

COMPUTER NETWORKS PRACTICUM

Modul 6 – Spanning Tree Protocol



Created by:

Hafshah Fitri Afifah

L200184172

INFORMATION TECHNOLOGY

FACULTY OF COMMUNICATION AND INFORMATICS

MUHAMMADIYAH UNIVERSITY OF SURAKARTA

2020

ACTIVITY 1 . TOPOLOGI 1

Tugas 1A . Langkah Pembuatan Topologi

- **Menentukan PC**
 1. Pada bagian end devices pilih generic
 2. Letakkan 3 PC sesuai dengan gambar
- **Menentukan Switches**
 1. Pada bagian network devices pilih switches
 2. Gunakan switches tipe 2950-24
 3. Letakkan 3 switch sesuai dengan gambar
- **Menghubungkan antar device menggunakan kabel**
 1. Pada bagian connection, pilih kabel sesuai dengan perangkat yang ingin dihubungkan
 - Jika berbeda jenis, gunakan *copper straight*
 - Jika satu jenis, gunakan *copper cross-over*

Tugas 2A . Memberi nama Switch melalui mode user

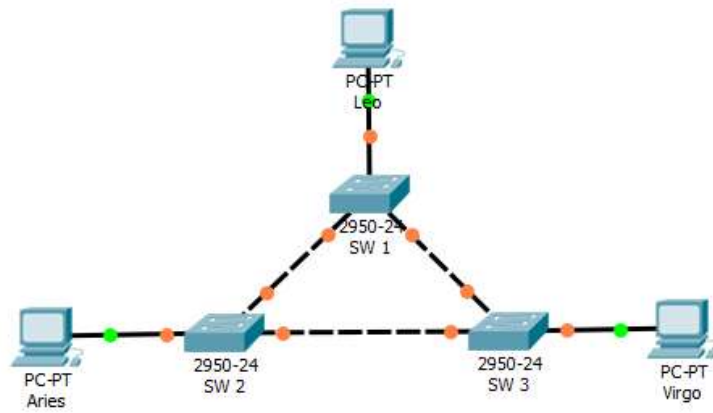
Switch> enable

Switch# conf term

Switch(config)#hostname SW1

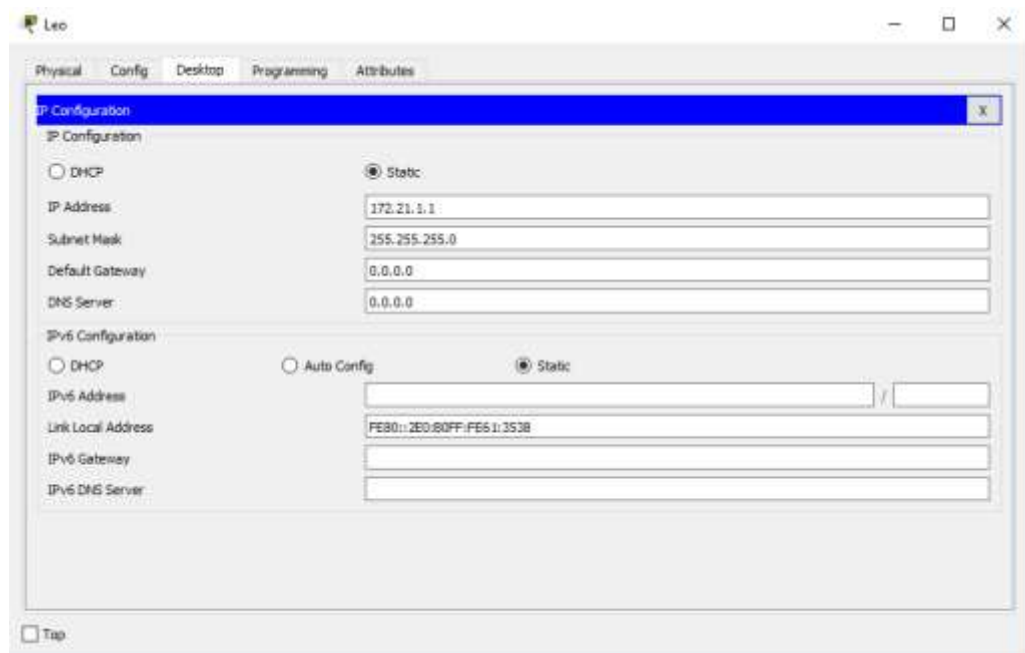
SW1(config)#

Gambar rangkaian topologi



Konfigurasi PC

➤ Leo



➤ Aries

The screenshot shows the 'Aries' configuration window with the 'Config' tab selected. The 'IP Configuration' section has 'Static' selected, with fields for IP Address (172.21.1.2), Subnet Mask (255.255.255.0), Default Gateway (0.0.0.0), and DNS Server (0.0.0.0). The 'IPv6 Configuration' section has 'Static' selected, with fields for IPv6 Address, Link Local Address (FE80::207:ECFF:FE77:36AA), IPv6 Gateway, and IPv6 DNS Server. A 'Top' button is at the bottom left.

IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IP Address	172.21.1.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IPv6 Configuration		
<input type="radio"/> DHCP	<input type="radio"/> Auto Config	<input checked="" type="radio"/> Static
IPv6 Address		
Link Local Address	FE80::207:ECFF:FE77:36AA	
IPv6 Gateway		
IPv6 DNS Server		

☐ Top

➤ Virgo

The screenshot shows the 'Virgo' configuration window with the 'Config' tab selected. The 'IP Configuration' section has 'Static' selected, with fields for IP Address (172.21.1.3), Subnet Mask (255.255.255.0), Default Gateway (0.0.0.0), and DNS Server (0.0.0.0). The 'IPv6 Configuration' section has 'Static' selected, with fields for IPv6 Address, Link Local Address (FE80::200:D3FF:FE82:6EDC), IPv6 Gateway, and IPv6 DNS Server. A 'Top' button is at the bottom left.

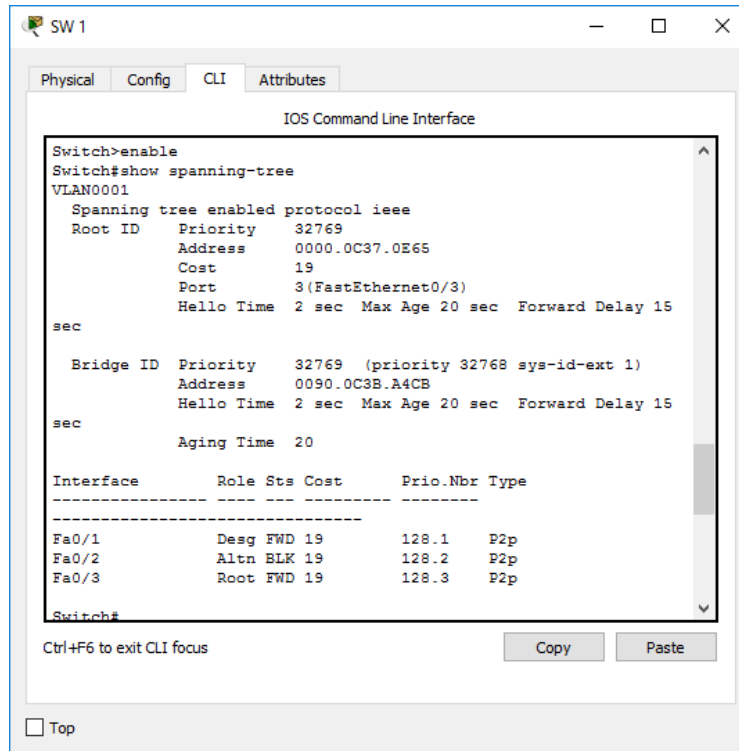
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IP Address	172.21.1.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IPv6 Configuration		
<input type="radio"/> DHCP	<input type="radio"/> Auto Config	<input checked="" type="radio"/> Static
IPv6 Address		
Link Local Address	FE80::200:D3FF:FE82:6EDC	
IPv6 Gateway		
IPv6 DNS Server		

