

SonicWALL Long Range Dual Band Wireless Card
User's Guide

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Table 1: Version History

Version	Date	Notes
1	April 20, 2004	This document was created.
2	April 20, 2004	Added Windows Wizard diagrams.
3	April 29, 2004	Incorporated technical review comments.
4	May 6, 2004	Updated SonicWALL Client Utility diagrams.
5	May 17, 2004	Incorporated final technical review comments.

This document describes SonicWALL Long Range Dual Band Wireless Card package contents and step-by-step procedures to configure your wireless card, setup the SonicWALL Client Utility, and connect to the network.

This document contains the following sections:

- "Introduction" on page 1
- "Installing the Drivers and SonicWALL Client Utility" on page 4
- "Using the SonicWALL Client Utility" on page 9
- "Uninstallation" on page 21
- "Troubleshooting" on page 23

Introduction

The SonicWALL Long Range Dual Band Wireless Card is a PC Card that fits in any 32-bit Cardbus PC Card Standard V7.1 Type II slot. The Wireless Card has an LED indicator and an integrated built-in diversity antenna.

Package Contents

- One wireless card
- One installation CD
- One Quick Start Installation Guide document

System Requirements

The following are the minimum system requirements in order to use the SonicWALL Long Range Dual Band Wireless Card.

- PC/AT compatible computer with a 32-bit Cardbus PC Card Standard V7.1 Type II slot
- Windows 98SE/ME/2000/XP operating system
- 300 MHz or higher processor
- 32 MB or greater memory

Product Registration

Registering your SonicWALL Long Range Wireless Cards at mySonicWALL.com (www.mysonicwall.com) allows you to receive any new driver updates. Your SonicWALL wireless security appliance must be registered before registering your SonicWALL Long Range Dual Band Wireless Cards.

Features and Benefits

This section provides a list of wireless features, information on wireless interoperability, and security.

Wireless Features

The SonicWALL Long Range Dual Band Wireless Card includes the features highlighted in Table 2.

Table 2: Wireless Features

Features	Benefits
2.4GHz IEEE 802.11b/g standard compliant 5GHz IEEE 802.11a standard compliant	Fully interoperable with IEEE 802.11a/b/g compliant products
Up to 54Mbps and 108Mbps (in 802.11a and Turbo G mode) high-speed data rates	Capable of handling heavy data payloads such as MPEG video streaming
WPA-PSK, WPA-EAP and 152-bit WEP Data Encryption with support for TKIP and AES	Powerful data security
Dynamic Frequency Selection (DFS) support	Provides flexible selection of the best frequency to allow mobility among all existing IEEE 802.11a/b/g networks
Transmission Power Control (TPC) support	Offers flexibility to adjust RF output power
Multi-country Roaming (802.11d) support	Automatically adjusts regulatory domain to operate in different countries

Interoperability

The SonicWALL Long Range Dual Band Wireless Card is WiFi certified to ensure wireless interoperability with other WiFi certified devices.

Security

The following security support is included:

- WPA-PSK (Pre-Shared Key) and WPA-EAP (Extensible Authentication Protocol) including EAP-TLS and EAP-PEAP
- WiFiSec (IPSec VPN) using SonicWALL's Global Security Client
- Wired Equivalent Privacy (WEP) encryption, operating with 64 bit, 128 bit or 152 bit encryption
- AES-CCM Encryption support
- Support for Windows 802.1X supplicants

Wireless LAN Solutions

The following list describes example applications of wireless LANs:

- **Office networks** - Business users need a cost-effective, easy and quick installation in an office network.
- **Training/educational facilities** - Training sites at corporations and students at universities use wireless connectivity to ease access to information, information exchanges, and learning.
- **Wireless extensions to Ethernet networks** - Network managers in dynamic environments can minimize the overhead caused by moves, extensions to networks, and other changes with wireless LANs.
- **Wired LAN backup** - Network managers implement wireless LANs to provide backup for mission-critical applications running on wired networks.
- **Access to environments requiring real-time information** - Doctors/nurses, point-of-sale employees, and warehouse workers can access real-time information while dealing with patients, serving customers and processing information.

- **Frequently changing environments** - Show rooms, meeting rooms, retail stores, and manufacturing sites where the workplace is frequently being rearranged.
- **Difficult-to-wire environments** - There are many situations where wires cannot easily be laid. Historic buildings, older buildings, open areas and across busy streets make the installation of LANs either impossible or very expensive.
- **Temporary workgroups** - Consider situations in parks, athletic arenas, exhibitions, disaster-recovery, temporary office and construction sites where you need a temporary WLAN established and removed.

Deployment Scenarios

This section provides deployment scenarios to help you understand how wireless LAN products work together to create a wireless network. Refer to the following deployment scenarios:

- Ad-hoc (or peer-to-peer) for departmental or office LANs
- Infrastructure for Enterprise LANs

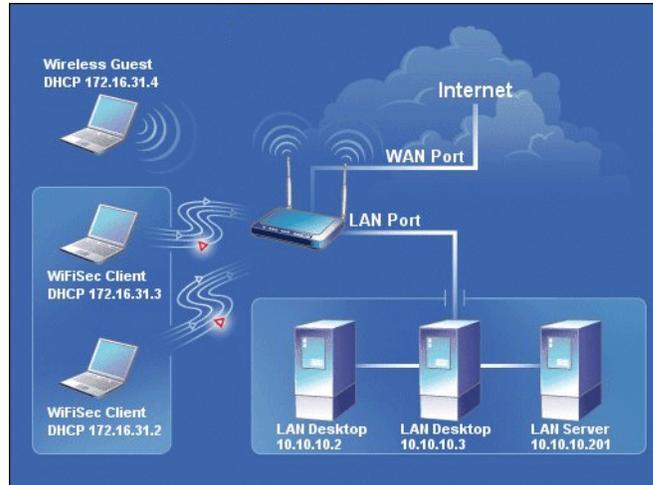
Ad-Hoc (Peer-to-Peer)

The ad-hoc (peer-to-peer) mode is the simplest network configuration that supports several computers equipped with SonicWALL Long Range Dual Band Wireless Cards to form a wireless network. In ad-hoc mode, each client is peer-to-peer and would only have access to the resources of the other client. In ad-hoc mode, the client does not require an access point.



Infrastructure Mode

The infrastructure mode requires the use of an access point (AP). In infrastructure mode, wireless communication between two computers is transferred through the AP. The AP can standalone or be wired to an Ethernet network. If an AP is used in standalone mode, the AP can extend the range of independent wireless LANs by acting as a repeater to effectively double the distance between wireless stations. The figure below illustrates a network in infrastructure mode.



Installing the Drivers and SonicWALL Client Utility

This section describes how to install the drivers and SonicWALL Client Utility for Windows 98SE/ME/2000/XP.

