AirConnect®
11 Mbps Wireless LAN PC Card
User Guide

Version 2.0

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3Com Corporation ■ 5400 Bayfront Plaza ■ Santa Clara, California ■ 95052-8145 ■ U.S.A.

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1 BEFORE YOU BEGIN

Introduction

The AirConnect® wireless network offers performance comparable to Ethernet networks, but without the restraints of network cables. The AirConnect product family includes the 3CRWE73796B wireless PC Card described in this manual.

Features

AirConnect adapters use IEEE 802.11 B direct-sequence-based technology to extend the range and versatility of a network. They provide a high-capacity link across multiple access points within large or small indoor environments. AirConnect product-family features include:

- A bridging architecture that allows communication between wired network devices and mobile devices.
- Compliance with IEEE 802.11 B specification, an open architecture that allows AirConnect devices to communicate with wireless devices from other manufacturers.
- Extended roaming to allow mobile devices to roam throughout large facilities while remaining connected to the LAN.
- Ad hoc mode that allows notebook PC users to create an instant network to share data anywhere and anytime without the need for an access point.

AirConnect PC Card operating features include:

- Support for standard NDIS (Network Driver Interface Specification) and drivers.
- Support for Windows Millennium Edition (Me), Windows 2000, Windows 98, Windows 95B (OSR 2), Windows NT 4.0 (with Service Pack 3.0 or greater), and Windows CE 2.11 and 3.0.
- Card and Socket Services support, including SystemSoft, CardSoft, and CardWizard.
- Plug and Play support.
- Power management.
- Low-power operation for battery-powered devices with PC Card slots.

AirConnect Wireless LAN cards support a maximum data rate of 11 Mbps. (The data rate drops back to 5.5, 2, or 1 Mbps when the adapter cannot establish or maintain an 11 Mbps association.) Factors that can affect the data rate include:

- A separation or change in signal strength between the Access Point and the wireless client
- The ratio of packets transmitted to transmissions attempted falling below a preset threshold
- The wireless client finding and switching to another Access Point with a higher transmit rate

Roaming means the AirConnect PC Card will maintain your network connection as you roam between Access Points in the same subnet. You can also roam across routers, depending on how your extended roaming configuration is set. When configured for extended roaming, the wireless client retains its network address as it moves between subnets, between Ethernet segments, or from an Ethernet segment to a wireless LAN. See "Easy Setup" on page 13 for details.

The wireless LAN PC Card supports *Continuous Active* and *Power Save Polling* power-management modes.

- In *Continuous Active Mode*, the radio that establishes and maintains the link to the network remains on. Continuous Active mode is not recommended for battery powered devices.
- *Power Save Polling* conserves power by suspending the adapter's communication with an associated access point. The access point saves data for transmission to the wireless client when it wakes at given intervals. When the adapter wakes to check for data, it switches back into *Continuous Active Mode* until it is ready to suspend communications again.

Installation Overview

Installing the AirConnect wireless network PC Card involves these tasks:

- Running the Setup program from the *Installation CD*. See "Installing the Drivers" on page 5.
- Installing the PC Card. Do not install the card until instructed to do so by the setup software. The procedure for installing the PC Card is described in "Installing the PC Card" on page 20.
- Installing the software, including the drivers for the card and the AirConnect software utilities. See "Installing the Card Software" on page 6.

  If you are reading this manual from the CD and want to install it on your hard disk for easier access, see "Installing the Documentation" on page 6.
- The card installation procedure covers basic configuration. For advanced configuration options, or to explore the utilities available for managing and configuring the card, see "Software Configuration, Tools, and Utilities" on page 13.

Disk Factory

If you are installing the software on a computer that does not have a CD-ROM drive, or if you choose to install the drivers manually, you will have to make diskettes from the *Installation CD*. The setup application includes Disk Factory, a utility for creating disks from CD. To use disk factory, you need access to a computer with a CD-ROM drive and a floppy drive.

1. For a transfer of the driver software to a diskette, prepare a diskette labeled *Drivers.*

   For a transfer of the application software to diskette, prepare three disks labeled as follows:

   AirConnect Application Disk 1
   AirConnect Application Disk 2
   AirConnect Application Disk 3

2. Put the *Installation CD* in the CD-ROM drive. The SETUP program should start automatically. If it does not start, you can run it manually by selecting *Run* from the Start menu.
3. Select *Create Diskettes*.
4. In the Disk Factory window, click *Next*.
5. Select the software you want to transfer to diskette. If you select *All*, you will need four floppy diskettes.
6. Select the action, for example, *Create and Verify Disks*, and click *Next*.
7. When you are ready to install the application software from diskette, put *AirConnect Application Disk 1* in the floppy drive and run SETUP.

   If you are installing the drivers manually, use the Drivers diskette when the setup wizard for your operating system prompts for drivers supplied by the manufacturer.

2 SOFTWARE INSTALLATION

Introduction

Use the procedures described in this chapter to install the AirConnect wireless PC Card software and drivers under Windows 95, Windows 98, Windows 2000, and Windows Millennium Edition (Windows Me).

Installation Notes

The following paragraphs described special considerations for particular operating systems.

Windows 98

- Installation under Windows 98 may result in a fatal error caused by the UHCD.SYS file in the Windows 98 operating system. To avoid this problem, you should update the UHCD.SYS file from v4.10.1998 to v4.10.2000. This update is available from the following web site:

  http://www.microsoft.com/windows98/downloads/contents/WURecommended/systemupdata/Default.asp

- Note that the final Windows 98 installation screen may take 30-60 seconds to appear. Do not interrupt the installation if the PC appears to be taking too much time to complete the installation.

Windows 95

Windows 95 users should note that the AirConnect wireless PC Card runs under Windows 95 version B (OSR 2) or higher. If you do not know which version of Windows 95 is installed on your computer, follow these steps:

1. In the Control Panel, double-click *System* to display the System Properties dialog box.
2. Click the *General Tab* to display the Windows 95 version information.

   Version B (also known as OSR 2) is identified as 4.00.950b.

Windows NT 4.0

Windows NT 4.0 users should refer to the driver installation instructions described in "Installing Windows NT Drivers" on page 8.

Windows CE

Windows CE users should refer to the "*Installation for Windows CE*" section.

