Your Mobile Broadband Connection

Lucent Technologies
Bell Labs Innovations

oriNOCO™

Residential Gateway **Getting Started**

- Introduction
- Network Options
- Network Installation
- Network Settings

Your Wireless Network Starts Here

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Quick Start

<div style="text-align: right">**1**</div>

Overview

Installing the ORiNOCO Residential Gateway (RG) is easy, following the quick steps described below to power up your wireless network:

1. Connect cables and power up the RG (see Chapter 2 of this document).
2. Insert the ORiNOCO CD-ROM and install the following software on your computer:
   - ORiNOCO Client Manager
   - ORiNOCO RG Setup Utility
3. Insert the ORiNOCO PC Card into your computer and follow the instructions on your screen.
   - Set PC Card profile settings to "Residential Gateway"
   - Set Network Name (= RG ID)

   For more information read the user documentation that comes with the PC Card
4. (Optional) Run the RG Setup Utility to:
   - Enable Internet Connectivity by setting the RG to match the information provided by your Internet Service Provider (ISP), or
   - Customize the RG settings (see Chapter 3 of this document).

Kit Contents

Your Residential Gateway kit includes the following items:

Residential Gateway

Power Adapter

Telephone Cable
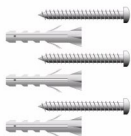
Screws and Plugs

Guide and CD-ROM
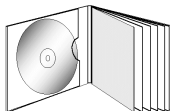
Network Options

The ORiNOCO Residential Gateway (RG) enables you to build various types of wireless network applications in your home or small office environment.

To build a Lucent ORiNOCO system you need:

- **one ORiNOCO Residential Gateway**
  A base station that will bridge communication between your wireless computers and the Internet.
- **one or more ORiNOCO PC Cards**
  Network adapter cards for computers.

The following network options are available:

- Wireless networks
- Wireless to Internet via phone line (using the built-in 56k/V90 modem)
- Wireless to Internet via Ethernet connection (using an external cable/xDSL/ISDN modem)

Wireless Networks

Wireless networking is the 'out-of-the-box' mode of operation for the ORiNOCO Residential Gateway (RG).

In this mode the RG will forward the data communication from one wireless computer to another. You can easily extend your Lucent ORiNOCO system by adding more wireless computers.

Figure 1-1   Wireless Networks

Optionally you can connect wired computers to your wireless computers.

Wireless to Internet via Phone Line

The Residential Gateway (RG) includes a built-in analog 56k/V90 modem that allows you to share an Internet connection between multiple computers.

To access the Internet via the RG modem, you must have a traditional phone line, and an account with an ISP (Internet Service Provider). After you have powered-up your RG you need to customize the RG settings (as described in Chapter 4).

Figure 1-2   Wireless to Internet via Phone Line

Wireless to Internet via Ethernet

You can also use the Residential Gateway (RG) to connect to the Internet using an:

■ Cable modem

■ xDSL modem

■ ISDN modem

To access the Internet via an external modem you must have an account with an ISP (Internet Service Provider) that supports this type of connection.

Figure 1-3   Wireless to Internet via Ethernet

Connect & Power Up

2

Connect Cables

1. Remove rear cover of the RG unit by pressing the latches.

Figure 2-1   Removing rear cover

release latches

rear cover
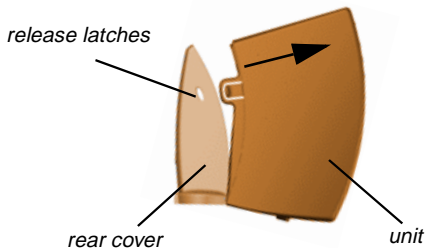
unit

2. Write down the ID of your Residential Gateway as you will need it later.

ID: ☐☐☐☐☐☐

You can find the RG ID on a small label on the rear of the unit (see Figure 2-2 on the next page).

Figure 2-2   Label with ID (example)

RG ID

3. Plug the power connector into the power socket on the RG unit (see Figure 2-3).

Figure 2-3   Connecting Power Adapter

4. If you want to connect to the **Internet via your phone line** (as described on page 1-5): plug the telephone cable connector into socket A (see Figure 2-4).

