TLEN5370 - Homework 3

Homework 3

Instructions: Do each question in order and be prepared to discuss in class.

1) Explain the difference between the LSA database and the Routing table in OSPF.

- The Link State Advertisement database stores complete routes to calculate new ones for OSPF. There are types of LSA that specify also where they came from varying from types 1-5 & 7. The routing table in OSPF tells the router where to route the next packet in the network.

2) Explain the differences between Stubby, Totally Stubby, and Not So Stubby Areas. Describe a situation where you would need each.

- Stubby
  - Does not accept external routes that are not OSPF generated. Uses Type 1,2, and 3 LSAs.
  - This would be needed when a network does not want to know type 4 and 5 LSA if there were too many of them
- Totally Stubby
  - Does not accept external non-OSPF and to area. Uses only 1 and 2 type LSAs with one type 3 LSA default route.
  - This would be used when a user does not need to store type 3 LSAs in their area and only needs information of type 1 and 2.
- NSSA
  - Is a stubby area that contains type 7 LSAs that generates external LSAs to other areas via the ABR.
  - This would be used when the area does not want to hold layer 5 LSAs and instead only advertise LSAs coming from the ASBR.

3) Explain the purpose of an area in OSPF. Define the role of an ABR,ASBR,DR, and BDR.

- The purpose of an area is to reduce LSAs and other overhead OSPF traffic.
- ABR (Area Border Router): Connects areas to the backbone. Maintain separate database for each area.
- ASBR (Autonomous System Border Router): Connects to other AS's through external routing protocols like BGP.

- DR (Designated Router): Generates LSAs that contain all routers within the network.
- BDR (Backup Designated Router): Does advertisement distribution by multiaccess network types

4) Label each router's role in the following diagram. Also show arrows for where LSA's are being originated for each router as well as what type of LSA's they are. Assume Area 1 is a type of stub area and that the network has no priority values set.