Advanced Settings

9

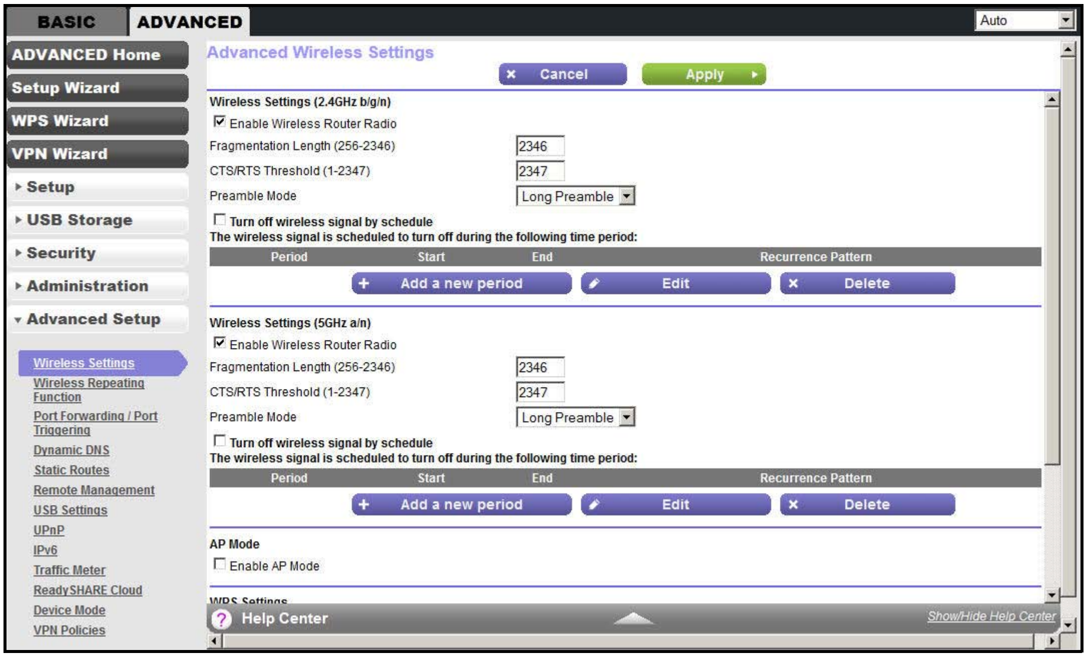
Fine-tuning your network

This chapter describes the advanced features of your WiFi modem router. The information is for users with a solid understanding of networking concepts who want to set the WiFi modem router up for unique situations such as when remote access from the Internet by IP or domain name is needed.

This chapter includes the following sections:

Advanced Wireless Settings

Select **ADVANCED > Advanced Setup > Wireless Settings** to display the Advanced Wireless Settings screen:



Advanced Wireless Settings

Wireless Settings (2.4GHz b/g/n)

☑ Enable Wireless Router Radio

Fragmentation Length (256-2346) 2346

CTS/RTS Threshold (1-2347) 2347

Preamble Mode Long Preamble

□ Turn off wireless signal by schedule

The wireless signal is scheduled to turn off during the following time period:

Period	Start	End	Recurrence Pattern

Wireless Settings (5GHz a/n)

☑ Enable Wireless Router Radio

Fragmentation Length (256-2346) 2346

CTS/RTS Threshold (1-2347) 2347

Preamble Mode Long Preamble

□ Turn off wireless signal by schedule

The wireless signal is scheduled to turn off during the following time period:

Period	Start	End	Recurrence Pattern

AP Mode

□ Enable AP Mode

WPS Settings

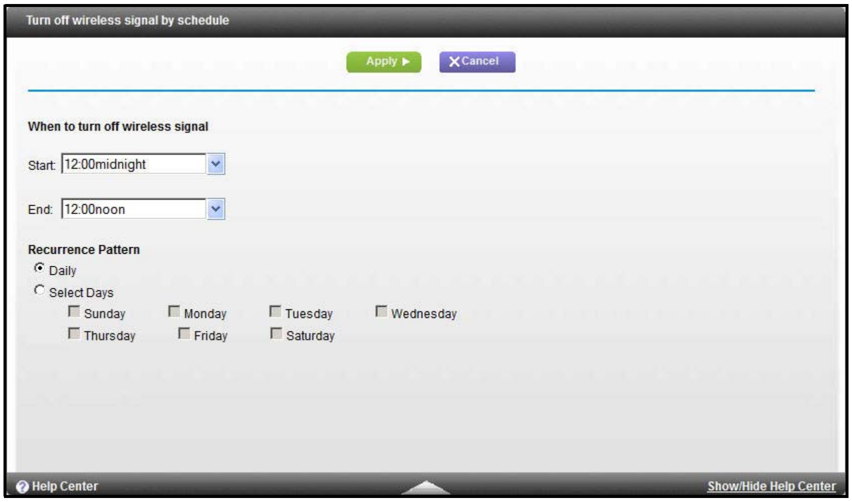
The following settings are available in this screen:

- **Enable Wireless Router Radio**. You can completely turn off the wireless portion of the WiFi modem router by clearing this check box. Select this check box again to enable the wireless portion of the WiFi modem router. When the wireless radio is disabled, other members of your household can use the WiFi modem router by connecting their computers to the WiFi modem router with an Ethernet cable.

Note: The Fragmentation Length, CTS/RTS Threshold, and Preamble Mode options are reserved for wireless testing and advanced configuration only. Do not change these settings.

- **Turn off wireless signal by schedule**. From the Advanced Wireless Settings screen (with the Enable Wireless Router Radio check box selected for the radio band you want to configure), click the **Add a new period** button to display the Turn off wireless signal by schedule screen.

You can use this feature to turn off the wireless signal from your WiFi modem router at times when you do not need a wireless connection. For example, you could turn it off for the weekend if you leave town.



Turn off wireless signal by schedule

When to turn off wireless signal

Start: 12:00midnight

End: 12:00noon

Recurrence Pattern

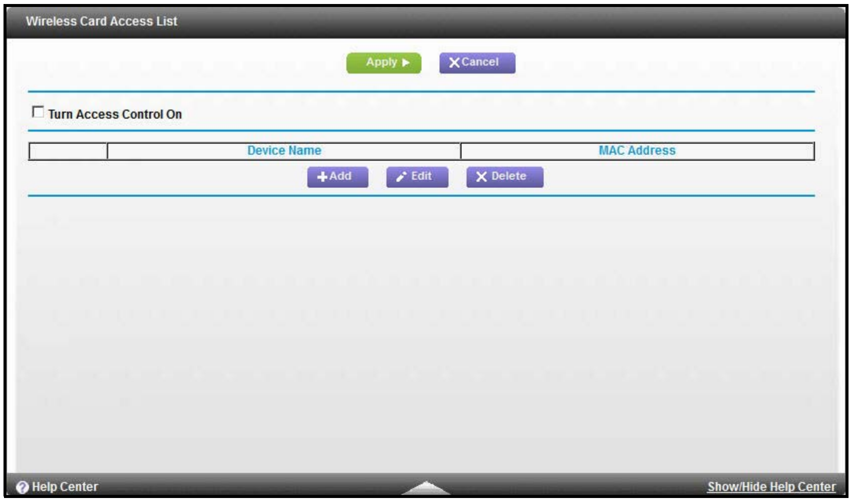
● Daily

○ Select Days

□ Sunday □ Monday □ Tuesday □ Wednesday

□ Thursday □ Friday □ Saturday

- **WPS Settings**. You can add WPS devices to your network.
- **AP Mode**. You can make the D6200 function as an access point.
- **Wireless Card Access List**. From the Advanced Wireless Settings screen, click the **Set Up Access List** button to display the Wireless Card Access List screen.

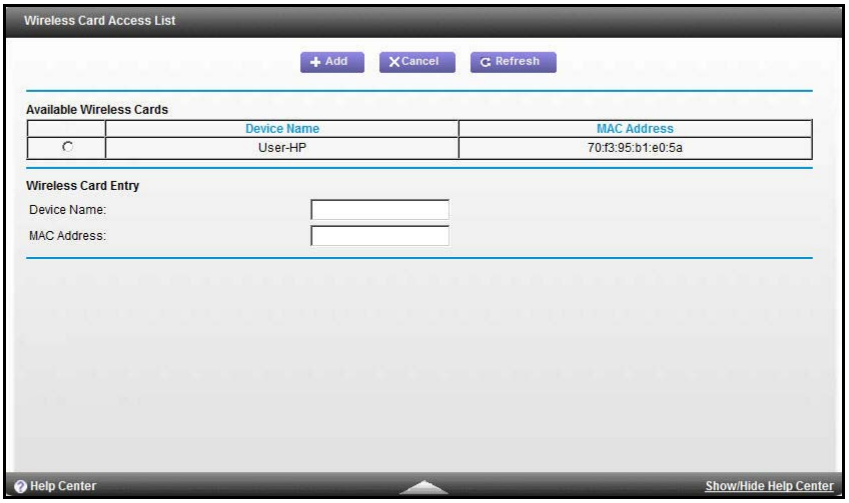


Wireless Card Access List

□ Turn Access Control On

	Device Name	MAC Address

From the Wireless Card Access List screen, click **Add** to display the Wireless Card Access Setup screen. On this screen, you can restrict access to your network to specific devices based on their MAC address.



Available Wireless Cards

	Device Name	MAC Address
○	User-HP	70:f3:95:b1:e0:5a

Wireless Card Entry

Device Name:

MAC Address:

Wireless Repeating Function (WDS)

You can set the WiFi Modem Router up to be used as a wireless access point (AP). Doing this setup enables the WiFi modem router to act as a wireless repeater. A wireless repeater connects to another wireless WiFi modem router as a client where the network to which it connects becomes the ISP service.

Wireless repeating is a type of Wireless Distribution System (WDS). A WDS allows a wireless network to be expanded through multiple access points instead of using a wired backbone to link them. The following figure shows a wireless repeating scenario.

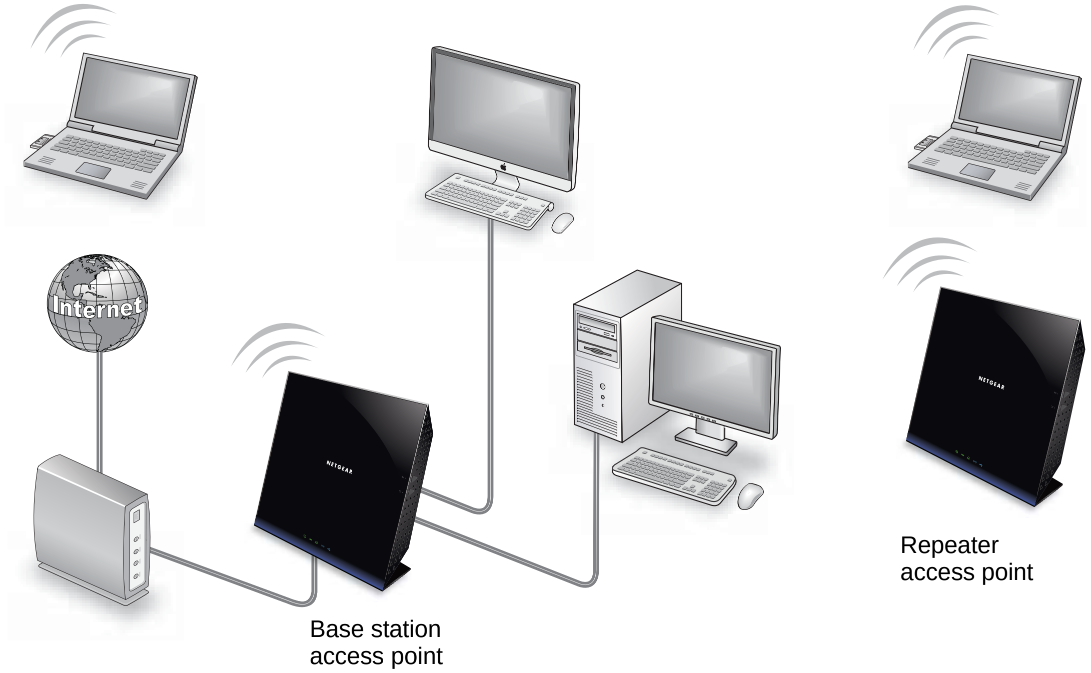


Figure 12. Wireless repeating scenario

Note: If you use the wireless repeating function, you need to select either **WEP** or **None** as a security option in the Wireless Settings screen. The WEP option displays only if you select the wireless mode **Up to 54 Mbps** in the Wireless Settings screen.

Wireless Base Station. The WiFi modem router acts as the parent access point, bridging traffic to and from the child repeater access point, as well as handling wireless and wired local computers. To configure this mode, you have to know the MAC address of the child repeater access point.

Wireless Repeater. The WiFi modem router sends all traffic from its local wireless or wired computers to a remote access point. To configure this mode, you have to know the MAC address of the remote parent access point.

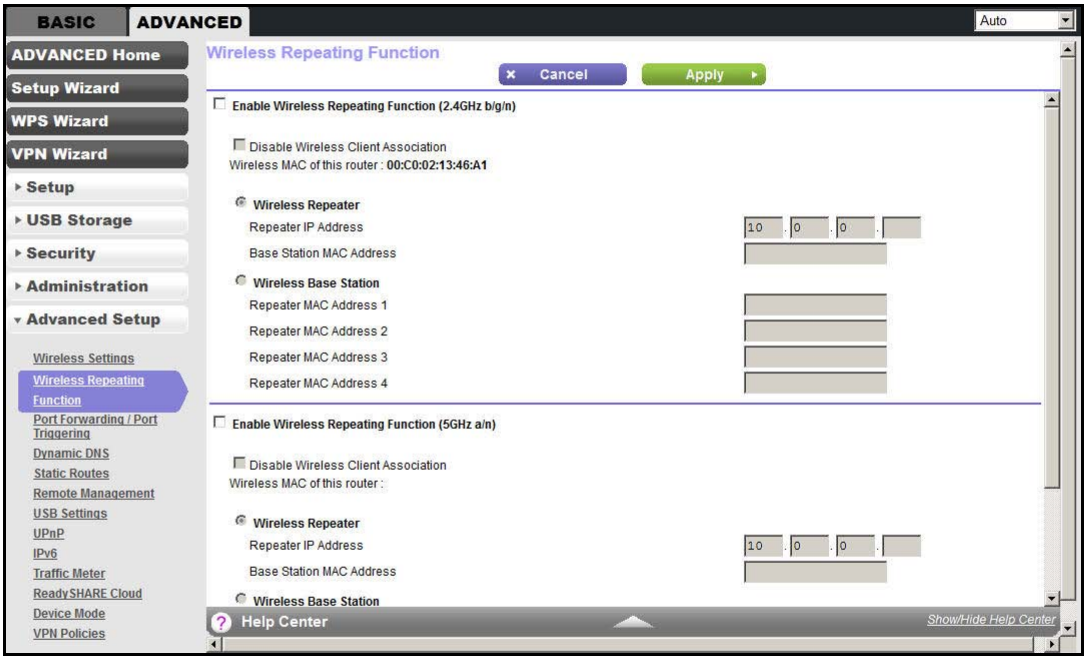
The D6200 WiFi modem router is always in dual-band concurrent mode, unless you turn off one radio. If you enable the wireless repeater in either radio band, the wireless base station or wireless repeater cannot be enabled in the other radio band. However, if you enable the wireless base station in either radio band and use the other radio band as a wireless WiFi modem router or wireless base station, dual-band concurrent mode is not affected.