Drivers for other operating systems are located at the 3Com Customer Support Web site at:

http://support.3com.com

Before Installing the Drivers

Before installing the Windows 98 driver, you will need a copy of the Windows 98 installation media supplied with your computer or operating system. On many Windows 98 systems, instead of a CD, the installation files are archived on the hard disk in C:\WINDOWS\OPTIONS\CABS. On Windows 2000 systems, you may be prompted to load operating system files from the Windows 2000 installation disk.

You will also need the AirConnect *Installation CD* supplied with your AirConnect wireless PC Card. Along with other utilities, the *Installation CD* installs the AirConnect *Network Configuration Properties Application* in the Control Panel on your system. Use this application to view and edit AirConnect WLAN adapter settings.

If your site requires installation using diskettes, see "Disk Factory" on page 3. Where the driver installation procedure mentions the *Installation CD* and CD-ROM drive, use the diskettes and the floppy drive instead.

Installing the Drivers

The following procedure is for installing drivers under Windows 95B (OSR 2), Windows 98, Windows 2000, and Windows Me.

1. Turn on your computer.
2. Put the *Installation CD* in the CD-ROM drive.

   The setup program should start automatically. If it does not start, you can run it manually by selecting *Run* from the Start menu.
3. From the 3Com AirConnect WLAN Installer, select *Install AirConnect WLAN Adapter*. Follow the instructions as they appear.
4. When prompted to insert the AirConnect PC Card, insert the card into the notebook PC slot as described in "Installing the PC Card" on page 20.

   The driver installation procedure will guide you through the steps standard for your operating system. You will be asked to supply a CD or directory path information for the *Installation CD* and your operating system software.

   As part of the driver installation process, the setup program will install and open the Network application in the Control Panel.
5. Enter the name of the Wireless LAN Service Area of the wireless network to which your computer will connect. The name you enter here must match exactly the name assigned to the access point. Characters, capitalization, and spacing must be identical.
6. Save the configuration settings and exit by clicking *OK*.
7. Restart your computer.

Installing the Card Software

1. When the system reboots, restart the setup program and install any other components required.

   3Com recommends that you install the wireless LAN applications so you can access the WLAN utilities described in Chapter 5.

2. Restart your computer for changes to take effect.

Installing the Documentation

If you are reading this manual from the CD, you may want to install it on your hard disk using the following procedure:

1. Put the *Installation CD* in the CD-ROM drive. The Setup program will start automatically.

   If the Setup program does not start, use Start/Run to run the SETUP.EXE program from CD-ROM drive.

2. Select *Documentation*.

   You can view the manuals from the CD.

3. To install the manuals on your hard disk, select *Install User Documentation*. Follow the instructions on the screen to complete the installation.

4. Exit the setup program.

   You can open the manuals from the AirConnect program group.

Product Registration and Support

To register this product with 3Com, go to the following Web page:

`http://www.3com.com/productreg/index.html`

For support information and pointers to the latest drivers and utilities available for the AirConnect wireless PC network interface card, go to the following Web page:

`http://support.3com.com`

Uninstalling the Card

If the card installation is unsuccessful for any reason, your best course may be to completely uninstall the AirConnect wireless PC Card and its software and repeat the installation procedure.

Previous installations or interrupted installation attempts sometimes leave problems that affect card operation. Possible problems include:

- The card functions not working.
- Windows 98 not detecting the card.
- The system issuing a warning tone at startup.

You can remove the card and driver files using the procedures below.

Removing Card Software

Open Control Panel/System/Device Manager. Select the AirConnect WLAN NIC card components and click *Remove*.

Using the Device Manager to remove the card will uninstall the driver files.

Removing the Card

CAUTION: *Exit any networking applications before removing the card.*

When removing the PC Card, use the release lever or button on your card slot to release the card. When pulling out the card, do not pull on the antenna. Refer to "Removing the PC Card" on page 21.

Troubleshooting

Symptom	Solution
Weak signal or intermittent connection.	Try reorienting the antenna. The PC Card antenna is attached to the end of the card. For best use of the antenna: ■ Keep the area around the antenna clear from materials that could block radio transmission, such as metal objects, electronic devices, and cordless telephones. ■ If your signal is weak, change the direction of the antenna slightly. ■ If necessary, move your computer a few inches to find a better signal. Depending on your environment, a difference of one or two inches can mean the difference between a strong and a weak signal. See "Status" on page 14 for details. Use the Signal Strength display in the AirConnect Status application to determine the best location and orientation for a network connection. See "Connection" on page 15 for information on monitoring your AirConnect connection.
Windows does not recognize the adapter when installed.	Verify that PCMCIA support is installed. Check whether the computer has a Plug and Play BIOS. Check whether an AirConnect adapter is already in use.
Driver fails to load.	A resource conflict could exist. Use the Device Manager to resolve resource conflicts. Select *System* from the Control Panel, then click on the Device Manager tab.
Workstation cannot attach to the network.	Verify that the adapter Wireless LAN Service Area ID matches the access point ID. See "Easy Setup" on page 13 Verify that the adapter Data Rate is configured properly for the access point.
Network drive mappings disappear when the notebook suspends or the adapter is removed then reinserted.	Windows 98 will not restore NetWare network drive mappings under these conditions. Log out and log in again, or restart the machine to restore the connections.
Nonfunctioning PC adapter LED.	Verify that the Wireless LAN Service Area ID matches the access point ID.

3 INSTALLING WINDOWS NT DRIVERS

Before Installing the Driver

Before installing the driver, you will need a copy of the Windows NT 4.0 installation media supplied with your computer or operating system.

You will also need the AirConnect *Installation CD* supplied with your AirConnect wireless PC Card. Along with other utilities, the *Installation CD* installs the AirConnect *Network Configuration Properties Application* in the Control Panel on your system. Use this application to view and edit AirConnect WLAN adapter settings.

If your site requires installation using diskettes, see "Disk Factory" on page 3. Where the driver installation procedure mentions the *Installation CD* and CD-ROM drive, use the diskettes and the floppy drive instead.

For Windows NT 4.0 installation, you must have Service Pack 4 or later installed on your computer. After installation, you may need to reinstall the Service Pack software to update NT network files and eliminate error messages in the Event Viewer. Contact your Network Administrator or Microsoft if you do not have the current Service Pack.

