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Kelas: A

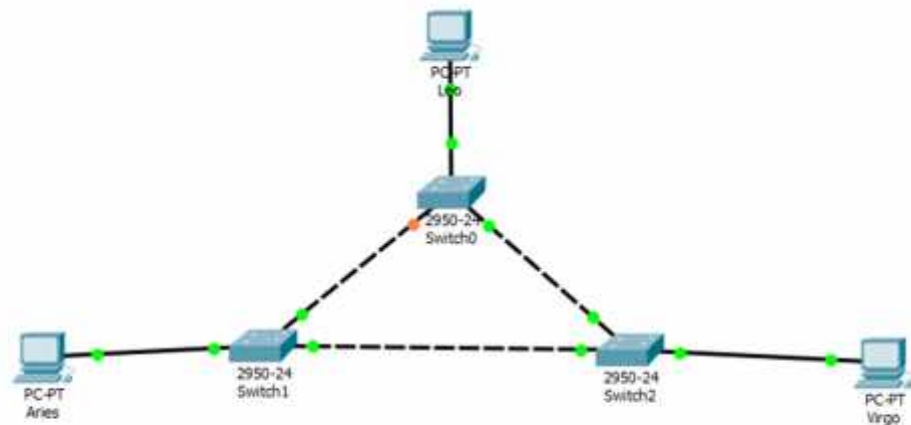
MODUL 6

SPANNING TREE PROTOCOL

C. Kegiatan Praktikum

Kegiatan 1. Topologi 1

1. Membuat topologi



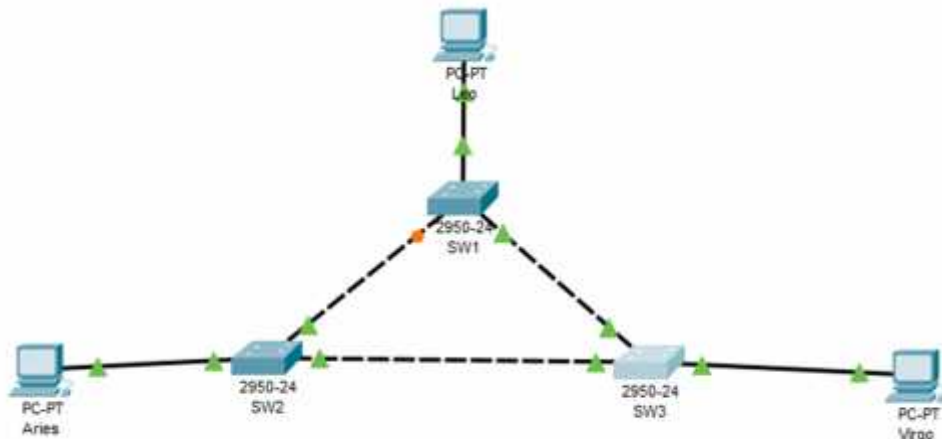
Tugas 1A:

Tulis langkah pembuatan topologi.

Jawab :

Pembuatan topologi pada kegiatan 1 menggunakan tiga buah switch 2950-24 yang dirangkai menjadi bentuk segitiga (ketiga switch terhubung). Pada setiap switch juga dihubungkan dengan PC. Switch 0 dihubungkan dengan PC Leo, switch 1 dihubungkan dengan PC Aries, dan switch 3 dihubungkan dengan PC Virgo.

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



Tugas 2A:

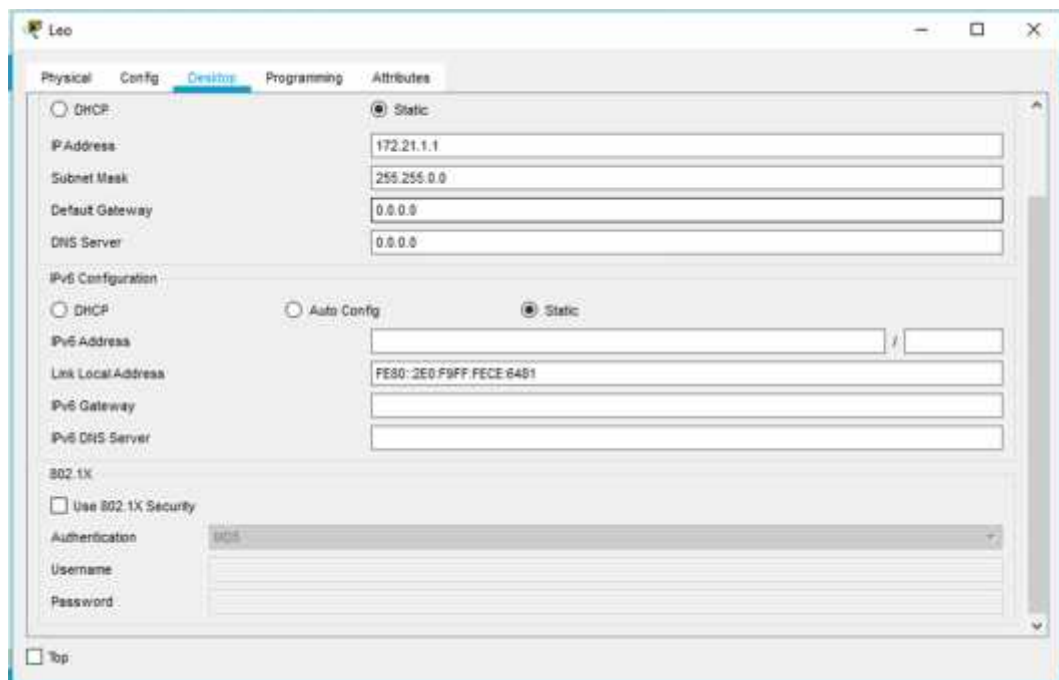
Tulis langkah pemberian nama switch mulai dari mode user.