For you to set up a wireless network with WDS, the following conditions have to be met for both access points:

- Both access points have to use the same SSID, wireless channel, and encryption mode.
- Both access points have to be on the same LAN IP subnet. That is, all the access point LAN IP addresses are in the same network.
- All LAN devices (wired and wireless computers) have to be configured to operate in the same LAN network address range as the access points.

Wireless Repeating Function

Select **ADVANCED > Advanced Setup > Wireless Repeating Function** to view or change wireless repeater settings for the WiFi modem router.



Wireless Repeating Function

☐ Enable Wireless Repeating Function (2.4GHz b/g/n)

☐ Disable Wireless Client Association

Wireless MAC of this router : 00:C0:02:13:46:A1

● Wireless Repeater

Repeater IP Address 10 . 0 . 0 .

Base Station MAC Address

○ Wireless Base Station

Repeater MAC Address 1

Repeater MAC Address 2

Repeater MAC Address 3

Repeater MAC Address 4

☐ Enable Wireless Repeating Function (5GHz a/n)

☐ Disable Wireless Client Association

Wireless MAC of this router :

● Wireless Repeater

Repeater IP Address 10 . 0 . 0 .

Base Station MAC Address

○ Wireless Base Station

- **Enable Wireless Repeating Function**. Select the check box for the 2.4 GHz or 5 GHz network to use the wireless repeating function.
- **Disable Wireless Client Association**. If your WiFi modem router is the repeater, selecting this check box means that wireless clients cannot associate with it. Only LAN client associations are allowed.
  - If you are setting up a point-to-point bridge, select this check box.
  - If you want all client traffic to go through the other access point (repeater with wireless client association), leave this check box cleared.

- **Wireless MAC of this router**. This field displays the MAC address for your WiFi modem router for your reference. You need to enter this MAC address in the corresponding Wireless Repeating Function screen of the other access point you are using.
- **Wireless Repeater**. If your WiFi modem router is the repeater, select this radio button.

  Repeater IP Address. If your WiFi modem router is the repeater, enter the IP address of the other access point.

  Base Station MAC Address. If your WiFi modem router is the repeater, enter the MAC address for the access point that is the base station.
- **Wireless Base Station**. If your WiFi modem router is the base station, select this radio button.

  Disable Wireless Client Association. If your WiFi modem router is the base station, selecting this check box means that wireless clients cannot associate with it. Only LAN client associations are allowed.

  Repeater MAC Address (1 through 4). If your WiFi modem router is the base station, it can act as the "parent" of up to four other access points. Enter the MAC addresses of the other access points in these fields.

Set Up the Base Station

The wireless repeating function works only in hub and spoke mode. The units cannot be daisy-chained. You have to know the wireless settings for both units. You have to know the MAC address of the remote unit. First, set up the base station and then set up the repeater.

➢ **To set up the base station:**

1. Set up both units with the same wireless settings (SSID, mode, channel, and security). The wireless security option has to be set to None or WEP.
2. Select **ADVANCED > Advanced Setup > Wireless Repeating Function** to display the Wireless Repeating Function screen.
3. Depending on the frequency you want to use, select the **Enable Wireless Repeating Function** check box and select the **Wireless Base Station** radio button.
4. Enter the MAC address for one or more repeater units.
5. Click **Apply** to save your changes.

Set Up a Repeater Unit

Use a wired Ethernet connection to set up the repeater unit to avoid conflicts with the wireless connection to the base station.

Note: If you are using the D6200 base station with a non-NETGEAR WiFi modem router as the repeater, you might need to change more configuration settings. In particular, you should disable the DHCP server function on the wireless repeater AP.

➢ **To configure the WiFi modem router as a repeater unit:**

1. Log in to the WiFi modem router that is the repeater. Select **BASIC > Wireless Settings** and verify that the wireless settings match the base unit exactly. The wireless security option has to be set to **WEP** or **None**.
2. Select **ADVANCED > Advanced Setup > Wireless Repeating Function**, and select the **Enable Wireless Repeating Function** check box and the **Wireless Repeater** radio button.
3. Complete the Repeater IP Address field. This IP address has to be in the same subnet as the base station, but different from the LAN IP of the base station.
4. Click **Apply** to save your changes.
5. Verify connectivity across the LANs.

   A computer on any wireless or wired LAN segment of the WiFi modem router should be able to connect to the Internet or share files and printers with other wireless or wired computer or server connected to the other access point.

Port Forwarding and Triggering

By default, the WiFi modem router blocks inbound traffic from the Internet to your computers except replies to your outbound traffic. You might need to create exceptions to this rule for these purposes:

- To allow remote computers on the Internet to access a server on your local network.
- To allow certain applications and games to work correctly when their replies are not recognized by your WiFi modem router.

Your WiFi modem router provides two features for creating these exceptions: port forwarding and port triggering. The next sections provide background information to help you understand how port forwarding and port triggering work, and the differences between the two.

Remote Computer Access Basics

When a computer on your network needs to access a computer on the Internet, your computer sends your WiFi modem router a message containing the source and destination address and process information. Before forwarding your message to the remote computer, your WiFi modem router has to modify the source information and create and track the communication session so that replies can be routed back to your computer.

Here is an example of normal outbound traffic and the resulting inbound responses:

1. You open a browser, and your operating system assigns port number 5678 to this browser session.
2. You type http://www.example.com into the URL field, and your computer creates a web page request message with the following address and port information. The request message is sent to your WiFi modem router.

   Source address. Your computer's IP address.

   Source port number. 5678, which is the browser session.

   Destination address. The IP address of www.example.com, which your computer finds by asking a DNS server.

   Destination port number. 80, which is the standard port number for a web server process.

3. Your WiFi modem router creates an entry in its internal session table describing this communication session between your computer and the web server at www.example.com. Before sending the web page request message to www.example.com, your WiFi modem router stores the original information and then modifies the source information in the request message, performing Network Address Translation (NAT):
   - The source address is replaced with your WiFi modem router's public IP address. This requirement is necessary because your computer uses a private IP address that is not globally unique and cannot be used on the Internet.
   - The source port number is changed to a number chosen by the WiFi modem router, such as 33333. This requirement is necessary because two computers could independently be using the same session number.

   Your WiFi modem router then sends this request message through the Internet to the web server at www.example.com.

4. The web server at www.example.com composes a return message with the requested web page data. The return message contains the following address and port information. The web server then sends this reply message to your WiFi modem router.

   Source address. The IP address of www.example.com.

   Source port number. 80, which is the standard port number for a web server process.

   Destination address. The public IP address of your WiFi modem router.

   Destination port number. 33333.

5. Upon receiving the incoming message, your WiFi modem router checks its session table to determine whether an active session for port number 33333 exists. Finding an active session, the WiFi modem router then modifies the message to restore the original address information replaced by NAT. Your WiFi modem router sends this reply message to your computer, which displays the web page from www.example.com. The message now contains the following address and port information.

   Source address. The IP address of www.example.com.

   Source port number. 80, which is the standard port number for a web server process.

   Destination address. Your computer's IP address.

Destination port number. 5678, which is the browser session that made the initial request.

6. When you finish your browser session, your WiFi modem router eventually detects a period of inactivity in the communications. Your WiFi modem router then removes the session information from its session table, and incoming traffic is no longer accepted on port number 33333.

Port Triggering to Open Incoming Ports

In the preceding example, requests are sent to a remote computer by your WiFi modem router from a particular service port number, and replies from the remote computer to your WiFi modem router are directed to that port number. If the remote server sends a reply to a different port number, your WiFi modem router does not recognize it and discards it. However, some application servers (such as FTP and IRC servers) send replies to multiple port numbers. Using the port triggering function of your WiFi modem router, you can tell the WiFi modem router to open more incoming ports when a particular outgoing port originates a session.

An example is Internet Relay Chat (IRC). Your computer connects to an IRC server at destination port 6667. The IRC server not only responds to your originating source port, but also sends an “identify” message to your computer on port 113. Using port triggering, you can tell the WiFi modem router, “When you initiate a session with destination port 6667, you have to also allow incoming traffic on port 113 to reach the originating computer.” Using steps similar to the preceding example, the following sequence shows the effects of the port triggering rule you have defined:

1. You open an IRC client program to start a chat session on your computer.
2. Your IRC client composes a request message to an IRC server using a destination port number of 6667, the standard port number for an IRC server process. Your computer then sends this request message to your WiFi modem router.
3. Your WiFi modem router creates an entry in its internal session table describing this communication session between your computer and the IRC server. Your WiFi modem router stores the original information, performs Network Address Translation (NAT) on the source address and port, and sends this request message through the Internet to the IRC server.
4. Noting your port triggering rule and having observed the destination port number of 6667, your WiFi modem router creates an additional session entry to send any incoming port 113 traffic to your computer.
5. The IRC server sends a return message to your WiFi modem router using the NAT-assigned source port (as in the previous example, say port 33333) as the destination port. The IRC server also sends an identify message to your WiFi modem router with destination port 113.
6. Upon receiving the incoming message to destination port 33333, your WiFi modem router checks its session table to determine whether an active session for port number 33333 exists. Finding an active session, the WiFi modem router restores the original address information replaced by NAT and sends this reply message to your computer.
7. Upon receiving the incoming message to destination port 113, your WiFi modem router checks its session table and learns that an active session exists for port 113 associated with

your computer. The WiFi modem router replaces the message's destination IP address with your computer's IP address and forwards the message to your computer.

8. When you finish your chat session, your WiFi modem router eventually senses a period of inactivity in the communications. The WiFi modem router then removes the session information from its session table, and incoming traffic is no longer accepted on port numbers 33333 or 113.

To configure port triggering, you need to know which inbound ports the application needs. Also, you need to know the number of the outbound port that triggers the opening of the inbound ports. You can usually determine this information by contacting the publisher of the application or user groups or newsgroups.

Note: Only one computer at a time can use the triggered application.

Port Forwarding to Permit External Host Communications

In both of the preceding examples, your computer initiates an application session with a server computer on the Internet. However, you might need to allow a client computer on the Internet to initiate a connection to a server computer on your network. Normally, your WiFi modem router ignores any inbound traffic that is not a response to your own outbound traffic. You can configure exceptions to this default rule by using the port forwarding feature.

A typical application of port forwarding can be shown by reversing the client-server relationship from the previous web server example. In this case, a remote computer's browser needs to access a web server running on a computer in your local network. Using port forwarding, you can tell the WiFi modem router, "When you receive incoming traffic on port 80 (the standard port number for a web server process), forward it to the local computer at 192.168.1.123." The following sequence shows the effects of the port forwarding rule you have defined:

1. The user of a remote computer opens a browser and requests a web page from www.example.com, which resolves to the public IP address of your WiFi modem router. The remote computer composes a web page request message with the following destination information:

   Destination address. The IP address of www.example.com, which is the address of your WiFi modem router.

   Destination port number. 80, which is the standard port number for a web server process.

   The remote computer then sends this request message through the Internet to your WiFi modem router.

2. Your WiFi modem router receives the request message and looks in its rules table for any rules covering the disposition of incoming port 80 traffic. Your port forwarding rule specifies that incoming port 80 traffic should be forwarded to local IP address 192.168.1.123. Therefore, your WiFi modem router modifies the destination information in the request message:

The destination address is replaced with 192.168.1.123.

Your WiFi modem router then sends this request message to your local network.

3. Your web server at 192.168.1.123 receives the request and composes a return message with the requested web page data. Your web server then sends this reply message to your WiFi modem router.
4. Your WiFi modem router performs Network Address Translation (NAT) on the source IP address, and sends this request message through the Internet to the remote computer, which displays the web page from www.example.com.

To configure port forwarding, you need to know which inbound ports the application needs. Usually you can determine this information by contacting the publisher of the application or the relevant user groups and newsgroups.

How Port Forwarding Differs from Port Triggering

The following points summarize the differences between port forwarding and port triggering:

- Port triggering can be used by any computer on your network, although only one computer can use it at a time.
- Port forwarding is configured for a single computer on your network.
- Port triggering requires that you know the computer’s IP address in advance. The IP address is captured automatically.
- Port forwarding requires that you specify the computer’s IP address during configuration, and the IP address can never change.
- Port triggering requires specific outbound traffic to open the inbound ports, and the triggered ports are closed after a period of no activity.
- Port forwarding is always active and does not need to be triggered.

Set Up Port Forwarding to Local Servers

Using the port forwarding feature, you can allow certain types of incoming traffic to reach servers on your local network. For example, you might want to make a local web server, FTP server, or game server visible and available to the Internet.

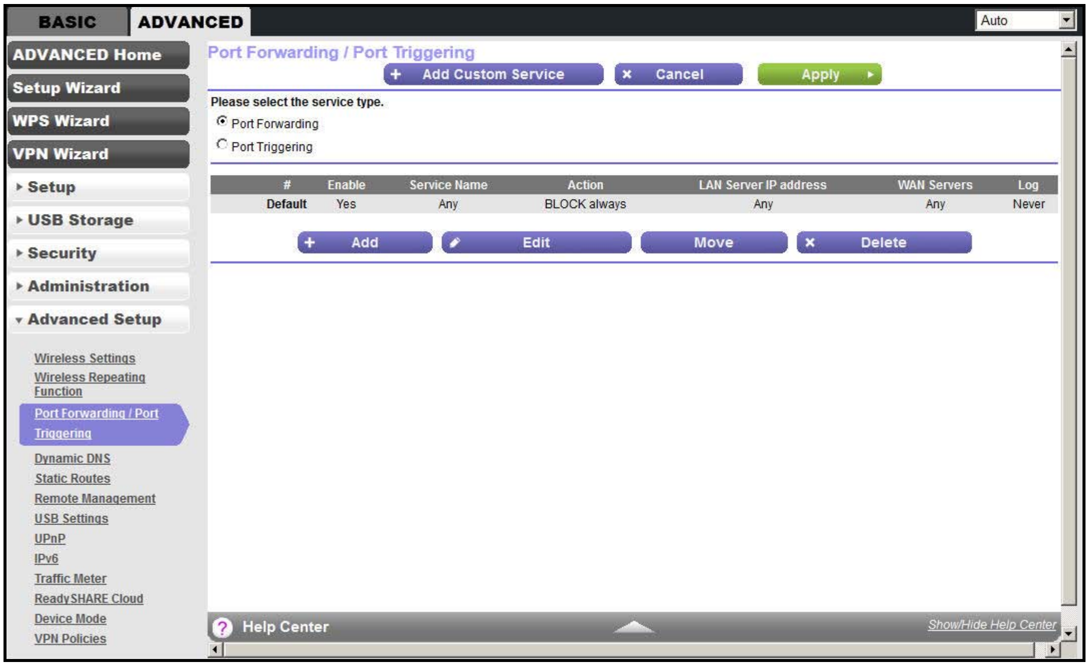
Use the Port Forwarding/Port Triggering screen to configure the WiFi modem router to forward specific incoming protocols to computers on your local network. In addition to servers for specific applications, you can also specify a default DMZ server to which all other incoming protocols are forwarded.

