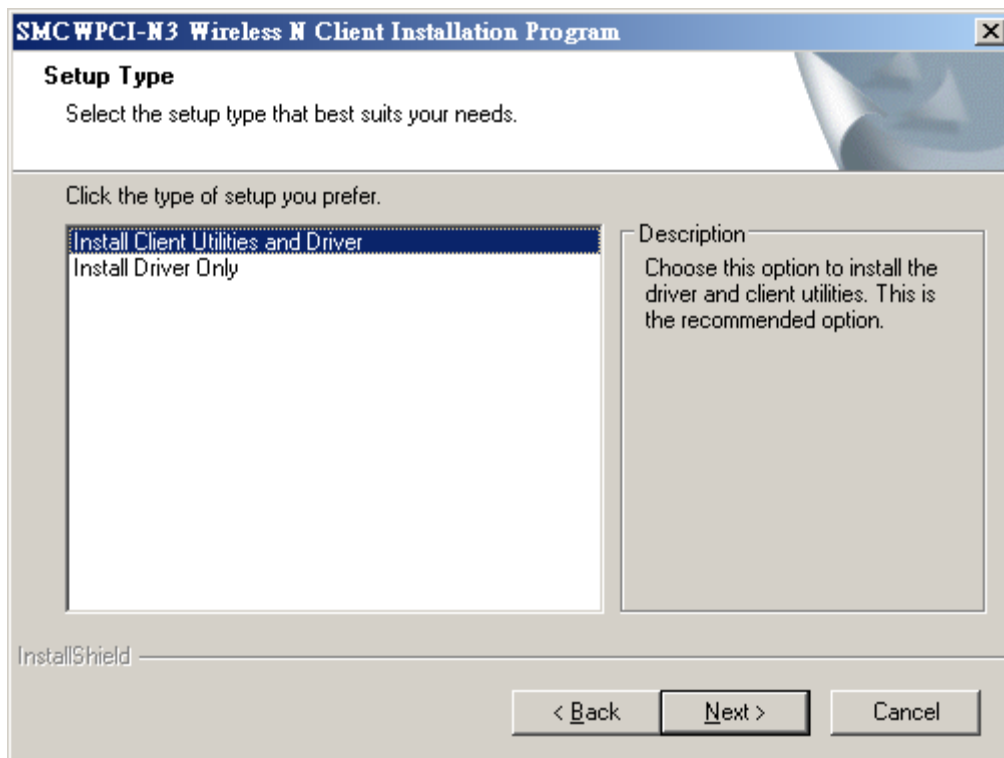


Figure 2-3

4. Click **Browse** to change the destination folder for the software, then click **Next** in the screen below (shown in Figure 2-4).

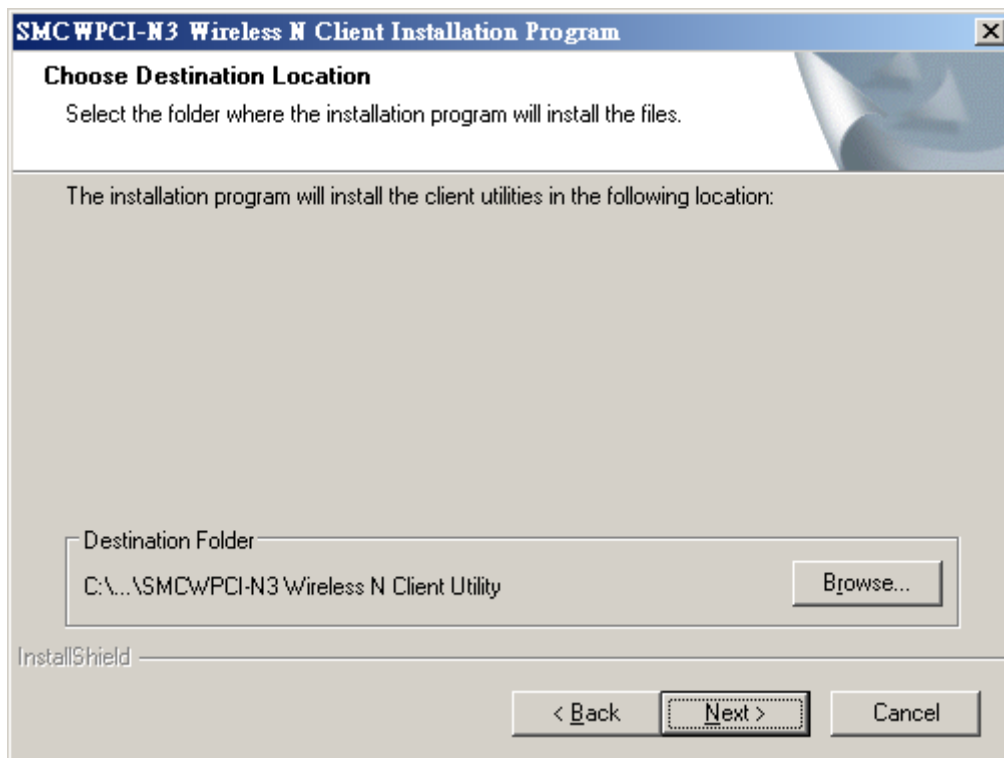


Figure 2-4

5. Select the program folder in the start menu where a program shortcut will be added. You can create a new folder or select one from the **Existing Folders** list. It is recommended that you keep the default setting. Click **Next** to continue the installation.

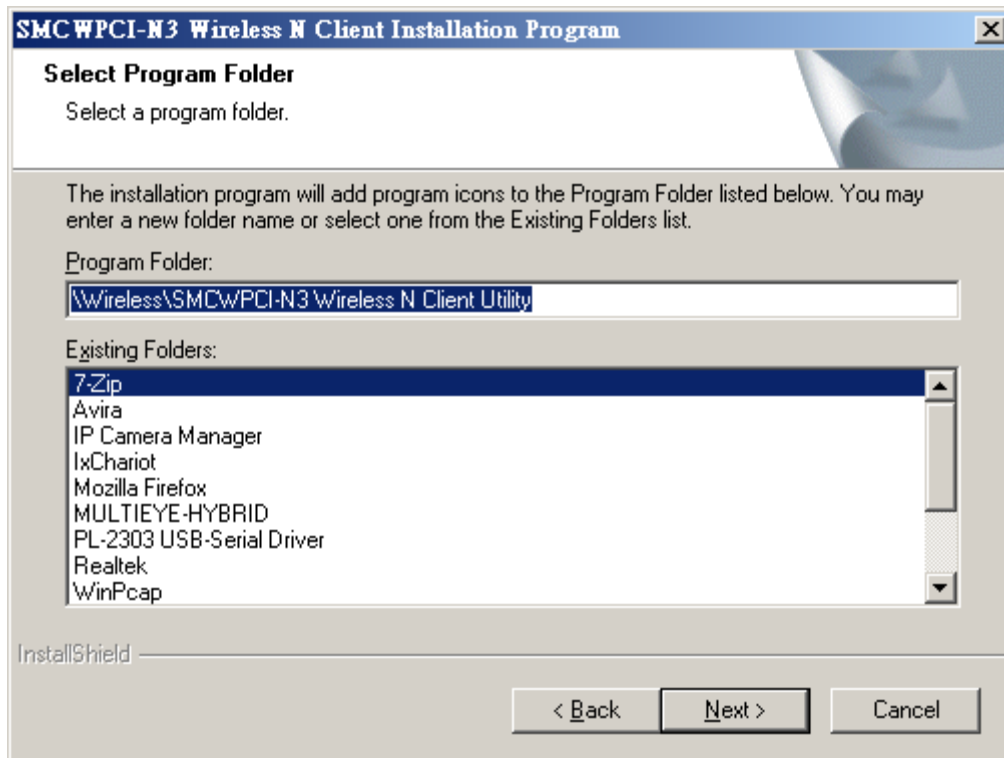


Figure 2-5

6. Here you have the option to choose the configuration tool for configuring your wireless adapter. Please leave it in the default option. Then click **Next** to continue.

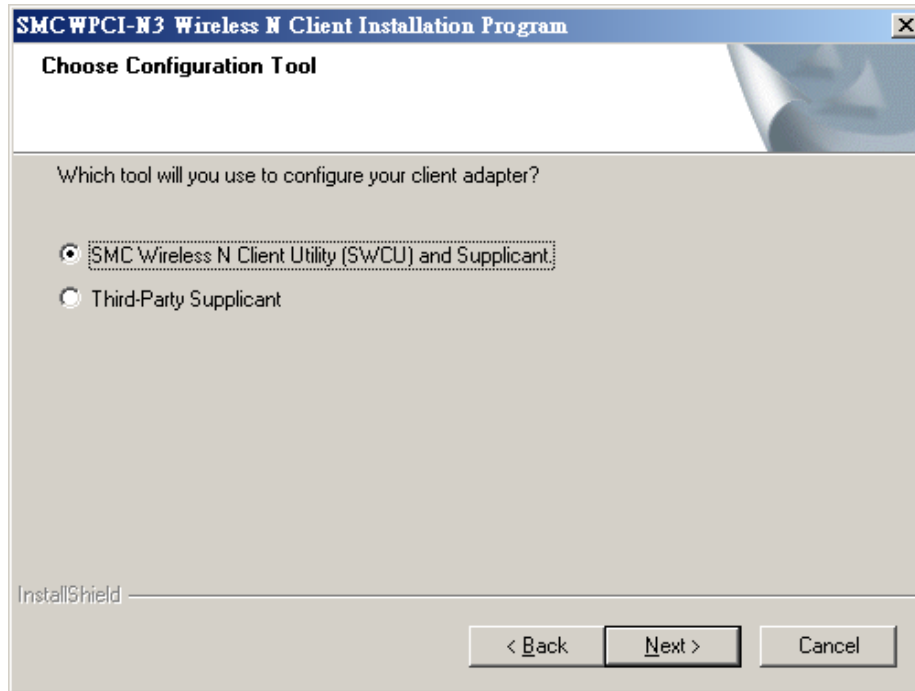


Figure 2-6

7. Click **OK** to continue the installation. Wait a while for the setup to complete as shown in Figure 2-7 .

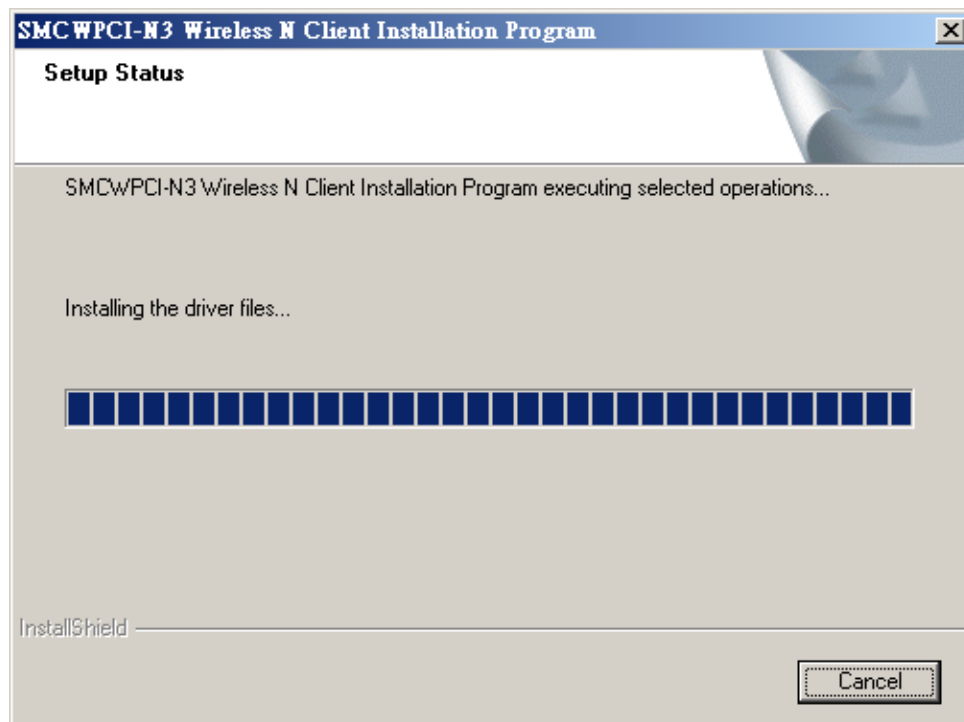


Figure 2-7

Note:

For Windows XP, the Setup Wizard will sometimes warn you that the driver you are installing was not verified by the Windows Logo. Identity and the following message will pop up (Figure 2-8). Our drivers have been tested thoroughly, and are able to work with the operating system. Click **Continue Anyway** to continue the Installation.



