

Lab #7

Computer Networking

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Due March 8, 2018

Every network administrator needs to know router settings. You were given a group assignment to set up Cisco routers.

This assignment is for everyone and you may use any available routers. Set up home/office router and screen capture as you perform the setup. If you already have a router setup at home, login and learn the settings. Make sure to include lots of explanation on each capture. I will paying particular attention to LAN, WAN settings, DHCP, NAT, Security, routing tables and port forwarding screens.

If you need to use a router for an hour or two to complete the assignment, please see me, I will lend you one.

The screenshot displays the Netgear router's configuration interface. The main content area is titled "Wireless Settings" and includes the following sections:

- Wireless Network:** Name (SSID) is set to "NETGEAR". Region is "United States", Channel is "Auto", and Mode is "Up to 145 Mbps".
- Security Options:** Radio buttons for "None", "WEP", "WPA-PSK (TKIP)", "WPA2-PSK (AES)", and "WPA-PSK (TKIP) + WPA2-PSK (AES)".
- Buttons:** "Apply" and "Cancel".

The "Wireless Help" sidebar on the right contains the following information:

- NOTE:** To ensure proper agency compliance and compatibility between similar products in your area, the operating channel and region must be set correctly.
- Placement of the Router to Optimize Wireless Connectivity:** The operating distance or range of your wireless connection can vary significantly based on the physical placement of the router. For best results, place your router:
 - Near the center of the area in which your PCs will operate
 - In an elevated location such as a high shelf
 - Away from potential sources of interference, such as PCs, microwave ovens, and cordless phones.
 - Away from large metal surfaces.
- Note:** Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the router.
- Wireless Network:** Name (SSID): Enter a value of up to 32 alphanumeric characters. The same name (SSID) must be assigned to all wireless devices in your network. The default SSID is NETGEAR, but NETGEAR strongly recommends that you change your network's name (SSID) to a different value. This value is case-sensitive. For example, NETGEAR is not the same as NETOEAR.
- Region:** Select your region from the drop-down list. This field displays the region of operation for which the wireless interface is intended. It might not be legal to operate the router in a region other than the region shown here. If your country or region is not listed, please check with your local government agency or check the NETGEAR website for more information about which channels to use.
- Channel:** This field determines which operating frequency will be used. It should not be necessary to change the wireless channel unless you notice interference problems with another nearby access point.
- Mode:** Select the wireless mode you want to use. The options are:
 - Up to 54 Mbps. Legacy Mode, with a maximum speed of up to 54 Mbps for big networks.
 - Up to 145 Mbps. Neighbor-Friendly Mode, the default, with a speed of up to 145 Mbps in the presence of neighboring wireless networks.
 - Up to 300 Mbps. Performance Mode, with a maximum Wireless-N speed of up to 300 Mbps.The default is Up to 145 Mbps, which allows all 11b and 11g and 11n wireless stations.
- Security Options:**
 - None - no data encryption
 - WEP - Wired Equivalent Privacy, use WEP 64- or 128-bit data encryption
 - Note: WPA Protected Setup function is disabled when the security setting is WEP with Shared-Key authentication
 - WPA-PSK (TKIP) - Wi-Fi Protected Access with Pre-Shared Key, use WPA-PSK standard encryption with TKIP encryption type
 - WPA2-PSK (AES) - Wi-Fi Protected Access version 2 with Pre-Shared Key, use WPA2-PSK standard encryption with the AES encryption type
 - WPA-PSK (TKIP) + WPA2-PSK (AES) - Allow clients using either WPA-PSK (TKIP) or WPA2-PSK (AES)

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192.168.1.1/start.htm

NETGEAR SMARTWIZARD router manager Wireless-N 300 Router model WNDR200v2

Select Language: English Apply

Router Status

Hardware Version	WNDR200v2
Firmware Version	V1.0.0.34_29.0.45NA
GUI Language Version	V1.0.0.34_0.5.0.0
Internet Port	30.46.9A.30 AC:0B
MAC Address	0.0.0.0
IP Address	0.0.0.0
DHCP	FixedIP
IP Subnet Mask	0.0.0.0
Domain Name Server	0.0.0.0
LAN Port	30.46.9A.30 AC:0A
MAC Address	192.168.1.1
IP Address	ON
DHCP	255.255.255.0
IP Subnet Mask	
Wireless Port	NETGEAR
Name (SSID)	United States
Region	Auto (8)
Channel	Up to 145 Mbps
Mode	On
Wireless AP	On
Broadcast Name	

Show Statistics | Connection Status

Router Status Help

You can use the Router Status screen to check the current settings and statistics for your router. This screen shows you the current settings. If something needs to be changed, you will have to change it on the relevant screen.