Installing the Driver

Point enabler installation is a basic, manual installation procedure that will work on nearly all configurations, including systems with third-party card and socket services installed.

1. Install the card as described in "Installing the PC Card" on page 20.
2. Power up the system.
3. When the Windows NT Setup dialog box appears, click *Select from list* for Network Adapters.
4. In the Select Network Adapters dialog box, click *Have Disk*.
5. Put the *Installation CD* in the CD-ROM drive. Make sure the path to the CD-ROM drive is indicated and click *OK*.
6. When the Select OEM option dialog box appears, select *AirConnect WLAN PC Card* and click *OK*.
7. At the Windows NT Setup dialog box, click *Next* to continue.
8. When the Windows NT Setup dialog box appears, select the appropriate Network Protocols and Network Services. If you are unsure about what to select, ask your MIS representative.
9. Click *Next*, and *Next* again to start the network installation.
10. Click *Next* to start the installed network configuration.

Setup With Networking Installed

If networking is already installed on your system:

1. Power up and log into the system.
2. Open the Control Panel.
3. Double-click *Network* and select the Adapters tab.
4. Select the AirConnect PC Card and click *Update*.
5. Put the *Installation CD* in the CD-ROM drive.
6. Click *OK* to select the default path to the driver files.

   When prompted, remove the installation disk. Click *OK* to continue.
7. Click *Close* to exit the Network applet.
8. Remove the *Installation CD* and click *Yes* to restart the system.

Setup with No Networking Installed

Before beginning this procedure, note that you must have Administrator group privileges to install network components.

1. Open the Control Panel and double-click the Network icon.
2. The Network Configuration dialog box prompts for Windows NT Networking installation, click *Yes*.
3. Check *Wired to the network* when the Network Setup Wizard dialog box appears. Click *Next* to continue.
4. When the Network Setup Wizard dialog box prompts for a network installation, click *Select from list*.
5. From the Adapter dialog box, click *Have Disk*.
6. Put the *Installation CD* in the CD-ROM drive, specify the path to the CD-ROM drive, and click *OK*.
7. Select the AirConnect PC Card and click *OK*.
8. When the Network Setup Wizard reappears, click *Next*.
9. The Protocols display shows protocol choices. Select the protocols that apply and click *Next*.
10. Click *Next* to scroll through the next two dialog boxes.

    The Network Setup Wizard displays the Windows NT Setup dialog box requesting Windows NT files.
11. Enter the path name of the Windows NT distribution files (E:\ for CD-based installation), click *Next*.

Configuring the Adapter

Configure the adapter using the Easy Configuration dialog box. Before configuring the adapter, you will need ask your MIS department for the Wireless LAN Service Area ID for your access point network.

1. Open the Control Panel and double-click the Network application.
2. Select the 3Com WLAN Adapter and select *Properties*.
3. Set the Wireless LAN Service Area ID to the desired network access point.

4 Click *Advanced*.

5 Select the WLAN Adapter tab from the AirConnect WLAN Advanced Properties dialog box.

6 Configure the hardware and radio link parameters for the AirConnect WLAN adapter.

7 Save the configuration settings by clicking *OK* before you exit.

Troubleshooting

Symptom	Solution
Weak signal or intermittent connection.	Try reorienting the antenna. The PC Card antenna is attached to the end of the card. For best use of the antenna: ■ Keep the area around the antenna clear from materials that could block radio transmission, such as metal objects, electronic devices, and cordless telephones. ■ If your signal is weak, change the direction of the antenna slightly. ■ If necessary, move your computer a few inches to find a better signal. Depending on your environment, a difference of one or two inches can mean the difference between a strong and a weak signal. See "Status" on page 14 for details. Use the Signal Strength display in the AirConnect Status application to determine the best location and orientation for a network connection. See "Connection" on page 15 for information on monitoring your AirConnect connection.
A resource conflict (usually IRQ or I/O base address) caused the driver not to load.	Check Service Monitor entries in the *S*ystem Log to look for the conflicts. Use the Windows NT Diagnostics program to locate a free resource.
No resource conflicts were detected, but the system does not attach to the network.	Verify that the adapter's Wireless LAN Service ID matches that of the access point. Use the *Network Configuration Properties Application* in the Control Panel to modify the Wireless LAN Service ID. Verify the Mandatory BSSID setting of the adapter is set to 0 or matches the BSSID of the Access Point. Use the Easy Setup Advanced options to modify the ID. See "Easy Setup" on page 13. Verify the adapter data rate is configured properly for the access point.

4 INSTALLATION FOR WINDOWS CE

Introduction

To install AirConnect on your mobile device (handheld PC), you will need the AirConnect *Installation CD* supplied with your AirConnect PC Card. Along with other utilities, the *Installation CD* installs the AirConnect *Network Configuration Properties Application* in the Control Panel on your system. Use this application to view and edit AirConnect WLAN adapter settings.

You will also need a desktop or notebook PC to transfer AirConnect files to your mobile device.

If your site requires installation using diskettes, see "Disk Factory" on page 3. Where the driver installation procedure mentions the *Installation CD* and and CD-ROM drive, use the diskettes and the floppy drive instead.

For Windows CE installation, you must have ActiveSync installed on the desktop or notebook PC from which you will transfer files.

Installation Procedure

The AirConnect installation procedure consists of two major steps: transferring the AirConnect files to your mobile device, and configuring the AirConnect settings.

Transferring AirConnect Files to Your Mobile Device

1. Connect the mobile device to the desktop or notebook PC from which you will transfer files. Use the appropriate cable supplied with your mobile device. The ActiveSync window opens when it detects the link.
2. Insert the *Installation CD* into the desktop or notebook PC.
3. From the *Installation CD*, run the file *WinCE\AirConnectNormal*.
4. Follow the instructions on the screen.
5. When prompted, select the default directory to continue the installation. The installation process begins and may take a few minutes to load the application files onto your mobile device.
6. When the file transfer finishes, a message box appears instructing you to check your mobile device screen for additional steps to be taken to complete the installation. Click *OK* to close the message box.

Configuring AirConnect on Your Mobile Device

After the AirConnect files have finished transferring, the 3Com AirConnect WLAN Easy Setup screen appears on the display of your mobile device.

