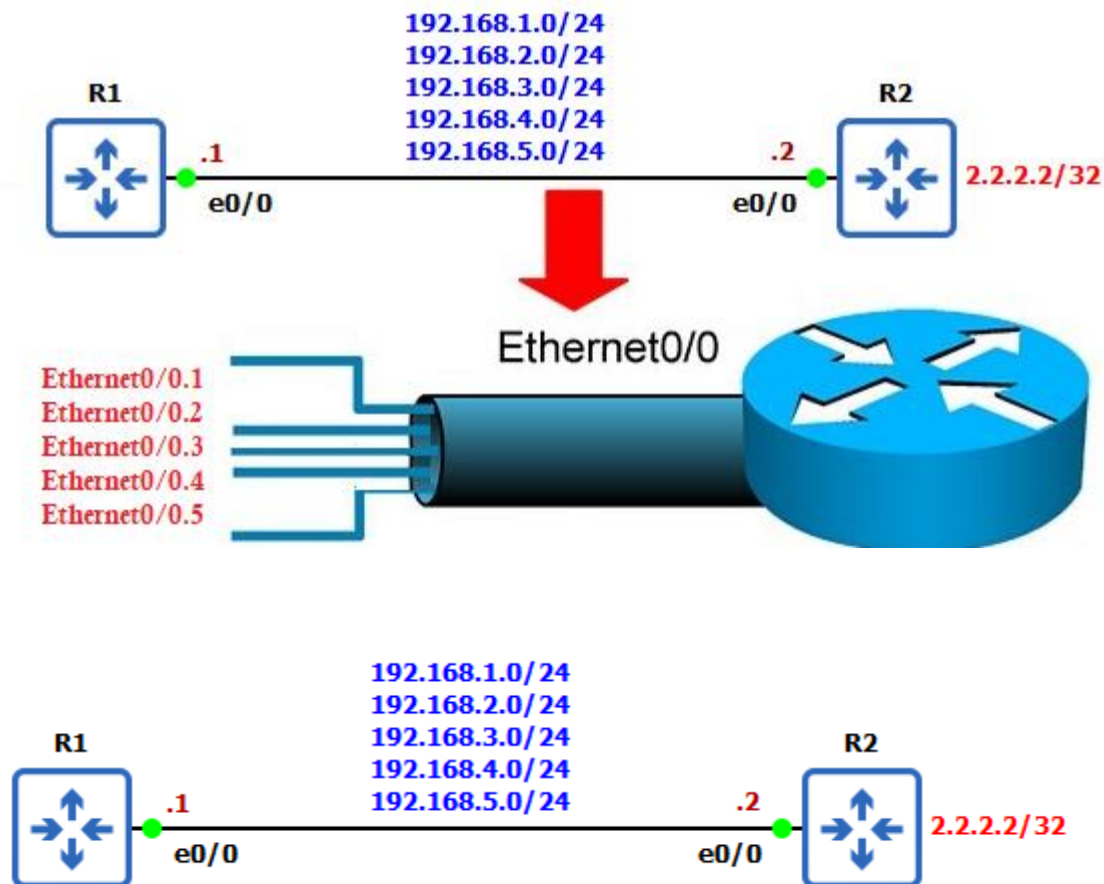


OSPF Load Balancing:

- o Its name implies, is the balancing of a traffic load across redundant links of equal cost.
- o ECMP is strategy used in routing to forward traffic to a destination over multiple best paths.
- o These best paths have calculated the same metric according to the routing protocol in use.
- o The Load balancing occurs when the router receives a multiple paths with the same AD.
- o Load balancing occurs when router receives multiple paths with same cost to destination.
- o Equal-cost multi-path allows router to insert more than one path to destination in routing.
- o OSPF protocol load balances across equal cost paths to the same destination by default.
- o By default, OSPF supports of four paths to install to single network with identical metric.
- o The maximum-paths command & specify how many equal-cost paths router should use.
- o In Open Shortest Path First protocol however can be changed to a maximum of 32 path.



