

Nama : Vintan Kirana

NIM : L200180144

Kelas : D

PRAKTIKUM JARINGAN KOMPUTER

MODUL 6

SPANNING TREE PROTOCOL

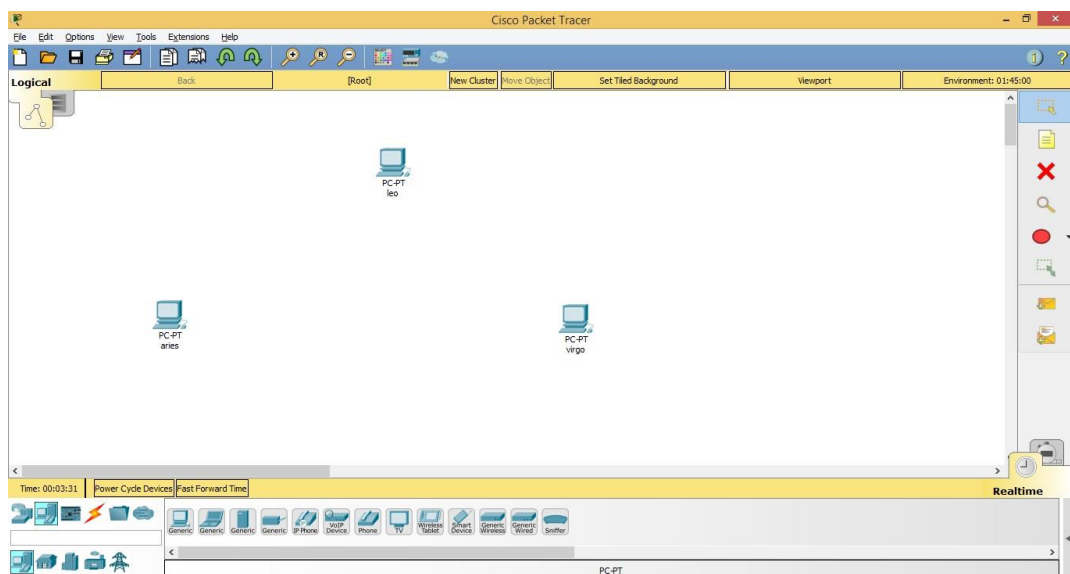
Kegiatan Praktikum

1. Kegiatan 1. Topologi 1

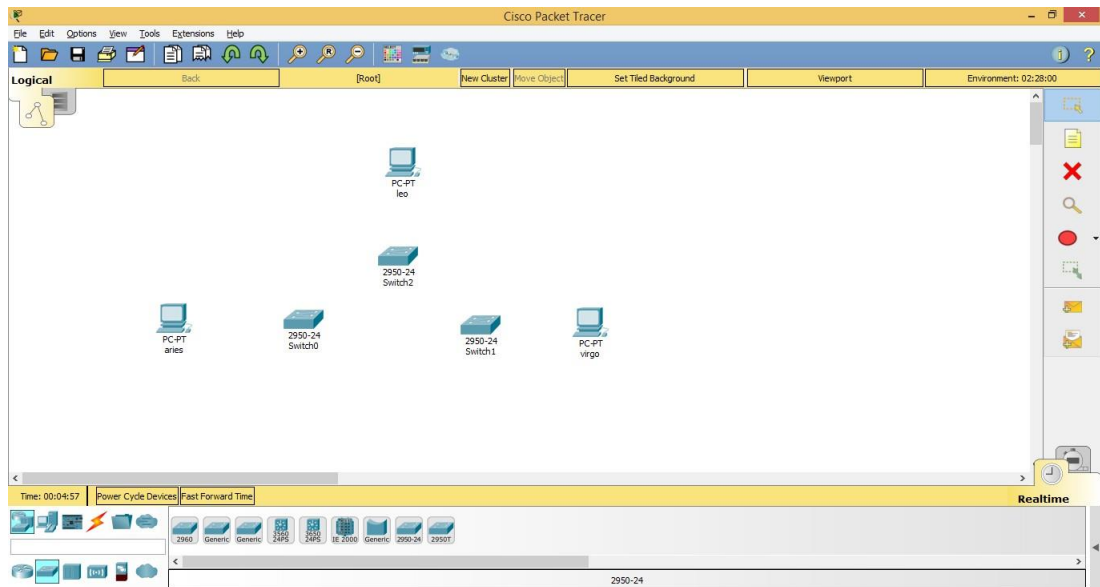
- Menggunakan Packet Tracer, membuat topologi berikut ini dengan menggunakan switch Catalyst 2950