Before You Begin

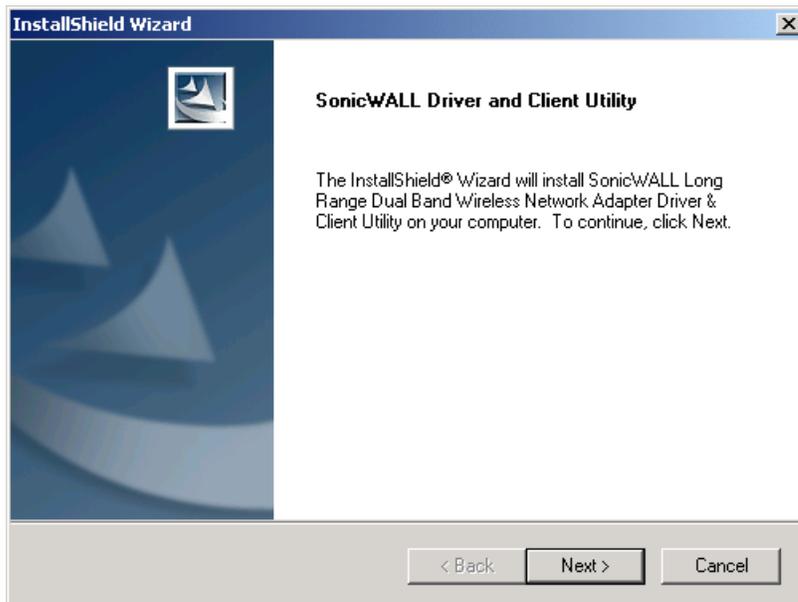
During the installation, Windows 98SE/ME/2000/XP may need to copy systems files from its installation CD. Therefore, you may need a copy of the Windows installation CD available before installing the drivers. On many systems, instead of a CD, the necessary installation files are archived on the hard disk in C:\WINDOWS\OPTIONS\CABS directory.

Installing the SonicWALL Long Range Dual Band Wireless Card Drivers

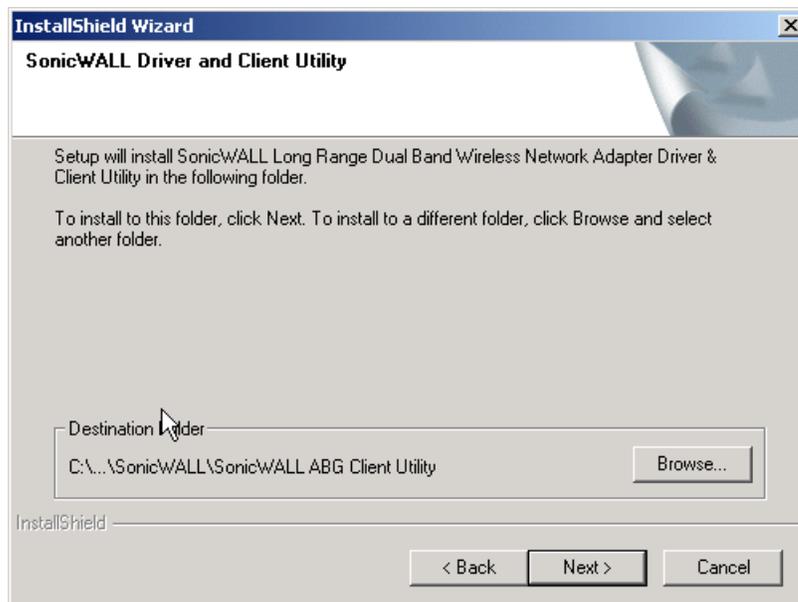
This section provides step-by-step procedures to install the SonicWALL driver and Client Utility. Do not insert the wireless card until after the driver installation is complete.

Perform the following steps below in order to install the SonicWALL Long Range Dual Band Wireless Card drivers:

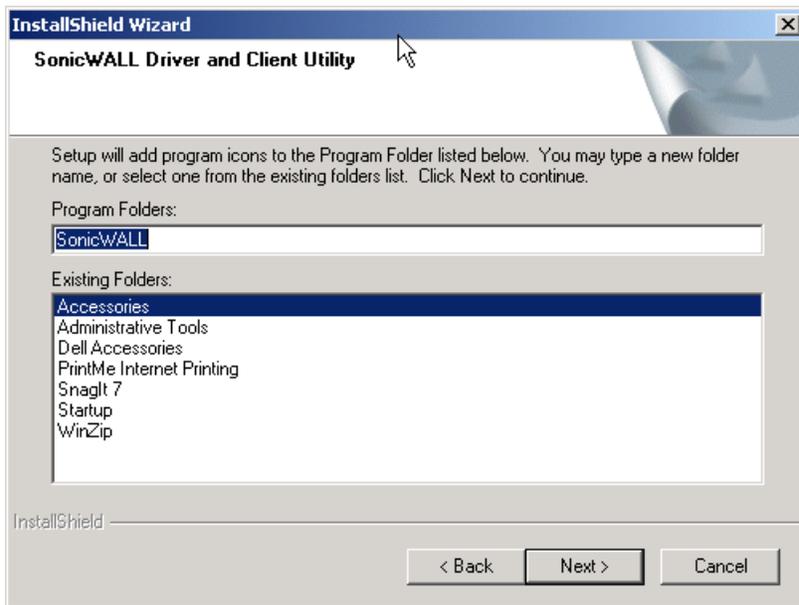
1. Insert the CD-ROM that was provided to you in this package. The setup should run automatically. If the setup does not run automatically, then you must manually select the **Setup.exe** file from the CD-ROM drive.
2. Once the setup begins you will see the **Install Shield Wizard**, as the image depicts below.



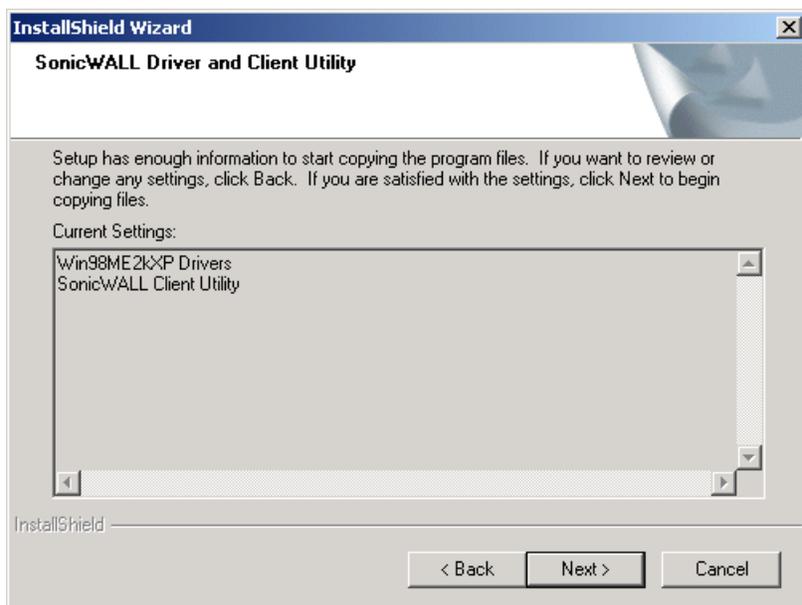
3. Click on the **Next** button to continue. The Install Wizard will then let you select a destination folder for the utility and drivers. Click on the Browse button and specify another folder, or click on the **Next** button to use the default folder.