☐ Top

Tugas 4A . Melihat Status STP masing-masing Switch

- SW 1



SW 1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0000.0C37.0E65
            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     0090.0C3B.A4CB
            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        Altn BLK 19        128.2    P2p
Fa0/3        Root FWD 19        128.3    P2p

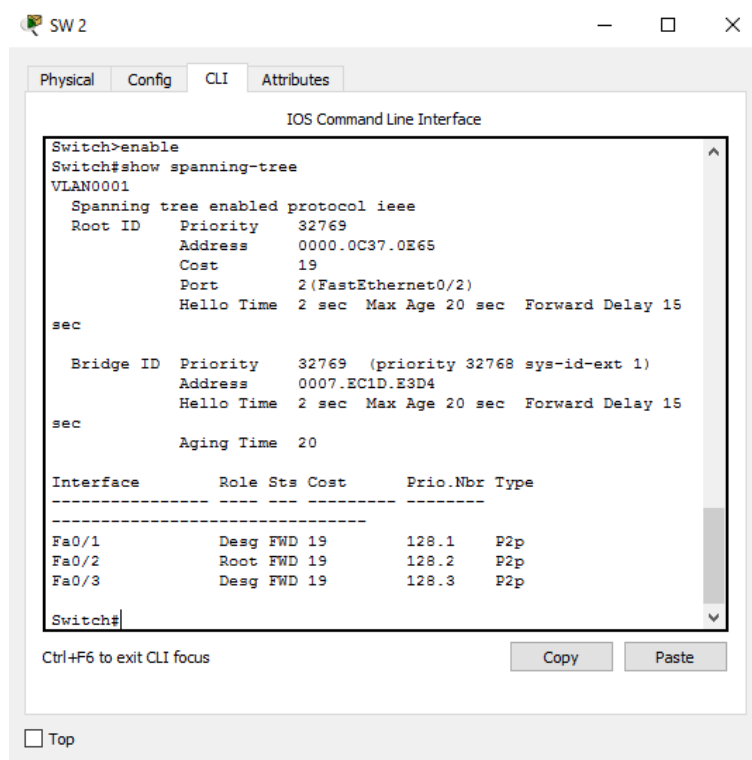
Switch#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

- SW 2



SW 2

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0000.0C37.0E65
            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     0007.EC1D.E3D4
            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        Root FWD 19        128.2    P2p
Fa0/3        Desg FWD 19        128.3    P2p

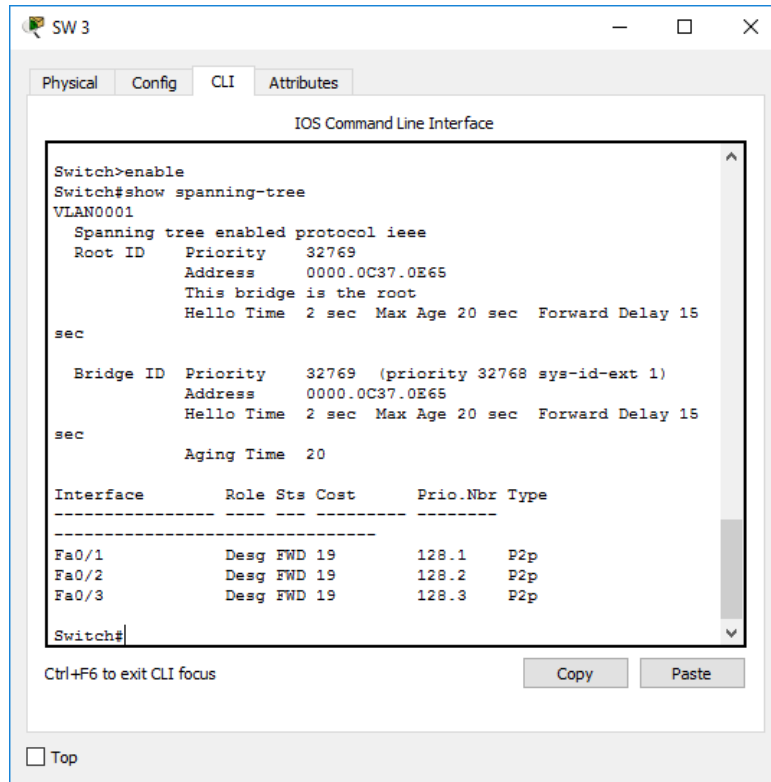
Switch#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

