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Lucent Technologies
Bell Labs Innovations



orinoco™

USB Client Getting Started

- Introduction
- Installing your USB Client
- Working with ORiNOCO

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About ORiNOCO

1

Introduction

Welcome to Lucent Technologies ORiNOCO, the easy way to wireless computing. Building your wireless network has never been easier.

This book introduces you to the Lucent Technologies ORiNOCO USB Client, and will help you to connect to your network in a snap. It describes the most common configurations.

To install and manage ORiNOCO products, it is assumed that you have a working knowledge of installation procedures for network operating systems under Microsoft Windows.

ORiNOCO Network Scenarios

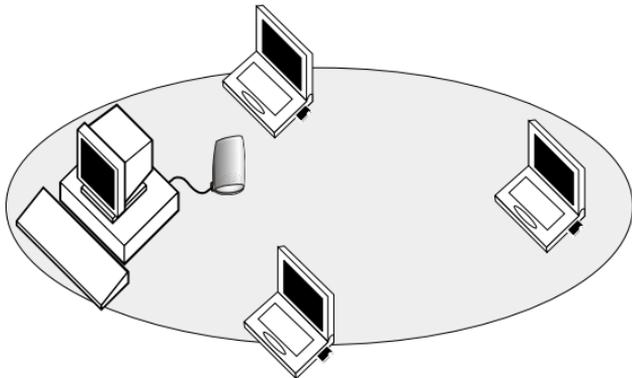
The ORiNOCO USB Client Kit enables you to:

- Connect your computer to a Peer-to-Peer workgroup of wireless computing devices (see Figure 1-1 on page 1-3).
- Connect your computer to a Small Office/Home Office (SOHO) network that includes the Lucent Technologies Residential Gateway access point (see Figure 1-2 on page 1-4).
- Connect your computer to a Local Area Network (LAN) Infrastructure that includes Lucent Technologies ORiNOCO Access Points, or other IEEE 802.11 compliant LAN systems (see Figure 1-3 on page 1-5).

Wireless stations can be equipped with the ORiNOCO USB Client, but also with PC Card or PCI Adapter. All ORiNOCO adapters share the same wireless functionality.

Peer-to-Peer Workgroup

The Peer-to-Peer workgroup configuration enables you to quickly set up a small wireless workgroup, where the workgroup participants can exchange files using features like “Files and Printer Sharing” as supported by Microsoft Networking.

Figure 1-1 Peer-to-Peer Wireless Workgroup

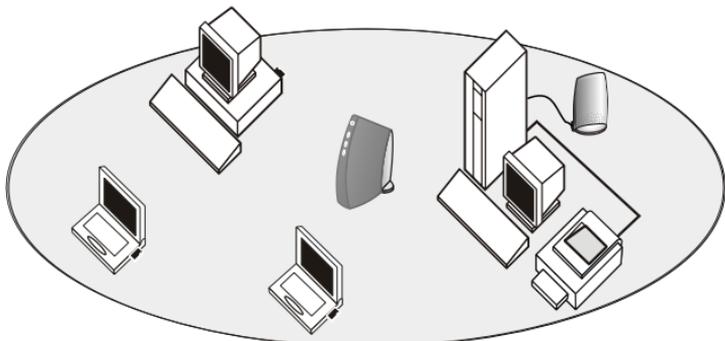
You can use this option to setup a temporary or ad-hoc network in environments where no access points are available (for example in Small Office/Home Office (SOHO) environments).

As long as the stations are within range of one another, this is the easiest and least expensive way to set up a wireless network.

Home Networking

With the Lucent Technologies Residential Gateway, wireless access to the Internet or other computers is at your fingertips.

Figure 1-2 Connect to the Residential Gateway



All you need to do is connect the wireless computers to the Residential Gateway, and you're ready to:

- Share files and printers, and
- Access the Internet via the built-in modem of the Residential Gateway.

Optionally the Residential Gateway allows you to connect your wireless stations to previously installed wired computers and/or an external cable, xDSL or ISDN modem.

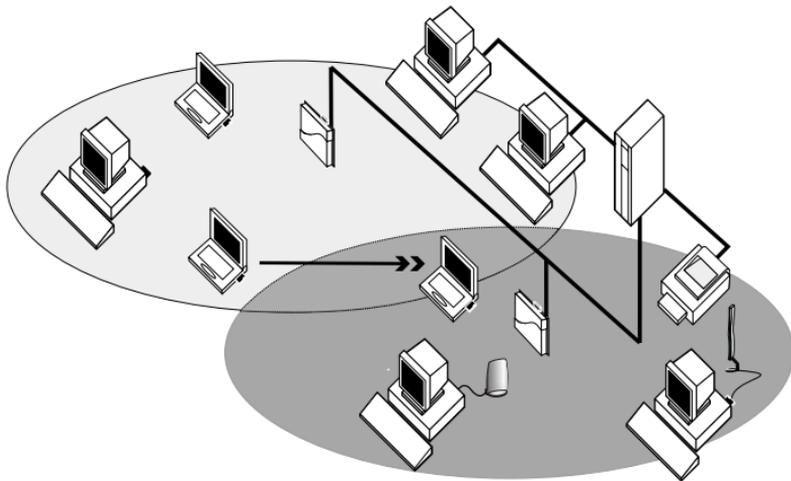
Enterprise Networking

With the ORiNOCO Access Point you can connect to a corporate Local Area Network (LAN) infrastructure to have wireless access to all network facilities.

LAN Infrastructures may either be:

- Stand-alone wireless LANs.
- Wireless network infrastructures connected to an existing Ethernet network as pictured in Figure 1-3.

Figure 1-3 LAN Infrastructure



It's Easy

The ORiNOCO USB Client functions like any standard wired Ethernet card, but ORiNOCO does not need any wires!

Where an Ethernet card requires a cable connection to a hub and/or patch panel, the cable physically ties you down to the location of the wired connection.

ORiNOCO allows you to connect your computer to a Local Area Network (LAN) system from anywhere within the wireless coverage area. Expanding or re-designing your network is easy: Add or relocate Access Points and/or Residential Gateways, power-up your (new) ORiNOCO computers, and you're done!

Unlike Ethernet, ORiNOCO client adapters and Access Points will enable you to roam throughout the network while remaining connected to the LAN.



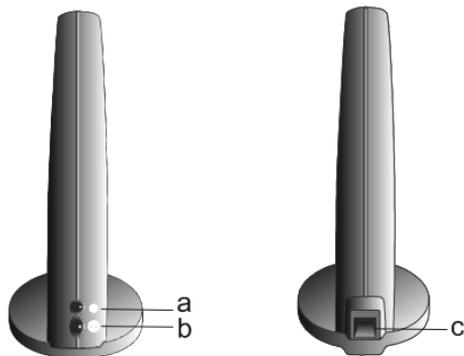
NOTE:

The ORiNOCO USB Client is a radio product. Refer to the flyer “Information to the User” for regulatory information that may apply in your country.

