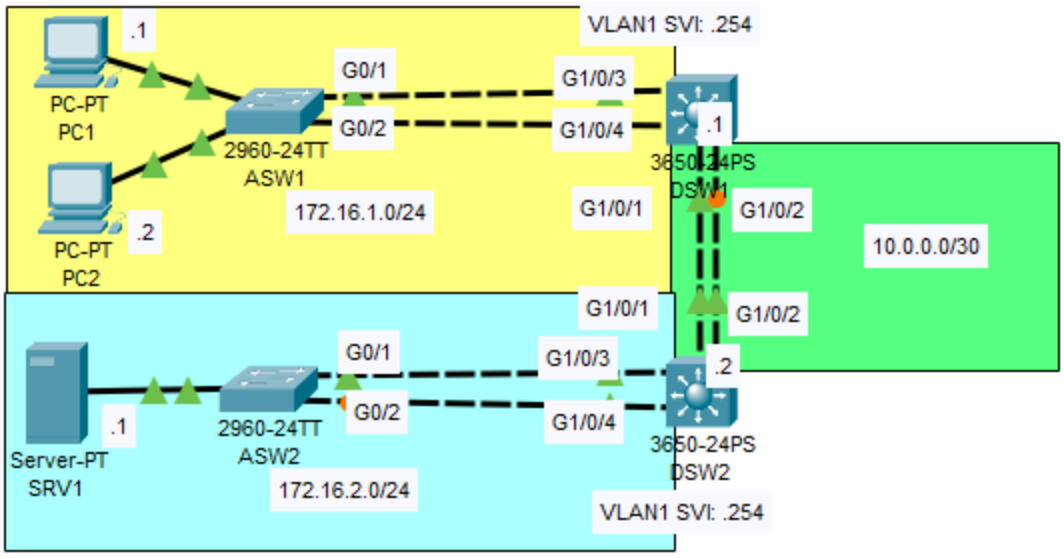

1. Configure layer 2 etherchannel between ASW1 and DSW using LACP and configure it as a trunk

asw1#int range g0/1,0/2
asw1#channel-group 1 mode active
asw1#int po1
asw1#do sh run

```
interface GigabitEthernet0/1
 switchport mode trunk
 channel-group 1 mode active
!
interface GigabitEthernet0/2
 switchport mode trunk
 channel-group 1 mode active
!
```

asw#do sh etherchannel summary

```
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-------------------------------

1      Po1(SD)           LACP    Gig0/1(I) Gig0/2(I)
```

Dsw1#int range 1/0/3,1/0/4
Dsw1#channel-group 1 mode active
Dsw1#int po1
Dsw1#Switchport mode trunk
dsw1#do sh etherchannel summary

```
------+-------------+-----------+-------------------------------

1      Po1(SU)           LACP    Gig1/0/3(P) Gig1/0/4(P)
```

Dsw1#do sh int trunk

```
DSW1(config-if)#do sh int trunk
Port        Mode         Encapsulation  Status        Native vlan
Po1         on           802.1q         trunking      1

Port        Vlans allowed on trunk
Po1         1-1005

Port        Vlans allowed and active in management domain
Po1         1

Port        Vlans in spanning tree forwarding state and not pruned
Po1         1
```

2. Configure layer 2 etherchannel between ASW2 and DSW2 USING PAGP

   ASW2#int range g0/1,g0/2
   Asw2#channel-group 1 mode desirable
   Asw2#int po1
   Asw2#do sh ether sum

```
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-------------------------

1      Po1(SD)           PAgP   Gig0/1(I) Gig0/2(I)
ASW2(config-if-range)#
```

   DSW2#int range g1/0/3,G1/0/4
   DSW2#channel-group 1 mode desirable
   DSW2#int po1
   DSW2#switchport mode trunk
   DSW2#do sh etherchannel summ

```
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-------------------------

1      Po1(SD)           PAgP   Gig1/0/3(I) Gig1/0/4(I)
```

   DSW2#do sh int trunk

```
Port        Mode         Encapsulation  Status        Native vlan
Po1         on           802.1q         trunking      1

Port        Vlans allowed on trunk
Po1         1-1005

Port        Vlans allowed and active in management domain
Po1         1

Port        Vlans in spanning tree forwarding state and not pruned
```

3. Configure layer 3 etherchannel between DSW1 and DSW2 using static etherchannel

   DSW2#int range g1/0/1,g1/0/2
   DSW2#no switchport
   DSW2#channel group mode 2 on
   DSW2#int po2
   DSW2#ip address 10.0.0.2 255.255.255.2
   DSW2#ip routing (so we can build our ip routing table later)

   DSW1#int range g1/0/1,g1/0/2
   DSW1#no switchport
   DSW1#channel group mode 2 on
   DSW1#int po2
   DSW1#ip address 10.0.0.1 255.255.255.252
   DSW1#ip routing (so we can build our ip routing table later)

   Do sh etherchannel summary

```
lumber of aggregators:           2

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------

      Po1(SU)           LACP   Gig1/0/3(P) Gig1/0/4(P)
      Po2(RU)           -      Gig1/0/1(P) Gig1/0/2(P)
```

4. Configure routes to allow the pcs to reach server 1

   DSW1#ip route 172.16.2.0 255.255.255.0 10.0.0.2

```
     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Port-channel2
     172.16.0.0/24 is subnetted, 2 subnets
C       172.16.1.0 is directly connected, Vlan1
S       172.16.2.0 [1/0] via 10.0.0.2
```

   Dsw2#ip route 172.16.1.0 255.255.255.0 10.0.0.1

```
     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Port-channel2
     172.16.0.0/24 is subnetted, 2 subnets
S       172.16.1.0 [1/0] via 10.0.0.1
C       172.16.2.0 is directly connected, Vlan1
```

5. What is the default etherchannel load-balancing method used on each switch

asw1#do sh etherchannel load balance

```
EtherChannel Load-Balancing Operational State (src-mac):
Non-IP: Source MAC address
  IPv4: Source MAC address
  IPv6: Source MAC address
```

What this means is that the default is src mac address all frames from same src mac address will always use same member interface of the etherchannel

6. Configure the switches to load balance based on the source and destination ip address

   To change the load balance method on etherchannel we have to enter this command:

   ASW1#port-channel load-balance src-dst-ip

```
EtherChannel Load-Balancing Operational State (src-dst-ip):
Non-IP: Source XOR Destination MAC address
  IPv4: Source XOR Destination IP address
  IPv6: Source XOR Destination IP address
```

It has been changed

   ASW2#port-channel load-balance src-dst-ip

   DSW1#do sh etherchannel load balance

```
EtherChannel Load-Balancing Configuration:
        src-mac
```

   DSW1#port-channel load balance src-dst-ip
   DSW2#port-channel load balance src-dst-ip