Figure 2-8

8. After all the steps above, you will see the screen below, click **Finish** to reboot the system.

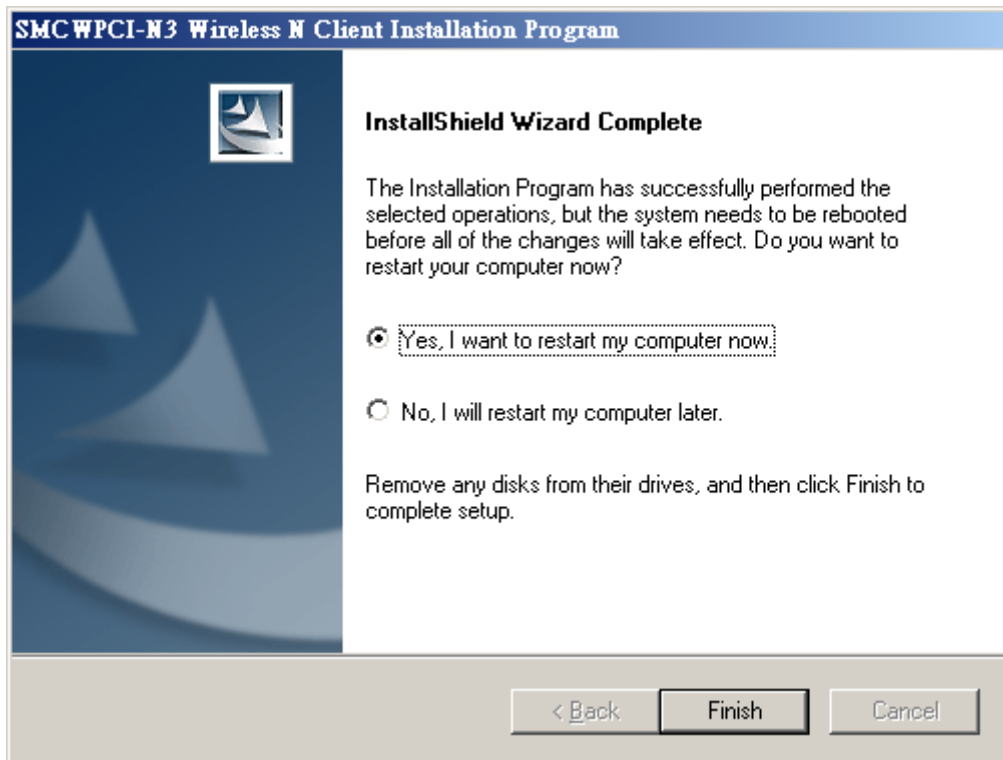


Figure 2-9

2.2.3 Software Installation for Windows 7

1. Insert the installation CD into your CD-ROM drive, and open the folder named **SMCWPCI-N3**. Double-click **Setup.exe** to start the installation, then the following screen for preparing setup will appear.

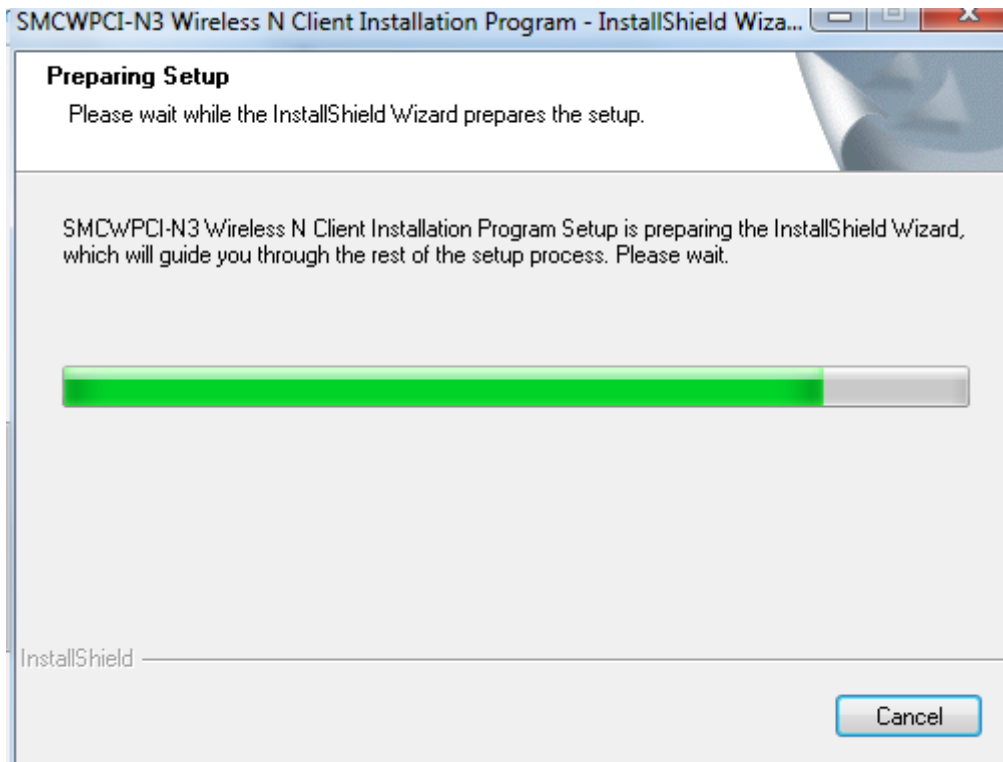


Figure 2-10

2. After a few seconds, the screen as in the Figure 2-11 will appear. Click **Next** to continue.

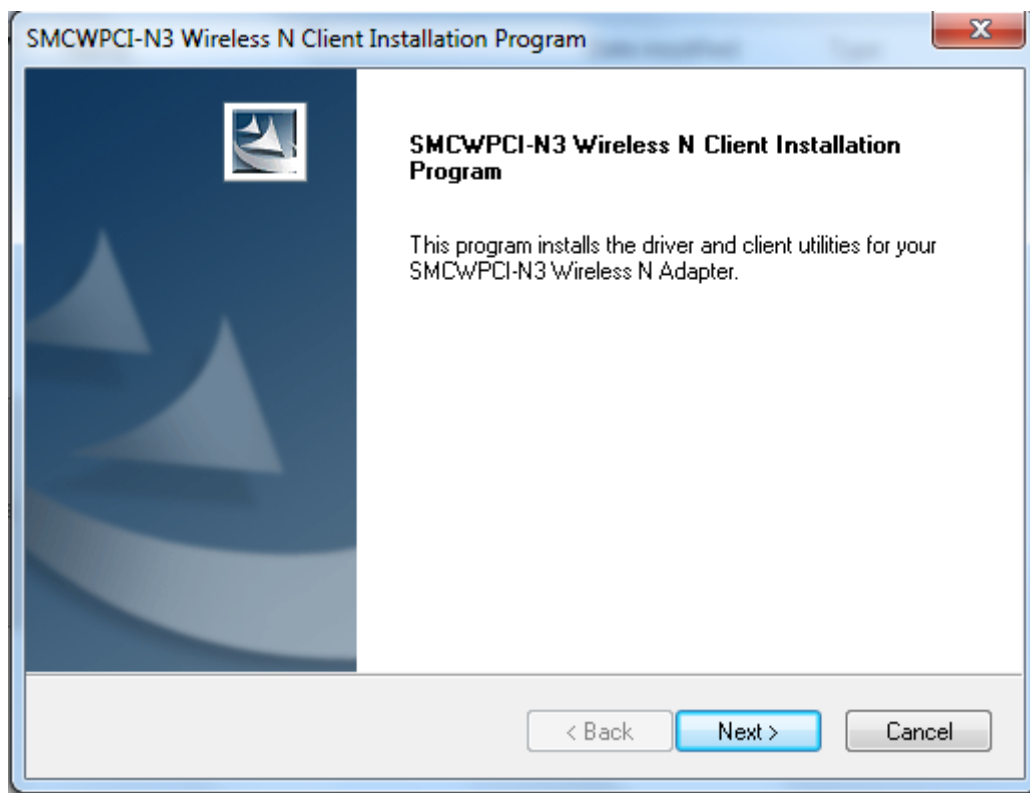


Figure 2-11

3. Click **Yes** to continue.

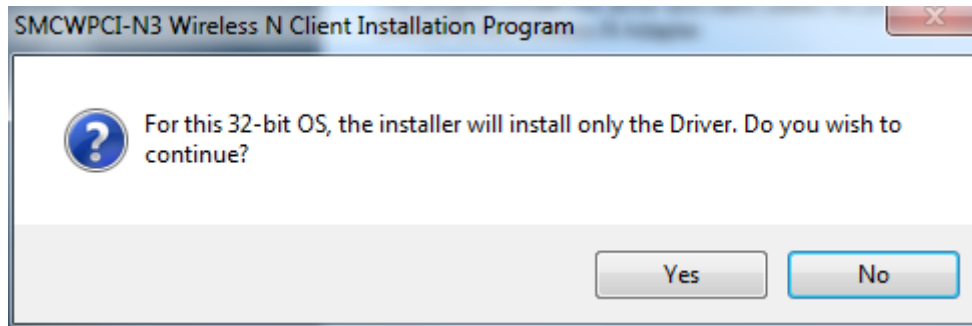


Figure 2-12

4. The following page will display. Please wait for a moment.

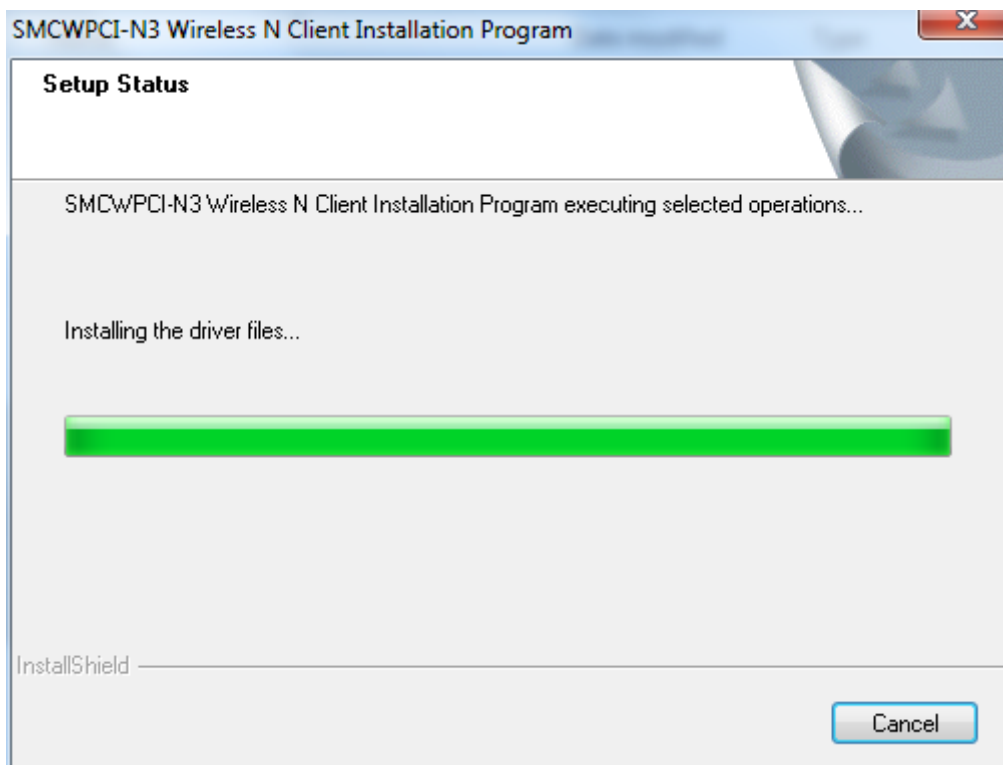


Figure 2-13

5. Click **Finish** to complete the installation.

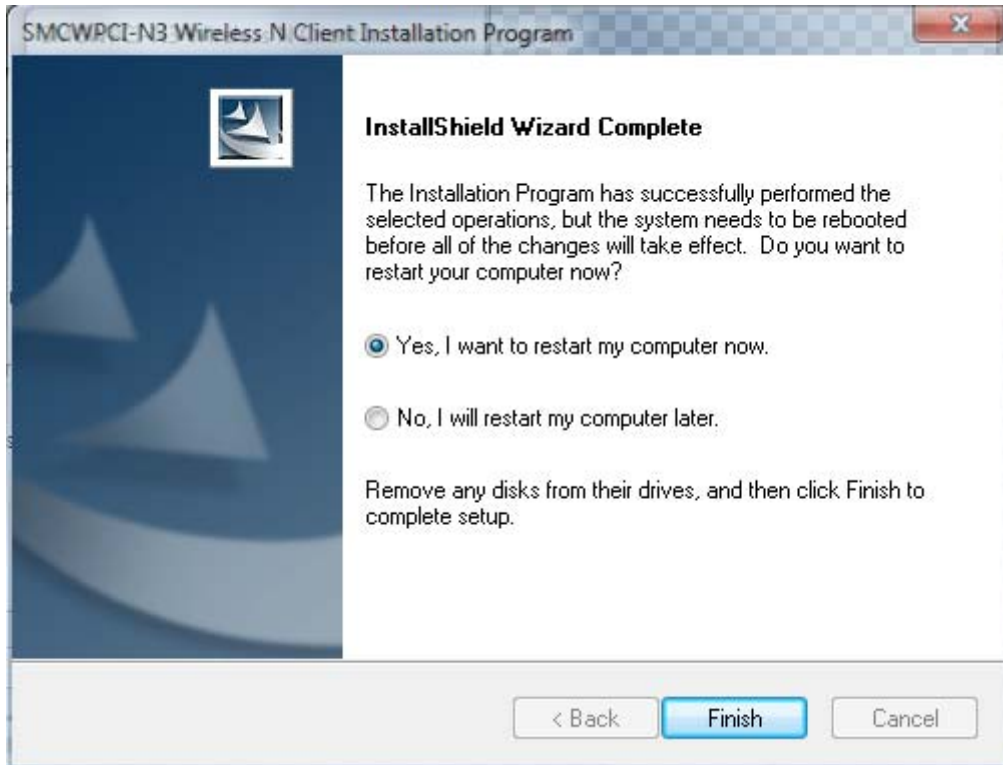



Figure 2-14

Chapter 3 Configuration for Windows XP

SMCWPCI-N3 can be configured by SMCWPCI-N3 Wireless N Client Utility in Windows XP & 2000. This chapter describes how to configure your Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

The configuration of the adapter in Windows XP is similar to that of Windows 2000. This User Guide takes Windows XP as an example to explain the process.

