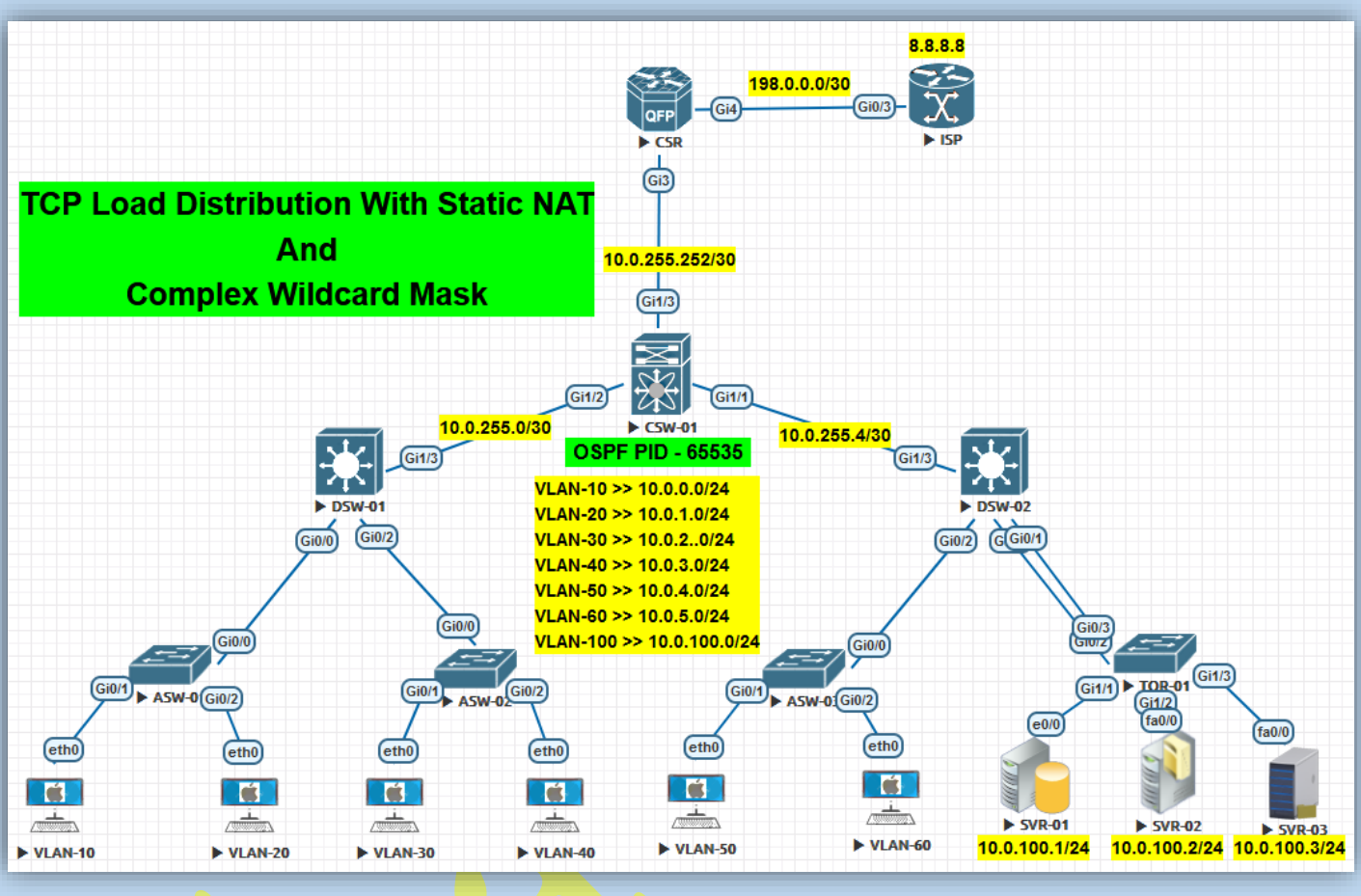
TCP Load Distribution With Static NAT And Complex Wildcard Mask



Lab Requirements

1. VLAN 10, 20, 30, 40, 50, 60 and 100 can reach each other.
2. Only **Even Networks** such as 10.0.0.0/24, 10.0.2.0/24, 10.0.4.0/24, 10.0.100.0/24 can access internet *(Use Single Access-list).*
3. Configure **TCP Load Distribution With Static NAT** for 3 servers 10.0.100.1, 10.0.100.2, 10.0.100.3 so that users from internet can access these servers with **loadbalancing.**

