

ADJUST/TROUBLESHOOT SINGLE AREA OSPF P2

OSPF adjacencies will not form if:

- ints not on same network
- OSPF network types don't match
- OSPF Hello/Dead Timers don't match
- Int to neighbor is incorrectly config as passive
- Missing/incorrect OSPF network cmd

OSPF States FULL/2WAY states normal: All other states transitory: Shouldn't remain in those states for periods of time

Troubleshooting Cmds

sh ip protocols	Verify vital OSPF config info <ul style="list-style-type: none"> • Includes: OSPF process ID, r-ID • Networks router is advertising, neighbors router receiving updates from • Default admin distance (110 for OSPF)
sh ip ospf neighbor	Verify router formed adjacency w/ neighboring routers <ul style="list-style-type: none"> • Displays neighbor r-ID, neighbor priority, OSPF state, Dead timer • Neighbor int IP address, int neighbor is accessible through • If r-ID of neighboring router isn't displayed: Doesn't show as FULL/2WAY: <ul style="list-style-type: none"> • 2 routers haven't formed OSPF adjacency • If 2 routers don't establish adjacency, link-state info not exchanged • Incomplete link-state db's can cause inaccurate SPF trees/r-tables • Routes to dest networks may not exist/may not be most optimum path
sh ip ospf int	Display OSPF params config'd on an int <ul style="list-style-type: none"> • Such as: Process ID int assigned to • Area ints are in • Cost of int • Hello/Dead intervals Adding int name/# to cmd displays output for specific int
sh ip ospf	Examine OSPF process ID/r-ID <ul style="list-style-type: none"> • Displays OSPF area info: Last time SPF alg was calc
sh ip route ospf	Display only OSPF learned routes in r-table
clear ip ospf [process-id] process	Reset OSPFv2 neighbor adjacencies

Components of Troubleshooting OSPF

1. Neighbor adjacencies

2. Missing routes
3. Path selection

If adjacency bet 2 routers established:

- Verify there are OSPF routes in r-table using `sh ip route ospf`
- **If no OSPF routes:** Verify no other r-protocols w/lower admin distances running in network
- Verify if required networks advertised in OSPF
- Verify if access list config on router that would filter incoming/outgoing r-updates
- If all required routes in table, but path traffic takes isn't correct, verify OSPF cost on ints on path
- Be careful in cases where the ints faster than 100 Mb/s: All ints have this BW/same OSPF cost by default

Troubleshooting Neighbor Issues

- Mismatched MTU sizes on connecting ints
- MTU size is largest network layer packet router will fwd out each int
- Default to MTU size of 1500 bytes
- Value can be changed using `ip mtu sizeinterface` or `ipv6 mtu sizeinterface`
- 2 routers: Mismatched MTU values: Would still attempt to form adjacency: Wouldn't exchange LSDBs/neighbor
 - Relationship would fail

OSPFv3 Troubleshooting

sh ipv6 protocols	Verify config Includes: <ul style="list-style-type: none"> • Process ID/r-ID/int router receiving updates from
sh ipv6 ospf neighbor	Verify router formed adjacency w/neighbors Display includes: <ul style="list-style-type: none"> • Neighbor r-ID/neighbor priority/state/dead timer/neighbor int ID • Int neighbor is accessible through If r-ID of neighboring router not displayed/doesn't show FULL/2WAY state <ul style="list-style-type: none"> • 2 routers haven't formed adjacency If 2 routers don't establish adjacency: <ul style="list-style-type: none"> • Link-state info won't be exchanged • Incomplete LSDB's can cause inaccurate SPF trees/r-tables • Routes to destination networks may not exist/may not be most optimum paths
sh ipv6 ospf int	Displays params config on int Including: <ul style="list-style-type: none"> • Process ID int assigned to/area ints are in/cost of int • Hello/Dead intervals Adding int name/# to cmd displays output for a specific int
sh ipv6 ospf	OSPF process ID/r-ID/LSA transmission info
sh ipv6 route ospf	Displays learned routes in r-table
clear ipv6 ospf [PID] process	Resets neighbor adjacencies