Chapter 4
Customizing Your Network Settings

This chapter describes how to configure advanced networking features of the Wireless-N Router Model WNR2000, including LAN, WAN, and routing settings.

It contains the following sections:

Using the LAN IP Setup Options

The LAN Setup screen allows configuration of LAN IP services such as Dynamic Host Configuration Protocol (DHCP) and Routing Information Protocol (RIP).

To configure LAN IP settings, select **LAN Setup** under Advanced in the main menu. The LAN Setup screen displays.

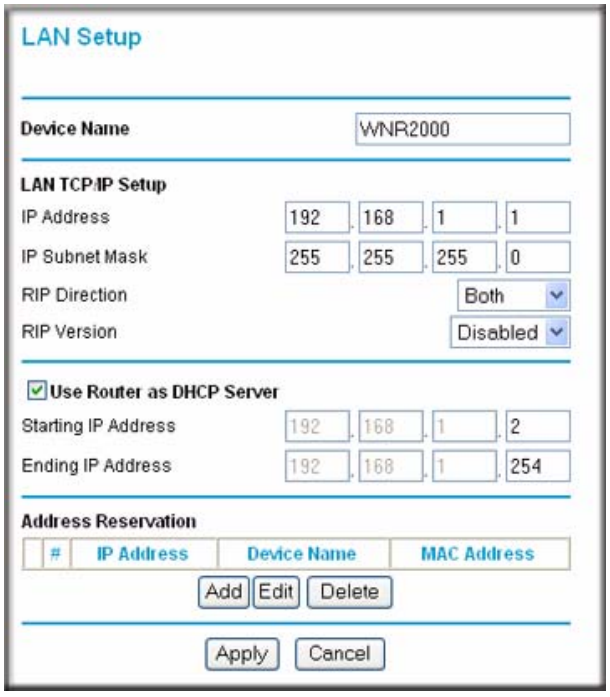

Figure 4-1

Configuring a Device Name

The device name is a user-friendly name for the router. This name is shown in the Network on Windows Vista and the Network Explorer on all Windows systems. The **Device Name** field cannot be blank. The default name is WNR2000.

Configuring LAN TCP/IP Setup Parameters

These are advanced settings that you might configure if you are a network administrator and your network contains multiple routers. The router is shipped preconfigured to use private IP addresses on the LAN side and to act as a DHCP server (see "Using the Router as a DHCP Server" on page 4-4).

Note: If you change the LAN IP address of the router while connected through the browser, you will be disconnected. You must then open a new connection to the new IP address and log in again.

The router's default LAN IP configuration is:

- LAN IP address. **192.168.1.1**
- Subnet mask. **255.255.255.0**

These addresses are part of the designated private address range for use in private networks and should be suitable for most applications. If your network has a requirement to use a different IP addressing scheme, you can make those changes in this screen.

The LAN IP settings are:

- **IP Address**. The LAN IP address of the router.
- **IP Subnet Mask**. The LAN subnet mask of the router. Combined with the IP address, the IP subnet mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or router.
- **RIP Direction**. RIP allows a router to exchange routing information with other routers. The RIP Direction selection controls how the router sends and receives RIP packets. **Both** is the default.
  - When set to **Both** or **In Only**, the router incorporates the RIP information that it receives.
  - When set to **Both** or **Out Only**, the router broadcasts its routing table periodically.
- **RIP Version**. This controls the format and the broadcasting method of the RIP packets sent by the router. (It recognizes both formats when receiving.) The default setting is **Disabled**.
  - **RIP-1** is universally supported. RIP-1 is usually adequate unless you have an unusual network setup.
  - **RIP-2B** carries more information than RIP-1 and uses subnet broadcasting.
  - **RIP-2M** carries more information than RIP-1 and uses multicasting.

Using the Router as a DHCP Server

By default, the router functions as a DHCP server, allowing it to assign IP, DNS server, and default gateway addresses to all computers connected to the router's LAN. The assigned default gateway address is the LAN address of the router. The router assigns IP addresses to the attached computers from a pool of addresses specified in this screen. Each pool address is tested before it is assigned to avoid duplicate addresses on the LAN.