Tugas 1A: Tulis langkah pembuatan topologi

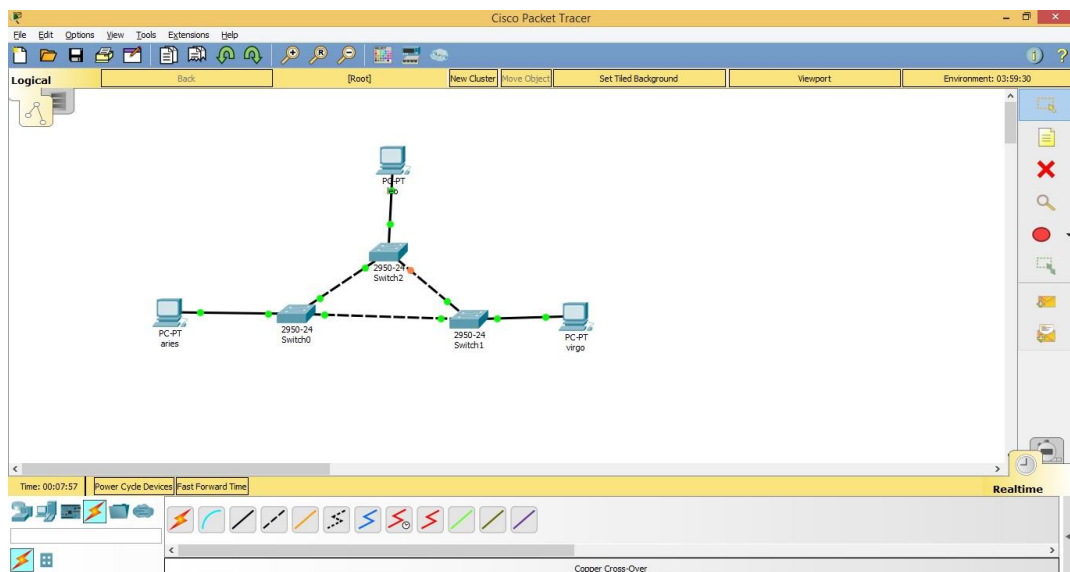
- Menambahkan 3 buah PC dengan cara klik icon end devices, klik icon PC dengan keterangan generic computer kemudian letakkan 3 buah PC



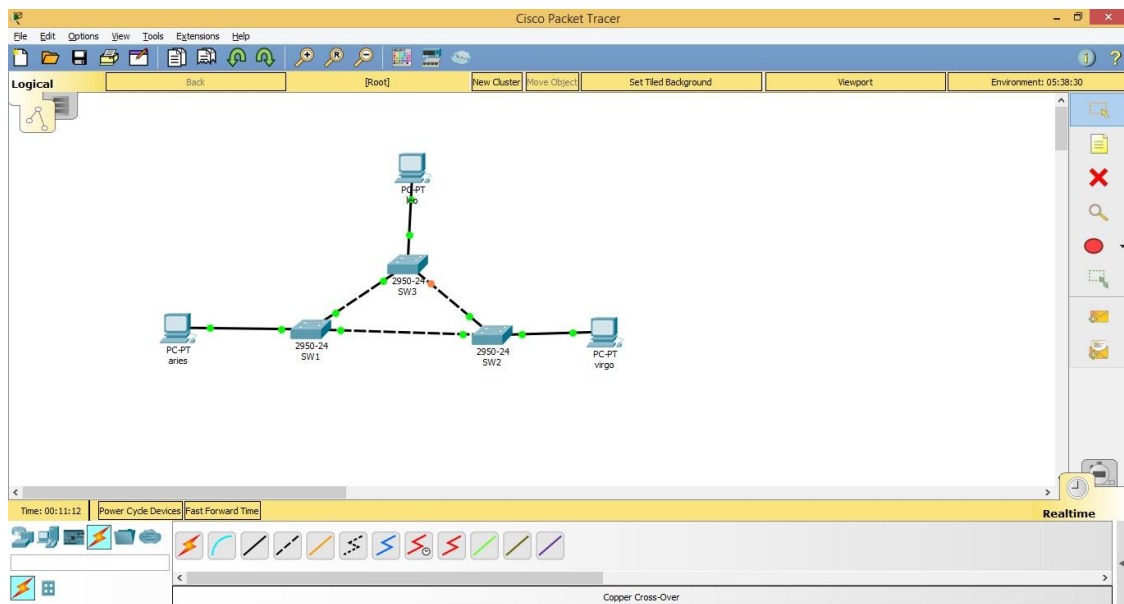
- Menambahkan 3 buah switch dengan cara pada bagian network devices, klik bagian switches kemudian letakkan switch dengan tipe 2950-24



- Menghubungkan komponen – komponen yang telah ditambahkan, untuk menghubungkan PC dengan switch gunakan icon petir, sedangkan untuk menghubungkan switch dengan switch gunakan icon garis putus-putus