After Installing the Adapter, the Adapter's tray icon  will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength.



If the icon is gray, there is no connection.



If the icon is red, there is poor signal strength and the received signal strength indicator (RSSI) is less than 5dB.



If the icon is yellow, there is poor signal strength and the RSSI is between 5dB and 10dB.



If the icon is green, there is good signal strength and the RSSI is between 10dB and 20dB.



If the icon is green, there is excellent signal strength and the RSSI is more than 20dB.

Double-click on the icon and the **Utility** will start. You can also run the utility by clicking the **Start** → **All Programs** → **Wireless** → **SMCWPCI-N3 Wireless N Client Utility**. The utility provides some integrated and easy-to-use tools to:

- Display current status information
- Edit and add configuration profiles
- Display current diagnostics information

The following sections introduce these tools in more detail.

3.1 Current Status

The Current Status tab contains general information about the program and its operations. No configuration changes can be done in this tab

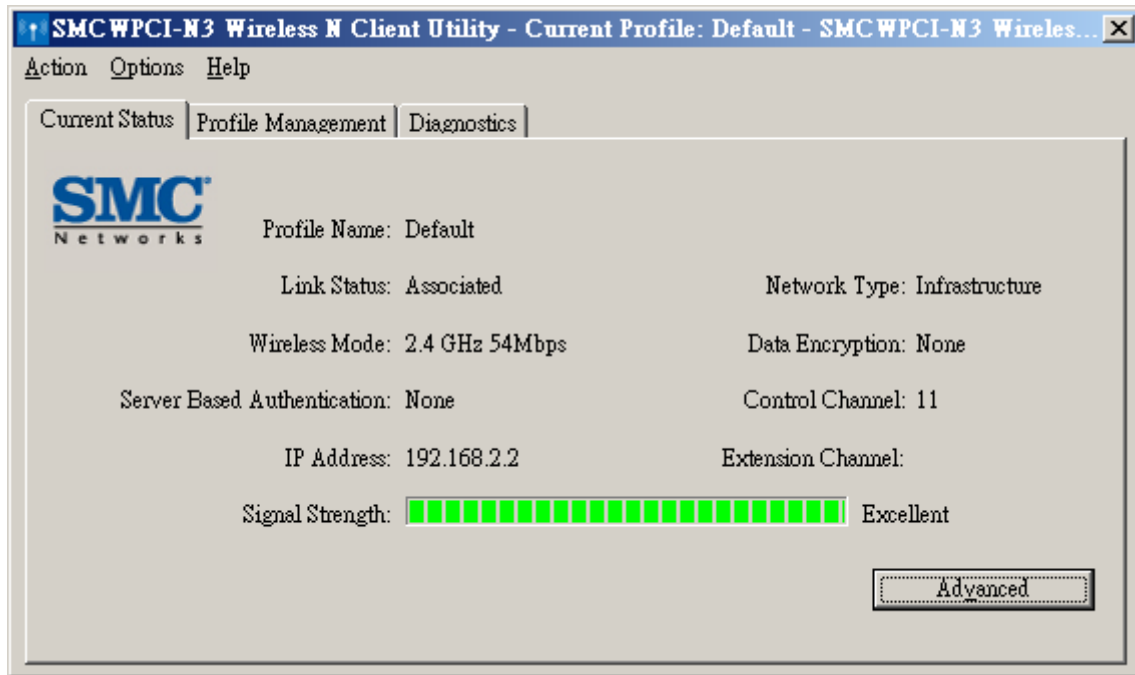


Figure 3-1

The following table describes the items found on the **Current Status** screen.

- **Profile Name** - Shows the name of the current configuration profile. The configuration of the Profile Name will be described on the **General** tab of **Profile Management**.
- **Link Status** - This shows whether the station is associated to the wireless network. It can be: No Associated, Authenticating, Authenticated and Associated
- **Wireless Mode** - Here the wireless mode is displayed. It includes 2.4GHz 300Mbps, 2.4GHz 54Mbps and 2.4GHz 11Mbps.
- **Network Type** - The type of network and the station currently connected are shown here. The options include:
 - Infrastructure (connection to an access point or wireless router)
 - Ad Hoc (direct connection to another laptop/ PC without access point)

 **Note:**

You can configure the network type and wireless mode on the **Advanced** tab of **Profile Management**.

- **IP Address** - This displays the computer's IP address.
- **Control Channel** - This shows the currently connected channel.
- **Data Encryption** - Here displays the encryption type the driver is using. You can configure it on the **Security** tab of **Profile Management**. Options include WEP, WPA and WPA2.

- **Server Based Authentication** - This shows whether server based authentication is used (IEEE 802.1x).
- **Signal Strength** - This shows the strength of the signal.
- **Extension Channel** - This shows the other channel connected when the wireless AP is set in 40MHz channel width

Click **Advanced** on the screen above, you can see advanced information about the program and its operations.

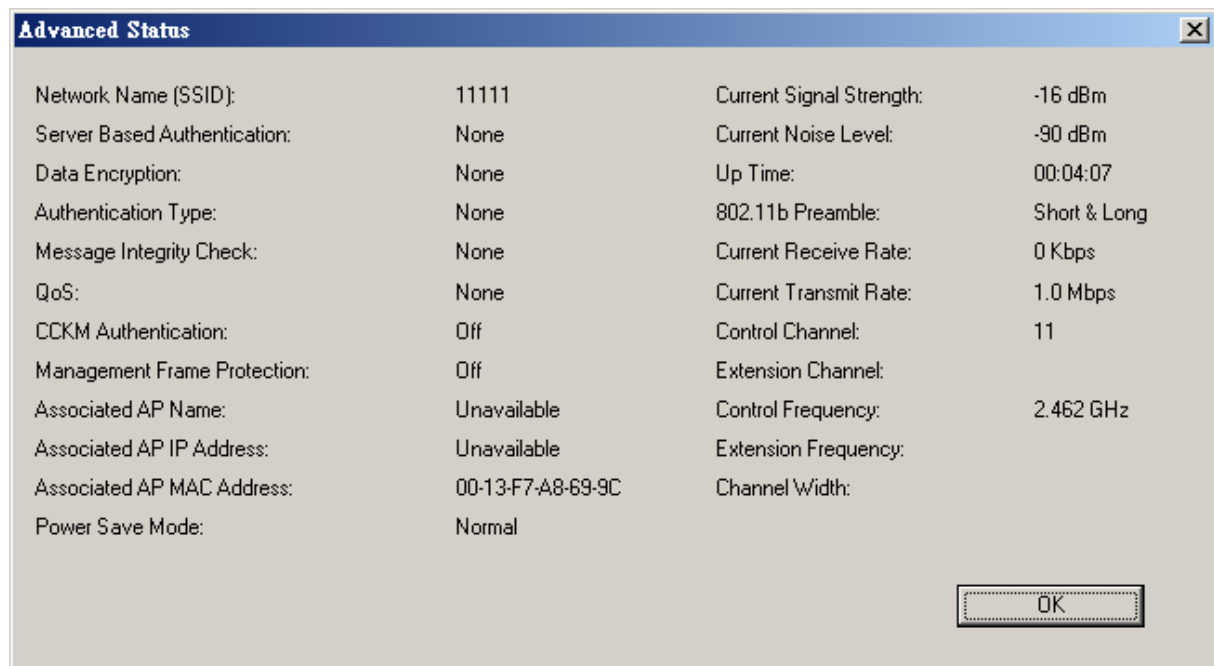


Figure 3-2

- **Network Name (SSID)** - The Name of wireless network your adapter connected.
- **Server Based Authentication** - Show whether or not to use the authentication based on server.
- **Data Encryption** - Show the type of data encryption.
- **Authentication Type** - Show the type of authentication
- **Message Integrity Check** - Show whether or not the MIC is enabled, MIC is used to prevent the bit-flip attack.
- **QoS** - The protocol of QoS.
- **CCKM Authentication** - Show whether or not the Cisco Centralized Key Management is be used.

- **Management Frame Protection** - Show whether or not the management frame is be protected. The management frame is part of MAC frame; it's used to manage the service of data link layer.
- **Associated AP Name** - The name of AP associated.
- **Associated AP IP Address** - The IP address of AP associated.
- **Associated AP MAC Address** - The MAC address of AP associated.
- **Power Save Mode** - The mode of power save; can be set as Maximum, Normal and Off.
- **Current Signal Strength** - The signal strength of wireless network.
- **Current Noise Level** - The noise level of the environment.
- **Up Time** - The duration time you have connected to the network.
- **802.11b Preamble** - The type of message preamble.
- **Current Receive Rate** - The rate of receiving.
- **Current Transmit Rate** - The rate of transmitting.
- **Control Channel** - This shows the currently connected channel.
- **Extension Channel** - This shows the other channel connected when the wireless AP is set in 40MHz channel width.
- **Control Frequency** - This shows the frequency of Control Channel.
- **Extension Channel** - This shows the frequency of Extension Channel.
- **Channel Width** - The channel width of the wireless network, it can be 20MHz or 20-40MHz.

3.2 Profile Management

Click the Profile Management tab and the next screen will appear (shown in Figure 3-3). The Profile Management screen provides tools to:

- Add a new profile
- Modify an existing profile
- Remove a profile
- Activate a profile
- Import a profile
- Export a profile

- Scan available networks
- Change the order of profiles

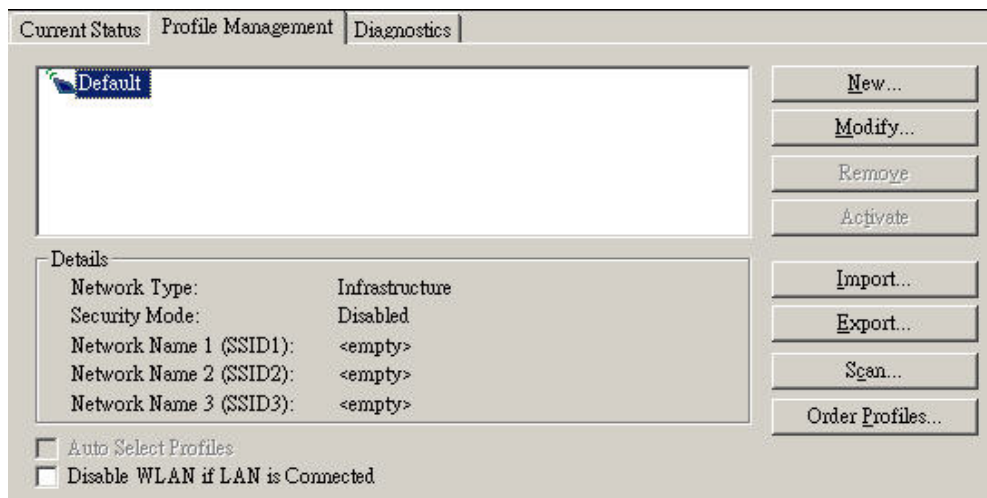


Figure 3-3

Disable WLAN if LAN is connected - Automatically disable the wireless interface when the LAN interface is connected

3.2.1 Add or Modify a Configuration Profile

To add a new configuration profile, click **New** on the Profile Management tab. To modify a configuration profile, select the configuration profile from the Profile list and click **Modify**. Then you will see the Management dialog box (shown in Figure 3-3).

1. Edit the General tab

- **Profile Name** - Please enter the Profile name which identifies the configuration profile. This name must be unique. Note that the profile names are not case-sensitive.
- **Client Name** - Identifies the client machine, i.e. your PC. This parameter is optional.
- **Network Names (SSIDs)** - Please enter the IEEE 802.11 wireless network name (also known as SSIS, service set identifier). This field accepts a maximum number of 32 characters.

