Part No. 214695-A
April 2003

4655 Great America Parkway
Santa Clara, CA 95054

Installing and Using the Nortel Networks Wireless LAN Mobile Adapter 2201

NORTEL NETWORKS™

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Compliances

Federal Communication Commission Interference 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 instructions, may cause harmful and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that the 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 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

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
FCC Radiation Exposure Statement

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

This device is going to be operated in 5.15 ~ 5.25GHx frequency range, it is restricted in indoor environment only.

In order to maintain compliance with the limits for a Class B digital device, it requires that you use a quality interface cable when connecting to this device. Changes or modifications not expressly approved could void the user's authority to operate this equipment.

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Preface

Introduction

Thank you for purchasing the Nortel Network Wireless LAN Mobile Adapter 2201 (Mobile Adapter 2201) that provides the easiest way to wireless networking. This User Manual contains detailed instructions in the operation of this product. Please keep this manual for future reference.

Package Checklist

The Mobile Adapter 2201 package includes:

- 1 Nortel Network Wireless LAN Mobile Adapter 2201
- 1 Installation Software CD
- 1 Documentation CD

System Requirements

Before you install the Mobile Adapter 2201, check your system for the following:

- A laptop PC contains:
  - — 32-bit Cardbus slot (or Desktop PC with PC Card-PCI adapter)
  - — 32 MB memory or greater
  - — 300 MHz processor or higher
- Microsoft Windows 98 Second Edition/Me/2000/XP (Prepare the Windows installation CD-ROM for use during installation)

Status LEDs

There are two Status LEDs on the Mobile Adapter 2201. You can check your network connectivity status by looking at the LEDs.

Table 1 Status LEDs

Status	Description
Off	Power is off.
Slow Blink	A connection is made. There is no activity yet.
Fast Blink	There are activities in a connected network.
Alternate Blink between LEDs	Look for a network association.
One LED Blink	Power Saving Mode is on.
One LED Steady Light	Awake from Power Saving Mode.

Chapter 1
Driver/Utility Installation

Warning: The Installation Section in this User Manual describes the first-time installation for Windows. To re-install the driver, please first uninstall the previously installed driver. See "Uninstallation" on page 20.

Warning: Do Not insert the Mobile Adapter 2201 into the Cardbus slot before the driver installation,

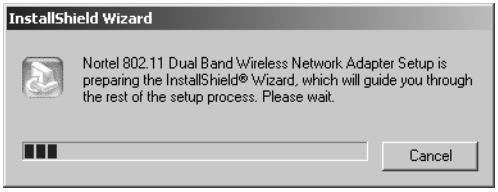
If you have inserted the Mobile Adapter 2201 into the Cardbus slot before installing the driver, a warning message pops up informing you that the software has not yet been installed. Please click "Cancel" to close the warning message. Remove the Mobile Adapter 2201, and then start to install the driver.

Basic Setup

Follow the steps below to complete the driver/utility installation:

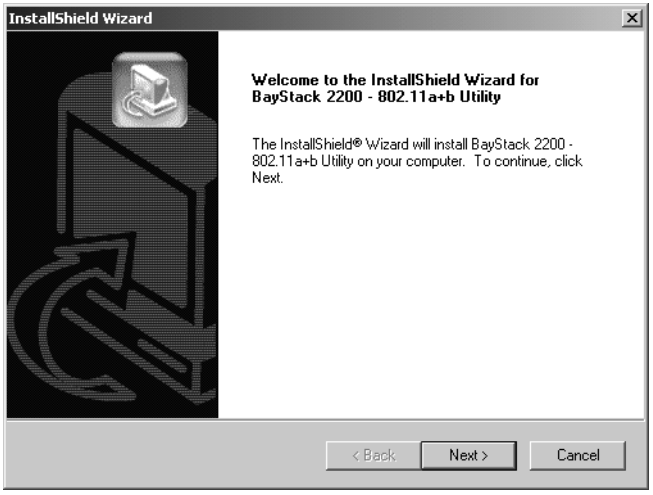
1 Insert the Installation Software CD into the CD-ROM Drive. Click "setup.exe" to launch the InstallShield Wizard.

Figure 1 InstallShield Wizard



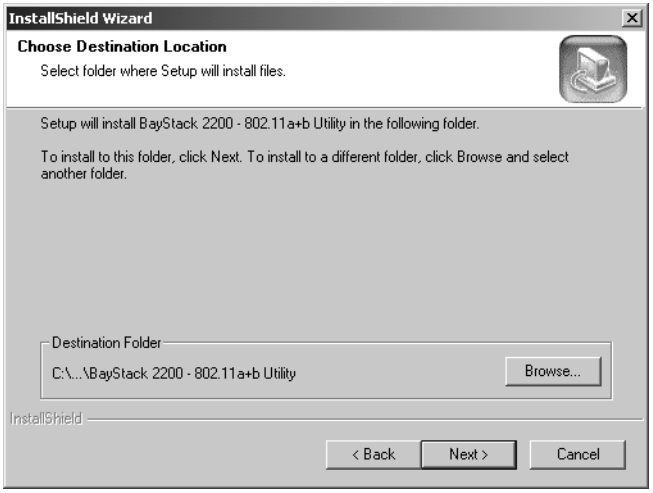
2 The InstallShield Wizard dialog box appears (Figure 2). Click “Next.”

Figure 2 InstallShield Wizard setup dialog box



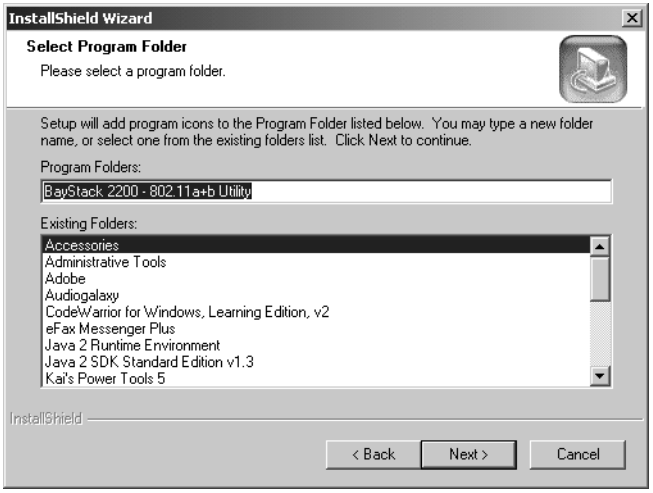
3 The Choose Destination Location dialog box appears (Figure 3). Click “Next” to continue using the default destination folder or click “Browse” to choose a different destination folder.

Figure 3 Choose Destination Location dialog box



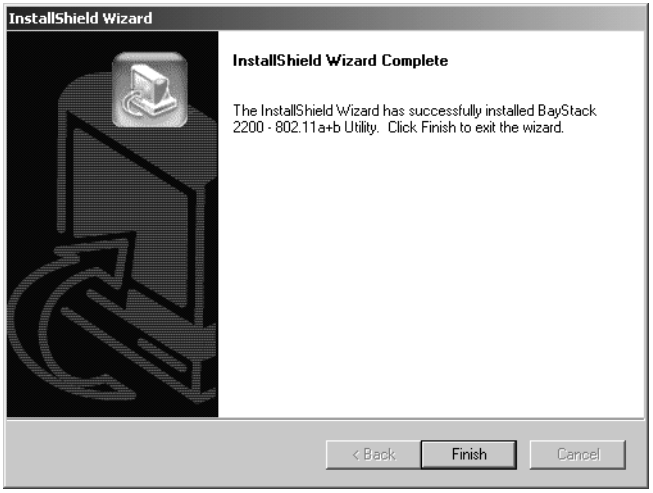
4 The Select Program Folder dialog box appears (Figure 4). Click "Next" to accept the default program folder name, or enter a custom name in the Program Folders text box and then click "Next" to continue.

Figure 4 Select Program Folder dialog box



5 The InstallShield Wizard Complete dialog box appears (Figure 5). Click "Finish."

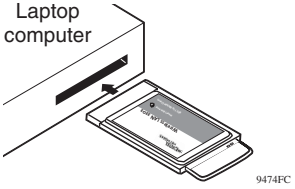
Figure 5 InstallShield Wizard Complete dialog box



The Mobile Adapter 2201 software is now installed.