- Memberi nama masing-masing switch dengan nama SW1, SW2, dan SW3



Tugas 2A: Tulis langkah pemberian nama switch mulai dari mode user

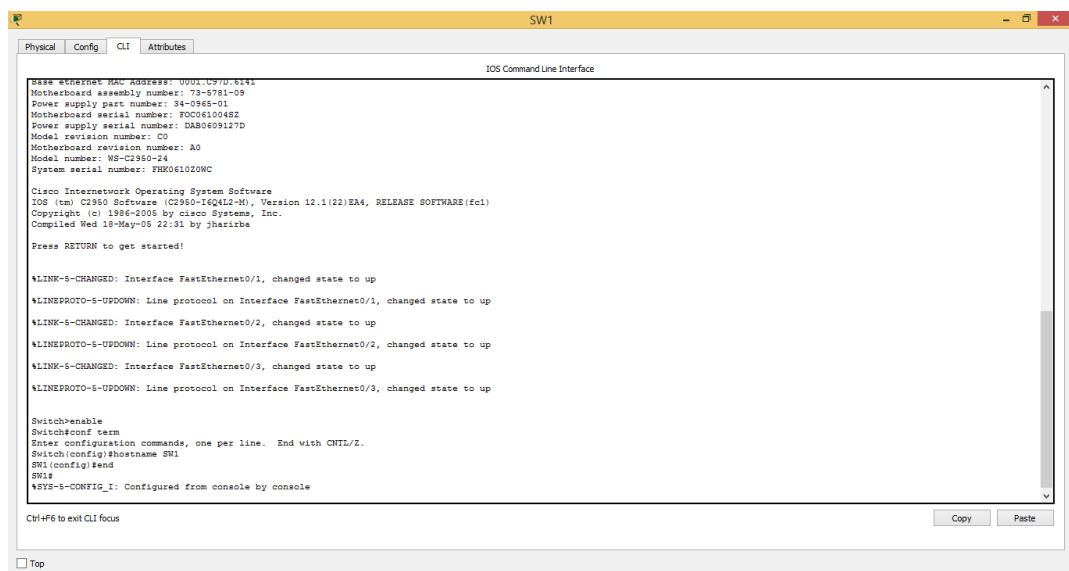
- Klik pada switch yang akan diberi nama
- Pilih CLI
- Klik enter
- Kemudian masukkan perintah berikut ini:

Switch>enable

Switch#conf term

Switch(config)#hostname SW1

SW1(config)#end



➤ Konfigurasi masing-masing PC dengan alamat IP:

- Leo = 172.21.1.1/24

Physical Config Desktop Programming Attributes

IP Configuration

☐ DHCP ☒ Static

IP Address: 172.21.1.1

Subnet Mask: 255.255.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:2BFF:FE1E:AD1A

IPv6 Gateway: /

IPv6 DNS Server: /

☐ Top

- Aries = 172.21.1.2/24

Physical Config Desktop Programming Attributes

IP Configuration

☐ DHCP ☒ Static

IP Address: 172.21.1.2

Subnet Mask: 255.255.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:2BFF:FEAC:4541

IPv6 Gateway: /

IPv6 DNS Server: /

☐ Top

- Virgo = 172.21.1.3/24

Physical Config Desktop Programming Attributes

IP Configuration

☐ DHCP ☒ Static

IP Address: 172.21.1.3

Subnet Mask: 255.255.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:2BFF:FE0B:84B5

IPv6 Gateway: /

IPv6 DNS Server: /

☐ Top

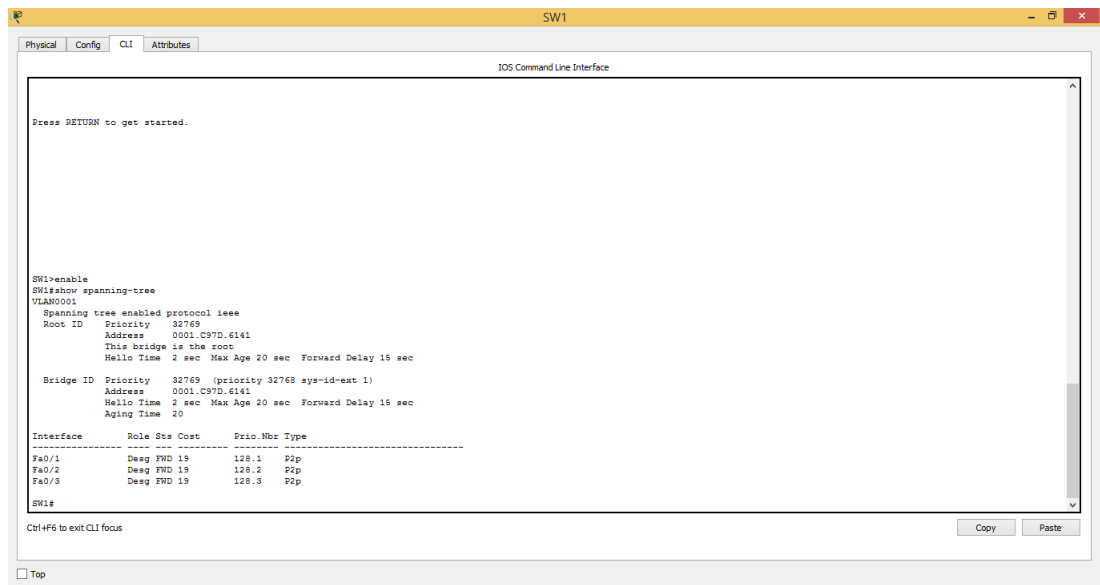
- Pada mode user atau mode privileged, lihat status STP pada masing-masing switch.

