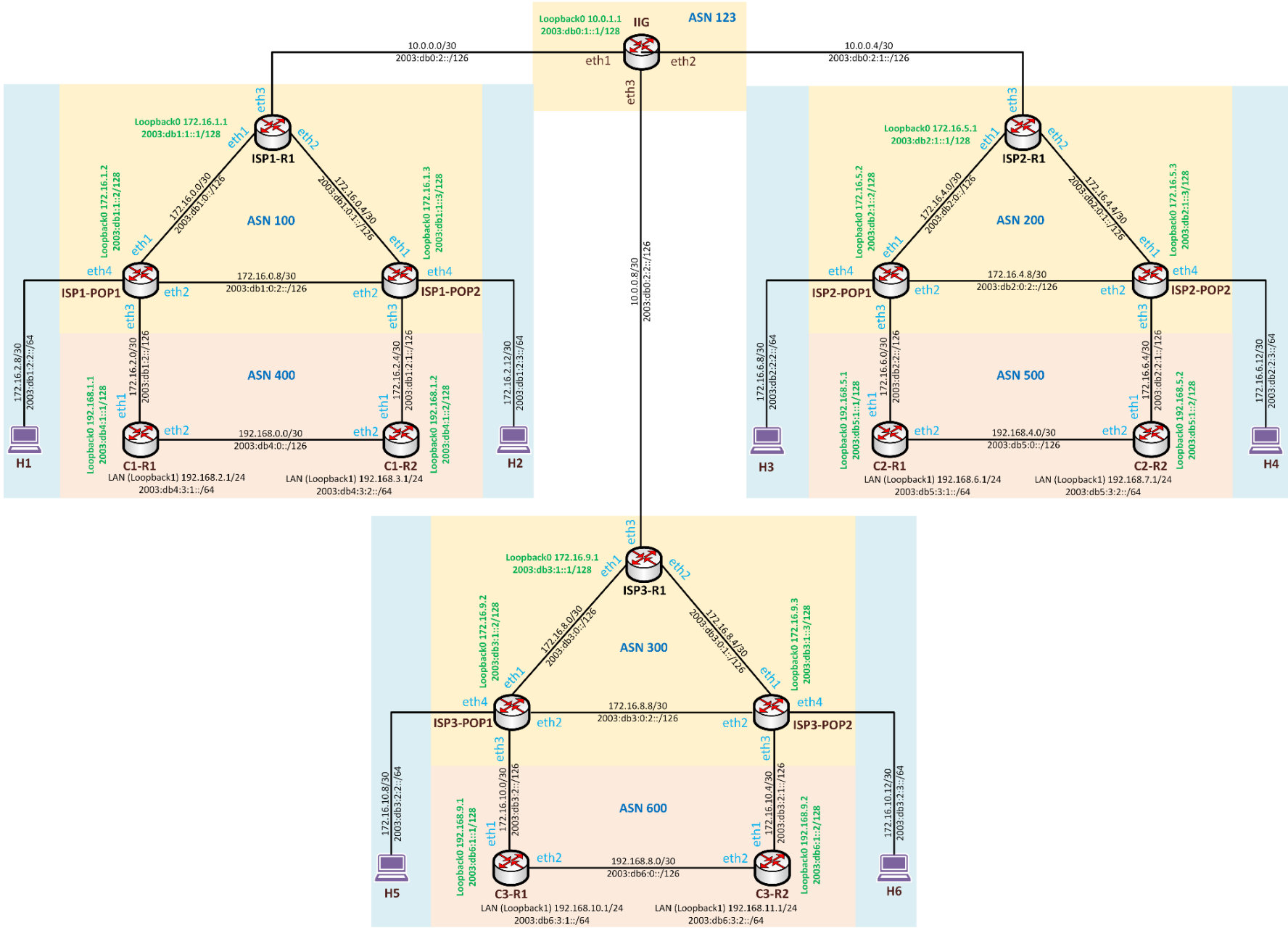
Lab-2: OSPF Config

bdNOG11 IPv6 Routing Workshop on MikroTik RouterOS – LAB Topology



IP Address Allocation

Organizations hold below number resources from RIR			
	ASN	**IPv4**	**IPv6**
IIG	123	10.0.0.0/22	2003:db0::/32
ISP1	100	172.16.0.0/22	2003:db1::/32
ISP2	200	172.16.4.0/22	2003:db2::/32
ISP3	300	172.16.8.0/22	2003:db3::/32
C1	400	192.168.0.0/22	2003:db4::/32
C2	500	192.168.4.0/22	2003:db5::/32
C3	600	192.168.8.0/22	2003:db6::/32

