

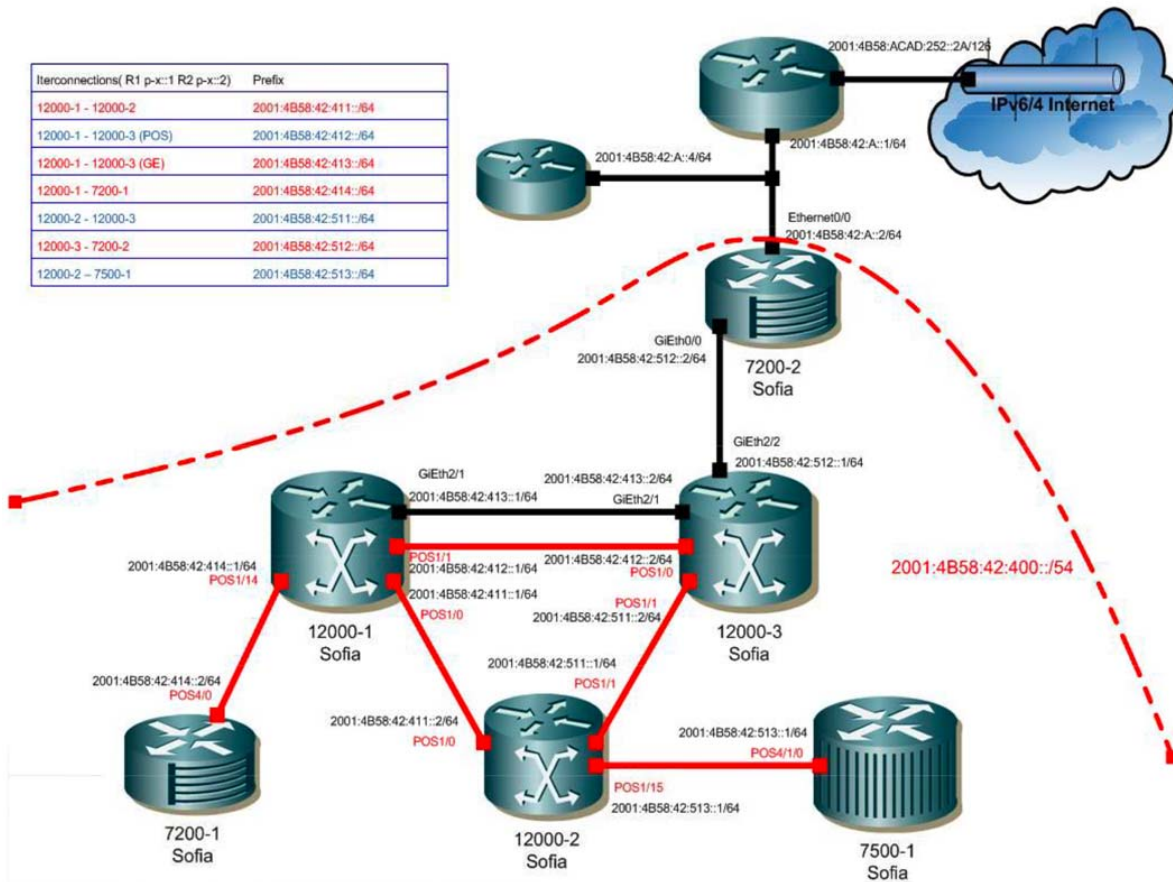
***IPv6 Workshop: Location***

***Date***

***Routing Hands-on – Sofia Lab***

***Trainer Name***

## Sofia testbed setup



## Routers login:

Use telnet protocol with the following

Router	IPv4 address (FE)	IPv4 address (aux)
7200-2		<i>reserved to tutors</i>
7200-1		194.141.6.100 2005
7500-1		194.141.6.102 2005
12000-1		194.141.6.103 2005
12000-2		194.141.6.104 2005
12000-3		194.141.6.105 2005

Routers connection information

Login: xxxxx  
 Password: xxxxx

## Addressing configuration

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

Loopback interfaces:

Name	IPv6 Loopback address	IPv4 Loopback address (for router-ID)
7200-2	na	na
7200-1	2001:4B58:42:1::1/64	10.1.1.4
7500-1	2001:4B58:42:3::1/64	10.1.1.5
12000-1	2001:4B58:42:4::1/64	194.141.6.133
12000-2	2001:4B58:42:5::1/64	194.141.6.134
12000-3	2001:4B58:42:6::1/64	10.1.1.3

Interconnections:

Interconnections (R1 - R2)	Prefix
12000-3 – 7200-2	2001:4B58:42:512::/64
12000-1 – 12000-3 (POS)	2001:4B58:42:412::/64
12000-1 – 12000-3 (GEth)	2001:4B58:42:413::/64
12000-2 – 12000-3	2001:4B58:42:511::/64
12000-1 – 12000-2	2001:4B58:42:411::/64
12000-1 – 7200-1	2001:4B58:42:414::/64
12000-2 – 7500-1	2001:4B58:42:513::/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.

## Routing topology to set up

- All the routers (12000s and 7x00) will share IPv6 routing information using OSPFv3. They are in the backbone area (Area 0)

## 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.

**Once** the edge routers are configured (see next page), proceed the additional steps :

- 8°) dynamic rerouting :
  - a) shutdown 12000-3 POS 1/1 interface
  - b) traceroute 7200-2 routers from 7500-1 router
  - c) what do you observe ?

## Bonus: BGP configuration for IPv6

1°) Configure an eMBGP peering between 12000-2 and 12000-1, 12000-1 and 12000-3 and another between 12000-2 and 12000-3. For this purpose, interconnection addresses must be used to setup the peerings. Also note that:

- AS number of 12000-1 is 65152
- AS number of 12000-2 is 65153
- AS number of 12000-3 is 65154

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

- for 12000-1, OSPF must be disabled in POS1/14
- for 12000-2, OSPF must be disabled in POS1/15
- for 12000-3, OSPF must be disabled in GEth2/2

2°) Configure an iMBGP peering between:

- 12000-1 and 7200-1
- 12000-2 and 7500-1
- 12000-3 and 7200-2

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.

5°) Check the connectivity to the IPv6 internet. Use the ping / traceroute commands from the routers to some well known IPv6 web servers

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