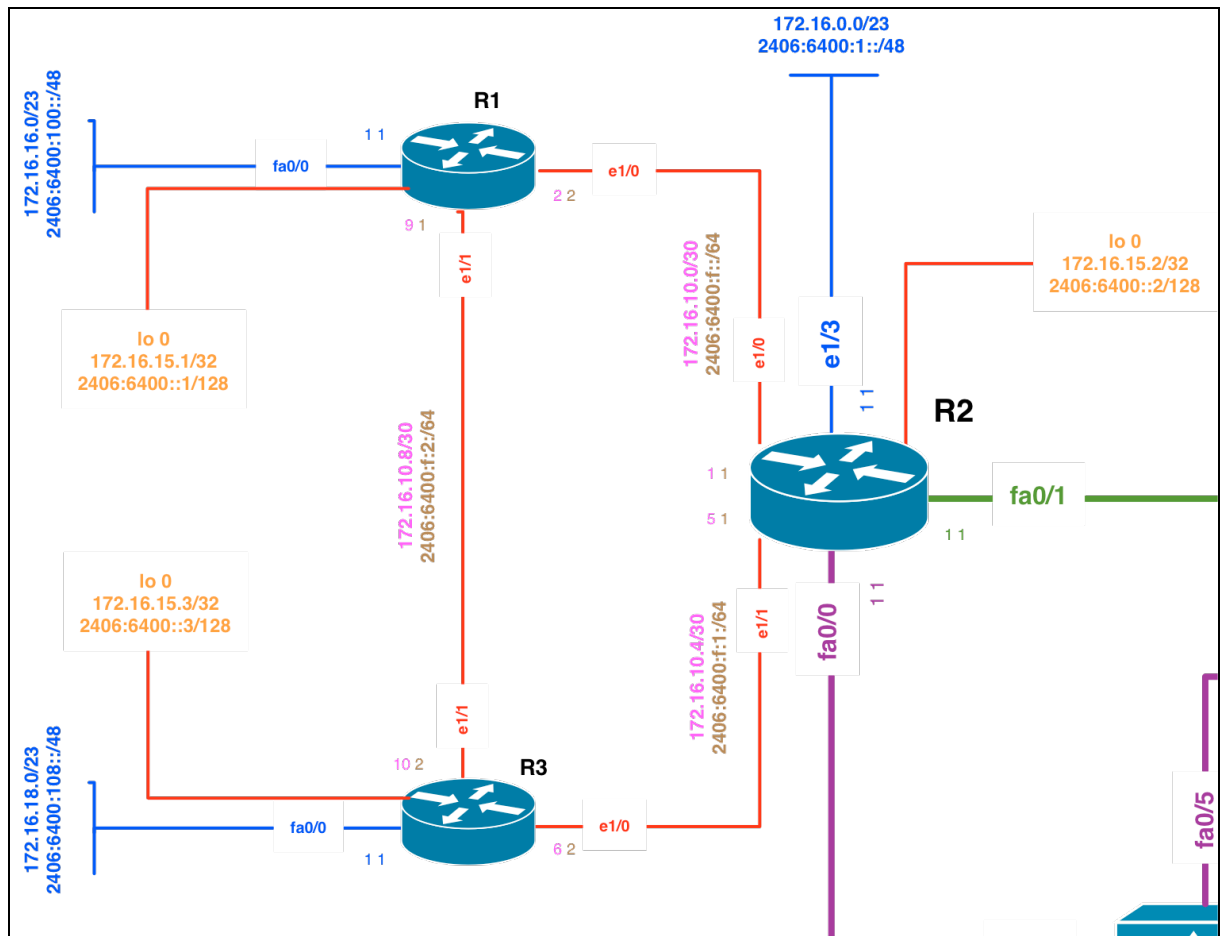


## Standard router configuration for training ISP network Region1:



### Basic Conf Router1:

```

conf t
hostname Router1
ip cef
no ip domain-lookup
no ip http server
no ip http secure-server
no ip finger
no service pad
no service udp-small-servers
no service tcp-small-server
no ip bootp server
no ip source-route
logging source-interface loopback 0
logging buffered 16384
service timestamps debug datetime msec
service timestamps log datetime msec
clock timezone AEST 10
ip routing
  