1. Click *OK* when a message box appears on the screen.
2. Insert the PC Card into the PC Card slot on your handheld PC.
3. Enter the IP address when prompted.
4. Perform a soft reset of your mobile device according to the manufacturer's instructions.

5 SOFTWARE CONFIGURATION, TOOLS, AND UTILITIES

Introduction

The AirConnect wireless PC Card software includes three groups of utilities. The best way to familiarize yourself with the software, the information it provides, and the options you can change, is to open and browse through the applications themselves. If you hold the cursor over an icon or item, a popup window will identify it for you. Help is available throughout the applications.

Easy Setup

Easy Setup lets you set common configuration parameters for the AirConnect wireless PC card.

1. Open the Control Panel and double-click the Network application.
2. Select the 3Com WLAN Adapter and select *Properties*.
   - *Wireless LAN Service Area* lets you specify the ID for the Access Point you will connect to.
   - *Advanced Properties* lets you set more advanced options in their WLAN adapter configuration.

   You can also access the Advanced Properties settings through the Network application located in the control panel. Advanced Properties include:

   - *Wireless Client* lets you set the two most common settings for the WLAN adapter, Wireless LAN Service Area, and Power Management settings.

     Wireless LAN Service Area is equivalent to the 802.11 parameter ESSID. The initial value was set when you ran the 3Com Wireless Easy Setup application.
   - *Power Management* is a slider that controls how you trade off performance and power management for the adapter. The system polls the other wireless devices on the network to determine if any traffic exists for this PC. To save power, increase the interval between polls.
   - *Mobile IP* lets you enable and configure extended roaming between routers.

     To enable extended roaming, check the Mobile IP check box. When this box is checked, the Home Agent IP Address, Mobile Home MD5 Key, Registration Timeout, and Delay Time fields are enabled.

For extended roaming to work, you must use a static IP address.

Home Agent IP Address lets you register your wireless client with your home access point through a foreign subnet access point (commonly called a foreign agent) and tell the Foreign Access Point where your home access point is located.

Mobile Home MD5 Key is a password that protects your registration packets from being tampered with by others while they are being forwarded to your home access point. It should match the MD5 key on the Access Point of your home subnet.

Registration Timeout (5 to 3600 seconds) tells the wireless client how often it needs to reregister with the Home Agent. When a wireless client registers with the home agent through a foreign agent, the registration has an expiration time associated with it - the Registration Timeout value. The default value is 60 seconds. If the wireless client does not reregister in the time allowed, the home agent will remove the wireless client from its list of registered wireless clients when the time expires.

Delay Time is the amount of time (1 to 10 seconds) that the wireless client will wait for a response from a foreign subnet access point when trying to register with that access point. The wireless client will try to register a maximum of three times.

WLAN Adapter lets you set specific hardware parameters that effect the operation of the WLAN adapter. This tab has different views depending on the operating system. In Windows NT 4, the tab displays hardware resource information and lets you change the settings. In Windows 95 and Windows 98, the tab does not display this information because it is set by Plug and Play.

Card Type lets you specify the card currently installed. For the selected card, you can review or change:

Interrupt Number is displayed only in the Windows NT environment. This field lets you select an Interrupt Request Number (IRQ) to use with this card.

I/O Port Address is displayed only in the Windows NT environment. This field lets you select an I/O Port Address to use with this card.

Memory Base Address is displayed only in the Windows NT environment. This field lets you select an Memory Base Address to use with this card.

Status

The AirConnect Status application displays status information about the current signal strength and provides access to 3Com WLAN application tools, including Settings, Connection, and Adapter Information utilities.

Start the Status application by clicking the 3Com icon in the tool tray in the lower right-hand corner of the Windows desktop.

- Settings launches the 3Com AirConnect Settings application in another window.
- Connection launches the 3Com AirConnect Connection application in another window. The signal status display is constantly updated to show the status of the wireless signal. The signal is rated as follows: no adapter installed, no connection, no signal, poor signal, fair signal, average signal, good signal, and excellent signal.
- Adapter Information launches the 3Com AirConnect Adapter Information application in another window.

Settings The Settings application displays information about the current card settings. It also lets you change the configuration of the card without rebooting your system. The application lets you set parameters such as wireless LAN service area and power mode settings.

- *Wireless LAN Service Area* displays the name of the access point with which the wireless PC Card is associated. You can enter a new name in this field or select a name from the drop-down list.
- *Power Mode* lets you select the power mode to use and specify when power-save options are in effect.

  Continuous access does not use power save polling and disables it.

  Power save polling uses Power Save Polling at all times.

  Switch based upon active power source causes the system to switch the power mode based upon whether the system is using AC or battery power. In this mode, the system use continuous polling mode with an AC power source and power save polling with battery power.

  The Power Save Polling slider lets you balance network performance against power consumption. When the slider is set to lowest power, the adapter checks network traffic less frequently, reducing power consumption used. When the slider is set to highest performance, the adapter tries to maintain constant contact with the network, increasing network performance but consuming correspondingly more power. If you check *Let the adapter manage power usage,* the card will use the best setting available at any given time. The polling interval is based on whether the system has received data recently. If no data is being received, the polling interval becomes less frequent over time, gradually decreasing power consumption.

Connection The Connection application allows more detailed checks of card performance than is possible with the AirConnect Status application. Signal strength is displayed over time, which lets you check the performance of the wireless link.

- *Signal Strength* tracks the signal strength in real time and displays a graph showing the historical trend.
- *Link Performance* lets you run a ping test between the wireless client and another IP device on the network. When the ping test is run to another wireless device, the round trip ping time can give an idea of what the upper limit is for connection speed.

  Start Test starts a ping test using the information provided in the Test Count and Host Address fields.

  Test Count lets you select the number of pings to perform in testing link performance.

  Host Address lets you enter the IP address or host name of the system to perform the ping test.

  Link Performance displays the results of the ping test specified on this tab. A graph indicating the round trip ping time of each ping and timing statistics are shown.

Adapter Information

The Adapter Information application lets you perform a wide range of adapter configuration and monitoring tasks from a single user interface. The application lets you configure the adapter, monitor performance, diagnose problems, and set up system logging. Each screen has a category list that lets you select which information is to be displayed in the window.