ASW-01

interface **GigabitEthernet0/0**

switchport trunk allowed vlan 10,20

switchport trunk encapsulation dot1q

switchport trunk native vlan 999

```
 switchport mode trunk
!
interface GigabitEthernet0/1
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast edge
!
interface GigabitEthernet0/2
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast edge
!
```

ASW-02

```
interface GigabitEthernet0/0
 switchport trunk allowed vlan 30,40
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet0/1
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast edge
!
interface GigabitEthernet0/2
 switchport access vlan 40
 switchport mode access
spanning-tree portfast edge
!
```

ASW-03

```
interface GigabitEthernet0/0
 switchport trunk allowed vlan 50,60
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet0/1
 switchport access vlan 50
 switchport mode access
 spanning-tree portfast edge
!
interface GigabitEthernet0/2
 switchport access vlan 60
 switchport mode access
 spanning-tree portfast edge
!
```

TOR-01

```
interface Port-channel24
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet0/2
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
 channel-group 24 mode auto
```

```
!
interface GigabitEthernet0/3
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
 channel-group 24 mode auto
!
interface GigabitEthernet1/1
 switchport access vlan 100
 switchport mode access
 spanning-tree portfast edge
!
interface GigabitEthernet1/2
 switchport access vlan 100
 switchport mode access
 spanning-tree portfast edge
!
interface GigabitEthernet1/3
 switchport access vlan 100
 switchport mode access
spanning-tree portfast edge
!
```

SVR-01

```
ip dhcp pool VLAN-10
 network 10.0.0.0 255.255.255.0
 default-router 10.0.0.254
 dns-server 8.8.8.8
!
ip dhcp pool VLAN-20
```

```
 network 10.0.1.0 255.255.255.0
 default-router 10.0.1.254
 dns-server 8.8.8.8
!
ip dhcp pool VLAN-30
 network 10.0.2.0 255.255.255.0
 default-router 10.0.2.254
 dns-server 8.8.8.8
!
ip dhcp pool VLAN-40
 network 10.0.3.0 255.255.255.0
 default-router 10.0.3.254
 dns-server 8.8.8.8
!
ip dhcp pool VLAN-50
 network 10.0.4.0 255.255.255.0
 default-router 10.0.4.254
 dns-server 8.8.8.8
!
ip dhcp pool VLAN-60
 network 10.0.5.0 255.255.255.0
 default-router 10.0.5.254
 dns-server 8.8.8.8
!
interface Ethernet0/0
 ip address 10.0.100.1 255.255.255.0
!
ip route 0.0.0.0 0.0.0.0 10.0.100.254
!
```

SVR-02

```
no ip routing
!
interface FastEthernet0/0
 ip address 10.0.100.2 255.255.255.0
!
ip default-gateway 10.0.100.254
!
```

SVR-03

```
no ip routing
!
interface FastEthernet0/0
 ip address 10.0.100.3 255.255.255.0
!
ip default-gateway 10.0.100.254
!
```

DSW-01

```
interface GigabitEthernet0/0
 switchport trunk allowed vlan 10,20
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet0/2
 switchport trunk allowed vlan 30,40
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
```

```
interface GigabitEthernet1/3
 switchport trunk allowed vlan 3001
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 4000
 switchport mode trunk
!
interface Vlan10
 ip address 10.0.0.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan20
 ip address 10.0.1.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan30
 ip address 10.0.2.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan40
 ip address 10.0.3.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan3001
 ip address 10.0.255.2 255.255.255.252
 ip ospf network point-to-point
 ip ospf dead-interval 11
 ip ospf hello-interval 2
!
```

DSW-02

```
interface Port-channel24
```

```
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet0/0
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
 channel-group 24 mode desirable
!
interface GigabitEthernet0/1
 switchport trunk allowed vlan 100
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
channel-group 24 mode desirable
!
interface GigabitEthernet0/2
 switchport trunk allowed vlan 50,60
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 999
 switchport mode trunk
!
interface GigabitEthernet1/3
 no switchport
 ip address 10.0.255.6 255.255.255.252
 ip ospf network point-to-point
 ip ospf dead-interval 11
 ip ospf hello-interval 2
```

```
!
interface Vlan50
 ip address 10.0.4.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan60
 ip address 10.0.5.254 255.255.255.0
 ip helper-address 10.0.100.1
!
interface Vlan100
 ip address 10.0.100.254 255.255.255.0
!
```