6 Insert the Mobile Adapter 2201 into the Cardbus slot, and the Windows Operating System will find the new hardware and launch the Found New Hardware wizard. (For Windows 98SE or Windows Me, please restart your computer before inserting the Adapter).

Figure 6 Inserting the adapter



The Found New Hardware dialog box (Figure 7) appears.

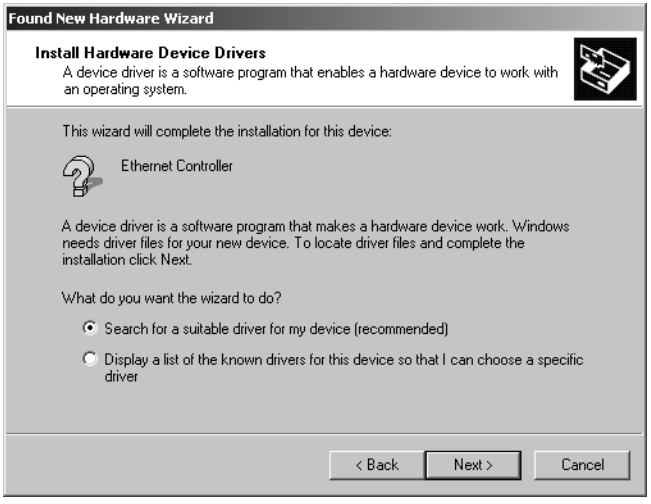
Figure 7 Found New Hardware dialog box

7 The Found New Hardware Wizard will launch (Figure 8). Click "Next" to install the driver.

Figure 8 Found New Hardware Wizard dialog box

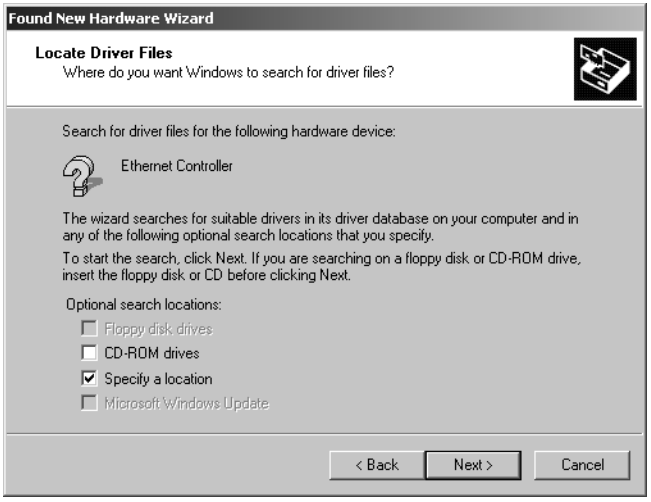
8 The Install Hardware Device Drivers dialog box appears (Figure 9). Select the option to search for a suitable driver and click "Next."

Figure 9 Install Hardware Device Drivers dialog box



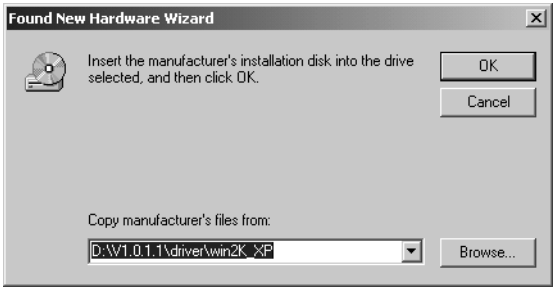
9 The Locate Driver Files dialog box appears (Figure 10). Check the option to Specify a location and click "Next."

Figure 10 Locate Driver Files dialog box



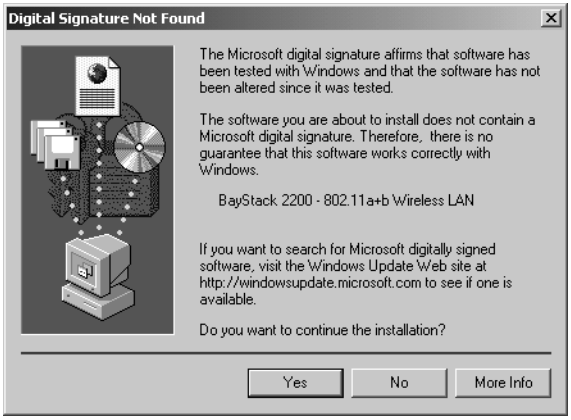
10 Browse to the appropriate location on the CD where the drivers for your particular operating system are located (Figure 11) and click "OK."

Figure 11 Driver location



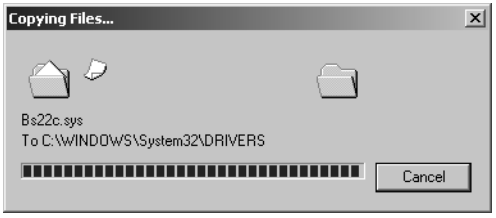
Note: On some operating systems, the Digital Signature Not Found dialog box (Figure 12) or the Windows XP compatibility testing dialog box may appear during driver installation. Click "Yes" (Windows 2000) or "Continue Anyway" (Windows XP) to continue the installation.

Figure 12 Digital Signature Not Found dialog box



The driver files are copied to your system (Figure 13).

Figure 13 Copying Files... dialog box



The installation completes (Figure 14). Click “Finish to close the Found New Hardware Wizard. The drivers are now installed.

Figure 14 Completing the Found New Hardware Wizard dialog box

Additional Setup

During software installation procedure, each operating system may prompt different specific options:

- **Windows 98SE**: The system will request the original Windows CD during the installation process. When the installation is finished, you will have to restart your computer.
- **Windows Me**: Please restart your computer when the installation is finished.
- **Windows 2000/XP**: Select “Install the software automatically” if the window with this option appears, and then click “Next” to continue installation.

Verifying the Driver

Windows 98SE/Me

1 Right-click “My Computer” icon on the desktop and choose “Properties.”

2 Select “Device Manager” tab and open “Network adapters.” You should see your Mobile Adapter 2201 in the list. Highlight it and click “Properties.”

3 From the “Device status”, you should see the line “This device is working properly.” If, instead, you see error messages displayed, please remove this Mobile Adapter 2201 (highlight this Mobile Adapter 2201 and click “Remove”). Restart your PC and go through the installation process again.

Windows 2000

1 Right-click “My Computer” icon on the desktop and choose “Properties.”

2 Select “Hardware” tab and click “Device Manager.” Open “Network adapters.” You should see your Mobile Adapter 2201 in the list. Right-click this Mobile Adapter 2201 and choose “Properties.”

3 From the “Device status”, you should see the line “This device is working properly.” If, instead, you see error messages displayed, please remove this Mobile Adapter 2201 (right-click this Mobile Adapter 2201 from the “Network adapters” list and choose “Uninstall”). Restart your PC and go through the installation process again.

Windows XP

1 Click Start>Control Panel> System.

2 Select “Hardware” tab and click “Device Manager.” Open “Network adapters.” You should see your Mobile Adapter 2201 in the list. Right-click this Adapter and choose “Properties.”

3 From the “Device status”, you should see the line “This device is working properly.” If, instead, you see error messages displayed, please remove this Mobile Adapter 2201 (right-click this Mobile Adapter 2201 from the “Network adapters” list and choose “Uninstall”). Restart your PC and go through the installation process again.

Uninstallation

Note: Before uninstallation, please close all running programs and make sure that the Mobile Adapter 2201 is inserted in the Cardbus slot.