- *Adapter* provides basic information about the adapter and the current hardware settings

  Signal Quality updates in real time to indicate the current signal strength.

  Adapter Information displays basic adapter information.

  Hardware Properties indicate the hardware resources being used by the PC, and hardware characteristics of the WLAN adapter (hardware revision, MAC address, and adapter type).

- *Known Access Points* shows which access points your adapter can sense and displays basic statistics for each. The display shows the access point addresses, channel, a type/status indicator, noise, and signal. The access point is indicated by a graphic of an access point transmitting on the left hand side of the list.

- *Association* displays statistics on the performance of the adapter related to adapter to access point associations and roaming.

  Association Statistics include the current number of associations, access point counts, number of fill scans, number of partial scans, and the current access point that the adapter is associated with.

  Roaming Reasons lists the reason that the adapter roamed from access point to access point.

  Miscellaneous Statistics lets you see if the adapter is experiencing transmission problems.

  Reset Statistics clears and restarts all statistics counters.

- *Transmit and Receive Statistics* are concerned with the quality of the wireless connection between the PC Card and the access point.

  Transmit Statistics include the total host packets transmitted, information on non-directed packets, information on directed packets, and the total number of bytes transmitted.

  Receive Statistics include the total host packets received, information on non-directed packets, information on directed packets, and the total number of bytes received.

  The transmit and receive graph displays a histogram of the directed and non-directed traffic at varying data rates.

- *Diagnostics* panel lets you perform low level tests to determine if the WLAN hardware is functioning.

  Select Function lets you choose a self-test or reset the adapter.

  Execute Function performs the selection.

  Results shows the results of the diagnostics.

- *Options* lets you save adapter performance information in a file.

  Enable Logging starts or stops logging to a group of HTML files on the system.

  Log File Path is the current path to store the log files. The field is disabled when logging is not turned on. Use *Browse* to select a Log File Path.

  View Log Files selects the log file to view in the default browser.

Firmware Upgrade

The Adapter Firmware Upgrade tool lets you download and install firmware updates that you have downloaded from the 3Com Customer Support Web site at

http://support.3com.com.

To run the card upgrade utility:

1. Open the Start menu.
2. Select *Programs*.
3. Select *3Com AirConnect*.
4. Select *AirConnect Upgrade Utility*.

The upgrade utility lets you view information on the current firmware version of the currently installed card and install firmware updates by selecting a firmware file downloaded from the 3Com Web site.

- *Firmware loaded in adapter* displays the version information for the current firmware on the adapter.
- The ellipsis (...) button opens a browser so you can select a firmware file. The new selection updates the *Firmware Filename* field.
- *Update* initiates the update of the firmware on the adapter based using the firmware file specified.

Encryption

The client and access point can be set for encryption to provide a level of security to the data stream between the client and its associated AP.

Encryption Configuration Requirements

- The encryption level (open, 40-bit, or 128-bit) must be the same on the wireless client and the access point.
- All shared keys on the wireless client must be the same as those on the access point with which the client will associate. They must match exactly (key order and hex-digit sequence).
- The selected keys do not need to be the same among different clients and/or access points.

Enabling Encryption on the Wireless Client

This procedure describes how to enable encryption on the wireless client. Refer to the *Access Point User Guide* for instructions on how to enable encryption on the AP.

1. Go to *Start* > *Settings* > *Control Panel* > *Network*.
2. Highlight the AirConnect PC Card, and click on the *Properties* tab.
3. Click on the *AirConnect* tab.

4 Click on the *Advanced* button.

5 Select the *Encryption* tab.

6 Change the current Encryption setting from the default "No encryption" to 40-bit or 128-bit or 40-bit.

7 Select *Shared Keys*.

8 Click *OK* in the Advanced Properties window to save changes.

9 Click *OK* to exit the *3Com AirConnect WLAN Easy Setup* window.

10 Click *OK* to exit the Network window.

11 Reboot the system.

Encryption Upgrade Access Codes

If you are upgrading your wireless client from 40-bit encryption to 128-bit encryption, you must enter an access code to perform the upgrade. Until the access code is entered, you can only enable or disable 40-bit encryption.

This procedure is not required for U.S. products.

Windows 95, Windows 98, Windows Me

1 Click the *Network Neighborhood* icon and open the *Properties* screen.

2 Click the *Configuration* tab.

3 Select (highlight) the AirConnect PC Card entry.

4 Click the *Properties* button. The *LAN Adapter Setup* screen appears.

5 Click the *Advanced* button. The *Advanced Properties* screen appears.

6 Click the *Encryption* tab.

7 Select the 128-bit encryption algorithm.

8 A pop-up screen appears, prompting you to enter an access code.

9 Enter the access code, then click *OK*.

10 Reboot the system.

Windows 2000

The procedure to enter access codes under Windows 2000 is identical to the one above, except that in step 1, the screen to be opened is the *Adapters* screen.

Windows NT 4.0

1 Click the *My Network Places* icon.

2 Click the Local Area Connections icon to open the *Local Area Connections* screen.

3 Click *the Configuration* tab, and then click the *Settings* tab.

4 Click the *Advanced* button.

5 Click the *Encryption* tab.

6 Select the 128-bit encryption algorithm.

7 A pop-up screen appears, prompting you to enter an access code.

8 Enter the access code, then click *OK*.

9 Reboot the system.

Ad Hoc Operation

Two or more wireless clients can be configured for direct wireless communication without using an access point. Two types of ad hoc operation can be configured: 802.11 ad hoc and proprietary ad hoc.

802.11 Ad Hoc

To configure your wireless client for 802.11 ad hoc operation:

1 Start the 3Com Launcher.

2 Open the *3Com AirConnect Settings* screen.

3 For *Operating Mode*, select *IBSS (802.11 Ad Hoc)*.

4 Enter the Wireless LAN Service Area. Be sure that the Wireless LAN Service Area is identical on all wireless clients that are to communicate with each other in ad hoc mode.

5 Open the *3Com AirConnect Connector Monitor* screen.

6 Click the *Known Peers* tab. A list appears showing all wireless clients that are in range, in the same operating mode (802.11 ad hoc), and having the same Wireless LAN Service Area.