Before starting, you need to determine which type of service, application, or game you want to provide, and the local IP address of the computer that provides the service. The server computer has to always have the same IP address.

➤ To set up port forwarding:

> **Tip:** To ensure that your server computer always has the same IP address, use the reserved IP address feature of your WiFi Modem Router.

1. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering** to display the following screen:



Please select the service type.

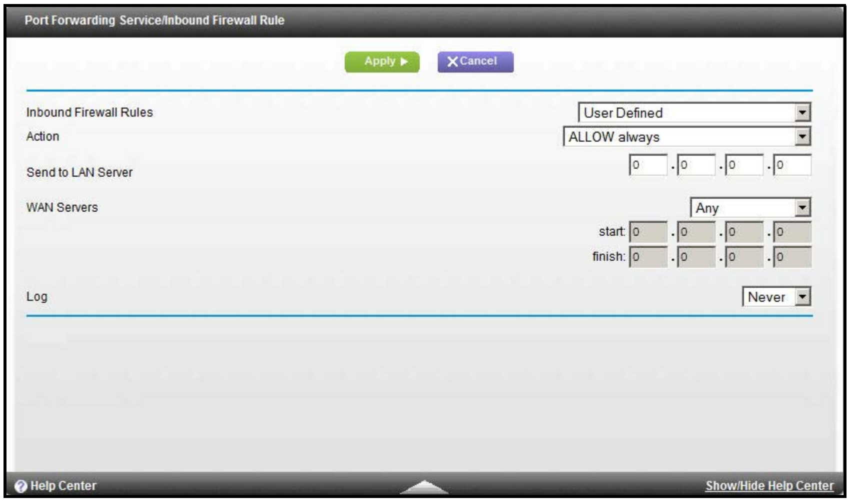
● Port Forwarding

○ Port Triggering

#	Enable	Service Name	Action	LAN Server IP address	WAN Servers	Log
Default	Yes	Any	BLOCK always	Any	Any	Never

Port Forwarding is selected as the service type.

2. Click **Add** to display the following screen:



Inbound Firewall Rules	User Defined
Action	ALLOW always
Send to LAN Server	0 . 0 . 0 . 0
WAN Servers	Any start: 0 . 0 . 0 . 0 finish: 0 . 0 . 0 . 0
Log	Never

3. From the Service list, select the service or game that you host on your network. If the service does not appear in the list, see *Add a Custom Service* on page 109.

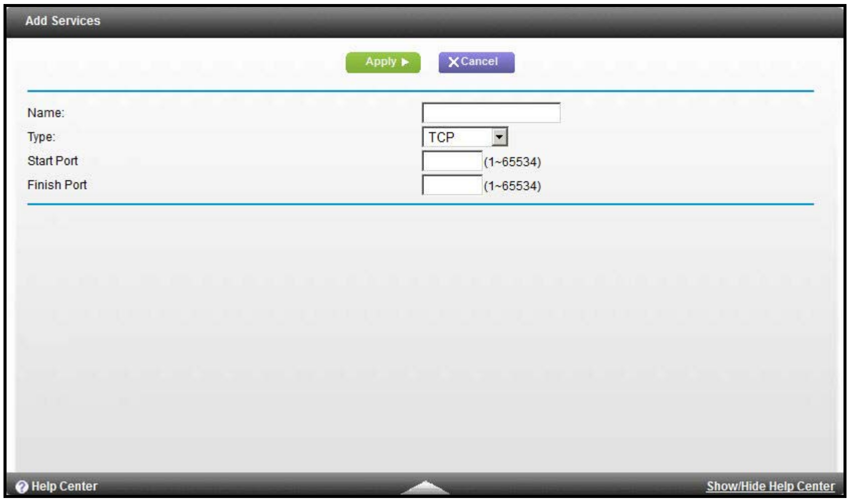
4. From the Action list, select the action that you want.
5. In the Send to LAN Server field, enter the last digit of the IP address of your local computer that provides this service.
6. Click **Apply**. The service appears in the list in the screen.

Add a Custom Service

To define a service, game, or application that does not appear in the Service Name list, you have to first determine which port number or range of numbers is used by the application. You can usually determine this information by contacting the publisher of the application or user groups or newsgroups.

➢ **To add a custom service:**

1. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
2. Select **Port Forwarding** as the service type.
3. Click the **Add Custom Service** button to display the following screen:



Add Services

Name:
Type: TCP
Start Port (1~65534)
Finish Port (1~65534)

4. In the Name field, enter a descriptive name.
5. In the Type list, select the protocol. If you are unsure, select **TCP/UDP**.
6. In the Start Port field, enter the beginning port number.
   - If the application uses a single port, enter the same port number in the End Port field.
   - If the application uses a range of ports, enter the ending port number of the range in the End Port field.
7. Click **Apply**. The service appears in the list in the Port Forwarding/Port Triggering screen.

Edit or Delete a Port Forwarding Entry

➢ **To edit or delete a port forwarding entry:**

1. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
2. In the table, select the radio button next to the service name.

3. Click **Edit Service** or **Delete Service**.

Application Example: Making a Local Web Server Public

If you host a web server on your local network, you can use port forwarding to allow web requests from anyone on the Internet to reach your web server.

➤ **To make a local web server public:**

1. Assign your web server either a fixed IP address or a dynamic IP address using DHCP address reservation. In this example, your WiFi modem router always gives your web server an IP address of 192.168.1.33.
2. In the Port Forwarding/Port Triggering screen, configure the WiFi modem router to forward the HTTP service to the local address of your web server at **192.168.1.33**. HTTP (port 80) is the standard protocol for web servers.
3. (Optional) Register a host name with a Dynamic DNS service, and configure your WiFi modem router to use the name as described in *Dynamic DNS* on page 112. To access your web server from the Internet, a remote user has to know the IP address that has been assigned by your ISP. However, if you use a Dynamic DNS service, the remote user can reach your server by a user-friendly Internet name, such as mynetgear.dyndns.org.

Set Up Port Triggering

Port triggering is a dynamic extension of port forwarding that is useful in these cases:

- More than one local computer needs port forwarding for the same application (but not simultaneously).
- An application needs to open incoming ports that are different from the outgoing port.

When port triggering is enabled, the WiFi modem router monitors outbound traffic looking for a specified outbound “trigger” port. When the WiFi modem router detects outbound traffic on that port, it remembers the IP address of the local computer that sent the data. The WiFi modem router then temporarily opens the specified incoming port or ports, and forwards incoming traffic on the triggered ports to the triggering computer.

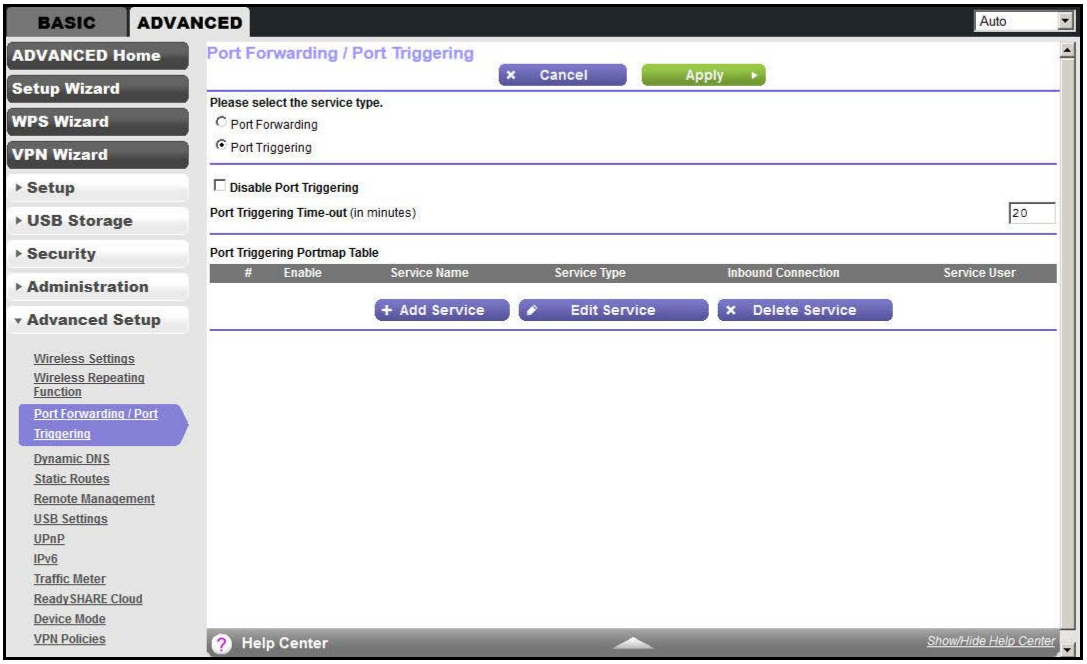
While port forwarding creates a static mapping of a port number or range to a single local computer, port triggering can dynamically open ports to any computer that needs them and can close the ports when they are no longer needed.

Note: If you use applications such as multiplayer gaming, peer-to-peer connections, real-time communications such as instant messaging, or remote assistance (a feature in Windows XP), you should also enable Universal Plug and Play (UPnP) according to the instructions in *Universal Plug and Play* on page 117.

To set up port triggering, you need to know which inbound ports the application needs. Also, you need to know the number of the outbound port that triggers the opening of the inbound ports. You can usually determine this information by contacting the publisher of the application or user groups or newsgroups.

➢ To set up port triggering:

1. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
2. Select the **Port Triggering** radio button to display the port triggering information.



Please select the service type.

○ Port Forwarding

● Port Triggering

□ Disable Port Triggering

Port Triggering Time-out (in minutes) 20

Port Triggering Portmap Table

#	Enable	Service Name	Service Type	Inbound Connection	Service User

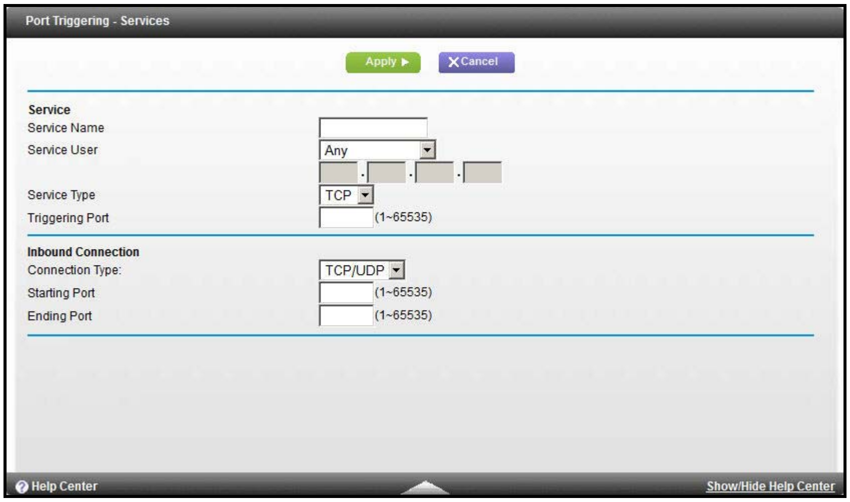
3. Clear the **Disable Port Triggering** check box if it is selected.

> **Note:** *If the Disable Port Triggering check box is selected after you configure port triggering, port triggering is disabled. However, any port triggering configuration information you added to the WiFi modem router is retained even though it is not used.*

4. In the Port Triggering Timeout field, enter a value up to 9999 minutes.

   This value controls the inactivity timer for the designated inbound ports. The inbound ports close when the inactivity time expires. This closure is required because the WiFi modem router cannot be sure when the application has terminated.

5. Click **Add Service** to display the following screen:



Port Triggering - Services

Service

Service Name

Service User: Any

Service Type: TCP

Triggering Port (1~65535)

Inbound Connection

Connection Type: TCP/UDP

Starting Port (1~65535)

Ending Port (1~65535)

6. In the Service Name field, type a descriptive service name.
7. In the Service User list, select **Any** (the default) to allow this service to be used by any computer on the Internet. Otherwise, select **Single address**, and enter the IP address of one computer to restrict the service to a particular computer.
8. Select the service type, either **TCP** or **UDP** or both (**TCP/UDP**). If you are not sure, select TCP/UDP.
9. In the Triggering Port field, enter the number of the outbound traffic port that causes the inbound ports to be opened.
10. Enter the inbound connection port information in the Service Type, Starting Port, and Ending Port fields.
11. Click **Apply**. The service appears in the Port Triggering Portmap table.

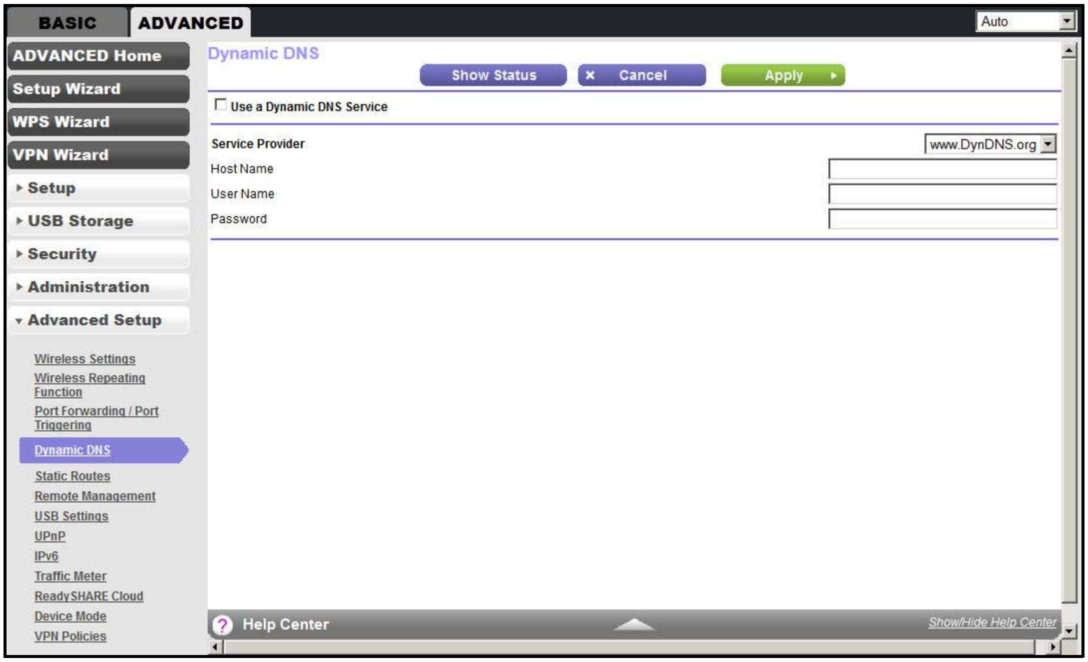
Dynamic DNS

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 is, and the address can change frequently. In this case, you can use a commercial Dynamic DNS service. This type of service lets you register your domain to their IP address and forwards traffic directed at your domain to your frequently changing IP address.

