

OSPF AREAS

OSPF uses AREAS to divide up the NETWORK

SMALL NETWORKS can be single-area without any negative effects on performance

LARGE NETWORKS, single-area design can have NEGATIVE effects:

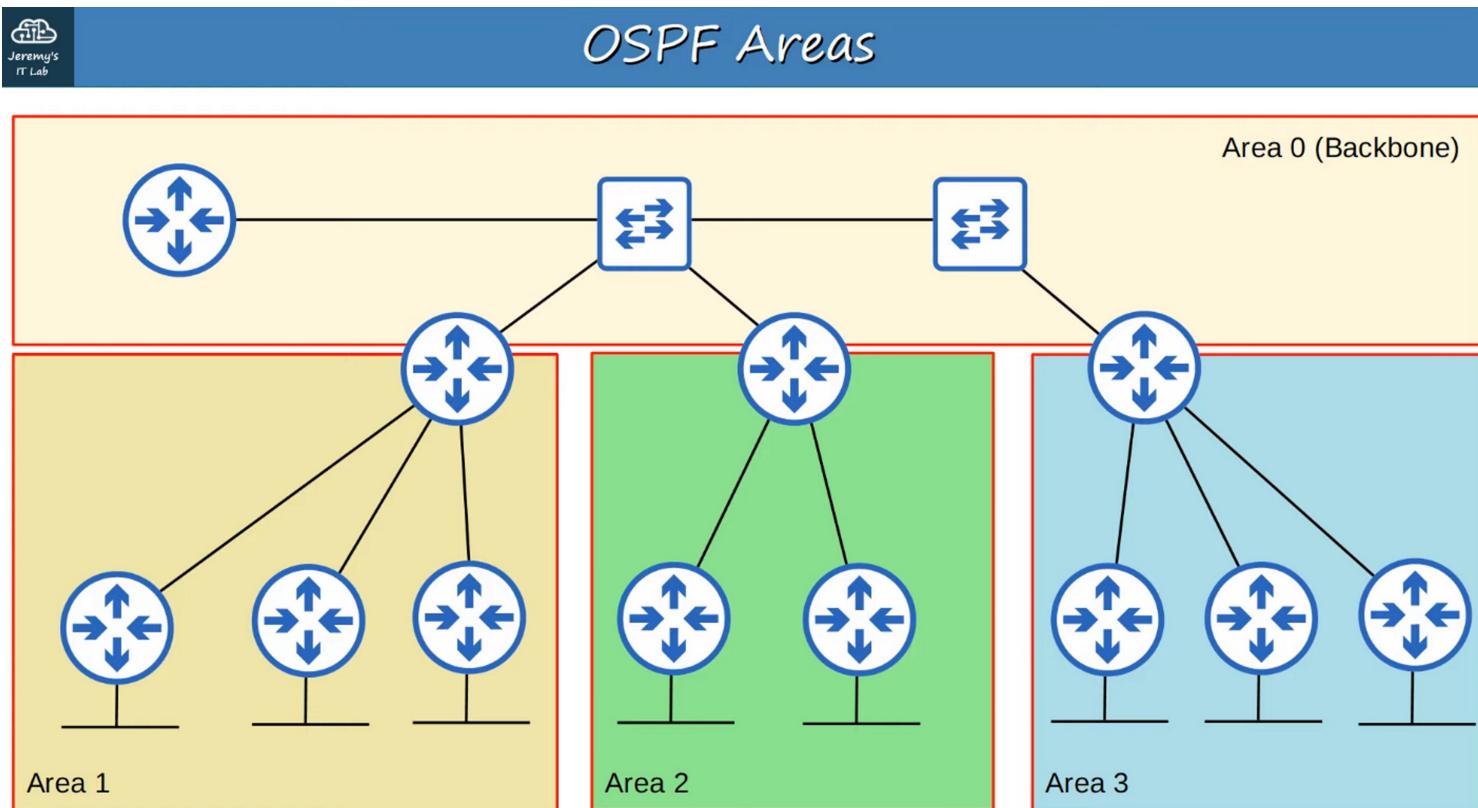
SPF ALGORITHM takes more time to calculate ROUTES

SPF ALGORITHM requires exponentially more processing power on ROUTERS

Larger LSDB takes up more MEMORY on ROUTERS

Small changes in NETWORK cause every ROUTER to FLOOD LSAs and run the SPF algorithm again

By dividing up a large OSPF NETWORK into several SMALLER areas, you can avoid the above NEGATIVE effects (sounds similar to VLANs re: broadcast domains)



An AREA is a set of ROUTERS and LINKS that share the same LSDB

The BACKBONE AREA (Area 0) is an AREA that all other AREAS must connect to

ROUTERS with ALL INTERFACES in the SAME AREA are called INTERNAL ROUTERS

ROUTERS with INTERFACES in MULTIPLE AREAS are called AREA BORDER ROUTERS (ABRs)

- 💡 ABRs maintain a SEPARATE LSDB for each AREA they are connected to.
- 💡 It is recommended that you connect an ABR to a MAXIMUM of TWO AREAS.
- 💡 Connecting an ABR to 3+ AREAS can overburden the ROUTER

ROUTERS connected to the BACKBONE AREA (Area 0) are called BACKBONE ROUTERS

An INTRA-AREA ROUTE is a ROUTE to a DESTINATION inside the same OSPF AREA

An INTER-AREA ROUTE is a ROUTE to a DESTINATION in a DIFFERENT OSPF AREA

OSPF RULES

OSPF AREAS should be CONTIGUOUS (no split AREAS)

All OSPF AREAS must have at least ONE ABR connected to the BACKBONE AREA

OSPF INTERFACES in the SAME SUBNET must be in the SAME AREA