Langkah pengoperasian:

- Tekan enter
- Masuk mode privileged(optional)
- Ketik show spanning tree

Tugas 4A: Pada kondisi default, capture masing-masing tampilan status STP switch(SW1, SW2, SW3)

- SW1



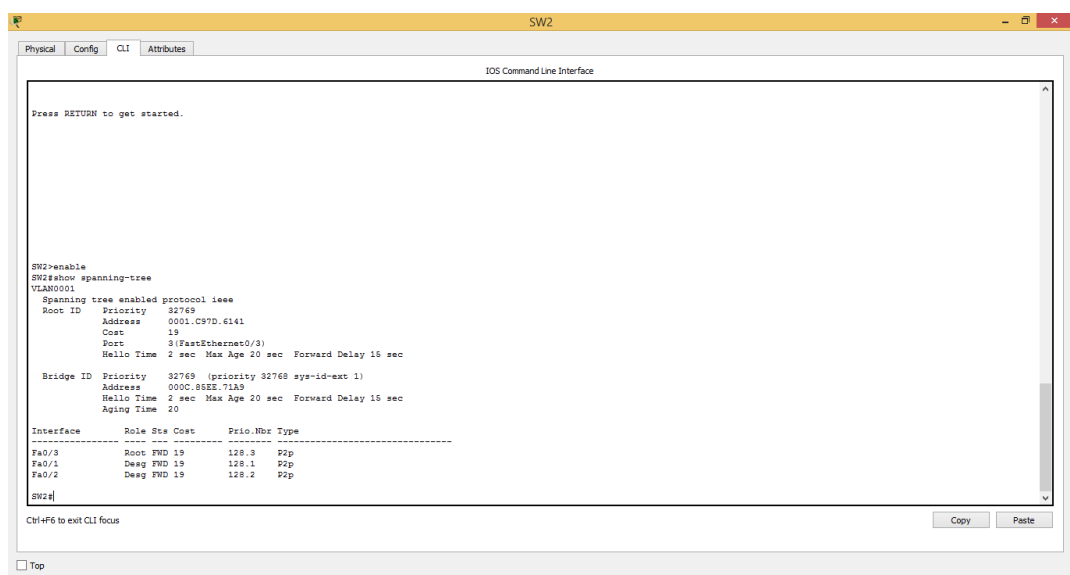
The screenshot shows the CLI of switch SW1. The user has entered the command 'show spanning-tree' in privileged mode. The output displays the spanning tree protocol status for VLAN0001, including the root ID, address, and bridge ID. It also shows the interface roles and costs.

```
SW1>enable
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address     0001.C97D.6141
              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     0001.C97D.6141
              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
              Aging Time 20

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

SW1#
```