```

```
ip subnet-zero
ip classless
line console 0
logging synchronous
transport preferred none
exit
exit
wr
```

Basic Conf Router2:

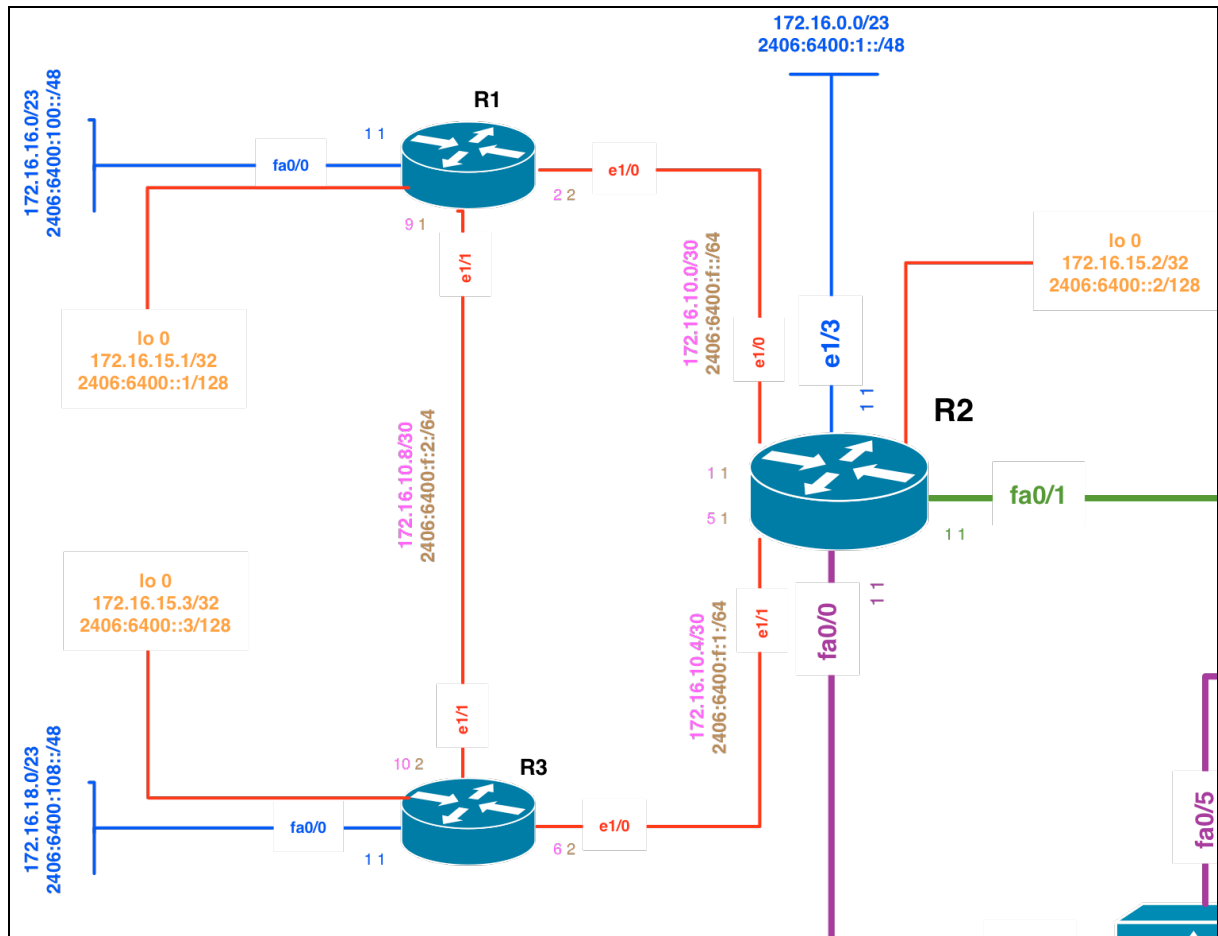
```
config t
hostname Router2
ip cef
no ip domain-lookup
no ip http server
no ip http secure-server
no ip finger
no service pad
no service udp-small-servers
no service tcp-small-server
no ip bootp server
no ip source-route
logging source-interface loopback 0
logging buffered 16384
service timestamps debug datetime msec
service timestamps log datetime msec
clock timezone AEST 10
ip routing
ip subnet-zero
ip classless
line console 0
logging synchronous
transport preferred none
exit
exit
wr
```