1 Click Start>Nortel Networks>Uninstall Mobile Adapter 2201 (Figure 15).

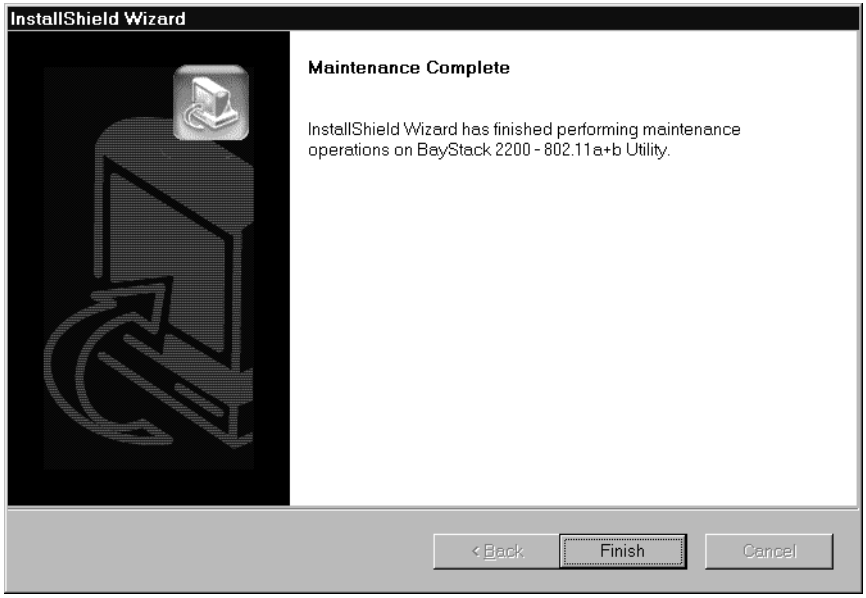
Figure 15 Uninstall Mobile Adapter 2201

2 The Confirm File Deletion dialog box appears (Figure 16). Click “OK” to start Uninstall.

Figure 16 Confirm File Deletion dialog box

3 The Maintenance Complete dialog box appears (Figure 17). Click “Finish.” Uninstall is now complete.

Figure 17 Maintenance Complete dialog box



Chapter 2
Utility Configuration

Connecting to an Existing Network

1 Click Start>Nortel Networks>Mobile Adapter 2201 (Figure 18), and the Mobile Adapter 2201 Client Manager window will appear (Figure 19).

Figure 18 Launch Mobile Adapter 2201

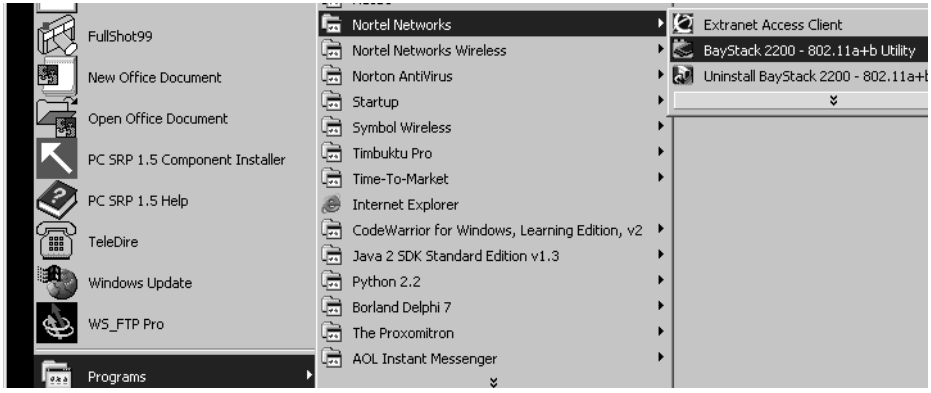
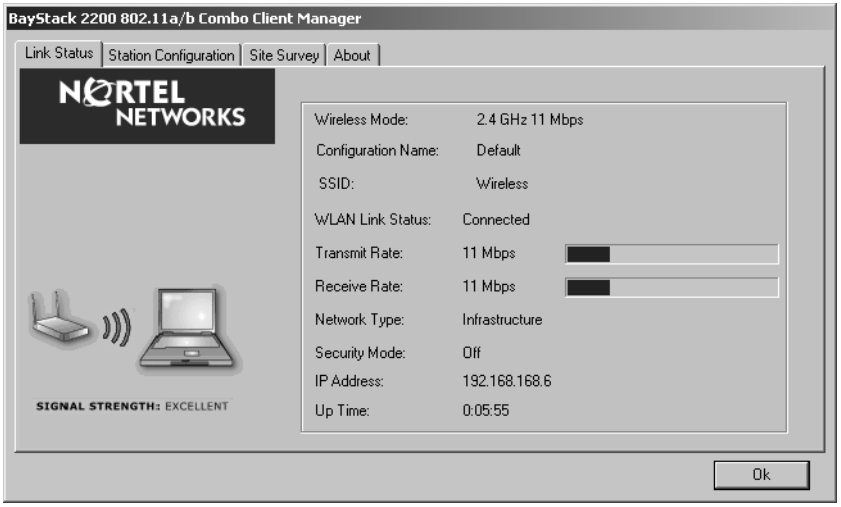
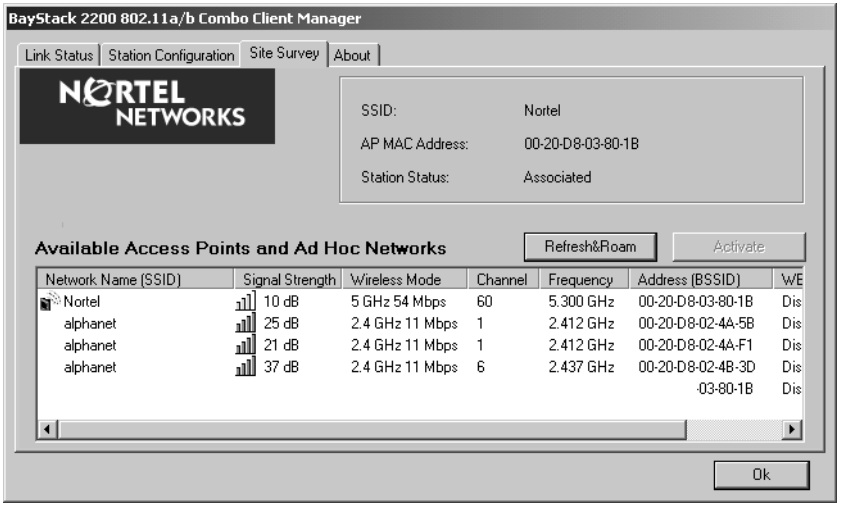


Figure 19 Mobile Adapter 2201 Client Manager



2 Click the Site Survey tab to bring up a list of the available access points and ad hoc networks (Figure 20). An icon next to the Network Name indicates that the Mobile Adapter 2201 is associated with an access point.

Figure 20 Mobile Adapter 2201 Client Manager - Site Survey tab

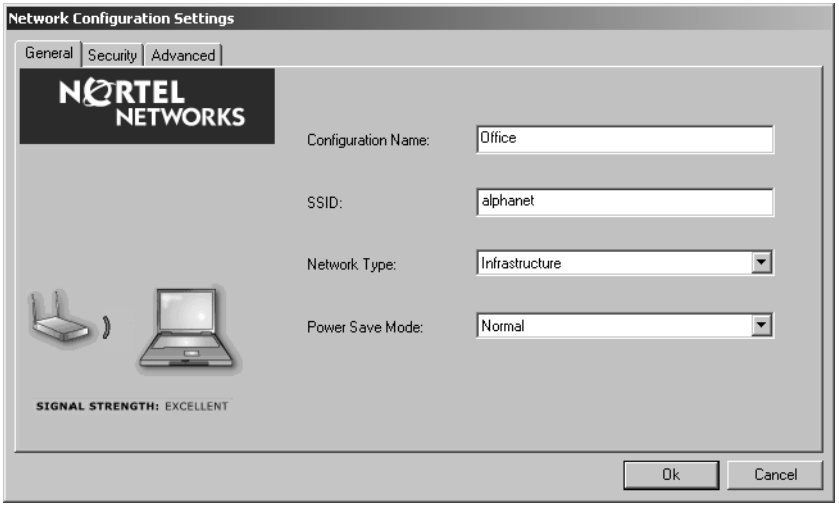


3 To connect to a different access point, select the Network Name (SSID) for that access point and click on “Activate.” (For more information on this material, refer to Chapter 3.)

4 If you do not already have a configuration profile created for this association, you will be prompted to create one. The Network Configuration Settings dialog box will launch (Figure 21).