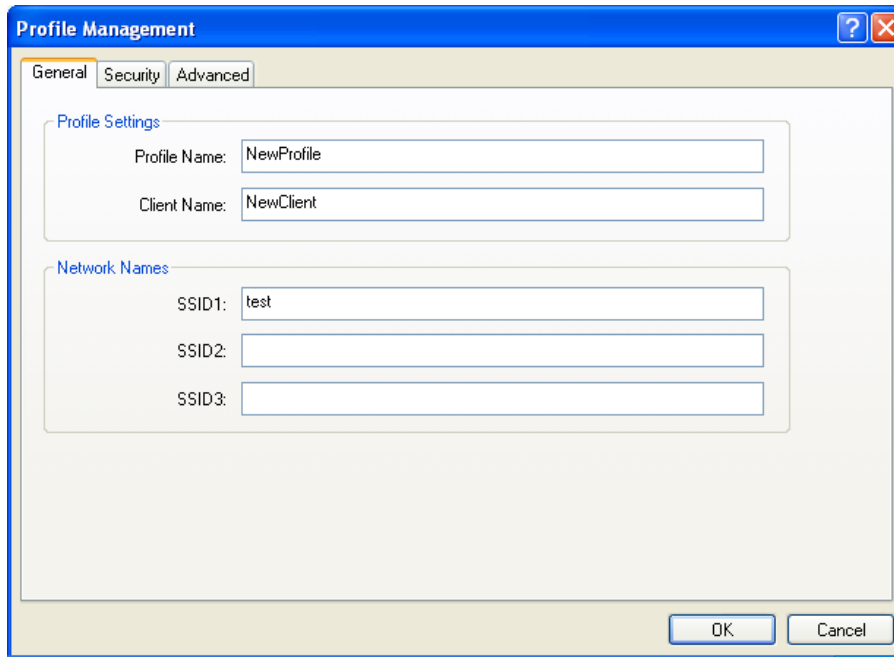


Figure 3-4

2. Edit the Security tab

In the Security tab, you can enter the security parameters of the profile. To define the security mode, select the radio button of the desired security mode as follows.

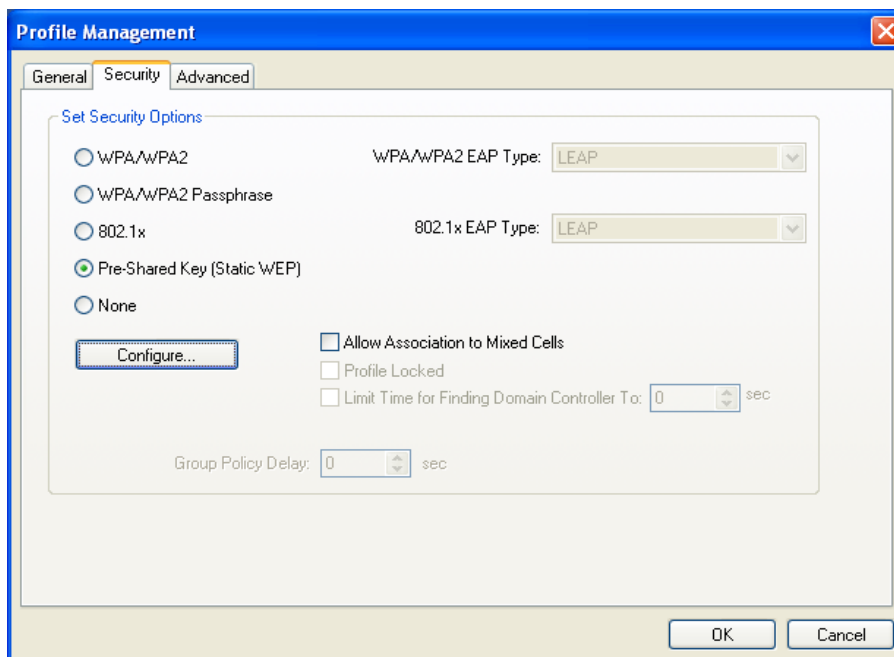


Figure 3-5

Note:

Select different **Security Options**, the configurations are different; you can select the appropriate

security option and configure the exact key as per your need

- **WPA/WPA2** - Wi-Fi Protected Access WPA/WPA2 is for enterprise use, you need a authentication server to authenticate the client.
- **WPA/WPA2 Passphrase** - Wi-Fi Protected Access Passphrase WPA/WPA2 Passphrase is for SOHO/domestic use. it's suitable for SOHO wireless AP when there is not a server responsible for authenticating in the wireless network.
- **802.1x** - Enables 802.1x security is based on client-server access control and certification protocol. It can prohibit unauthorized users/equipments from visiting LAN/WAN through access ports, that is, this protocol can also be applied to LAN; also, this is one kind of Enterprise encryption.
- **Pre-Shared Key (Static WEP)** - Enables the use of shared keys that are defined on both the access point and the station. To define shared encryption keys, choose the Shared Key radio button and click **Configure** to fill in the Define Shared Keys window (shown in Figure 3-6).
- **None** - No security (not recommended).

 **Note:**

If the access point that the Adapter is associated to has WEP set and the client has WEP enabled, make sure that **Allow Association to Mixed Cells** is checked on the Security tab to allow association. To complete WEP encryption configuration, you must select the 802.11 Authentication Mode on the **Advanced** tab of the **Profile Management** dialog.

To configure the Encryption Keys under the Pre-Shared keys (Static WEP) Security mode:

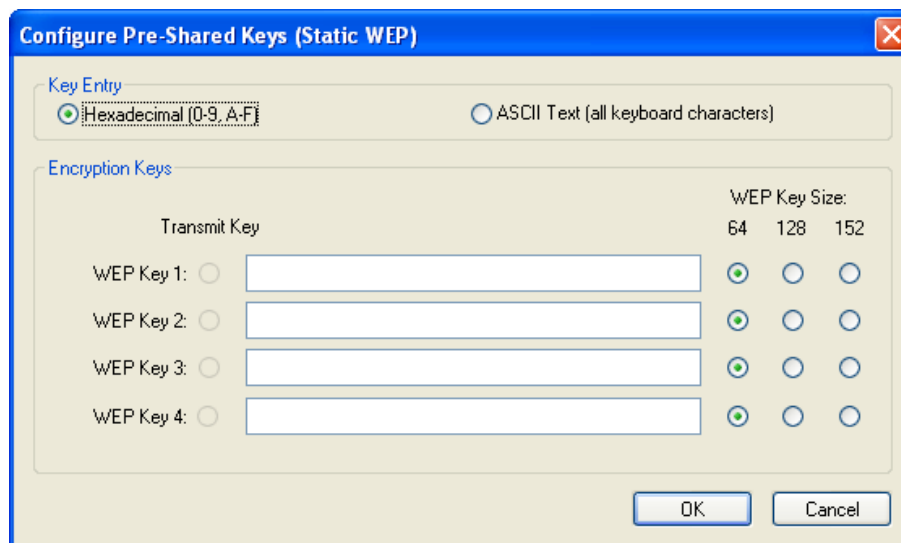


Figure 3-6

3. Edit the Advanced tab

This screen below allows you to make advanced configuration for the profile.

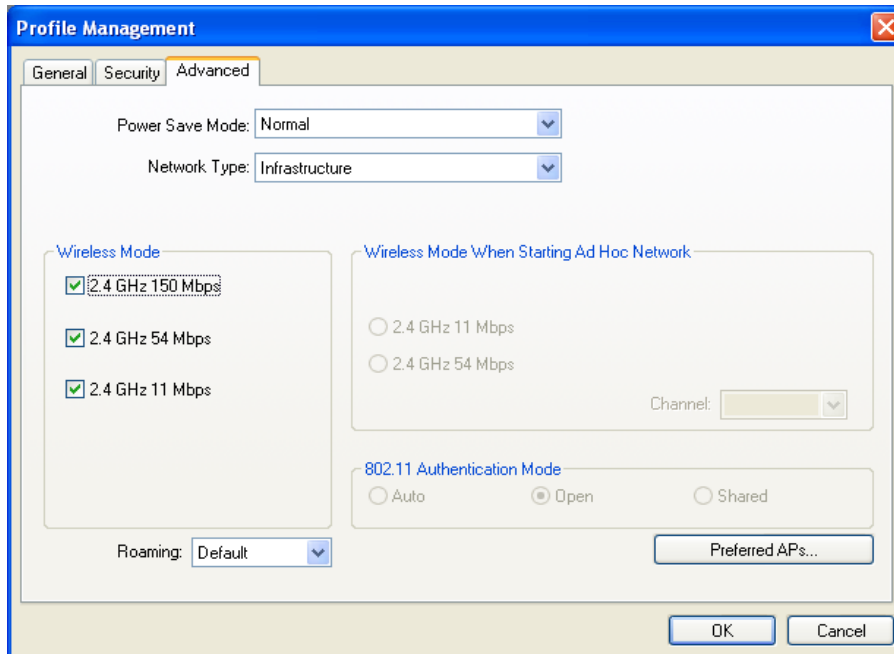


Figure 3-7

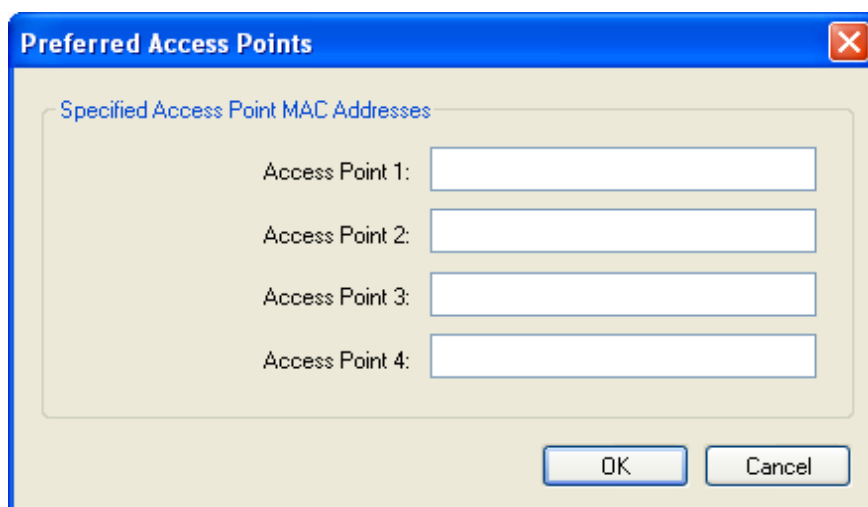
- **Power Save Mode** - Please select the power save mode in the drop-down list.
 - **Maximum** – In the Maximum mode the adapter will periodically query the Access Point to verify if there is any waiting message/packet in the buffer
 - **Normal** - Normal mode uses maximum when retrieving a large number of packets, then switches back to power save mode after retrieving the packets.
 - **Off** - Turns power saving off, thus powering up the Wireless PCI Adapter continuously for a short message response time.
- **Network Type:** There are basically two modes of networking:
 - **Infrastructure** – The adapter will act as a wireless client and connect to an access point or wireless router.
 - **Ad-Hoc** – The adapter will connect directly to another computer, for peer-to-peer communication, using a wireless network adapter on the remote computer, such as SMCWPCI-N3 wireless adapter.

Note:

- 1) An Infrastructure network contains an Access Point or wireless router. All the wireless devices or clients will connect to the wireless router or access point.
- 2) An Ad-Hoc network contains only clients, such as laptops with wireless desktop adapters. All the adapters must be in Ad-Hoc mode to communicate.

- **Wireless Mode** - Specifies 2.4 GHz 300 Mbps, 2.4 GHz 54 Mbps or 2.4 GHz 11 Mbps operation in an access point network. The Wireless adapter must match the wireless mode of the access point with which it associates.
- **Wireless Mode when Starting an Ad Hoc Network** - Specifies 2.4 GHz 54/11 Mbps to start an Ad Hoc network if no matching network name is found after scanning all available modes. This mode also allows the selection of the channel that the Wireless Adapter uses. The channels available depend on the regulatory domain. If the adapter finds no other ad hoc adapters, the channel that the adapter starts the ad hoc network with will be selected automatically. The Adapter must match the wireless mode and channel of the clients it associates.
- **802.11 Authentication Mode** - Select which mode the Adapter uses to authenticate to an access point:
 - **Auto** - It automatically makes the adapter attempt authentication using shared mode, but switches it to open authentication if shared mode fails.
 - **Open** - Open System enables an adapter to attempt authentication regardless of its WEP settings. In/Under Open System mode, no matter whether the entered password is correct or not, the adapter can build the connection to the AP; however, only with a correct password. the adapter can receive/send data.
 - **Shared** - Shared-key only allows the adapter to associate with access points that have the same WEP key.

For infrastructure (access point) networks, click **Preferred APs** to specify four access points to which the adapter will attempt to connect in the first place. The four access points have different priorities; the upper one has the higher priority.



The image shows a dialog box titled "Preferred Access Points". It contains a section for "Specified Access Point MAC Addresses" with four input fields labeled "Access Point 1:", "Access Point 2:", "Access Point 3:", and "Access Point 4:". At the bottom right, there are "OK" and "Cancel" buttons.

Figure 3-8

 **Note:**

Roaming : Roaming ensures that the wireless device is kept connected to the network, without losing the connection

3.2.2 Remove a profile

1. Go to the Profile Management tab (shown in Figure 3-3).
2. Select the profile name in the Profiles List.
3. Click **Remove**.

 **Note:**

The profile being used can't be removed.

3.2.3 Switch another Profile

1. Go to the Profile Management screen (shown in Figure 3-3).
2. Select the profile name required in the Profiles List.
3. Click **Activate**.