- SW 3



Tugas 4B. Tabel setiap Switch

- SW 1

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	0090.0C3B.A4CB
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

➤ SW 2

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	0007.EC1D.E3D4
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

➤ SW 3

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	0000.0C37.0E65
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

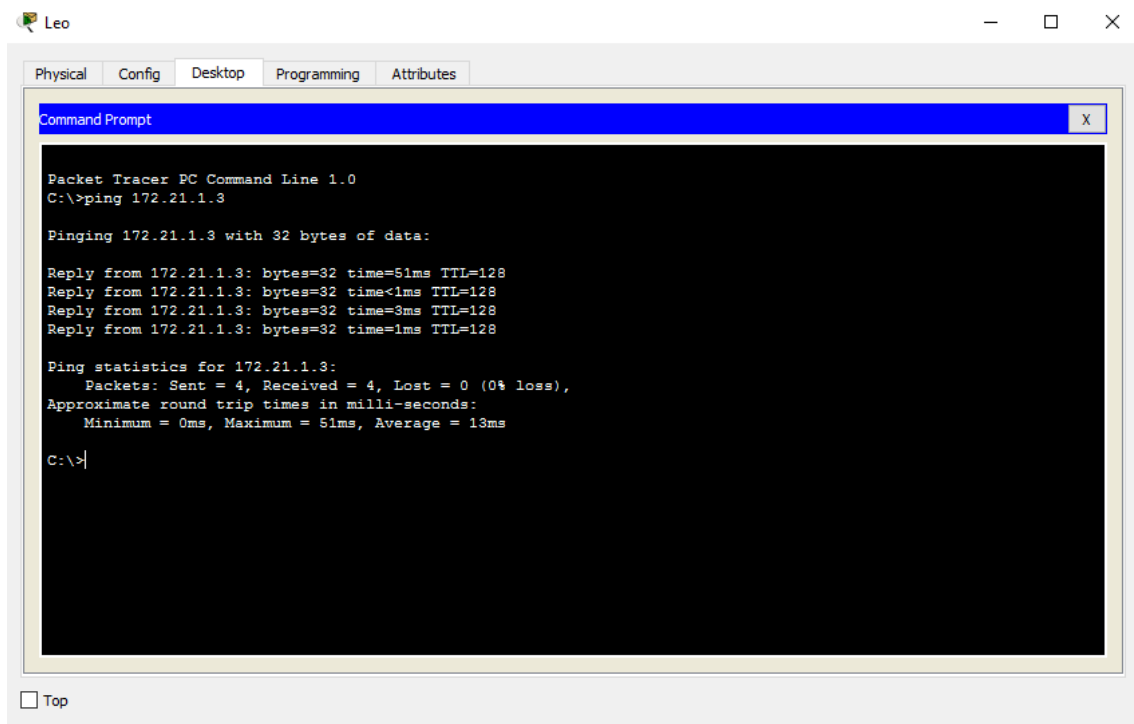
Tugas 4C.

- a) Root bridge : SW3
- b) Designated bridge : SW 1 dan SW 2
- c) Root port : SW1(Fa0/3), SW2(Fa0/2)
- d) Designated port : SW1(Fa0/1), SW2(Fa0/1 dan Fa0/3), SW3(Fa0/1, Fa0/2, dan Fa0/3)

Tugas 4D

- a) Keadaan forwarding : SW1 (Fa0/1 dan Fa0/3) , SW2(Fa0/1 Fa0/2 Fa0/3), SW3(Fa0/1 Fa0/2 Fa0/3)
- b) Keadaan blocking : SW1 (Fa0/2)