Jawab :

Switch paling atas diberi nama SW1, switch sebelah kiri diberi nama SW2 dan switch disebelah kanan diberi nama SW3.

3. Konfigurasi masing-masing PC dengan alamat IP.

- Leo = 172.21.1.1/24



- Aries = 172.21.1.2/24

The screenshot shows the configuration window for a switch named 'Aries'. The 'Desktop' tab is selected. Under the 'Config' section, the 'Static' radio button is chosen for IP configuration. The IP Address is set to 172.21.1.2, Subnet Mask to 255.255.0.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. In the 'IPv6 Configuration' section, the 'Static' radio button is also selected, with the Link Local Address set to FE80::290:CFF:FEE1:23DA. The '802.1X' section shows 'Use 802.1X Security' is unchecked, and the 'Authentication' dropdown is set to 'NONE'. A 'Top' button is located at the bottom left.

- Virgo = 172.21.1.3/24

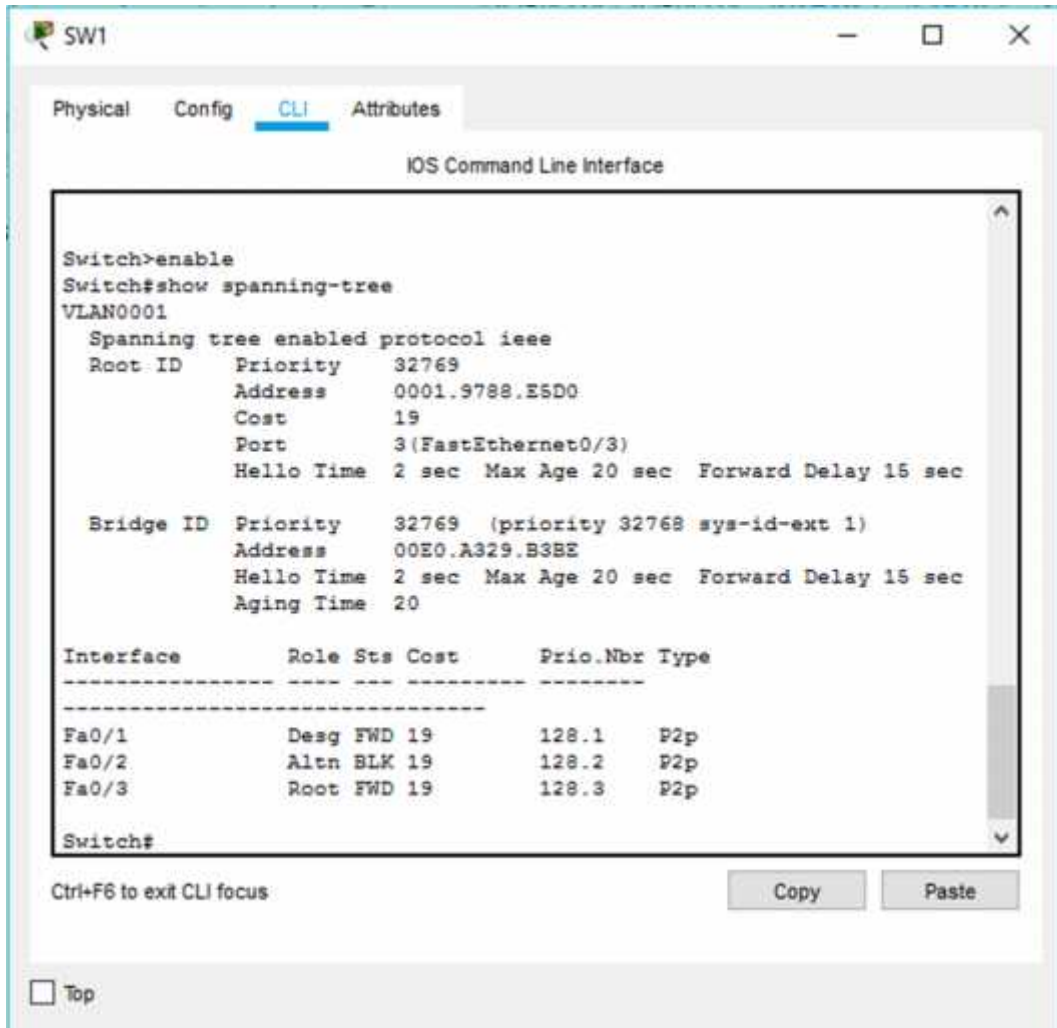
The screenshot shows the configuration window for a switch named 'Virgo'. The 'Desktop' tab is selected. Under the 'Config' section, the 'Static' radio button is chosen for IP configuration. The IP Address is set to 172.21.1.3, Subnet Mask to 255.255.0.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. In the 'IPv6 Configuration' section, the 'Static' radio button is also selected, with the Link Local Address set to FE80::290:21FF:FEEA:0519. The '802.1X' section shows 'Use 802.1X Security' is unchecked, and the 'Authentication' dropdown is set to 'NONE'. A 'Top' button is located at the bottom left.