IP Address Breakdown Plan

IIG	2003:db0::/32	10.0.0.0/22	
	Infra P2P	2003:db0:0::/48	10.0.0.0/24
	Infra Loopback	2003:db0:1::/48	10.0.1.0/24
	PE-CE	2003:db0:2::/48	10.0.2.0/24
	CE LAN	2003:db0:3::/48	10.0.3.0/24

ISP1	2003:db1::/32	172.16.0.0/22	
	Infra P2P	2003:db1:0::/48	172.16.0.0/24
	Infra Loopback	2003:db1:1::/48	172.16.1.0/24
	PE-CE	2003:db1:2::/48	172.16.2.0/24
	CE LAN	2003:db1:3::/48	172.16.3.0/24

ISP2	2003:db2::/32	172.16.4.0/22	
	Infra P2P	2003:db2:0::/48	172.16.4.0/24
	Infra Loopback	2003:db2:1::/48	172.16.5.0/24
	PE-CE	2003:db2:2::/48	172.16.6.0/24
	CE LAN	2003:db2:3::/48	172.16.4.0/24

C1	2003:db4::/32	192.168.0.0/22	
	Infra P2P	2003:db4:0::/48	192.168.0.0/24
	Infra Loopback	2003:db4:1::/48	192.168.1.0/24
	PE-CE	2003:db4:2::/48	192.168.2.0/24
	CE LAN	2003:db4:3::/48	192.168.3.0/24

C2	2003:db5::/32	192.168.4.0/22	
	Infra P2P	2003:db5:0::/48	192.168.4.0/24
	Infra Loopback	2003:db5:1::/48	192.168.5.0/24
	PE-CE	2003:db5:2::/48	192.168.6.0/24
	CE LAN	2003:db5:3::/48	192.168.7.0/24

ISP3	2003:db3::/32	172.16.8.0/22	
	Infra P2P	2003:db3:0::/48	172.16.8.0/24
	Infra Loopback	2003:db3:1::/48	172.16.9.0/24
	PE-CE	2003:db3:2::/48	172.16.10.0/24
	CE LAN	2003:db3:3::/48	172.16.11.0/24

C3	2003:db6::/32	192.168.8.0/22	
	Infra P2P	2003:db6:0::/48	192.168.8.0/24
	Infra Loopback	2003:db6:1::/48	192.168.9.0/24
	PE-CE	2003:db6:2::/48	192.168.10.0/24
	CE LAN	2003:db6:3::/48	192.168.11.0/24

Final IP Plan

P2P IP				**Loopback**		**LAN Block**
Link Between		**IPv4 Block**	**IPv6 Block**	**Router**	**IPv4 / IPv6**	**IPv4 / IPv6**
IIG	ISP1-R1	10.0.0.0/30	2003:db0:2::/126	IIG	10.0.1.1	N/A
IIG	ISP2-R1	10.0.0.4/30	2003:db0:2:1::/126		2003:db0:1::1/128	N/A
IIG	ISP3-R1	10.0.0.8/30	2003:db0:2:2::/126			
ISP1-R1	ISP1-POP1	172.16.0.0/30	2003:db1:0::/126	ISP1-R1	172.16.1.1	N/A
ISP1-R1	ISP1-POP2	172.16.0.4/30	2003:db1:0:1::/126		2003:db1:1::1/128	N/A
ISP1-POP1	ISP1-POP2	172.16.0.8/30	2003:db1:0:2::/126	ISP1-POP1	172.16.1.2	N/A
ISP1-POP1	C1-R1	172.16.2.0/30	2003:db1:2::/126		2003:db1:1::2/128	N/A
ISP1-POP2	C1-R2	172.16.2.4/30	2003:db1:2:1::/126	ISP1-POP2	172.16.1.3	N/A
ISP1-POP1	H1	172.16.2.8/30	2003:db1:2:2::/64		2003:db1:1::3/128	N/A
ISP1-POP2	H2	172.16.2.12/30	2003:db1:2:3::/64			
ISP2-R1	ISP2-POP1	172.16.4.0/30	2003:db2:0::/126	ISP2-R1	172.16.5.1	N/A
ISP2-R1	ISP2-POP2	172.16.4.4/30	2003:db2:0:1::/126		2003:db2:1::1/128	N/A
ISP2-POP1	ISP2-POP2	172.16.4.8/30	2003:db2:0:2::/126	ISP2-POP1	172.16.5.2	N/A
ISP2-POP1	C2-R1	172.16.6.0/30	2003:db2:2::/126		2003:db2:1::2/128	N/A
ISP2-POP2	C2-R2	172.16.6.4/30	2003:db2:2:1::/126	ISP2-POP2	172.16.5.3	N/A
ISP2-POP1	H3	172.16.6.8/30	2003:db2:2:2::/64		2003:db2:1::3/128	N/A
ISP2-POP2	H4	172.16.6.12/30	2003:db2:2:3::/64			