3.2.4 Export a Profile

1. From the Profile Management screen (shown in Figure 3-3), highlight the profile to export.
2. Click **Export...**, the Export Profile window will then appear below.
3. Browse the directory where you want to save the profile to.
4. Click **Save**. The profile should then be exported to the specified location.

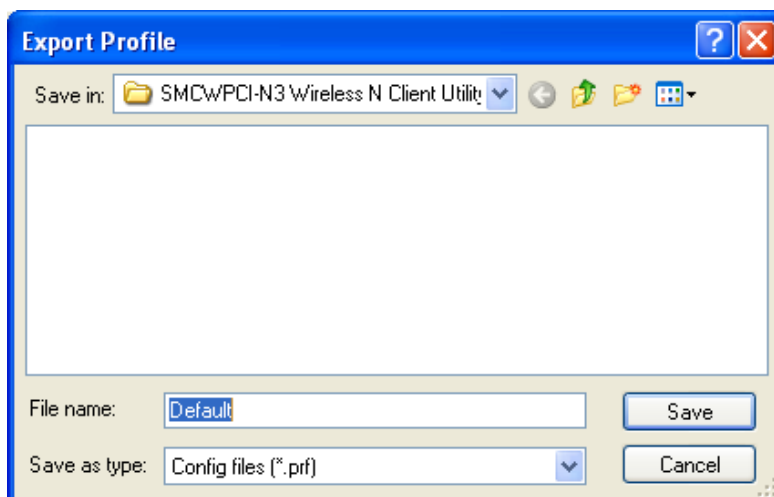


Figure 3-9

3.2.5 Import a Profile

1. From the Profile Management screen (shown in Figure 3-3), click **Import**. Then the Import

Profile will appear as below (Figure 3-10).

2. Browse to the directory where the profile is located.
3. Highlight the profile name.
4. Click **Open**, the imported profile will then appear in the Profiles List.

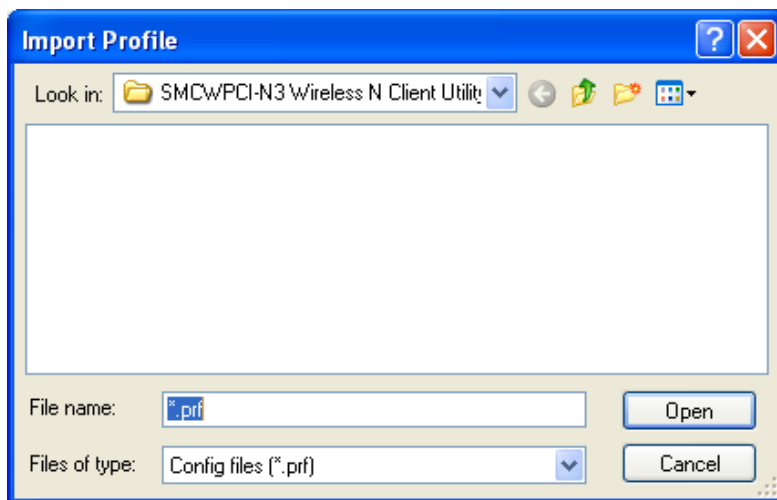


Figure 3-10

3.2.6 Scan Available Networks

1. Click **Scan** on the Profile Management screen (shown in Figure 3-3), the Available Infrastructure and Ad Hoc Networks window will appear below.
2. Click **Refresh** to refresh the list at any time.
3. Highlight a network name and click **Activate** to connect to an available network. If no configuration profile exists for that network, the Profile Management window will open the **General** tab screen. Fill in the Profile name and click **OK** to create the configuration profile for that network.

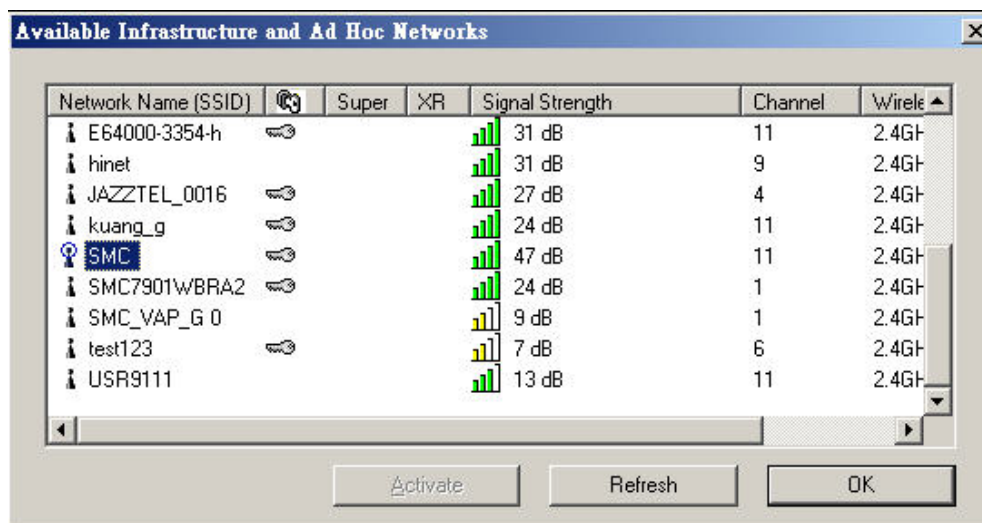


Figure 3-11

Super and XR are both Wireless 11g standard. These standards would extend the data rate to 108Mbps.

3.2.7 Auto Profile Selection Management

The auto selection feature allows the adapter to automatically select a profile from the list of profiles and use it to connect to the network. To add a new profile into the Auto Selected Profiles list, please follow these steps.

1. On the Profile Management screen (shown in Figure 3-3), click **Order Profiles**.
2. The Auto Profiles Selection management window will appear (shown in Figure 3-12) with a list of all created profiles in the Available Profiles.

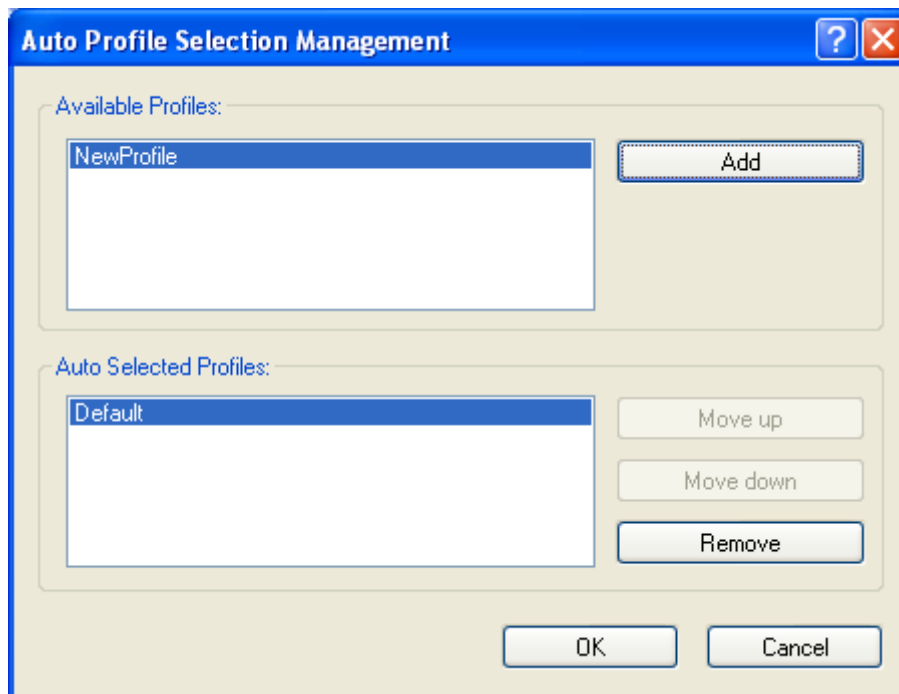


Figure 3-12

3. Highlight the profiles to add to auto profile selection, and click **Add**. The profile will appear in the Auto Selected Profiles box.
4. Highlight a profile in the Auto Selected Profiles box.
5. Click **Move Up** or **Move Down** to move the selected Profile up or down or click on remove to remove the selected profile from the list.

 **Note:**

The first profile in the Auto Selected Profiles box has highest priority, while the last profile has the lowest priority.

- Click **OK**.
- Check the **Auto Select Profiles** checkbox on the **Profile Management** tab (shown in Figure 3-3).

 **Note:**

When auto profile selection is enabled by checking **Auto Select Profiles** on the **Profile Management** tab, the client adapter will scan for an available network. The profile with the highest priority and the same SSID as one of the found networks will be used to connect to the network. If the connection fails, the client adapter will try the next highest priority profile that matches the SSID until an available network is found.

3.3 Diagnostics

The **Diagnostics** tab of the SMCWPCI-N3 Wireless N Client Utility provides options used to retrieve network traffic statistics. The Diagnostics tab does not require any configuration.

The Diagnostics tab lists the following receiving and transmitting diagnostics for frames received or transmitted by the wireless network adapter:

- Multicast frames transmitted and received
- Broadcast frames transmitted and received
- Unicast frames transmitted and received
- Total bytes transmitted and received

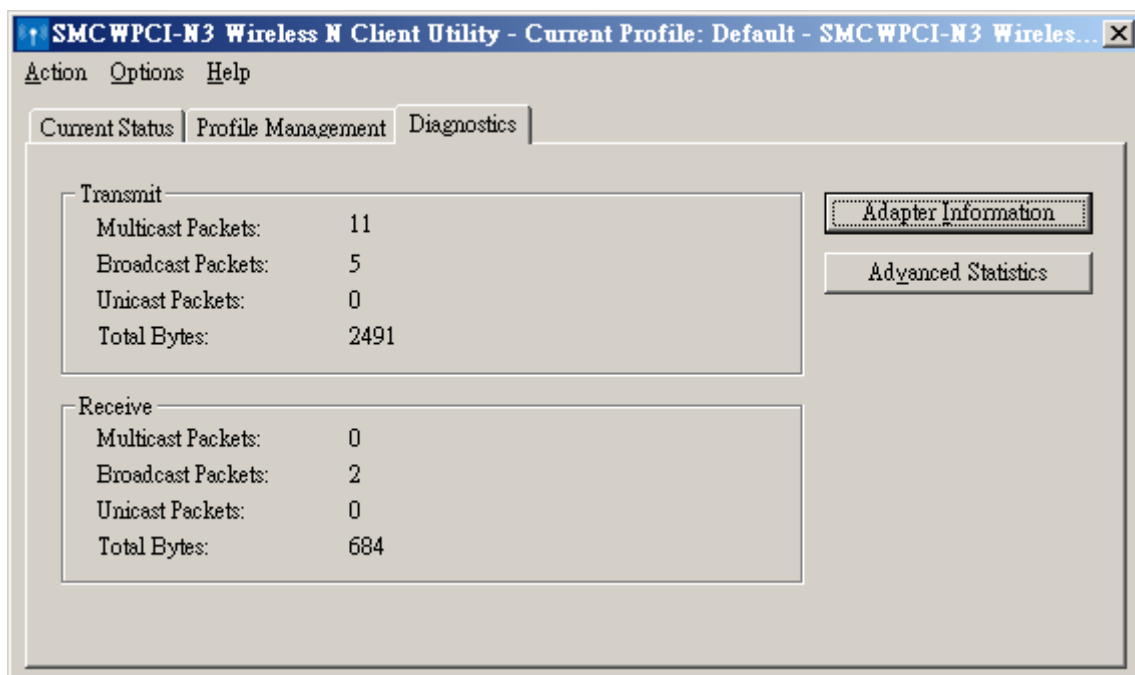


Figure 3-13

3.3.1 Check Driver Information

Click the **Adapter Information** button in the screen above, you will see the adapter information, including general information about the wireless network adapter and the Network Driver Interface Specification (NDIS) driver.

