Congratulations on your purchase of a NETGEAR™ Model RT338 ISDN Router.

This document provides instructions to get you connected to an ISDN Internet service line using the NETGEAR Model RT338 router and your personal computer. The document is only a quick reference guide. For more detailed information about installation and configuration, refer to Model RT338 ISDN Router Installation Guide included on the Model RT338 Resources CD.

## Product Illustration

### Front Panel

The front panel of the Model RT338 router contains status LEDs. Refer to the illustration and table below for descriptions of the LEDs on the front panel of the router.

**Front Panel of the Model RT338 Router**

![Diagram of the front panel of the Model RT338 router with labels for the Power switch, Test LED, LAN LEDs, ISDN LEDs, and Phone LEDs.]

<table>
<thead>
<tr>
<th>Label</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR (Power)</td>
<td>On</td>
<td>Power is supplied to the router.</td>
</tr>
<tr>
<td>TEST</td>
<td>Blinking/Off</td>
<td>If this LED blinks during initialization and then turns off, the router is functioning properly.</td>
</tr>
<tr>
<td>LAN</td>
<td>On</td>
<td>Link has been detected on the LAN port.</td>
</tr>
<tr>
<td></td>
<td>Blinking</td>
<td>A data packet is being sent or received on the port.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>LAN is operating at 10 Mbps.</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>LAN is operating at 100 Mbps.</td>
</tr>
<tr>
<td>ISDN</td>
<td>On</td>
<td>Router is synchronized with the attached ISDN line.</td>
</tr>
<tr>
<td>D</td>
<td>On</td>
<td>Router is synchronized with the attached ISDN line.</td>
</tr>
<tr>
<td>B1</td>
<td>On</td>
<td>ISDN B channel is sending or receiving a call.</td>
</tr>
<tr>
<td>B2</td>
<td>On</td>
<td>ISDN B channel is sending or receiving a call.</td>
</tr>
<tr>
<td>1 (Phone)</td>
<td>On</td>
<td>An analog device (telephone, fax, or modem) connected to the Phone 1 port is in use.</td>
</tr>
<tr>
<td>2 (Phone)</td>
<td>On</td>
<td>An analog device connected to the Phone 2 port is in use.</td>
</tr>
</tbody>
</table>
Rear Panel
Refer to this diagram to identify all the ports on the router when you attempt to make any connections.

Installing the Hardware
Refer to the following illustration and steps when connecting the router.

To connect your router:

1. **Connect your PC or hub to the LAN port:**
   - Use the **red** crossover cable included to connect the router directly to a PC.
   - Use the **white** straight-through cable included to connect the router to a 10 Mbps or 100 Mbps hub or switch port. The router will sense the speed of the connected port and will automatically set its speed to match.

   **Note:** If you are using a 100 Mbps Fast Ethernet network or a mixed 10 Mbps/100 Mbps network, use Category 5 cabling (included).
2. Connect the analog devices to the phone ports (Phone 1 and Phone 2, respectively).
3. Connect the ISDN line from the router to the ISDN wall connection. Use the black cable that is provided.
4. Connect a network manager workstation to the RS-232 port. This step is optional.
5. Connect the DC power adapter cable to the power outlet on the rear panel of the switch and plug the power adapter into the wall outlet.

Prepare the Router

Do the following to prepare your router:
- Order ISDN service from the phone company.
- Configure your PC to use the TCP/IP networking protocol.
- Order Internet service from an Internet service provider (ISP).

The following section provides an overview of the requirements.

Ordering an ISDN Line

Contact the ISDN sales center of the phone company and order an ISDN Basic Rate Interface (BRI) phone line. In North America, provide the phone company with an ISDN ordering code (IOC). NETGEAR recommends codes IOC “U” or EZ-ISDN1 for the Model RT338 router. Additional information about ordering an ISDN line can be found in the *Model RT338 ISDN Router Installation Guide*.

When the ISDN line is installed, make sure you have the following information:
- ISDN directory number(s)
- Service profile identifier numbers (SPIIDs) (North America only)
- Switch type and protocol of the switch (such as National ISDN NI-1) used at the telephone company (North America only)

Order any additional ISDN or phone service at this time.

Setting up Your Network

The Model RT338 router uses the Internet Protocol (IP). To access the Internet using the Model RT338 router, all PCs must have TCP/IP installed and selected as their networking protocol. TCP/IP is built into Windows® 95, Windows 98, and Windows NT® but must be enabled and configured. Refer to “Configuring TCP/IP Properties” for instructions to install IP networking.

