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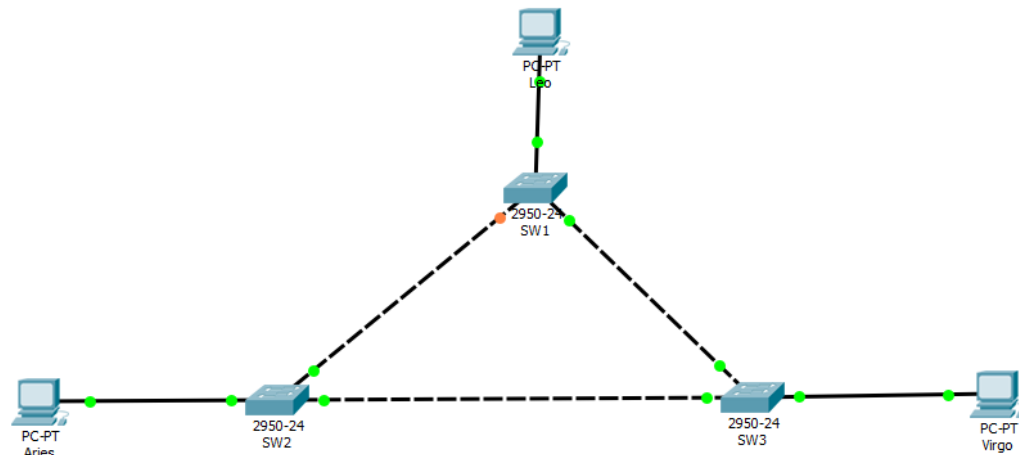
## MODUL 6

### SPANNING TREE PROTOCOL

#### Kegiatan Praktikum

##### 1. Topologi 1

- Membuat topologi pada packet tracer menggunakan switch Catalyst 2950



##### Tugas 1A

- Pada bagian Network Devices, klik bagian Switches, dan letakkan 3 buah Switch tipe 2950-24 bentuk seperti gambar.
  - Klik ikon End Devices, klik ikon PC dengan keterangan Generic Computer, letakkan 3 di dekat switch masing-masing satu.
  - Untuk menghubungkan pilih pada bagian Connections, klik ikon petir, lalu sambungkan dari switch satu ke yang lain, lalu hubungkan PC dengan switch yang berada di dekatnya.
- Memberi nama pada masing-masing switch dengan SW1, SW2, dan SW3

##### Tugas 2A

- SW1

```
Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW1
SW1(config)#exit
SW1#
```

- SW2

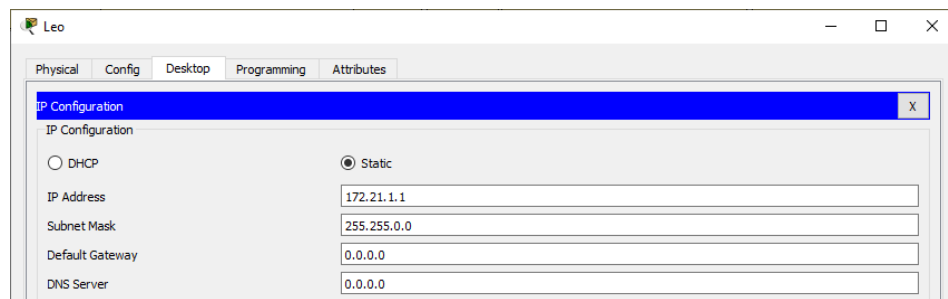
```
Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW2
SW2(config)#exit
SW2#
```

- SW3

```
Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW3
SW3(config)#exit
SW3#
```

c. Konfigurasi masing-masing IP dengan alamat IP yang tertera di modul

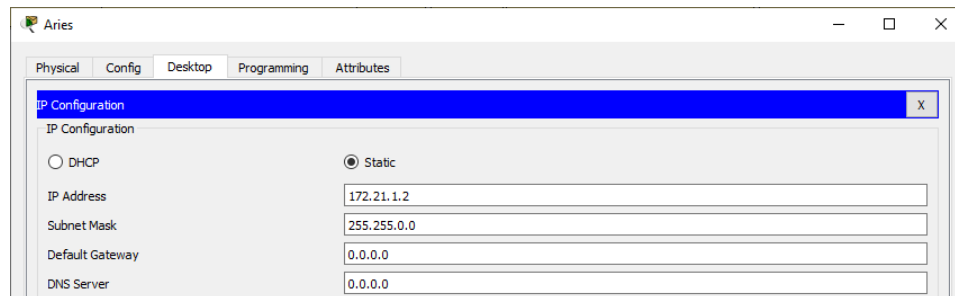
- Leo



The screenshot shows the 'Leo' configuration window with the 'Config' tab selected. The 'IP Configuration' section is active, showing a table of network settings. The 'Static' radio button is selected.