Firmware Version: This is the current software the router is using. This will change if you upgrade your router.

Internet Port: These are the current settings that you set in the Setup Wizard or Basic Settings screens.

- MAC Address: The physical address of the router, as seen from the Internet.
- IP Address: The current Internet IP address. If assigned dynamically, and no Internet connection exists, this will be blank or 0.0.0.0.
- Default Gateway: The current Internet gateway. If assigned dynamically, and no Internet connection exists, this will be blank or 0.0.0.0.
- Domain Name Server: Displays the address of the current DNS.
- DHCP: Indicates either Client (IP address is obtained dynamically) or None.

LAN Port: These are the current settings, as set in the LAN IP Setup screen.

- MAC Address: The physical address of the router, as seen from the LAN.
- IP Address: The LAN IP address of the router.
- IP Subnet Mask: The subnet mask associated with the LAN IP address.
- DHCP: Indicates if the router is acting as a DHCP server for devices on your LAN.

Wireless Port: These are the current settings, as set in the Wireless Settings screen.

- Name (SSID): SSID of the router.
- Region: The location (country).
- Channel: The current channel in use.
- Mode: Indicates the current mode (up to 54 Mbps, up to 130 Mbps, up to 300 Mbps).
- Security: The wireless security type (NONE, WEP, WPA-PSK, WPA2-PSK, WPA-PSK+WPA2-PSK).
- Wireless AP: Indicates if the access point feature of the router is enabled or not. If not enabled, the Wireless LED on the front panel is off.
- Broadcast Name: Indicates if the router is broadcasting its SSID.

Click Show Statistics to see router performance statistics such as the number of packets sent and the number of packets received for each port.

Click Connection Status to see information about your current connection.

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192.168.1.1/start.htm

NETGEAR SMARTWIZARD router manager Wireless-N 300 Router model WNDR200v2

Select Language: English Apply

Port Forwarding / Port Triggering

Please select the service type.

Port Forwarding
 Port Triggering

Service Name: Age of Empire

Server IP Address: 192.168.1.1

#	Service Name	Start Port	End Port	Server IP Address

Edit Service | Delete Service

Add Custom Service

Port Forwarding / Port Triggering Help

Port Forwarding is an advanced feature that you can use for gaming and other Internet applications. Port forwarding can typically be used to enable similar functionality, but it is static and has some limitations.

Port triggering opens an incoming port temporarily and does not require the server on the Internet to track your IP address if it is changed by DHCP, for example.

Port triggering monitors outbound traffic. When the router detects traffic on the specified outbound port, it remembers the IP address of the computer that sent the data and triggers the incoming port. Incoming traffic on the triggered port is then forwarded to the triggering computer.

Using the Port Forwarding / Port Triggering screen, you can make local computers or servers available to the Internet for different services (for example, FTP or HTTP), to play Internet games (like Quake III), or to use Internet applications (like Outlook).

Port forwarding is designed for FTP, Web server, or other server-based services. Once port forwarding is set up, requests from the Internet are forwarded to the proper server.

Port triggering allows requests from the Internet only after a designated port is triggered. Port triggering applies to chat and Internet games.

Port Forwarding

For the services, applications, or games that already exist in the drop-down list, you need to specify only the computer's IP address. Otherwise, you should specify the port number and computer's IP address for each service, game, or application by clicking the Add Custom Service button.

Port Assignment

You can make up to 20 different port assignments for Internet services, applications, or games. In the Service Name list, you can select a service, an application, or a game. If you do not see an item that you want to use in any of the lists, check with the software or game developer for the correct port numbers to use.

For Internet Services

Before starting, you need to determine which type of services you will provide and the IP address of the computer that will provide those services. The most common services you should provide are a Web (HTTP) server or FTP server.

To set up a computer or server to be accessible to the Internet for an Internet service:

- Select the Internet service you want to use from the Service Name list.
- Type the IP address of the computer in the Server IP Address field.
- Click Add.

Note: You might have a single computer or server available for more than one type of service. To do that, select another service, and type the same IP address for that computer or server.