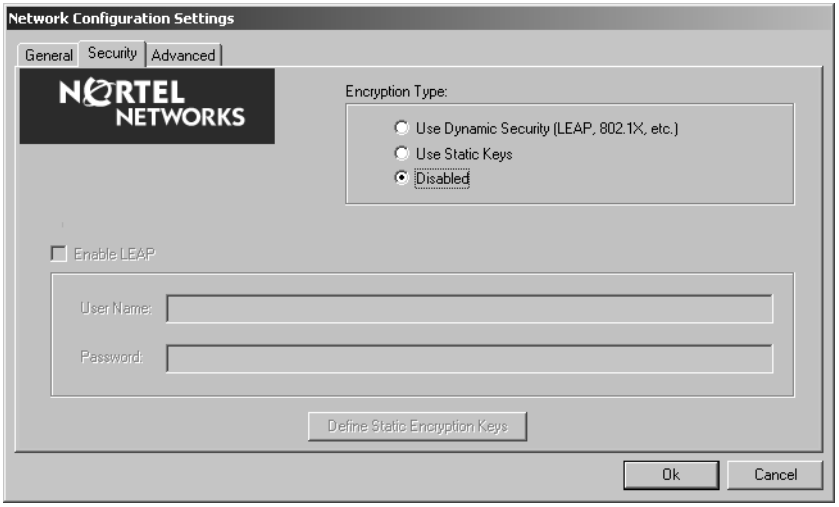
Enter the correct SSID and Network Type (refer to Chapter 3) for the network that you are going to join.

Figure 21 Network Configuration Settings dialog box - General Tab



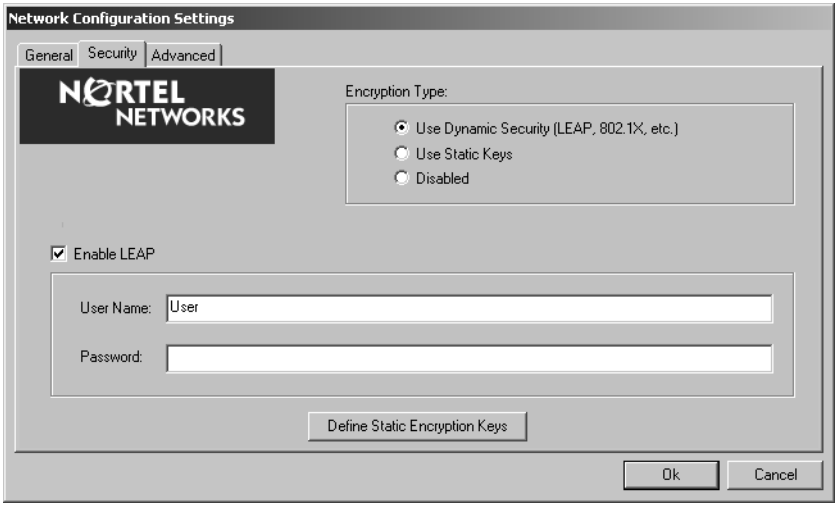
5 Click on the Security tab (Figure 22). The Security dialog box appears. Enter the appropriate settings for your network.

Figure 22 Network Configuration Settings - Security Tab



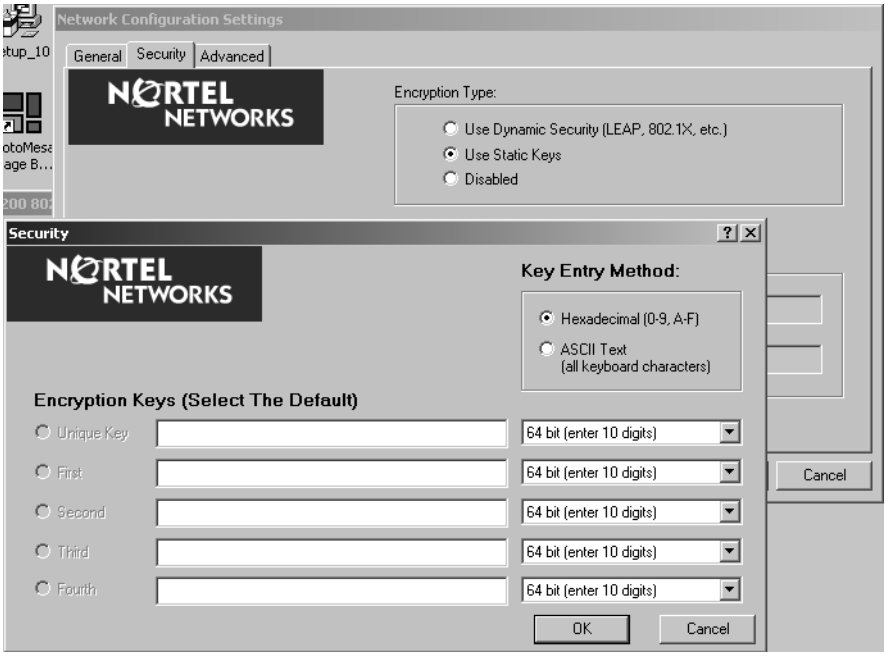
6 If you select Use Dynamic Security and check the box to Enable LEAP, you will be prompted to enter a user name and password (Figure 23).

Figure 23 Network Configuration Settings - Security Tab, LEAP Enabled



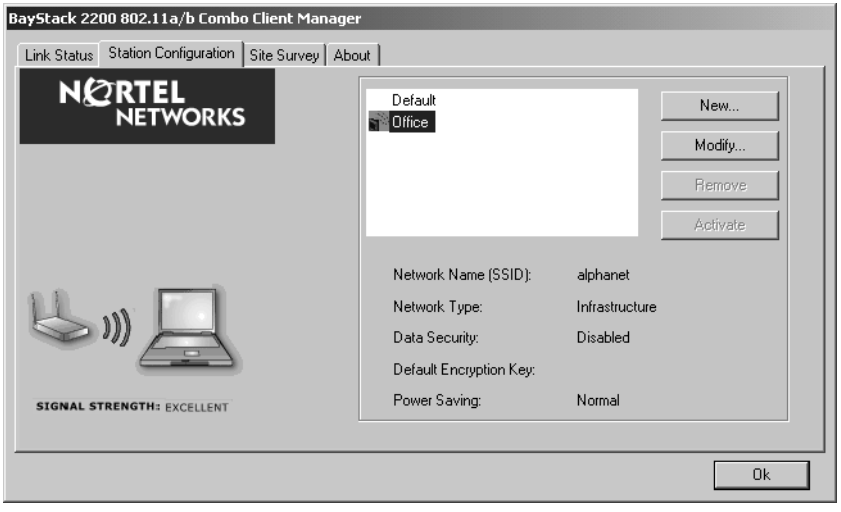
If you select Define Static Encryption Keys, you will be prompted to enter the encryption key(s) (Figure 24).

Figure 24 Encryption Key dialog box.



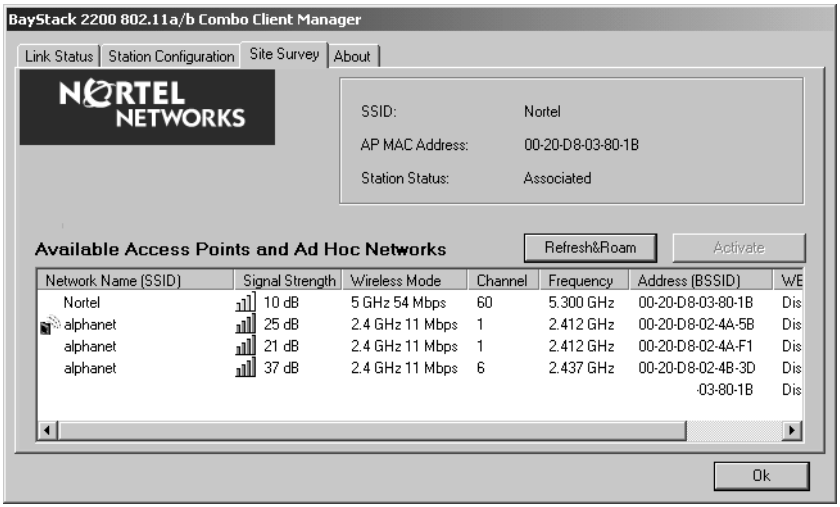
7 Once all of the profile settings have been entered, click OK. The newly created profile will be displayed in the Station Configuration tab (Figure 25).

Figure 25 Mobile Adapter 2201 Client Manager - Station Configuration tab



8 Once you have created the proper profile for the network that you are trying to join, your Mobile Adapter 2201 will associate with the proper access point. When you click on the Site Survey tab, the association icon will appear before the Network Name (SSID) that you selected (Figure 26).

Figure 26 Mobile Adapter 2201 Client Manager - Site Survey tab



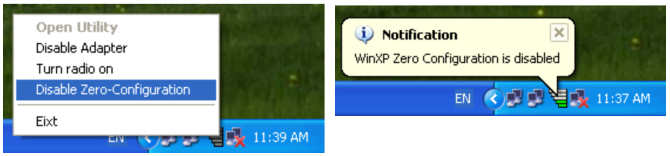
Advanced settings for Windows XP

In Windows XP, it is recommended that you use the Mobile Adapter 2201 Client Manager. Before using the Mobile Adapter 2201 Client Manager, please follow the steps below to disable the Windows XP Zero Configuration.