In an IP network, all PCs must be assigned IP addresses. Most LANs use private IP addresses. These addresses are assigned automatically by the Model RT338 router whenever a PC reboots. Refer to “Using Private IP Addresses” for instructions to use private IP addressing.
All PCs must also have other IP configuration information, including a subnet mask, a domain name server (DNS) address, and a default gateway address. This information is also assigned automatically by the Model RT338 router whenever a PC reboots. For more information about these parameters, refer to the Model RT338 ISDN Router Installation Guide.

Using Private IP Addresses

Using the DHCP protocol, the Model RT338 router assigns private IP addresses to all the PCs on your LAN (when the PC reboots). The Internet Engineering Task Force (IETF) reserves these addresses for use in private networks:

- 192.168.0.1—local IP address for the router (This address also serves as the DNS address and default gateway address for all of the PCs.)
- 192.168.0.2 through 192.168.0.32—IP addresses of your PCs
- 255.255.255.0—subnet mask for your router and PC

Setting up an ISP

Contact an ISP and request a single-user Internet access account. You can connect a multiuser LAN through a single-user account by using the Network Address Translation (NAT) feature on the router.

In a single-user account, the ISP assigns one registered IP address to use. With most accounts, this address is assigned dynamically each time you log in to the account, so you will not need to know the actual address. The NAT feature translates the private IP addresses of your network PC(s) to this address for accessing the Internet.

Account Information

The ISP should give you the following information for your account:

- Local phone number for accessing the ISP
- Login name
- Password

Questions to ask the ISP

In addition, you should ask your ISP these questions:

- Will the IP address be dynamically assigned?
  
  Refer to the Model RT338 ISDN Router Installation Guide on the Model RT338 Resources CD for instructions to configure a static IP address.

- Will your DNS server address be dynamically assigned?
  
  If not, enter it in FirstGear’s ISP connection.

- Does your ISP support Multilink Protocol?
  
  If you want to connect both ISDN B channels simultaneously for a 128 Kbps connection, your ISP must support Multilink Protocol.
Configuring Windows 95 or Windows 98 for IP Networking

All PCs must have an Ethernet adapter card installed and TCP/IP as their protocol. TCP/IP installation must be done manually.

To configure Windows 95 or Windows 98 for IP networking:

- Select the network properties from the Windows Control Panel.
  
  Find your Ethernet adapter, TCP/IP protocol, and Client for Microsoft Networks. If these do not exist, you must add them.

To add an Ethernet adapter:

  a. Click on Add.
  b. Select Adapter.
  c. Click on Add (again).
  d. Select the manufacturer and model for the Ethernet adapter.
  e. Click on OK.

To add TCP/IP:

  a. Click on Add.
  b. Click on Protocol.
  c. Click on Add (again).
  d. Select Microsoft.
  e. Select TCP/IP.
  f. Click on OK.

To add a Client for Microsoft Networks:

  a. Click on Add.
  b. Click on Client.
  c. Click on Add (again).
  d. Select Microsoft.
  e. Select Client for Microsoft Networks.
  f. Click on OK.

Restart your PC after making these changes.

Configuring TCP/IP Properties

NETGEAR recommends that you keep the default settings for the TCP/IP setup parameters, because your PC is configured to obtain its TCP/IP configuration information from a DHCP server on the LAN. The Model RT338 router is shipped preconfigured as a DHCP server and assigns the TCP/IP configuration.

To obtain the configuration information from the router:

1. Turn on power to the router.
   
   Wait at least one minute before continuing to step 2.

2. Reboot each PC on your LAN.
Verifying TCP/IP Properties

After your PC has been configured and rebooted, check the TCP/IP configuration using the Windows 95 and Windows 98 utility winipcfg.exe. For Windows NT systems, use ipconfig.exe.

To check the TCP/IP configuration:

1. **From Start, select Run.**
2. **Type** winipcfg (or ipconfig for Windows NT).
3. **Click on OK.**
   
   The IP Configuration window opens.

4. **In the IP configuration window, select your Ethernet adapter.**
5. **Verify the following:**
   - IP address is set at between 192.168.0.2 and 192.168.0.31.
   - Subnet mask is set at 255.255.255.0.
   - Default gateway is set at 192.168.0.1.
6. **Click on More Info.**
7. **Verify that the DNS server is set to 192.168.0.1.**

### Configuring the Router

To configure your router, you will use the FirstGear™ configuration software that is provided on the *Model RT338 Resources* CD.