Note: For most applications, the default DHCP and TCP/IP settings of the router are satisfactory. Click the link to the online document "TCP/IP Networking Basics" in Appendix B for an explanation of DHCP and information about how to assign IP addresses for your network.

To specify a pool of IP addresses to be assigned, set the starting IP address and ending IP address. These addresses should be part of the same IP address subnet as the router's LAN IP address. Using the default addressing scheme, you should define a range between **192.168.1.2** and **192.168.1.254**, although you might wish to save part of the range for devices with fixed addresses.

The router delivers the following parameters to any LAN device that requests DHCP:

- An IP address from the range you have defined
- Subnet mask
- Gateway IP address (the router's LAN IP address)
- Primary DNS server (if you entered a primary DNS address in the Basic Settings screen; otherwise, the router's LAN IP address)
- Secondary DNS server (if you entered a secondary DNS address in the Basic Settings screen)

To use another device on your network as the DHCP server, or to manually specify the network settings of all of your computers, clear the **Use Router as DHCP Server** check box. Otherwise, leave it selected. If this service is not selected and no other DHCP server is available on your network, you need to set your computers' IP addresses manually or they will not be able to access the router.

Using Address Reservation

When you specify a reserved IP address for a computer on the LAN, that computer always receives the same IP address each time it accesses the router's DHCP server. Reserved IP addresses should be assigned to computers or servers that require permanent IP settings.

Figure 4-2

To reserve an IP address:

1. Click **Add**.
2. In the **IP Address** field, enter the IP address to assign to the computer or server. (Choose an IP address from the router's LAN subnet, such as **192.168.1.x**.)
3. Enter the MAC address of the computer or server.

> **Tip:** If the computer is already present on your network, you can copy its MAC address from the Attached Devices screen and paste it here.

4. Click **Apply** to enter the reserved address into the table.

> **Note:** The reserved address is not assigned until the next time the computer contacts the router's DHCP server. Reboot the computer or access its IP configuration and force a DHCP release and renew.

To edit or delete a reserved address entry:

1. Click the button next to the reserved address you want to edit or delete.
2. Click **Edit** or **Delete**.

Using a Dynamic DNS Service

If your Internet Service Provider (ISP) gave you a permanently assigned IP address, you can register a domain name and have that name linked with your IP address by public Domain Name Servers (DNS). However, if your Internet account uses a dynamically assigned IP address, you do not know in advance what your IP address will be, and the address can change frequently. In this case, you can use a commercial Dynamic DNS service, which allows you to register your domain to their IP address, and forwards traffic directed at your domain to your frequently changing IP address.

	Note: If your ISP assigns a private WAN IP address (such as 192.168.x.x or 10.x.x.x), the Dynamic DNS service will not work because private addresses are not routed on the Internet.

Your router contains a client that can connect to the Dynamic DNS service provided by DynDNS.org. You must first visit their website at *www.dyndns.org* and obtain an account and host name, which you specify in the router. Then, whenever your ISP-assigned IP address changes, your router automatically contacts the Dynamic DNS service provider, logs in to your account, and registers your new IP address. If your host name is hostname, for example, you can reach your router at hostname.dyndns.org.

Select **Dynamic DNS** under Advanced in the main menu. The Dynamic DNS screen displays.