ORiNOCO USB Client Features

The ORiNOCO USB Client is a wireless network device that is connected through the USB cable to any standard USB connector.

Figure 1-4 USB Client LEDs and Connector



- a. Power ON/OFF LED.
- b. Transmit/ Receive LED.
 - Off - No wireless activity.
 - Blinking - Sensing/transmitting wireless data.
 - Solid Green - standard operational mode.
- c. USB Connector.

The ORiNOCO USB Client is:

- Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA). This means that your ORiNOCO hardware will communicate with other vendors' IEEE 802.11 compliant wireless LAN products.
- Fully compatible with any other wireless LAN system based on Direct Sequence Spread Spectrum (DSSS) radio technology that complies with the "IEEE 802.11 standard on wireless LANs (Revision B)".
- Compatible with the Universal Serial Bus revision 1.1. specification (Sept. 23, 1998).



The ORiNOCO USB Client supports the following wireless LAN features:

- Automatic Transmit Rate Select mechanism in the transmit range of 11, 5.5, 2 and 1 Mbit/s.
- Frequency Channel Selection (2.4 GHz).
- Roaming over multiple channels.
- Power Management.
- Wired Equivalent Privacy (WEP) data encryption:
 - (Silver)
 - 128-bit RC4 Encryption (Gold)

About the ORiNOCO CD-ROM

The ORiNOCO CD-ROM contains both software and documentation for all ORiNOCO products in indoor environments.

If you wish to install ORiNOCO drivers and software, turn to “Install your USB Client” on page 2-1 and follow the instructions as described for installing your ORiNOCO USB Client.



NOTE:

Prior to copying or installing the software, you are advised to read the Software License Agreement “License.txt”, located in the root folder of the CD-ROM. By installing, copying or using the ORiNOCO software, you are consenting to be bound by this agreement. If you do not agree to all of the terms of the Software License Agreement, do not download, copy or install the ORiNOCO software.

It is the policy of Lucent Technologies to improve products as new technology, components, software and firmware become available. Before you proceed with the installation of this product, we recommend you to consult the ORiNOCO website to:

- Verify if newer versions of the software that was shipped with your product are available.
- Download and install the latest software with your purchased product.

You can download the latest software and documentation from the support pages of the ORiNOCO website at: <http://www.lucent.com/orinoco>.

The folder “\Xtras\Acrobat\Windows” includes a copy of the **Adobe Acrobat Reader**®, required to view and/or print the ORiNOCO user documentation included on this CD-ROM.



NOTE:

The Adobe Acrobat Reader is owned by and licensed from Adobe Systems Incorporated. This software is provided “as is”.

Lucent Technologies makes no warranty or representation, express or implied, relating to the completeness, reliability, effectiveness, accuracy, performance, or operation of the Adobe software, or as to its suitability, merchantability or fitness for a particular purpose or against infringement of intellectual property rights of any party.

For more information about Adobe Acrobat software, please consult the Adobe Website at: <http://www.adobe.com/acrobat>.

Install your USB Client

2

Quick Overview

This chapter describes the installation of the ORiNOCO USB Client for Microsoft Windows operating systems only¹.

To install your USB Client:

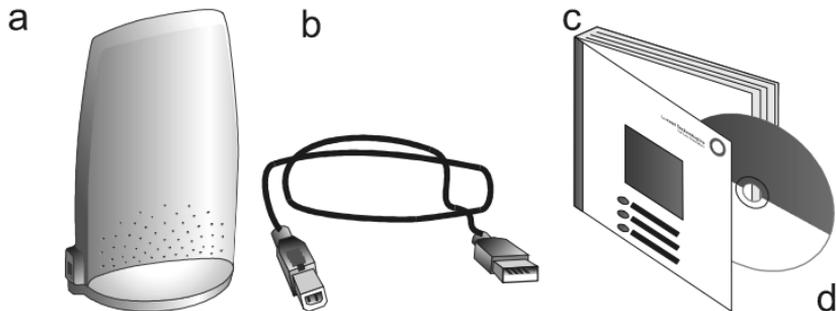
1. Verify kit contents (see page 2-2).
2. Insert the ORiNOCO CD-ROM and install the Client Manager Software (see page 2-3).
3. Connect your USB Client to your computer (see page 2-5).
4. Follow the instructions on the screen to install drivers (see page 2-6).
5. Set Windows Network Properties (see page 2-8)
This step is only required if this is the first time you are installing a network adapter on your computer.
6. Set basic parameters to connect to wireless network (see page 2-10).
7. Finish installation: Specify drive and directory of the ORiNOCO software and restart your system (see page 2-18).

1. The USB Client does not support Windows NT, Windows 95 and Windows 3.11.

Verify Kit Contents

Unpack your ORiNOCO USB Client kit and verify that all items are present.

Figure 2-1 ORiNOCO Kit Contents



- a. One ORiNOCO USB Client.
- b. One USB Cable.
- c. One “ORiNOCO USB Client Getting Started Guide” (this document).
- d. One CD-ROM containing drivers, software and electronic documentation.

If any of the items described appear to be damaged or missing, please contact your supplier.

Install the Client Manager Software

The ORiNOCO Client Manager program is a software tool that you can use to check the quality of your wireless connection to the network.



NOTE:

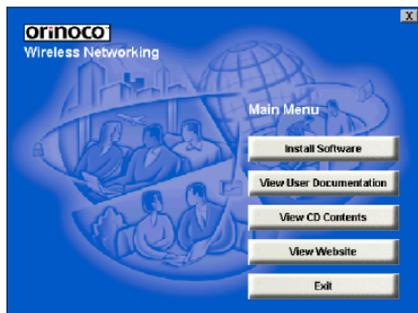
It is not mandatory to install the Client Manager program in order to establish a network connection, but it provides you with more options to:

- View/modify the settings of your network connection.
- Monitor your network connection.

To install the Client Manager software, proceed as follows:

1. Insert the ORiNOCO CD-ROM that came with your kit in your CD-ROM drive.
Your operating system will automatically start the CD and display the menu pictured in Figure 2-2 on page 2-4.
2. Select button **Install Software**.
3. Select **Install Client Manager**.
4. Follow the instructions on your screen.

Figure 2-2 Start-Up Screen ORiNOCO CD-ROM



NOTE:

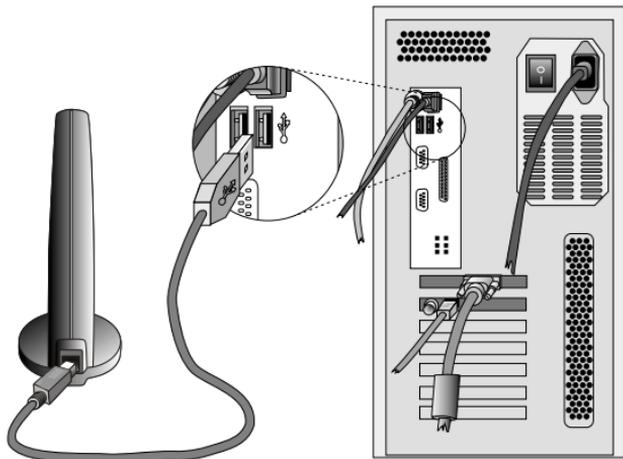
If the CD-ROM does not start automatically:

1. Open Windows Explorer
2. Navigate to the CD-ROM drive
3. Double-click the file "**setup.exe**".

Connect your ORiNOCO USB Client

Connect your ORiNOCO USB Client to your computer as pictured in Figure 2-3.