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

Your WiFi modem router contains a client that can connect to the Dynamic DNS service provided by DynDNS.org. First visit their website at *http://www.dyndns.org* and obtain an account and host name that you configure in the WiFi modem router. Then, whenever your ISP-assigned IP address changes, your WiFi modem 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 WiFi modem router at http://hostname.dyndns.org.

On the Advanced tab, select **Advanced Setup > Dynamic DNS** to display the following screen:



□ Use a Dynamic DNS Service

Service Provider www.DynDNS.org

Host Name

User Name

Password

➢ To set up Dynamic DNS:

1. Register for an account with one of the Dynamic DNS service providers whose addresses appear in the Service Provider list.
2. Select the **Use a Dynamic DNS Service** check box.
3. Select the address of your Dynamic DNS service provider. For example, for DynDNS.org, select **www.dyndns.org**.
4. Type the host name (or domain name) that your Dynamic DNS service provider gave you.
5. Type the user name for your Dynamic DNS account. This name is the name that you use to log in to your account, not your host name.
6. Type the password (or key) for your Dynamic DNS account.
7. Click **Apply** to save your configuration.

Static Routes

Static routes provide more routing information to your WiFi modem router. Under usual circumstances, the WiFi modem router has adequate routing information after it has been configured for Internet access, and you do not need to configure more static routes. You have to configure static routes only for unusual cases such as multiple WiFi modem routers or multiple IP subnets 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 WiFi modem router on your home network for connecting to the company where you are employed. This WiFi modem router’s address on your LAN is 192.168.1.100.
- Your company’s network address is 134.177.0.0.

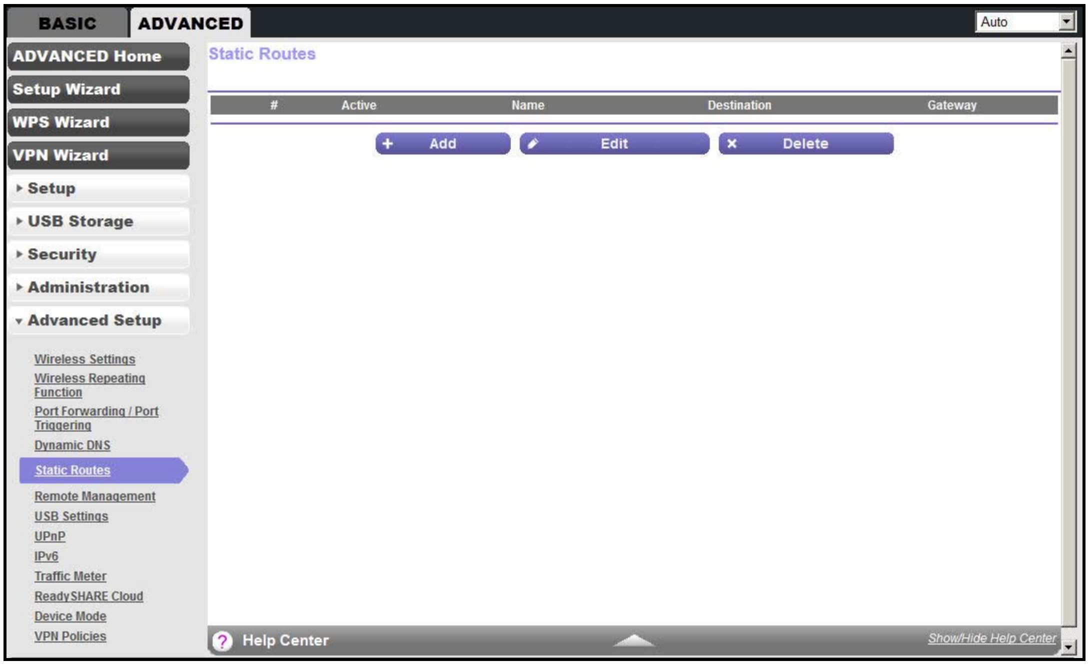
When you first configured your WiFi modem router, two implicit static routes were created. A default route was created with your ISP as the gateway, and a second static route was created to your local network for all 192.168.1.x addresses. With this configuration, if you attempt to access a device on the 134.177.0.0 network, your WiFi modem 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 have to define a static route, telling your WiFi modem router that 134.177.0.0 should be accessed through the ISDN WiFi modem 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 WiFi modem router at 192.168.1.100.
- A metric value of 1 works since the ISDN WiFi modem router is on the LAN.
- Private is selected only as a precautionary security measure in case RIP is activated.

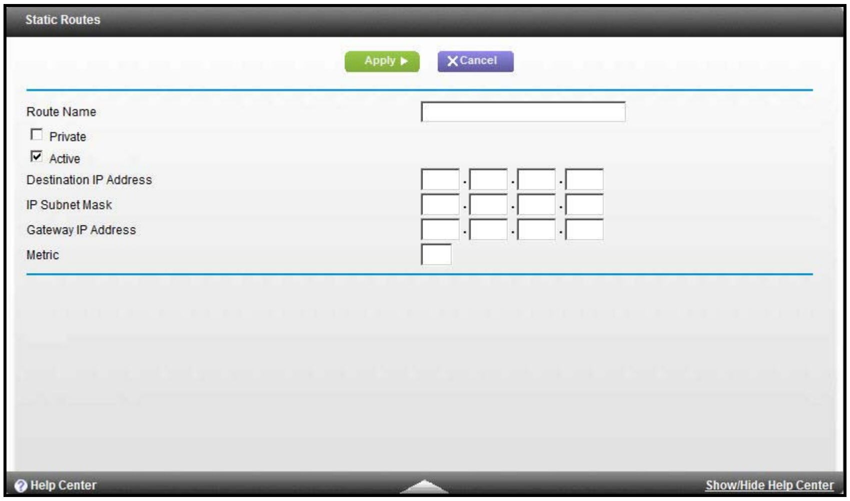
➢ To set up a static route:

1. Select **ADVANCED > Advanced Setup > Static Routes** to display the following screen:



#	Active	Name	Destination	Gateway

2. Click **Add** to display the following screen:



3. In the Route Name field, type a name for this static route (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. Type the IP address of the final destination.
7. Type the IP subnet mask for this destination. If the destination is a single host, type **255.255.255.255**.
8. Type the gateway IP address, which has to be a WiFi modem router on the same LAN segment as the WiFi Modem Router.
9. Type a number from 1 through 15 as the metric value.

   This value represents the number of WiFi modem routers between your network and the destination. Usually, a setting of 2 or 3 works, but if this link is a direct connection, set it to 1.

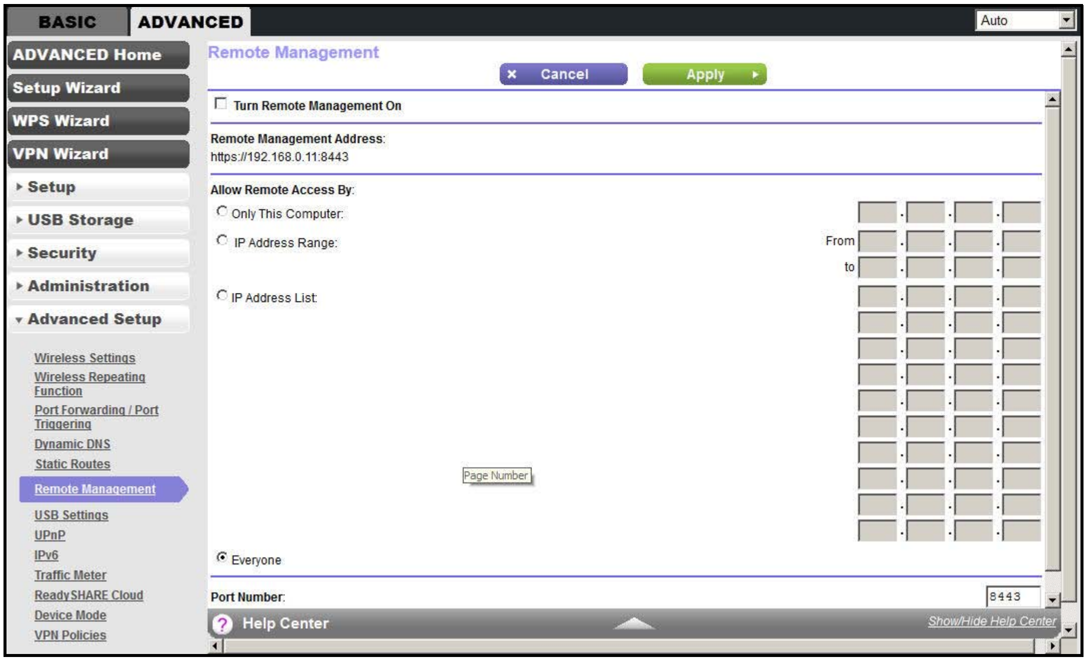
10. Click **Apply** to add the static route.

Remote Management

The remote management feature lets you upgrade or check the status of your WiFi Modem Router over the Internet.

➢ To set up remote management:

1. Select **ADVANCED > Advanced Setup > Remote Management**.



Remote Management

□ Turn Remote Management On

Remote Management Address:
https://192.168.0.11:8443

Allow Remote Access By:

○ Only This Computer:

○ IP Address Range: From . . . to . . .

○ IP Address List

● Everyone

Port Number: 8443

> **Note:** *Be sure to change the WiFi modem router’s default login password to a secure password. The ideal password should contain no dictionary words from any language and contain uppercase and lowercase letters, numbers, and symbols. It can be up to 30 characters.*

2. Select the **Turn Remote Management On** check box.
3. Under Allow Remote Access By, specify the external IP addresses allowed to access the WiFi modem router’s remote web management interface.

   > **Note:** *For enhanced security, restrict access to as few external IP addresses as practical.*

   - To allow access from a single IP address on the Internet, select **Only This Computer**. Enter the IP address that is allowed access.
   - To allow access from a range of IP addresses on the Internet, select **IP Address Range**. Enter a beginning and ending IP address to define the allowed range.
   - To allow access from any IP address on the Internet, select **Everyone**.
4. Specify the port number for accessing the web management interface.

Normal web browser access uses the standard HTTP service port 80. For greater security, enter a custom port number for the remote web management interface. Choose a number from 1024 through 65535, but do not use the number of any common service port. The default is 8080, which is a common alternate for HTTP.

5. Click **Apply** to have your changes take effect.
6. When accessing your WiFi modem router from the Internet, type your WiFi modem router's WAN IP address into your browser's address or location field followed by a colon (:) and the custom port number. For example, if your external address is 134.177.0.123 and you use port number 8080, enter **http://134.177.0.123:8080** in your browser.

USB Settings

For added security, the WiFi modem router can be set up to share only approved USB devices. See *Specify Approved USB Devices* on page 70 for the procedure.

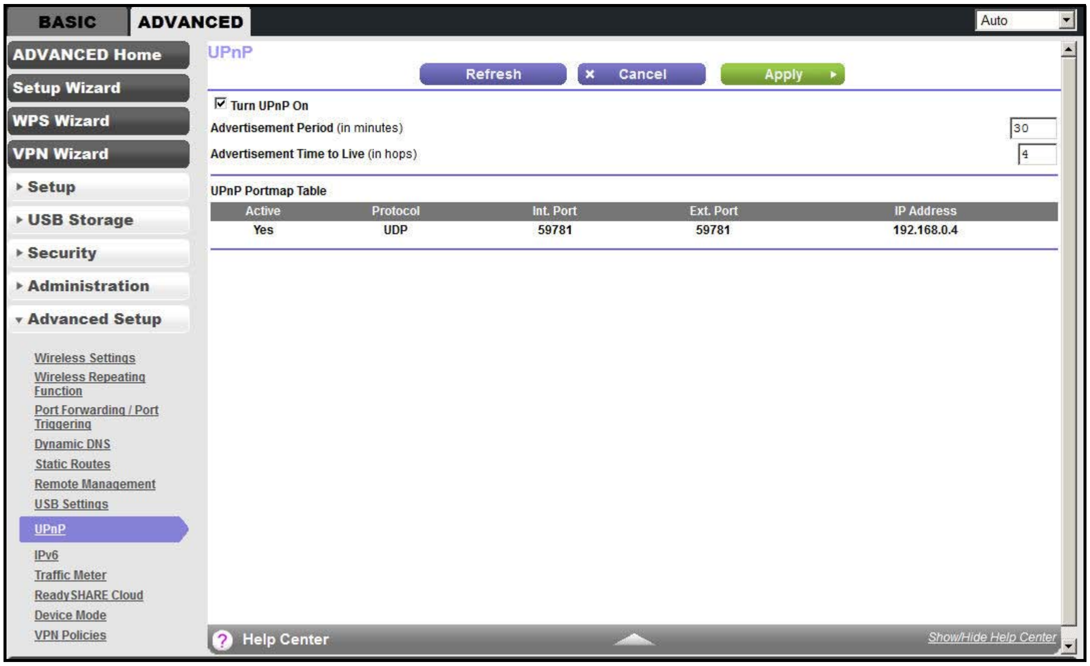
Universal Plug and Play

Universal Plug and Play (UPnP) helps devices, such as Internet appliances and computers, to access the network and connect to other devices as needed. UPnP devices can automatically discover the services from other registered UPnP devices on the network.

Note: If you use applications such as multiplayer gaming, peer-to-peer connections, or real-time communications such as instant messaging or remote assistance (a feature in Windows XP), you should enable UPnP.