Ping PC Leo ke Virgo

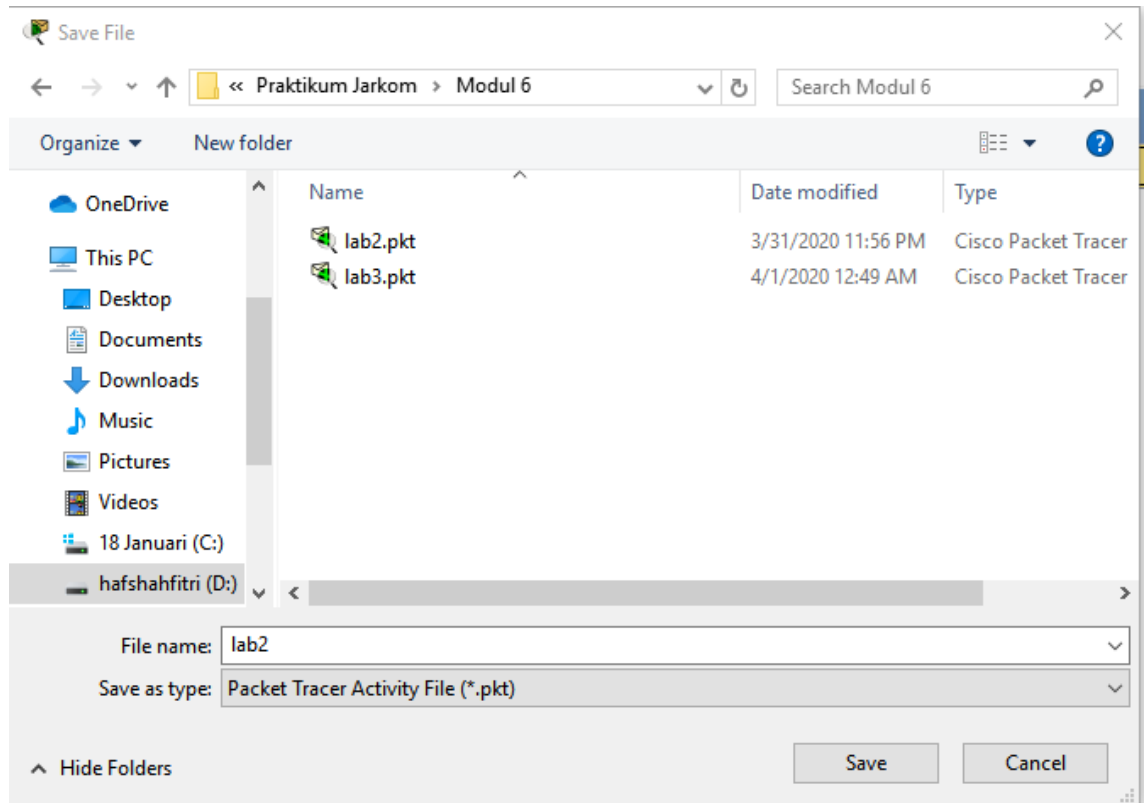


Tugas 5A . Langkah melakukan ping

1. Klik PC Leo
2. Pilih tab desktop
3. Pilih command prompt
4. Ketikkan ping 172.21.1.3

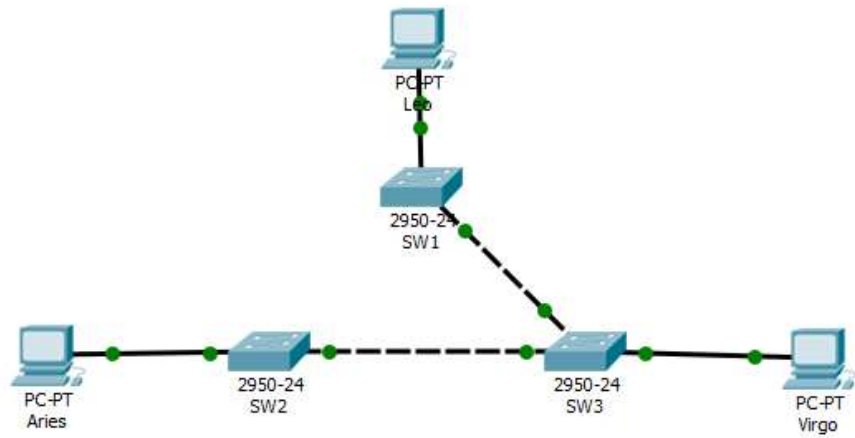
Tugas 6A . Langkah untuk menyimpan konfigurasi jaringan