4. Pada mode user atau mode privileged, lihat status STP pada masing-masing switch. Langkah pengoperasian
 - Tekan enter
 - Masuk mode privileged
 - Ketik show spanning-tree

Tugas 4A:

Pada kondisi default, capture masing-masing tampilan status STP switch (SW1, SW2, SW3).

Jawab :



The screenshot shows a network switch (SW1) in its CLI interface. The user has entered the command `show spanning-tree` for VLAN0001. The output displays the spanning tree protocol status, including the root ID, priority, address, cost, port, and hello time. It also shows the bridge ID, priority, address, hello time, max age, forward delay, and aging time. A table at the bottom lists the interfaces and their roles in the spanning tree.

```
Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
             Address     0001.9788.E5D0
             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     00E0.A329.B3BE
             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

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SW2

PhysicalConfigCLIAttributes

IOS Command Line Interface

Switch>enable
Switch#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID Priority 32769
 Address 0001.9788.E5D0
 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.F2D2.DD69
 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
 Aging Time 20

Interface Role Sts Cost Prio.Nbr Type

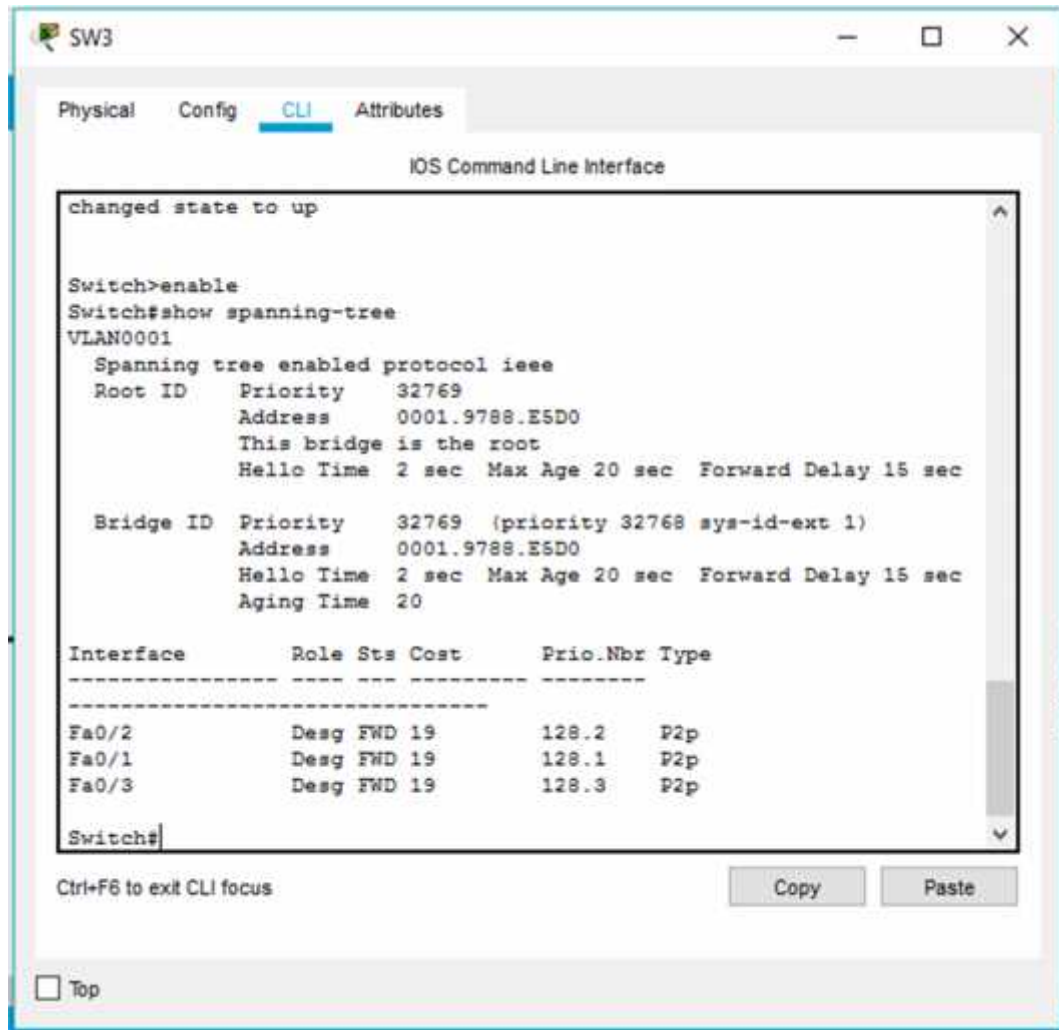
Fa0/3 Desg FWD 19 128.3 P2p
Fa0/1 Desg FWD 19 128.1 P2p
Fa0/2 Root FWD 19 128.2 P2p

Switch#

Ctrl+F6 to exit CLI focus

CopyPaste

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Tugas 4B:

Untuk tiap-tiap switch, isikan tabel berikut:

Jawab :

SW1