Proprietary Ad Hoc

To configure your wireless client for proprietary ad hoc operation:

1 Start the 3Com Launcher.

2 Open the *3Com AirConnect Settings* screen.

3 For *Operating Mode*, select *Pseudo IBSS (Proprietary Ad Hoc)*.

4 Enter the desired channel. All wireless clients that are to connect to each other using proprietary ad hoc mode must be set to the same channel.

5 Open the *3Com AirConnect Connector Monitor* screen.

6 Click the *Known Peers* tab. A list appears showing all wireless clients that are in range, in the same operating mode (proprietary ad hoc), and set to the same channel.

Testing Ad Hoc Operation

To test your ad hoc connection:

1 Open the Link Performance screen from the 3Com launcher.

2 Enter the IP address of an associated client into the IP address field.

3 If desired, you can set a test count number, or set the test to be *Once* or *Continuous*.

4 Click the *Start Test* button. The test screen displays the results of the ad hoc connection test.

6 INSTALLING THE PC CARD

Installing the PC Card

1 Insert the PC Card into the PC slot as shown.

2 Slide in the PC Card until it seats snugly. Align the card properly before putting it in the slot. Insert the card firmly without forcing until it seats snugly.

CAUTION: *Forcing a misaligned card into the slot can damage the computer or the card.*

Wireless PC Card LED

The PC Card LED (see the figure below) indicates the operational status of the card.

Off	Slow Blinking	Fast Blinking
The PC Card is not functioning, is disabled, or is not installed correctly.	The card is attempting to associate with an access point or ad hoc wireless client.	The card is exchanging data with an access point or ad hoc wireless client. The higher the data rate, the faster the blinking.

Removing the PC Card

Use the release lever or button on your card slot to release the card and pull the card out by its sides. Do not pull on the antenna.

7 UPGRADE PROCEDURES

Introduction

This section describes the procedures for upgrading the wireless client from the AirConnect version 1.0 or 1.5 product to version 2.0.

Four upgrade procedures are given, one procedure for each of four categories of operating system:

- Windows 95B (OSR 2)
- Windows Millennium Edition (Windows Me) and Windows 98/98SE
- Windows NT 4.0 Workstation/Server
- Windows 2000 Professional

Windows 95B (OSR 2) Wireless Client Upgrade Procedure

Remove the old driver.

1. Under Device Manager, select *Network Adapters*.
2. Under Network Adapters, select the *AirConnect* card.
3. Select *Remove*, then reboot the PC.

Install the new driver.

1. Insert the *Installation CD* or 3.5" diskette into the PC.
2. Follow the instructions displayed on the screen to load the new driver. If one or more dialog boxes pop up indicating a version conflict, always answer "yes" to keep your existing files.
3. When prompted, enter the WLAN Service Area ID.
4. Remove the *Installation CD* or 3.5" diskette, insert the Windows 95B or 95C installation diskette into the floppy drive.
5. Click *OK* when prompted. The PC will search for required operating system files on the installation diskette. If one or more dialog boxes pop up indicating a version conflict, always answer "yes" to keep your existing files.

Upgrade the 3Com Launcher.

1. Remove the Windows 95B or 95C installation diskette, and reinsert the *Installation CD* or 3.5" diskette.
2. Go to *Start* > *Run*, enter *<drive>:\setup.exe*, and click *OK*.
3. Select *Installation for Windows*.

4 Select *Install WLAN Applications*.

5 Follow the instructions on the screen.

Upgrade the firmware.

1 With the *Installation CD* or diskette still inserted into the PC, select *Start* > *Programs* > *3Com AirConnect* > *AirConnect Firmware Upgrade Utility*.

2 Make sure that the AirConnect wireless PC Card is inserted in the PC.

3 Click the button to the right of the field labeled *Firmware Filename*, then go to the *Firmware* > *MU* directory on the *Installation CD* or diskette.

4 In the *Firmware**MU* directory, select the upgrade file: *3compc.img*

5 Click *Update* to begin the upgrade.

6 When prompted, reboot the system.

Windows Me, Windows 98, and Windows 98SE Wireless Client Upgrade Procedure

Remove the old driver.

1 Under Device Manager, select *Network Adapters*.

2 Under Network Adapters, select the *AirConnect* card.

3 Select *Remove*.

4 When prompted, select *Yes* to reboot the PC.

Install the new driver.

1 Insert the *Installation CD* or 3.5" diskette into the PC.

2 Follow the instructions displayed on the screen.

3 When prompted, enter the WLAN Service Area ID.

4 Remove the *Installation CD* or 3.5" diskette, insert the Windows 98 installation diskette into the PC.

5 Click *OK* when prompted. The PC will search for required operating system files on the installation diskette.

6 When prompted, reboot the PC.

Upgrade the 3Com Launcher.

1 Be sure that the *Installation CD* or 3.5" diskette is inserted in the PC.

2 Go to *Start* > *Run*.

3 Enter *<drive>**setup.exe*, then click *OK*.

4 Select *Installation for Windows*.

5 Select *Install WLAN Applications*.

6 Follow the instructions on the screen.

Upgrade the firmware.

1. With the *Installation CD* or diskette still inserted into the PC, select *Start > Programs > 3Com AirConnect > AirConnect Firmware Upgrade Utility*.
2. Make sure that the AirConnect PC Card is inserted in the PC.
3. Click the button to the right of the field labeled *Firmware Filename*, then go to the *Firmware > MU* directory on the *Installation CD* or diskette.
4. In the *Firmware\MU* directory, select the upgrade file: *3compc.img*
5. Click *Update* to begin the upgrade.
6. When prompted, reboot the system.

Windows NT 4.0 Workstation/Server Wireless Client Upgrade Procedure

Remove the old driver.

1. Log on as Administrator.
2. In the Control Panel, select *Network*.
3. In the Network window, select the *Adapters* tab.
4. Select the *AirConnect* card, then select *Remove*.
5. Close the Network window.
6. Reboot the system.

Install the new driver.

1. In the Control Panel, select *Network*.
2. In the Network window, click the *Adapters* tab.
3. In the Adapters window, select *Add*.
4. Click the *Have Disk* button.
5. Insert the *Installation CD* or 3.5" diskette into the PC.
6. Type the drive letter in the entry field, then click OK.
7. When prompted, select the AirConnect PC Card entry.
8. When prompted, enter the WLAN Service Area ID.
9. To leave the Network window, click *Close*.
10. If TCP/IP is installed, you may be prompted to enter additional information appropriate to your network.