Field	Value
IP Address	172.21.1.1
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

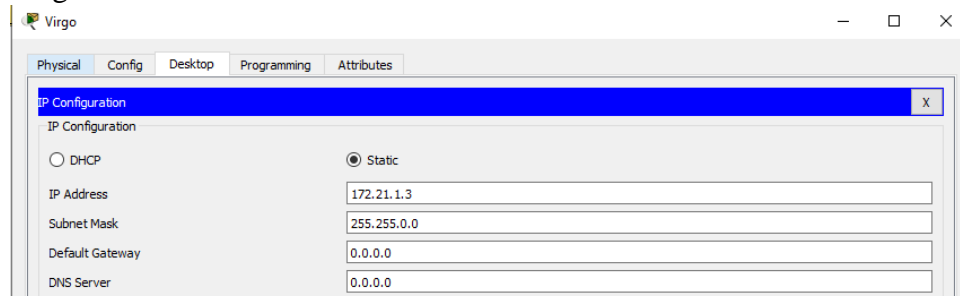
- Aries



The screenshot shows the 'Aries' configuration window with the 'Config' tab selected. The 'IP Configuration' section is active, showing a table of network settings. The 'Static' radio button is selected.

Field	Value
IP Address	172.21.1.2
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

- Virgo



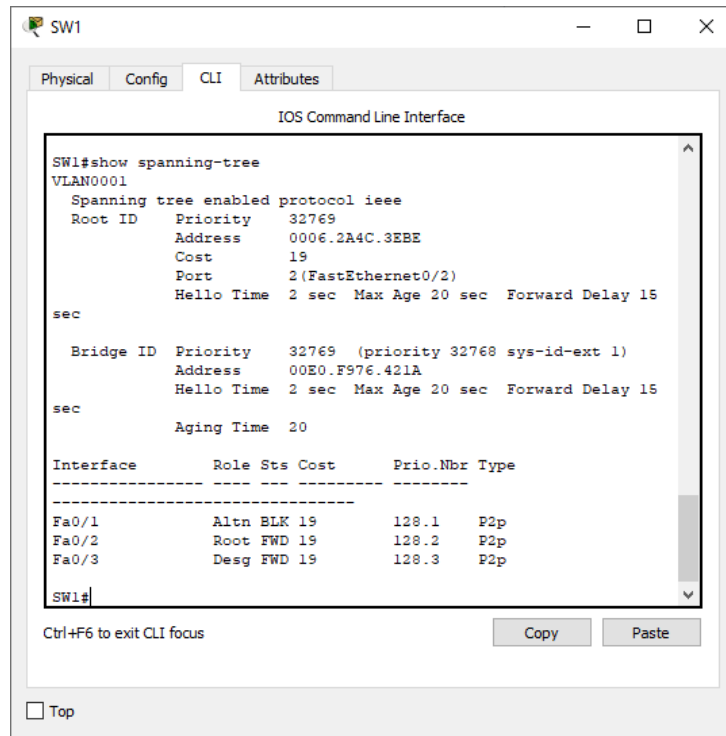
The screenshot shows the 'Virgo' configuration window with the 'Config' tab selected. The 'IP Configuration' section is active, showing a table of network settings. The 'Static' radio button is selected.

Field	Value
IP Address	172.21.1.3
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

- d. Pada mode user atau mode privileged, melihat status STP pada masing-masing switch