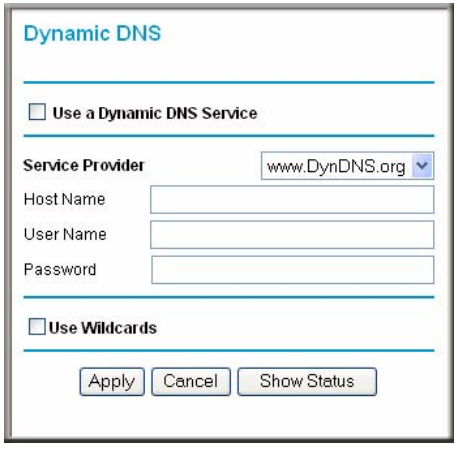

Figure 4-3

To configure for a Dynamic DNS service:

1. Register for an account with one of the Dynamic DNS service providers whose names appear in the **Service Provider** list. For example, for DynDNS.org, select **www.dynDNS.org**.
2. Select the **Use a Dynamic DNS Service** check box.
3. Select the name of your Dynamic DNS service provider.
4. Enter the host name (or domain name) that your Dynamic DNS service provider gave you.
5. Enter the user name for your Dynamic DNS account. This is the name that you use to log in to your account, not your host name.
6. Enter the password (or key) for your Dynamic DNS account.
7. If your Dynamic DNS provider allows the use of wildcards in resolving your URL, you can select the **Use Wildcards** check box to activate this feature.
   For example, the wildcard feature causes *.yourhost.dyndns.org to be aliased to the same IP address as yourhost.dyndns.org.
8. Click **Apply** to save your configuration.

Configuring the WAN Setup Options

The WAN Setup options let you configure a DMZ (demilitarized zone) server, change the Maximum Transmit Unit (MTU) size, and enable the wireless router to respond to a ping on the WAN (Internet) port. Select **WAN Setup** under Advanced in the main menu. The WAN Setup screen displays.

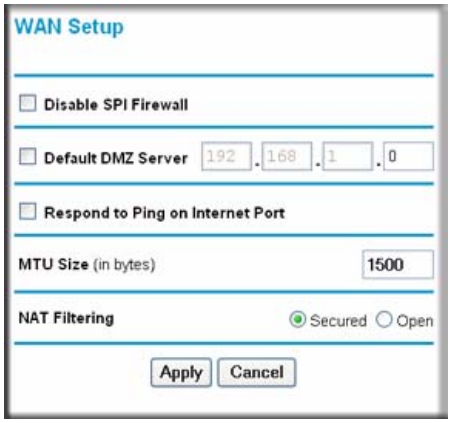

Figure 4-4

Disabling the SPI Firewall

The Stateful Packet Inspection (SPI) firewall protects your network and computers against attacks and intrusions. A stateful packet firewall carefully inspects incoming traffic packets, looking for known exploits such as malformed, oversized, or out-of-sequence packets. The firewall should be disabled only in special circumstances, such as when you are troubleshooting application issues.

Setting Up a Default DMZ Server

The default DMZ server feature is helpful when you are using some online games and videoconferencing applications that are incompatible with Network Address Translation (NAT). The router is programmed to recognize some of these applications and to work correctly with

them, but there are other applications that might not function well. In some cases, one local computer can run the application correctly if that computer's IP address is entered as the default DMZ server.

	**Warning:** DMZ servers pose a security risk. A computer designated as the default DMZ server loses much of the protection of the firewall, and is exposed to exploits from the Internet. If compromised, the DMZ server computer can be used to attack other computers on your network.

Incoming traffic from the Internet is usually discarded by the router unless the traffic is a response to one of your local computers or a service that you have configured in the Port Forwarding/Port Triggering screen. Instead of discarding this traffic, you can have it forwarded to one computer on your network. This computer is called the default DMZ server.

The WAN Setup screen lets you configure a default DMZ server.

To assign a computer or server to be a default DMZ server:

1. Select the **Default DMZ Server** check box.
2. In the **Default DMZ Server** fields, enter the IP address for that computer or server.
3. Click **Apply**.

Responding to a Ping on the Internet (WAN) Port

If you want the router to respond to a ping from the Internet, select the **Respond to Ping on Internet Port** check box. This should be used only as a diagnostic tool, since it allows your router to be discovered by Internet scanners. Do not select this check box unless you have a specific reason to do so, such as when troubleshooting your connection.

