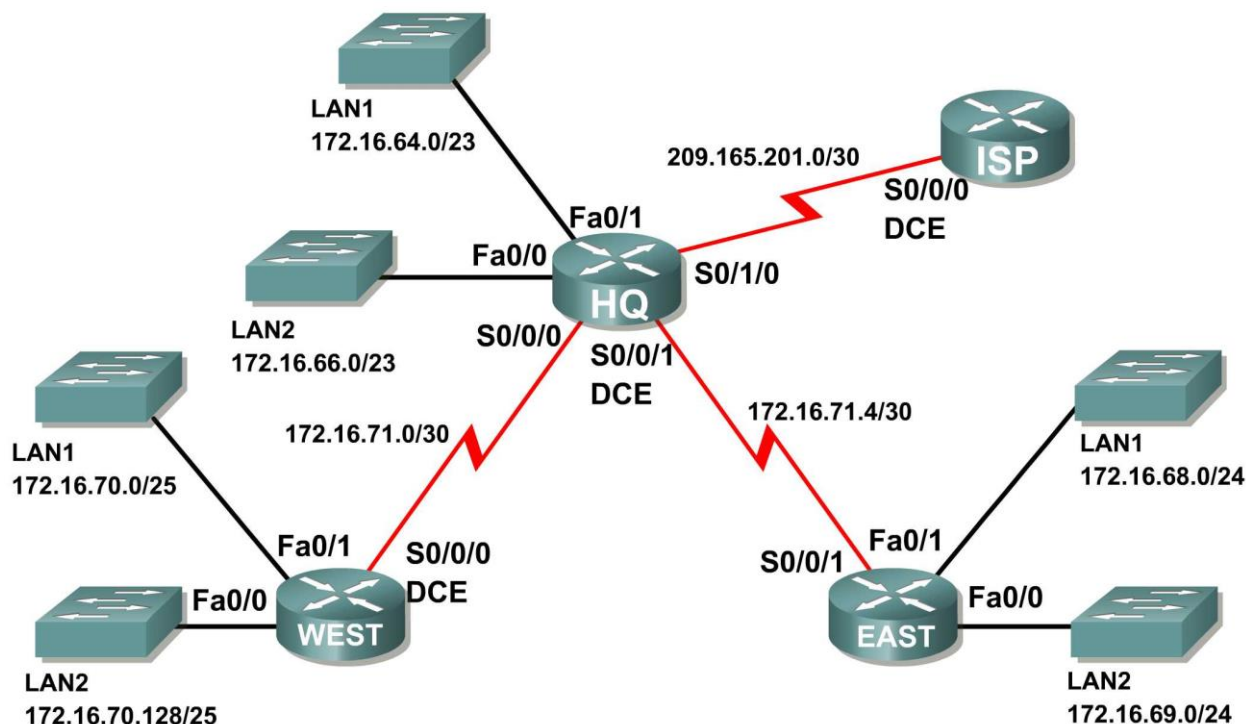


Activity 6.4.4: Basic Route Summarization

Topology Diagram



Addressing Table

Subnet	Network Address
HQ LAN1	172.16.64.0/23
HQ LAN2	172.16.66.0/23
EAST LAN1	172.16.68.0/24
EAST LAN2	172.16.69.0/24
WEST LAN1	172.16.70.0/25
WEST LAN2	172.16.70.128/25
Link from HQ to EAST	172.16.71.4/30
Link from HQ to WEST	172.16.71.0/30
Link from HQ to ISP	209.165.201.0/30

Learning Objectives:

- Determine summarized routes that can be used to reduce the size of routing tables.

Scenario

In this activity, you have been given the network shown in the Topology Diagram. The subnetting and address assignments have already been completed for the network segments. Determine summarized routes that can be used to reduce the number of entries in routing tables.

Task 1: Determine the Summary Route for the HQ LANs.

Step 1: List the HQ LAN1 and LAN2 in binary format.

LAN1 _____ 10101100.00010000.01000000.00000000
LAN2 _____ 10101100.00010000.01000010.00000000

Step 2: Count the number of left-most matching bits to determine the mask for the summary route.

- How many left-most matching bits are present in the two networks? _____ 22
- What is the subnet mask for the summary route in decimal format?
_____ 255.255.252.0

Step 3: Copy the matching bits and then add all zeros to determine the summarized network address.

- What are the matching bits for the two networks?
_____ 10101100.00010000.01000000
- Add zeroes to make up the remainder of the network address in binary form.
_____ 10101100.00010000.01000000.00000000
- What is the network address for the summary route in decimal format?
_____ 172.16.64.0

Task 2: Determine the Summary Route for the EAST LANs.

Step 1: List the EAST LAN1 and LAN2 in binary format.

LAN1 _____ 10101100.00010000.01000100.00000000
LAN2 _____ 10101100.00010000.01000101.00000000

Step 2: Count the number of left-most matching bits to determine the mask for the summary route.

- How many left-most matching bits are present in the two networks? _____ 23
- What is the subnet mask for the summary route in decimal format?
_____ 255.255.254.0

Step 3: Copy the matching bits and then add all zeros to determine the summarized network address.

- What are the matching bits for the two networks?
_____ 10101100.00010000.01000100

2. Add zeroes to make up the remainder of the network address in binary form.

10101100.00010000.01000100.00000000

3. What is the network address for the summary route in decimal format?

172.16.68.0

Task 3: Determine the Summary Route for the WEST LANs.

Step 1: List the WEST LAN1 and LAN2 in binary format.

LAN1 10101100.00010000.01000110.00000000

LAN2 10101100.00010000.01000110.10000000

Step 2: Count the number of left-most matching bits to determine the mask for the summary route.

1. How many left-most matching bits are present in the two networks? 24

2. What is the subnet mask for the summary route in decimal format?

255.255.255.0

Step 3: Copy the matching bits and then add all zeros to determine the summarized network address.

1. What are the matching bits for the two networks?

10101100.00010000.01000110

2. Add zeroes to make up the remainder of the network address in binary form.

10101100.00010000.01000110.00000000

3. What is the network address for the summary route in decimal format?

172.16.70.0

Task 4: Determine the Summary Route for the HQ, EAST, and WEST LANs.

Step 1: List summary networks for the HQ, EAST, and WEST LANs in binary format.

HQ Summary Route 10101100.00010000.01000000.00000000

EAST Summary Route 10101100.00010000.01000100.00000000

WEST Summary Route 10101100.00010000.01000110.00000000

Step 2: Count the number of left-most matching bits to determine the mask for the summary route.

1. How many left-most matching bits are present in the three networks? 21

2. What is the subnet mask for the summary route in decimal format?

255.255.248.0

Step 3: Copy the matching bits and then add all zeros to determine the summarized network address.

1. What are the matching bits for the three networks?

10101100.00010000.01000

2. Add zeroes to make up the remainder of the network address in binary form.
_____ 10101100.00010000.01000000.00000000
3. What is the network address for the summary route in decimal format?
_____ 172.16.64.0