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0001.9788.E5D0 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0001.9788.E5D0 |
| 4. | Bridge ID | 32769, 0001.9788.E5D0 |
| 5. | Cost (0/1;0/2;0/3) | Fa0/1: Desg; FWD; 19; 128.1; P2p Fa0/2: Altn; BLK; 19; 128.2; P2p Fa0/3: Root; FWD; 19; 128.3; P2p |
| 6. | Hello Time | 2 sec |
| 7. | MaxAge | 20 sec |
| 8. | Forward Delay | 15 sec |

SW2

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0001.9788.E5D0 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0001.9788.E5D0 |
| 4. | Bridge ID | 32769, 0001.9788.E5D0 |
| 5. | Cost (0/1;0/2;0/3) | Fa0/3: Desg; FWD; 19; 128.3; P2p Fa0/1: Desg; FWD; 19; 128.1; P2p Fa0/2: Root; FWD; 19; 128.2; P2p |
| 6. | Hello Time | 2 sec |
| 7. | MaxAge | 20 sec |
| 8. | Forward Delay | 15 sec |

SW3

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0001.9788.E5D0 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0001.9788.E5D0 |
| 4. | Bridge ID | 32769, 0001.9788.E5D0 |
| 5. | Cost (0/1;0/2;0/3) | Fa0/2: Desg; FWD; 19; 128.2; P2p Fa0/1: Desg; FWD; 19; 128.1; P2p Fa0/3: Desg; FWD; 19; 128.3; P2p |
| 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:

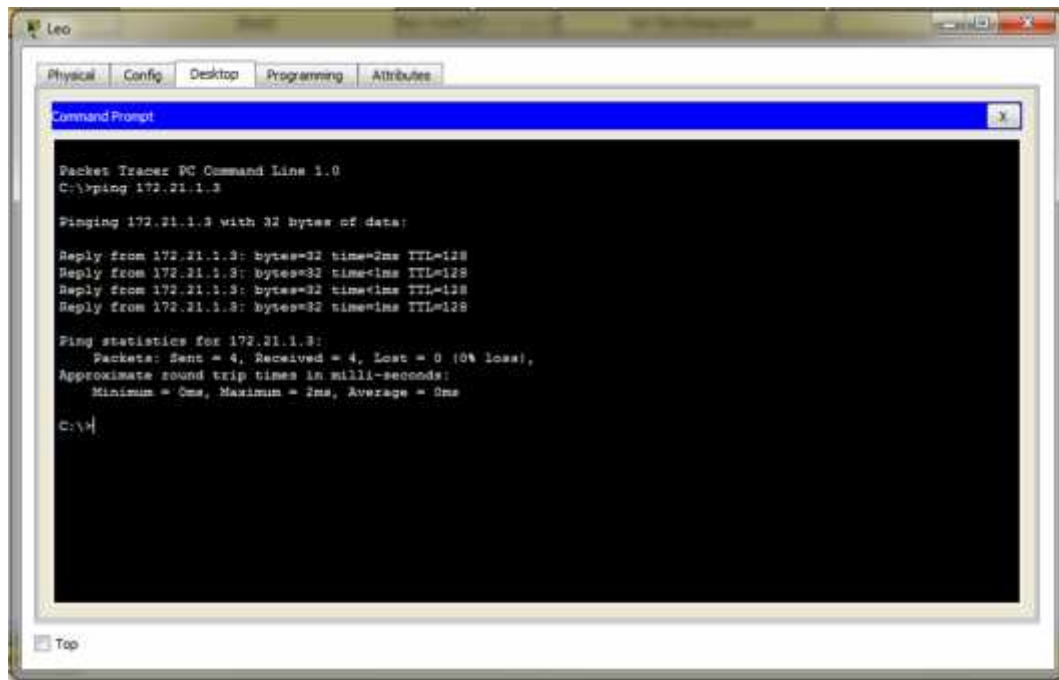
- Menjadi root bridge: SW3
- Menjadi designated bridge: SW3
- Menjadi root port: SW1 (Fa0/3), SW2 (Fa0/2)
- Menjadi designated port: SW3

Tugas 4D:

Pada kondisi default tersebut, dan port mana saja yang:

- Berada pada keadaan forwarding: SW2, SW3
- Berada pada keadaan blocking: SW1(Fa0/2)

5. Dari PC Leo lakukan ping ke PC Virgo



Tugas 5A:

Tulis langkah untuk melakukan perintah ping.

Jawab :

Klik PC Leo pilih menu “Desktop” lalu pilih “Command prompt” lalu ketikkan “ping 172.21.1.3” kemudian tekan enter.