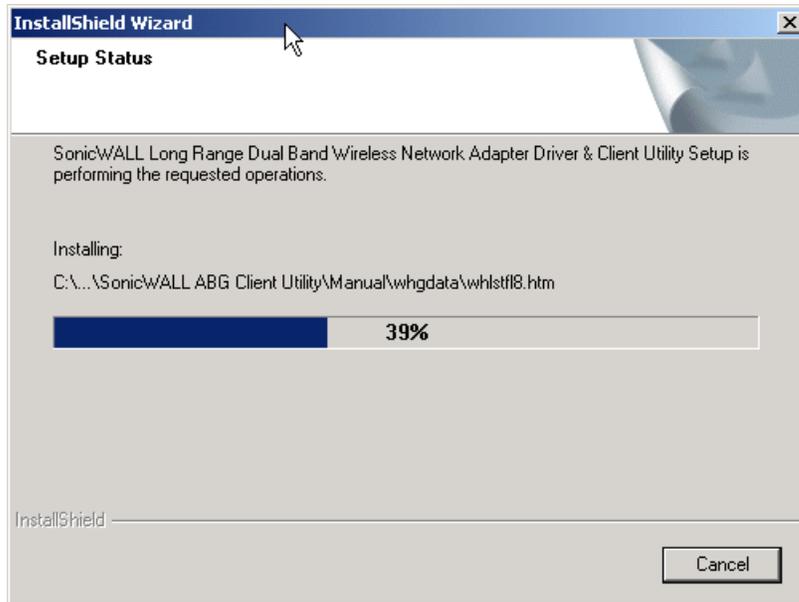
4. The Install Wizard will then allow you to select a Program Folder. Select one from the list, or click on the **Next** button to use the default program folder.



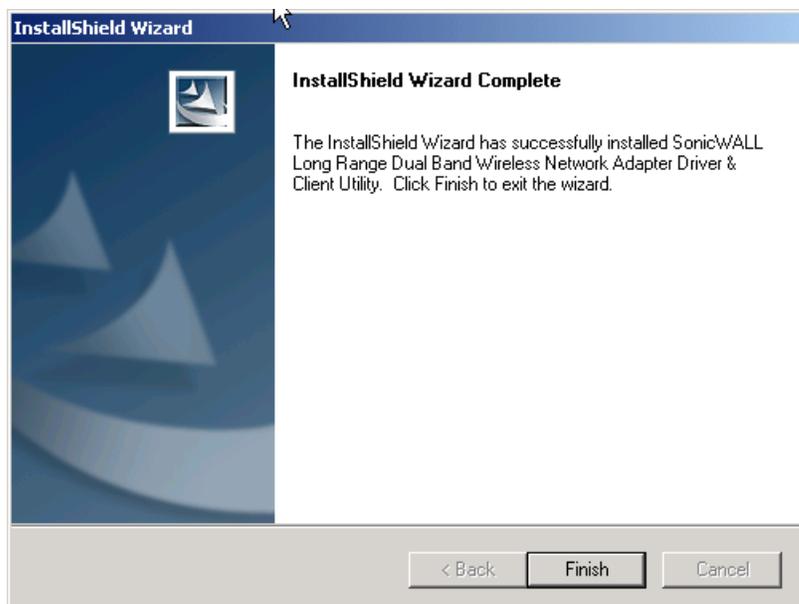
5. The Install Wizard will then inform you that it has enough information to begin the installation process. Click on the **Next** button to continue.



6. The Install Wizard will then begin to copy the files to your computer, as the image depicts below.



7. Click on the **Finish** button. The first part of the installation is complete.



8. Gently insert the SonicWALL Long Range Dual Band Wireless Card into the CardBus Type II slot of your PC. Windows will automatically detect the SonicWALL Long Range Dual Band Wireless Card and display the **Found New Hardware Wizard**, as the image depicts below.



9. Select the **Install the software automatically (Recommended)** radio button, and then click on the **Next** button to continue. If you are using Windows XP, you will see a message regarding Windows Logo Testing, click on the **Continue Anyway** button to continue.



10. The setup will then begin to copy the necessary files. After the copying is completed you will see the final screen of the installation procedure, Completing the Found New Hardware Wizard window. The installation of the SonicWALL Long Range Dual Band Wireless Card is now complete. Click on the **Finish** button.

Using the SonicWALL Client Utility

This section describes the features of the SonicWALL Long Range Dual Band Wireless Card and its configuration process. After a successful installation, a **SonicWALL Client Utility** program group will be added to the Programs menu.

To launch the SonicWALL Client Utility, click **Start > Programs > SonicWALL Client Utility > SonicWALL Client Utility**. The SonicWALL Client Utility icon will appear in the system tray each time your computer is restarted.

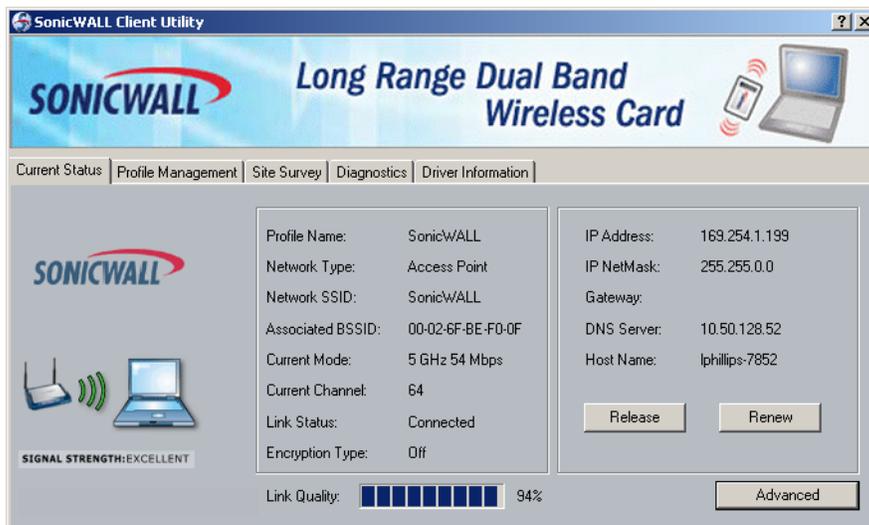


Right-click on the SonicWALL Client Utility icon in the system tray and then click on **Open Client Utility...**, as the image depicts below.



The SonicWALL Client Utility appears. The SonicWALL Client Utility contains five tabs, each tab is described in detail in the following sections.