- SW2



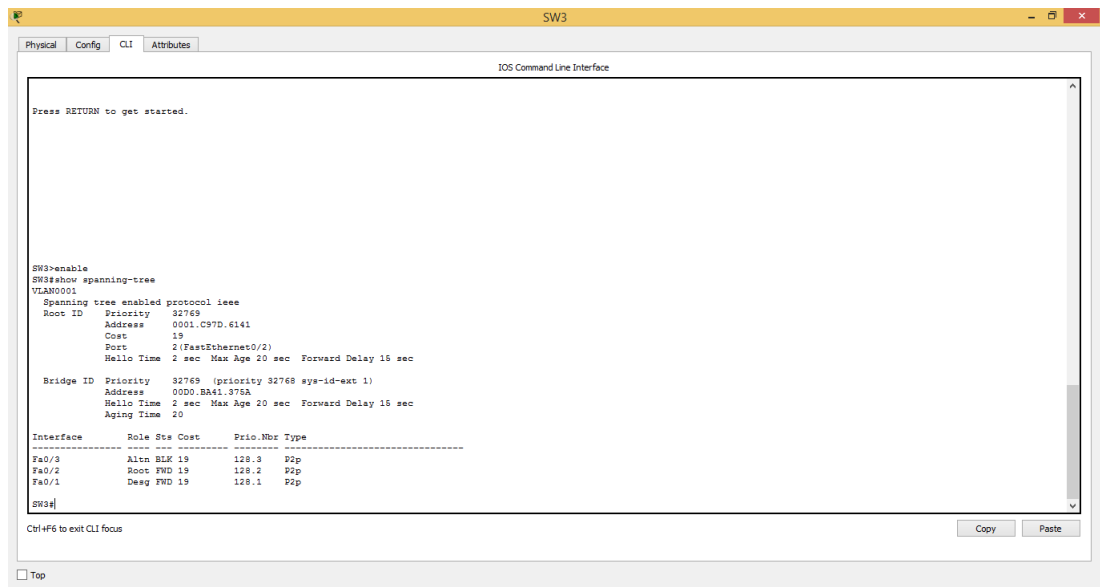
The screenshot shows the CLI of switch SW2. The user has entered the command 'show spanning-tree' in privileged mode. The output displays the spanning tree protocol status for VLAN0001, including the root ID, address, and bridge ID. It also shows the interface roles and costs.

```
SW2>enable
SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address     0001.C97D.6141
              Cost        19
              Port        3(FastEthernet0/3)
              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
    Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
              Address     000C.85EE.71A9
              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
              Aging Time 20

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

SW2#
```

- SW3



Tugas 4B: Untuk tiap switch, isikan tabel berikut:

- SW1

No	Variabel	Nilai
1.	Root ID	32729
2.	Priority	32769
3.	MAC Address	0001.C97D.6141
4.	Bridge ID	32729
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	000C.85EE.71A9
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

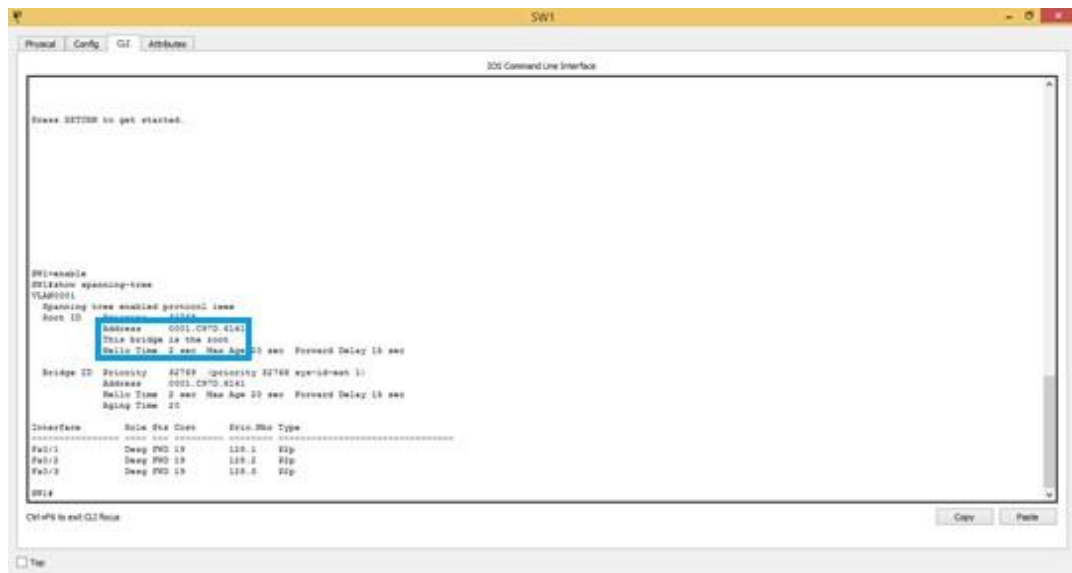
- SW3

No	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	00D0.BA41.375A
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: Pada kondisi default tersebut, switch dan port mana saja yang:

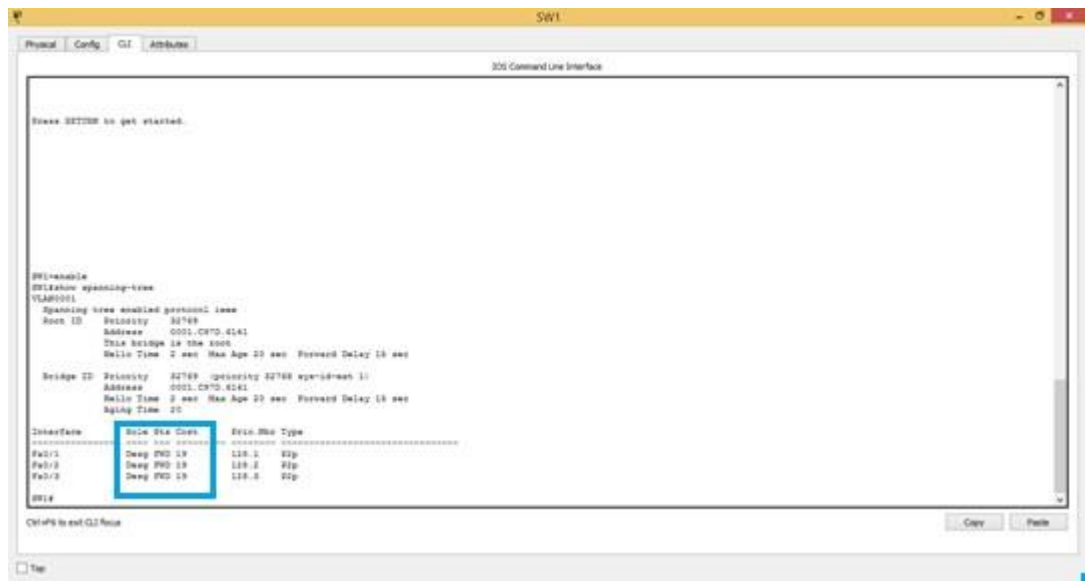
- Menjadi root bridge: **SW1**

Terdapat tulisan this bridge is the root



- Menjadi designated bridge: **SW1**

Fa0/1, Fa0/2, Fa0/3 memiliki status yang konsisten, yaitu Desg



- Menjadi root port: **SW2(Fa0/3), SW3(Fa0/2)**

Dilihat dari yang memiliki status root

- Menjadi designated port: **SW1(Fa0/1, Fa0/2, Fa0/3), SW2(Fa0/1, Fa0/2), SW3(Fa0/1)**

Dilihat dari yang memiliki status Desg

Tugas 4D: Pada kondisi default tersebut, dan port mana saja yang:

- Berada pada keadaan forwarding: **SW1(Fa0/1, Fa0/2, Fa0/3), SW2(Fa0/1, Fa0/2, Fa0/3), SW3(Fa0/1, Fa0/2)**

Dilihat dari yang terdapat tulisan FWD

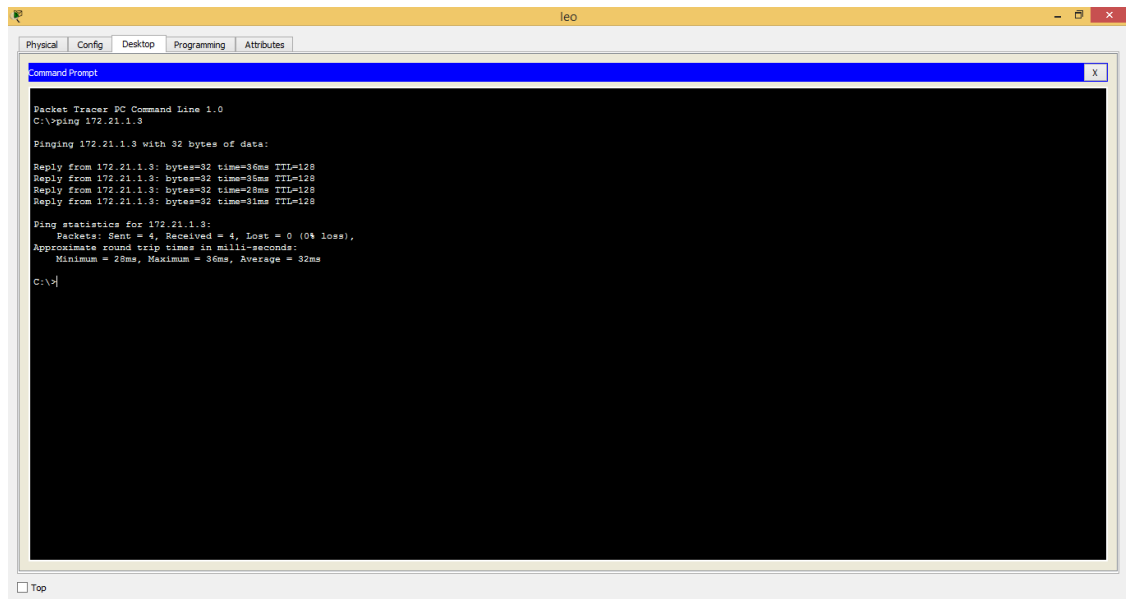
- Berada pada keadaan blocking: **SW3(Fa0/3)**