### Tugas 4A

- SW1



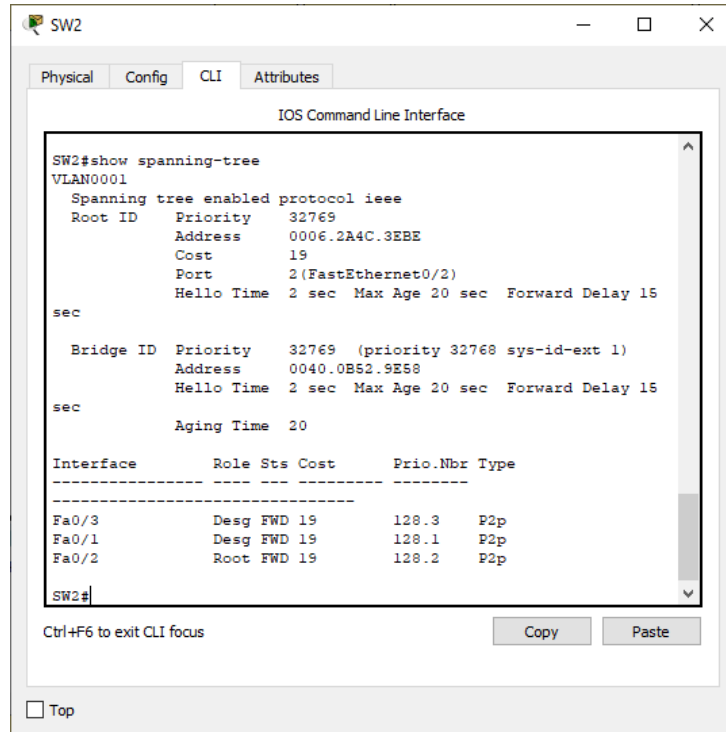
The screenshot shows the CLI of switch SW1. The command `show spanning-tree` has been executed for VLAN0001. The output displays the spanning tree configuration, including the root ID, priority, address, cost, port, hello time, max age, and forward delay. It also shows the bridge ID, priority, address, hello time, max age, forward delay, and aging time. Finally, it lists the interfaces and their roles in the spanning tree.

```
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0006.2A4C.3EBE
            Cost        19
            Port        2(FastEthernet0/2)
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec
  Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
            Address     00E0.F976.421A
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec
            Aging Time  20

Interface    Role Sts Cost      Prio.Nbr Type
-----
Fa0/1        Altn BLK 19       128.1    P2p
Fa0/2        Root FWD 19       128.2    P2p
Fa0/3        Desg FWD 19       128.3    P2p

SW1#
```

- SW2



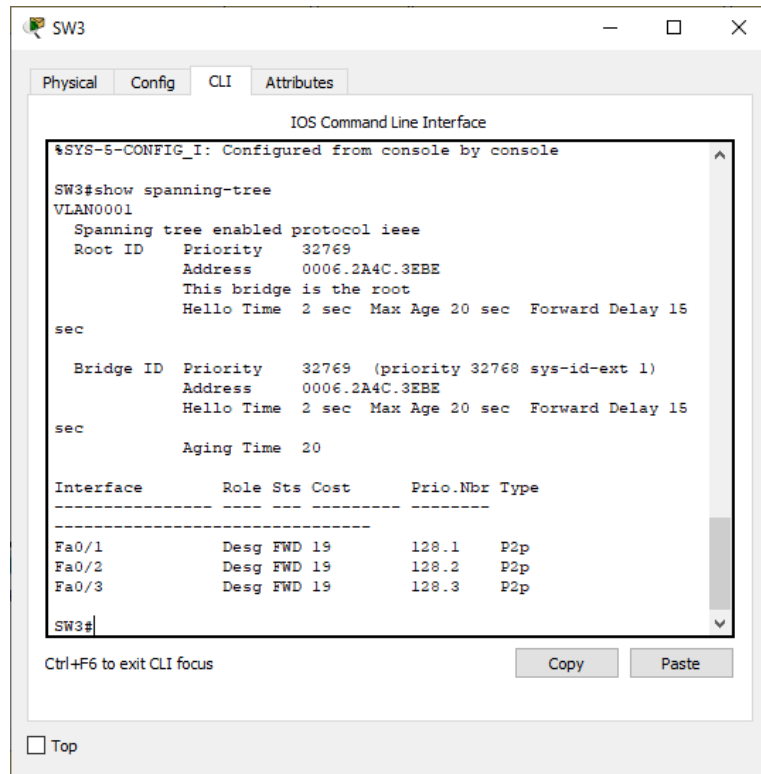
The screenshot shows the CLI of switch SW2. The command `show spanning-tree` has been executed for VLAN0001. The output displays the spanning tree configuration, including the root ID, priority, address, cost, port, hello time, max age, and forward delay. It also shows the bridge ID, priority, address, hello time, max age, forward delay, and aging time. Finally, it lists the interfaces and their roles in the spanning tree.

```
SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0006.2A4C.3EBE
            Cost        19
            Port        2(FastEthernet0/2)
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec
  Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
            Address     0040.0B52.9E58
            Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec
            Aging Time  20

Interface    Role Sts Cost      Prio.Nbr Type
-----
Fa0/3        Desg FWD 19       128.3    P2p
Fa0/1        Desg FWD 19       128.1    P2p
Fa0/2        Root FWD 19       128.2    P2p

SW2#
```

