TEIN3 Internship Program Weekly Report

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This is my internship report for the third week. The following are the one which I learned during the third week (16th -20th July):

OSPF – Open Shortest Path First

1. OSPF
2. OSPF Packet
3. Lab Topology
4. The Router OSPF Command
5. The Network Command
6. OSPF Router ID
7. Verifying Router ID
8. Loopback Address
9. The OSPF router-id command
10. Modifying the Router ID
11. Duplicate Router IDs
12. Verifying OSPF

I read all the document/or notes on the following

1. OSPF Data Structures
2. OSPF Adjacency Database
3. OSPF Area Structure
4. OSPF Router Types

I also learned about **OSPF Router Types and LSAs-Link-statement Advertisement.** There are four types of OSPF Router. Router types are determined by router's function and /or location within OSPF area:

1. Internal Router (IR)-
2. Backbone
3. Area Border Router (ABR)
4. Autonomous System Boundary Router(ASBR)

5. OSPF Terminology
6. Calculating the OSPF Metric
7. Link-State Data Structures.
8. OSPF Network Types

Following are the types of LSAs in an OSPF network:

- Type 1 router LSA — a router sends this to describe neighbors and its own interfaces.
- Type 2 network LSA — for broadcast networks only; this LSA is flooded by the DR and lists OSPF-speaking routers on the network.

- Type 3 network summary LSA — sent by an ABR to advertise networks reachable through it. A stub area router will also use this for the default route.

- Type 4 ASBR-summary LSA — Sent by ABR, but only internally. This describes to the others how to get to the ASBR itself, and uses only internal metrics.

- Type 5 AS-external LSA — used to describe external routes to internal areas. Can be used to advertise "this is the way to the Internet" (or some subset of).

- Type 6 Group summary — used in multicast (MOSPF). Ignore this.

- Type 7 NSSA area import.

- Type 8 External Attributes LSA – This is very rarely deployed and is used when BGP information is carried across OSPF AS

- Type 9, 10, and 11 are Opaque LSAs — they are designated for future specifically for application specific purposes.

9. Adjacency Behavior for a Point
10. Adjacency Behavior for a Broadcast Link
11. Selecting the DR and BDR
12. Adjacency Behavior for a NBMA Network
13. DR Election in NBMA Topology
14. OSPF over Frame Relay
15. OSPF over NBMA Topology Modes
16. Configuring the OSPF Network Type
17. Configuring OSPF over Frame Relay
18. Using the neighbor Command
19. The show IP OSPF neighbor Command
20. Point-to-Multipoint Configuration.
21. Point-to-Multipoint Non broadcast Configuration
22. Configuring a Point-to-Point Subinterface
23. Configuring a Multipoint Subinterface

Route Summarization

- ABR and ASBR Implementation
- OSPF Route Summarization Example
- Configuring OSPF Route Summarization
- Configuring Route Summarization at ABR

- Configuring Route Summarization at ASBR
- Benefits of a Default Route in OSPF
- On figuring a Default Route in OSPF
- Example of Configuring a Default Route in OSPF

OSPF Authentication

- OSPF Authentication Methods
- Configuring Simple Password Authentication
- Example of Configuring Simple Password Authentication
- Configuring MD5 Authentication
- Example of Configuring MD5 Authentication
- Troubleshooting Simple Password Authentication

After reading all the documents and doing some labs, I learned how to:

- Erase the startup configuration and reload a router to the default state
- Perform basic configuration tasks on a router
- Configure and activate interfaces
- Configure OSPF routing on all routers
- Configure OSPF router IDs
- Verify OSPF routing using show commands
- Configure a static default route
- Propagate default route to OSPF neighbors
- Configure OSPF Hello and Dead Timers
- Configure OSPF on a Multi-access network
- Configure OSPF priority

BGP-Border Gateway Protocol

1. BGP Concepts and Terminology

2. EBGP and IBGP

3. Configuring BGP
   - ✓ Basic BGP Configuration

- ✓ Activate a BGP Session
- ✓ Shutting Down a BGP Neighbor
- ✓ BGP Configuration Considerations
- ✓ IBGP Peering Issue
- ✓ BGP neighbor update-source Command
- ✓ EBGP Peering Issue
- ✓ Next Hop Behavior
- ✓ BGP neighbor next-hop-self Command
- ✓ Injection Routing Information into BGP
- ✓ BGP network Command Example
- ✓ BGP Synchronization
- ✓ BGP Synchronization Example
- ✓ BGP Configuration Example

I also did configuration example and lab on Configuring BGP with Default Routing.