To install and run FirstGear:

1. **Insert the NETGEAR Model RT338 Resources CD.**
2. **From the Windows taskbar, open Start > Run.**
3. **Click on Browse.**
4. **Find and select the Setup.exe program on the CD.**
5. **Click on OK.**
6. **Follow the setup instructions to install the program.**
7. **Double-click on the FirstGear icon that should now be visible on your desktop.**
   
   Make sure the router is connected and has been on for at least one minute before launching FirstGear. If the password has been changed from the default of “1234,” enter a new password.

8. **Enter your ISDN information.**
   
   Be sure to enter your directory numbers in the local format. Do not enter the area code unless it is required for local dialing.
9. **Click on Next.**
10. **Wait for the ISDN test to complete.**

   If the ISDN test fails, recheck your ISDN setup information and the physical connection. Refer to “Troubleshooting Information” below.

11. **Enter your ISP account information.**

   Enter the phone number for the ISP, as you would dial it from your location.

12. **Click on Connect.**

13. **Wait for the ISP test to complete.**

   If the ISP test fails, recheck your ISP account information. For help, refer to the troubleshooting section in this document.

14. **Basic configuration is now complete. Either exit the program or click on Advanced Setup.**

   Features for the Advanced Setup are described in the *Model RT338 ISDN Router Installation Guide*.

For information about the data to be entered in each FirstGear screen, click on Help. If the ISDN or ISP test fails, refer to the troubleshooting section of this document and to the troubleshooting section in the Model RT338 ISDN Router Installation Guide.

The Model RT338 router is now configured to provide Internet access for your LAN. For additional applications information, refer to the Applications folder on the *Model RT338 Resources CD* and on the NETGEAR Web site at: www.NETGEAR.com.

### Verifying the Installation

When the router is configured correctly, it will place a call to the ISP automatically whenever a configured PC tries to access the Internet. The router disconnects from the ISP when the connection has been idle for a period of time. Therefore, the Dial-Up Networking, login, and disconnect processes are performed by the router.

To access the Internet, launch a browser application (that is, Microsoft® Internet Explorer or Netscape Navigator). The B1 LED on the router illuminates, indicating that a call is being placed. Next, the LAN activity LEDs (TD and RD) blink, indicating communication between your router and your ISP. The browser then displays its opening page. This process may take up to a minute.

After about five minutes of inactivity, the router disconnects the call.

### Troubleshooting Information

FirstGear cannot find your router:

- Check the Ethernet connection between your PC and router. The Link LED on your Ethernet card and the corresponding port LED on the router should be lit.

- Power cycle the router. Wait 1 minute before starting FirstGear.
ISDN connection test fails:

- Check that you entered the directory numbers in a correct format. Do not enter the area code unless it is required.
- Recheck your directory numbers, SPIDs, and switch type (North America only).
- For North America: If the switch at your phone company is running the National ISDN (NI-1) protocol, select “National ISDN” rather than the switch model (Nortel, AT&T).

ISP connection test fails:

- Check that you entered the phone number in the correct format. Do not enter the area code unless required.

**Note:** In some areas of North America only, you must dial an ISDN data call using 1+ (area code) or you will receive a 56K connection instead of a 64K connection.

Router does not place a call when you launch your browser:

- Make sure your PC has the router configured as its default gateway. Verify the gateway as described in the section “Verifying TCP/IP Properties” in this document.
- If your PC launches the Dial-Up Networking program, change the Internet connection parameters:
  a. Access the Internet Control Panel.
  b. Select the Connection tab.
  c. Depending on the Dial-Up Networking program, either:
     - Uncheck the check box labeled “Connect to the Internet as needed.”
     - Uncheck the check box labeled “Connect to the Internet using a local area network.”

Your router connects, but you cannot load any pages from the Internet:

- Make sure your PC has one DNS server address configured. A DNS server is an Internet host that translates Internet names (such as “www” addresses) to numeric IP addresses. Typically, your ISP provides the addresses of one or two DNS servers for use. Follow the steps described in “Verifying TCP/IP Properties” to verify that a DNS server address is present.

The Model RT338 router is now configured to provide Internet access for your LAN. For additional applications information, refer to the Applications folder on the Model RT338 Resources CD and on the NETGEAR Web site at: www.NETGEAR.com.
Model RT338 ISDN Router Installation Guide