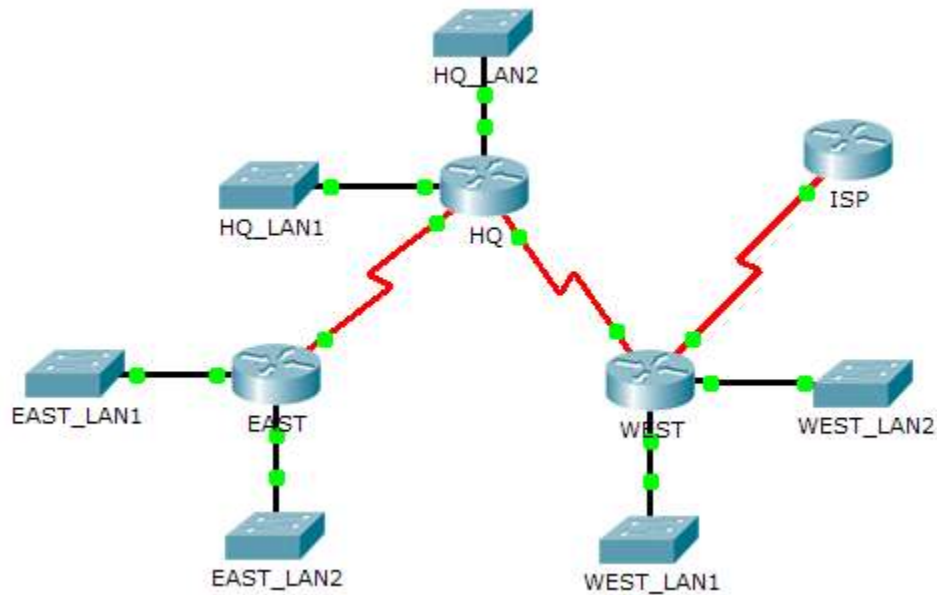


Packet Tracer - Troubleshooting VLSM and Route Summarization (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
HQ	G0/0	172.16.40.1	255.255.254.0	N/A
	G0/1	172.16.32.1	255.255.252.0	N/A
	S0/0/0	10.10.10.2	255.255.255.252	N/A
	S0/0/1	10.10.10.5	255.255.255.252	N/A
EAST	G0/0	172.16.52.1	255.255.252.0	N/A
	G0/1	172.16.48.1	255.255.252.0	N/A
	S0/0/0	10.10.10.1	255.255.255.252	N/A
WEST	G0/0	172.16.58.1	255.255.255.0	N/A
	G0/1	172.16.56.1	255.255.254.0	N/A
	S0/0/0	10.10.10.6	255.255.255.252	N/A
	S0/0/1	10.10.10.9	255.255.255.252	N/A
HQ_LAN1	VLAN 1	172.16.32.2	255.255.252.0	172.16.32.1
HQ_LAN2	VLAN 1	172.16.40.2	255.255.254.0	172.16.40.1
EAST_LAN1	VLAN 1	172.16.48.2	255.255.252.0	172.16.48.1
EAST_LAN2	VLAN 1	172.16.52.2	255.255.252.0	172.16.52.1
WEST_LAN1	VLAN 1	172.16.58.2	255.255.255.0	172.16.58.1
WEST_LAN2	VLAN 1	172.16.56.2	255.255.254.0	172.16.56.1

Objectives

Part 1: Locate the Problem

Part 2: Determine the Solution

Part 3: Implement the Solution

Part4: Verify That the Issues Are Resolved

Background / Scenario

In this activity, the network is already addressed using VLSM and configured with static routes but there is a problem. Locate the issues, determine the best solution, implement the solution, and verify the issues are resolved.

Part 1: Locate the Problem

- Investigate the device and document the current addressing scheme in the Addressing Table.
- Using the Host Chart below, determine if the addressing on each LAN interface has the appropriate subnet mask based on the number of hosts required for that LAN.

Host Chart

LAN	Interface	Number of Hosts
HQ LAN 1	G0/1	1500
HQ LAN 2	G0/0	1000
EAST LAN 1	G0/1	900
EAST LAN 2	G0/0	900
WEST LAN 1	G0/0	250
WEST LAN 2	G0/1	500

Part 2: Determine the Solution

- Determine the solution to the addressing errors and correct the documentation in the Addressing Table.
- After the addressing scheme is corrected, analyze the summary routes to see if any errors exist. There should be one summary route for both LANs of each router.
- Document the errors and the solution to each problem found in the Troubleshooting Documentation table below.

Troubleshooting Documentation

Problem	Solution
The subnet mask for HQ's G0/0 interface is incorrect.	The correct subnet mask should be 255.255.252.0
The subnet mask for HQ's G0/1 interface is incorrect.	The correct subnet mask should be 255.255.248.0
The subnet mask for HQ LAN 1 is incorrect.	The correct subnet mask should be 255.255.248.0
The subnet mask for HQ LAN 2 is incorrect.	The correct subnet mask should be 255.255.252.0
The summary route for the HQ LANs on the EAST router is incorrect.	The correct summary route should be ip route 172.16.32.0 255.255.240.0 10.10.10.5
The summary route for the HQ LANs on the WEST router is incorrect.	The correct summary route should be ip route 172.16.32.0 255.255.240.0 10.10.10.2

Part 3: Implement the Solution

- Correct addressing errors.

```
HQ(config)# interface g0/0
HQ(config-if)# ip address 172.16.40.1 255.255.252.0
HQ(config-if)# interface g0/1
HQ(config-if)# ip address 172.16.32.1 255.255.248.0
HQ_LAN1(config)# interface vlan 1
```

```
HQ_LAN1(config-if)# ip address 172.16.32.2 255.255.248.0
HQ_LAN2(config)# interface vlan 1
HQ_LAN2(config-if)# ip address 172.16.40.2 255.255.252.0
```

- b. Correct summary route errors.

Note: It is possible to configure a summary route that restores connectivity, but it is still incorrect because it includes addresses that are not part of the topology.

```
EAST(config)# no ip route 172.16.32.0 255.255.248.0 10.10.10.2
EAST(config)# ip route 172.16.32.0 255.255.240.0 10.10.10.2
WEST(config)# no ip route 172.16.32.0 255.255.248.0 10.10.10.5
WEST(config)# ip route 172.16.32.0 255.255.240.0 10.10.10.5
```

Part 4: Verify That the Issues Are Resolved

Ping each switch from EAST_LAN1. If you are unsuccessful, recheck your addressing scheme and summary route configurations.

Suggested Scoring Rubric

Activity Section	Possible Points	Earned Points
Addressing Table	25	
Troubleshooting Documentation	25	
Packet Tracer Score	50	
Total Score	100	