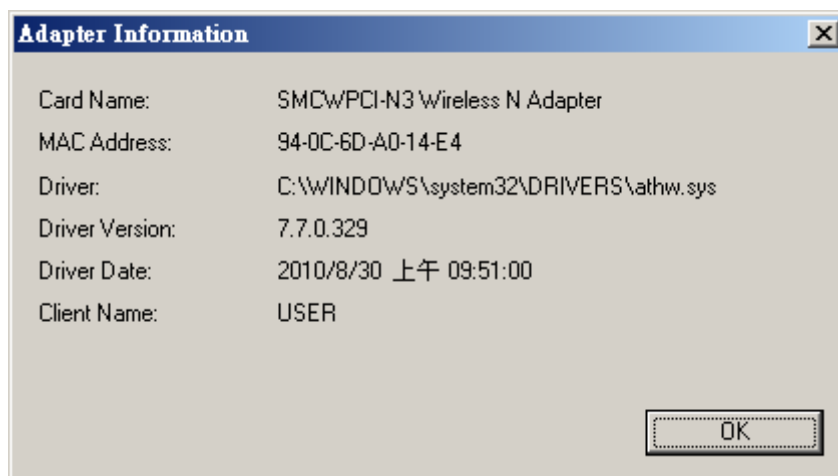
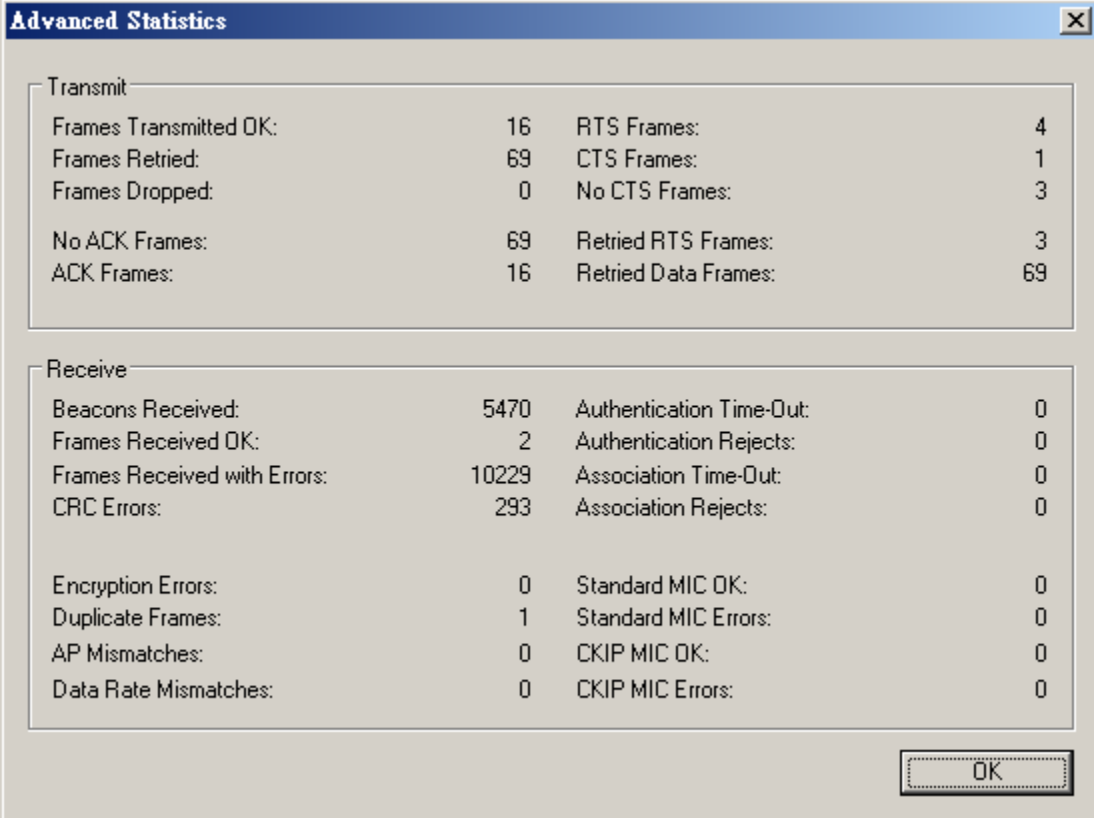


Figure 3-14

- **Card Name** - The name of the wireless network adapter.
- **MAC Address** - The MAC address of the wireless network adapter.
- **Driver** - The driver name and path of the wireless network adapter driver.
- **Driver Version** - The version of the wireless network adapter driver.
- **Driver Date** - The creation date of the wireless network adapter driver.
- **Client Name** - The name of the client computer.

3.3.2 Check Receive and Transmit Statistical Information

The **Advanced Statistics** show receiving and transmitting statistical information about the frames received by or transmitted by the wireless network adapter.



The image shows a software window titled "Advanced Statistics" with a close button in the top right corner. The window is divided into two main sections: "Transmit" and "Receive". Each section contains a list of statistics with their corresponding values. The "Transmit" section lists metrics such as "Frames Transmitted OK", "Frames Retried", and "Frames Dropped". The "Receive" section lists metrics such as "Beacons Received", "Frames Received OK", and "CRC Errors". An "OK" button is located at the bottom right of the window.


| Transmit | | | |
|------------------------|----|----------------------|----|
| Frames Transmitted OK: | 16 | RTS Frames: | 4 |
| Frames Retried: | 69 | CTS Frames: | 1 |
| Frames Dropped: | 0 | No CTS Frames: | 3 |
| No ACK Frames: | 69 | Retried RTS Frames: | 3 |
| ACK Frames: | 16 | Retried Data Frames: | 69 |

| Receive | | | |
|------------------------------|-------|--------------------------|---|
| Beacons Received: | 5470 | Authentication Time-Out: | 0 |
| Frames Received OK: | 2 | Authentication Rejects: | 0 |
| Frames Received with Errors: | 10229 | Association Time-Out: | 0 |
| CRC Errors: | 293 | Association Rejects: | 0 |
| Encryption Errors: | 0 | Standard MIC OK: | 0 |
| Duplicate Frames: | 1 | Standard MIC Errors: | 0 |
| AP Mismatches: | 0 | CKIP MIC OK: | 0 |
| Data Rate Mismatches: | 0 | CKIP MIC Errors: | 0 |

Figure 3-15

Chapter 4 Configuration for Windows Vista

SMC Wireless N Client Utility (SWCU) is not available for Windows Vista. So after the Adapter's driver has been installed, we have to use Windows WLAN Autoconfig to establish a connection. Please follow the steps below.

1. Right-click the icon  at the bottom of your screen in your system tray and then select "Connect to a network".

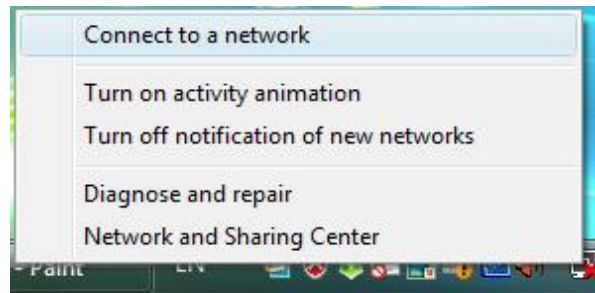


Figure 4-1

2. This page will then display and you will see the available wireless network list. Select the SSID of your Access Point, take **test** for example. Click **Connect**.

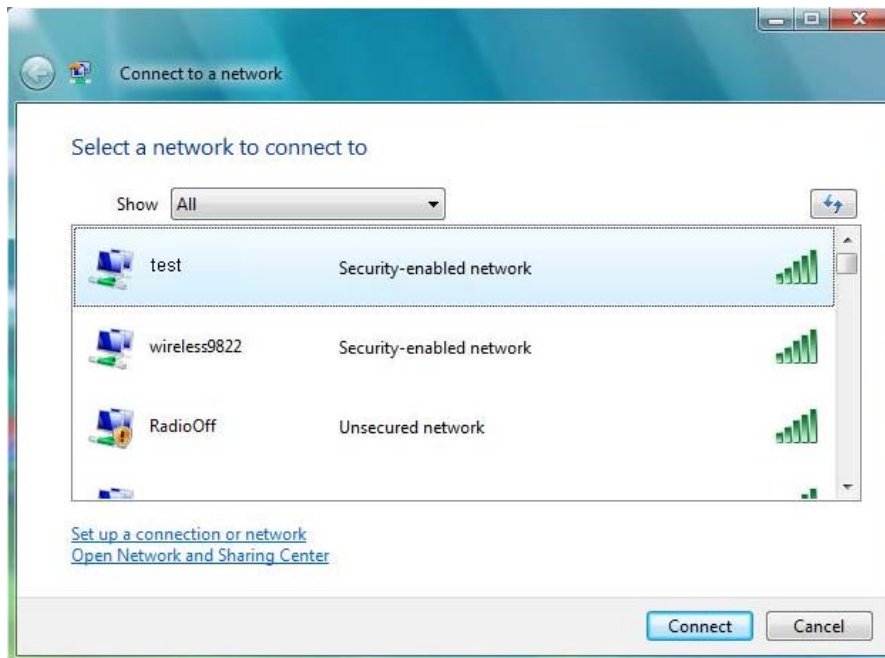


Figure 4-2 Select a Network

3. Enter the passphrase, take **1234567890** for example. And then click **Connect**.

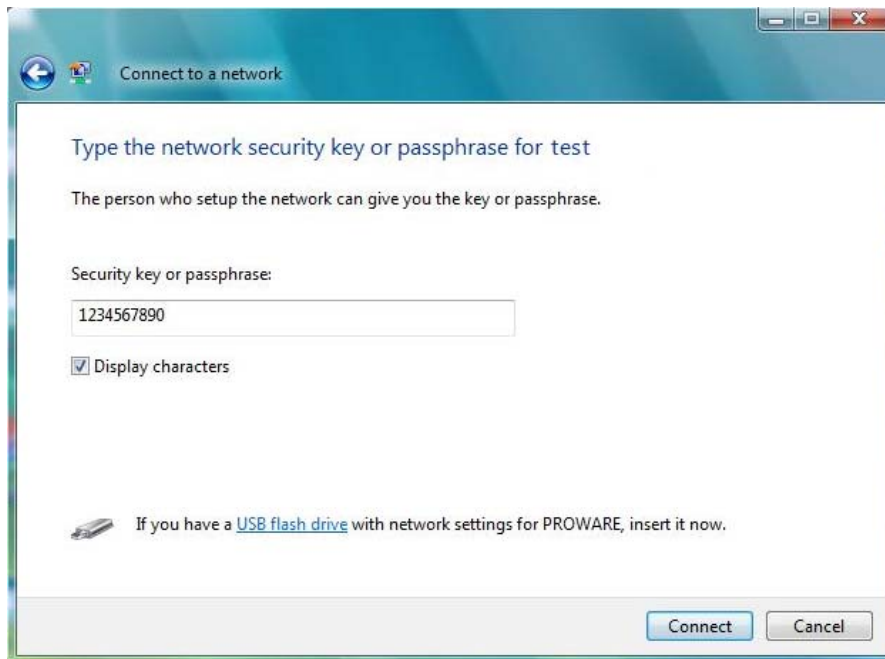


Figure 4-3 Enter Passphrase

4. If the key entered is correct, you will successfully connect to the network.

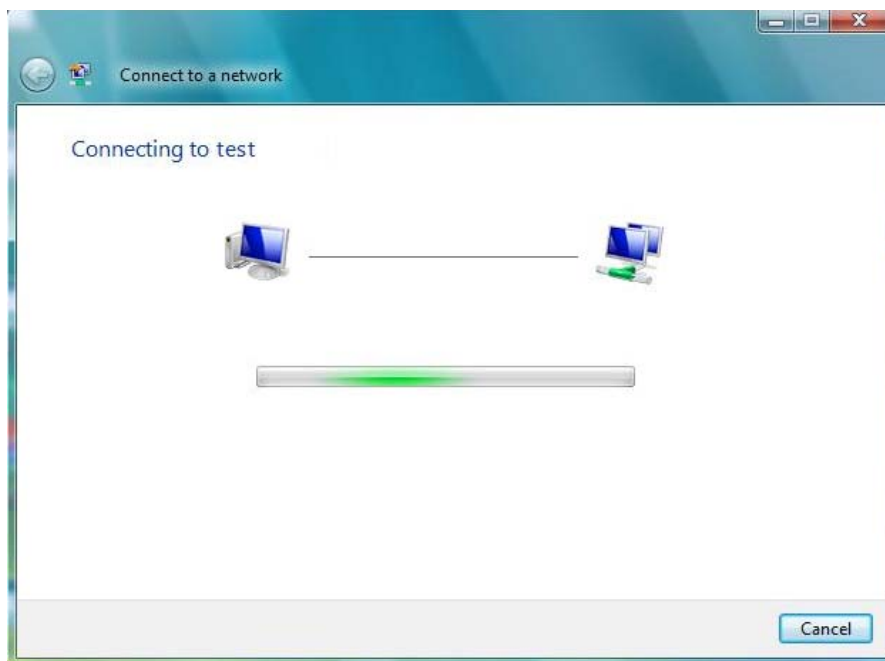


Figure 4-4 Connecting

5. Click **Close** to finish.

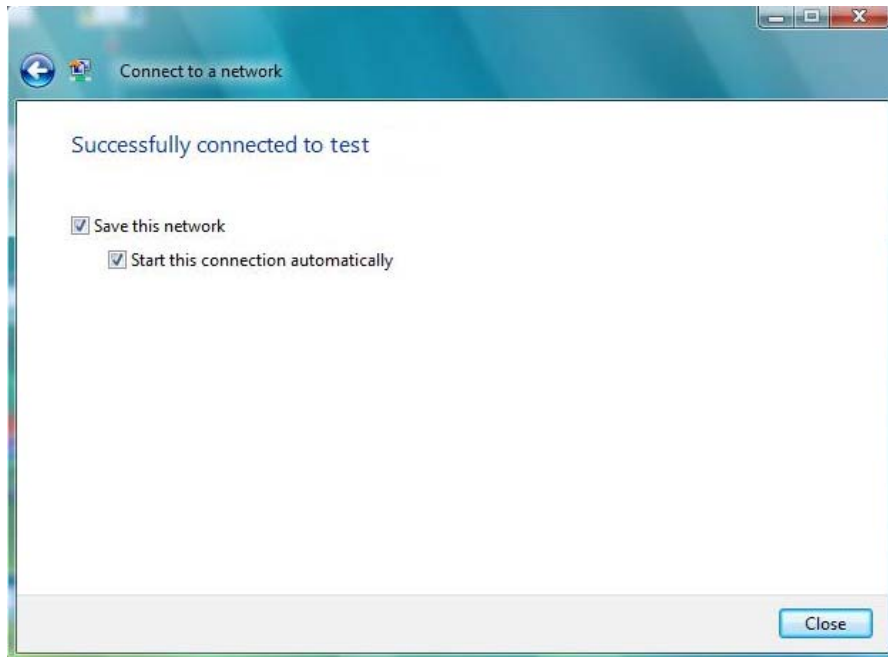



Figure 4-5 Successfully Connected

Chapter 5 Configuration for Windows 7

SMC Wireless N Client Utility (SWCU) is not available for Windows 7. So after the Adapter's driver has been installed, we have to use Windows WLAN Autoconfig to establish a connection. Please follow the steps below.