➢ To turn on Universal Plug and Play:

1. Select **ADVANCED > Advanced Setup > UPnP**. The UPnP screen displays.



☑ Turn UPnP On

Advertisement Period (in minutes) 30

Advertisement Time to Live (in hops) 4

UPnP Portmap Table

Active	Protocol	Int. Port	Ext. Port	IP Address
Yes	UDP	59781	59781	192.168.0.4

2. The available settings and information in this screen are:

   Turn UPnP On. UPnP can be enabled or disabled for automatic device configuration. The default setting for UPnP is disabled. If this check box is not selected, the WiFi modem router does not allow any device to automatically control the resources, such as port forwarding (mapping) of the WiFi modem router.

   Advertisement Period. The advertisement period is how often the WiFi modem router broadcasts its UPnP information. This value can range from 1 to 1440 minutes. The default period is 30 minutes. Shorter durations ensure that control points have current device status at the expense of more network traffic. Longer durations can compromise the freshness of the device status, but can significantly reduce network traffic.

   Advertisement Time to Live. The time to live for the advertisement is measured in hops (steps) for each UPnP packet sent. The time to live hop count is the number of steps a broadcast packet is allowed to propagate for each UPnP advertisement before it disappears. The number of hops can range from 1 to 255. The default value for the advertisement time to live is 4 hops, which should be fine for most home networks. If you notice that some devices are not being updated or reached correctly, it might be necessary to increase this value.

   UPnP Portmap Table. The UPnP Portmap Table displays the IP address of each UPnP device that is accessing the WiFi modem router and which ports (internal and external) that device has opened. The UPnP Portmap Table also displays what type of port is open and whether that port is still active for each IP address.

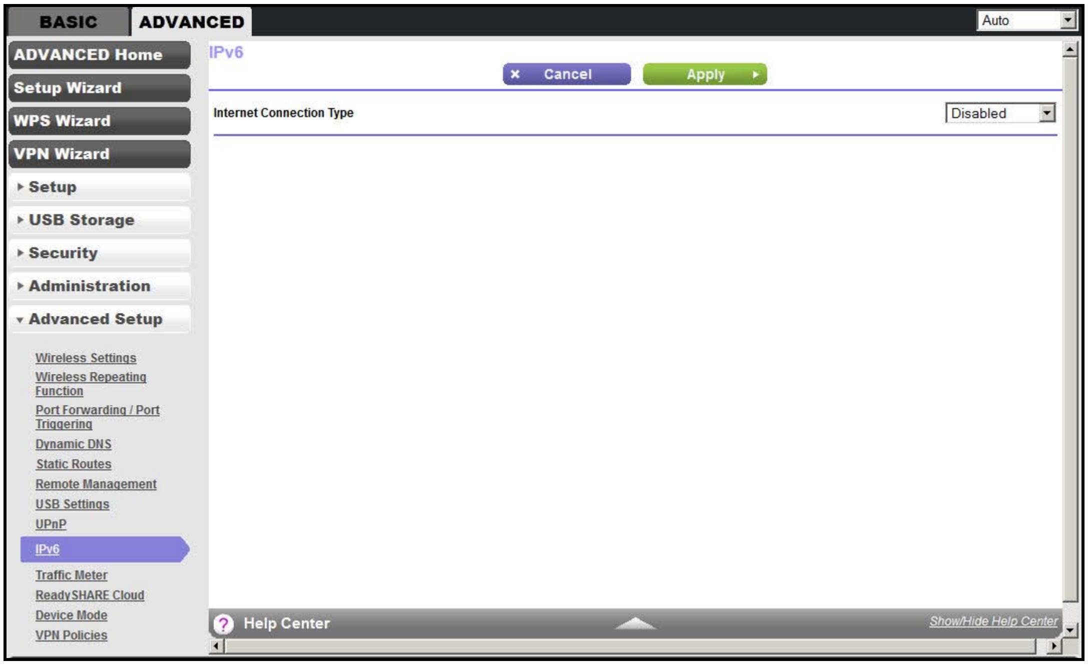
3. Click **Apply** to save your settings.

IPv6

You can use this feature to set up an IPv6 Internet connection type if NETGEAR genie does not detect it automatically.

➤ **To set up an IPv6 Internet connection type:**

1. Select **ADVANCED > Advanced Setup > IPv6** to display the following screen:



Internet Connection Type Disabled

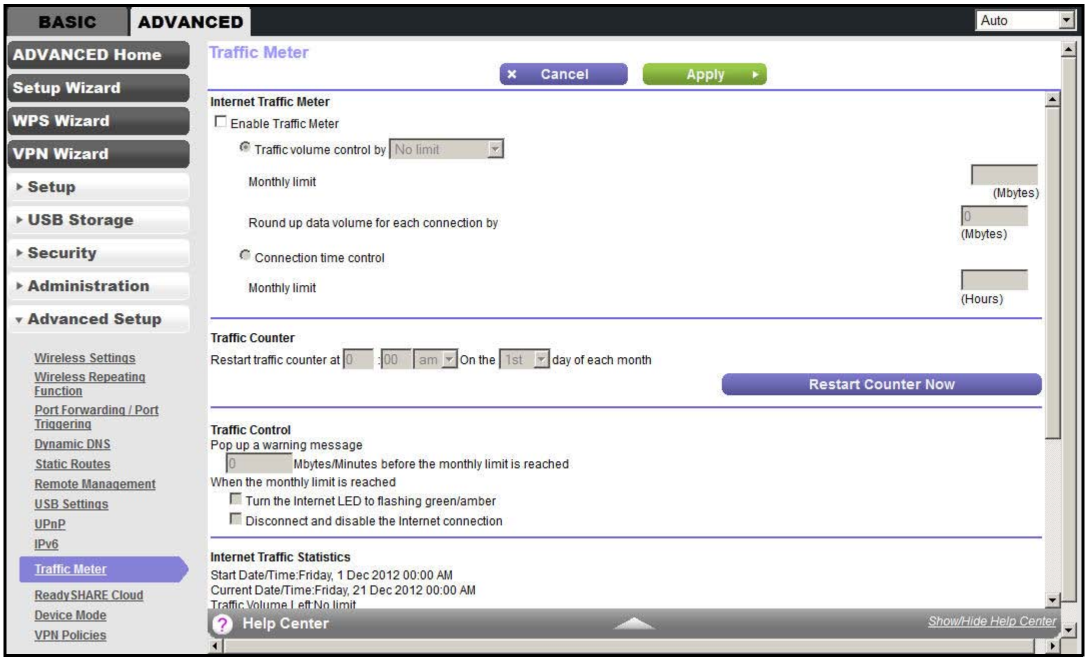
2. Select the IPv6 connection type from the list. Your Internet service provider (ISP) can provide this information.
   - If your ISP did not provide details, you can select **IPv6 Tunnel**.
   - If you are not sure, select **Auto Detect** so that the WiFi modem router detects the IPv6 type that is in use.
   - If your Internet connection does not use PPPoE, DHCP, or fixed, but is IPv6, then select **IPv6 auto config**.
3. Click **Apply** so that your changes take effect.

Traffic Meter

Traffic metering allows you to monitor the volume of Internet traffic passing through your WiFi modem router's Internet port. With the traffic meter utility, you can set limits for traffic volume, set a monthly limit, and get a live update of traffic usage.

➢ To monitor Internet traffic:

1. Click **ADVANCED > Advanced Setup > Traffic Meter** to display the following screen:



Traffic Meter

Internet Traffic Meter

□ Enable Traffic Meter

● Traffic volume control by No limit

Monthly limit (Mbytes)

Round up data volume for each connection by 0 (Mbytes)

○ Connection time control

Monthly limit (Hours)

Traffic Counter

Restart traffic counter at 0 :00 am On the 1st day of each month

Traffic Control

Pop up a warning message

0 Mbytes/Minutes before the monthly limit is reached

When the monthly limit is reached

□ Turn the Internet LED to flashing green/amber

□ Disconnect and disable the Internet connection

Internet Traffic Statistics

Start Date/Time:Friday, 1 Dec 2012 00:00 AM
Current Date/Time:Friday, 21 Dec 2012 00:00 AM
Traffic Volume Left:No limit

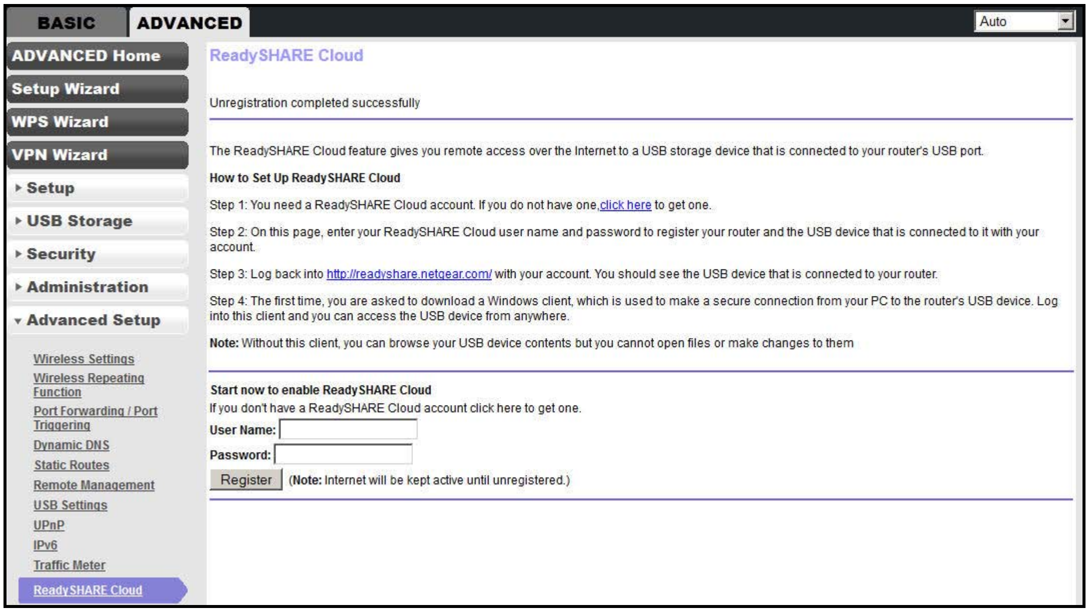
2. To enable the traffic meter, select the **Enable Traffic Meter** check box.
3. If you would like to record and restrict the volume of Internet traffic, select the **Traffic volume control by** radio button. You can select one of the following options for controlling the traffic volume:
   - **No Limit**. No restriction is applied when the traffic limit is reached.
   - **Download only**. The restriction is applied to incoming traffic only.
   - **Both Directions**. The restriction is applied to both incoming and outgoing traffic.
4. You can limit the amount of data traffic allowed per month by specifying how many Mbytes per month are allowed or by specifying how many hours of traffic are allowed.
5. Set the traffic counter to begin at a specific time and date.
6. Set up traffic control to issue a warning message before the monthly limit of Mbytes or hours is reached. You can select one of the following to occur when the limit is attained:
   - The Internet LED blinks green or red.
   - The Internet connection is disconnected and disabled.
7. Set up Internet traffic statistics to monitor the data traffic.
8. Click the **Traffic Status** button to get a current update of Internet traffic status on your WiFi modem router.
9. Click **Apply** to save your settings.

ReadySHARE Cloud

The ReadySHARE Cloud feature provides remote access over the Internet to a USB storage device that is connected to your router's USB port no matter where you are. You can also invite family members or friends to access the USB storage device.

➢ To set up ReadySHARE Cloud:

1. Click **ADVANCED > Advanced Setup > ReadySHARE Cloud** to display the following screen:



ReadySHARE Cloud

Unregistration completed successfully

The ReadySHARE Cloud feature gives you remote access over the Internet to a USB storage device that is connected to your router's USB port.

How to Set Up ReadySHARE Cloud

Step 1: You need a ReadySHARE Cloud account. If you do not have one,click here to get one.

Step 2: On this page, enter your ReadySHARE Cloud user name and password to register your router and the USB device that is connected to it with your account.

Step 3: Log back into http://readyshare.netgear.com/ with your account. You should see the USB device that is connected to your router.

Step 4: The first time, you are asked to download a Windows client, which is used to make a secure connection from your PC to the router's USB device. Log into this client and you can access the USB device from anywhere.

Note: Without this client, you can browse your USB device contents but you cannot open files or make changes to them

Start now to enable ReadySHARE Cloud

If you don't have a ReadySHARE Cloud account click here to get one.

User Name:

Password:

Register (**Note:** Internet will be kept active until unregistered.)

2. You need a ReadySHARE Cloud account. If you do not have one, click the link provided in this screen to go to NETGEAR ReadySHARE Cloud page to create an account.

   Enter a valid email address that is used to recover your user name and password.

3. Return to this screen.

   Note: *This step has to be initiated from your NETGEAR router. You cannot register your router through the NETGEAR ReadySHARE Cloud website at http://readyshare.netgear.com.*

   a. Enter your ReadySHARE Cloud user name and password to register your router and the USB device that is connected to it.

   Fill in the User Name and Passwor**d** fields. These entries are the ReadySHARE Cloud account you created on NETGEAR website in *Step 2*.

   b. Click **Register**.

   - The router with the USB storage device displays in your ReadySHARE Cloud account only after you register it. The Internet connection between the router and the ReadySHARE Cloud server is kept alive until you unregister it.

- You can also register the router with another account after unregistering the router from previous account.

4. Log in to http://readyshare.netgear.com with your account. You should see the USB device that is connected to your router. By default, all contents of the USB device are accessible. You can create a share that is limited to any subset of the contents with the security level you specify.
5. The first time you use ReadySHARE Cloud, you are asked to download a Windows client that makes a secure connection from your computer to the router’s USB device. Log in to this client to access the USB device from anywhere.

