Activity 6.4.5: Challenge Route Summarization

Topology Diagram
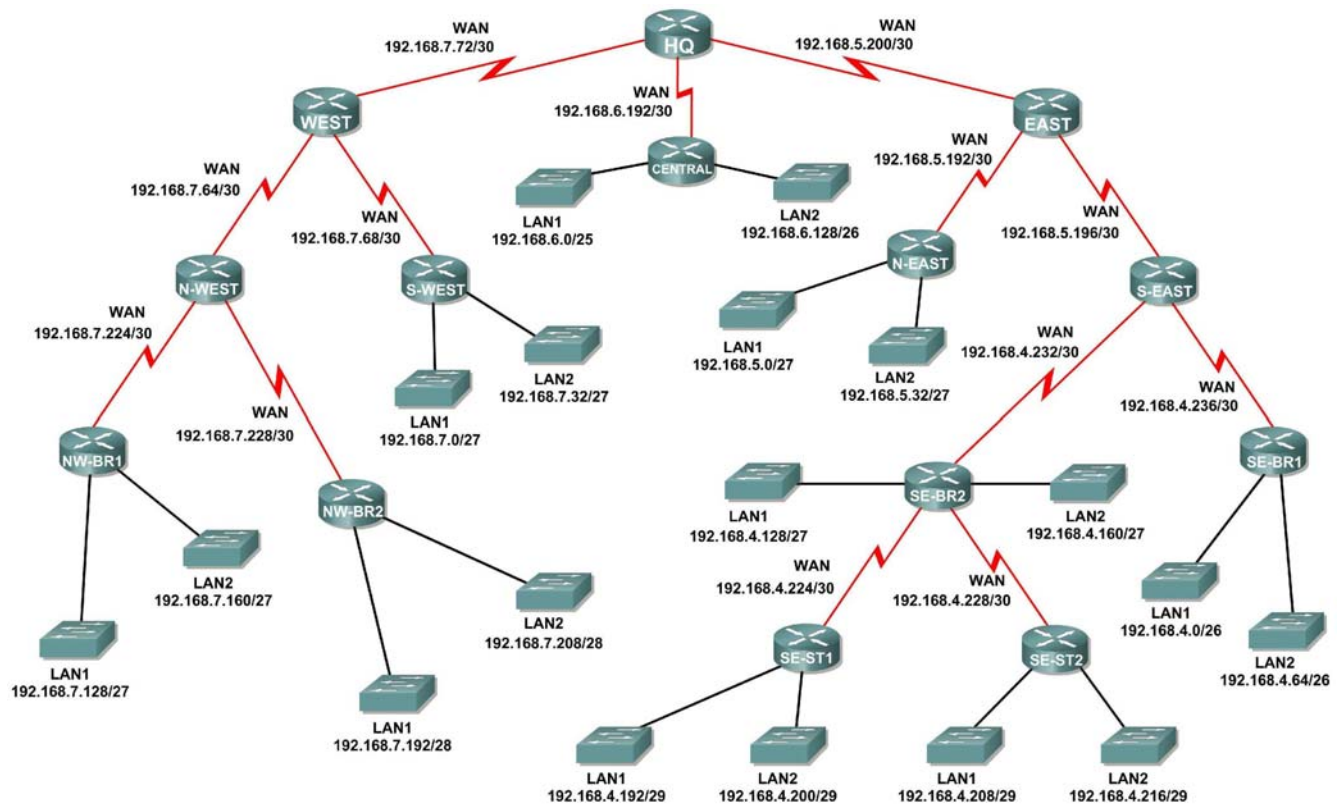
Addressing Table

Subnet	Network Address
S-WEST LAN1	192.168.7.0/27
S-WEST LAN2	192.168.7.32/27
Link from WEST to N-WEST	192.168.7.64/30
Link from WEST to S-WEST	192.168.7.68/30
Link from HQ to WEST	192.168.7.72/30
NW-BR1 LAN1	192.168.7.128/27
NW-BR1 LAN2	192.168.7.160/27
NW-BR2 LAN1	192.168.7.192/28
NW-BR2 LAN2	192.168.7.208/28
Link from N-WEST to NW-BR1	192.168.7.224/30
Link from N-WEST to NW-BR2	192.168.7.228/30
CENTRAL LAN1	192.168.6.0/25
CENTRAL LAN2	192.168.6.128/26
Link from HQ to CENTRAL	192.168.6.192/30
N-EAST LAN1	192.168.5.0/27
N-EAST LAN2	192.168.5.32/27
Link from EAST to N-EAST	192.168.5.192/30
Link from EAST to S-EAST	192.168.5.196/30
Link from HQ to EAST	192.168.5.200/30
SE-BR1 LAN1	192.168.4.0/26
SE-BR1 LAN2	192.168.4.64/26
SE-BR2 LAN1	192.168.4.128/27
SE-BR2 LAN2	192.168.4.160/27
SE-ST1 LAN1	192.168.4.192/29
SE-ST1 LAN2	192.168.4.200/29
SE-ST2 LAN1	192.168.4.208/29
SE-ST2 LAN2	192.168.4.216/29
Link from SE-BR2 to SE-ST1	192.168.4.224/30
Link from SE-BR2 to SE-ST2	192.168.4.228/30
Link from S-EAST to SE-BR2	192.168.4.232/30
Link from S-EAST to SE-BR1	192.168.4.236/30