Figure 2-3 Connect USB Client to Your Computer



NOTE:

Both USB slots on the PC are equivalent.

Install Drivers

Before You Start the Installation

Before you start the installation, you are advised to keep the Windows CD-ROM or software diskettes close at hand. If your computer came with a factory-installed Windows operating system, these files will be stored on your computer's hard disk, in the form of cabinet (*.cab) files.



NOTE:

If you are upgrading from an earlier driver version, please consult “Troubleshooting” on page B-1.

What You Need to Know

Installing your ORiNOCO USB Client requires the same level of expertise that you would need to install a standard Ethernet network adapter card. It is assumed that you have a working knowledge of standard Windows operations and of installing network adapter cards. Refer to the Windows Help when necessary (on the Windows Taskbar, press the **Start** button and select **Help**).

Driver Installation for Windows

To install the driver proceed as follows:

1. If Windows starts the **Add New Hardware** wizard, follow the instructions of the **New Hardware Found** wizard to install the drivers.

When you are prompted to locate the driver installation files, select the ORiNOCO CD-ROM included with the USB Client Kit and browse to the folder that matches your operating system:

- Windows ME: D:\Drivers\Win_ME
- Windows 98: D:\Drivers\Win_98 or
- Windows 2000: D:\Drivers\Win_2000.

Where "D:\\" represents the drive letter of your CD-ROM drive.

When finished installing the drivers, Windows automatically opens the **Add/Edit Configuration Profile** window.

2. Continue with "Set Windows Network Properties" on page 2-8.



NOTE:

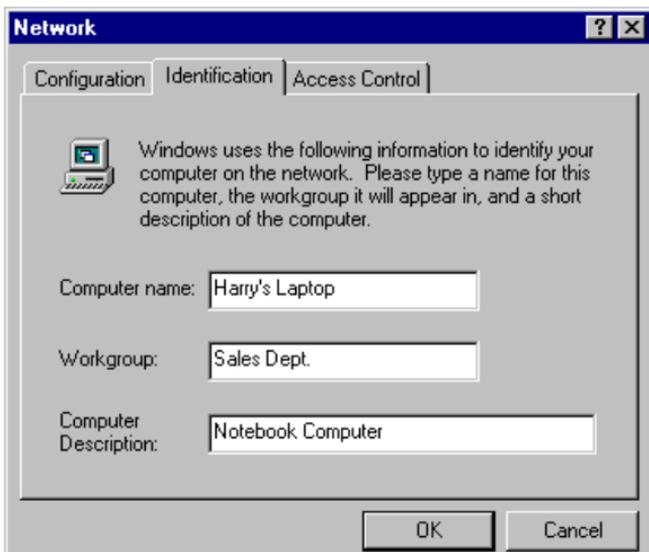
If your computer does not detect the new hardware consult "Troubleshooting" on page B-1.

Set Windows Network Properties

If this is the very first time that network support is installed onto your computer, the screen displayed in Figure 2-4 will automatically appear.

If network support is already installed, continue with “Set Basic Parameters” on page 2-10.

Figure 2-4 Windows Network Identification Properties



The Windows operating system will prompt you to enter a computer and workgroup name. These names will be used to identify your computer on the Microsoft Network Neighborhood.

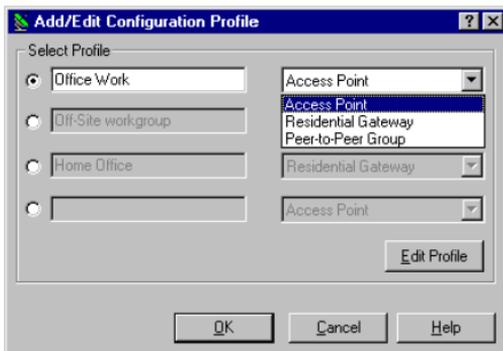
1. In the **Computer name** field, enter a unique name for your computer.
2. In the **Workgroup** field, enter the name of your workgroup.
3. (Optional) Provide a description of the computer in the **Computer Description** field.

For more information about setting your Windows Network properties, consult your Windows documentation or the Windows on-line help information.

Set Basic Parameters

After installing the drivers, Windows will open the Add/Edit Configuration Profile window for your ORiNOCO USB Client as pictured in Figure 2-5.

Figure 2-5 Add/Edit Configuration Profile window



The Add/Edit Configuration Profile window enables you to specify one or more network connection profiles.

For example you can setup profiles for:

- **Office**, to connect to an Enterprise Network via an Access Point (AP-1000 or AP-500).
- **Workgroup Computing**, to share files with colleagues or friends in small Peer-to-Peer workgroups without access point.

- **Home**, to connect to the Residential Gateway that provides access to the Internet or your home printers.

For more information about the different types of networks, refer to “ORINOCO Network Scenarios” on page 1-2.

To connect your computer to a wireless network you will need to:

1. Assign a name to the selected profile.
2. Use the pull-down menu on the right to select how you wish to connect to the wireless network.
3. Click the **Edit Profile** button to view/modify the parameters for the selected profile.

For first-time installations, you are advised to setup a single profile using only the Basic Settings.



NOTE:

The number and type of parameters you need to specify may differ according to the selected connection type:

- To connect to an Access Point see page 2-12.
- To connect to the Residential Gateway see page 2-13.
- For a Peer-to-Peer connection, see page 2-16.

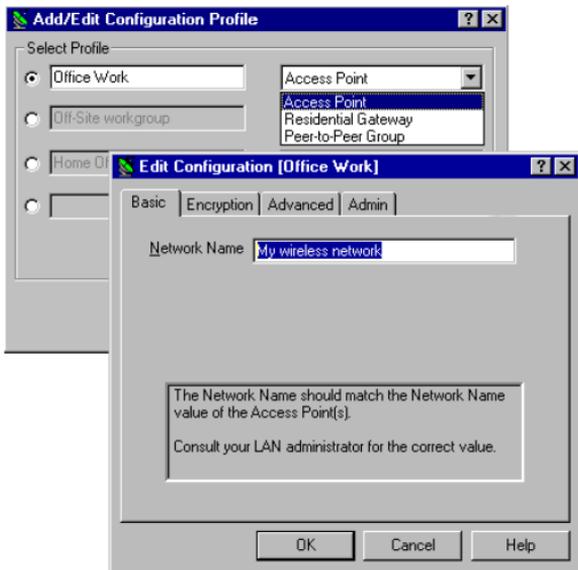
For information about various options press the **F1** key or click the **Help** button.