1 Click Start>Nortel Networks>Mobile Adapter 2201 to open the Utility.

2 From the Windows System Tray, you should see the signal icon. Right-click it and select “Disable Zero-Configuration.”

Figure 27 Windows system tray signal icon

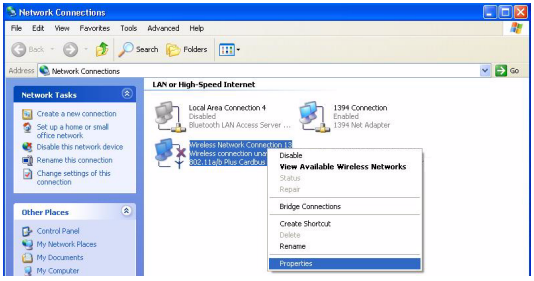


Or

1 Go to “Control Panel” and double click “Network Connections.”

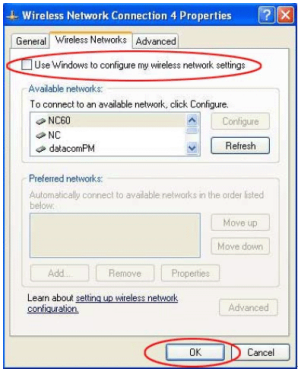
2 Right-click “Wireless Network Connection” of “802.11a/b Plus Cardbus,” and select “Properties.”

Figure 28 Cardbus context menu



3 Select “Wireless Networks” tab, and uncheck the check box of “Use Windows to configure my wireless network settings,” and then click “OK.”

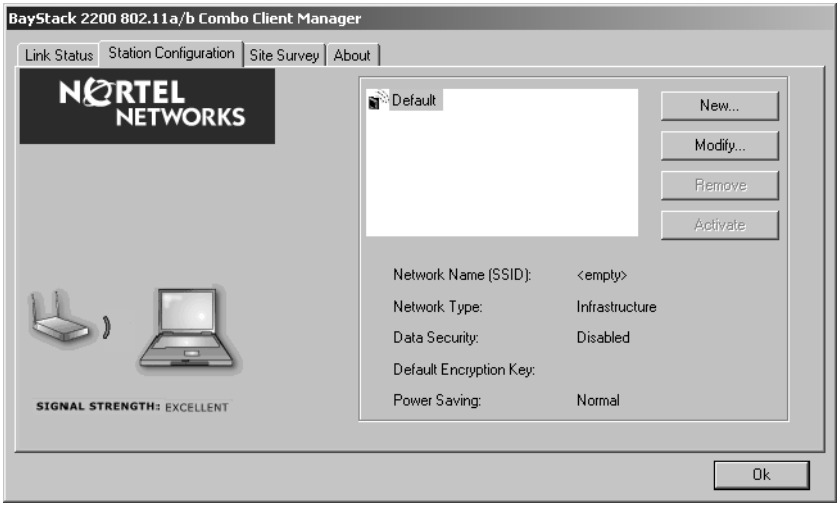
Figure 29 Wireless networks tab



Create a New Network Profile

1 To create a new Network Configuration profile, click the Station Configuration tab (Figure 30).

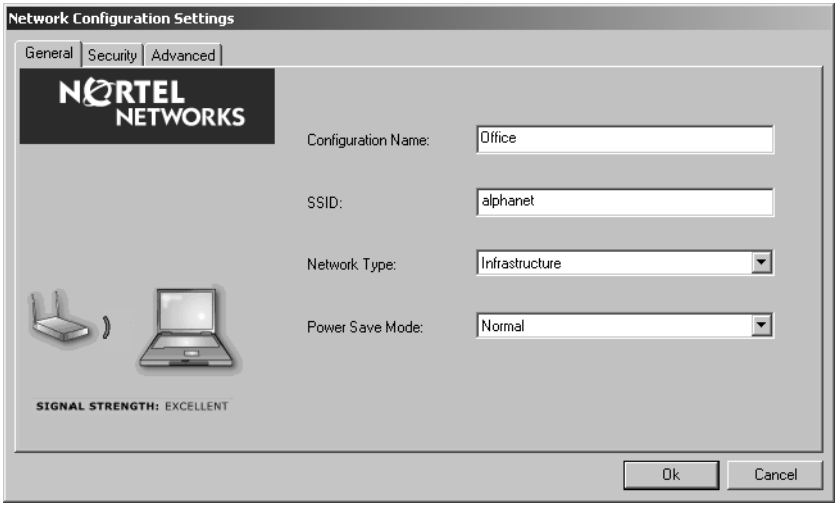
Figure 30 Mobile Adapter 2201 Client Manager - Station Configuration tab



2 Click New. The Network Configuration Settings dialog box will launch (Figure 31).

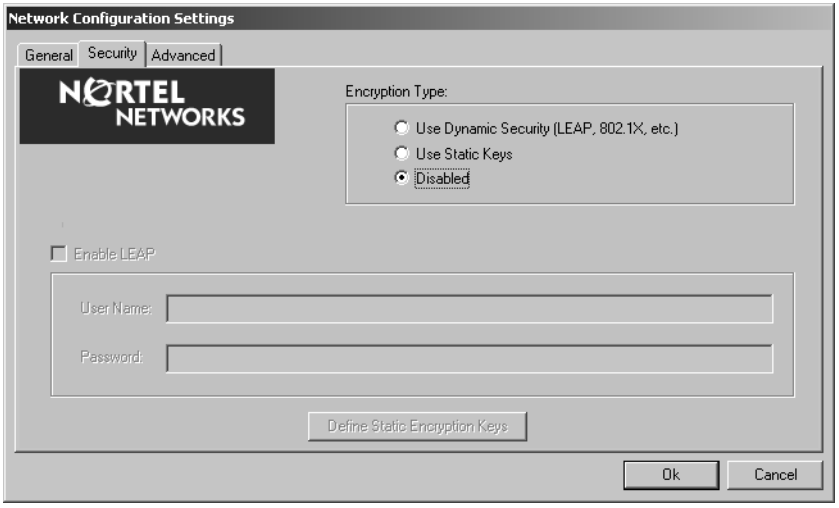
Enter the correct SSID and Network Type for the network that you are going to join.

Figure 31 Network Configuration Settings dialog box - General Tab



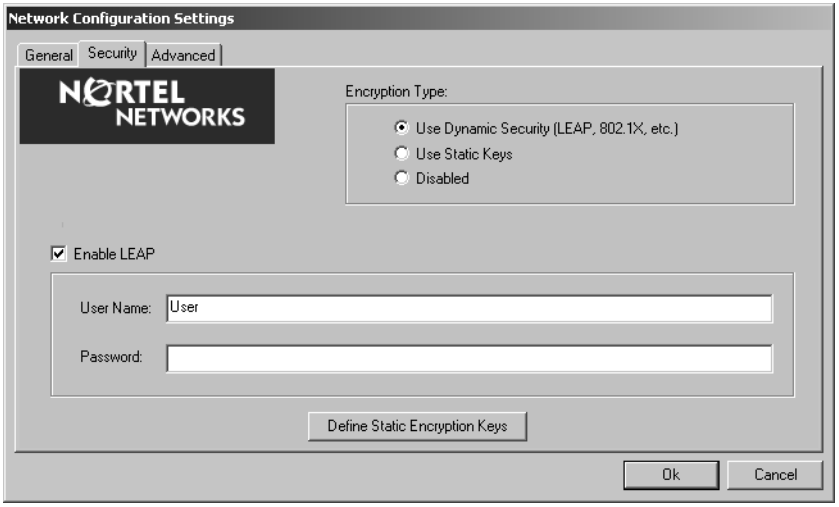
3 Click on the Security tab (Figure 32). The Security dialog box appears. Enter the appropriate settings for your network.