Figure 2-4 Connecting Telephone Cable

Plug the opposite end of the phone cable connector into a phone outlet.[1]

5. (Optional) If you want to connect to the **Internet via an external device** (as described on page 1-6): plug an Ethernet cable into socket B.

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1 Depending on local standards, you may need a special adapter plug to connect the telephone cable to your phone outlet. Adapter plugs are available from your local telephone equipment dealer.

⇒ **NOTE:**
> Ethernet cables are not included, they are available from your local computer dealer. See Appendix A for detailed information about possible cable types.

6. Close the rear cover by attaching it to the unit. Press the latches to insert the unit into the rear cover.
   (see Figure 2-5, item a).

7. Place the unit on a flat service and power-up the device
   (see Figure 2-5, item b).

Figure 2-5   Closing the Unit and Placing it on a Flat Surface
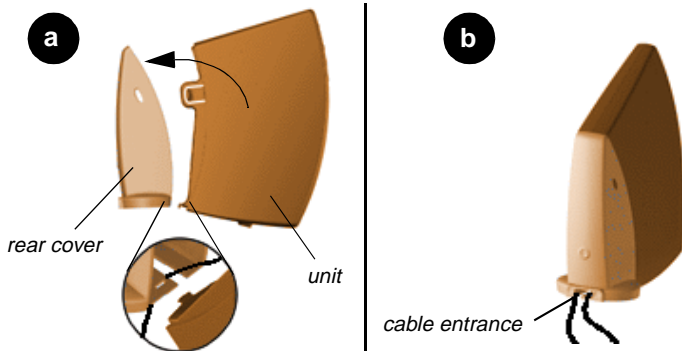
Optionally you can mount the RG to the wall as described in Chapter 4.

Power-up the Unit

1. Plug the power adapter into an AC power outlet.

⚠️ **WARNING:**

After applying power to the RG, do not cover the unit or block the airflow to the unit with any other objects.

Figure 2-6   Residential Gateway LEDs

Power

Wireless

Ethernet

Modem
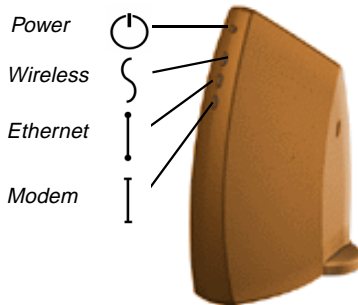
2. Monitor the LED activity on the unit.

   The LEDs (see Figure 2-6) will change color in the range Yellow, Red and Green to indicate start-up diagnostics. When finished (after approximately 30 seconds), the Residential Gateway shows LED activity as listed in the table on the next page.

Table 2-1   LED Activity Table
(normal operation)

Icon	Name	Color/Activity	Description
⏻	Power	Steady Green	Power enabled
∫	Wireless	Off, or Flashing Green	Wireless activity
⌇	Ethernet	Off, or Flashing Green	Ethernet activity
⌇	Telephone Modem	Off, or Flashing Green	Modem activity

⇒ NOTE:

If the Residential Gateway does not switch to normal operation within one minute, try to solve the problem with the troubleshooting information in the **Online Help** (see "Finding Information" on page 3-4).

3. Now proceed with the installation of software as described in step 2 of the Quick start overview on page 1-1.

Customizing the RG Settings

<div style="text-align: right; font-size: 2em;">3</div>

Introduction

Having installed the ORiNOCO PC Card, the Residential Gateway (RG) is ready for use in a Wireless Network as described on page 1-4.

To connect to the Internet you will need:

- Subscription to an Internet Service Provider (ISP).
- Customize the RG settings by using the RG Setup Utility.

Start the RG Setup Utility

1. Click the **Start** button on the Windows task bar.
2. Select **Programs**, then select **ORiNOCO**.
3. Select **RG Setup Utility** to start the program.
4. To connect to the RG, enter the 6-character ID you wrote down on page 2-1.

    ➡ NOTE:
    All alphabetical characters must be entered in lower-case (e.g. a,b,c).

5. Follow the instructions on your screen.

   If you encounter difficulty accessing the RG device to view or modify its current settings:

   ■ Verfiy that the Network Name setting of your PC Card matches the exact value of the RG ID. This value is printed on the label at the back of the unit (see also page 2-1).

