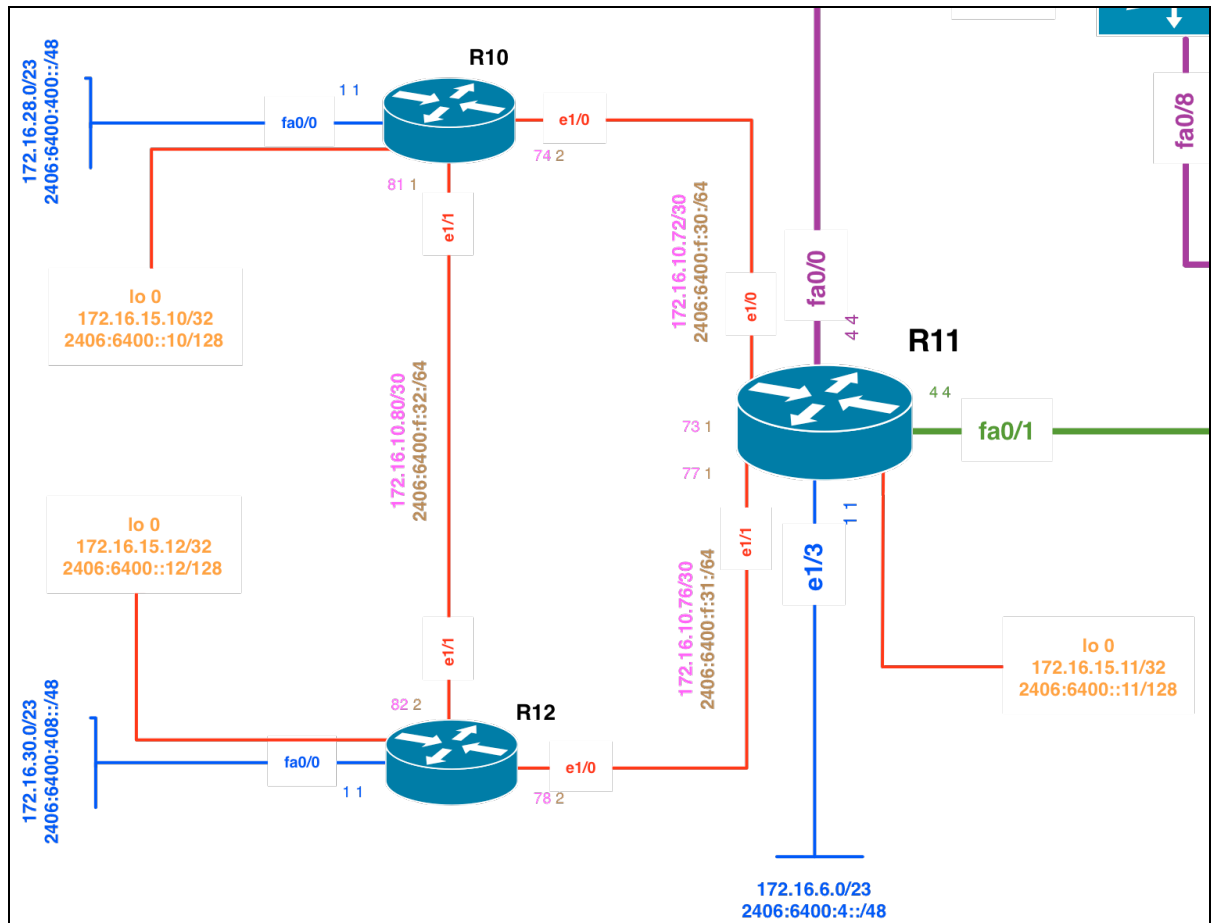


Standard router configuration for training ISP network Region4:



Basic Conf Router10:

```

config t
hostname Router10
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 Router11:

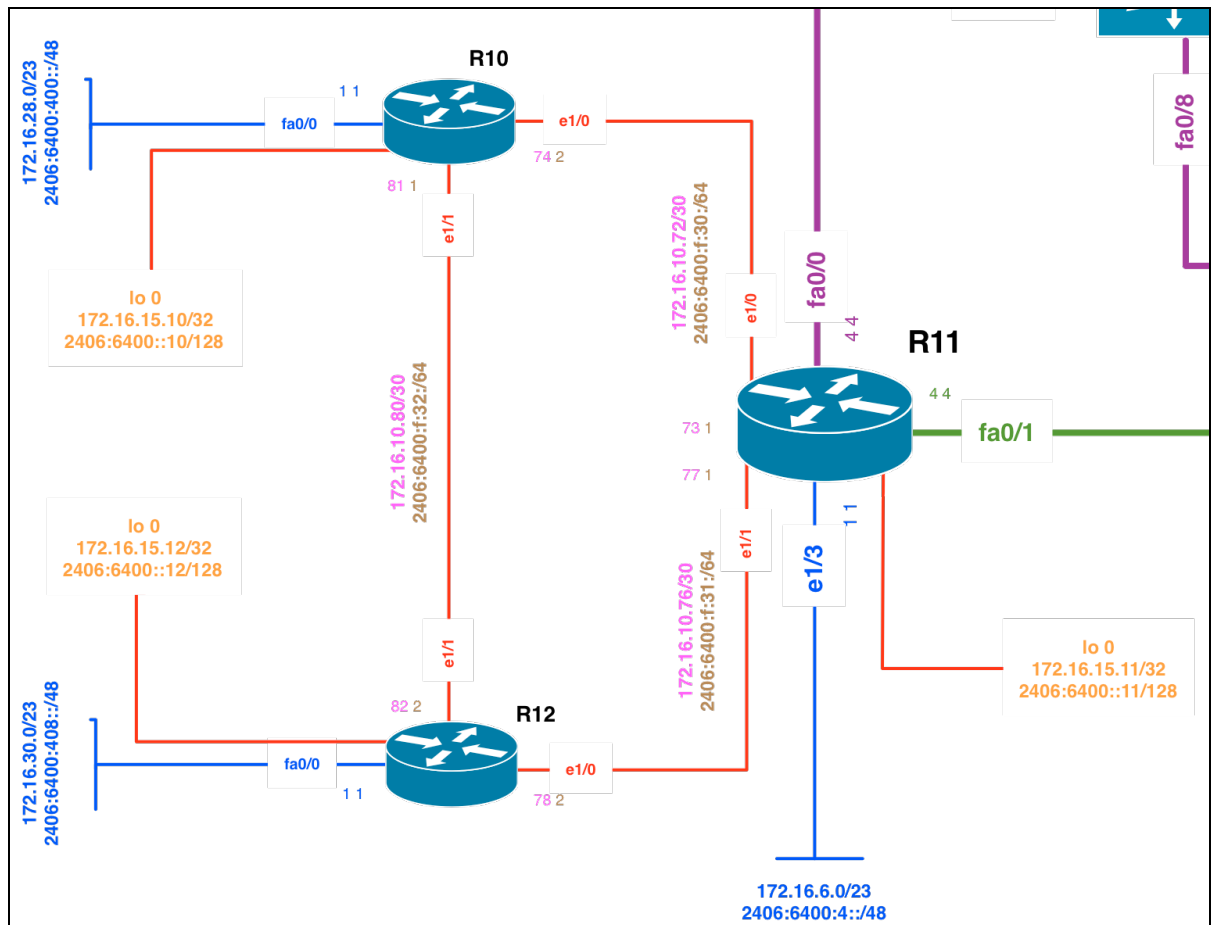
```
config t
hostname Router11
ip cef
no ip domain-lookup
no ip http server
no ip http secure-server
no ip finger
no service pad
no service udp-small-servers
no service tcp-small-server
no ip bootp server
no ip source-route
logging source-interface loopback 0
logging buffered 16384
service timestamps 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 Router12:

```
config t
hostname Router12
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 4:



IPv4 Interface Conf Router10:

```

conf t
interface loopback 0
description Router10 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachables
ip address 172.16.15.10 255.255.255.255
no shutdown
interface e1/0
description WAN R10-R11
no ip redirects
no ip directed-broadcast
no ip unreachables
ip address 172.16.10.74 255.255.255.252
no shutdown
interface e1/1
description WAN R10-R12
no ip redirects
no ip directed-broadcast
  
```