P2P IP				Loopback		LAN Block
Link Between		IPv4 Block	IPv6 Block	Router	IPv4 / IPv6	IPv4 / IPv6
ISP3-R1	ISP3-POP1	172.16.8.0/30	2003:db3:0::/126	ISP3-R1	172.16.9.1	N/A
ISP3-R1	ISP3-POP2	172.16.8.4/30	2003:db3:0:1::/126		2003:db3:1::1/128	N/A
ISP3-POP1	ISP3-POP2	172.16.8.8/30	2003:db3:0:2::/126	ISP3-POP1	172.16.9.2	N/A
ISP3-POP1	C3-R1	172.16.10.0/30	2003:db3:2::/126		2003:db3:1::2/128	N/A
ISP3-POP2	C3-R2	172.16.10.4/30	2003:db3:2:1::/126	ISP3-POP2	172.16.9.3	N/A
ISP3-POP1	H5	172.16.10.8/30	2003:db3:2:2::/64		2003:db3:1::3/128	N/A
ISP3-POP2	H6	172.16.10.12/30	2003:db3:2:3::/64			
C1-R1	C1-R2	192.168.0.0/30	2003:db4:0::/126	C1-R1	192.168.1.1	192.168.2.1/24
					2003:db4:1::1/128	2003:db4:3:1::/64
				C1-R2	192.168.1.2	192.168.3.1/24
					2003:db4:1::2/128	2003:db4:3:2::/64
C2-R1	C2-R2	192.168.4.0/30	2003:db5:0::/126	C2-R1	192.168.5.1	192.168.6.1/24
					2003:db5:1::1/128	2003:db5:3:1::/64
				C2-R2	192.168.5.2	192.168.7.1/24
					2003:db5:1::2/128	2003:db5:3:2::/64
C3-R1	C3-R2	192.168.8.0/30	2003:db6:0::/126	C3-R1	192.168.9.1	192.168.10.1/24
					2003:db6:1::1/128	2003:db6:3:1::/64
				C3-R2	192.168.9.2	192.168.11.1/24
					2003:db6:1::2/128	2003:db6:3:2::/64

Task-5: Configure OSPFv2 for IPv4; Verify Neighbor Table and Routing Table

ISP1-R1

```
/routing ospf instance set router-id=172.16.1.1 numbers=default
/routing ospf network add network=172.16.1.1/32 area=backbone
/routing ospf network add network=172.16.0.0/30 area=backbone
/routing ospf network add network=172.16.0.4/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP1-POP1

```
/routing ospf instance set router-id=172.16.1.2 numbers=default
/routing ospf network add network=172.16.1.2/32 area=backbone
/routing ospf network add network=172.16.0.0/30 area=backbone
/routing ospf network add network=172.16.0.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP1-POP2

```
/routing ospf instance set router-id=172.16.1.3 numbers=default
/routing ospf network add network=172.16.1.3/32 area=backbone
/routing ospf network add network=172.16.0.4/30 area=backbone
/routing ospf network add network=172.16.0.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside ISP1

```
[ISP1-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.1.2      172.16.0.2      Full                   9
 1 172.16.1.3      172.16.0.6      Full                   9
```