For Internet Games or Applications

Before starting, you need to know which service, application, or game you will be configuring. Also, you need to have the IP address for the computer that you want to use.

To set up a computer to play Internet games or use Internet applications:

- Select the Internet application or game you want to use from one of the relevant lists. The Start Port and End Port fields are filled in.
- Note:** If you cannot find the game or application you want in one of the lists, click the Add Custom Service button, and enter the service name, starting port, ending port, and server IP address.
- Type the IP address of the computer in the Server IP Address field.
- Click Add.

192.168.1.1/PV_forward.htm

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192.168.1.1/start.htm

NETGEAR SMARTWIZARD router manager Wireless-N 300 Router model WN3200v2

Select Language: English Apply

Setup Wizard

Add WPS Client

Setup

Basic Settings

Wireless Settings

Guest Network

Content Filtering

Logs

Block Sites

Block Services

Schedule

E-mail

Maintenance

Router Status

Attached Devices

Backup Settings

Set Password

Router Upgrade

Advanced

Wireless Settings

Wireless Repeating Function

Port Forwarding / Port Triggering

NAM Setup

LAN Setup

QoS Setup

Dynamic DNS

Static Routes

Remote Management

UPnP

Traffic Meter

Web Support

Knowledge Base

Documentation

LAN Setup

Device Name: WNR2000v2

LAN TCP/IP Setup

IP Address: 192.168.1.1

IP Subnet Mask: 255.255.255.0

RIP Direction: Both

RIP Version: Disabled

Use Router as DHCP Server

Starting IP Address: 192.168.1.2

Ending IP Address: 192.168.1.254

#	IP Address	Device Name	MAC Address

Apply Cancel

LAN Setup Help

The default LAN settings work for most users.

Device Name

This is a friendly name of this router. You can see this name representing the router shown in the Network on Vista Windows and the Network Explorer on all Windows systems.

LAN TCP/IP Setup

These are advanced settings that you may configure if you are a network administrator and your network contains multiple routers. If you make any changes to these settings you will need to restart your computer(s) for the settings to take effect.

- IP Address:** Type the IP address of your router in dotted decimal notation (factory default: 192.168.1.1).
- IP Subnet Mask:** The subnet mask specifies the network number portion of an IP address. Your router will automatically calculate the subnet mask based on the IP address that you assign. Unless you are implementing subnetting, use 255.255.255.0 as the subnet mask computed by the router.
- RIP Direction:** RIP (Routing Information Protocol, RFC1088 and RFC1390) allows a router to exchange routing information with other routers. The RIP Direction selection controls how the router sends and receives RIP packets. Both is the default.
 - When set to **Both** or **Out Only**, the router will broadcast its routing table periodically.
 - When set to **Both** or **In Only**, it will incorporate the RIP information that it receives.
- RIP Version:** This controls the format and the broadcasting method of the RIP packets that the router sends. (It recognizes both formats when receiving.) By default, this is set for Disabled.
 - RIP-1 is universally supported. RIP-1 is probably adequate for most networks, unless you have an unusual network setup.
 - RIP-2 carries more information. Both RIP-2B and RIP-2M send the routing data in RIP-2 format.
 - RIP-2B uses subnet broadcasting.
 - RIP-2M uses multicasting. (See note below.)

Note: Multicasting can reduce the load on non-router machines because they do not listen to the RIP multicast address and will not receive the RIP packets. However, if one router uses multicasting, then all routers on your network must use multicasting.

Use Router as DHCP Server

The Router is set up by default as a DHCP (Dynamic Host Configuration Protocol) server, which provides the TCP/IP configuration for all the computers that are connected to the router.

Unless told to change these settings by your ISP, leave the **Use Router as DHCP Server** check box selected.

If your ISP has you clear this check box, you must have another DHCP server within your network or else you must manually configure the computer.

- Starting IP Address:** This box specifies the first of the contiguous addresses in the IP address pool. 192.168.1.2 is the default start address.
- Ending IP Address:** This box specifies the last of the contiguous addresses in the IP address pool. 192.168.1.254 is the default ending address.

Address Reservation

When you specify a reserved IP address for a PC on the LAN, that PC will always receive the same IP address each time it accesses the DHCP server. Reserved IP addresses should be assigned to servers that require permanent IP settings.

To Reserve an IP Address:

1. Click the **Add** button.