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 S-WEST LANs.

Step 1: List the S-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 is the summary route in binary form?
   _____

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

Task 2: Determine the Summary Route for the NW-BR1 LANs.

Step 1: List the NW-BR1 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 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 is the summary route in binary form?
   _____

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

Task 3: Determine the Summary Route for the NW-BR2 LANs.

Step 1: List the NW-BR2 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 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 is the summary route in binary form?
   _____

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

Task 4: Determine the Summary Route for the Northwest Portion of the Network.

Use the networks listed below to determine a summary route for the Northwest portion of the network.

Step 1: List the Northwest network segments in binary format.

NW-BR1 Summary   _____

NW-BR2 Summary   _____

Link from N-WEST to NW-BR1   _____

Link from N-WEST to NW-BR2   _____

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 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 is the summary route in binary form?
   _____

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

Task 5: Determine the Summary Route for the West Portion of the Network.

Use the networks listed below to determine a summary route for the West portion of the network.

Step 1: List the West network segments in binary format.

S-WEST Summary	_____
N-WEST Summary	_____
Link from WEST to N-WEST	_____
Link from WEST to S-WEST	_____
Link from HQ to WEST	_____

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 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 is the summary route in binary form?
   _____

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

Task 6: Determine the Summary Route for the Central Portion of the Network.

Use the networks listed below to determine a summary route for the Central portion of the network.

Step 1: List the Central network segments in binary format.

CENTRAL LAN1	_____
CENTRAL LAN2	_____
Link from HQ to CENTRAL	_____

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 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 is the summary route in binary form?
   _____

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

Task 7: Determine the Summary Route for the N-EAST LANs.

Step 1: List the N-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 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 is the summary route in binary form?
   _____

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

Task 8: Determine the Summary Route for the SE-BR1 LANs.

Step 1: List the SE-BR1 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 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 is the summary route in binary form?
   _____

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

Task 9: Determine the Summary Route for the SE-BR2 LANs.

Step 1: List the SE-BR2 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 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 is the summary route in binary form?
    _____

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

Task 10: Determine the Summary Route for the SE-ST1 LANs.

Step 1: List the SE-ST1 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 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 is the summary route in binary form?
    _____

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

Task 11: Determine the Summary Route for the SE-ST2 LANs.

Step 1: List the SE-ST2 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 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 is the summary route in binary form?
    _____

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

Task 12: Determine the Summary Route for the Southeast Portion of the Network.

Use the networks listed below to determine a summary route for the Southeast portion of the network.

Step 1: List the Southeast network segments in binary format.

SE-BR1 Summary	_____
SE-BR2 Summary	_____
SE-ST1 Summary	_____
SE-ST2 Summary	_____
Link from SE-BR2 to SE-ST1	_____
Link from SE-BR2 to SE-ST2	_____
Link from S-EAST to SE-BR1	_____
Link from S-EAST to SE-BR2	_____

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 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 is the summary route in binary form?
   _____

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

Task 13: Determine the Summary Route for the East Portion of the Network.

Use the networks listed below to determine a summary route for the East portion of the network.

Step 1: List the East network segments in binary format.

S-EAST Summary	_____
N-EAST Summary	_____
Link from EAST to N-EAST	_____
Link from EAST to S-EAST	_____
Link from HQ to EAST	_____

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 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 is the summary route in binary form?
   _____

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

Task 14: Determine the Summary Route for the Entire Network.

Use the networks listed below to determine a summary route for the entire network.

Step 1: List the East, West, and Central summary routes in binary format.

EAST Summary	_____
WEST Summary	_____
CENTRAL Summary	_____

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 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 is the summary route in binary form?
   _____

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