- SW3



## Tugas 4B

- SW1

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	00E0.F976.421A
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

- SW2

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	0040.0B52.9E58
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

- SW3

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	0006.2A4C.3EBE
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

#### Tugas 4C

- Root bridge : SW3
- Designated bridge : SW2
- Root port : SW1 (Fa0/2), SW2 (Fa0/2)
- Designated port : SW1 (Fa0/3), SW2 (Fa0/1, Fa0/3), SW3 (Fa0/1, Fa0/2, Fa0/3)

#### Tugas 4D

- Forwarding :
  - SW1 : Fa0/2, Fa0/3
  - SW2 : Fa0/1, Fa0/2, Fa0/3
  - SW3 : Fa0/1, Fa0/2, Fa0/3
- Blocking : SW1 (Fa0/1)

e. Melakukan ping dari PC Leo ke PC Virgo

```

Leo
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 172.21.1.3

Pinging 172.21.1.3 with 32 bytes of data:

Reply from 172.21.1.3: bytes=32 time=16ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128

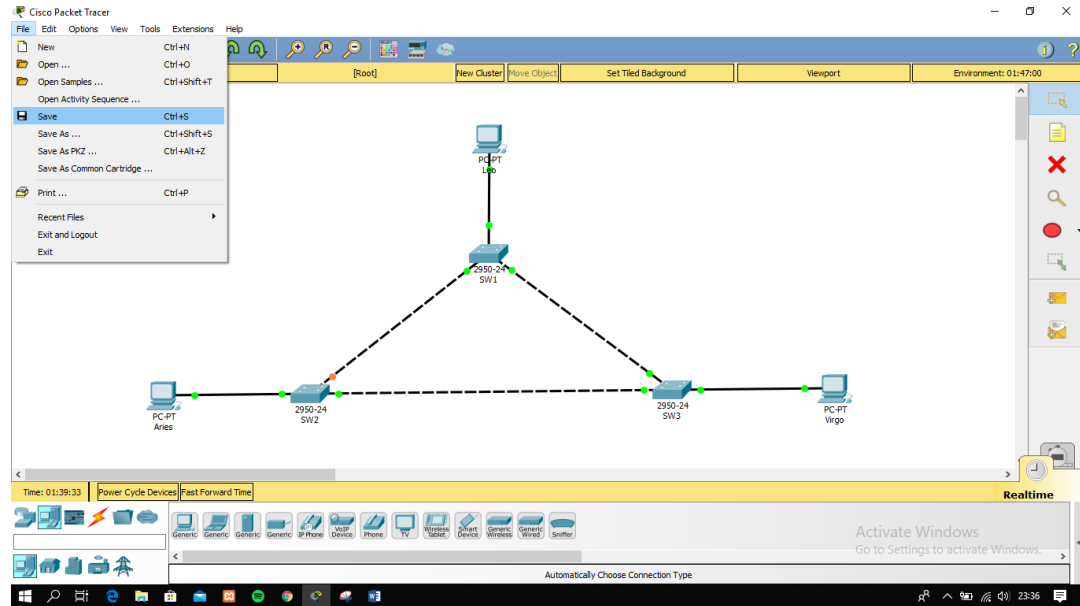
Ping statistics for 172.21.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 16ms, Average = 4ms

C:\>
  
```

## Tugas 5A

- Klik pada PC Leo
- Pilih tab desktop
- Pilih command prompt
- Ketikkan ping 172.21.1.3