```
[ISP1-R1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.0.8/30                        172.16.0.6
                                             172.16.0.2
 1 ADo  172.16.1.2/32                        172.16.0.2
 2 ADo  172.16.1.3/32                        172.16.0.6
```

```
[ISP1-POP1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.1.3      172.16.0.10     Full                   8
 1 172.16.1.1      172.16.0.1      Full                   4
```

```
[ISP1-POP1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.0.4/30                        172.16.0.1
                                             172.16.0.10
 1 ADo  172.16.1.1/32                        172.16.0.1
 2 ADo  172.16.1.3/32                        172.16.0.10
```

```
[ISP1-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.1.2      172.16.0.9      Full                   4
 1 172.16.1.1      172.16.0.5      Full                   4
```

```
[ISP1-POP2] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.0.0/30                        172.16.0.5
                                             172.16.0.9
 1 ADo  172.16.1.1/32                        172.16.0.5
 2 ADo  172.16.1.2/32                        172.16.0.9
```

ISP2-R1

```
/routing ospf instance set router-id=172.16.5.1 numbers=default
/routing ospf network add network=172.16.5.1/32 area=backbone
/routing ospf network add network=172.16.4.0/30 area=backbone
/routing ospf network add network=172.16.4.4/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP2-POP1

```
/routing ospf instance set router-id=172.16.5.2 numbers=default
/routing ospf network add network=172.16.5.2/32 area=backbone
/routing ospf network add network=172.16.4.0/30 area=backbone
/routing ospf network add network=172.16.4.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP2-POP2

```
/routing ospf instance set router-id=172.16.5.3 numbers=default
/routing ospf network add network=172.16.5.3/32 area=backbone
/routing ospf network add network=172.16.4.4/30 area=backbone
/routing ospf network add network=172.16.4.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside ISP2

```
[ISP2-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.5.3      172.16.4.6      Full                   8
 1 172.16.5.2      172.16.4.2      Full                   8
```

```
[ISP2-R1] > /ip route print where ospf
 #      DST-ADDRESS        PREF-SRC        GATEWAY
 0 ADo  172.16.4.8/30                      172.16.4.6
                                           172.16.4.2
 1 ADo  172.16.5.2/32                      172.16.4.2
 2 ADo  172.16.5.3/32                      172.16.4.6
```

```
[ISP2-POP1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.5.3      172.16.4.10     Full                   8
 1 172.16.5.1      172.16.4.1      Full                   4
```

```
[ISP2-POP1] > /ip route print where ospf
 #      DST-ADDRESS        PREF-SRC        GATEWAY
 0 ADo  172.16.4.4/30                      172.16.4.1
                                           172.16.4.10
 1 ADo  172.16.5.1/32                      172.16.4.1
 2 ADo  172.16.5.3/32                      172.16.4.10
```

```
[ISP2-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 172.16.5.2      172.16.4.9      Full                   4
 1 172.16.5.1      172.16.4.5      Full                   4
```

```
[ISP2-POP2] > /ip route print where ospf
 #      DST-ADDRESS        PREF-SRC        GATEWAY
 0 ADo  172.16.4.0/30                      172.16.4.5
                                           172.16.4.9
 1 ADo  172.16.5.1/32                      172.16.4.5
 2 ADo  172.16.5.2/32                      172.16.4.9
```

ISP3-R1

```
/routing ospf instance set router-id=172.16.9.1 numbers=default
/routing ospf network add network=172.16.9.1/32 area=backbone
/routing ospf network add network=172.16.8.0/30 area=backbone
/routing ospf network add network=172.16.8.4/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP3-POP1

```
/routing ospf instance set router-id=172.16.9.2 numbers=default
/routing ospf network add network=172.16.9.2/32 area=backbone
/routing ospf network add network=172.16.8.0/30 area=backbone
/routing ospf network add network=172.16.8.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

ISP3-POP2

```
/routing ospf instance set router-id=172.16.9.3 numbers=default
/routing ospf network add network=172.16.9.3/32 area=backbone
/routing ospf network add network=172.16.8.4/30 area=backbone
/routing ospf network add network=172.16.8.8/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether1 passive=no network-type=point-to-point
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside ISP3

