EIGRP Capstone Project

Objectives

In this Capstone Project activity, you will demonstrate your ability to:

- Design, configure, verify, and secure EIGRP, IPv4 or IPv6 on a network
- Design a VLSM addressing scheme for the devices connected to the LANs
- Present your design using network documentation from your Capstone Project network

Scenario

You are a network engineer for your small- to medium-sized business. You and your team have been asked to design an IPv4 or IPv6 network that uses the EIGRP routing protocol.

The network consists of four branches that are connected to a headquarters router. The headquarters then connects to an ISP router.

Your job is to create an EIGRP-based, VLSM addressed network scheme using IPv4 or IPv6 to accommodate the number of hosts requested for this Capstone Project.

Required Resources

- Packet Tracer software
- Word processing, presentation software or use the space provided below

Step 1: Design the network topology.

a. Network equipment:
   1) Six routers
      (a) Four branch routers
      (b) One headquarters router
      (c) One ISP router
   2) Switches to support the LANS

b. LANs:
   1) Two LANs per branch router
      (a) Two LANs with 500 hosts
      (b) One LAN serving 120 hosts
      (c) One LAN with 200 hosts
      (d) Two LANS with 80 hosts
      (e) One LAN with 60 hosts
      (f) One LAN with 30 hosts
   2) One, three-host LAN assigned to the ISP router for server connectivity (DNS, Web, and TFTP).

Step 2: Devise the network addressing scheme.

a. Use any RFC 1918 Class B address that will accommodate the specifications listed in Step 1.

b. ISPs LAN connection will use a different IPv4 network number to indicate Internet or telecommunications connectivity to the servers.

c. Use VLSM efficiently to conserve addresses and allow for scalability.

d. Apply the network address scheme to hosts and LAN and WAN interfaces.

Step 3: Implement the EIGRP routing protocol on your network

a. Requirements:

1) Advertise directly connected networks using the wildcard mask.

2) Disable automatic summarization.

3) Disable routing updates from being sent across the LAN interfaces.

4) Implement one, named extended ACL on the network.

b. Recommendations (choose two):

1) Selectively implement EIGRP summary routes.

2) Modify the EIGRP hello-timers.

3) Modify the bandwidth of the interfaces.

Step 4: Configure basic security

a. Restrict access to the console connection.

b. Configure encrypted passwords.

c. Restrict access to the VTY connections.

d. Configure a banner warning.

Step 5: Backup the configurations of each router to the TFTP server.

Step 6: Verify the network.

a. Validate connectivity by pinging all devices.

b. Use five **show** commands to verify EIGRP configuration.

Step 7: Present your Capstone Project to the class and be able to answer questions from your peers and Instructor.