Basic Conf Router3:

```
config t
hostname Router3
ip cef
no ip domain-lookup
no ip http server
no ip http secure-server
no ip finger
no service pad
```

```
no service udp-small-servers
no service tcp-small-server
no ip bootp server
no ip source-route
logging source-interface loopback 0
logging buffered 16384
service timestamps debug datetime msec
service timestamps log datetime msec
clock timezone AEST 10
ip routing
ip subnet-zero
ip classless
line console 0
logging synchronous
transport preferred none
exit
exit
wr
```

## Interface configuration of training ISP network Region 1:



### IPv4 Interface Conf Router1:

```

config t
interface loopback 0
description Router1 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachables
ip address 172.16.15.1 255.255.255.255
no shutdown
interface e1/0
description WAN R1-R2
no ip redirects
no ip directed-broadcast
no ip unreachables
ip address 172.16.10.2 255.255.255.252
no shutdown
interface e1/1
description WAN R1-R3
no ip redirects

```

```
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.9 255.255.255.252
no shutdown
interface fa0/0
description Router1 customer network
no ip redirects
no ip directed-broadcast
no ip unreachable
no cdp enable
ip address 172.16.16.1 255.255.255.0
no shutdown
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 172.16.10.1
ping 172.16.10.10
```

IPv6 Interface Conf Router1:

```
config t
ipv6 unicast-routing
ipv6 cef
interface loopback 0
ipv6 address 2406:6400:0000:0000::1/128
ipv6 enable
interface e1/0
ipv6 address 2406:6400:000F:0000::2/64
ipv6 enable
interface e1/1
ipv6 address 2406:6400:000F:0002::1/64
ipv6 enable
interface fa0/0
ipv6 address 2406:6400:0100:0000::1/48
ipv6 enable
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 2406:6400:000F:0000::1
ping 2406:6400:000F:0002::2
```

## IPv4 Interface Conf Router2:

```
config t
interface loopback 0
description Router2 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.15.2 255.255.255.255
no shutdown
interface e1/0
description WAN R2-R1
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.1 255.255.255.252
no shutdown
interface e1/1
description WAN R2-R3
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.5 255.255.255.252
no shutdown
interface fa0/0
description Purple Transport Link
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.12.1 255.255.255.0
no shutdown
interface fa0/1
description Green Transport Link
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.13.1 255.255.255.0
no shutdown
interface e1/3
description Router2 DC net
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.0.1 255.255.255.0
no shutdown
exit
exit
```

wr

Verify point-to-point connectivity:

ping 172.16.10.2

ping 172.16.10.6

Verify transport link:

ping 172.16.12.2

ping 172.16.12.3

ping 172.16.12.4

ping 172.16.13.2

ping 172.16.13.3

ping 172.16.13.4

IPv6 Interface Conf Router2:

config t

ipv6 unicast-routing

ipv6 cef

interface loopback 0

ipv6 address 2406:6400:0000:0000::2/128

ipv6 enable

interface e1/0

ipv6 address 2406:6400:000F:0000::1/64

ipv6 enable

interface e1/1

ipv6 address 2406:6400:000F:0001::1/64

ipv6 enable

interface fa0/0

ipv6 address 2406:6400:000D:0000::1/48

ipv6 enable

interface fa0/1

ipv6 address 2406:6400:000E:0000::1/48

ipv6 enable

interface e1/3

ipv6 address 2406:6400:0001:0000::1/48

ipv6 enable

exit

exit

wr

Verify point-to-point connectivity:

ping 2406:6400:000F:0000::2

ping 2406:6400:000F:0001::2

Verify transport link:

```
ping 2406:6400:000D:0000::2
ping 2406:6400:000D:0000::3
ping 2406:6400:000D:0000::4
ping 2406:6400:000E:0000::2
ping 2406:6400:000E:0000::3
ping 2406:6400:000E:0000::4
```