```
[ISP3-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE         STATE-CHANGES
 0 172.16.9.3      172.16.8.6      Full                      8
 1 172.16.9.2      172.16.8.2      Full                      8
```

```
[ISP3-R1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.8.8/30                        172.16.8.6
                                             172.16.8.2
 1 ADo  172.16.9.2/32                        172.16.8.2
 2 ADo  172.16.9.3/32                        172.16.8.6
```

```
[ISP3-POP1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE         STATE-CHANGES
 0 172.16.9.3      172.16.8.10     Full                      8
 1 172.16.9.1      172.16.8.1      Full                      4
```

```
[ISP3-POP1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.8.4/30                        172.16.8.1
                                             172.16.8.10
 1 ADo  172.16.9.1/32                        172.16.8.1
 2 ADo  172.16.9.3/32                        172.16.8.10
```

```
[ISP3-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE         STATE-CHANGES
 0 172.16.9.2      172.16.8.9      Full                      4
 1 172.16.9.1      172.16.8.5      Full                      4
```

```
[ISP3-POP2] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC         GATEWAY
 0 ADo  172.16.8.0/30                        172.16.8.5
                                             172.16.8.9
 1 ADo  172.16.9.1/32                        172.16.8.5
 2 ADo  172.16.9.2/32                        172.16.8.9
```

C1-R1

```
/routing ospf instance set router-id=192.168.1.1 numbers=default
/routing ospf network add network=192.168.1.1/32 area=backbone
/routing ospf network add network=192.168.0.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

C1-R2

```
/routing ospf instance set router-id=192.168.1.2 numbers=default
/routing ospf network add network=192.168.1.2/32 area=backbone
/routing ospf network add network=192.168.0.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside C1

```
[C1-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS          STATE        STATE-CHANGES
 0 192.168.1.2     192.168.0.2      Full                   8
```

```
[C1-R1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.1.2/32                      192.168.0.2
```

```
[C1-R2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS          STATE        STATE-CHANGES
 0 192.168.1.1     192.168.0.1      Full                   8
```

```
[C1-R2] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.1.1/32                      192.168.0.1
```

C2-R1

```
/routing ospf instance set router-id=192.168.5.1 numbers=default
/routing ospf network add network=192.168.5.1/32 area=backbone
/routing ospf network add network=192.168.4.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

C2-R2

```
/routing ospf instance set router-id=192.168.5.2 numbers=default
/routing ospf network add network=192.168.5.2/32 area=backbone
/routing ospf network add network=192.168.4.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no network-type=point-to-point

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside C2

```
[C2-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 192.168.5.2     192.168.4.2     Full                   8
```

```
[C2-R1] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.5.2/32                      192.168.4.2
```

```
[C2-R2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 192.168.5.1     192.168.4.1     Full                   8
```

```
[C2-R2] > /ip route print where ospf
 #      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.5.1/32                      192.168.4.1
```

C3-R1

```
/routing ospf instance set router-id=192.168.9.1 numbers=default
/routing ospf network add network=192.168.9.1/32 area=backbone
/routing ospf network add network=192.168.8.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no

/routing ospf network print
/routing ospf interface print
```

C3-R2

```
/routing ospf instance set router-id=192.168.9.2 numbers=default
/routing ospf network add network=192.168.9.2/32 area=backbone
/routing ospf network add network=192.168.8.0/30 area=backbone
/routing ospf interface add interface=all passive=yes
/routing ospf interface add interface=ether2 passive=no

/routing ospf network print
/routing ospf interface print
```

Verify OSPFv2 inside C3

```
[C3-R1] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 192.168.9.2     192.168.8.2     Full                 8
```

```
[C3-R1] > /ip route print where ospf
#      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.9.2/32                      192.168.8.2
```

```
[C3-R2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS         STATE        STATE-CHANGES
 0 192.168.9.1     192.168.8.1     Full                 8
```

```
[C3-R2] > /ip route print where ospf
#      DST-ADDRESS         PREF-SRC        GATEWAY
 0 ADo  192.168.9.1/32                      192.168.8.1
```

Task-6: Configure OSPFv3 for IPv6 and Verify Routing Table

ISP1-R1

