OSPF Quick Notes

Points to remember

- When priority is set to 0,that router won't participate in DR/BDR election
- When other routing protocol routes are being redistributed into OSPF, Make sure "**Subnet**" option is added
- If ping to 224.0.0.5 fails, it means Router have no OSPF neighbors
- When OSPF is enabled across an NBMA network -- DR BDR election will occur. We need to configure neighbor command to build adjacencies
- If no Loopback is configured, Highest IP address will be the DR
- OSPFv3 for IPv6 authentication is supported by IPv6 IPSec.
- By default, redistribution of routes from other routing protocols into OSPF will appear as type E2 routes in OSPF routing table
- When implementing OSPFv3, In interface configuration mode, the IPv6 OSPF process area ID combination assigns interfaces to OSPFv3 areas.
- In OSPF, Router will only establish full adjacency with the DR and BDR on broadcast multi-access networks.
- OSPF Network LSAs are originated by the DR on every multi-access network. They include all attached routers including the DR itself
- In OSPF, If a router is stuck in INIT STATE means that router didn't receive hello packets from neighboring router
- To make an area "**totally stubby**" we must apply the "**area <area-id> stub no-summary**" on the ABR and "**area <area-id> stub**" commands to all other routers in that area

- **Advantages of creating multiple areas in OSPF**
  - Less frequent SPF calculation
  - Smaller routing table
  - Reduced LSU overhead
- **Three restrictions apply to OSPF stub areas?**
  - No virtual links are allowed.
  - The area cannot be a backbone area.
  - No Autonomous System Boundary Routers are allowed.
- **The maximum number of routers per OSPF area typically depends on**
  - the kind of OSPF areas being implemented
  - the number of external LSAs in the network
  - how well the areas can be summarized
- **When verifying the OSPF link state database, which type of LSAs should you expect to see within the different OSPF area types?**
  - All OSPF routers in stubby areas can have type 3 LSAs in their database.
  - All OSPF routers in NSSA areas can have type 3 LSAs in their database.
  - All OSPF routers in NSSA areas can have type 7 LSAs in their database.
- **When verifying OSPF virtual link problems, which is an important item to check on the two transit OSPF routers?**
  - OSPF Router ID
- **Two statements about route redistribution when implementing OSPF**
  - OSPF can import routes learned using EIGRP, RIP, and IS-IS.

- OSPF routes can be exported into BGP.

- **3 statements about OSPF areas**
  - Areas introduce a boundary on the link-state updates.
  - All routers within an area have the exact link-state database.
  - The calculation of the Dijkstra algorithm on a router is limited to changes within an area.

Show Command	**Explanation**
show ip ospf database external	will display only the Type 5 LSAs in the OSPF topology database
show ip ospf	command displays the number of times that the OSPF Shortest Path First (SPF) algorithm has been executed
show ip ospf neighbor	• This command is used to verify the current state of the OSPF database loading process • To view neighbor adjacencies
S how ip ospf interfaces	view neighbor adjacencies
Show ip protocols	Display OSPF parameters such as filter, default metric, maximum paths, and number of areas configured on router

OSPF LSA

Below summarizes the LSA Types allowed and not allowed in area types:

Area Type	Type 1 & 2 (within area)	Type 3 (from other areas)	Type 4	Type 5	Type 7
Standard & backbone	Yes	Yes	Yes	Yes	No
Stub	Yes	Yes	No	No	No
Totally stubby	Yes	No	No	No	No
NSSA	Yes	Yes	No	No	Yes
Totally stubby NSSA	Yes	No	No	No	Yes

Popular LSA Types are listed below: http://sysnetNotes.blogspot.in

LSA Type	Description	Details
1	Router LSA	Generated by all routers in an area to describe their directly attached links
2	Network LSA	Advertised by the DR of the broadcast network (does not cross ABR)
3	Summary LSA	Advertised by the ABR of originating area
4	Summary LSA	Generated by the ABR of the originating area to advertise an ASBR to all other areas in the autonomous system
5	AS external LSA	Used by the ASBR to advertise networks from other autonomous systems
7	Defined for NSSAs	Generated by an ASBR inside a Not-so-stubby area (NSSA) to describe routes redistributed into the NSSA

Q: You have been tasked with setting up OSPF on an existing company router usingIPv6. Which command enables OSPF for IPv6 on a router?

A. ipv6 router ospf process-id

Q: One of the most important characteristics of OSPF is multiple areas ?

A. All computation is kept within the area, with minimum communication between the areas, allowing the network to scale to larger sizes.

Q: When learning a new route, if a LSA received is not found in the topological database, what will an internal OSPF router do?

A. The LSA is flooded immediately out of all the OSPF interfaces, except the interface from which the LSA was received.

- **OSPF order to form full adjacency**
  - Down
  - INIT
  - 2way
  - Exstart
  - Exchange
  - Loading
  - Full