IPv4 Interface Conf Router3:

```
config t
interface loopback 0
description Router3 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.15.3 255.255.255.255
no shutdown
interface e1/0
description WAN R3-R2
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.6 255.255.255.252
no shutdown
interface e1/1
description WAN R3-R1
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.10 255.255.255.252
no shutdown
interface fa0/0
description Router3 customer network
no ip redirects
no ip directed-broadcast
no ip unreachable
no cdp enable
ip address 172.16.18.1 255.255.255.0
no shutdown
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 172.16.10.5
ping 172.16.10.9
```



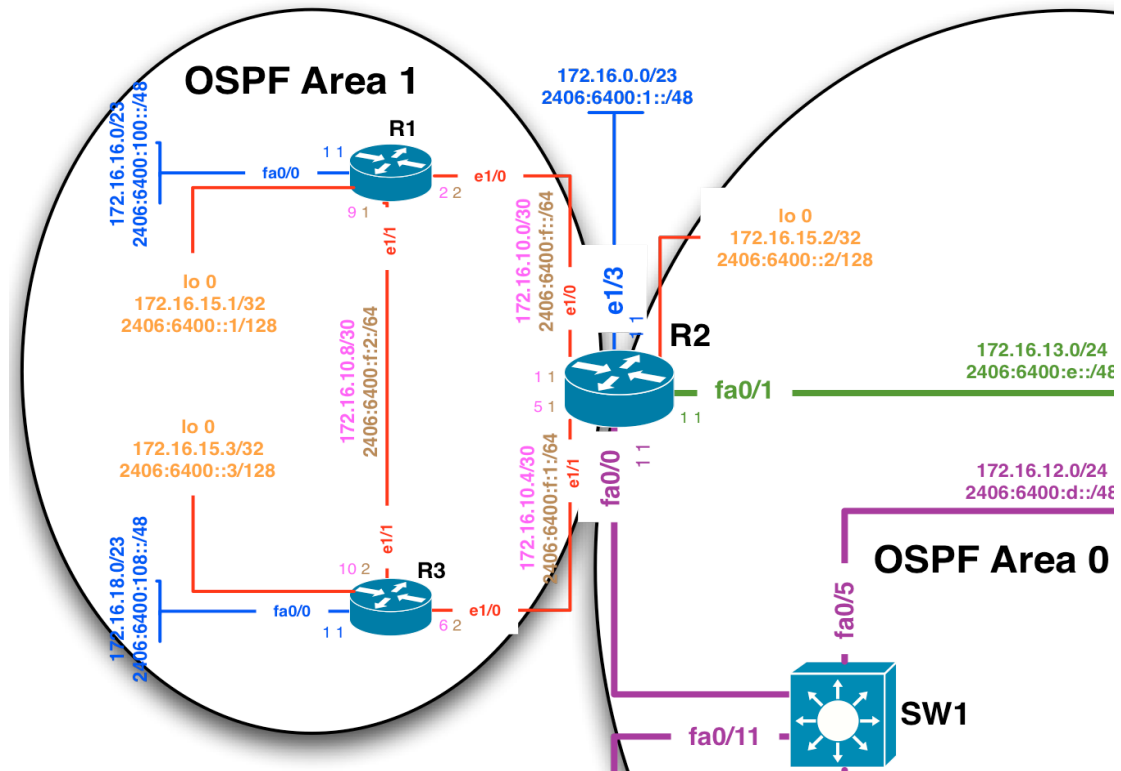
### IPv6 Interface Conf Router3:

```
config t
ipv6 unicast-routing
ipv6 cef
interface loopback 0
ipv6 address 2406:6400:0000:0000::3/128
ipv6 enable
interface e1/0
ipv6 address 2406:6400:000F:0001::2/64
ipv6 enable
interface e1/1
ipv6 address 2406:6400:000F:0002::2/64
ipv6 enable
interface fa0/0
ipv6 address 2406:6400:0108:0000::1/48
ipv6 enable
exit
exit
wr
```