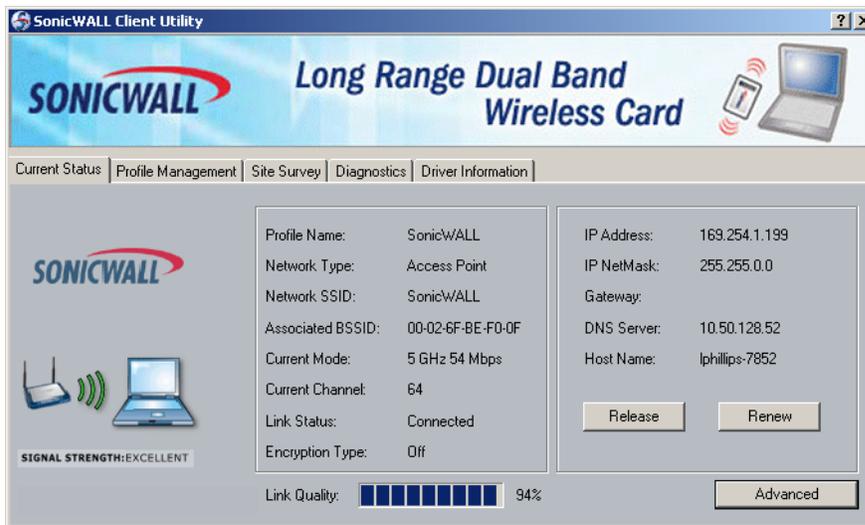
- Current Status
- Profile Management
- Site Survey
- Diagnostics
- Driver Information



Current Status

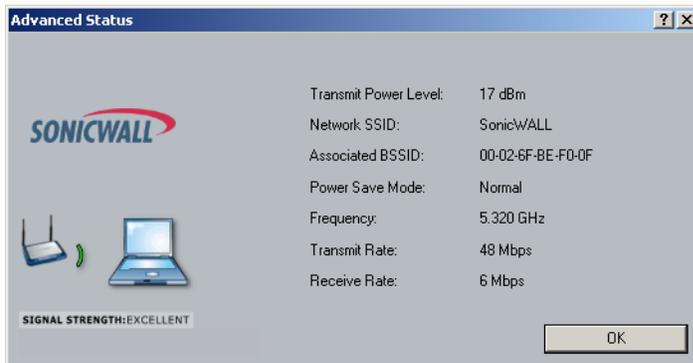
The first tab displays the **Current Status**. The Current Status tab provides the following current status information:

- **Profile Name** - The current name of the selected configuration profile.
- **Network Type** - The current type of wireless network that is either Access Point or Ad hoc.
- **Network SSID** - The wireless network instance (SSID) that the device is currently connected to.
- **Current Mode** - The current wireless mode is the frequency and data rate that has been selected.
- **Current Channel** - Specifies the current channel that the SonicWALL Long Range Dual Band Wireless Card is connected to or scanning on.
- **Link Status** - The link can be either connected or disconnected to an Access point or other wireless client.
- **Encryption Type** - Describes whether or not the wireless traffic is encrypting.
- **IP Address** - The current IP address of the SonicWALL Long Range Dual Band Wireless Card.
- **Gateway** - The IP address of the Gateway (access point) connecting the device.
- **DNS Server** - The IP address of the Domain Name System (DNS) server used for DNS naming resolution.
- **Host Name**: The name of the computer running the SonicWALL Client Utility.



Advanced Status

Click on the **Advanced** button to view more details about the status. You will then see the following window.



The **Advanced Status** window displays the following information:

- **Transmit Power Level** - Provides current setting of Radio output power.
- **Associated BSSID** - Shows the MAC address of the associated Access Point.
- **Power Save Mode** - The type of Power Savings that is configured on the device
- **Frequency** - The current frequency that the Wireless device is connected to or is scanning on.
- **Transmit Rate** - The transmit rate (Mbps) for the current connection for the wireless driver.
- **Receive Rate** - The receive rate (Mbps) for the current connection for the driver.

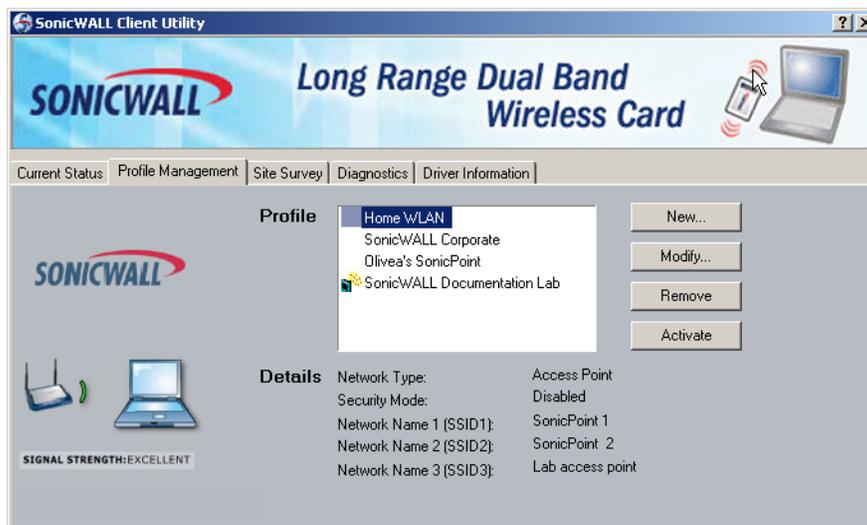
Click on the **OK** button to close this window and return to the **Current Status** tab.

Profile Management

The second tab displays the **Profile Management**. The Profile Management tab allows you to configure several different user defined policies. This tab is used to create a new profile, modify and existing profile, remove an existing profile, or activate an existing profile. Each profile can be configured to match the appropriate settings of a unique wireless network.

Adding or Modifying a Configuration Profile

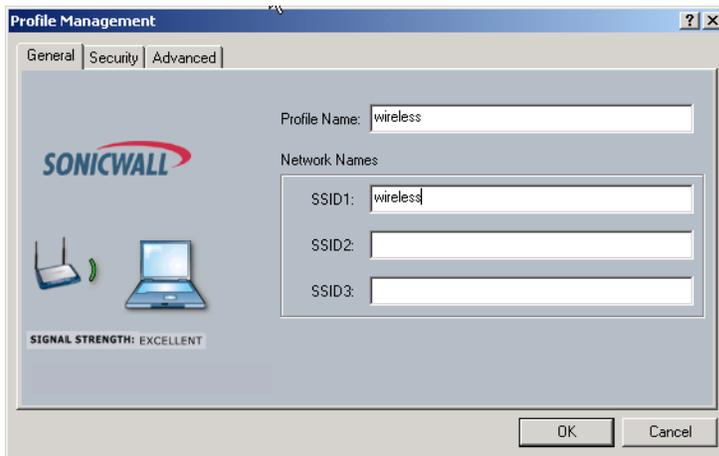
To add a new configuration file, click on the **New** button. To modify or remove a configuration profile, select the configuration from the Profile list and click the **Modify** or **Remove** button.



Another window will then appear displaying three tabs: **General**, **Security**, and **Advanced**. Each tab is described below.

General

The first tab displayed is the **General** tab.



In the General tab, you can specify a new profile name and SSID.

- **Profile Name** — Enter a name for this profile. This can be any name that you may associate with your network.
 - **SSID1** — Enter the SSID of the network. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
- Click on the **OK** button to save the changes.

Security

The second tab displayed is the **Security** tab. Here you can specify and configure the security method that is used by your network. There are five types of security methods available:

- **WPA-EAP** - (WiFi Protected Access - Extensible Authentication Protocol) Provides WPA with 802.1X RADIUS authentication.
- **WPA-PSK** - (WiFi Protected Access - Pre-Shared Key) Provides support for both Passphrass (8-63 characters) and Hexadecimal (64 characters) keys.
- **WEP** - (Wired Equivalent Privacy) Provides the ability for setting of all four WEP keys. The WEP selection also allows for setting of a unique key, which is used with higher forms of encryption such as AES.
- **None** - Use this mode when there is no security authentication or encryption is currently enabled on your Wireless LAN network.