Figure 32 Network Configuration Settings - Security Tab



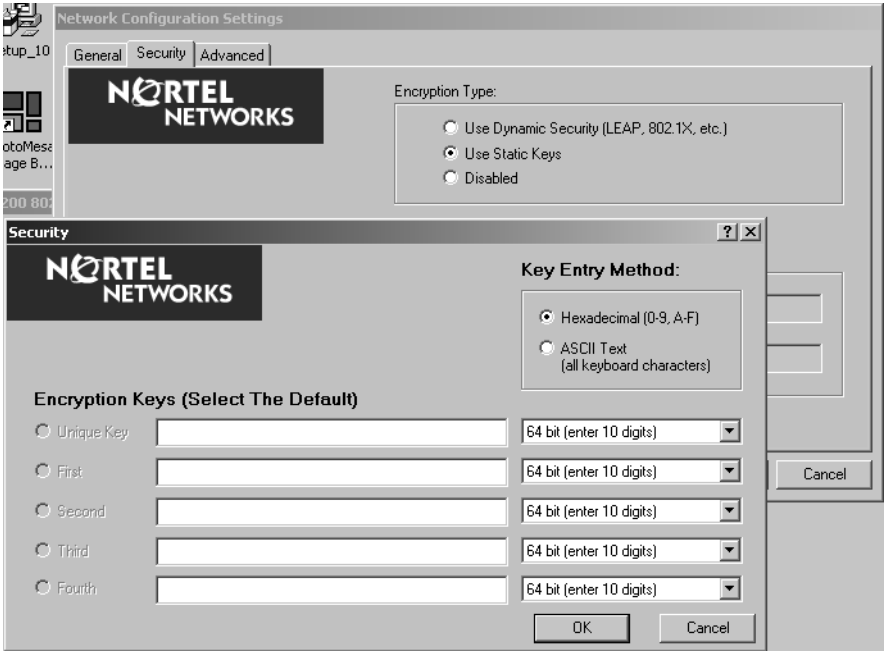
4 If you select Use Dynamic Security and check the box to Enable LEAP, you will be prompted to enter a user name and password (Figure 33).

Figure 33 Network Configuration Settings - Security Tab, LEAP Enabled



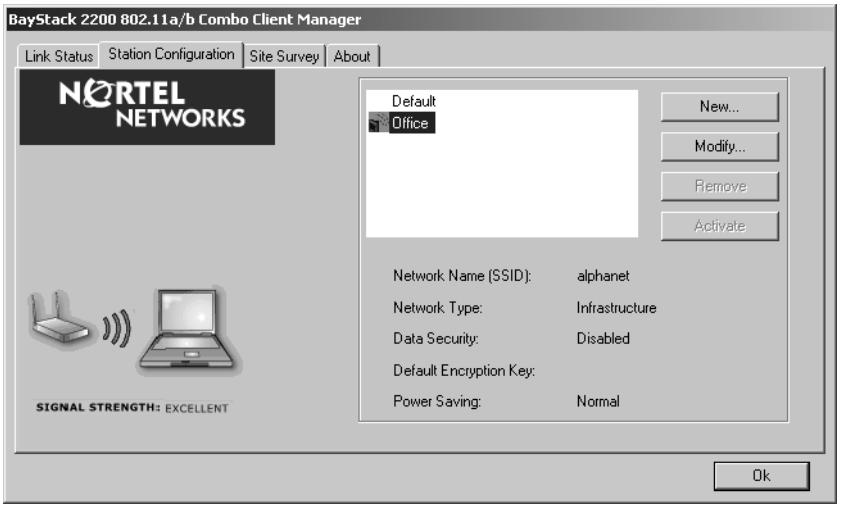
If you select Define Static Encryption Keys, you will be prompted to enter the encryption key(s) (Figure 34).

Figure 34 Encryption Key dialog box.



5 Once all of the profile settings have been entered, click OK. The newly created profile will be displayed in the Station Configuration tab (Figure 35).

Figure 35 Mobile Adapter 2201 Client Manager - Station Configuration tab



Chapter 3
Network Configuration

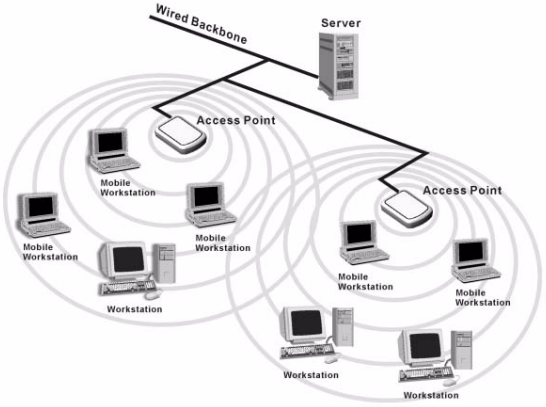
Device Configuration

You can set the Wireless Network Adapter to work in either “infrastructure” mode or “ad hoc” mode.

Infrastructure Mode

In infrastructure mode, devices communicate with each other by first going through an Access Point (AP). Wireless devices can communicate with each other or can communicate with a wired network. When one AP is connected to wired network and a set of wireless stations, it is referred to as a BSS (Basic Service Set).

Figure 36 Infrastructure mode



Ad Hoc Mode

Ad-hoc mode is also called “peer-to-peer mode” or “Independent Basic Service Set (IBSS).” In ad hoc mode, devices communicate directly with each other without using an Access Point (AP).

Figure 37 Ad hoc mode

Non-Default Settings Configuration

1 To create a configuration profile with non-default settings, Click Start>Nortel Networks>Mobile Adapter 2201 (Figure 38), and the Mobile Adapter 2201 Client Manager window will appear (Figure 39).

Figure 38 Launch Mobile Adapter 2201

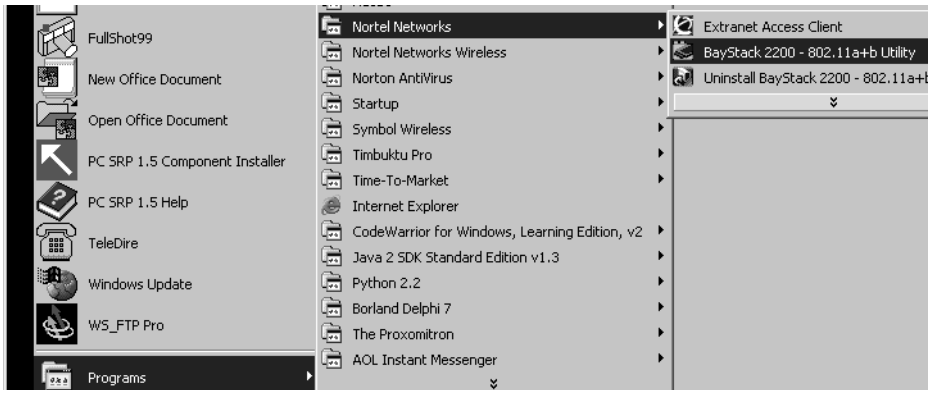
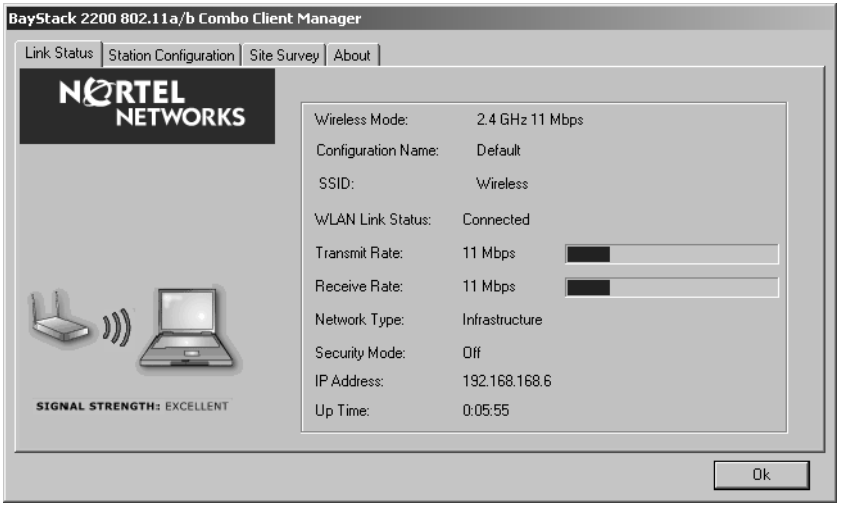
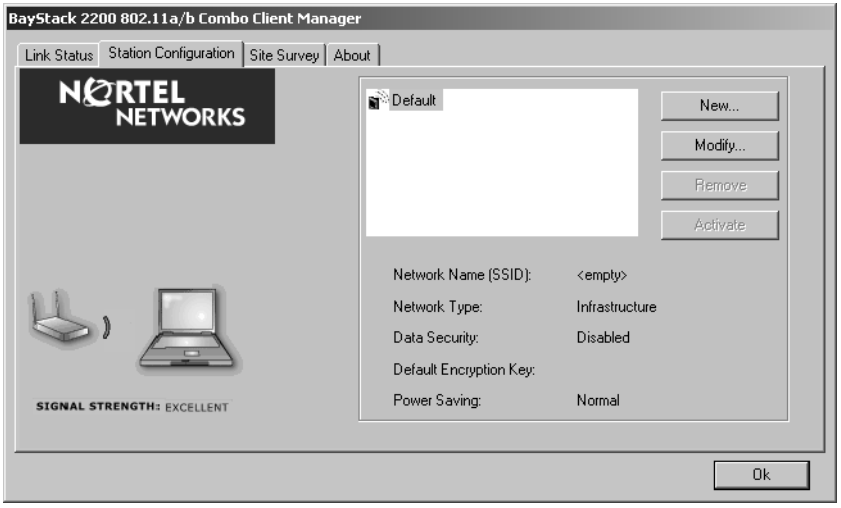