### Verify point-to-point connectivity:

```
ping 2406:6400:000F:0001::1
ping 2406:6400:000F:0002::1
```

## Configuration of OSPF in training ISP network Region1:



IPv4 OSPF Conf Router1:

```

config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.1 0.0.0.0 area 1
no passive-interface e1/0
network 172.16.10.0 0.0.0.3 area 1
no passive-interface e1/1
network 172.16.10.8 0.0.0.3 area 1
exit
exit
wr
  
```

Verify IPv4 OSPF Configuration:

```

sh ip ospf neighbor
sh ip ospf database
sh ip route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ip ospf packet
  
```

debug ip ospf adj

IPv6 OSPF Conf Router1:

```
config t
interface loopback 0
ipv6 ospf 17821 area 1
interface e1/0
ipv6 ospf 17821 area 1
interface e1/1
ipv6 ospf 17821 area 1
exit
exit
wr
```

Verify IPv6 OSPF Configuration:

```
sh ipv6 ospf neighbor
sh ipv6 ospf database
sh ipv6 route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ipv6 ospf packet
debug ipv6 ospf adj
```

IPv4 OSPF Conf Router2:

```
config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.2 0.0.0.0 area 0
no passive-interface e1/0
network 172.16.10.0 0.0.0.3 area 1
no passive-interface e1/1
network 172.16.10.4 0.0.0.3 area 1
no passive-interface fa0/0
network 172.16.12.0 0.0.0.255 area 0
no passive-interface fa0/1
network 172.16.13.0 0.0.0.255 area 0
exit
exit
wr
```

Verify IPv4 OSPF Configuration:

```
sh ip ospf neighbor
sh ip ospf database
sh ip route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ip ospf packet
debug ip ospf adj
```

IPv6 OSPF Conf Router2:

```
config t
interface loopback 0
ipv6 ospf 17821 area 0
interface fa0/0
ipv6 ospf 17821 area 0
interface fa0/1
ipv6 ospf 17821 area 0
interface e1/0
ipv6 ospf 17821 area 1
interface e1/1
ipv6 ospf 17821 area 1
exit
exit
wr
```

Verify IPv6 OSPF Configuration:

```
sh ipv6 ospf neighbor
sh ipv6 ospf database
sh ipv6 route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ipv6 ospf packet
debug ipv6 ospf adj
```

IPv4 OSPF Conf Router3:

```
config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.3 0.0.0.0 area 1
no passive-interface e1/0
```

```
network 172.16.10.4 0.0.0.3 area 1
no passive-interface e1/1
network 172.16.10.8 0.0.0.3 area 1
exit
exit
wr
```

Verify IPv4 OSPF Configuration:

```
sh ip ospf neighbor
sh ip ospf database
sh ip route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ip ospf packet
debug ip ospf adj
```

IPv6 OSPF Conf Router3:

```
config t
interface loopback 0
ipv6 ospf 17821 area 1
interface e1/0
ipv6 ospf 17821 area 1
interface e1/1
ipv6 ospf 17821 area 1
exit
exit
wr
```

Verify IPv6 OSPF Configuration:

```
sh ipv6 ospf neighbor
sh ipv6 ospf database
sh ipv6 route ospf
ping [router1....up to router12 loopback] !!!!!
ping [all WAN interface & transport interface] !!!!!
ping [any datacenter prefix] .....
ping [any customer prefix] .....
debug ipv6 ospf packet
debug ipv6 ospf adj
```