Upgrade the 3Com Launcher.

1. Insert the *Installation CD* or 3.5" diskette.
2. If the CD or diskette does not Autorun, go to *Start > Run*, enter *<drive>:\setup.exe*, then click *OK*.
3. Select *Installation for Windows*.
4. Select *Install WLAN Applications*.
5. Follow the instructions on the screen.

6 When prompted to restart the system select No.

7 Reboot the system using the *Start* > *Shut Down* sequence.

Upgrade the firmware.

1 With the *Installation CD* or diskette still inserted into the PC, select *Start* > *Programs* > *3Com AirConnect* > *AirConnect Firmware Upgrade Utility*.

2 Make sure that the AirConnect PC Card is inserted in the PC.

3 Click the button to the right of the field labeled *Firmware Filename*, then go to the *Firmware* > *MU* directory on the *Installation CD* or diskette.

4 In the *Firmware**MU* directory, select the upgrade file: *3compc.img*

5 Click *Update* to begin the upgrade.

6 When prompted, reboot the system.

Windows 2000 Professional Wireless Client Upgrade Procedure

Remove the old driver.

1 In the Control Panel, select *System*. The System Properties window opens.

2 In the Systems Properties window, click *Hardware*.

3 In the Hardware window, click the *Device Manager* button.

4 Expand the Network Adapters folder in the Device Manager window.

5 Select the 3Com AirConnect card listing and right-click it. A pop-up window appears.

6 Select *Uninstall* in the pop-up window, then click *OK* when prompted.

7 Close the Device Manager window.

8 Reboot the system using the *Start* > *Shut down* > *Restart* sequence.

Install the new driver.

1 After reboot, the system should display a window indicating that it detects new hardware (the PC Card).

2 A "Digital Signature Not Found" message window appears. Click *Yes* to continue the installation procedure.

3 Insert the *Installation CD* or 3/5" diskette into the PC when prompted, the click *OK*.

4 In the 3Com AirConnect WLAN Easy Setup window, enter the WLAN Service Area ID.

5 Reboot the system using the *Start* > *Shut down* > *Restart* sequence.

Upgrade the 3Com Launcher.

1 Remove, and then reinsert the *Installation CD* or 3.5" diskette in the floppy drive.

2 If the diskette does not Autorun, go to *Start* > *Run*, enter *<drive>:\setup.exe*, then click *OK*.

3 Select *Installation for Windows*.

4 Select *Install WLAN Applications*.

5 Follow the instructions on the screen.

6 After setup is finished, reboot the system when prompted.

Upgrade the firmware.

1 With the *Installation CD* or diskette still inserted into the PC, select *Start* > *Programs* > *3Com AirConnect* > *AirConnect Firmware Upgrade Utility*.

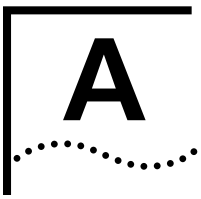
2 Make sure that the AirConnect PC Card is inserted in the PC.

3 Click the button to the right of the field labeled *Firmware Filename*, then go to the *Firmware* > *MU* directory on the *Installation CD* or diskette.

4 In the *Firmware**MU* directory, select the upgrade file: *3compc.img*

5 Click *Update* to begin the upgrade.

6 Reboot the system when prompted.



TECHNICAL SUPPORT

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com FTP site

World Wide Web Site

Access the latest networking information on the 3Com Corporation World Wide Web site by entering the URL into your Internet browser:

http://www.3com.com/

This service provides access to online support information such as technical documentation and software library, as well as support options ranging from technical education to maintenance and professional services.

3Com FTP Site

Download drivers, patches, software, and MIBs across the Internet from the 3Com public FTP site. This service is available 24 hours a day, 7 days a week.

To connect to the 3Com FTP site, enter the following information into your FTP client:

- Hostname: **ftp.3com.com** (or **192.156.136.12**)
- Username: **anonymous**
- Password: **<your Internet e-mail address>**

A user name and password are not needed with Web browser software such as Netscape Navigator and Internet Explorer.

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. To find out more about your support options, please call the 3Com technical telephone support phone number at the location nearest you.

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Below is a list of worldwide technical telephone support numbers:

Country	Telephone Number	Country	Telephone Number
Asia Pacific Rim			
Australia		P.R. of China	10800 61 00137 or
Hong Kong	1 800 678 515		021 6350 1590
India	800 933 486	Singapore	800 6161 463
Indonesia	+61 2 9937 5085	S. Korea	
Japan	001 800 61 009	From anywhere	
Malaysia	03 5783 1270	in S. Korea:	00798 611 2230
New Zealand	1800 801 777	From Seoul:	(0) 2 3455 6455
Pakistan	0800 446 398	Taiwan, R.O.C.	0080 611 261
Philippines	+61 2 9937 5085 1235 61 266 2602	Thailand	001 800 611 2000
Europe			
From anywhere in Europe, call:	+31 (0)30 6029900 phone +31 (0)30 6029999 fax		
From the following European countries, you may use the toll-free numbers:			
Australia	1800 678 515	New Zealand	0800 446 398
Austria	0800 297468	Norway	800 11376
Belgium	0800 71429	P.R. of China	10 800 61 00137
Denmark	800 17309	Philippines	1235 61 266 2602
Finland	0800 113153	Poland	0800 3111206
France	0800 917959	Portugal	0800 831416
Germany	0800 1821502	Singapore	800 616 1463
Hong Kong	800 933 486	South Africa	0800 995014
Hungary	06800 12813	South Korea	00798 611 2230
Indonesia	001 80061 009	Spain	900 983125
Ireland	1 800 553117	Sweden	020 795482
Israel	1 800 9453794	Switzerland	0800 55 3072
Italy	800 879489	Taiwan, R.O.C.	0080 611 261
Malaysia	1800 801777	Thailand	001 800 611 2000
Netherlands	0800 0227788	U.K.	0800 966197
Latin America			
Argentina	AT&T +800 666 5065	Mexico	AT&T +800 778 5573
Brazil	0800 13 3266	Peru	AT&T +800 666 5065
Chile	0800 13 3266	Puerto Rico	800 666 5065
Colombia	98012 2127	Venezuela	AT&T +800 666 5065
North America	1 800 527 8677		