Note: *Currently, you can download only the Windows OS client. The Mac OS client will be ready at a later time on the website.*

Note: *Without this client, you can only browse your USB device contents by clicking the + icon (Add Share) on the website. You are not able to open files nor can you change them.*

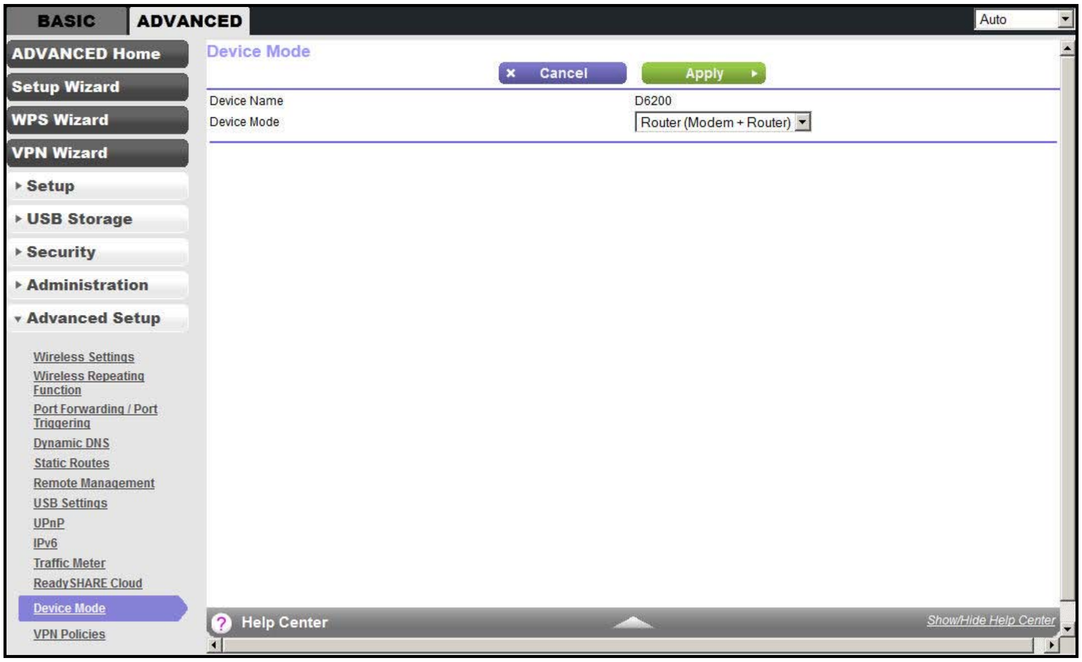
Device Mode

When the WiFi modem router is in Router mode, this screen allows switching to Modem mode, where the WiFi modem router acts as a pure bridge or DSL modem.

Routing, firewall, wireless support, USB, and the traffic meter are not available in Modem mode. A typical application is a small-to-medium business scenario where the WiFi modem router is used for DSL connectivity behind a carrier class router or firewall or security device manager. When the WiFi modem router is in Modem mode, this screen allows switching back to Router mode with all of the standard features.

➤ **To switch the device mode:**

1. Click **ADVANCED > Advanced Setup > Device Mode** to display the following screen:



Device Mode

Device Name D6200

Device Mode Router (Modem + Router)

2. From the Device Mode list, select **Router (Modem + Router)** or **Modem (Modem only)**.
3. Click **Apply** to save your settings.

VPN Policies

Manage your VPN policies from the VPN Policies screen.

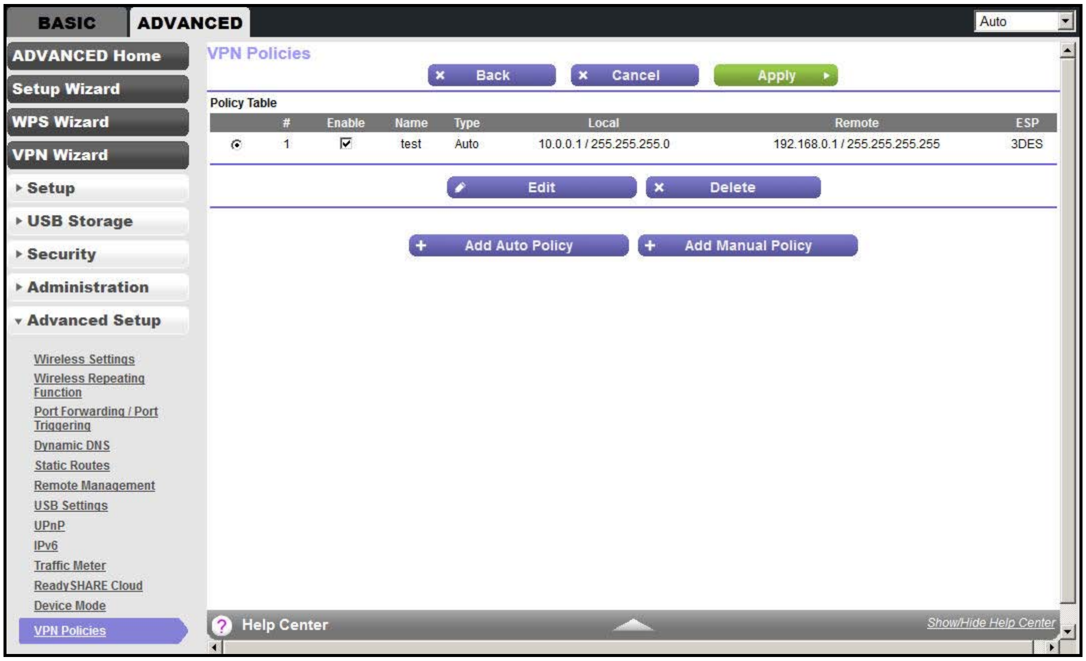
- Traffic covered by a policy is automatically sent through a VPN tunnel.
- Where traffic is covered by two or more policies, the first matching policy is used. In this situation, the order of the policies is important. However, if you only have one policy for each remote VPN endpoint, the policy order is not important.
- The VPN tunnel is created according to the parameters in the SA (security association).
- The remote VPN endpoint must have a matching SA, or else it refuses the connection.

Two types of VPN policies are possible:

- **Manual**. All settings (including the keys) for the VPN tunnel are input manually at each end (both VPN endpoints). No third-party server or organization is involved.
- **Auto**. Some parameters for the VPN tunnel are generated automatically. This process requires using the IKE (Internet Key Exchange) protocol to perform negotiations between the two VPN endpoints.

➢ To manage the VPN policies:

1. Click **ADVANCED > Advanced Setup > VPN Policies** to display the following screen:



VPN Policies

Policy Table

	#	Enable	Name	Type	Local	Remote	ESP
●	1	☑	test	Auto	10.0.0.1 / 255.255.255.0	192.168.0.1 / 255.255.255.255	3DES

The Policy Table contains the following data:

- **Enable**. Use this check box to enable or disable a policy as required. Click **Apply** when you are finished.
- **Name**. Each policy has a unique name to identify it.
- **Type**. The type is Auto or Manual.
- **Local**. IP address or address range on your local LAN. Traffic must be from (or to) the addresses covered by this policy.
- **Remote**. IP address or address range of the remote network. Traffic must be to (or from) the addresses covered by this policy.
- **ESP**. Encapsulating Security Payload. This setting specifies the encryption protocol used for the VPN data.

2. Click the appropriate button to manage a VPN policy:
   - **Edit**. Edit (modify) the selected policy. (Select a policy by selecting the radio button.)
   - **Delete**. Delete the selected policy.
   - **Apply**. Save any changes to the Enable setting for each policy.

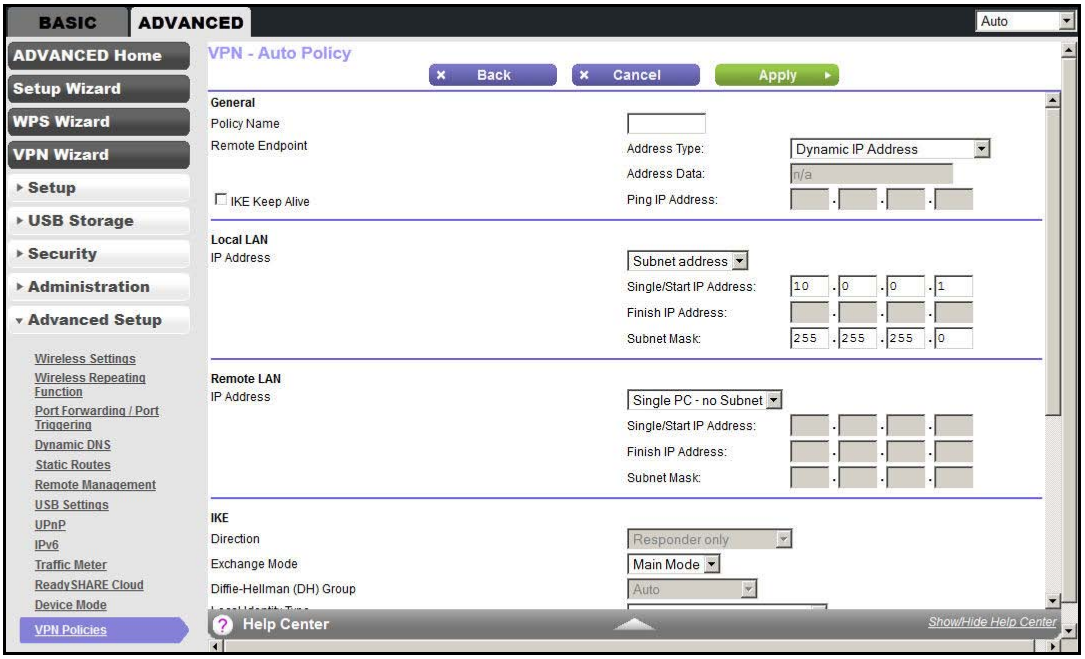
- **Cancel**. Discard any unsaved changes to the Enable setting for each policy.
- **Add Auto Policy**. Change to the input screen for an Auto policy. When the new policy is saved, it appears in the bottom row of the Policy Table. See *Add or Edit an Auto VPN Policy* on page 125.
- **Add Manual Policy**. Change to the input screen for a Manual policy. When the new policy is saved, it appears in the bottom row of the Policy Table. See *Add or Edit a Manual VPN Policy* on page 128.

Add or Edit an Auto VPN Policy

An Auto VPN policy uses the IKE (Internet Key Protocol) to exchange and negotiate parameters for the IPsec SA (security association). Because of this negotiation, not all of the settings on this VPN gateway have to match the settings on the remote VPN endpoint. Where settings have match, this requirement is indicated.

➢ **To add or edit an Auto VPN Policy:**

1. Click **ADVANCED > Advanced Setup > VPN Policies**, and click the **Add Auto Policy** button to display the following screen:



VPN - Auto Policy

General

Policy Name

Remote Endpoint — Address Type: Dynamic IP Address; Address Data: n/a; Ping IP Address: . . .

□ IKE Keep Alive

Local LAN

IP Address: Subnet address

Single/Start IP Address: 10 . 0 . 0 . 1

Finish IP Address: . . .

Subnet Mask: 255 . 255 . 255 . 0

Remote LAN

IP Address: Single PC - no Subnet

Single/Start IP Address: . . .

Finish IP Address: . . .

Subnet Mask: . . .

IKE

Direction: Responder only

Exchange Mode: Main Mode

Diffie-Hellman (DH) Group: Auto

2. Enter or select the following parameters:
   - **General**. These settings identify this policy and determine its major characteristics.
     - **Policy Name**. Enter a unique name to identify this policy. This name is not supplied to the remote VPN endpoint. It is used only to help you manage the policies.
     - **Remote VPN Endpoint**. If the remote endpoint has a dynamic IP address, select **Dynamic IP Address**. No address data input is required.

Otherwise, select the desired option (IP address or domain name) and enter the address of the remote VPN endpoint you wish to connect to.

The remote VPN endpoint must have this VPN gateway's address entered as its remote VPN endpoint.

- **IKE Keep Alive**. Check this check box if you wish to ensure that a connection is kept open, or, if that is not possible, it is quickly reestablished when disconnected.

  The ping IP address has to be associated with the remote endpoint. Either the WAN or a LAN address can be used; a LAN address is preferable. This IP address is pinged to generate some traffic for the VPN tunnel.

- **Local LAN**. These settings identify which computers on your LAN are covered by this policy. For each selection, data must be provided as follows:
  - **Single address**. Enter an IP address in the Single/Start IP address field. Typically, this setting is used when you wish to make a single server on your LAN available to remote users.
  - **Range address**. Enter the starting IP address in the Single/Start IP address field, and the finish IP address in the Finish IP address field. A range must be an address range used on your LAN.
  - **Subnet address**. Enter an IP address in the Single/Start IP address field, and the desired network mask in the Subnet Mask field.

  The remote VPN endpoint must have these IP addresses entered as its remote addresses.

- **Remote LAN**. These settings identify which computers on the remote LAN are covered by this policy. For each selection, data must be provided as follows:
  - **Single PC - no Subnet**. Select this option if there is no LAN (only a single computer) at the remote endpoint. If this option is selected, no additional data is required.
  - **Single address**. Enter an IP address in the Single/Start IP address field. This value must be an address on the remote LAN. Typically, this setting is used when you wish to access a server on the remote LAN.
  - **Range address**. Enter the starting IP address in the Single/Start IP address field, and the finish IP address in the Finish IP address field. This range must be an address range used on the remote LAN.
  - **Subnet address**. Enter an IP address in the Single/Start IP address field, and the desired network mask in the Subnet Mask field.

  The remote VPN endpoint must have these IP addresses entered as its local addresses.

- **IKE**.
  - **Direction/Type**. This setting is used when determining if the IKE policy matches the current traffic. Select the desired option.
  - **Responder only**. Incoming connections are allowed, but outgoing connections are blocked.

  - **Initiator and Responder**. Both incoming and outgoing connections are allowed.
  - **Exchange Mode**. Currently, only Main Mode is supported. Ensure that the remote VPN endpoint is set to use Main Mode.
  - **Diffie-Hellman (DH) Group**. The Diffie-Hellman algorithm is used when the connection exchanges keys. The DH Group setting determines the bit size used in the exchange. This value must match the value used on the remote VPN gateway.
  - **Local Identity Type**. Select the desired option to match the Remote Identity Type setting on the remote VPN endpoint.
  - **WAN IP Address**. Your Internet IP address.
  - **Fully Qualified Domain Name**. Your domain name.
  - **Fully Qualified User Name**. Your name, email address, or other ID.
  - **Local Identity Data**. Enter the data for the selection. When WAN IP Address is selected, no input is required.
  - **Remote Identity Type**. Select the desired option to match the Local Identity Type setting on the remote VPN endpoint.
  - **IP Address**. The Internet IP address of the remote VPN endpoint.
  - **Fully Qualified Domain Name**. The domain name of the remote VPN endpoint.
  - **Fully Qualified User Name**. The name, email address, or other ID of the remote VPN endpoint.
  - **Remote Identity Data**. Enter the data for the selection. When IP Address is selected, no input is required.
- **Parameters**.
  - **Encryption Algorithm**. The encryption algorithm used for both IKE and IPSec. This setting must match the setting used on the remote VPN gateway.
  - **Authentication Algorithm**. The authentication algorithm used for both IKE and IPSec. This setting must match the setting used on the remote VPN gateway.
  - **Pre-shared Key**. The key has to be entered both here and on the remote VPN gateway.
  - **SA Life Time**. This setting determines the time interval before the SA (security association) expires. (It is automatically reestablished as required.) While using a short time period (or data amount) increases security, it also degrades performance. It is common to use periods over an hour (3600 seconds) for the SA lifetime. This setting applies to both IKE and IPSec SAs.
  - **Enable PFS (Perfect Forward Secrecy)**. If enabled, security is enhanced by ensuring that the key is changed at regular intervals. Also, even if one key is broken, subsequent keys are no easier to break. (Each key has no relationship to the previous key.)