CSW-01

```
interface GigabitEthernet1/1
 no switchport
 ip address 10.0.255.5 255.255.255.252
 ip ospf network point-to-point
 ip ospf dead-interval 11
 ip ospf hello-interval 2
!
interface GigabitEthernet1/2
 switchport trunk allowed vlan 3001
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 4000
 switchport mode trunk
!
interface GigabitEthernet1/3
 no switchport
 ip address 10.0.255.253 255.255.255.252
 ip ospf network point-to-point
```

```
 ip ospf dead-interval 11
 ip ospf hello-interval 2
!
interface Vlan3001
 ip address 10.0.255.1 255.255.255.252
 ip ospf network point-to-point
 ip ospf dead-interval 11
 ip ospf hello-interval 2
!
```

CSR

```
interface GigabitEthernet3
 ip address 10.0.255.254 255.255.255.252
 ip nat inside
 ip ospf network point-to-point
 ip ospf dead-interval 11
 ip ospf hello-interval 2
!
interface GigabitEthernet4
 ip address 198.0.0.2 255.255.255.252
 ip nat outside
!
```

OSPF Configurations

CSR

```
router ospf 65535
 router-id 10.255.0.1
 auto-cost reference-bandwidth 1000
 passive-interface default
 no passive-interface GigabitEthernet3
 network 10.0.255.254 0.0.0.0 area 0
```

```
 default-information originate
!
ip route 0.0.0.0 0.0.0.0 198.0.0.1
!
```

CSW-01

```
router ospf 65535
 router-id 10.255.0.2
 auto-cost reference-bandwidth 1000
 passive-interface default
 no passive-interface GigabitEthernet1/1
 no passive-interface GigabitEthernet1/3
 no passive-interface Vlan3001
 network 10.0.255.1 0.0.0.0 area 0
 network 10.0.255.5 0.0.0.0 area 0
 network 10.0.255.253 0.0.0.0 area 0
 !
```

DSW-01

```
router ospf 65535
 router-id 10.255.0.3
 auto-cost reference-bandwidth 1000
 passive-interface default
 no passive-interface Vlan3001
 network 10.0.0.0 0.0.0.255 area 0
 network 10.0.1.0 0.0.0.255 area 0
 network 10.0.2.0 0.0.0.255 area 0
 network 10.0.3.0 0.0.0.255 area 0
 network 10.0.255.2 0.0.0.0 area 0
!
```

DSW-02

```
router ospf 65535
 router-id 10.255.0.4
```

```
 auto-cost reference-bandwidth 1000
 passive-interface default
 no passive-interface GigabitEthernet1/3
 network 10.0.4.0 0.0.0.255 area 0
 network 10.0.5.0 0.0.0.255 area 0
 network 10.0.100.0 0.0.0.255 area 0
 network 10.0.255.6 0.0.0.0 area 0
!
```

NAT Configuration For Internet Users

CSR

```
ip access-list extended NAT_ACL
 permit ip 10.0.0.0 0.0.254.255 any /*Complex Wildcard Mask For Even Networks*/
!
ip nat inside source list NAT_ACL interface GigabitEthernet4 overload
!
```

TCP Load Distribution With Static NAT

```
ip access-list extended SVR_LOAD_BALANCE
 permit tcp any any eq telnet
!
ip nat pool LOAD_BALANCE 10.0.100.1 10.0.100.3 prefix-length 24 type rotary
!
ip nat inside destination list SVR_LOAD_BALANCE pool LOAD_BALANCE
!
```

```
CSR#sh ip nat translations
Pro  Inside global         Inside local       Outside local      Outside global
tcp  198.0.0.2:23          10.0.100.3:23      198.0.0.1:34329    198.0.0.1:34329
tcp  198.0.0.2:23          10.0.100.1:23      198.0.0.1:53871    198.0.0.1:53871
tcp  198.0.0.2:23          10.0.100.2:23      198.0.0.1:40949    198.0.0.1:40949
Total number of translations: 3

CSR#
```