Configuration for each security method is described below.



WPA-EAP

WPA (Wi-Fi Protected Access) was designed to improve upon the security features of WEP (Wired Equivalent Privacy). WPA provides improved data encryption through the Temporal Key Integrity Protocol (TKIP), which scrambles the keys using a hashing algorithm and by adding an integrity-checking feature to ensure that the keys have not been tampered.

EAP (Extensible Authentication Protocol) is an extension to the PPP protocol that enables a variety of authentication protocols to be used. It passes through the exchange of authentication messages, allowing the authentication software stored in a server to interact with its counterpart in the client.

If your network uses **WPA-EAP**, select that radio button. You must then select an **EAP** type from the drop-down list. The two options available are: TLS and PEAP.

Before you enable WPA-EAP type TLS or PEAP authentication, your network devices must meet the following requirements:

- You must have a valid Windows username and password, and the password cannot be blank.
- The appropriate certificate must be installed on your computer. TLS requires both a Certificate Authority (CA) certificate and a user certificate. PEAP requires only a CA certificate.



WPA-EAP Using TLS

TLS (Transport Layer Security) is an IETF standardized authentication protocol that uses PKI (Public Key Infrastructure) certificate-based authentication of both the client and authentication server.

Select **TLS** from the drop-down list, and then click on the **Configure** button. The SonicWALL Client Utility will then search your computer for any certificates. If you do not have any certificates, you will see the following message, requiring you to select another WPA-EAP option.

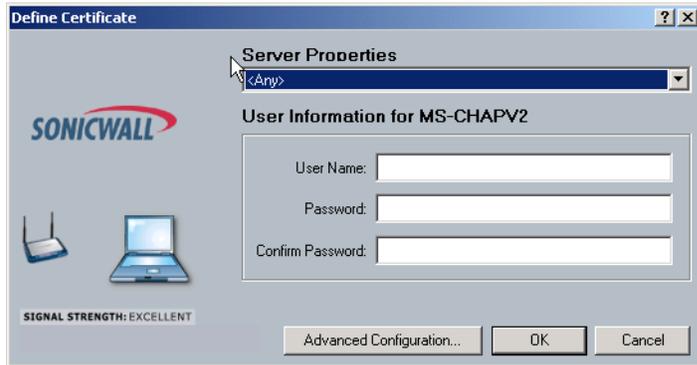


Click on the **OK** button.

WPA-EAP Using PEAP

PEAP (Protected Extensible Authentication Protocol) is a protocol developed jointly by Microsoft, RSA Security, and Cisco Systems for transmitting authentication data, including passwords over a 802.11 wireless network. PEAP authenticates wireless LAN clients using only server-side digital certificates by creating an SSL/TLS tunnel between the client and the authentication server. The tunnel then protects the subsequent user authentication exchange.

Select **PEAP** from the drop-down list, and then click on the **Configure** button. You will then see the following window.

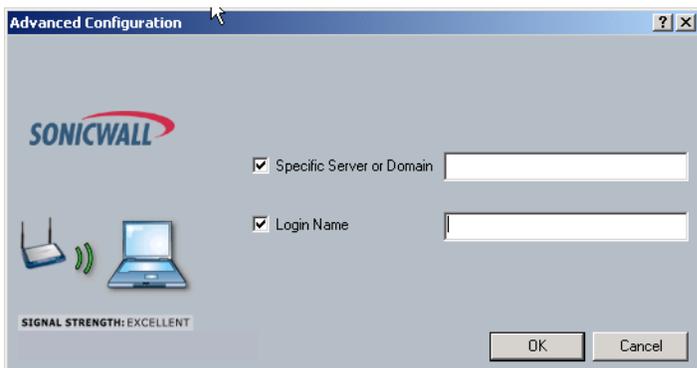


Provide the following information for user authentication:

- **Server Properties:** select a server name from the drop-down list.
- **User Name:** enter the user name.
- **Password:** enter the password.
- **Confirm Password:** re-type the password for confirmation purposes.

Click on the **OK** button, or click on the **Advanced Configuration** button to specify a server or login name.

After clicking on the **Advanced Configuration** button, you will see the following window.



Provide the following optional information:

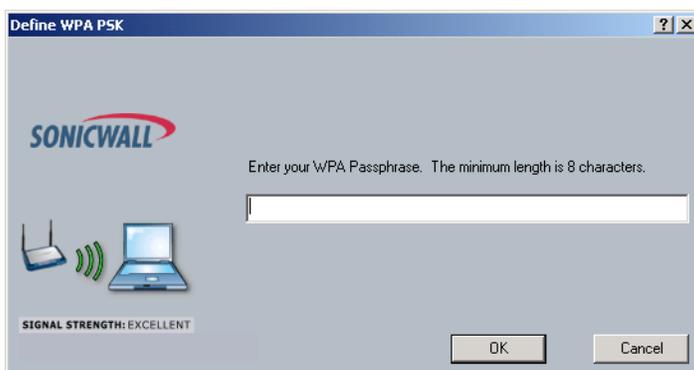
- **Specific Server or Domain** — (Optional) Place a check in this box and enter the server or domain name.
- **Login Name** — (Optional) Place a check in this box and enter the login name.

WPA-PSK

WPA-PSK (Pre-shared Key) is used in a Pre Shared Key mode that does not require an authentication server. Access to the Internet and the rest of the wireless network services is allowed only if the pre-shared key of the computer matches that of the Access Point. This approach offers the simplicity of the WEP key, but uses stronger TKIP encryption.



If your network uses **WPA-PSK**, select that radio button, and then click on the **Configure** button. You will then see the following window.



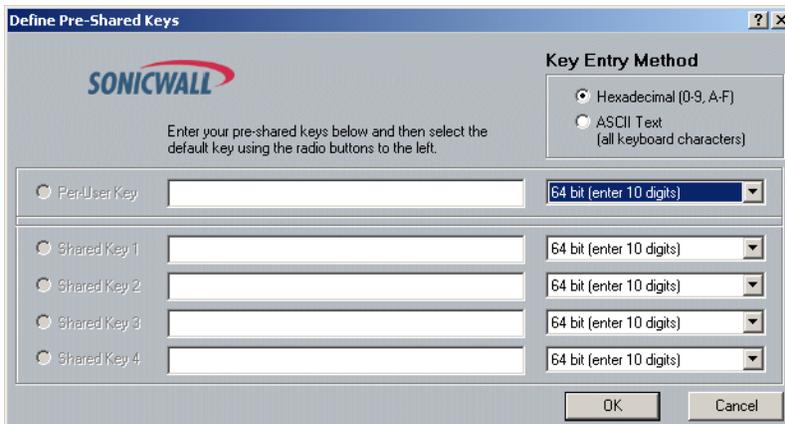
Enter the WPA pass-phrase in the text box. The pass-phrase must be a minimum of 8 characters. This is the password shared between the Access Points and the Clients. Click on the **OK** button when completed.

WEP

WEP does not require an authentication server. Access to the Internet and the rest of the wireless network services is allowed only if the pre-shared key of the computer matches that of the Access Point.



If your network uses **WEP**, select that radio button, and then click on the **Configure** button. You will then see the following window.