1. Right-click the icon  at the bottom of your screen in your system tray and then you will see the available wireless network list. Select the SSID of your Access Point, take **test** for example. Click **Connect**.

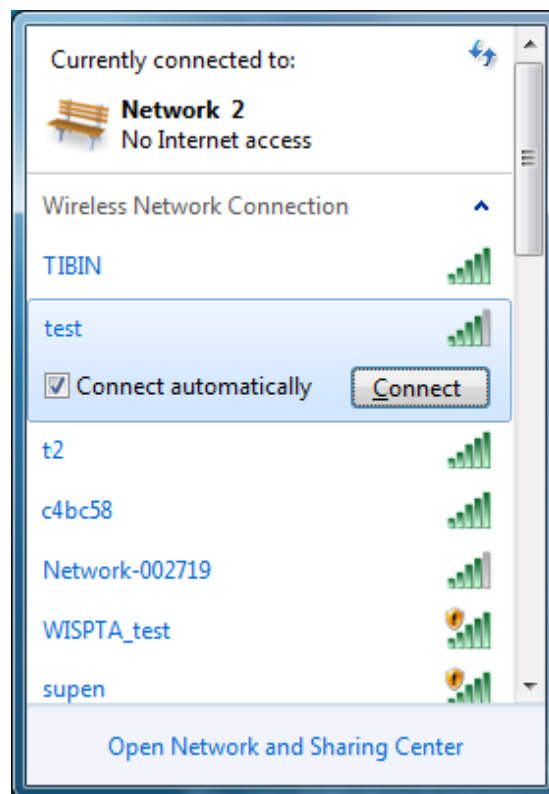


Figure 5-1 Select a Network

2. If your wireless network is secured, you will be required to enter the security key as shown in Figure 5-2. Enter the passphrase, take **1234567890** for example. And then click **OK**.

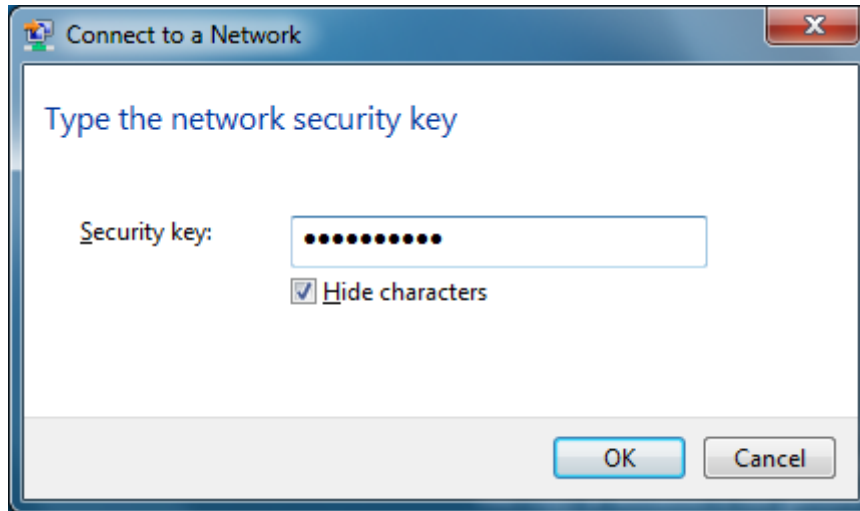


Figure 5-2 Enter Passphrase

3. If the key entered is correct, you will successfully connect to the network as shown in Figure 5-3.

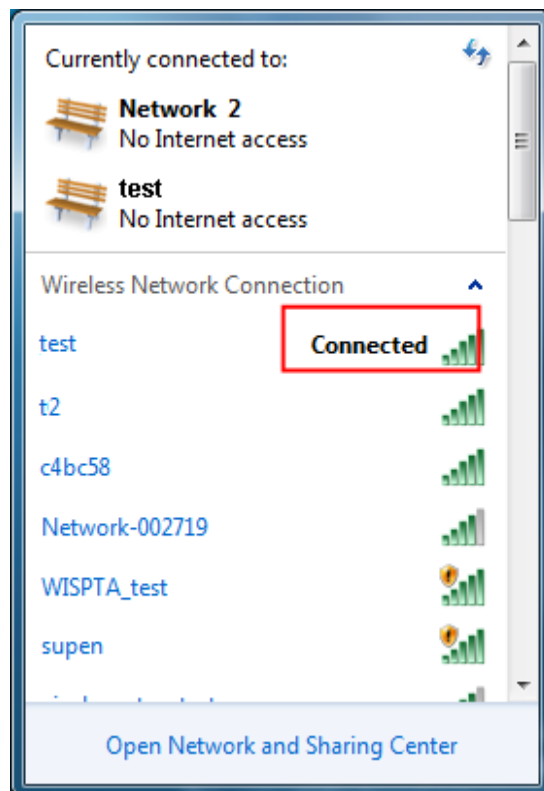


Figure 5-3 Connected

Chapter 6 WPS configuration

WPS (Wi-Fi Protected Setup) function allows you to add a new wireless device to an existing network quickly.

If the wireless Router supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and router using either Push Button Configuration (PBC) or PIN method.

First, the WPS software should be installed. Insert the installation CD into your CD-ROM drive, and open the folder named **SMCWPCI-N3**. Double-click **WPS.exe** to start the installation, then the following screen for preparing setup will appear.

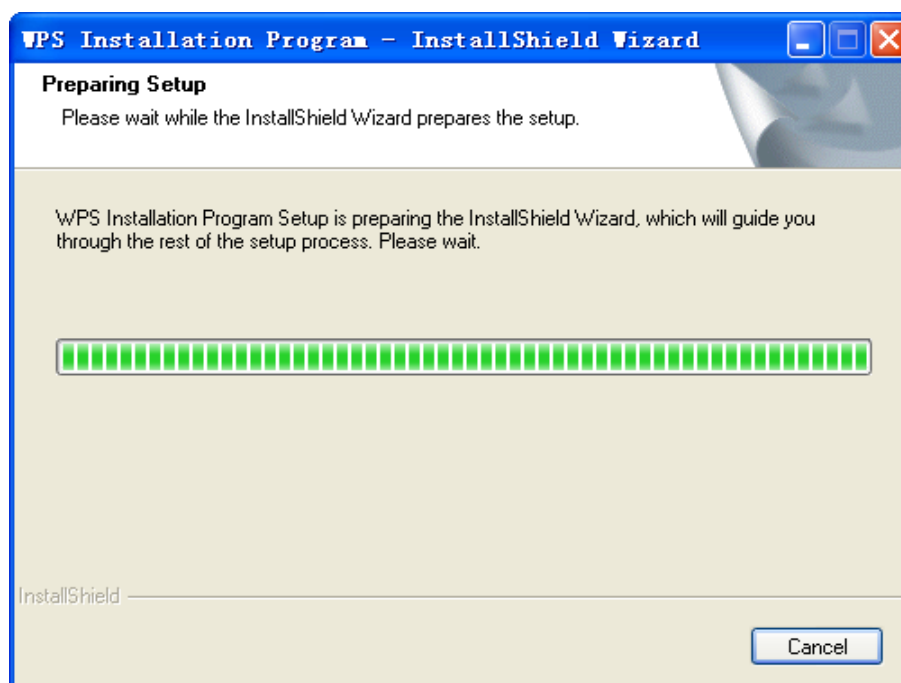


Figure 6-1

Please follow the guide of the Operating System to complete the WPS installation. After that, WPS function can be enabled. Here we will introduce how to configure the WPS in a SMC Wireless Router as an example.

6.1 PBC (Push Button Configuration) method

1. First, press the WPS button directly on the front panel of the Router shown in Figure 6-2.

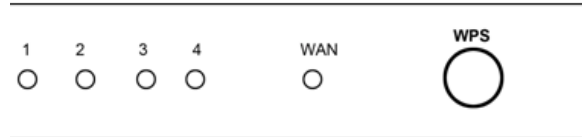



Figure 6-2

2. Double click the icon  on the desktop to open the WPS Utility and then you can see the welcome screen shown as Figure 6-3. Click **Next** to continue.

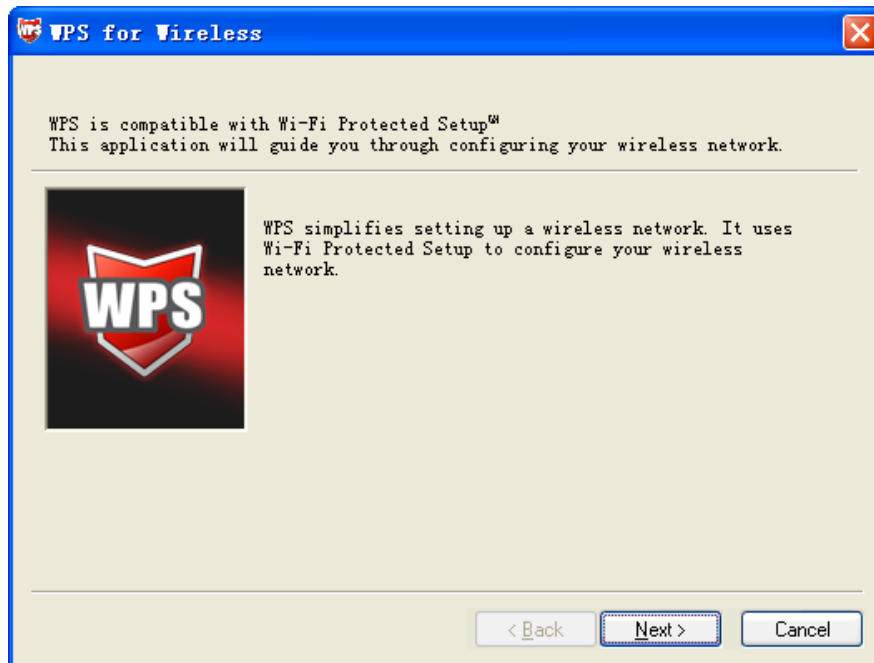


Figure 6-3

3. Then select **Push the button on my access point** in the next screen shown in Figure 6-4 and click **Next**.

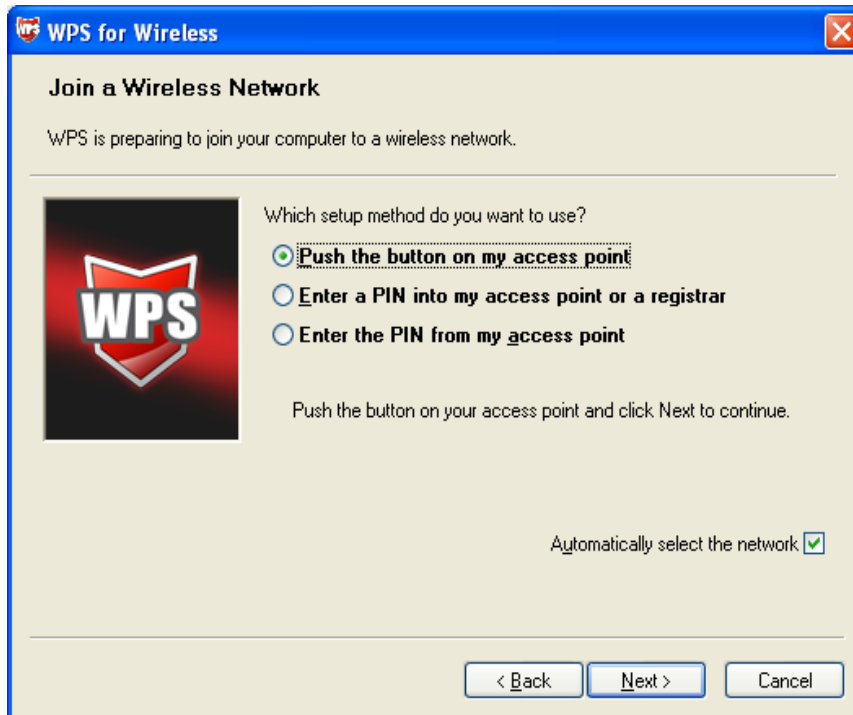


Figure 6-4

4. Then wait a minute until Figure 6-5 appears. Click **Finish** to complete the WPS configuration.

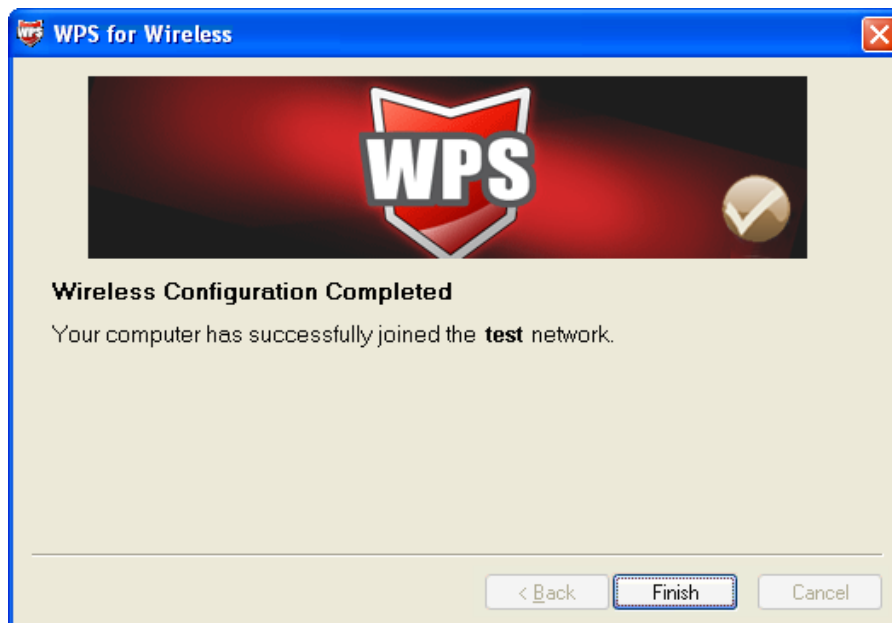


Figure 6-5

6.2 PIN method


There are two ways to configure WPS by **PIN method**:

1. Enter a PIN into your AP device.

2. Enter the PIN from your AP device.

Following are the detailed configuration procedure of each way.