Figure 39 Mobile Adapter 2201 Client Manager



1 Click the Station Configuration tab (Figure 40).

Figure 40 Mobile Adapter 2201 Client Manager - Station Configuration tab



2 Click New. The Network Configuration Settings dialog box will launch (Figure 41).

Enter the correct SSID and Network Type for the network profile that you are creating. Table 2 shows the items on the Network Configuration Settings - General tab.

Figure 41 Network Configuration Settings dialog box - General Tab

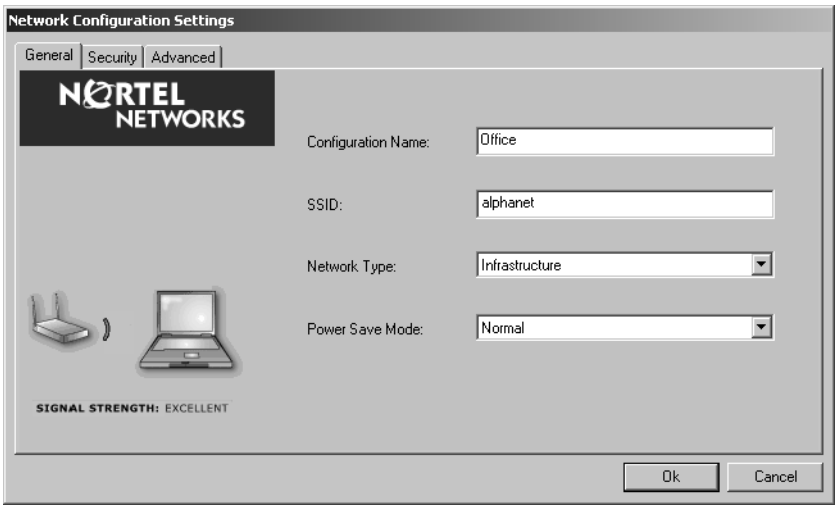


Table 2 Network Configuration Settings - General tab

Item	Description
Configuration Name	This name identifies the configuration. This name should be unique.
SSID	The name of the wireless network. This name cannot be longer than 32 characters. If the field is set to be “ANY” or is left blank, your computer will connect to an AP with the best signal strength.
Network Type	Specifies the mode of the network. Two options are “Infrastructure” and “Ad Hoc.”
Power Save Mode	Three power management options are “Off,” “Normal” and ”Maximum.” In Ad Hoc mode, Power Savings function cannot be enabled.

3 Click on the Security tab. Depending on the Encryption Type selected, you will be presented with different security settings to enter (Figure 42). Enter the appropriate settings for your network. Table 3 shows the items on the Network Configuration Settings - Security tab.

Figure 42 Network Configuration Settings - Security tab

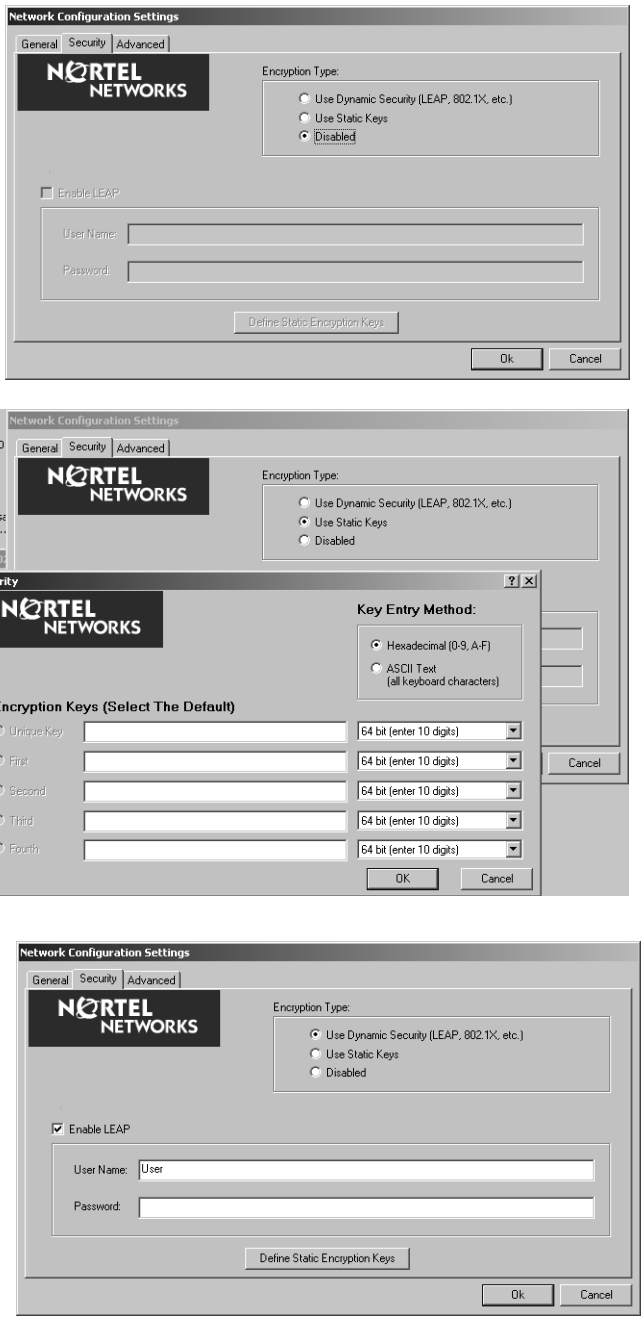


Table 3 Network Configuration Settings - Security tab

Item	Description
Encryption Type	Three options are “Use Dynamic Security (LEAP, 802.1X, etc.”, “Use Static Keys” and “Disabled.”
Enable LEAP	If ‘Use Dynamic Security” is selected and this box is checked, you may enter the User Name and Password information used for Lightweight Extensible Authentication Protocol (LEAP) authentication.
Key Entry Method	If ‘Use Static Keys” is selected, you may specify Hexadecimal or ASCII Text as the method of key entry.
Encryption Keys	Enter the encryption keys using the key entry method specified (Hexadecimal or ASCII). **Unique Key:** Defines the unique encryption key for security for the current network configuration. Not used in Ad-Hoc mode. To use Unique Key for security, this field should be populated. **First, Second, Third, Fourth:** Defines four shared encryption keys. To use Shared Keys for security, at least one Shared Key should be populated. **Key Length:** Defines the length of each encryption key. When the length is changed to be a smaller number after a key is entered, the key is automatically truncated to fit. If the length is increased again, the key will not be automatically updated to the previous value.

4 Click on the Advanced tab to set advanced security settings (Figure 43). Table 4 shows the items on the Network Configuration Settings - Advanced tab.