Provide the following information for the key entry:

- **Hexadecimal (0-9, A-F)**: select this radio button if you would like to use hexadecimal characters as the Pre-shared Key.
 - **ASCII Text (all keyboard characters)**: select this option if you would like to use ASCII text as the Pre-shared Key.
 - **Per-User Key**: enter a per-user key, and then select an encryption type from the drop-down list:
 - 64 bit encryption (10 digits)
 - 128 bit encryption (26 digits)
 - 152 bit encryption (32 digits)
 - **Shared Key 1-4**: enter the shared key and then select an encryption type from the drop-down menu.
- Click on the **OK** button to continue.

None

If your network does not use any type of security select the **None** radio button and then click on the **OK** button.



Advanced

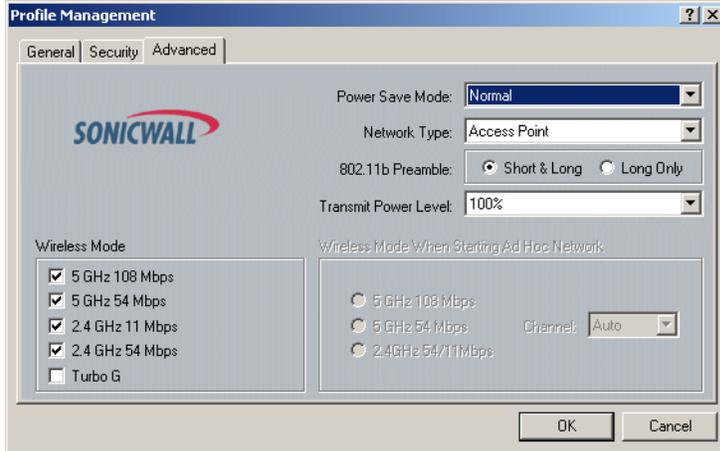
The third tab displayed is the Advanced tab. Here you can configure details about an Access Point or Ad Hoc network configuration. Each advanced setting field is described below.

- **Power Save Mode** - Allows you to minimize power utilized by the SonicWALL Long Range Dual Band Wireless Card.
Warning: Setting Power Save Mode to enabled (Normal or Maximum) may cause the user to experience an extended connection delay of up to one minute.
- **Network Type** - Allows you to configure the SonicWALL Long Range Dual Band Wireless Card as either an Ad hoc or Access Point type network.
- **802.11b Preamble** - Allows setting the preamble support to match up with the specified wireless network.
- **Transmit Power Level** - Allows you to modify the power output of the radio.

Warning: Setting this to any other value except for 100% will decrease range of your SonicWALL Long Range Dual Band Wireless Card.

- **Wireless Mode Setting** - The wireless mode settings allow you to specify which wireless frequency and data rate the wireless network is operating at. If all selections are chosen, the SonicWALL Long Range Dual Band Wireless Card will automatically search all frequencies and data rates for wireless networks that match up to the profile settings.
Note: *The Turbo G and 5Ghz 108 Mbps modes should be chosen only if the client is associated to a SonicPoint.*
- **Wireless Mode when starting Ad Hoc setting** - The "Wireless Mode When Starting Ad Hoc Setting" allows you to determine the type of ad hoc network to be started.
Note: *This setting will only take effect if there are no other ad hoc networks with the same SSID currently operating within range. If existing ad hoc networks with the same SSID are currently operating, then the SonicWALL Long Range Dual Band Wireless Card will connect using the frequency and data rate provided by the existing ad hoc network.*

Infrastructure Mode Configuration

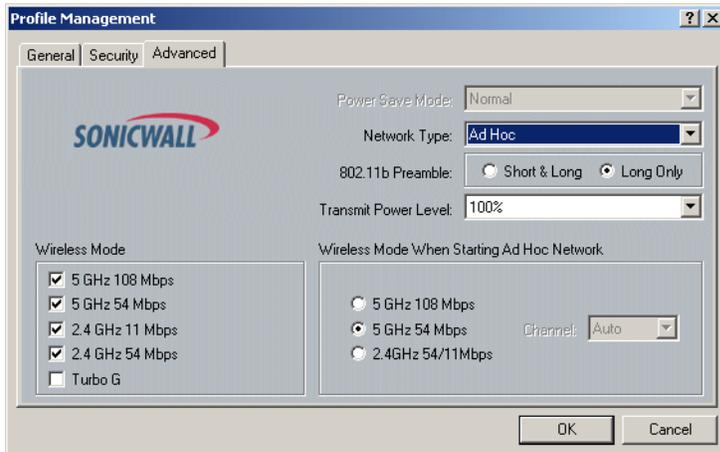


Provide the following information to configure a connection to an access point:

- **Power Save Mode** - Select a power save mode from the drop-down list.
- **Network Type** - Select **Access Point** from the drop-down list.
- **802.11b Preamble** - Select **Short & Long** or **Long Only**.
- **Transmit Power Level** - Select a power level from the drop-down list.
- **Wireless Mode Setting** - Place a check in this box if you would like to use the available frequencies.

Click on the **OK** button to continue.

Ad Hoc Configuration



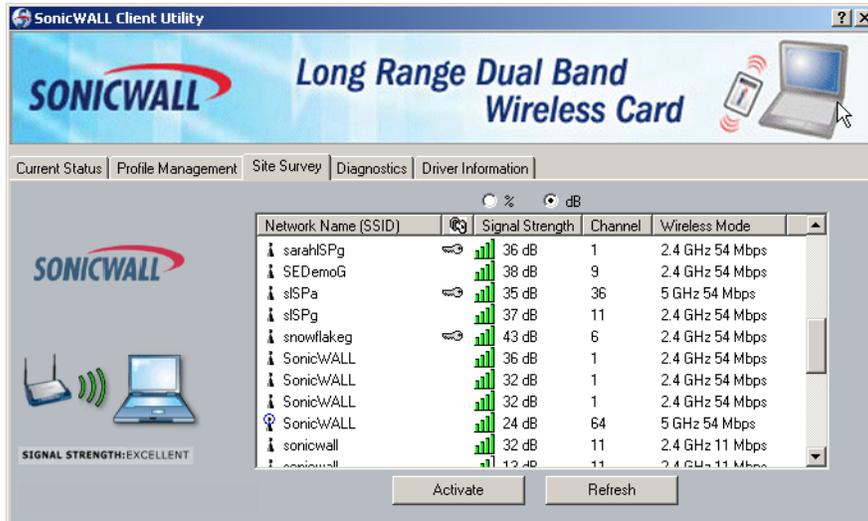
Provide the following information to configure an ad hoc configuration:

- **Network Type:** select **Ad Hoc** from the drop-down list.
- **802.11b Preamble:** select **Short & Long** or **Long Only**.
- **Transmit Power Level:** select a power level from the drop-down list.
- **Wireless Mode:** place a check in this box if you would like to use the available frequencies.
- **Wireless Mode when Starting Ad Hoc Network:** select a frequency and data rate radio button.
- **Channel:** select a channel number from the drop-down list, or set the channel to **auto**.

Click on the **OK** button to continue.