Basic Settings for Enterprise Networks

If you wish to connect to an Enterprise Network, use the Add/Edit Configuration Profile window to:

- Select to connect to an **Access Point**.
- Set the correct **Network Name**.

Figure 2-6 Edit Configuration window



1. In the field **Network Name** define the name of the wireless network to which you want to connect. You can use:
 - The value “**ANY**” (all characters uppercase), to connect to any wireless LAN network in the vicinity of your computer.
 - An “exact” value to connect to a specific wireless network. Consult your LAN Administrator for the value that applies to your network. The Network Name can be any alphanumeric string in the range of “a” to “z”, “A” to “Z” and “0” to “9” with a maximum of 32 characters (case-sensitive).
2. Click **OK** to confirm and return to the Add/Edit Configuration Profile window.
3. Click **OK** again to finish with the installation as described on page 2-18.

The Add/Edit Configuration window also provides you the possibility to change other parameters described in “Advanced Configurations” on page 4-1 and in the on-line help file of the drivers.

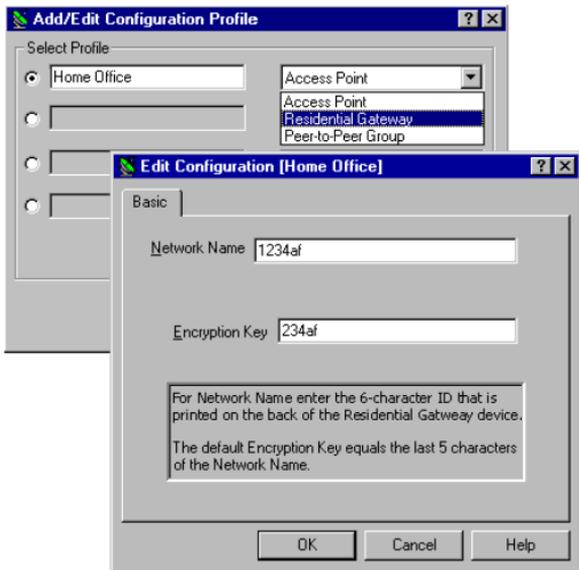
You are advised to leave these parameters to their default settings, unless there are special situations, for example, upon advice of the ORiNOCO expert.

Basic Settings for Residential Gateways

If you wish to connect to a Home Network via the Residential Gateway, use the Add/Edit Configuration Profile window to:

- Select to connect to the **Residential Gateway**.
- Set the correct **Network Name** and **Encryption Key**.

Figure 2-7 Edit Configuration window: Residential Gateway



1. In the field **Network Name** enter the 6-character Network Name to define the name of the wireless network to which you want to connect. The Network Name has to match the unique Network Name (which can be found on the label on the bottom of the device).
2. In the **Encryption Key** field enter the last 5 digits of the Network Name (default).



NOTE:

If you changed the default Encryption Key on the Residential Gateway you will need to enter the new value here as well.

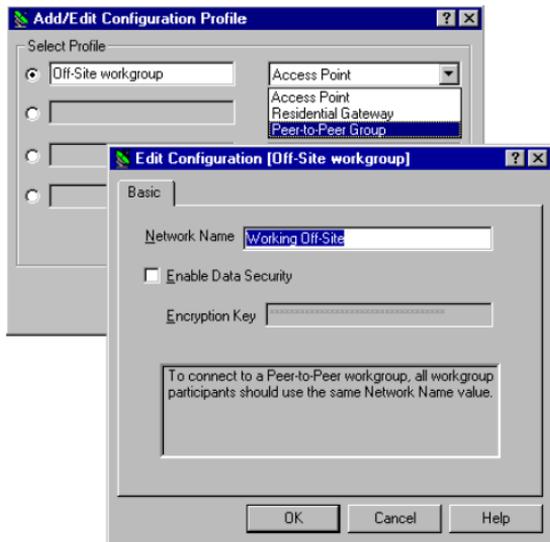
3. Click **OK** to confirm and return to the Add/Edit Configuration Profile window.
4. Click **OK** again to finish the installation as described on page 2-18.

Basic Settings for Peer-to-Peer Workgroups

If you wish to connect to a Peer-to-Peer workgroup, use the Add/Edit Configuration Profile window to:

- Select to connect to a **Peer-to-Peer Workgroup**.
- Set the correct **Network Name** and **Encryption Key**.

Figure 2-8 Edit Configuration window: Peer-to-Peer



1. In the field **Network Name** define the name of the wireless network to which you want to connect.

The Network Name can be any alphanumeric string in the range of “a” to “z”, “A” to “Z” and “0” to “9” with a maximum of 32 characters (case-sensitive).

- If there is already a Peer-to-Peer group with this name available your computer will automatically connect to this workgroup.
 - If there is not yet such a group available, your computer will automatically start one with this name.
2. Click **OK** to confirm and return to the Add/Edit Configuration Profile window.
 3. Click **OK** again to proceed with the installation.
Continue with “Finish the Installation” on page 2-18 to complete the installation procedure.

Finish the Installation

When you have completed the setting of the Basic Parameters, Windows will finish building the driver configuration database and copy some files to your computer's hard disk.

- If the Windows operating system prompts you to identify the location of the Windows files, specify the drive and directory of the Windows Installation CD-ROM.

When you had the USB Client installed on your computer before, most of these files are already available on your hard disk drive. If you do not have the Windows CD-ROM available, you may try replacing the proposed path in the Copy Files From dialog box with:

"C:\Windows\System" or **"C:\Windows"**

- If the Windows operating system prompts you to identify the location of the ORiNOCO driver files (typically file names starting with the characters **"WLLUCxx.*"** or **"WNLUCxx.*"**) specify the drive and directory of the ORiNOCO Software:
 - Windows ME: D:\Drivers\Win_ME
 - Windows 98: D:\Drivers\Win_98
 - Windows 2000: D:\Drivers\Win_2000

Where **"D:\"** represents the drive letter of your CD-ROM.

If installing files that you downloaded from the Internet, point to the disk drive or directory where you saved the downloaded files.

When Windows has finished the copying of files, it will prompt you to restart your computer. Click the **Yes** button to restart your computer.

After Restarting Your Computer

To verify if the installation of the drivers was completed successfully, check the LEDs on your USB Client.



A steady green Power LED to indicate the USB Client is connected to your computer.



A flickering green Transmit/Receive LED to indicate wireless activity.

For other LED behavior see “Troubleshooting” on page B-1.

(Optional) Check the quality of the wireless network connection, using the ORiNOCO Client Manager program (see “Install the Client Manager Software” on page 2-3).

Using ORiNOCO and Windows

3

Introduction

This chapter provides general information about:

- Using your USB Client
- Viewing Other Computers
- Using the Client Manager
 - View Wireless Link Quality
 - View/Modify USB Client Settings
- Finding More Information

Using your USB Client

Radio Antennas

The built-in radio and antennas of your ORiNOCO USB Client perform best in an open environment with as few obstacles as possible. To achieve the maximum range for wireless communications, do not cover the USB Client device with any objects.