f. Menyimpan konfigurasi jaringan dengan nama lab2.nwc

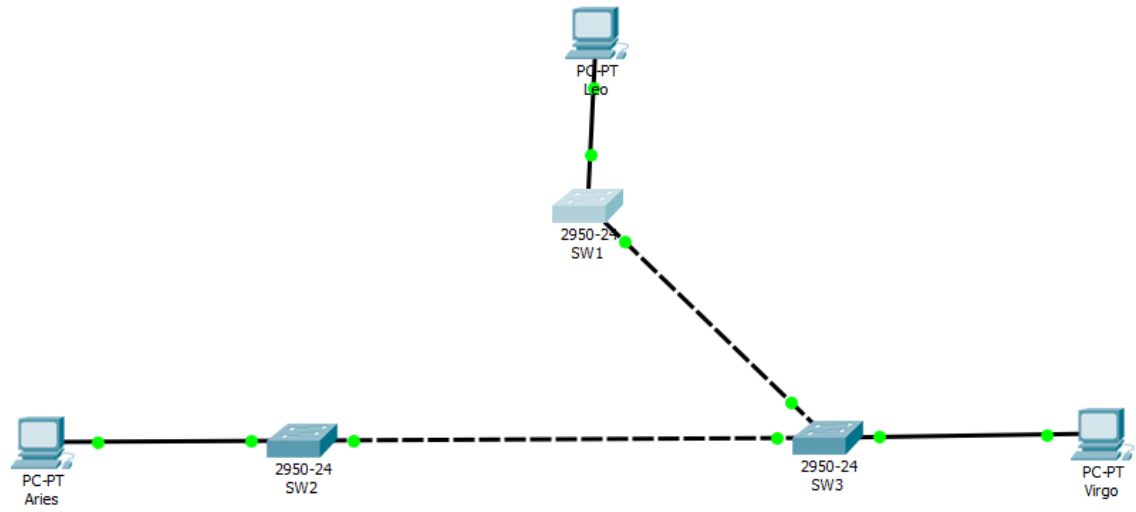


## Tugas 6A

- Pilih file
- Pilih save
- Pilih direktori untuk tempat menyimpan
- Isikan nama dengan lab2 (ekstensi akan sesuai dengan aplikasi yang digunakan)

## 2. Topologi 2

Mengubah topologi menjadi berikut :



### Tugas 9A

- SW1

SW1

Physical Config CLI Attributes

IOS Command Line Interface

```
SW1>show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
             Address     0006.2A4C.3EBE
             Cost        19
             Port        2 (FastEthernet0/2)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec

  Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
             Address     00E0.F976.421A
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15
sec

             Aging Time  20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Fa0/3          Desg FWD 19        128.3    P2p
Fa0/2          Root FWD 19        128.2    P2p

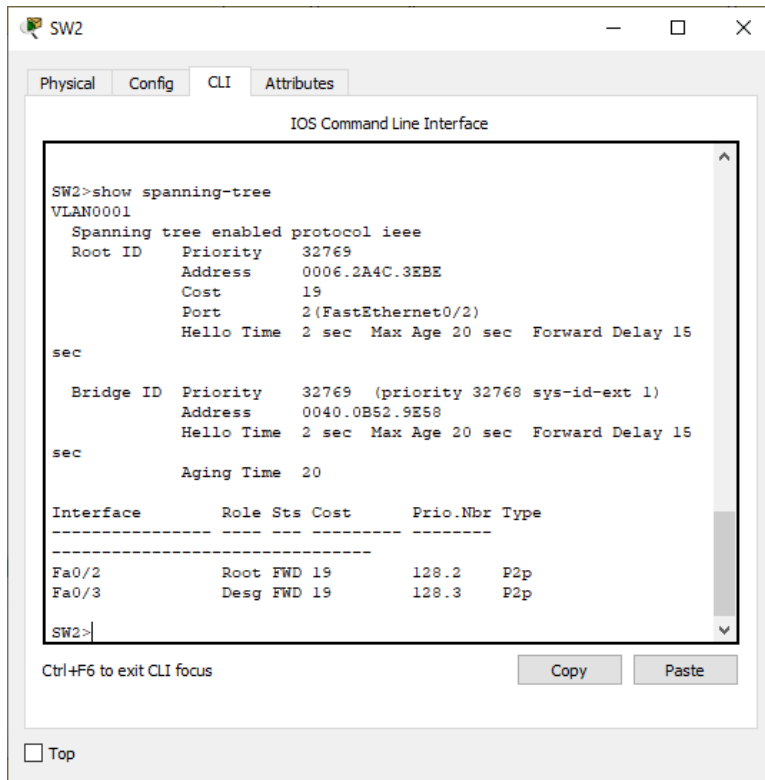
SW1>
```