Site Survey

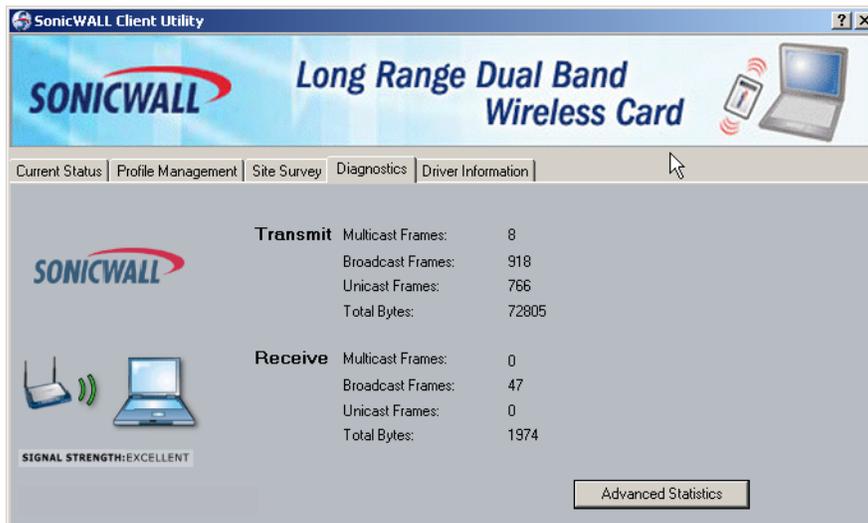
The third tab displays the **Site Survey**. The Site Survey tab allows you to view a list of all available wireless networks that are within range of the SonicWALL Long Range Dual Band Wireless Card. Each wireless network entry displays the SSID, encryption settings, signal strength level, channel and wireless mode information. You can create a new profile by highlighting the wireless network you want to create a profile for and clicking on the **Activate** button.



The Signal Strength column displays signal strength display units in percentage or decibels (dB). Click on the **Refresh** button to refresh the display.

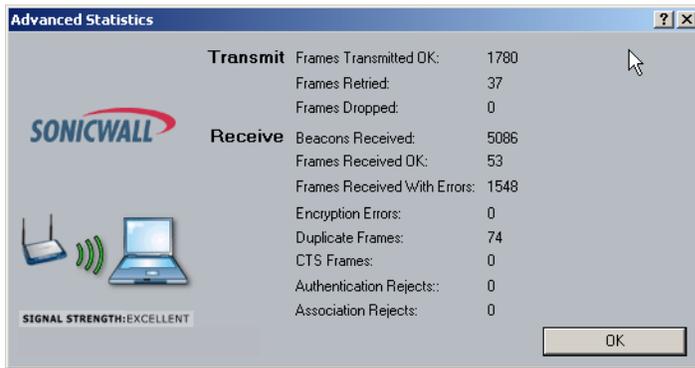
Diagnostics

The fourth tab displays the **Diagnostics**. The Diagnostics tab displays the current data statistics for both receive and transmit. Additional statistics can be displayed by using the **Advanced Statistics** button.



Advanced Statistics

Click on the **Advanced Statistics** button to view more detailed statistics. The Advanced Statistics Information tab contains more statistics about the network interface card. Click the **OK** button to continue.



Driver Information

The fifth tab displays the **Driver Information**. The Driver Information tab contains general information about the network interface card (the wireless network adapter) and the network driver interface specification (NDIS) driver. The **Driver Information** tab provides the following details about the driver:

- **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.



Uninstallation

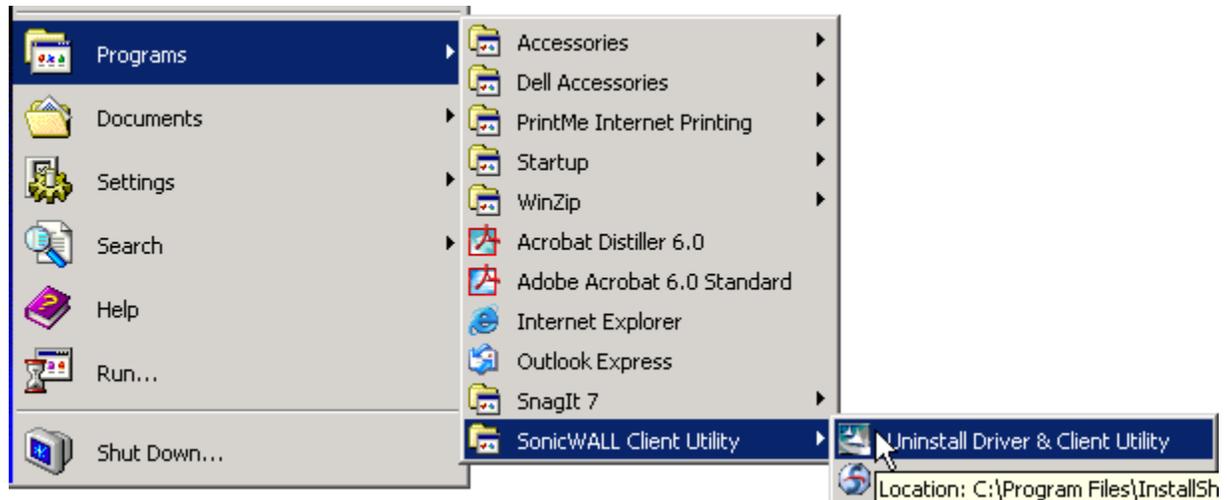
If the SonicWALL Long Range Dual Band Wireless Card installation is unsuccessful for any reason, the best way to solve the problem may be to completely uninstall the SonicWALL Long Range Dual Band Wireless Card and its software and repeat the installation procedure again.

This section provides a step-by-step procedure to uninstall your SonicWALL Long Range Dual Band Wireless Card software.

Warning: To avoid potential conflicts during the uninstallation of the drivers, we recommend you disable any resident anti-virus or spyware software.

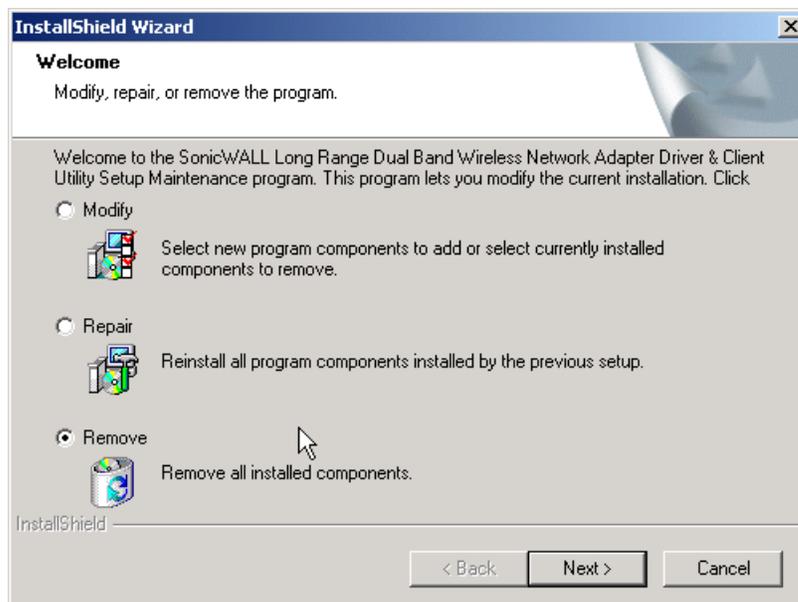
Perform the following steps to uninstall the SonicWALL Client Utility.