Remove the USB Client

If you do not need the wireless connectivity of your ORiNOCO USB Client, you can disconnect and remove the USB Client.



CAUTION:

When removing the ORiNOCO USB Client you will lose your connection to the network. Prior to removing the USB Client, make sure you have closed all files and network applications (such as e-mail).

Maintenance of your USB Client

To clean the USB Client, gently wipe it with a soft (damp) cloth. To avoid damage to the USB Client do not use abrasive materials, or rinse the device with liquids.

Viewing Other Computers

When multiple ORiNOCO stations are up and running in your wireless network, you can use the procedure described below to display the other computers:

1. Start Windows Explorer.
2. Scroll down the list of files and folders to look for the item **Network Neighborhood**.
3. Double-click the **Network Neighborhood** item to display all stations in your Microsoft Networking Group.
4. To display other workgroups in the network environment, double-click the **Entire Network** icon.
5. If there is a second network operating system running in your network environment (for example a Novell NetWare network), the “Entire Network” window will also display available servers running under the second network operating system.

If you click on these servers, you may be asked to enter your user name and password that applies to the other network operating system.

If you cannot find other (ORiNOCO) networked computers, verify whether the other ORiNOCO computers are:

- Powered up and logged on to the network.
- Configured to operate with identical Microsoft Network settings concerning:
 - Networking Protocol.
 - Wireless Network Name

— Workgroup Name

To view or modify the **Station Name** or **Workgroup** of your computer, proceed as follows:

1. Click the  button from the Windows task bar.
2. Click on **Settings**, and then on **Control Panel**.
3. In the Control Panel window, double-click the **Network** icon.
4. In the Network Settings window, select the **Identification** tab to verify or change the **Station Name** or **Workgroup**.



NOTE:

You have to restart your computer before changes to the Network Settings will be effected.

To verify the radio connection with other stations refer to “View Wireless Link Quality” on page 3-5.

Using the Client Manager

If you installed the ORiNOCO Client Manager as described in “Install the Client Manager Software” on page 2-3, you can use the Client Manager to:

- Verify the quality of your wireless connection to the network.
- View/Modify the configuration settings of your wireless USB Client.

The Client Manager will start automatically every time you power up your computer.

The Client Manager icon is displayed in the “System Tray” of your Windows task bar at the right-side on the bottom of your screen, indicating that the Client Manager program is running.



- Click the icon once with your **left** mouse button to retrieve a more detailed status overview.
- Click the icon once with your **right** mouse button to display a menu with more options.

View Wireless Link Quality

You can use the Client Manager icon on the Windows task bar to verify the link quality of your network connection.

An overview of all possible icons is given below. When the Client Manager icon is not indicating excellent or good radio connection, act as described below.

Icon	Color	Description
	Green	Excellent radio connection
	Green	Good radio connection
	Yellow	Marginal radio connection: The radio signal is weak. Move closer to the: ■ AP-500 or AP-1000, or ■ Residential Gateway. ■
	Red	Poor radio connection: The radio signal is very weak. Save your files and move closer to the: ■ AP-500 or AP-1000, or ■ Residential Gateway. ■
	Red	No radio connection because: ■ Looking for initial connection, or ■ You have moved out of range of the network.
	Blank	No wireless interface detected or Peer-to-Peer network connection.

View/Modify USB Client Settings

If you would like to view or modify ORiNOCO parameters, for example because you would like to connect to another network or type of network, proceed as follows:

1. Right-click on the Client Manager icon  on the Windows task bar.
2. From the menu, select **Configuration Profile** (see Figure 3-1) and select:
 - **Add/Edit Profile** to add a new profile or to modify an existing profile.
 - **One of the existing profiles** (if present) to select one of the defined profiles without viewing or modifying the settings.

After selecting another profile, the USB Client will use the selected profile to connect to the wireless network.

Figure 3-1 Edit Wireless Configuration Settings



If your Client Manager icon is not visible, you have to start the Client Manager program again:

1. Click the  button from the Windows task bar.
2. Select **Programs**, and then select the **ORiNOCO** workgroup.

3. Next select **Client Manager** to start the program.

Alternatively you can use change the USB Client settings via the Control Panel:

1. Click the  **Start** button from the Windows task bar.
2. Select **Settings**, and then select **Control Panel**
3. In the Control Panel window, double-click the **Wireless Network** icon.
4. (Optional) Change the parameters you would like to modify, and click
 - the **OK** button to confirm your changes, or
 - the **Cancel** button to ignore your modifications.

Finding More Information

If you are looking for more information than contained in this manual, please consult one of the following options:

- The on-line help system of your ORiNOCO wireless system - for information about software and driver functionality.

To view the on-line help system click the **Help** button or press the **F1** function key on your keyboard in any ORiNOCO window, or

- The “ORiNOCO Manager Suite - User’s Guide” - a reference guide for LAN Administrators that need to setup, monitor and manage corporate LANs.
- The ORiNOCO website at: <http://www.lucent.com/orinoco> - for frequently asked questions (FAQ's) and Software Updates.



Advanced Configurations

4

Introduction

Although your ORiNOCO USB Client will work fine in most network environments with the Basic Parameters as described on page 2-10, you may wish to explore the Advanced Parameters options as displayed on the ORiNOCO USB Client's Edit Configuration window:

- Encryption Parameters Tab.
- Advanced Parameters Tab.
- Admin Parameters Tab.



NOTE:

The Advanced and Admin Parameter Tabs are not available for peer-to-peer workgroups or Residential Gateway networks.

Encryption Parameters Tab

The Encryption tab enables you to define the encryption keys that your ORiNOCO USB Client should use to:

- Encrypt data that will be transmitted via the wireless interface.
- Decrypt wireless messages received via its wireless interface.



CAUTION:

Encryption needs to be the same for all ORiNOCO stations.

Figure 4-1 Setup ORiNOCO Encryption Parameters



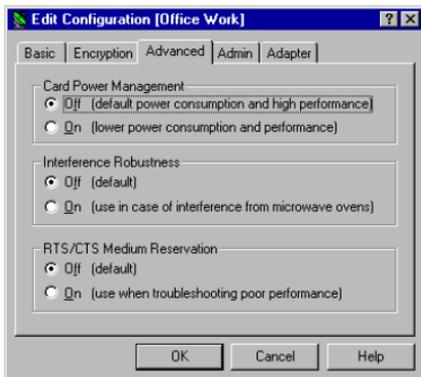
You can identify up to 4 different key values to decrypt wireless data, and select one of these keys to encrypt wireless data transmissions.

For more information consult your LAN Administrator. You can also refer to the help file and the “ORiNOCO Manager Suite - User’s Guide”.

Advanced Parameters Tab

The Advanced parameters tab of the Edit Configuration window allows you to adjust the parameters listed below.