Ctrl+F6 to exit CLI focus

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- SW2

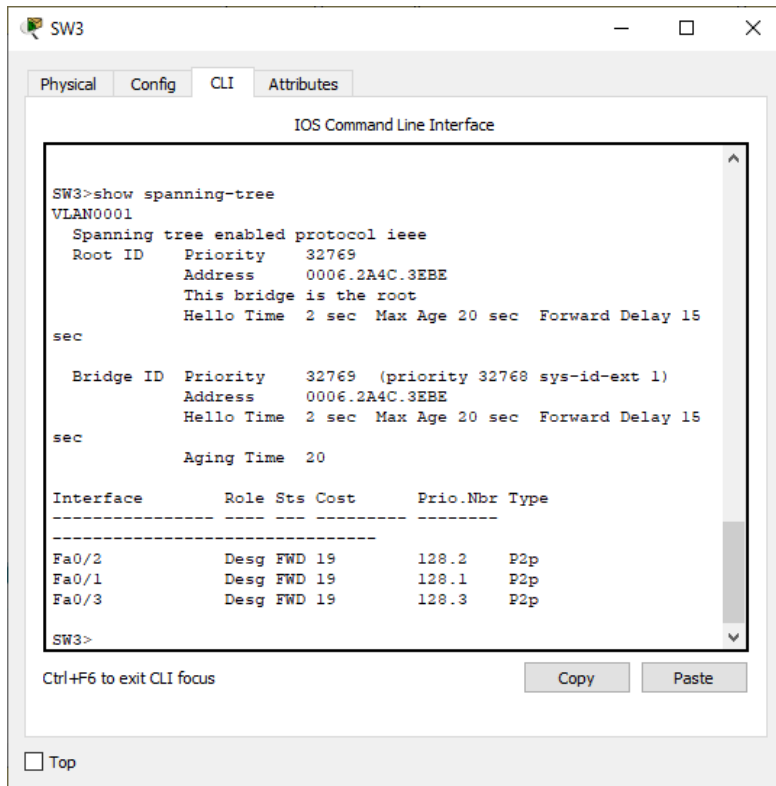


SW2>show spanning-tree  
VLAN0001  
Spanning tree enabled protocol ieee  
Root ID    Priority    32769  
          Address    0006.2A4C.3EBE  
          Cost        19  
          Port        2(FastEthernet0/2)  
          Hello Time 2 sec Max Age 20 sec Forward Delay 15  
sec  
  
Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)  
          Address    0040.0B52.9E58  
          Hello Time 2 sec Max Age 20 sec Forward Delay 15  
sec  
          Aging Time 20  
  
Interface        Role Sts Cost        Prio.Nbr Type  
-----  
Fa0/2            Root FWD 19        128.2    P2p  
Fa0/3            Desg FWD 19        128.3    P2p  
  
SW2>

Ctrl+F6 to exit CLI focus    Copy    Paste

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- SW3



SW3>show spanning-tree  
VLAN0001  
Spanning tree enabled protocol ieee  
Root ID    Priority    32769  
          Address    0006.2A4C.3EBE  
          This bridge is the root  
          Hello Time 2 sec Max Age 20 sec Forward Delay 15  
sec  
  
Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)  
          Address    0006.2A4C.3EBE  
          Hello Time 2 sec Max Age 20 sec Forward Delay 15  
sec  
          Aging Time 20  
  
Interface        Role Sts Cost        Prio.Nbr Type  
-----  
Fa0/2            Desg FWD 19        128.2    P2p  
Fa0/1            Desg FWD 19        128.1    P2p  
Fa0/3            Desg FWD 19        128.3    P2p  
  
SW3>

Ctrl+F6 to exit CLI focus    Copy    Paste

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- SW1

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	00E0.F976.421A
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

- SW2

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	0040.0B52.9E58
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

- SW3

No.	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	0006.2A4C.3EBE
4.	Bridge ID	32769
5.	Cost(0/1;0/2;0/3)	19
6.	Hello Time	2 sec
7.	MaxAge	20 sec
8.	Forward Delay	15 sec

- Root bridge : SW3
- Designated bridge : SW2
- Root port : SW1 (Fa0/2), SW2 (Fa0/2)
- Designated port : SW1 (Fa0/3), SW2 (Fa0/3), SW3 (Fa0/1, Fa0/2, Fa0/3)
- Forwarding :
  - SW1 : Fa0/2, Fa0/3
  - SW2 : Fa0/2, Fa0/3
  - SW3 : Fa0/1, Fa0/2, Fa0/3
- Blocking : Tidak ada port yang ter-block