   Please note that the alphabetical characters are case-sensitve.

   ■ Verify that the encryption key setting of your PC Card matches the value of the RG. The default encryption key matches the last five digits of the RG ID.

   ■ Restart your computer to load the driver and refresh the IP Address assigned by the Residential Gateway to your computer.

   ■ Consult your Microsoft documentation and/or Help system for information about setting the TCP/IP network protocol.

   The TCP/IP settings for your card should have DHCP enabled.

   ■ Consult the Troubleshooting section of the RG Online Help, that was installed on your computer together with the RG Setup Utility (see also "Finding Information" on page 3-4).

View/Modify RG Settings

The RG Setup Utility allows you to view or modify the following network settings:

- Internet Access settings
- Wireless Connection settings

Internet Access Settings

To setup your Residential Gateway (RG) for Internet Access you will need information from your Internet Service Provider (ISP), like for example a user name, password, telephone number and/or IP address.

Next select how you wish to connect to your ISP:

- **via your phone line**
  (as described on page 1-5)
- **via an external device (such as cable, xDSL or ISDN modem)**
  (as described on page 1-6)

Follow the instructions on your screen or click **Help** for more information.

Wireless Connection Settings

Your RG will work fine with its default settings. In exceptional situations you may wish to change the Radio Channel and/or Encryption Key. Consult the **Online Help** for more information.

Finding Information

This Getting Started manual provides only basic instructions. For more detailed information, please consult the Online Help that was installed with the ORiNOCO software. This Online Help contains detailed instructions, including a troubleshooting section.

For context-sensitive help press the **Help** button on the screens of your RG Setup Utility. This way you will get specific information about that window.

Also task-oriented information is available. Follow the steps below:

1. Select the **Start** button on the windows task bar.
2. Click **Programs**, and then select **ORiNOCO**.
3. Select **Online Manual** to display a table of contents of the Online Help.

Using your RG

4

General Guidelines

When using your Residential Gateway (RG) please follow the guidelines listed below:

Safety Guidelines

- Do not cover the unit or block the airflow to the unit.
- Keep the RG away from excessive heat and humidity.
- Keep the unit free from vibration and dust.
- Always disconnect the RG power adapter before cleaning.

Operation Guidelines

- To maximize the wireless coverage: place the unit as centrally as possible (relative to the wireless computers in the vicinity). See also "Wall Mount the RG" on page 4-2.
- The RG unit can be cleaned with a soft tissue. Do not use aggressive liquids like alcohol or acetone, to avoid damage. Do not rinse the unit with fluids.
- To extend the life of your RG it is better to leave the unit powered on. The Residential Gateway uses very little power.

Wall Mount the RG

If you want to mount the Residential Gateway (RG) to the wall proceed as follows:

1. Remove the rear cover as described in Chapter 2.
2. Use a sharp pointed object (like a small screwdriver) to open the three rear cover screw holes (see Figure 4-1).

Figure 4-1   Punch Screw Holes and Mount the RG to a Wall

rear cover

screw holes
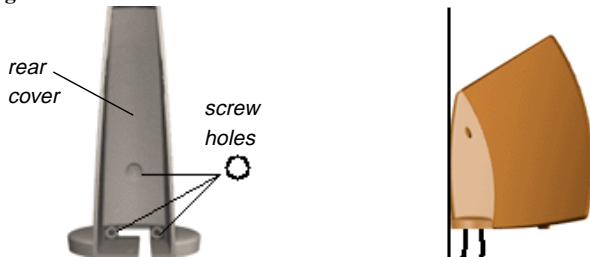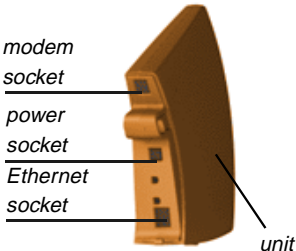
3. Decide where and how you want to place the RG (you may consider to mount the unit upside down on high spots, to be able to see the LEDs).
4. Place the rear cover against the wall, and put three marks on the wall to indicate the screw positions.
5. Use the screws and the plugs that came with your kit to fix the rear cover to the wall.
6. Close the Residential Gateway.