Figure 4-2 Setup ORiNOCO Advanced Parameters



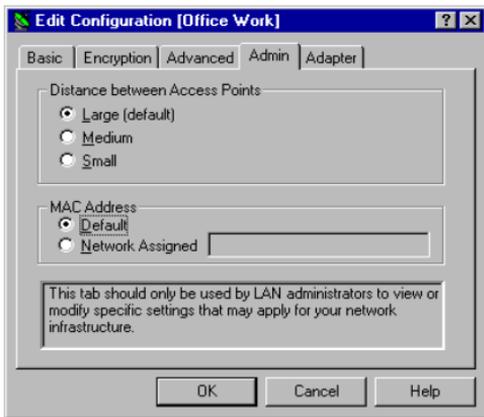
- **Card Power Management** to extend the battery life of (mobile) devices.
- **Interference Robustness** to troubleshoot slow performance related to in-band interference from microwave ovens.
- **RTS/CTS Medium Reservation** to troubleshoot poor performance if density of ORiNOCO stations and access points is very low, or excessive frame collisions occur at the access points.

For more information consult your LAN Administrator. You can also refer to the help file and the “ORiNOCO Manager Suite - User’s Guide”.

Admin Parameters Tab

The Admin parameters tab allows network administrators to tune the parameters listed below in network environments that require specific settings.

Figure 4-3 Setup ORiNOCO Admin Parameters



- **Distance between Access Points** is an option that controls the network performance depending on the number of access points in the ORiNOCO network.
- **MAC Address** is a special option for network systems that require Local MAC Addresses.



For more information consult your LAN Administrator. You can also refer to the help file and the “ORiNOCO Manager Suite - User's Guide”.

USB Client Specifications



Physical Specifications

Dimensions	(LxWxH)	63 x 89 x 145 mm
Weight	170 gram	
Cable length	100 cm	
Temperature & Humidity		
Operation	0° to 40° C ¹	
Transit	-20° to 75° C	maximum humidity 95% (no condensation allowed)
Storage	-20° to 75° C	

1. Although the USB Client may still operate in the range of -20° to 70°C, operation outside the range of 0° to 40° C may no longer be according to specifications.

Power Characteristics

Doze Mode	10 mA
Receive Mode	245 mA (Nominal)
Transmit Mode	360 mA (Nominal)
Power Supply	5 V

Networking Characteristics

Compatibility	<ul style="list-style-type: none">■ IEEE 802.11 Standard for Wireless LANS (DSSS)■ Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA).■ Universal Serial Bus Revision 1.1. specification
Host Operating System	Microsoft Windows® 98, ME and 2000: <ul style="list-style-type: none">■ NDIS5 Miniport Driver
Media Access Protocol	CSMA/CA (Collision Avoidance) with Acknowledgment (ACK)

Regulatory Information

Wireless communication is often subject to local radio regulations. Although ORiNOCO wireless networking products have been designed for operation in the license-free 2.4 GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment.



NOTE:

Refer to the flyer “Information to the User” for more regulatory information that may apply in your country.

Radio Characteristics

R-F Frequency Band	2.4 GHz (2400-2500 MHz)				
Supported sub-channels	1	2412			
	2	2417			
	3	2422			
	4	2427			
	5	2432			
	6	2437			
	7	2442			
	8	2447			
	9	2452			
		10	2457		
		11	2462		
Modulation Technique	Direct Sequence Spread Spectrum CCK 11 & 5.5 Mb/s, DQPSK for 2 Mb/s and DBPSK for 1 Mb/s				
Spreading	11-chip Barker Sequence				
Bit Error Rate (BER)	Better than 10 ⁻⁵				
Nominal Output Power	15 dBm				
Encryption	64-bit Wired Equivalent Privacy (WEP) - Silver 128-bit (RC4) - Gold				
Range / Transmit Rate	11 Mb/s	5.5 Mb/s	2 Mb/s	1 Mb/s	
Open Office Environment	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)	
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)	
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft.)	

Receiver Sensitivity	-83 dBm	-87 dBm	-91 dBm	-94 dBm
Delay Spread (FER of <1%)	65 ns	225 ns	400 ns	500 ns

The range of the wireless signal is related to the Transmit Rate of the wireless communication. Communications at lower Transmit range may travel larger distances.



NOTE:

The listed range values listed are typical distances as measured at the Lucent Technologies ORiNOCO laboratories. These values may provide a rule of thumb and may vary according to the actual radio conditions at the location where the ORiNOCO product will be installed.

- The range of your wireless devices can be affected when the antennas are placed near metal surfaces and solid high-density materials.
- Range is also impacted due to “obstacles” in the signal path of the radio that may either absorb or reflect the radio signal.

The listed ranges are typical ranges when used indoors in “office environments” that can be described as follows:

- In Open Office environments, antennas can “see” each other, i.e. there are no physical obstructions between them.
- In Semi-open Office environments, work space is divided by shoulder-height, hollow wall elements; antennas are at desktop level.
- In Closed Office environments, work space is separated by floor-to-ceiling brick walls.

Introduction

This appendix is divided into a number of sections, each with its own specific troubleshooting tips:

1. Common Troubleshooting Tips:
 - Can Not Connect To The Network (page B-4).
 - Can Not Edit Configuration Profile (page B-5).
 - LEDs Work But Can Not Connect to Network (page B-4).
 - Can Not Edit Configuration Profile (page B-5).
2. Windows 98/ME Troubleshooting Tips (page B-7):
 - Update the Driver (page B-7).
 - Remove the Driver (page B-9).
3. Windows 2000 Troubleshooting Tips (page B-13):
 - Update the Driver (page B-13).
 - Remove Existing USB Client Drivers (page B-14).

Common Troubleshooting Tips

LED Activity

If you encounter difficulty using and/or installing your ORiNOCO product, the error may be related to various causes:

- Out-of range situation, which prevents the ORiNOCO USB Client from establishing a wireless connection with the network.
- Configuration mismatch, which prevents the ORiNOCO USB Client from establishing a wireless connection with the (correct) network.
- Absence of, or conflict of the ORiNOCO Driver.
- A problem or conflict with the USB Client connector which prevents the USB Client from powering on.
- A conflict of the ORiNOCO hardware with another device.

The starting point to troubleshoot problems with your ORiNOCO USB Client is looking at the LED activity of the ORiNOCO USB Client.

Table B-1 on page B3 provides an overview of the various modes of operation and the associated LED activity. It also includes a number of troubleshooting hints, if required, that may help you solve the problem.