1. Click on **Start > Programs > SonicWALL Client Utility > Uninstall Driver & Client Utility**.



The InstallShield Wizard displays.

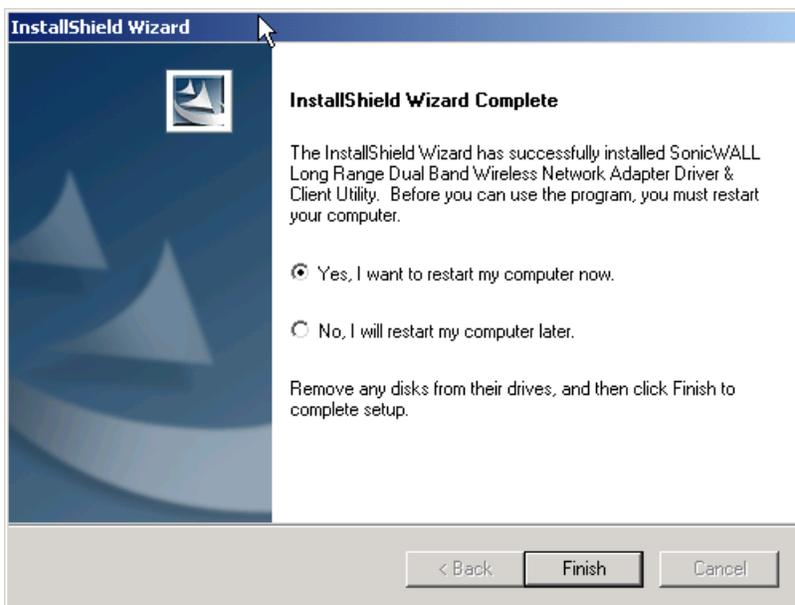
2. Click on the **Remove** radio button, and click on the **Next** button.



3. At the Confirm Uninstall window, click on the **OK** button to proceed with the uninstallation. The Windows InstallShield Wizard will begin removing the SonicWALL Long Range Dual Band Network Adapter drivers and SonicWALL Client Utility program from your system.



4. You have completed the uninstallation. If you plan on re-installing SonicWALL Long Range Dual Band Network Adapter drivers and SonicWALL Client Utility program, accept the default setting of "**Yes, I want to restart my computer now.**" And click on the **Finish** button to restart your computer.

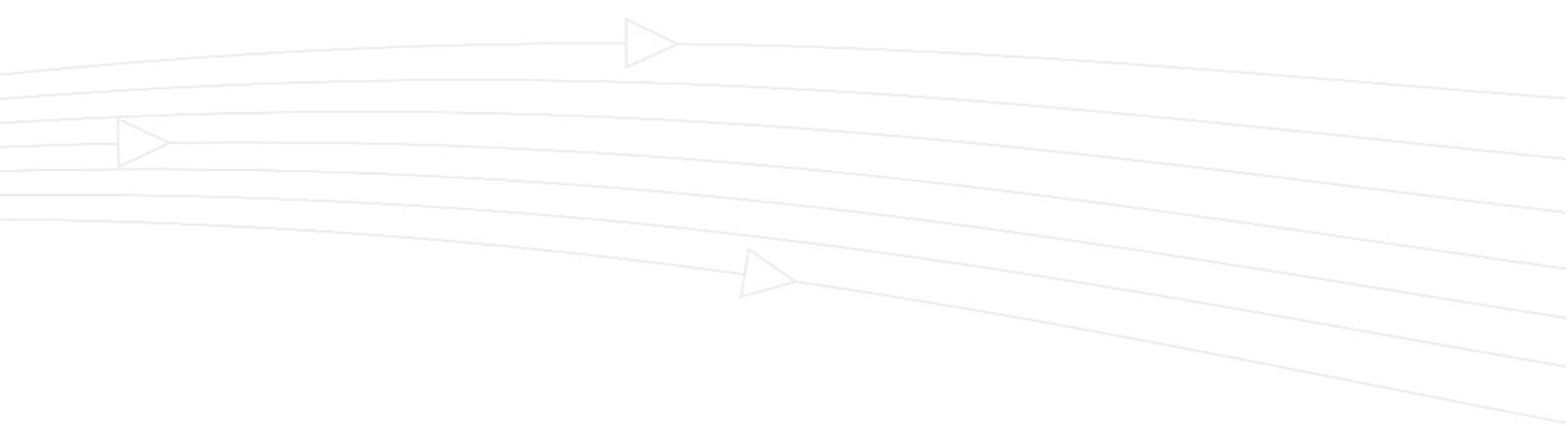


Troubleshooting

This section provides troubleshooting solutions to common installation problems.

Symptom	Solution
Windows does not detect the SonicWALL Long Range Dual Band Wireless Card when installed.	<p>Verify that the SonicWALL Long Range Dual Band Wireless Card is properly inserted into the PC Card slot.</p> <p>Check whether or not the computer has a Plug and Play BIOS.</p> <p>Windows 98SE/ME/2000/XP may not detect the card if a previous installation was interrupted or cancelled before it finished installing the card. Remove the previous installation and perform the installation again.</p>
Driver fails to load.	<p>A resource conflict may exist.</p> <p>For Windows 98SE/ME/2000/XP, use the Device Manager to resolve any resource conflicts.</p> <p>A device conflict under Windows 98SE/ME/2000/XP may be related to the SonicWALL Long Range Dual Band Wireless Card.</p> <p>For Windows 98SE/ME/2000/XP, use the computer properties to identify the used I/O port addresses and IRQ values.</p>
Device conflict on a Windows Operating System	<p>If there is a device conflict, select alternative settings for I/O Base Address or IRQ values. If you know which device is causing the conflict, you can change the I/O address or IRQ instead of the PC Card.</p>
No resource conflicts were detected, but the wireless station does not attach to the network.	<p>Verify that the SSID of the SonicWALL Long Range Dual Band Wireless Card matches that of the access point. Use Network Configuration Properties in the Control Panel to modify the SSID.</p> <p>Verify that the Network Mode of the SonicWALL Long Range Dual Band Wireless Card is configured correctly.</p>

<p>Nonfunctioning LED on the SonicWALL Long Range Dual Band Wireless Card</p>	<p>The SonicWALL Long Range Dual Band Wireless Card is not powered on. The cause may be:</p> <ul style="list-style-type: none"> • No Driver loaded or installed. • Card - Driver mismatch, which prevented the driver from loading. • Device conflict, which prevented the driver from loading. <p>Actions:</p> <ul style="list-style-type: none"> • Verify that a driver is installed for the SonicWALL Long Range Dual Band Wireless Card. • Determine if a conflict exists with another device.
<p>Weak or intermittent signal</p>	<p>If your signal is weak, change the direction of the antenna slightly.</p> <p>If necessary, move your notebook computer a few inches to find a better signal.</p> <p>Use the Link Quality and Signal Strength display in the Client Utility to determine the best location and orientation for a network connection.</p>



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