```
no ip unreachable
ip address 172.16.10.81 255.255.255.252
no shutdown
interface fa0/0
description Router10 customer network
no ip redirects
no ip directed-broadcast
no ip unreachable
no cdp enable
ip address 172.16.28.1 255.255.255.0
no shutdown
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 172.16.10.73
ping 172.16.10.82
```

IPv6 Interface Conf Router10:

```
config t
ipv6 unicast-routing
ipv6 cef
interface loopback 0
ipv6 address 2406:6400:0000:0000::10/128
ipv6 enable
interface e1/0
ipv6 address 2406:6400:000F:0030::2/64
ipv6 enable
interface e1/1
ipv6 address 2406:6400:000F:0032::1/64
ipv6 enable
interface fa0/0
ipv6 address 2406:6400:0400:0000::1/48
ipv6 enable
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 2406:6400:000F:0030::1
ping 2406:6400:000F:0032::2
```

IPv4 Interface Conf Router11:

```
config t
interface loopback 0
description Router11 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.15.11 255.255.255.255
no shutdown
interface e1/0
description WAN R11-R10
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.73 255.255.255.252
no shutdown
interface e1/1
description WAN R11-R12
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.77 255.255.255.252
no shutdown
interface fa0/0
description Purple Transport Link
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.12.4 255.255.255.0
no shutdown
interface fa0/1
description Green Transport Link
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.13.4 255.255.255.0
no shutdown
interface e1/3
description Router11 DC net
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.6.1 255.255.255.0
no shutdown
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 172.16.10.74
ping 172.16.10.78
```

Verify transport link:

```
ping 172.16.12.1
ping 172.16.12.2
ping 172.16.12.3
ping 172.16.13.1
ping 172.16.13.2
ping 172.16.13.3
```

IPv6 Interface Conf Router11:

```
config t
ipv6 unicast-routing
ipv6 cef
interface loopback 0
ipv6 address 2406:6400:0000:0000::11/128
ipv6 enable
interface e1/0
ipv6 address 2406:6400:000F:0030::1/64
ipv6 enable
interface e1/1
ipv6 address 2406:6400:000F:0031::1/64
ipv6 enable
interface fa0/0
ipv6 address 2406:6400:000D:0000::4/48
ipv6 enable
interface fa0/1
ipv6 address 2406:6400:000E:0000::4/48
ipv6 enable
interface e1/3
ipv6 address 2406:6400:0004:0000::1/48
ipv6 enable
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 2406:6400:000F:0030::2
ping 2406:6400:000F:0031::2
```

Verify transport link:

```
ping 2406:6400:000D:0000::1
```

```
ping 2406:6400:000D:0000::2
ping 2406:6400:000D:0000::3
ping 2406:6400:000E:0000::1
ping 2406:6400:000E:0000::2
ping 2406:6400:000E:0000::3
```

IPv4 Interface Conf Router12:

