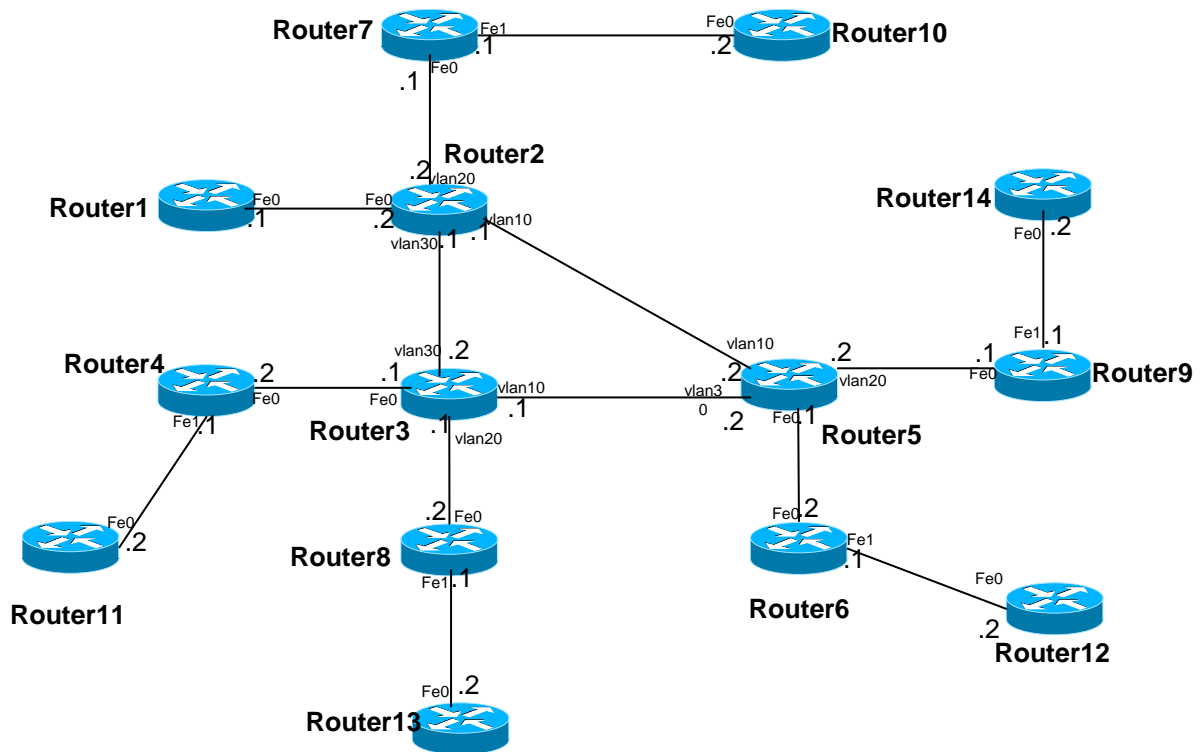


Hands-on

Routing configuration / Local laboratory

Testbed setup



Testbed diagram

Routers login:

Use telnet protocol with the

Router	IPv4 address
Router1	10.1.1.1
Router2	10.2.2.2
Router3	10.3.3.3
...	...
RouterN	10.N.N.N
...	...
Router12	10.12.12.12
Router13	10.13.13.13
Router14	10.14.14.14

Routers connection information

Login: 6diss
Password: 6diss

Addressing configuration

1°) Configure the following addressing plan on the routers.

Loopbacks:

Name	IPv6 Loopback address	IPv4 Loopback address (for router-ID)
Router1	2001:DB8:CAFE:8001::1/64	10.1.1.1
Router2	2001:DB8:CAFE:8002::1/64	10.2.2.2
Router3	2001:DB8:CAFE:8003::1/64	10.3.3.3
Router4	2001:DB8:CAFE:8004::1/64	10.4.4.4
Router5	2001:DB8:CAFE:8005::1/64	10.5.5.5
Router6	2001:DB8:CAFE:8006::1/64	10.6.6.6
Router7	2001:DB8:CAFE:8007::1/64	10.7.7.7
Router8	2001:DB8:CAFE:8008::1/64	10.8.8.8
Router9	2001:DB8:CAFE:8009::1/64	10.9.9.9
RouterN	2001:DB8:CAFE:800N::1/64	10.N.N.N
...
Router14	2001:DB8:CAFE:8014::1/64	10.14.14.14