6. Simpan konfigurasi jaringan dengan nama lab2.nwc

Tugas 6A:

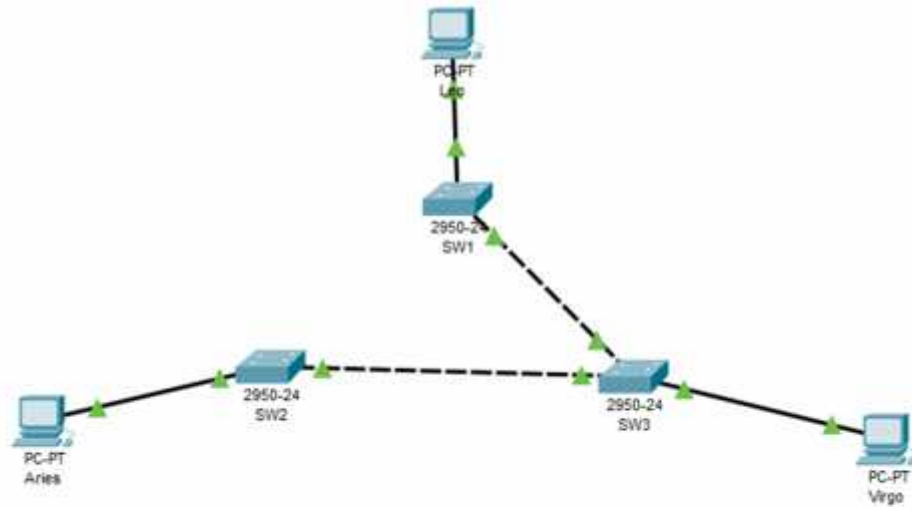
Tulislah langkah untuk menyimpan konfigurasi jaringan.

Jawab :

- Klik “File”
- pilih “Save as”
- pilih direktori
- ketikkan nama file “lab2.nwc”
- klik “save”

Kegiatan 2. Topologi 2

1. Membuat topologi



2. Menyimpan topologi dan membuka topologi tersebut pada lingkungan Packet Tracer. Kemudian men-load file konfigurasi lab2.ncw.
3. Melakukan langkah- langkah seperti pada kegiatan 1.

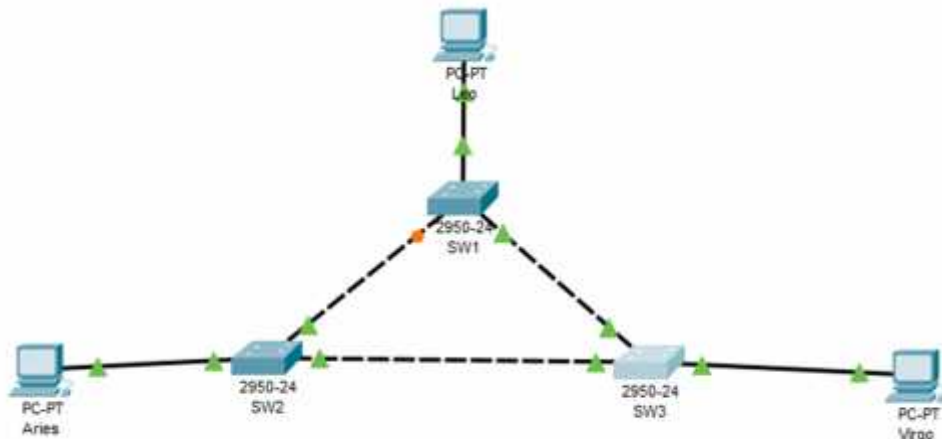
1. Tugas 1A:

Tulis langkah pembuatan topologi.

Jawab :

Pembuatan topologi pada kegiatan 1 menggunakan tiga buah switch 2950-24 yang dirangkai menjadi bentuk segitiga (ketiga switch terhubung). Pada setiap switch juga dihubungkan dengan PC. Switch 0 dihubungkan dengan PC Leo, switch 1 dihubungkan dengan PC Aries, dan switch 3 dihubungkan dengan PC Virgo.

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



Tugas 2A:

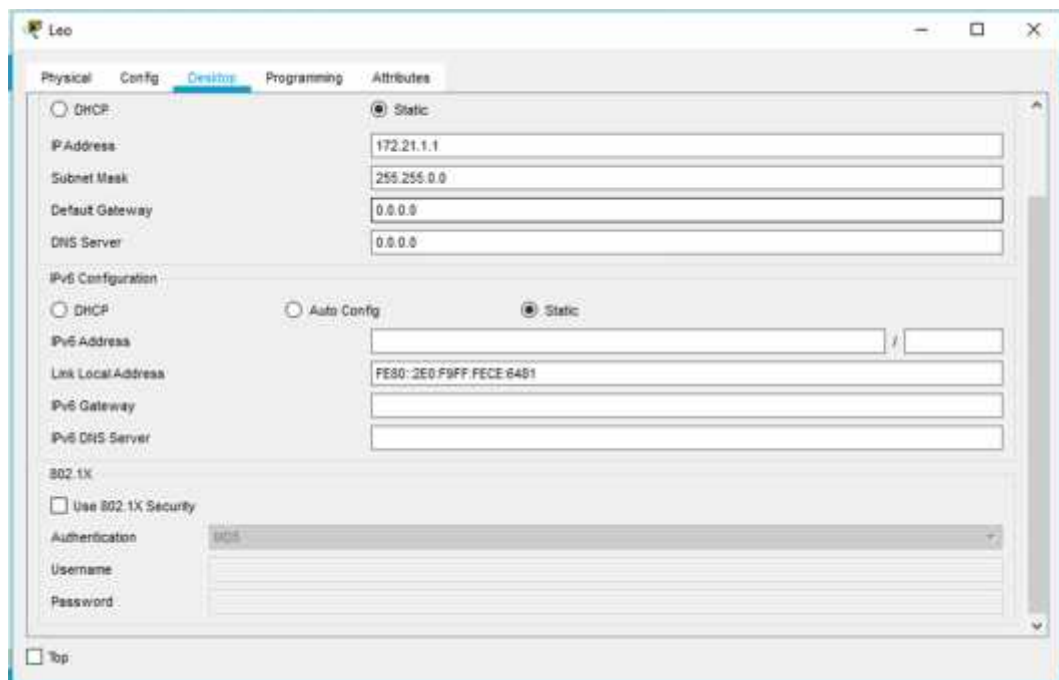
Tulis langkah pemberian nama switch mulai dari mode user.

Jawab :

Switch paling atas diberi nama SW1, switch sebelah kiri diberi nama SW2 dan switch disebelah kanan diberi nama SW3.

3. Konfigurasi masing-masing PC dengan alamat IP.

- Leo = 172.21.1.1/24



- Aries = 172.21.1.2/24

The screenshot shows the configuration window for a switch named 'Aries'. The 'Desktop' tab is selected. Under the 'Config' section, the 'Static' radio button is chosen for IP configuration. The IP Address is set to 172.21.1.2, Subnet Mask to 255.255.0.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. In the 'IPv6 Configuration' section, the 'Static' radio button is also selected, with the Link Local Address set to FE80::290:CFF:FEE1:23DA. The '802.1X' section shows 'Use 802.1X Security' is unchecked, and the 'Authentication' dropdown is set to 'MCS'. A 'Top' button is located at the bottom left.