```
config t
interface loopback 0
description Router12 Loopback
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.15.12 255.255.255.255
no shutdown
interface e1/0
description WAN R12-R11
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.78 255.255.255.252
no shutdown
interface e1/1
description WAN R12-R10
no ip redirects
no ip directed-broadcast
no ip unreachable
ip address 172.16.10.82 255.255.255.252
no shutdown
interface fa0/0
description Router12 customer network
no ip redirects
no ip directed-broadcast
no ip unreachable
no cdp enable
ip address 172.16.30.1 255.255.255.0
no shutdown
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 172.16.10.81
ping 172.16.10.77
```

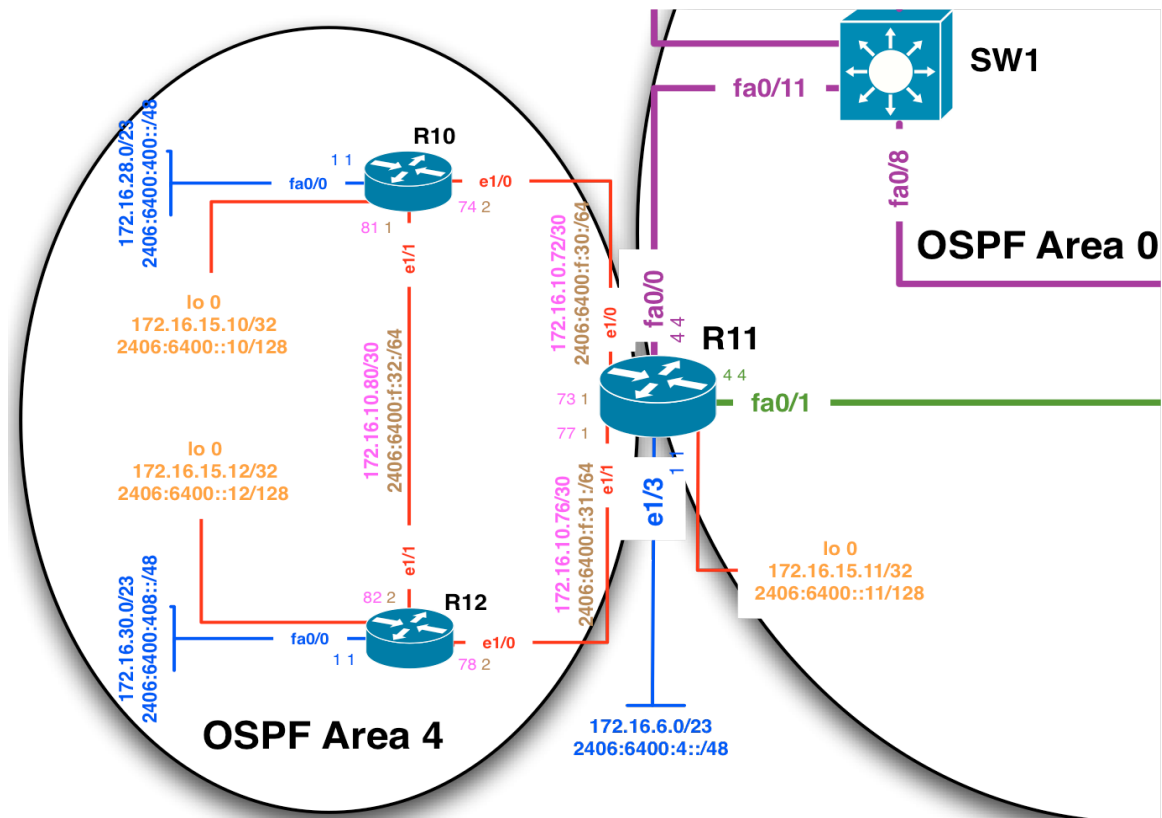

IPv6 Interface Conf Router12:

```
config t
ipv6 unicast-routing
ipv6 cef
interface loopback 0
ipv6 address 2406:6400:0000:0000::12/128
ipv6 enable
interface e1/0
ipv6 address 2406:6400:000F:0031::2/64
ipv6 enable
interface e1/1
ipv6 address 2406:6400:000F:0032::2/64
ipv6 enable
interface fa0/0
ipv6 address 2406:6400:0408:0000::1/48
ipv6 enable
exit
exit
wr
```

Verify point-to-point connectivity:

```
ping 2406:6400:000F:0031::1
ping 2406:6400:000F:0032::1
```

Configuration of OSPF in training ISP network Region4:



IPv4 OSPF Conf Router10:

```

config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.10 0.0.0.0 area 4
no passive-interface e1/0
network 172.16.10.72 0.0.0.3 area 4
no passive-interface e1/1
network 172.16.10.80 0.0.0.3 area 4
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 Router10:

```
config t
interface loopback 0
ipv6 ospf 17821 area 4
interface e1/0
ipv6 ospf 17821 area 4
interface e1/1
ipv6 ospf 17821 area 4
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 Router11:

```
config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.11 0.0.0.0 area 0
no passive-interface e1/0
network 172.16.10.72 0.0.0.3 area 4
no passive-interface e1/1
network 172.16.10.76 0.0.0.3 area 4
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 Router11:

```
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 4
interface e1/1
ipv6 ospf 17821 area 4
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 Router12:

```
config t
router ospf 17821
log-adjacency-changes
passive-interface default
network 172.16.15.12 0.0.0.0 area 4
no passive-interface e1/0
```

```
network 172.16.10.76 0.0.0.3 area 4
no passive-interface e1/1
network 172.16.10.80 0.0.0.3 area 4
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 Router12:

```
config t
interface loopback 0
ipv6 ospf 17821 area 4
interface e1/0
ipv6 ospf 17821 area 4
interface e1/1
ipv6 ospf 17821 area 4
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
```