6.2.1 Enter a PIN into your AP device

1. Double click the icon  on the desktop to open the WPS Utility and then you can see the welcome screen shown as Figure 6-3. Click **Next** to continue. Figure 6-6 will appear. Select the second option and you will see the PIN value of the adapter which is randomly generated. Click **Next**.

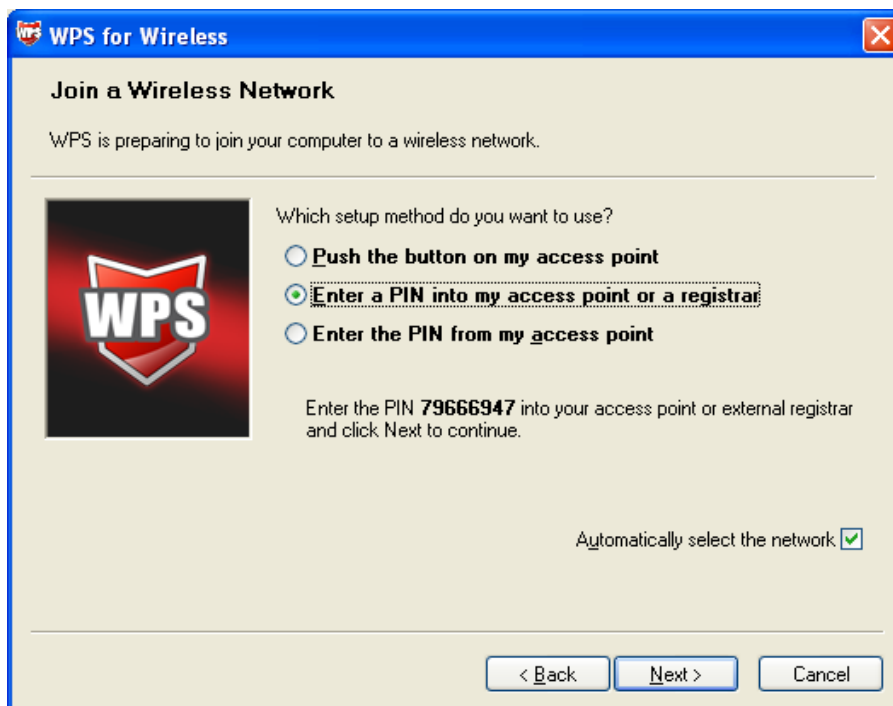


Figure 6-6

2. Open the Router's Web-based Utility and click **WPS** link on the left of the main menu. Then Figure 6-7 will appear.

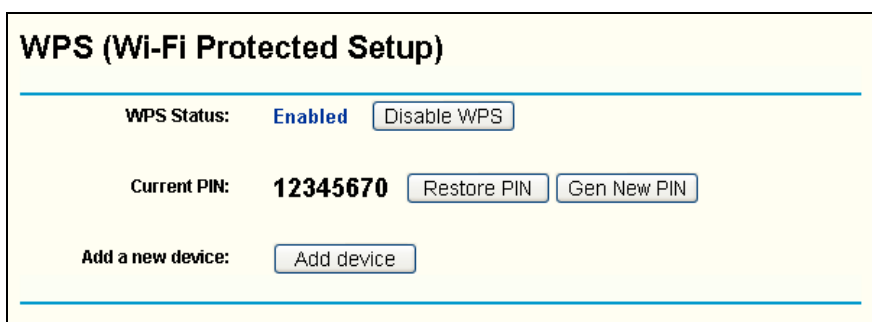
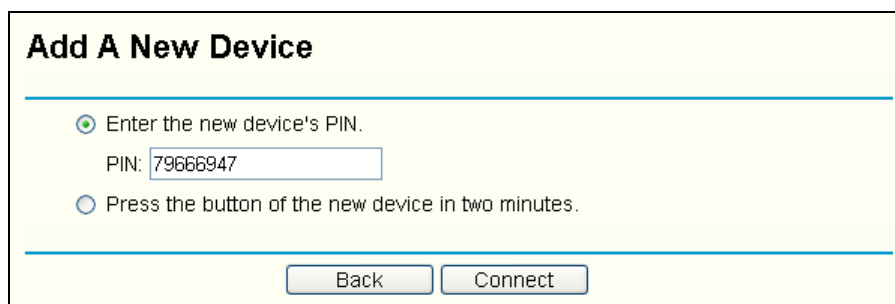


Figure 6-7

3. Click **Add device**, then you can see Figure 6-8. Select **Enter the new device's PIN** and

enter the PIN value of the adapter shown in Figure 6-6, click **Connect**.



Add A New Device

Enter the new device's PIN.
PIN:

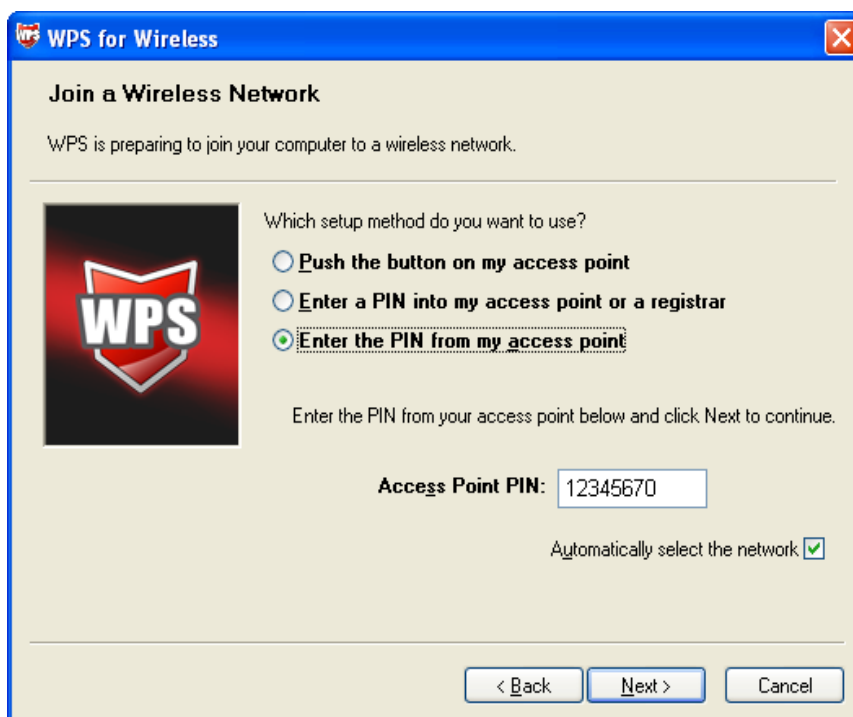
Press the button of the new device in two minutes.

Figure 6-8

4. When Figure 4-5 appears, the WPS configuration is complete.

6.2.2 Enter the PIN from your AP device

1. Open the WPS Utility and you will see Figure 6-3. Click **Next** to continue. Then Figure 6-9 will appear. Select the third option and enter the PIN value which is generally labeled on the bottom of the router. Click **Next**.



WPS for Wireless

Join a Wireless Network

WPS is preparing to join your computer to a wireless network.

Which setup method do you want to use?

Push the button on my access point

Enter a PIN into my access point or a registrar

Enter the PIN from my access point

Enter the PIN from your access point below and click Next to continue.

Access Point PIN:

Automatically select the network

Figure 6-9

2. When Figure 6-5 appears, the WPS configuration is complete.

Note:

If you generate a new PIN code for your Router, please enter the new one instead.

Appendix A: Specifications

| Normal | |
|-----------------------|---|
| Interface | PCI Interface |
| Standards | IEEE 802.11n; IEEE 802.11g; IEEE 802.11b; |
| Operating System | Windows 2000 / Windows XP / Windows Vista / Windows 7 |
| Radio Data Rate | 11b: 1/2/5.5/11Mbps 11g: 6/9/12/18/24/36/48/54Mbps 11n: Up to 300Mbps |
| Modulation | 11b: CCK, QPSK, BPSK; 11g: OFDM; 11n: QPSK, BPSK, 16-QAM, 64-QAM; |
| Media Access Protocol | CSMA/CA with ACK |
| Data Security | WPA/WPA2; 64/128/152-bit WEP; TKIP/AES |
| Spread Spectrum | Direct Sequence Spread Spectrum (DSSS) |
| Safety & Emissions | FCC, CE |

| Environmental and Physical | |
|----------------------------|------------------------------|
| Operating Temp. | 0°C~40°C (32°F~104°F) |
| Storage Temp. | -40°C~ 70°C (-40°F~158°F) |
| Working Humidity | 10% ~ 90% RH, Non-condensing |
| Storage Humidity | 5% ~ 90% RH, Non-condensing |

Appendix B: Glossary

- **802.11b** - The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g** - specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **802.11n** - is an amendment to the IEEE 802.11-2007 wireless networking standard to improve network throughput over the two previous standards — 802.11a and 802.11g — with a significant increase in the maximum raw data rate from 54 Mbit/s to 600 Mbit/s with the use of four spatial streams at a channel width of 40 MHz.
- **Ad-hoc Network** - An ad-hoc network is a group of computers, each with a Wireless Adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.
- **DSSS - (Direct-Sequence Spread Spectrum)** - DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need of retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).
- **FHSS - (Frequency Hopping Spread Spectrum)** - FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.
- **Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a Wireless Adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.
- **Spread Spectrum** - Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems.

It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

- **SSID** - A **S**ervice **S**et **I**dentification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name. See *also* Wireless Network Name and ESSID.
- **WEP** - (**W**ired **E**quivalent **P**rivacy) - A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard. To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.
- **Wi-Fi** - A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see <http://www.wi-fi.net>), an industry standards group promoting interoperability among 802.11b devices.
- **WLAN** - (**W**ireless **L**ocal **A**rea **N**etwork) - A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.
- **WPA** - (**W**i-Fi **P**rotected **A**ccess) - A wireless security protocol use TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

FOR TECHNICAL SUPPORT, CALL:

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E-mail addresses: support@smc-australia.com.au

English: Technical Support information available at www.smc.com

English(For Asia Pacific): Technical Support information available at www.smc-asia.com

Deutsch: Technischer Support und weitere Information unter www.smc.com

Español: En www.smc.com Ud. podrá encontrar la información relativa a servicios de soporte técnico

Français: Informations Support Technique sur www.smc.com

Português: Informações sobre Suporte Técnico em www.smc.com

Italiano: Le informazioni di supporto tecnico sono disponibili su www.smc.com

Svenska: Information om Teknisk Support finns tillgängligt på www.smc.com

Nederlands: Technische ondersteuningsinformatie beschikbaar op www.smc.com

Polski: Informacje o wsparciu technicznym są dostępne na www.smc.com

Čeština: Technická podpora je dostupná na www.smc.com

Magyar: Műszaki támogatás információ elérhető -on www.smc.com

简体中文: 技术支持讯息可通过www.smc-prc.com查询

繁體中文: 產品技術支援與服務請上 www.smcnetworks.com.tw

ไทย: สามารถหาข้อมูลทางด้านเทคนิคได้ที่ www.smc-asia.com

한국어: 기술지원관련 정보는 www.smc-asia.com을 참고하시기 바랍니다

Driver updates:

http://www.smc.com/index.cfm?action=tech_support_drivers_downloads

World Wide Web:

<http://www.smc-australia.com.au>