1. Klik File
2. Pilih Save As
3. Beri nama lab2, ekstensi akan menyesuaikan dengan aplikasi yang kita gunakan



ACTIVITY 2 . TOPOLOGI 2

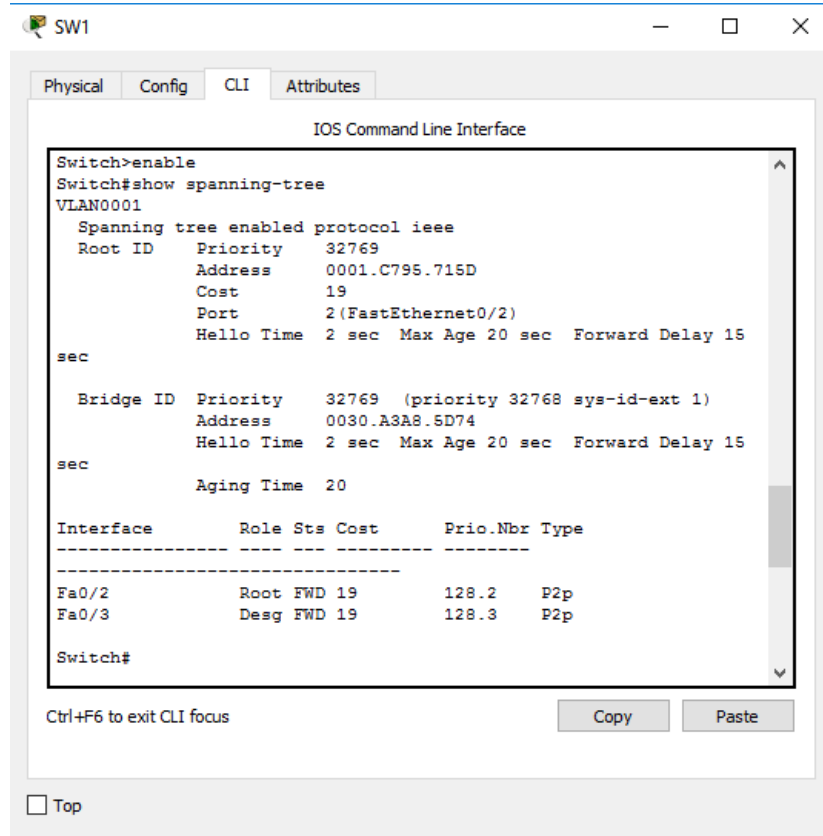
Rangkaian Topologi 2



Tugas 9A

A. Status STP masing-masing Switch

- SW1



The screenshot shows a network switch window titled 'SW1' with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the 'IOS Command Line Interface'. The user has entered the command 'show spanning-tree' for VLAN0001. The output shows the spanning tree is enabled with protocol IEEE. The root ID is 32769 with address 0001.C795.715D, cost 19, and port 2 (FastEthernet0/2). The bridge ID is 32769 with address 0030.A3A8.5D74. The hello time is 2 sec, max age is 20 sec, and forward delay is 15 sec. The aging time is 20. A table shows the status of interfaces Fa0/2 and Fa0/3, both in the Forwarding (FWD) state with a cost of 19. Fa0/2 is the root port (Root) and Fa0/3 is a designated port (Desg).

```
Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID    Priority    32769
              Address     0001.C795.715D
              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     0030.A3A8.5D74
              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

Switch#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	0030.A3A8.5D74
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

- SW2

SW2
— □ ×

Physical
Config
CLI
Attributes

IOS Command Line Interface

```

Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
             Address    0001.C795.715D
             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    000C.CF81.62A0
             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