Specifications

A

Technical Specifications	
Compatibility	■ IEEE 802.11 Standard for high speed Wireless LANs. ■ Wireless Fidelity (Wi-Fi) certified by the Wireless Ethernet Compatibility Alliance (WECA).
Bit Error Rate	better than 10^{-5}
Range	up to 550 metres (see details on page A-3)
Frequency band / Channels	2.4 Ghz. Selectable channels: - Channel A: 2412 MHz - Channel B: 2427 MHz - Channel C: 2442 MHz - Channel D: 2457 MHz
Input Voltage RG	7 to 15V DC
Input Voltage Power Adapter	100 to 240V +/- 10%
Power Adapter Types	Subject to local standards. Available types: AU, UK, US/JP, EU
Power Adapter Frequency	47 to 63 Hz

Interfaces (built-in)		
Modem	56K, V.90, RJ-11 connector (female)[1]	*modem socket*
Ethernet	10BASE-T, RJ-45 (female)[2]	*power socket*
Wireless	ORiNOCO Interface	*Ethernet socket*
		unit

1   1.8 m/ 6ft. cable included.

2   Use cross-over cables (not included) for connection to external modems. Use regular cables for connection to HUB or switch.

Physical Specifications	Residential Gateway	Power Adapter
Dimensions (HxWxL)	208x52x155 mm	78x48x75 mm
Weight	350 g	-
Operating Temperature	0 to +40 ^{o}C	0 to +50 ^{o}C
Storage Temperature	-10 to +50 ^{o}C	-20 to +85 ^{o}C
Humidity	max. 95% (no condensation allowed)	20 to 90%
Barometric Pressure	740 to 1050 hPa	-

Radio Specifications

Radio Output Power	15 dBm (nominal)			
Spreading	11-chip Barker Sequence			
	Wireless Data Rate			
Environment	**11 Mb/s**	**5.5 Mb/s**	**2 Mb/s**	**1 Mb/s**
Max. range[1]	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)
Modulation technique	DSSS CCK	DSSS CCK	DSSS DQPSK	DSSS DBPSK
Receiver Sensitivity (for BER = 10^{-5})	-82 dBm	-87 dBm	-91 dBm	-94 dBm
Delay Spread (at FER of <1%)	65 ns	225 ns	400 ns	500 ns

1   In open environments where antennas can "see" each other, i.e. there are no physical obstructions between them, the device will automatically select the best data rate for the current radio connection.

➡ **NOTE:**

The range values provide a rule of thumb and may vary according to the actual radio conditions at the location where the product will be installed. The range of your wireless devices can be affected when:

■ Antennas have been placed near metal surfaces and solid high-density materials.

■ Obstacles or objects in the signal path of the radio signal absorb or reflect the radio signal. E.g. in areas with floor to ceiling walls, the range may decrease to 15% of the maximum range.

Regulatory Information

B

USA

Federal Communications Commission (FCC)
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Information to the user
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna.

■ Increase the distance between the equipment and the receiver.

■ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

■ Consult the dealer or an experienced radio/TV technician for help

Lucent Technologies is not responsible for any radio or television interference caused by unauthorized modification of the device, or the substitution or attachment of connecting cables and equipment other than specified by Lucent Technologies. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Exposure to Radio Frequency Radiation
The radiated output power of the equipment is far below the FCC radio frequency exposure limits. Nevertheless, it is advised to use the equipment in such a manner that the potential for human contact during normal operation is minimized.

Use of the internal modem
The internal modem of this equipment complies with Part 68 of the FCC Rules. On this equipment is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

Notify your Telephone Company
Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

Ringer equivalence number (REN): 0.53B
The REN is useful to determine the quantity of devices you may connect to your telephone lines and still have all those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

Telephone jack type: USOC RJ-11
An FCC compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that complies with the Part 68 rules. See the installation instructions for detail.

Telephone Line Problems
If your telephone does not work, there may be a problem with your phone line. Disconnect the equipment from your phone line to see if the problem goes away. If it does not, report the problem either to your local company, or to your company's telecommunication's people. If disconnecting the equipment from your phone line eliminates the problem, the equipment itself

may need service. See the service and support information that came with your product for instructions on how to contact Lucent Technologies or a Lucent Technologies authorized service provider for assistance.