R1 IP Address Configuration

```
R1(config)#interface e0/0
```

```
R1(config-if)#no shutdown
```

```
R1(config-if)#interface e0/0.1
```

```
R1(config-subif)#encapsulation dot1Q 1
```

```
R1(config-subif)#ip add 192.168.1.1 255.255.255.0
```

```
R1(config)#interface e0/0.2
```

```
R1(config-subif)#encapsulation dot1Q 2
```

```
R1(config-subif)#ip add 192.168.2.1 255.255.255.0
```

```
R1(config)#interface e0/0.3
```

```
R1(config-subif)#encapsulation dot1Q 3
```

```
R1(config-subif)#ip add 192.168.3.1 255.255.255.0
```

```
R1(config)#interface e0/0.4
```

```
R1(config-subif)#encapsulation dot1Q 4
```

```
R1(config-subif)#ip add 192.168.4.1 255.255.255.0
```

```
R1(config)#interface e0/0.5
```

```
R1(config-subif)#encapsulation dot1Q 5
```

```
R1(config-subif)#ip add 192.168.5.1 255.255.255.0
```

R2 IP Address Configuration

```
R2(config)#interface e0/0
```

```
R2(config-if)#no shutdown
```

```
R2(config-if)#interface e0/0.1
```

```
R2(config-subif)#encapsulation dot1Q 1
```

```
R2(config-subif)#ip add 192.168.1.2 255.255.255.0
```

```
R2(config)#interface e0/0.2
```

```
R2(config-subif)#encapsulation dot1Q 2
```

```
R2(config-subif)#ip add 192.168.2.2 255.255.255.0
```

```
R2(config)#interface e0/0.3
```

```
R2(config-subif)#encapsulation dot1Q 3
```

```
R2(config-subif)#ip add 192.168.3.2 255.255.255.0
```

```
R2(config)#interface e0/0.4
```

```
R2(config-subif)#encapsulation dot1Q 4
```

```
R2(config-subif)#ip add 192.168.4.2 255.255.255.0
```

```
R2(config)#interface e0/0.5
```

```
R2(config-subif)#encapsulation dot1Q 5
```

```
R2(config-subif)#ip add 192.168.5.2 255.255.255.0
```

```
R2(config)#interface loopback 2
```

```
R2(config-if)#ip address 2.2.2.2 255.255.255.255
```

R1 OSPF Configuration

```
R1(config)#router ospf 1
R1(config-router)#network 0.0.0.0 0.0.0.0 area 0
```

R2 OSPF Configuration

```
R2(config)#router ospf 1
R2(config-router)#network 0.0.0.0 0.0.0.0 area 0
```

```
R1#show ip route ospf
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
```

```
Gateway of last resort is not set
```

```
2.0.0.0/32 is subnetted, 1 subnets
O       2.2.2.2 [110/11] via 192.168.4.2, 00:46:47, Ethernet0/0.4
         [110/11] via 192.168.3.2, 00:46:47, Ethernet0/0.3
         [110/11] via 192.168.2.2, 00:46:47, Ethernet0/0.2
         [110/11] via 192.168.1.2, 00:46:47, Ethernet0/0.1
```

```
R1#traceroute 2.2.2.2 probe 8
```

```
Type escape sequence to abort.
```

```
Tracing the route to 2.2.2.2
```

```
VRF info: (vrf in name/id, vrf out name/id)
```

```
 1 192.168.4.2 1 msec
    192.168.1.2 1 msec
    192.168.2.2 1 msec
    192.168.3.2 0 msec
    192.168.4.2 0 msec
    192.168.1.2 1 msec
    192.168.2.2 1 msec
    192.168.3.2 1 msec
```

```
R1#show ip route 2.2.2.2
```

```
Routing entry for 2.2.2.2/32
```

```
Known via "ospf 1", distance 110, metric 11, type intra area
```

```
Last update from 192.168.3.2 on Ethernet0/0.3, 00:51:56 ago
```

```
Routing Descriptor Blocks:
```

```
* 192.168.4.2, from 192.168.6.2, 00:51:56 ago, via Ethernet0/0.4
```

```
Route metric is 11, traffic share count is 1
```

```
192.168.3.2, from 192.168.6.2, 00:51:56 ago, via Ethernet0/0.3
```

```
Route metric is 11, traffic share count is 1
```

```
192.168.2.2, from 192.168.6.2, 00:51:56 ago, via Ethernet0/0.2
```

```
Route metric is 11, traffic share count is 1
```

```
192.168.1.2, from 192.168.6.2, 00:51:56 ago, via Ethernet0/0.1
```

```
Route metric is 11, traffic share count is 1
```