2.6.2: Configuring a Default Route

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Fa0/0	172.16.3.1	255.255.255.0	N/A
	S0/0/0	172.16.2.1	255.255.255.0	N/A
R2	Fa0/0	172.16.1.1	255.255.255.0	N/A
	S0/0/0	172.16.2.2	255.255.255.0	N/A
	S0/0/1	192.168.1.2	255.255.255.0	N/A
R3	Fa0/0	192.168.2.1	255.255.255.0	N/A
	S0/0/1	192.168.1.1	255.255.255.0	N/A
PC1	NIC	172.16.3.10	255.255.255.0	172.16.3.1
PC2	NIC	172.16.1.10	255.255.255.0	172.16.1.1
PC3	NIC	192.168.2.10	255.255.255.0	192.168.2.1

Introduction:

In this activity we will examine ways of making routing tables shorter. We will look at summarizing static routes to contiguous networks into a single route that includes all of the routes. We will also look at replacing a number of individual static routes with a static default route that will match any packet that does not have a specific entry in the routing table.

Learning Objectives:

- Examine the network with individual static routes to all networks.
- View the configuration.
- Verify connectivity.
- Summarize static routes to contiguous networks.
- Replace existing static routes with a summary static route.
- View the configuration.
- Verify connectivity.
- Configure a stub network.
- Replace existing static routes with a default static route.
- View the configuration.
- Verify connectivity.

Task 1: Examine the network with individual static routes to all networks.

Step 1 – View the configuration.

On each of the three routers:

- Login to the router using password **cisco**. Enter privileged exec mode using password **class**.
- Enter the command **show running-config** to see how static routing is currently configured.
- Enter the command **show ip route** to see the effect of the configuration. There are individual static routes on each router to every remote network.

Step 2 – Verify connectivity.

From the command line prompt on each of the three PCs, ping the other two PCs. All pings should succeed.

Task 2: Summarize static routes to contiguous networks.

Step 1 – Replace existing static routes with a summary static route.

On router R3 enter global configuration mode and enter the following commands:

- R3(config)#**no ip route 172.16.1.0 255.255.255.0 s0/0/1**
- R3(config)#**no ip route 172.16.2.0 255.255.255.0 s0/0/1**
- R3(config)#**no ip route 172.16.3.0 255.255.255.0 s0/0/1**
- R3(config)#**ip route 172.16.0.0 255.255.252.0 s0/0/1**

Step 2 – Save the updated configurations.

On router R3, exit configuration mode by using the **Ctrl+z** key sequence. Save the configuration by issuing the command **copy run start**.

Step 3 – View the configuration.

On router R3:

- Enter the command **show running-config** to see how static routing is now configured.
- Enter the command **show ip route** to see the effect of the changed configuration. There is only one static route to every remote network.

Step 4 – Verify connectivity.

From the command line prompt on PC3, ping the other two PCs. All pings should succeed, if not troubleshoot the static route.

Task 3: Configure a stub network.

Step 1 – Replace existing static routes with a default static route.

On router R1 enter global configuration mode and enter the following commands:

- R1(config)#**no ip route 172.16.1.0 255.255.255.0 s0/0/0**
- R1(config)#**no ip route 192.168.1.0 255.255.255.0 s0/0/0**
- R1(config)#**no ip route 192.168.2.0 255.255.255.0 s0/0/0**
- R1(config)#**ip route 0.0.0.0 0.0.0.0 s0/0/0**

Step 2 – Save the updated configurations.

On router R1, exit configuration mode by using the **Ctrl+z** key sequence. Save the configuration by issuing the command **copy run start**.

Step 3 – View the configuration.

On router R1:

- Enter the command **show running-config** to see how static routing is now configured.
- Enter the command **show ip route** to see the effect of the changed configuration. There is a single default route to every remote network.

Step 4 – Verify connectivity.

From the command line prompt on PC1, ping the other two PCs. All pings should succeed, if not troubleshoot the static default route.

At the end of this activity your completion rate should be 100%. If the completion rate is not 100%, use the **Check Results** button and troubleshoot as necessary.