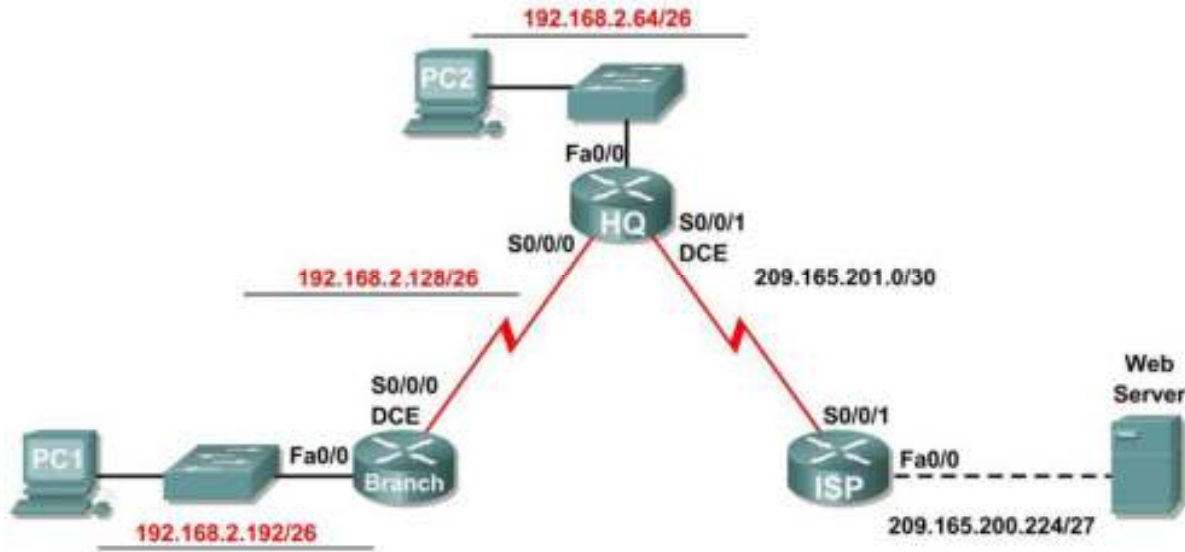


CSE 421
Static Routing Lab

Scenario:



Device	Interface	IP Address	Subnet Mask	Default Gateway
BRANCH	Fa0/0	192.168.2.193	255.255.255.192	N/A
	S0/0/0	192.168.2.129	255.255.255.192	N/A
HQ	Fa0/0		255.255.255.192	N/A
	S0/0/0	192.168.2.130		N/A
	S0/0/1			N/A
ISP	Fa0/0	209.165.200.225	255.255.255.224	N/A
	S0/0/0	209.165.201.1	255.255.255.252	N/A
PC1	NIC	192.168.2.253	255.255.255.192	192.168.2.193
PC2	NIC			
Web Server	NIC	209.165.200.254	255.255.255.224	209.165.200.225

In this lab activity, the subnets are already given to complete the addressing of the network shown in the Topology Diagram. The Internet Service Provider has provided the addressing for the LAN connected to the ISP router and the link between the HQ and ISP routers. As there will be no dynamic Routing, static routes will need to be configured so that hosts on networks that are not directly connected will be able to communicate with each other.

Task 1: Basic Router Configurations

Perform basic configuration of the HQ router only according to the following guidelines:

1. Configure the router hostname
2. Disable DNS lookup
3. Configure an EXEC mode password. Password will be **class**
4. Configure a message-of-the-day banner. Banner will be **Maintenace on Friday 5th Dec**
5. Configure a login banner. Banner will be **Authourized Users Only**
6. Configure a password for console connection. Password will be **cisco**
7. Issue **logging synchronous** command at line console 0
8. Configure a password for VTY (0-4) connections. Password will be **cisco**
9. Configure an EXEC timeout of 15 minutes 5 second for VTY connections

Task 2: Configure and Activate Serial and Ethernet Addresses

1. Configure HQ router's serial interfaces with appropriate IP addresses as shown in the table above.(Do not forget "clockrate" when necessary. Use 64000 as clockrate)
2. Assign and configure the first valid host address in subnet 1, 192.168.2.64/26 to the LAN interface(fast-ethernet interface) on HQ.
3. Assign and configure the last valid host address in subnet 1,192.168.2.64/26 to PC2.