```
/routing ospf-v3 instance set router-id=172.16.1.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP1-POP1

```
/routing ospf-v3 instance set router-id=172.16.1.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP1-POP2

```
/routing ospf-v3 instance set router-id=172.16.1.3 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside ISP1

```
[ISP1-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.1.3      fe80::5200:ff:fe04:0    Full                    5
 1 172.16.1.2      fe80::5200:ff:fe03:0    Full                    5
```

```
[ISP1-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db1:0:2::/126        fe80::5200:ff:fe03:0%... 110
                                  fe80::5200:ff:fe04:0%...
 1 ADo  2003:db1:1::2/128         fe80::5200:ff:fe03:0%... 110
 2 ADo  2003:db1:1::3/128         fe80::5200:ff:fe04:0%... 110
```

```
[ISP1-POP1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.1.3      fe80::5200:ff:fe04:1    Full                    5
 1 172.16.1.1      fe80::5200:ff:fe02:0    Full                    5
```

```
[ISP1-POP1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db1:0:1::/126        fe80::5200:ff:fe04:1%... 110
                                  fe80::5200:ff:fe02:0%...
 1 ADo  2003:db1:1::1/128         fe80::5200:ff:fe02:0%... 110
 2 ADo  2003:db1:1::3/128         fe80::5200:ff:fe04:1%... 110
```

```
[ISP1-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.1.2      fe80::5200:ff:fe03:1    Full                    5
 1 172.16.1.1      fe80::5200:ff:fe02:1    Full                    5
```

```
[ISP1-POP2] > /ip route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db1::/126            fe80::5200:ff:fe03:1%... 110
                                 fe80::5200:ff:fe02:1%...
 1 ADo  2003:db1:1::1/128         fe80::5200:ff:fe02:1%... 110
 2 ADo  2003:db1:1::2/128         fe80::5200:ff:fe03:1%... 110
```

ISP2-R1

```
/routing ospf-v3 instance set router-id=172.16.5.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP2-POP1

```
/routing ospf-v3 instance set router-id=172.16.5.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP2-POP2

```
/routing ospf-v3 instance set router-id=172.16.5.3 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside ISP2

```
[ISP2-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.5.3      fe80::5200:ff:fe0a:0    Full                    5
 1 172.16.5.2      fe80::5200:ff:fe09:0    Full                    5
```

```
[ISP2-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db2:0:2::/126        fe80::5200:ff:fe09:0%...  110
                                  fe80::5200:ff:fe0a:0%...
 1 ADo  2003:db2:1::2/128         fe80::5200:ff:fe09:0%...  110
 2 ADo  2003:db2:1::3/128         fe80::5200:ff:fe0a:0%...  110
```

```
[ISP2-POP1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.5.3      fe80::5200:ff:fe0a:1    Full                    5
 1 172.16.5.1      fe80::5200:ff:fe05:0    Full                    5
```

```
[ISP2-POP1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db2:0:1::/126        fe80::5200:ff:fe05:0%...  110
                                  fe80::5200:ff:fe0a:1%...
 1 ADo  2003:db2:1::1/128         fe80::5200:ff:fe05:0%...  110
 2 ADo  2003:db2:1::3/128         fe80::5200:ff:fe0a:1%...  110
```

```
[ISP2-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.5.2      fe80::5200:ff:fe09:1    Full                    5
 1 172.16.5.1      fe80::5200:ff:fe05:1    Full                    5
```

```
[ISP2-POP2] > /ip route print where ospf
#      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db2::/126            fe80::5200:ff:fe05:1%...  110
                                  fe80::5200:ff:fe09:1%...
 1 ADo  2003:db2:1::1/128         fe80::5200:ff:fe05:1%...  110
 2 ADo  2003:db2:1::2/128         fe80::5200:ff:fe09:1%...  110
```

ISP3-R1

```
/routing ospf-v3 instance set router-id=172.16.9.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP3-POP1

```
/routing ospf-v3 instance set router-id=172.16.9.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

ISP3-POP2