    This setting applies to both IKE and IPSec SAs. When configuring the remote endpoint to match this setting, you might need to specify the key group used. For this device, the key group is the same as the DH Group setting in the IKE section.

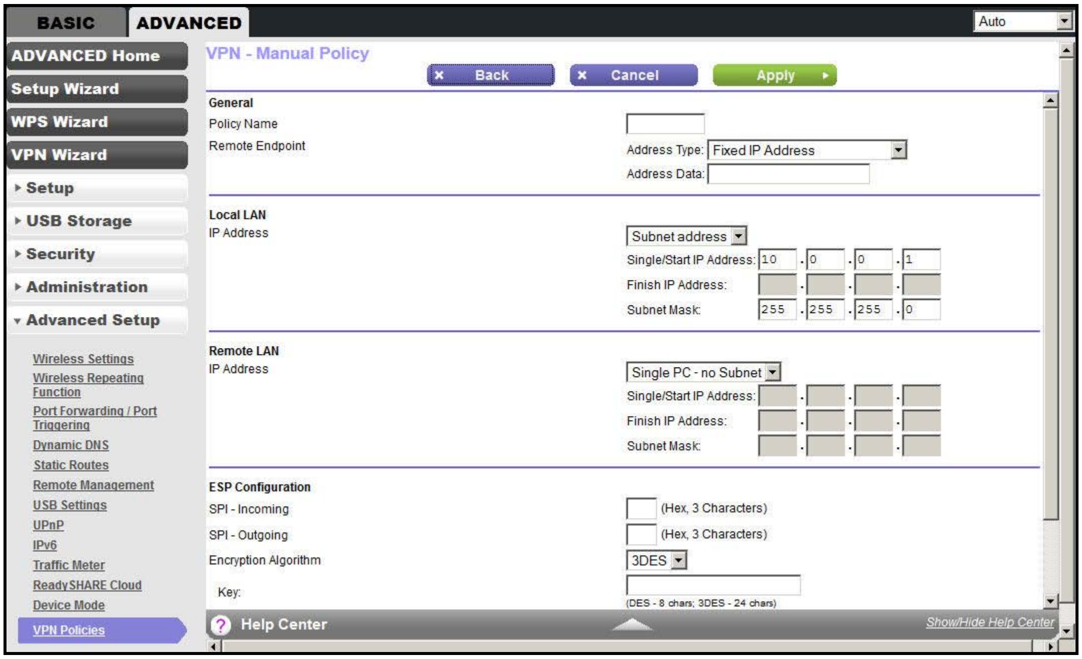
3. Click **Apply** when done.

Add or Edit a Manual VPN Policy

A Manual VPN policy requires all settings (including the keys) for the VPN tunnel to be manually input at each end (both VPN endpoints). No third-party server or organization is involved.

To add or edit a Manual VPN policy:

1. Click **ADVANCED > Advanced Setup > VPN Policies**, and click the **Add Manual Policy** button to display the following screen:



VPN - Manual Policy

General

Policy Name:

Remote Endpoint — Address Type: Fixed IP Address; Address Data:

Local LAN

IP Address: Subnet address

Single/Start IP Address: 10 . 0 . 0 . 1

Finish IP Address: . . .

Subnet Mask: 255 . 255 . 255 . 0

Remote LAN

IP Address: Single PC - no Subnet

Single/Start IP Address: . . .

Finish IP Address: . . .

Subnet Mask: . . .

ESP Configuration

SPI - Incoming: (Hex, 3 Characters)

SPI - Outgoing: (Hex, 3 Characters)

Encryption Algorithm: 3DES

Key: (DES - 8 chars; 3DES - 24 chars)

2. Enter or select the following parameters:
   - **General**. These settings identify this policy and determine its major characteristics.
     - **Policy Name**. Enter a unique name to identify this policy. This name is not supplied to the remote VPN endpoint. It is used only to help you manage the policies.
     - **Remote VPN Endpoint**. Select the desired option (IP address or domain name) and enter the address or domain name of the remote VPN endpoint you wish to connect to.

       The remote VPN endpoint must have this VPN gateway’s address entered as its remote VPN endpoint.
   - **Local LAN**. These settings identify which computers on your LAN are covered by this policy. For each selection, data must be provided as follows:
     - **Single address**. Enter an IP address in the Single/Start IP address field. Typically, this setting is used when you wish to make a single server on your LAN available to remote users.

- **Range address**. Enter the starting IP address in the Single/Start IP address field, and the finish IP address in the Finish IP address field. This setting must be an address range used on your LAN.
- **Subnet address**. Enter an IP address in the Single/Start IP address field, and the desired network mask in the Subnet Mask field.

The remote VPN endpoint must have these IP addresses entered as its remote addresses.

- **Remote LAN**. These identify which computers on the remote LAN are covered by this policy. For each selection, data must be provided as follows:
    - **Single PC - dynamic IP**. Select this option if there is no LAN (only a single computer) at the remote endpoint. If this option is selected, no additional data is required.
    - **Single address**. Enter an IP address in the Single/Start IP address field. This setting must be an address on the remote LAN. Typically, this setting is used when you wish to access a server on the remote LAN.
    - **Range address**. Enter the starting IP address in the Single/Start IP address field, and the finish IP address in the Finish IP address field. This range must be an address range used on the remote LAN.
    - **Subnet address**. Enter an IP address in the Single/Start IP address field, and the desired network mask in the Subnet Mask field.

  The remote VPN endpoint must have these IP addresses entered as its local addresses.

- **ESP Configuration**. ESP (encapsulating security payload) provides security for the payload (data) sent through the VPN tunnel.
    - **SPI**. Enter the required SPIs. Each policy must have unique SPIs. These settings must match the remote VPN endpoint. The Incoming setting here must match the Outgoing setting on the remote VPN endpoint, and the Outgoing setting here must match the Incoming setting on the remote VPN endpoint.
    - **Encryption**. Select the desired encryption algorithm, and enter the key in the field provided. For 3DES, the keys should be 24 ASCII characters (48 hex characters).
    - **Authentication**. Select the desired authentication algorithm, and enter the key in the field provided. For MD5, the keys should be 16 ASCII characters (32 hex characters). For SHA-1, the keys should be 20 ASCII (40 hex characters).

3. Click **Apply** when done.

10. Troubleshooting 10

Diagnose and solve problems

This chapter provides information to help you diagnose and solve problems you might have with your WiFi modem router. If you do not find the solution here, check the NETGEAR support site at *http://support.netgear.com/general/contact/default.aspx* for product and contact information.

This chapter contains the following sections:

Quick Tips

This section describes tips for troubleshooting some common problems.

Sequence to Restart Your Network

Be sure to restart your network in this sequence:

1. Turn off *and* unplug the modem.
2. Turn off the WiFi modem router and computers.
3. Plug in the modem and turn it on. Wait 2 minutes.
4. Turn on the WiFi modem router and wait 2 minutes.
5. Turn on the computers.

Check Ethernet Cable Connections

Make sure that the Ethernet cables are securely plugged in:

- The Internet status LED on the WiFi modem router is lit if the Ethernet cable connecting the WiFi modem router and the modem is plugged in securely and the modem and WiFi modem router are turned on.
- For each powered-on computer connected to the WiFi modem router by an Ethernet cable, the corresponding numbered router LAN port LED is lit.

Wireless Settings

Make sure that the wireless settings in the computer and WiFi modem router match exactly.

- For a wirelessly connected computer, the wireless network name (SSID) and wireless security settings of the WiFi modem router and wireless computer need to match exactly.
- If you set up an access list in the Advanced Wireless Settings screen, you have to add each wireless computer’s MAC address to the WiFi modem router’s access list.

Network Settings

Make sure that the network settings of the computer are correct:

- Wired and wirelessly connected computers need to have network (IP) addresses on the same network as the WiFi modem router. The simplest way to achieve this address commonality is to configure each computer to obtain an IP address automatically using DHCP.
- Some cable modem service providers require you to use the MAC address of the computer initially registered on the account. You can view the MAC address in the Attached Devices screen.

Troubleshoot with the LEDs

After you turn on power to the WiFi modem router, the following sequence of events should occur:

1. When power is first applied, verify that the Power LED is lit.
2. Verify that the Power LED turns red within a few seconds, indicating that the self-test is running.
3. After approximately 30 seconds, verify the following:
   - The Power LED is solid green.
   - The Internet LED is lit.
   - The Ethernet LED is lit for any local port that is connected to a computer. This LED indicates that a link has been established to the connected device.

The LEDs on the front panel of the WiFi modem router can be used for troubleshooting.

Power LED Is Off or Blinking

- Make sure that the power cord is securely connected to your WiFi modem router and that the power adapter is securely connected to a functioning power outlet.
- Make sure that you are using the power adapter that NETGEAR supplied for this product.
- If the Power LED blinks slowly and continuously, the WiFi modem router firmware is corrupted. This situation can happen if a firmware upgrade is interrupted, or if the WiFi modem router detects a problem with the firmware. If the error persists, you have a hardware problem. For recovery instructions or help with a hardware problem, contact technical support at *http://support.netgear.com/general/contact/default.aspx*.

Power LED Stays Red

When the WiFi modem router is turned on, the Power LED turns red for about 20 seconds and then turns green. If the LED does not turn green, the WiFi modem router has a problem.

If the Power LED is still red one minute after you turn on power to the WiFi modem router:

1. Turn off the power and back on to see if the WiFi modem router recovers.
2. Press and hold the **Restore Factory Settings** button to return the WiFi modem router to its factory settings. See *Factory Settings* on page 141.

If the error persists, you might have a hardware problem and should contact technical support at *www.netgear.com/support*.

LEDs Never Turn Off

When the WiFi modem router is turned on, the LEDs turn on for about 10 seconds and then turn off. If all the LEDs stay lit, a fault exists within the WiFi modem router.

If all LEDs are still lit 1 minute after power-up:

- Cycle the power to see if the WiFi modem router recovers.
- Press and hold the **Restore Factory Settings** button to return the WiFi modem router to its factory settings. See *Factory Settings* on page 141.

If the error persists, you might have a hardware problem and should contact technical support at *www.netgear.com/support*.

Internet or Ethernet Port LEDs Are Off

If the Internet LED or the Ethernet port LEDs do not light when the Ethernet connection is made, check the following:

- Make sure that the Ethernet cable connections are secure at the WiFi modem router and at the modem or computer.
- Make sure that power is turned on to the connected modem or computer.
- Be sure that you are using the correct cable.

  When connecting the WiFi modem router’s Internet port to a cable or DSL modem, use the cable that was supplied with the cable or DSL modem. This cable could be a standard straight-through Ethernet cable or an Ethernet crossover cable.

Wireless LEDs Are Off

If the Wireless LEDs stay off, check to see if the Wireless On/Off button on the WiFi modem router has been pressed. This button turns the wireless radios in the WiFi modem router on and off. The Wireless LEDs are lit when the wireless radio is turned on.

The Push 'N' Connect (WPS) Button Blinks Green

If after you press the WPS button and the button blinks green, check the following:

- Make sure that you are using the button and not the WiFi modem router’s built-in registrar.
- Check that PIN verification has succeeded for the wireless device you are adding to the wireless network.
- Make sure that you have not pressed the WPS button on the top of the WiFi modem router after disabling the WPS feature (you logged in to the WiFi modem router and disabled this feature previously).
- Check that the WiFi modem router is not in the temporary AP setup locked state (if you are using the wireless repeater function).

Cannot Log In to the Router

If you are unable to log in to the WiFi modem router from a computer on your local network, check the following:

- If you are using an Ethernet-connected computer, check the Ethernet connection between the computer and the WiFi modem router as described in the previous section.
- Make sure that your computer's IP address is on the same subnet as the WiFi modem router. If you are using the recommended addressing scheme, your computer's address should be in the range of 192.168.0.2 to 192.168.0.254.
- If your computer's IP address is shown as 169.254.x.x, recent versions of Windows and Mac OS generate and assign an IP address if the computer cannot reach a DHCP server. These autogenerated addresses are in the range of 169.254.x.x. If your IP address is in this range, check the connection from the computer to the WiFi modem router, and reboot your computer.
- If your WiFi modem router's IP address was changed and you do not know the current IP address, clear the WiFi modem router's configuration to factory defaults. This procedure sets the WiFi modem router's IP address to 192.168.0.1. This procedure is explained in *Factory Settings* on page 141.
- Make sure that your browser has Java, JavaScript, or ActiveX enabled. If you are using Internet Explorer, click **Refresh** to be sure that the Java applet is loaded.
- Try quitting the browser and launching it again.
- Make sure that you are using the correct login information. The factory default login name is *admin* and the password is *password*. Make sure that Caps Lock is off when you enter this information.
- If you are attempting to set up your NETGEAR WiFi modem router as an additional router behind an existing router in your network, consider replacing the existing router instead. NETGEAR does not support such a configuration.
- If you are attempting to set up your NETGEAR WiFi modem router as a replacement for an ADSL gateway in your network, the WiFi modem router cannot perform many gateway services, for example, converting ADSL or cable data into Ethernet networking information. NETGEAR does not support such a configuration.

Cannot Access the Internet

If you can access your router but you are unable to access the Internet, first determine whether the WiFi modem router can obtain an IP address from your Internet service provider (ISP). Unless your ISP provides a fixed IP address, your WiFi modem router requests an IP address from the ISP. You can determine whether the request was successful using the Router Status screen.

➤ **To check the WAN IP address:**

1. Start your browser and select an external site such as *http://www.netgear.com*.

2. Access the WiFi modem router interface at *http://www.routerlogin.net*.
3. Select **Administration > Router Status**.
4. Check that an IP address is shown for the Internet port. If 0.0.0.0 is shown, your WiFi modem router has not obtained an IP address from your ISP.

If your WiFi modem router cannot obtain an IP address from the ISP, you might need to force your cable or DSL modem to recognize your new WiFi modem router by restarting your network, as described in *Sequence to Restart Your Network* on page 131.

If your WiFi modem router is still unable to obtain an IP address from the ISP, the problem might be one of the following:

- Your Internet service provider (ISP) might require a login program.
  Ask your ISP whether it requires PPP over Ethernet (PPPoE) or some other type of login.
- If your ISP requires a login, the login name and password might be set incorrectly.
- Your ISP might check for your computer’s host name.
  Assign the computer host name of your ISP account as the account name in the Internet Basic Settings screen.
- Your ISP allows only one Ethernet MAC address to connect to the Internet and might check for your computer’s MAC address. In this case, do one of the following:
  - Inform your ISP that you have bought a new network device, and ask them to use the WiFi modem router’s MAC address.
  - Configure your WiFi modem router to clone your computer’s MAC address.