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
Asia, Pacific Rim	65 543 6500	65 543 6348
Europe, South Africa, and Middle East	+ 44 1442 435860	+ 44 1442 435718
From the following European countries, you may call the toll-free numbers; select option 2 and then option 2:		
Australia	1800 678 515	
Austria	0800 297468	
Belgium	0800 71429	
Denmark	800 17309	
Finland	0800 113153	
France	0800 917959	
Germany	0130 821502	
Hong Kong	800 933 486	
Hungary	06800 12813	
Indonesia	001 80061 009	
Ireland	1 800 553117	
Israel	1 800 9453794	
Italy	800 879489	
Malaysia	1800 801777	
Netherlands	0800 0227788	
New Zealand	0800 446 398	
Norway	800 11376	
P.R. of China	10 800 61 00137	
Philippines	1235 61 266 2602	
Poland	0800 3111206	
Portugal	0800 831416	
South Africa	0800 995014	
South Korea	00798 611 2230	
Spain	900 983125	
Sweden	020 795482	
Switzerland	0800 55 3072	
Taiwan, R.O.C.	0080 611 261	
Thailand	001 800 611 2000	
U.K.	0800 966197	
Latin America	1 408 326 2927	1 408 326 3355
U.S.A. and Canada	1 800 527 8677	1 408 326 7120

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WARRANTY AND REGULATORY COMPLIANCE

3Com Corporation Limited Warranty

This warranty applies to customers located in the United States, Australia, Canada (except Quebec), Ireland, New Zealand, U.K., and other English language countries, and countries for which a translation into the local language is not provided

3Com AirConnect 11 Mbps Wireless LAN PC Card

HARDWARE

3Com warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for the following length of time from the date of purchase from 3Com or its authorized reseller:

Three (3) years

Spare Parts and Spares Kits are warranted for ninety (90) days

3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products or parts may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

SOFTWARE

3Com warrants to Customer that each software program licensed from it, except as noted below, will perform in substantial conformance to its program specifications, for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product or from use of the software product not in accordance with 3Com's published specifications or user manual.

The site survey software is licensed "AS IS".

THIS 3COM PRODUCT MAY INCLUDE OR BE BUNDLED WITH (1) THIRD PARTY SOFTWARE, OR (2) 3COM SOFTWARE WHICH IS USED WITH THE LINUX OPERATING SYSTEM, THE USE OF WHICH IS GOVERNED BY A SEPARATE END USER LICENSE AGREEMENT. THIS 3COM WARRANTY DOES NOT APPLY TO SUCH THIRD PARTY SOFTWARE OR 3COM LINUX SOFTWARE. FOR THE APPLICABLE WARRANTY, PLEASE REFER TO THE END USER LICENSE AGREEMENT GOVERNING THE USE OF SUCH SOFTWARE OR THE ACCOMPANYING DOCUMENTATION RELATING TO SUCH SOFTWARE

YEAR 2000 WARRANTY

In addition to the Hardware Warranty and Software Warranty stated above, 3Com warrants that each product sold or licensed to Customer on and after January 1, 1998 that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site, http://www.3com.com/products/yr2000.html, as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

OBTAINING WARRANTY SERVICE

Customer must contact a 3Com Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase from 3Com or its authorized reseller may be required. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a User Service Order (USO) number (or a Return Material Authorization (RMA) number or a Service Repair Order (SRO) number, whichever was issued) marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured or sent by a method that provides for tracking of the package. Responsibility for loss or damage does not transfer to 3Com until the returned item is received by 3Com. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after 3Com receives the defective product, and 3Com will retain risk of loss or damage until the item is delivered to Customer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

Dead- or Defective-on-Arrival. In the event a product completely fails to function or exhibits a defect in materials or workmanship within the first forty-eight (48) hours of installation but no later than thirty (30) days after the date of purchase, and this is verified by 3Com, it will be considered dead- or defective-on-arrival (DOA) and a replacement shall be provided by advance replacement, but only if Customer provides a purchase order number, credit card number, or other method of payment acceptable to 3Com, to be used if 3Com needs to charge Customer for the replacement, as explained below. The replacement product will normally be shipped not later than three (3) business days after 3Com's verification of the DOA product, but may be delayed due to export or import procedures. The shipment of advance replacement products is subject to local legal requirements and may not be available in all locations. When an advance replacement is provided and Customer fails to return the original product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement product, at list price.

INCLUDED SERVICES: Telephone Support, with coverage for basic troubleshooting only, will be provided for ninety (90) days from the date of purchase, on a commercially reasonable efforts basis. Telephone support is available from 3Com only if Customer purchased this product directly from 3Com, or if Customer's reseller is unable to provide telephone support. Please refer to the Technical Support appendix in the User Guide for telephone numbers.

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This Limited Warranty shall be governed by the laws of the State of California, U.S.A. excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.

3Com Corporation
5400 Bayfront Plaza
Santa Clara, CA 95054
(408) 326-5000
January 3, 2000

Regulatory Compliance Information

RADIO FREQUENCY INTERFERENCE REQUIREMENTS

This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If the 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:

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

CANADA

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

CE Marking and European Union Compliance

Products intended for sale within the European Union are marked with the CEMark which indicates compliance to applicable Directives and European Normes (EN), as follows. Amendments to these Directives or ENs are included: Normes (EN), as follows.

Applicable Directives:

- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

Applicable Standards:

- EN 55 022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information technology Equipment
- EN 50 082-1 - Electromagnetic Compatibility - Generic Immunity Standard, Part 1: Residential, commercial, Light Industry
- IEC 801.2 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 2: Electrostatic Discharge Requirements
- IEC 801.3 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 3: Radiated Electromagnetic Field Requirements
- IEC 801.4 - Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment Part 4: Electrical Fast Transients Requirements
- EN 60 950 + Amd 1 + Amd 2 - Safety of Information Technology Equipment Including Electrical Business Equipment
- EN 60 825-1 (EN 60 825) - Safety of Devices Containing Lasers

3Com End User Software License Agreement

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