- Virgo = 172.21.1.3/24

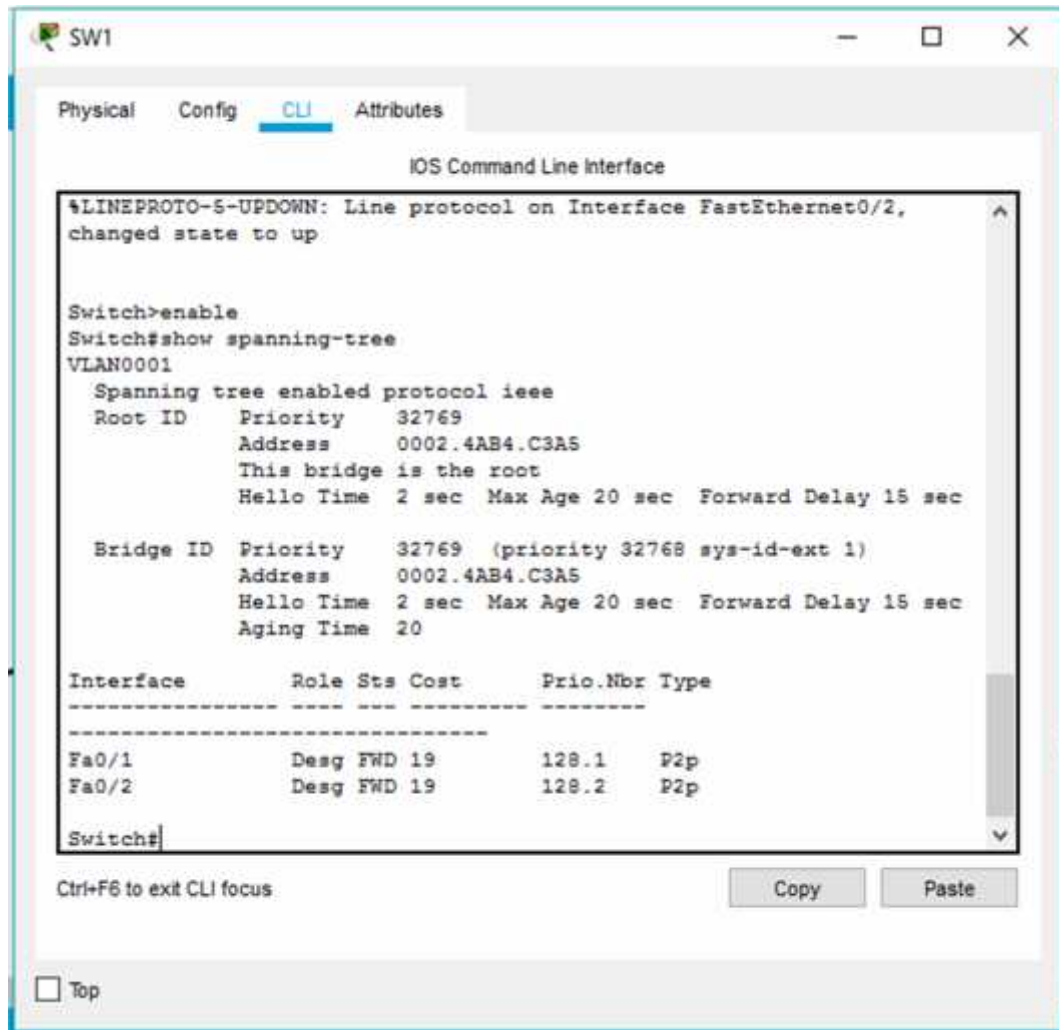
The screenshot shows the configuration window for a switch named 'Virgo'. The 'Desktop' tab is selected. Under the 'Config' section, the 'Static' radio button is chosen for IP configuration. The IP Address is set to 172.21.1.3, Subnet Mask to 255.255.0.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. In the 'IPv6 Configuration' section, the 'Static' radio button is also selected, with the Link Local Address set to FE80::290:21FF:FEEA:0519. The '802.1X' section shows 'Use 802.1X Security' is unchecked, and the 'Authentication' dropdown is set to 'MCS'. A 'Top' button is located at the bottom left.

4. Pada mode user atau mode privileged, lihat status STP pada masing-masing switch. Langkah pengoperasian
 - Tekan enter
 - Masuk mode privileged
 - Ketik show spanning-tree

Tugas 4A:

Pada kondisi default, capture masing-masing tampilan status STP switch (SW1, SW2, SW3).

Jawab:



The screenshot shows a network switch (SW1) CLI window with the following content:

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

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

Switch>enable
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    32769
            Address     0002.4AB4.C3A5
            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     0002.4AB4.C3A5
            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

Switch#
```