Setting the MTU Size

The normal MTU value for most Ethernet networks is 1500 bytes, 1492 bytes for PPPoE connections, or 1450 for PPTP connections. For some ISPs, you might need to reduce the MTU size, but this is rarely required and should not be done unless you are sure it is necessary for your ISP connection. For more information, see "Changing the MTU Size" on page 5-15.

To change the MTU size:

1. In the **MTU Size** field, enter a new size between 64 and 1500.
2. Click **Apply** to save the new configuration.

Configuring NAT Filtering

Network Address Translation (NAT) determines how the router processes inbound traffic. Secured NAT provides a secured firewall to protect the computers on the LAN from attacks from the Internet, but might prevent some Internet games, point-to-point applications, or multimedia applications from functioning. Open NAT provides a much less secured firewall, but allows almost all Internet applications to function. For more information about NAT, see "How Your Computer Accesses a Remote Computer through Your Router" on page 5-2.

To change the NAT option:

1. In the NAT Filtering area, select either the **Secured** or the **Open** radio button.
2. Click **Apply** to save the new configuration.

Configuring Static Routes

Static routes provide additional routing information to your router. Under usual circumstances, the router has adequate routing information after it has been configured for Internet access, and you do not need to configure additional static routes. You must configure static routes only for unusual cases such as multiple routers or multiple IP subnets located on your network.

As an example of when a static route is needed, consider the following case:

- Your primary Internet access is through a cable modem to an ISP.
- You have an ISDN router on your home network for connecting to the company where you are employed. This router's address on your LAN is 192.168.1.100.
- Your company's network address is 134.177.0.0.

When you first configured your router, two implicit static routes were created. A default route was created with your ISP as the gateway, and a second static route was created to your local network for all 192.168.1.x addresses. With this configuration, if you attempt to access a device on the 134.177.0.0 network, your router forwards your request to the ISP. The ISP forwards your request to the company where you are employed, and the request is likely to be denied by the company's firewall.

In this case you must define a static route, telling your router that 134.177.0.0 should be accessed through the ISDN router at 192.168.1.100.

In this example:

- The **Destination IP Address** and **IP Subnet Mask** fields specify that this static route applies to all 134.177.x.x addresses.

- The **Gateway IP Address** field specifies that all traffic for these addresses should be forwarded to the ISDN router at 192.168.1.100.
- A **Metric** value of 1 will work since the ISDN router is on the LAN.
- **Private** is selected only as a precautionary security measure in case RIP is activated.

To add or edit a static route:

1. Select **Static Routes** under Advanced in the main menu. The Static Routes screen displays.

Figure 4-5

2. Click **Add** to expand the Static Routes screen.

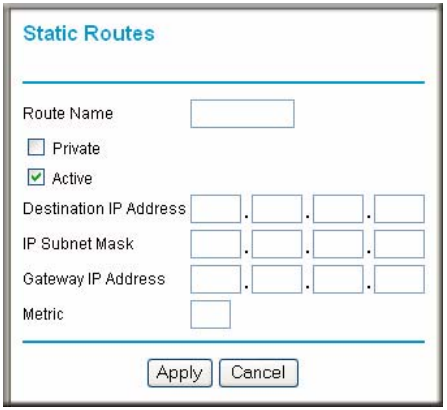

Figure 4-6

3. In the **Route Name** field, enter a name for this static route. (This is for identification purposes only.)
4. Select the **Private** check box if you want to limit access to the LAN only. If Private is selected, the static route is not reported in RIP.
5. Select the **Active** check box to make this route effective.

6. In the **Destination IP Address** field, enter the IP address of the final destination.
7. In the **IP Subnet Mask** field, enter the IP subnet mask for this destination.
   If the destination is a single host, enter **255.255.255.255**.
8. In the **Gateway IP Address** field, enter the gateway IP address, which must be a router on the same LAN segment as the WNR2000 router.
9. In the **Metric** field, enter a number between 1 and 15 as the metric value.

   This represents the number of routers between your network and the destination. Usually, a setting of 2 or 3 works, but if this is a direct connection, set it to 1.
10. Click **Apply** to have the static route entered into the table.