Dilihat dari yang terdapat tulisan BLK

➤ Dari PC Leo lakukan ping ke PC Virgo

Tugas 5A: Tulis langkah untuk melakukan perintah ping

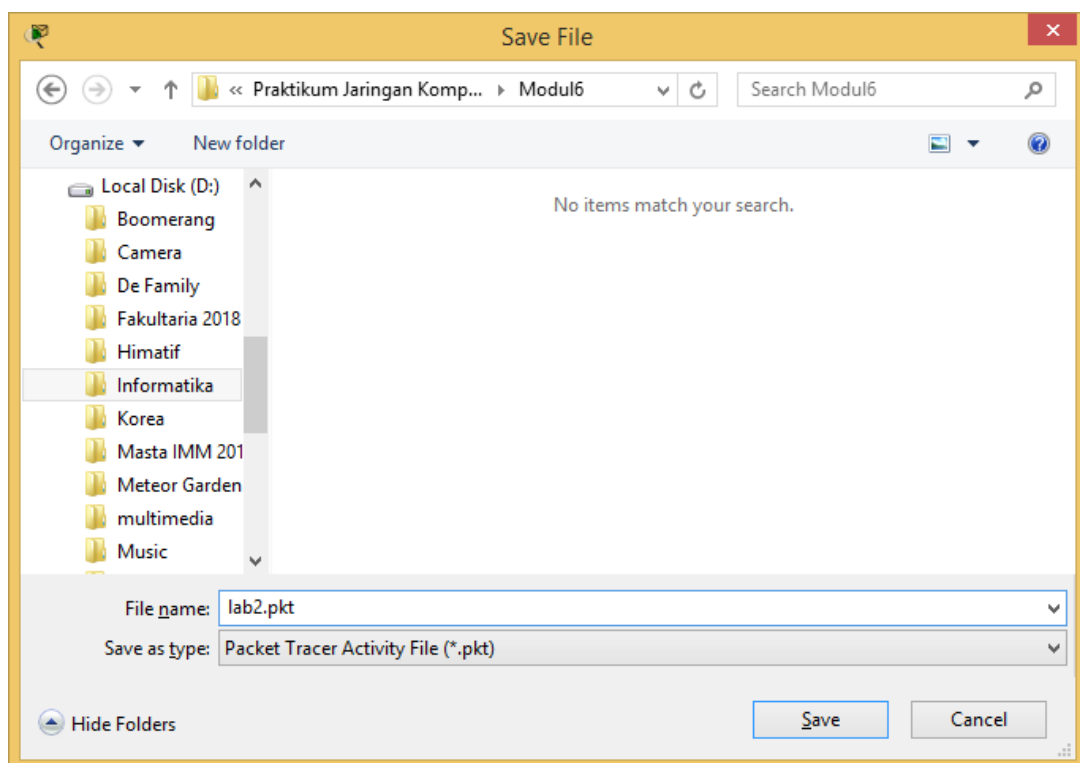
- Klik pada PC Leo
- Pilih desktop
- Pilih command prompt
- Ketik ping 172.21.1.3 (IP Address dari PC Virgo)



- Simpan konfigurasi jaringan dengan nama lab2.ekstensi (d disesuaikan dengan ekstensi file masing-masing)

Tugas 6A: Tulis langkah untuk menyimpan konfigurasi jaringan

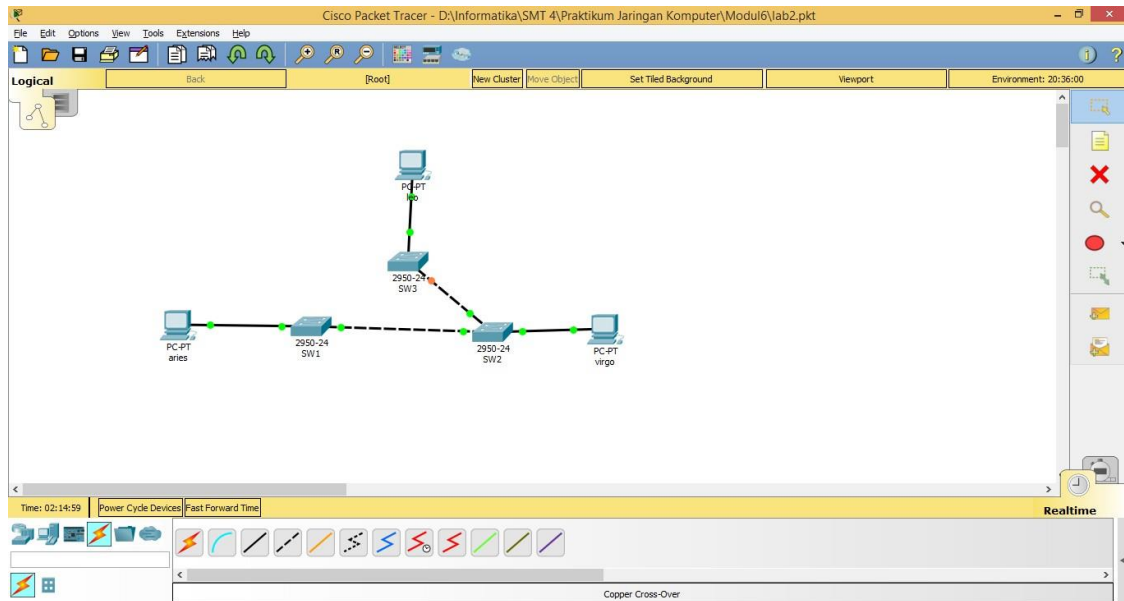
- Klik file
- Klik save as
- Pilih lokasi penyimpanan
- Beri nama file dengan lab2.pkt