Below the CLI window, there are buttons for "Copy" and "Paste", and a "Top" link.

SW2

PhysicalConfigCLIAttributes

IOS Command Line Interface

changed state to up

Switch>enable

Switch#show spanning-tree

VLAN0001

Spanning tree enabled protocol ieee

Root ID Priority 32769

Address 0002.4AB4.C3A5

Cost 38

Port 1(FastEthernet0/1)

Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)

Address 0060.4719.1542

Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Aging Time 20

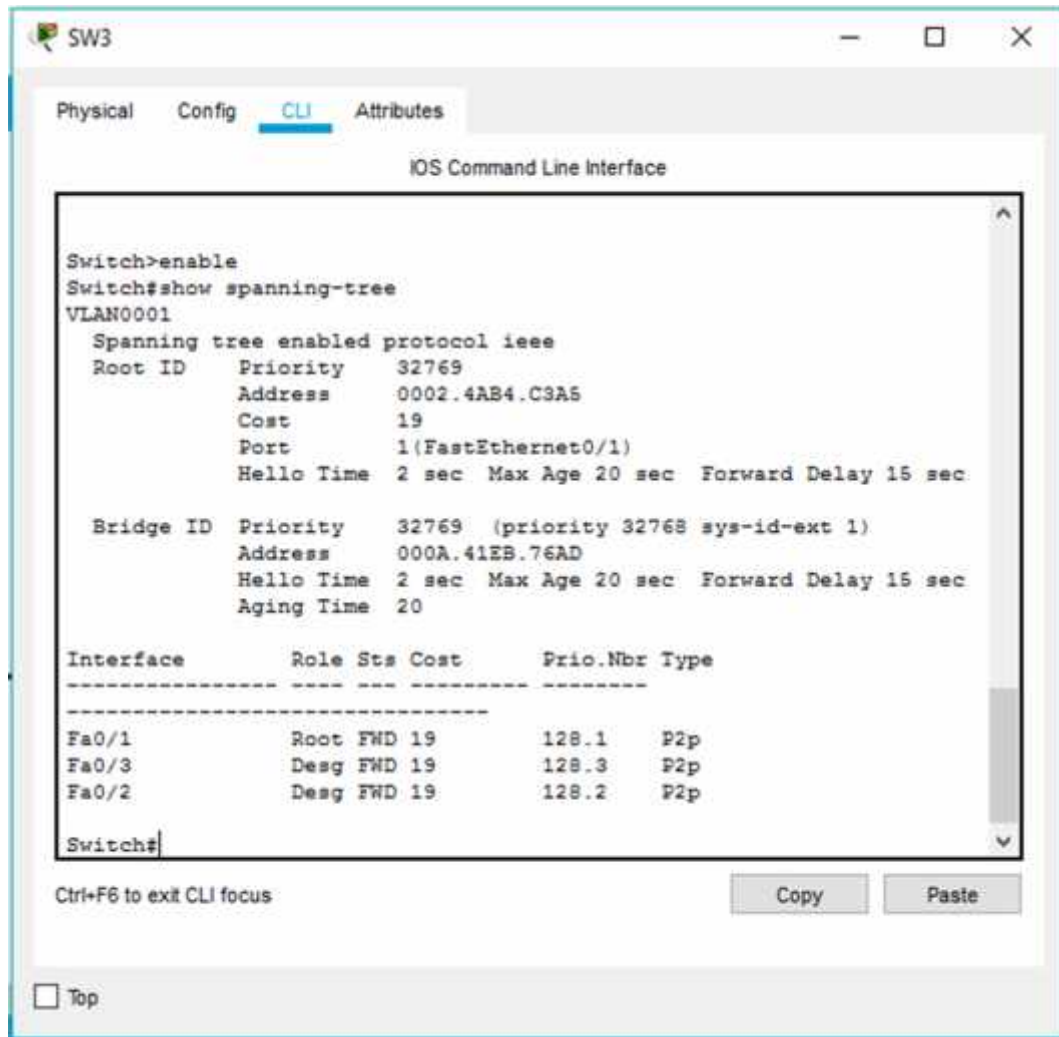
| Interface | Role | Sts | Cost | Prio.Nbr | Type |
|-----------|------|-----|------|----------|------|
| Fa0/1 | Root | FWD | 19 | 128.1 | P2p |
| Fa0/2 | Desg | FWD | 19 | 128.2 | P2p |