Table B-1 LED Status Table

Power	 	Transmit/Receive	Description/Action
Continuous Green		Blinking	Standard operational mode. <ul style="list-style-type: none"> ■ USB Client is powered on. ■ Sensing/transmitting wireless data.
		Off	<ul style="list-style-type: none"> ■ USB Client is powered on. ■ No wireless activity. No action is required.
Off		Off	USB Client is not powered on, so it can not transmit/receive data. The cause may be that the USB Cable is not properly connected. Actions: <ul style="list-style-type: none"> ■ Check USB cable connection. ■ Verify the device settings of the USB Client to determine the occurrence of a conflict with another device. If so, change the settings of either your USB Client or the conflicting device to resolve the problem. ■ Verify the versions of the driver, and the embedded software in the USB Client (also referred to as Station firmware). ■ Consult the ORiNOCO website at: http://www.lucent.com/orinoco to see if newer versions are available and if so, upgrade both the embedded software and driver to the latest available version.
Red		Red	Normal behavior at startup indicating startup diagnostics. This LED status only should last a few seconds and will disappear after Windows successfully loads the driver.

 Power	 Transmit/ Receive	Description/Action
Orange or Green	Red	Device error, please contact your Authorized Reseller for Technical Support.

Can Not Connect To The Network

If your USB Client seems to be working fine, but you are not able to connect to the network, this error might be due to a configuration mismatch.

For example if both LEDs of your USB Client blink once every ten seconds, the problem is likely to be caused by a configuration mismatch of:

- Network Name (this value is case-sensitive)
- Encryption Key

Other causes may be:

- No driver loaded
- Station not authorized to access network.
- USB Client defect

LEDs Work But Can Not Connect to Network

If you can not connect to the network while the LEDs indicate that the network is working properly (Power LED is on, Transmit Receive LED blinks) probably the TCP/IP settings of your network are not properly set.

Changing TCP/IP Settings

Consult your LAN Administrator for your the values of your TCP/IP settings.

To change the TCP/IP Settings:

1. On the Windows task bar click the **Start** button
2. Select **Settings** and then select **Control Panel**.
3. On the Control Panel window, double-click on the **Network** icon to view the **Network Properties**.
4. From the list of installed components, check if the **TCP/IP -> ORiNOCO USB Client protocol** is installed.
 - If this protocol is not yet installed, click the **Add** button and select the **TCP/IP** protocol from the list. Refer to the Windows Help for more information.
 - If this protocol is installed, select this protocol and click the **Properties** button. Check if the parameters resemble the settings provided by your LAN Administrator. Make changes if necessary, and click **OK** when you are done.
5. When prompted, restart your computer.

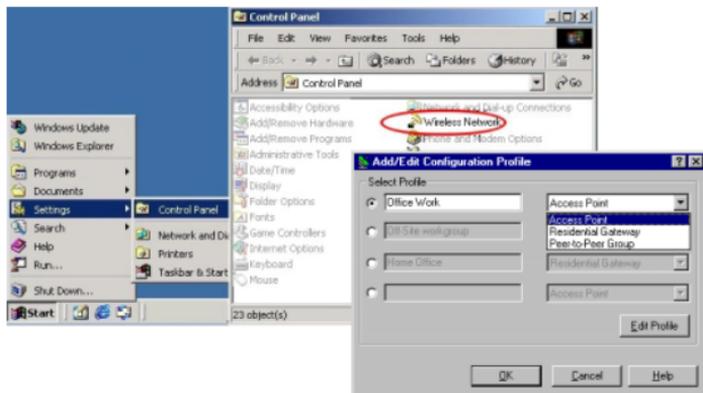
Can Not Edit Configuration Profile

If you want to add/edit the Configuration Profile of your USB Client but the Client manager icon is not visible, you may do the following:

- If the Client Manager is not running, select **Programs**, **ORiNOCO** from the **Start** menu, and select **Client Manager** to start the Client Manager.

- If the Client Manager is not installed, try the following:
 1. From the **Start** menu, select **Settings**, and select **Control Panel**.
 2. In the Control Panel window, double-click the **Wireless Network** icon to open the “Add/Edit Configuration Profile” window pictured in Figure B-1.

Figure B-1 View/Modify ORiNOCO USB Client Settings



Windows 98/ME Troubleshooting Tips

Update the Driver

Upgrading the ORiNOCO Driver may be required in one of the following situations:

- You would like to use new features that have become available for your USB Client.
- You installed a newer version of the Client Manager tool.
- Your Client Manager “Card Diagnostics” reported a Driver/Firmware mismatch.



CAUTION:

Upgrading the ORiNOCO Driver should only be done by a skilled LAN Administrator or support engineer that has a working knowledge of the Microsoft Windows 98/ME operating system.

Windows 98/ME systems feature an “update driver” function that allows you to easily replace the current driver with a more recent version.

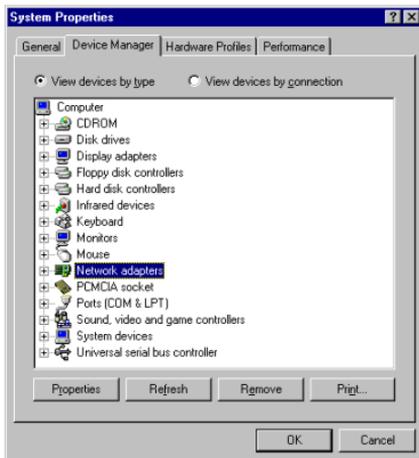
Updating the drivers

1. On the Windows Taskbar, click the **Start** button.
2. Click on **Settings**, and then click **Control Panel**.

3. In the Control Panel window, double-click the **System** icon.
4. In the System Properties window, select the tab **Device Manager**.
5. In the top section of the **Device Manager** tab, select the option **View devices by type** as pictured in Figure B-2.



Figure B-2 The Windows 98 Device Manager tab



6. In the list of computer devices, double-click **Network Adapters**.
7. Select the item **ORiNOCO USB Client** and click the **Properties** button.
8. In the ORiNOCO USB Client Properties window, select the **Driver** tab to display the window pictured in Figure B-3.

Figure B-3 Windows 98 Update Driver Window


- To display information about the currently installed driver, click the **Driver File Details** button.
 - To upgrade your current driver to a newer version click the **Update Driver** button and follow the instructions displayed on your screen.
9. Restart your computer to finish the driver upgrade procedure and to have the new driver loaded by the operating system.
 10. (Optional) Upgrade the Client Manager program.

Remove the Driver

1. Close all applications that are currently open.
2. On the Windows Taskbar, click the **Start** button.

3. Click on **Settings**, then click **Control Panel**.
4. In the Control Panel window, double-click the **Network** icon.
5. Select the **ORiNOCO Adapter** and click the **Remove** button.
The Windows operating system will disable the driver and update the driver configuration files. It will not delete the driver from your computer's hard disk.



This means that when you would re-insert the ORiNOCO USB Client, your Windows operating system will attempt to activate the same driver files again.

6. When prompted to **Restart your computer** select:
 - **Yes**, if you don't mind that the driver and configuration files reside on your hard disk (the restart will finish your procedure to disable the driver).
 - **No**, if you would like to physically remove the drivers from your hard disk (typically required to upgrade the driver on a Windows 98/2000 operating system).

Proceed as described under "Delete the ORiNOCO Driver Files" to delete the driver and its information and configuration files from your hard disk.

Delete the ORiNOCO Driver Files

The procedure to physically remove the ORiNOCO Driver files from your hard disk is similar for all Windows operating systems.