If you do not disconnect your equipment when it is adversely affecting the telephone line, the telephone company has the right to disconnect your service temporarily until you correct the problem. The telephone company will notify you as soon as possible. Also, you will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect proper operation of your equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

The internal modem of this equipment will not work with party lines, can not be connected to a coin-operated telephone, and may not work with a private branch exchange (PBX).

Canada

Industry Canada (IC)
This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations

Cet appareil de la class B respecte toutes les exigences du Reglement sur le materiel brouiller du Canada

The Industry Canada (IC) label identifies certified equipment. This certification means that equipment meets certain telecommunication network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user satisfaction.

Use of the internal modem
Before installing this equipment, users ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Ringer Equivalence Number (REN): 0.4
The REN assigned to each terminal device provides an indication of the maximum number of

terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five (5.0)

Telephone jack type: CA11A

Repairs
Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Electrical ground connections
Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Europe

EU Declaration of Conformity
This product conforms to the relevant regulatory standards following the provisions of the European Council Directives 73/23/EEC (Low Voltage Directive) and 89/336/EEC amended by 92/31/EEC (EMC Directive).

Use of the internal modem
The equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.
In the event of problem, you should contact your equipment supplier in the first instance.
Notify your Telephone Company

Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

Australia

Use of the internal modem

All telecommunications devices are required to be labelled as complying to the Australian telecommunications standards, ensuring the health and safety of the operator and the integrity of the Australian telecommunications network. To provide compliance with the Australian Communications Authority's technical standards, please ensure that the following AT commands be maintained:

- ■ ATBO (ITU/CCITT operation)
- ■ AT&GO (no guard tone)
- ■ AT&P1 (33/66 pulse dial make/break ratio)
- ■ ATSO=0 or ATSO=2 (no answer or answer greater than one ring)
- ■ ATS6=95 (DTMF period between 70-255 ms)
- ■ ATS11=95 (DTMF period between 70-255 ms)

For calls that are automatically generated, a total of three call attempts are allowed to a telephone number, with a minimum period between calls of 2 seconds. If the call does not connect after three attempts, 30 minutes must expire before automatic redialing may be initiated. Failure to set the modem (and any associated communications software) to the above settings may result in the modem being non-compliant with Australian telecommunications standards. Under these circumstances a user could be subject to significant penalties under the Telecommunications Act 1997.

Notify your Telephone Company

Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

New Zealand

Use of the internal modem

The internal modem is fully approved to operate on the New Zealand telecommunications network under Telepermit number PTC 211/98/119. All telecommunications devices are required to hold a Telepermit and be labelled accordingly with the approved Telepermit number to comply

with the New Zealand telecommunications standards, ensuring the health and safety of the operator and the integrity of the New Zealand telecommunications network.

Note: Customers in New Zealand who are prompted to choose a country for their modem should choose the "Australia" country code setting.

To ensure compliance, all calls that are automatically generated should not make more than 10 call attempts to the same number within any 30-minute period with a minimum period between calls of 30 seconds. Failure to adhere to these standards may result in the modem being non-compliant with New Zealand Telecom standards. Under these circumstances a user could be subject to significant penalties.

Important If pulse dialling is required for any reason, the communications software must be set up to record numbers according to the following translation list.

- Number to be dialled: 0; number to be entered into computer: 0
- Number to be dialled: 1; number to be entered into computer: 9
- Number to be dialled: 2; number to be entered into computer: 8
- Number to be dialled: 3; number to be entered into computer: 7
- Number to be dialled: 4; number to be entered into computer: 6
- Number to be dialled: 5; number to be entered into computer: 5
- Number to be dialled: 6; number to be entered into computer: 4
- Number to be dialled: 7; number to be entered into computer: 3
- Number to be dialled: 8; number to be entered into computer: 2
- Number to be dialled: 9; number to be entered into computer: 1

The preferred method of dialling is to use DTMF tones as this is faster than pulse (decadic) dialling and is readily available on almost all New Zealand telephone exchanges.

Notify your Telephone Company

Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

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.