Task 3: Verify Connectivity to Next Hop Device

You should NOT have connectivity between end devices yet. However, you can test connectivity between two routers or between and end device on its default gateway.

Step 1 Verify that BRANCH across the WAN link to HQ and that HQ can ping across the WAN link it shares with ISP.

Step 2 Verify that PC1, PC2, and the Web Server can ping their respective default gateway.

Task 4: Configure Static Routing on HQ

Step 1 Consider the type of static routing that is needed on HQ.

What networks are present in the HQ routing table? List the networks with slash notation.

What networks are missing from the HQ routing table? List the networks with slash notation.

Can one summary route that includes all of the missing networks be created? _____

HQ is in a unique position as the hub router in this hub-and-spoke topology. Traffic from the BRANCH LAN destined for the Internet must pass through HQ. HQ must be able to send any traffic it does not have a router for to ISP. What kind of route you need to configure on HQ to solve this problem?

Step 2- Configure the HQ router with a default static route pointing to ISP using the "next-hop" IP address. Record the command you used.

Step 3- Configure HQ a static route to the BRANCH LAN using the Serial 0/0/0 interface of HQ as the exit interface. Record the command you used.

Step 4-View the routing table of R2 to verify the new static route entries.

Step 5- Without testing it first, do you think PC1 can now successfully ping PC2?

_____ Why or why not?

Step 6-Without testing it first, do you think PC1 or PC2 can now successfully ping the Web Server?

_____ Why or why not?

Task 5: Configure Static Routing on BRANCH

Step 1 Consider the type of static routing that is needed on BRANCH

What is needed for the BRANCH router to have connection to HQ router LANs and also to the outside world through ISP router?

Step 2 Because BRANCH is a stub router, we should configure BRANCH with a default static route point to HQ. Record the command below to configure a default static route using the appropriate exit interface.

Step 3 View the routing table of BRANCH to verify the new static route entry. You should a “Gateway of Last Resort” set on BRANCH

Without testing it first, do you think PC1 can now successfully ping PC2? _____

Why or why not?

Task 6: Configure Static Routing on ISP

Note: In a real-world implementation of this topology, you would not be configuring the ISP router. However, your service provider is an active partner in solving your connectivity needs. Service provider administrators are human, too, and make mistakes. Therefore, it is important that you understand the type of errors an ISP could make that would cause your networks to lose connectivity.

Step 1-Consider the type of static routing that is needed on ISP

What type of static routes is needed in the ISP router have connectivity to all?

Step 2-Using the “next-hop” IP address, configure ISP with a summary static route that includes all of the subnets that are missing from the routing table. Record the command you used.

Step 3-View the routing table of R3 to verify the new static route entry.

Task 7: Verify the Configurations

Answer the following questions to verify that the network is operating as expected.

From PC2, is it possible to ping PC1? _____

From PC2, is it possible to ping the Web Server? _____

From PC1, is it possible to ping the Web Server? _____

The answer to the above questions should be ‘yes’. If any of the above pings failed, check your physical connections and configurations.

What routes are present in the routing table of BRANCH?

What routes are present in the routing table of HQ?

What routes are present in the routing table of ISP?

Task 8: Reflection

If a default static route was not configured on BRANCH, how many individual static routes would be needed to for hosts on the BRANCH LAN to communicate with all of the networks in the Topology Diagram? _____

If a summary static route was not configured on R3, how many individual static routes would be needed to for hosts on the R3 LAN to communicate with all of the networks in the Topology Diagram? _____