**CAUTION:**

Prior to deleting the files from your hard disk, it is important to remove the drivers as described on page B-9.

Failing to do so prevents the Windows operating system from cleaning the Windows Registry, which might lead to complications when you try to re-install the ORiNOCO driver in the future.

1. Open the Windows Explorer.
2. In the Explorer menu, click on **View** and select **Folder Options**.
3. From the **View** tab, select **Show all files** and clear the check-box **Hide MS-DOS file extensions**.
4. Click the **Apply** button to return to the Explorer window.
5. Back in the Explorer, open the folder “c:\windows\system”.
6. Delete the ORiNOCO driver files listed below:
 - **wlucxx.exe**
 - **wilucxx.dll**
 - **wllucxx.sys**
 - **wnlucxx.cpl**
 - **wulucxx.vxd**
 - **wnlucxx.hlp**
 - **wnlucxx.cnt**
7. Next delete the “inf” file:
Delete the file: “**Lucent TechnologiesWLLUCxx.inf**” from the folder “c:\windows\inf\other” and/or “**LWLLUCXX.INF**” from the folder “c:\windows\inf”.

8. Close the Windows Explorer and Restart your computer.

When deleting the ORiNOCO Driver files was part of an “Upgrade Driver” routine, you can now (re-)install the new ORiNOCO Driver as described in “Install your USB Client” on page 2-1.

Windows 2000 Troubleshooting Tips

Update the Driver

Updating the USB Client Driver may be required in one of the following situations:

- You would like to use new features that have become available for your ORiNOCO USB Client.
- You installed a newer version of the Client Manager tool.
- Your Client Manager “Card Diagnostics” reported a Driver/Firmware mismatch.



CAUTION:

Updating the USB Client Drivers should only be done by a skilled LAN Administrator or support engineer that has a working knowledge of the Microsoft Windows 2000 operating system.

To update previously installed USB Client drivers:

1. Remove Existing USB Client Drivers from your Windows 2000 operating system, and
2. (Re-)Install the driver as described in “Install Drivers” on page 2-6.



NOTE:

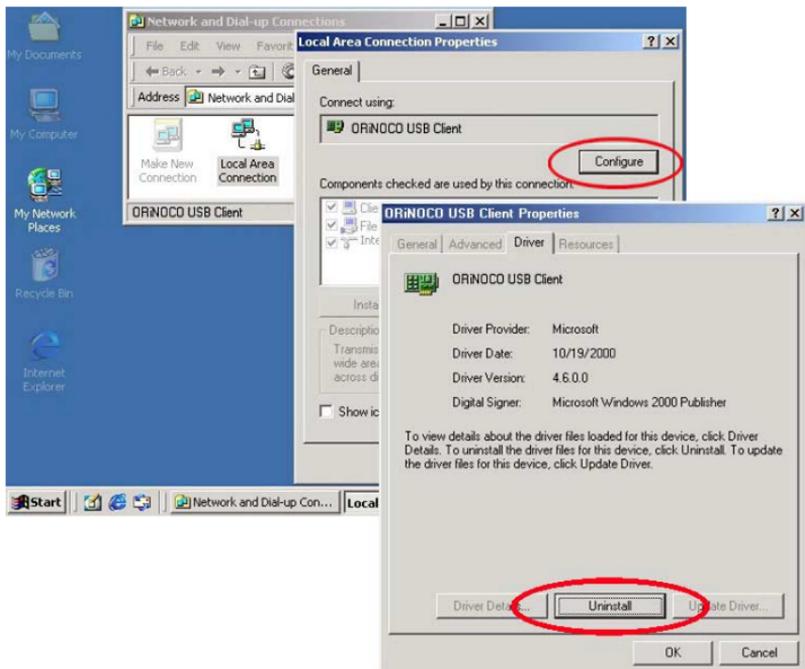
Although the MS-Windows 2000 USB Client Properties window includes a special “update” button, it is not guaranteed that this

button will truly update all driver files. Therefore Lucent Technologies advises you to remove and re-install the driver.

Remove Existing USB Client Drivers

1. Make sure your USB Client is inserted in the USB Client connector of your computer.
2. On your Windows desktop, right-click the **My Network Places** icon and choose **Properties** from the pop-up menu.
3. In the Network and Dial-up Connections window, right-click the **Local Area Connection** icon and select **Properties** from the pop-up menu.
4. Next click the **Configure** button to view the USB Client Properties window.
5. Select the **Driver** tab and click the **Uninstall** button to finish removing the USB Client drivers.
6. Finally disconnect the USB Client from its connector and proceed with the instructions as described under "Install Drivers" on page 2-6.

Figure B-4 Remove USB Client Drivers



Technical Support

If you encounter problems when installing or using this product, please consult the ORiNOCO website at: <http://www.lucent.com/orinoco> for:

- the latest software, user documentation and product updates
- the Frequently Asked Questions (FAQ)

Alternatively please contact your local authorized ORiNOCO reseller for Technical Support.

Help us helping you by completing the ORiNOCO problem report form and include it with your e-mail or fax when contacting Technical Support.

You can find the problem report form (**report.txt**) on:

- the ORiNOCO CD-ROM, and
- the support pages of the ORiNOCO website.

Addresses of authorized ORiNOCO resellers are listed in the “Contact & Ordering” section of the ORiNOCO website.

Repair or Replacement

If it appears that your unit needs a repair or replacement, return to your Dealer/Distributor in its original packaging.

When returning a defective product for Warranty, always include the following documents:

- The Warranty Repair card (last page of this appendix), and
- A copy of the invoice/proof of purchase
- Problem Report Form (see “Technical Support” on page C-1”).

Lucent Technologies extends a limited warranty from date of purchase of:

- Thirty-six (36) months for ORiNOCO hardware products
- Twelve (12) months for the ORiNOCO AP-500
- Twelve (12) months for the media on which the software is furnished and the reproduction of the software on the media.

Upon proof-of-purchase Lucent Technologies shall at its option, repair or replace the defective item at no cost to the buyer.

Defective items shall be returned to the dealer/distributor:

- Freight prepaid.
- Accompanied by a copy of proof-of-purchase.
- Accompanied by a filled out Warranty/Repair card.

This warranty is contingent upon proper use in the application for which the products are intended and does not cover products which have been modified without the seller's approval or which have been subjected to unusual physical or electrical demands or damaged in any way.

This Warranty constitutes the sole and exclusive remedy of any buyer or seller's equipment and the sole and exclusive liability of Lucent Technologies in connection with the products and is in lieu of all other warranties, express, implied or statutory, including, but not limited to, any implied warranty of merchantability of fitness for a particular use and all other obligations or liabilities of Lucent Technologies.

In no event will Lucent Technologies Inc. or any other party or person be liable to you or anyone else for any damages, including lost profits, lost savings or other incidental or consequential damages, or inability to use the software provided on the software media even if Lucent Technologies or the other party person has been advised of the possibility of such damages.

