Lab 1: Configure and Verify EIGRP Operations with basic BGP configuration

Activity Objective

In this activity, you will use correct commands, tools, and steps to configure and verify a basic EIGRP implementation. After completing this activity, you will be able to meet these objectives:

- Configure and verify basic EIGRP operation over WAN and LAN interfaces
- Select the required tools and commands to configure basic EIGRP operations
- Influence the path selection for EIGRP by changing the metric
- Optimize EIGRP operation to prevent unnecessary hellos from being sent
- Optimize EIGRP operation by minimizing the routing table size using summarization
- Verify the configuration and operation by using the proper show and debug commands

Step 1: Configure your pod to match diagram. Be sure you have basic IP connectivity and can ping across directly attached segments before moving on to step 2. Also save baseline configurations as will be used as starting point in future labs. This will also get you back to basics with configuration after a summer off!

Step 2: Configure EIGRP on routers R1-R4. AS should be 113. Put all networks into EIGRP which exist on these routers. Check your EIGRP configuration. Is “no auto-summary” default or not? Should it be configured or not? What does this do?

Step 3: Verify the EIGRP configuration with the show ip eigrp neighbors command. R1 should have two active neighbors, and R2-R4 should have 4. Use the “show ip route eigrp” command to view routing table. The routing table differs on each router, why? Use the “show ip protocols” command to view information about eigrp configuration and the “show ip eigrp topology” command to view topology table. On R4 what is the feasible successor for 128.213.113.0?

Step 4: Next you will simulate a failure. First on R3 turn on eigrp debugging (debug ip eigrp). Ensure you have logging turned on so you can see output in both buffer and on console. Check the routing table on R3 for 128.213.105.0/24 - it should be reachable via R1 via vlan 13. Check the EIGRP topology table on R3 for feasible success for 128.213.105.0 – what is it? Next you will simulate a failure on R1 by shutting down vlan 13 on R1. Examine the results of the debug on R3. How did the routing table change on R3? How did the eigrp topology table change on R3? Is this what you expected based on the feasible successor? If not what happened? Bring back up vlan 13 on R1.

Step 5: Next you will configure EIGRP path selection by changing the delay metric. First on R3 check route to 128.213.40.0/24. What path is preferred and why? By manipulating only the delay metric change EIGRP so path via R4 frame relay link is preferred. On R3 check routing table and EIGRP
topology table, what has changed and why? Depending on where you manipulated metric this will affect path of other routes in addition to 128.213.40.0/24 – be aware of these consequences.

**Step 6:** You are to perform EIGRP optimization gig0/0.138 on R3 and Gig0/0.100 on R4 such that EIGRP hellos are not sent out the interfaces but networks still in EIGRP. What command is needed to do this?

**Step 7:** On R1 configure EIGRP summarization on link to R2 to summarize 128.213.112.0/23. Verify this with the “show ip route eigrp” command on R1 and on the routing table on R2 - R4.

**Step 8:** On R3 under the EIGRP configuration, configure “variance 5”. What does this do? How does routing table and eigrp topology table change with this configuration on R3?

**Step 9:** At this point all IP addresses on routers R1-R4 should be pingable from routers R1-R4. Verify this and correct any problems with your EIGRP configuration if that is not the case.

**Step 10:** Bring up basic BGP between R4 and R6. From R4 announce only 128.213.0.0/16 – do this without redistribution. From R6 to R4 announce nothing at this point.