Switch#
          
```

Ctrl+F6 to exit CLI focus

Copy
Paste

☐ Top

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	000C.CF81.62A0
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

- SW3

The screenshot shows a network switch configuration window for SW3. The 'CLI' tab is active, displaying the following command and output:

```
Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0001.C795.715D
            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.C795.715D
            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

Switch#
```

Below the CLI window, there are buttons for 'Copy' and 'Paste', and a 'Top' button.

NO	Variable	Value
1	Root ID	32769
2	Priority	32768
3	MAC Address	0001.C795.715D
4	Bridge ID	32769
5	Cost	19
6	Hello Time	2 sec
7	Max Age	20 sec
8	Forward Delay	15 sec

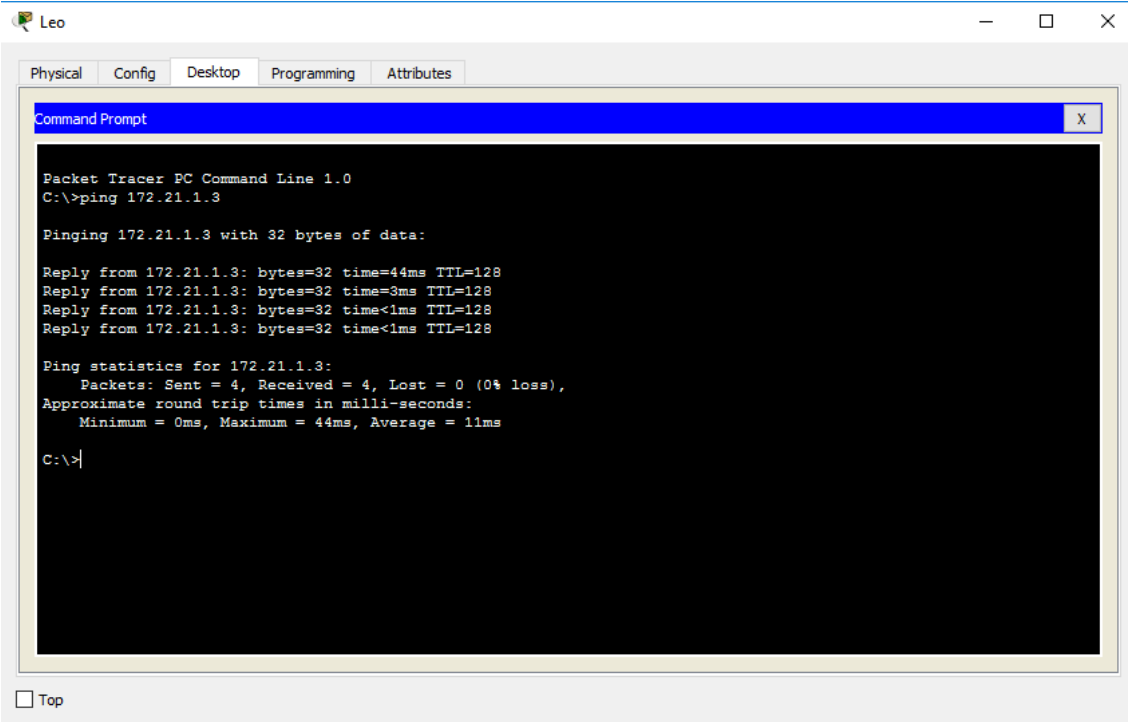
B . Menentukan :

- a) Root bridge : SW3
- b) Designated bridge : SW 1 dan SW 2
- c) Root port : SW1(Fa0/2), SW2(Fa0/2)
- d) Designated port : SW1(Fa0/3), SW2(Fa0/3), SW3(Fa0/1, Fa0/2, dan Fa0/3)

C. Menentukan :

- a) Keadaan forwarding : SW1 (Fa0/2 dan Fa0/3) , SW2(Fa0/2 Fa0/3), SW3(Fa0/1 Fa0/2 Fa0/3)
- b) Keadaan blocking : tidak ada

Ping PC Leo ke Virgo



```
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=44ms TTL=128
Reply from 172.21.1.3: bytes=32 time=3ms 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 = 44ms, Average = 11ms

C:\>
```