Interconnections:

Interconnections (R1 - R2)	Prefix
router1 - router2	2001:DB8:CAFE:8101::/64
router2 - router3	2001:DB8:CAFE:8102::/64
router2 - router5	2001:DB8:CAFE:8103::/64
router7 - router2	2001:DB8:CAFE:8104::/64
router3 - router4	2001:DB8:CAFE:8105::/64
router3 - router5	2001:DB8:CAFE:8106::/64
router3 - router8	2001:DB8:CAFE:8107::/64
router5 - router6	2001:DB8:CAFE:8108::/64
router9 - router5	2001:DB8:CAFE:8109::/64
router7 - router10	2001:DB8:CAFE:8110::/64
router4 - router 11	2001:DB8:CAFE:8111::/64
router 6 - router 12	2001:DB8:CAFE:8112::/64
router8 - router 13	2001:DB8:CAFE:8113::/64
router9 - router 14	2001:DB8:CAFE:8114::/64

R1 has address = prefix::1

R2 has address = prefix::2

2°) Check you can ping address of the routers connected to the router you manage.

3°) Take a look at the IPv6 details of an interface. Write down the different addresses you observe and give their types and usage.

OSPF configuration for IPv6

- 1°) *Enable OSPFv3 routing protocol for IPv6 on all routers.*
- 2°) *Enable CEF switching for IPv6 on CISCO routers*
- 3°) *Enable the OSPFv3 process you have configured in question 1 on all interfaces of the lab (except loopback interfaces). Use area 0 for OSPFv3.*
- 4°) *Check OSPFv3 connections are established between routers.*
- 5°) *Redistribute the loopback addresses in OSPFv3.*
- 6°) *Check all routers in the labs receive all interconnection and loopback prefixes via OSPFv3.*
- 7°) *Check reachability of all routers loopback addresses from your router using ping command.*

BGP configuration for IPv6

1°) Configure an eMBGP peerings between router2, router3 and router5. For this purpose, interconnection addresses must be used to setup the peerings. Also note that:

- AS number of router2 is 65151
- AS number of router3 is 65152
- AS number of router5 is 65153

Note that you have to disable OSPF in “external” interfaces:

- for router2, OSPF must be disabled in VLAN30 and VLAN10
- for router3, OSPF must be disabled in VLAN30 and VLAN10
- for router5, OSPF must be disabled in VLAN30 and VLAN10

2°) Configure an iMBGP peering between:

- router1 - router2 (AS65151)
- router7 - router2 (AS65151)
- router7 - router10 (AS65151)
- router3 - router4 (AS65152)
- router3 - router8 (AS65152)
- router4 - router11 (AS65152)
- router8 - router13 (AS65152)
- router5 - router6 (AS65153)
- router5 -router9 (AS65153)
- router6 –router12 (AS65153)
- router9 – router14 (AS65153)

Note: For iMBGP peerings, you have to specify the ipv6 address used for the BGP routing updates:

```
router bgp xxxx
...
...
address-family ipv6
...
...
neighbor X:X:X:X::X update-source Loopback 0
...
```

Note that the iMBGP full mesh is configured between loopback addresses of the routers. This is the reason why OSPF is needed to reach loopback addresses.

3°) Check the status of the eMBGP and iMBGP peerings. They must be in established state before going to the next step.

4°) Check that you receive prefixes via the eMBGP peerings. Check they are properly propagated to the routers of the lab through iMBGP peerings.

Bonus:



5°) *Enforce policies on the eMBGP peerings to accept only one loopback prefix (e.g: 2001:DB8:CAFE:8007::1/64).*

6°) *Apply a policy to prefer the path between router2 and router3 . For this purpose, configure on router3 the local-preference 200 on prefixes received from router2. Configure on router5 the local-preference of 150 on prefixes received from router2.*

7°) *Check the BGP details to make sure the policy is properly configured. Using traceroute command, make sure that the path between router2 and router3 is preferred.*