- Klik save

2. Kegiatan 2. Topologi 2

- Menggunakan packet tracer ubah topologi menjadi seperti topologi berikut ini:



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

Langkah pengoperasian:

- Tekan enter
- Masuk mode privileged(optional)
- Ketik show spanning tree

Capture masing-masing tampilan status STP switch(SW1, SW2, SW3)

- SW1

```
SW1
Physical Config CLI Attributes
IOS Command Line Interface

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

SW1>enable
SW1#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    32768
           Address    0001.C97D.6141
           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    0001.C97D.6141
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 20

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

SW1#
```

- SW2

```

SW2>enable
SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address    0001.C97D.6141
              Cost        19
              Port        3 (FastEthernet0/3)
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

    Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address    000C.88E8.71A3
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Fa0/3          Root FWD 19       128.3   P2p
Fa0/1          Desg FWD 19       128.1   P2p
Fa0/2          Desg FWD 19       128.2   P2p
SW2#
  
```

- SW3

```

SW3>enable
SW3#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address    0001.C97D.6141
              Cost        98
              Port        3 (FastEthernet0/3)
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

    Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address    00D0.BA41.376A
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Fa0/3          Root FWD 19       128.3   P2p
Fa0/1          Desg FWD 19       128.1   P2p
SW3#
  
```

Untuk tiap switch, isikan tabel berikut:

- SW1

No	Variabel	Nilai
1.	Root ID	32769
2.	Priority	32769
3.	MAC Address	0001.C97D.6141
4.	Bridge ID	32729
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	000C.85EE.71A9
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	00D0.BA41.375A
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

Pada kondisi tersebut, switch dan port mana saja yang:

- Menjadi root bridge: **SW1**

Terdapat tulisan this bridge is the root

```
SW1>enable
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32768
             Address     0001.C97D.6141
             This bridge is the root
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority    32768 (priority 32768 sys-id-ext 1)
             Address     0001.C97D.6141
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
             Aging Time 20

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

SW1#
```

- Menjadi designated bridge: **SW1**
Fa0/1, Fa0/3 memiliki status yang konsisten, yaitu Desg

```
SW1>enable
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32768
             Address     0001.C97D.6141
             This bridge is the root
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority    32768 (priority 32768 sys-id-ext 1)
             Address     0001.C97D.6141
             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
             Aging Time 20

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

SW1#
```

- Menjadi root port: **SW2(Fa0/3), SW3(Fa0/3)**
Dilihat dari yang memiliki status root
- Menjadi designated port: **SW1(Fa0/1, Fa0/3), SW2(Fa0/1, Fa0/2), SW3(Fa0/1)**
Dilihat dari yang memiliki status Desg
Pada kondisi tersebut, dan port mana saja yang:
- Berada pada keadaan forwarding: **SW1(Fa0/1, Fa0/3), SW2(Fa0/1, Fa0/2, Fa0/3), SW3(Fa0/1, Fa0/3)**
Dilihat dari yang terdapat tulisan FWD
- Berada pada keadaan blocking: **Tidak ada**
Dilihat dari yang terdapat tulisan BLK

➤ Dari PC Leo lakukan ping ke PC Virgo

Tulis langkah untuk melakukan perintah ping

- Klik pada PC Leo
- Pilih desktop
- Pilih command prompt
- Ketik ping 172.21.1.3 (IP Address dari PC Virgo)

```
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=12ms TTL=128
Reply from 172.21.1.3: bytes=32 time=16ms TTL=128
Reply from 172.21.1.3: bytes=32 time=16ms TTL=128
Reply from 172.21.1.3: bytes=32 time=17ms 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 = 12ms, Maximum = 27ms, Average = 17ms

C:\>
```