Figure 43 Network Configuration Settings - Advanced tab

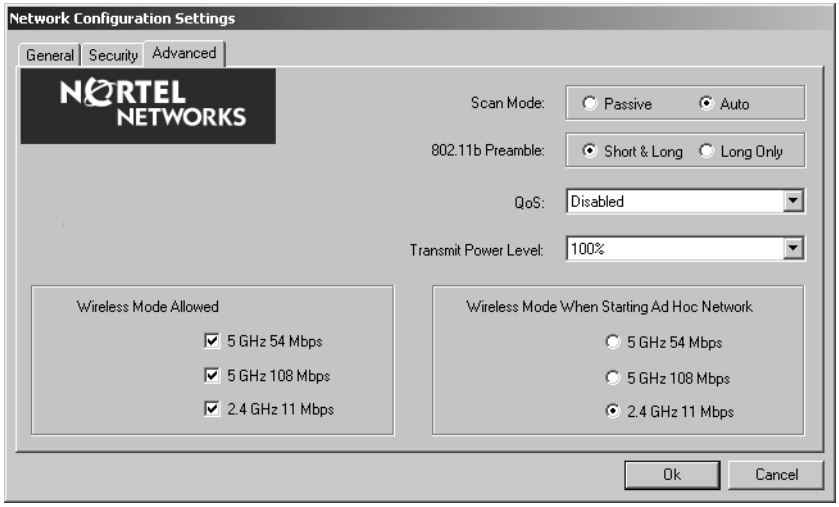
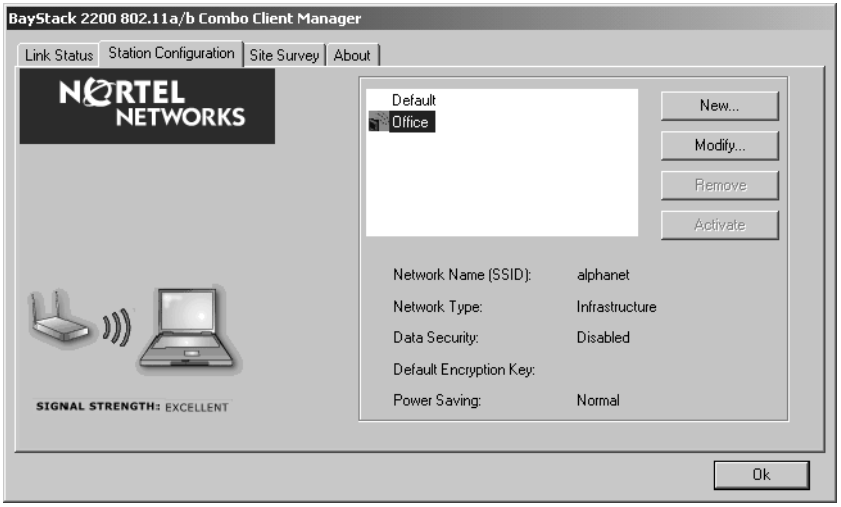


Table 4 Network Configuration Settings - Advanced tab

Item	Description
Scan Mode	Two options are “Auto” and “Passive.”
802.11b Preamble	Two options are “Short & Long” and “Long Only.”
QoS	Stands for Quality of Service. Disables or enables the Adapter to cooperate in a network using QoS.
Transmit Power Level	Options are “100%,” “50%,” “25%” and “12% Power.”
Wireless Mode Allowed	Three options are “5 GHz 54 Mbps,” “5 GHz 108 Mbps” and “2.4 GHz 11 Mbps.”
Wireless Mode When Starting Ad Hoc Network	Three options are “5 GHz 54 Mbps,” “5 GHz 108 Mbps” and “2.4 GHz 11 Mbps.”

5 Once all of the profile settings have been entered, click OK. The newly created profile will be displayed in the Station Configuration tab (Figure 44).

Figure 44 Mobile Adapter 2201 Client Manager - Station Configuration tab



Default Settings Windows XP Zero-Configuration

You may also choose the default parameters and directly proceed to Windows XP zero-configuration through the steps below:

1. Go to “Control Panel” and open “Network Connections.”
2. Right-click the Wireless Network Connection of “802.11a/b Plus Cardbus,” and make sure this connection is Enabled.
3. Right-click the Wireless Network Connection of “802.11a/b Plus Cardbus,” and then click “Properties.”
4. Select “Wireless Networks” tab and select “Use Windows to configure my wireless network settings” check box.

Note: Clear the check box of “Use Windows to configure my wireless network settings” will disable automatic wireless network configuration.

Chapter 4
Troubleshooting

Check the following troubleshooting items before contacting Technical Support.

Table 5 Troubleshooting

Problems	Possible Solutions
My computer cannot find the Adapter	• Make sure the Adapter has no physical damage. • Make sure the Adapter is properly inserted in the Cardbus slot. • Try the Adapter in other Cardbus slots. • Try another Adapter in that particular Cardbus slot. • Check whether there are conflicts caused by other network cards in the computer. Remove all other cards then try this Adapter separately..
Cannot access any network resources from the computer.	• Make sure the correct software is installed. • Uninstall and reinstall the driver/utility (see Chapter 2 for the procedures). • Make sure all network devices are receiving power and working well. • Check whether the SSID is set properly. • Check with the network administrator to see whether the Access Point is configured properly to accept your signal. • If you have trouble accessing the Internet, make sure to check with the network administrator for further instructions.

Appendix A Specifications

This appendix provides technical specifications for the Nortel Network Wireless LAN Mobile Adapter 2201.

Frequency Range

U-NII: 2.412 ~ 2.484 GHz, 5.15 ~ 5.35 GHz, 5.725 ~ 5.825 GHz

Europe: 2.412 ~2.484 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz

Japan: 2.471 ~ 2.497 GHz, 5.15 ~ 5.25 GHz

China: 2.412 ~ 2.484 GHz, 5.725 ~ 5.85 GHz

Modulation Technique

DSSS (CCK, BPSK, QPSK) for 2.4 GHz

OFDM (BPSK, QPSK, 16-QAM, 64-QAM) for 5 GHz

Host Interface

Card Bus interface and form factor

Channels Support

2.4 GHz	US / Canada: 11 (1 ~ 11)
	China / Major European country: 13 (1 ~ 13)
	France: 4 (10 ~ 13)
	Japan: 14 (1 ~ 13 or 14th)
5 GHz	US/Canada: 12 non-overlapping channels

5.15 ~ 5.35 GHz, 5.725 ~ 5.825 GHz

Europe: 19 non-overlapping channel

5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz

Japan: 4 non-overlapping channels

5.15 ~ 5.25 GHz

China: 5.725 ~ 5.85 GHz

Operation Voltage

3.3V +/- 5%

Power Consumption

Transmission mode	1155 mW (estimated)
Receive mode	1221 mW (estimated)
Standby mode	297 mW (estimated)
Power saving mode	39.6 mW (estimated)

Output Power

Worldwide	2.4 GHz: 17 dBm (50 mW) peak power
US	5 GHz
	a. 5.150 ~ 5.250: peak power to 50mW (17dBm)
	b. 5.250 ~ 5.350:peak power to 125mW (21 dBm)
	c. 5.470-5.725:not allowed
	d. 5.725 ~ 5.825:peak power to 80mW (19 dBm)
Europe	5 GHz
	a. 5.150 ~ 5.250 and 5.250-5.350: European regulations limit power in these bands to 200 mW EIRP (23 dBm)
	b. 5.470 ~ 5.725: 1W EIRP (30 dBm) allowed
	c. 5.725 ~ 5.825: calibrated to provide 20 dBm peak power
Japan	5 GHz

	a. 5.150 ~ 5.250: 200 mW EIRP (23 dBm)
	b. 5.250 ~ 5.350: not allowed
	c. 5.470 ~ 5.725: not allowed
	d. 5.725 ~ 5.825: not allowed
China	5 GHz: 10 mW

Operation Distance

802.11a	Up to 1320 feet
802.11b	Up to 1650 feet

Operation System

Windows 98SE, Me, 2000, XP

Dimension

23mm (L) x 54mm (W) x 10.4 (H)

Security

64-bit WEP, 128-bit WEP, 152-bit WEP Encryption

802.1x Authentication

H/W AES encryption

Operation Mode

Infrastructure & Ad-hoc mode

Transfer Data Rate

2.4 GHz	11, 5.5, 2, 1Mbps, auto-fallback

5 GHz	54, 48, 36, 24, 18, 12, 9, 6Mbps, auto-fallback 108,96,72,48,36,24,18,12 Mbps by using turbo mode

Operation Temperature

0 ~ 70 °C

Storage Temperature

20 ~ 80 °C

Wi-Fi & Wi-Fi5

WECA Compliant

WHQL

Microsoft 2000, XP Complaint

FAA

S/W audio On/Off support

EMC Certificate

FCC part 15 (USA)
IC RSS210 (Canada)

Media Access Protocol

CSMA/CA with ACK architecture 32-bit MAC