If your WiFi modem router can obtain an IP address, but your computer is unable to load any web pages from the Internet:

- Your computer might not recognize any DNS server addresses.

  A DNS server is a host on the Internet 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 your use. If you entered a DNS address during the WiFi modem router’s configuration, reboot your computer, and verify the DNS that address. You can configure your computer manually with DNS addresses, as explained in your operating system documentation*.*

- Your computer might not have the WiFi modem router configured as its TCP/IP gateway.

  If your computer obtains its information from the WiFi modem router by DHCP, reboot the computer, and verify the gateway address.

- You might be running login software that is no longer needed.

  If your ISP provided a program to log you in to the Internet (such as WinPoET), you no longer need to run that software after installing your WiFi modem router. You might need to go to Internet Explorer and select **Tools > Internet Options**, click the **Connections** tab, and select **Never dial a connection**.

Troubleshoot PPPoE

If you are using PPPoE, try troubleshooting your Internet connection.

➢ **To troubleshoot a PPPoE connection:**

1. Log in to the WiFi modem router.
2. Select **Administration > Router Status**.
3. Click **Connection Status**. If all of the steps indicate OK, your PPPoE connection is working.

If any of the steps indicate Failed, you can attempt to reconnect by clicking **Connect**. The WiFi modem router continues to attempt to connect indefinitely.

If you cannot connect after several minutes, you might be using an incorrect service name, user name, or password. There might also be a provisioning problem with your ISP.

Note: Unless you connect manually, the WiFi modem router does not authenticate using PPPoE until data is transmitted to the network.

Troubleshoot Internet Browsing

If your WiFi modem router can obtain an IP address but your computer is unable to load any web pages from the Internet, check the following:

- Your computer might not recognize any DNS server addresses. A DNS server is a host on the Internet 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 your use. If you entered a DNS address during the WiFi modem router's configuration, restart your computer.

  Alternatively, you can configure your computer manually with a DNS address, as explained in the documentation for your computer.
- Your computer might not have the WiFi modem router configured as its default gateway.

  Reboot the computer, and verify that the WiFi modem router address (www.routerlogin.net) is listed by your computer as the default gateway address.
- You might be running login software that is no longer needed. If your ISP provided a program to log you in to the Internet (such as WinPoET), you no longer need to run that software after installing your WiFi modem router. You might need to go to Internet Explorer and select **Tools > Internet Options**, click the **Connections** tab, and select **Never dial a connection**.

  If the WiFi modem router does not save changes you have made in the browser interface, check the following:

- When entering configuration settings, be sure to click **Apply** before moving to another screen or tab, or your changes could be lost.
- Click **Refresh** or **Reload** in the web browser. The changes might have occurred, but the web browser might be caching the old configuration.

Changes Not Saved

If the WiFi modem router does not save the changes you make in the WiFi modem router interface, check the following:

- When entering configuration settings, always click the **Apply** button before moving to another screen or tab, or your changes are lost.
- Click the **Refresh** or **Reload** button in the web browser. The changes might have occurred, but the old settings might be in the web browser’s cache.

Incorrect Date or Time

Select **ADVANCED > Security > Schedule** to display the current date and time. The WiFi modem router uses the Network Time Protocol (NTP) to obtain the current time from one of several network time servers on the Internet. Each entry in the log is stamped with the date and time of day. Problems with the date and time function can include the following:

- Date shown is January 1, 2000. This value means the WiFi modem router has not yet successfully reached a network time server. Check that your Internet access is configured correctly. If you have finished setting up the WiFi modem router, wait at least 5 minutes, and check the date and time again.
- Time is off by one hour. The WiFi modem router does not automatically sense daylight saving time. In the Schedule screen, select the **Automatically adjust for daylight savings time** check box.

Wireless Connectivity

If you are having trouble connecting wirelessly to the WiFi modem router, try to isolate the problem.

- Does the wireless device or computer that you are using find your wireless network?

  If not, check the Wireless LEDs on the front of the WiFi modem router. They should be lit. If they are not, you can press the **WiFi On/Off** button on the back of the WiFi modem router to turn the WiFi modem router’s wireless radio back on.

  If you disabled the WiFi modem router’s SSID broadcast, then your wireless network is hidden and does not show up in your wireless client’s scanning list. By default, SSID broadcast is enabled.

- Does your wireless device support the security that you are using for your wireless network (WPA or WPA2)?

- If you want to view the wireless settings for the WiFi modem router, use an Ethernet cable to connect a computer to a LAN port on the WiFi modem router. Then log in to the WiFi modem router and select **Setup > Wireless Settings** see (*Basic Wireless Settings* on page 35).

Note: Be sure to click **Apply** when you make changes.

Wireless Signal Strength

If your wireless device finds your network, but the signal strength is weak, check these conditions:

- Is your WiFi modem router too far from your computer, or too close? Place your computer near the WiFi modem router, but at least 6 feet away, and see whether the signal strength improves.
- Is your wireless signal blocked by objects between the WiFi modem router and your computer?

Restore the Factory Settings and Password

This section explains how to restore the factory settings, changing the WiFi modem router's administration password back to **password**. You can erase the current configuration and restore factory defaults in two ways:

- Use the Erase function of the WiFi modem router (see *Erase* on page 93).
- Use the Restore Factory Settings button on the back of the WiFi modem router. See *Factory Settings* on page 141. If you restore the factory settings and the WiFi modem router fails to restart, or the green Power LED continues to blink, the unit might be defective. If the error persists, you might have a hardware problem and should contact technical support at *http://www.netgear.com/support*.

Troubleshoot Your Network Using the Ping Utility

Most network devices and routers contain a ping utility that sends an echo request packet to the designated device. The device then responds with an echo reply. You can easily troubleshoot a network by using the ping utility in your computer or workstation.

Test the LAN Path to Your Router

You can ping the WiFi modem router from your computer to verify that the LAN path to your WiFi modem router is set up correctly.

➤ **To ping the WiFi modem router from a computer running Windows:**

1. From the Windows toolbar, click **Start** and select **Run**.
2. In the field provided, type **ping** followed by the IP address of the WiFi modem router, as in this example:

   ping www.routerlogin.net

3. Click **OK**.

   You should see a message like this one:

   ```
   Pinging <IP address > with 32 bytes of data
   ```

   If the path is working, you see this message:

   ```
   Reply from < IP address >: bytes=32 time=NN ms TTL=xxx
   ```

   If the path is not working, you see this message:

   ```
   Request timed out
   ```

If the path is not functioning correctly, you might have one of the following problems:

- Wrong physical connections

  For a wired connection, make sure that the numbered LAN port LED is lit for the port to which you are connected.

  Check that the appropriate LEDs are lit for your network devices. If your WiFi modem router and computer are connected to a separate Ethernet switch, make sure that the Ethernet LEDs are lit for the switch ports that are connected to your computer and WiFi modem router.

- Wrong network configuration

  Verify that the Ethernet card driver software and TCP/IP software are both installed and configured on your computer.

  Verify that the IP address for your WiFi modem router and your computer are correct and that the addresses are on the same subnet.

Test the Path from Your Computer to a Remote Device

After verifying that the LAN path works correctly, test the path from your computer to a remote device.

1. From the Windows toolbar, click **Start** and select **Run**.
2. In the Windows Run window, type:

   ping -n 10 *<IP address>*

   where <IP address> is the IP address of a remote device such as your ISP DNS server.

If the path is functioning correctly, replies like the examples shown in the previous section are displayed.

If you do not receive replies:

- Check that your computer has the IP address of your WiFi modem router listed as the default gateway. If the IP configuration of your computer is assigned by DHCP, this information is not visible in your computer’s Network Control Panel. Verify that the IP address of the WiFi modem router is listed as the default gateway.
- Check to see that the network address of your computer (the portion of the IP address specified by the subnet mask) is different from the network address of the remote device.
- Check that your cable or DSL modem is connected and functioning.
- If your ISP assigned a host name to your computer, enter that host name as the account name in the Internet Basic Settings screen.
- Your ISP could be rejecting the Ethernet MAC addresses of all but one of your computers.

Many broadband ISPs restrict access by allowing traffic only from the MAC address of your broadband modem, but some ISPs additionally restrict access to the MAC address of a single computer connected to that modem. If so, configure your WiFi modem router to “clone” or “spoof” the MAC address from the authorized computer.

Supplemental Information

Factory settings and technical specifications

A

This appendix provides factory default settings and technical specifications for the D6200 WiFi Modem Router.

Factory Settings

You can return the WiFi modem router to its factory settings. Use the end of a paper clip or some other similar object to press and hold the **Restore Factory Settings** button on the back of the router for at least 5 seconds. The WiFi modem router resets and returns to the factory settings. Your device returns to the factory configuration settings shown in the following table.

Table 10. Factory default settings

Feature		Default Behavior
Router login	User login URL	www.routerlogin.com or www.routerlogin.net
	User name (case-sensitive)	admin
	Login password (case-sensitive)	password
Internet connection	WAN MAC address	Use default hardware address
	WAN MTU size	1500
	Port speed	Autosensing
Local network (LAN)	LAN IP	192.168.0.1
	Subnet mask	255.255.255.0
	DHCP server	Enabled
	DHCP range	192.168.0.2 to 192.168.0.254
	Allow a registrar to configure this router	Enabled
	DHCP starting IP address	192.168.0.2
	DHCP ending IP address	192.168.0.254

Table 10. Factory default settings (continued)

Feature		Default Behavior
Local network (LAN) continued	DMZ	Disabled
	Time zone	GMT for WW except NA and GR, GMT+1 for GR, GMT-8 for NA
	Time zone adjusted for daylight savings time	Disabled
Firewall	Inbound (communications coming in from the Internet)	Disabled (except traffic on port 80, the HTTP port)
	Outbound (communications going out to the Internet)	Enabled (all)
	Source MAC filtering	Disabled
Wireless	Wireless communication	Enabled
	SSID name	See router label
	Security	Enabled
	Broadcast SSID	Enabled
	Transmission speed	Auto[1]
	Country/region	United States in the US, otherwise varies by region
	RF channel	6 until region selected
	Operating mode	Up to 145 Mbps
	Data rate	Best
	Output power	Full
Firewall	Inbound (communications coming in from the Internet)	Disabled (bars all unsolicited requests)
	Outbound (communications going out to the Internet)	Enabled (all)

[1] Maximum Wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput varies. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

Technical Specifications

Table 11. D6200 Router specifications

Feature	Description
Data and routing protocols	TCP/IP, RIP-1, RIP-2, DHCP, PPPoE, Dynamic DNS, UPnP, and SMB
Power adapter	• North America: 120V, 60 Hz, input • UK, Australia: 240V, 50 Hz, input • Europe: 230V, 50 Hz, input • All regions (output): 12V DC @ 5A, output
Dimensions	205 mm x 255 mm x 77 mm (8.07 in. x 10.04 in. x 3.03 in.)
Weight	654g (1.44 lbs)
Operating temperature	0° to 40°C (32º to 104ºF)
Operating humidity	90% maximum relative humidity, noncondensing
Electromagnetic emissions	FCC Part 15 Class B EN 55 022 (CISPR 22), Class B C-Tick N10947
LAN	10BASE-T or 100BASE-Tx, RJ-45
WAN	10BASE-T or 100BASE-Tx, RJ-45
Wireless	Maximum wireless signal rate complies with the IEEE 802.11 standard. See the footnote for the previous table.
Radio data rates	Auto Rate Sensing
Data encoding standards	IEEE 802.11n version 2.0 IEEE 802.11n, IEEE 802.11g, IEEE 802.11b 2.4 GHz IEEE 802.11n, IEEE 802.11a 5.0 GHz
Maximum computers per wireless network	Limited by the amount of wireless network traffic generated by each node (typically 50–70 nodes).
Operating frequency range	2.4 GHz 2.412–2.462 GHz (US) 2.412–2.472 GHz (Japan) 2.412–2.472 GHz (Europe ETSI) 5 GHz 5.18–5.24 + 5.745–5.825 GHz (US) 5.18–5.24 GHz (Europe ETSI)
802.11 security	WPA-PSK, WPA2-PSK, and WPA/WPA2 Enterprise.

Notification of Compliance

NETGEAR Dual Band - Wireless

B

Regulatory Compliance Information

This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product.

Europe – EU Declaration of Conformity

Products bearing the CE marking comply with the following EU directives:

- EMC Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC

If this product has telecommunications functionality, it also complies with the requirements of the following EU Directive:

- R&TTE Directive 1999/5/EC

Compliance with these directives implies conformity to harmonized European standards that are noted in the EU Declaration of Conformity.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 - 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

FCC Requirements for Operation in the United States

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

FCC Guidelines for Human Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

FCC Declaration of Conformity

We, NETGEAR, Inc., 350 East Plumeria Drive, San Jose, CA 95134, declare under our sole responsibility that the D6200 WiFi Modem Router complies with Part 15 Subpart B of FCC CFR47 Rules.

FCC Radio Frequency Interference Warnings & Instructions

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 uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 to correct the interference by one or more of the following methods:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an electrical outlet on a circuit different from that which the radio receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- 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.
- For product available in the USA market, only channel 1~11 can be operated. Selection of other channels is not possible.
- This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (D6200 WiFi Modem Router) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class [B] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

Pour les produits disponibles aux États-Unis / Canada du marché, seul le canal 1 à 11 peuvent être exploités. Sélection d'autres canaux n'est pas possible.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

Le dispositif pourrait automatiquement cesser d'émettre en cas d'absence d'informations à transmettre, ou une défaillance opérationnelle. Notez que ce n'est pas l'intention d'interdire la transmission des informations de contrôle ou de signalisation ou l'utilisation de codes répétitifs lorsque requis par la technologie.

The maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.

Le gain maximal d’antenne permis (pour les dispositifs utilisant la bande 5725-5825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l’exploitation point à point et non point à point, selon le cas.

Industry Canada

This device complies with RSS-210 of the Industry Canada 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.

IMPORTANT NOTE: Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Caution:

The device for the band 5150-5250 MHz is only for indoor usage to reduce po-tential for harmful interference to co-channel mobile satellite systems.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

NOTE IMPORTANTE: Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Avertissement:

Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utili-sation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Interference Reduction Table

The following table shows the recommended minimum distance between NETGEAR equipment and household appliances to reduce interference (in feet and meters).

Household Appliance	**Recommended Minimum Distance (in feet and meters)**
Microwave ovens	30 feet / 9 meters
Baby Monitor - Analog	20 feet / 6 meters
Baby Monitor - Digital	40 feet / 12 meters
Cordless phone - Analog	20 feet / 6 meters
Cordless phone - Digital	30 feet / 9 meters
Bluetooth devices	20 feet / 6 meters
ZigBee	20 feet / 6 meters

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