Switch#

Ctrl+F6 to exit CLI focus

CopyPaste

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Tugas 4B:

Untuk tiap-tiap switch, isikan tabel berikut:

Jawab :

SW1

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0002.4AB4.C3A5 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0002.4AB4.C3A5 |
| 4. | Bridge ID | 32769, 0002.4AB4.C3A5 |
| 5. | Cost (0/1;0/2;0/3) | Fa0/1: Desg; FWD; 19; 128.1; P2p Fa0/2: Desg; FWD; 19; 128.2; P2p |
| 6. | Hello Time | 2 sec |
| 7. | MaxAge | 20 sec |
| 8. | Forward Delay | 15 sec |

SW2

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0002.4AB4.C3A5 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0002.4AB4.C3A5 |
| 4. | Bridge ID | 32769, 0060.4719.1542 |
| 5. | Cost (0/1;0/2;0/3) | Fa0/1: Root; FWD; 19; 128.1; P2p Fa0/2: Desg; FWD; 19; 128.2; P2p |
| 6. | Hello Time | 2 sec |
| 7. | MaxAge | 20 sec |
| 8. | Forward Delay | 15 sec |

SW3

| No | Variabel | Nilai |
|----|--------------------|--|
| 1. | Root ID | 32769, 0002.4AB4.C3A5 |
| 2. | Priority | 32769 |
| 3. | MAC Address | 0002.4AB4.C3A5 |
| 4. | Bridge ID | 32769, 000A.41EB.76AD |
| 5. | Cost (0/1;0/2;0/3) | Fa0/1: Root; FWD; 19; 128.1; P2p Fa0/3: Desg; FWD; 19; 128.3; P2p Fa0/2: Desg; FWD; 19; 128.2; P2p |
| 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:

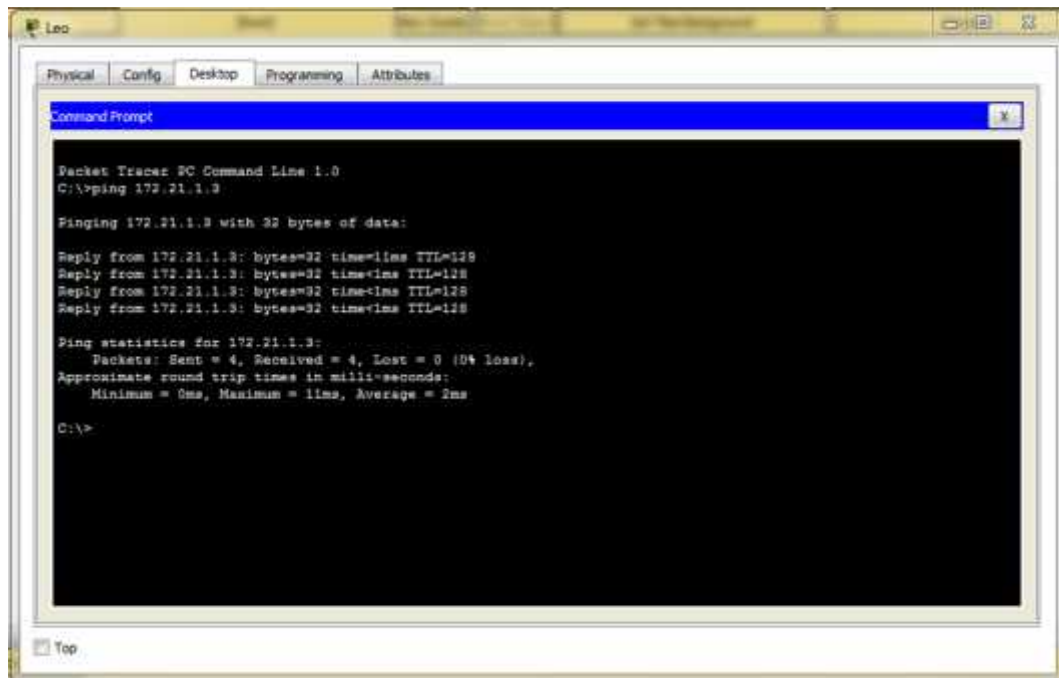
- Menjadi root bridge: SW1
- Menjadi designated bridge: SW1
- Menjadi root port: SW2 (Fa0/1) , SW3 (Fa0/1)
- Menjadi designated port: SW1

Tugas 4D:

Pada kondisi default tersebut, dan port mana saja yang:

- Berada pada keadaan forwarding: SW1, SW2, SW3
- Berada pada keadaan blocking: tidak ada

5. Dari PC Leo lakukan ping ke PC Virgo



The screenshot shows a Command Prompt window titled "Command Prompt" with a blue header bar. The window is part of a larger application with tabs labeled "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active. The Command Prompt displays the output of the command "C:\>ping 172.21.1.3". The output shows four successful replies from 172.21.1.3 with 32 bytes of data, each taking 1ms. The ping statistics show 4 packets sent, 4 received, 0% loss, and an average round trip time of 1ms.

```
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=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
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 = 1ms, Average = 1ms

C:\>
```

Tugas 5A:

Tulis langkah untuk melakukan perintah ping.

Jawab :

Klik PC Leo pilih menu "Desktop" lalu pilih "Command prompt" lalu ketikkan "ping 172.21.1.3" kemudian tekan enter.