```
/routing ospf-v3 instance set router-id=172.16.9.3 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether1 area=backbone passive=no network-type=point-to-point
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside ISP3

```
[ISP3-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.9.3      fe80::5200:ff:fe0e:0    Full                    5
 1 172.16.9.2      fe80::5200:ff:fe0f:0    Full                    5
```

```
[ISP3-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db3:0:2::/126        fe80::5200:ff:fe0f:0%...   110
                                  fe80::5200:ff:fe0e:0%...
 1 ADo  2003:db3:1::2/128         fe80::5200:ff:fe0f:0%...   110
 2 ADo  2003:db3:1::3/128         fe80::5200:ff:fe0e:0%...   110
```

```
[ISP3-POP1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.9.3      fe80::5200:ff:fe0e:1    Full                    5
 1 172.16.5.1      fe80::5200:ff:fe06:0    Full                    5
```

```
[ISP3-POP1] > /ipv6 route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db3:0:1::/126        fe80::5200:ff:fe06:0%...   110
                                  fe80::5200:ff:fe0e:1%...
 1 ADo  2003:db3:1::1/128         fe80::5200:ff:fe06:0%...   110
 2 ADo  2003:db3:1::3/128         fe80::5200:ff:fe0e:1%...   110
```

```
[ISP3-POP2] > /routing ospf neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 172.16.9.2      fe80::5200:ff:fe0f:1    Full                    5
 1 172.16.9.1      fe80::5200:ff:fe06:1    Full                    5
```

```
[ISP3-POP2] > /ip route print where ospf
 #      DST-ADDRESS               GATEWAY                    DIS
 0 ADo  2003:db3::/126            fe80::5200:ff:fe06:1%...   110
                                  fe80::5200:ff:fe0f:1%...
 1 ADo  2003:db3:1::1/128         fe80::5200:ff:fe06:1%...   110
 2 ADo  2003:db3:1::2/128         fe80::5200:ff:fe0f:1%...   110
```

C1-R1

```
/routing ospf-v3 instance set router-id=192.168.1.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

C1-R2

```
/routing ospf-v3 instance set router-id=192.168.1.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside C1

```
[C1-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.1.2     fe80::5200:ff:fe0d:1    Full                    5
```

```
[C1-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                   DIS
 0 ADo  2003:db4:1::2/128        fe80::5200:ff:fe0d:1%... 110
```

```
[C1-R2] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.1.1     fe80::5200:ff:fe07:1    Full                    5
```

```
[C1-R2] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                   DIS
 0 ADo  2003:db4:1::1/128        fe80::5200:ff:fe07:1%... 110
```

C2-R1

```
/routing ospf-v3 instance set router-id=192.168.5.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

C2-R2

```
/routing ospf-v3 instance set router-id=192.168.5.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside C2

```
[C2-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.5.2     fe80::5200:ff:fe0c:1    Full                    5
```

```
[C2-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                     DIS
 0 ADo  2003:db5:1::2/128        fe80::5200:ff:fe0c:1%...    110
```

```
[C2-R2] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.5.1     fe80::5200:ff:fe0b:1    Full                    5
```

```
[C2-R2] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                     DIS
 0 ADo  2003:db5:1::1/128        fe80::5200:ff:fe0b:1%...    110
```

C3-R1

```
/routing ospf-v3 instance set router-id=192.168.9.1 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

C3-R2

```
/routing ospf-v3 instance set router-id=192.168.9.2 numbers=default

/routing ospf-v3 interface add interface=loopback0 area=backbone
/routing ospf-v3 interface add interface=ether2 area=backbone passive=no network-type=point-to-point

/routing ospf-v3 interface print
```

Verify OSPFv3 inside C3

```
[C3-R1] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.9.2     fe80::5200:ff:fe08:1    Full                    5
```

```
[C3-R1] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                    DIS
 0 ADo  2003:db6:1::2/128        fe80::5200:ff:fe08:1%...   110
```

```
[C3-R2] > /routing ospf-v3 neighbor print brief
 # ROUTER-ID       ADDRESS                 STATE       STATE-CHANGES
 0 192.168.9.1     fe80::5200:ff:fe10:1    Full                    5
```

```
[C3-R2] > /ipv6 route print where ospf
 #      DST-ADDRESS              GATEWAY                    DIS
 0 ADo  2003:db6:1::1/128        fe80::5200:ff:fe10:1%...   110
```

** Bug fixing is always welcome at info@mn-lab.net **