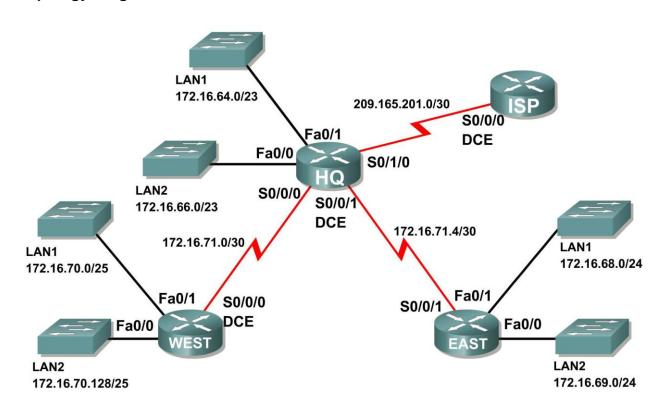# Activity 6.4.4: Basic Route Summarization

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

Upon completion of this activity, you will be able to:

- 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_____

LAN2_____

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?_____

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

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?
   _____

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

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

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

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

LAN1_____
LAN2_____

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?_____

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

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?
   _____

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

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

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

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

LAN1_____

LAN2_____

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?_____

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

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?
    _____

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

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

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_____

EAST Summary Route_____

WEST Summary Route_____

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?_____

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

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?
    _____

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

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