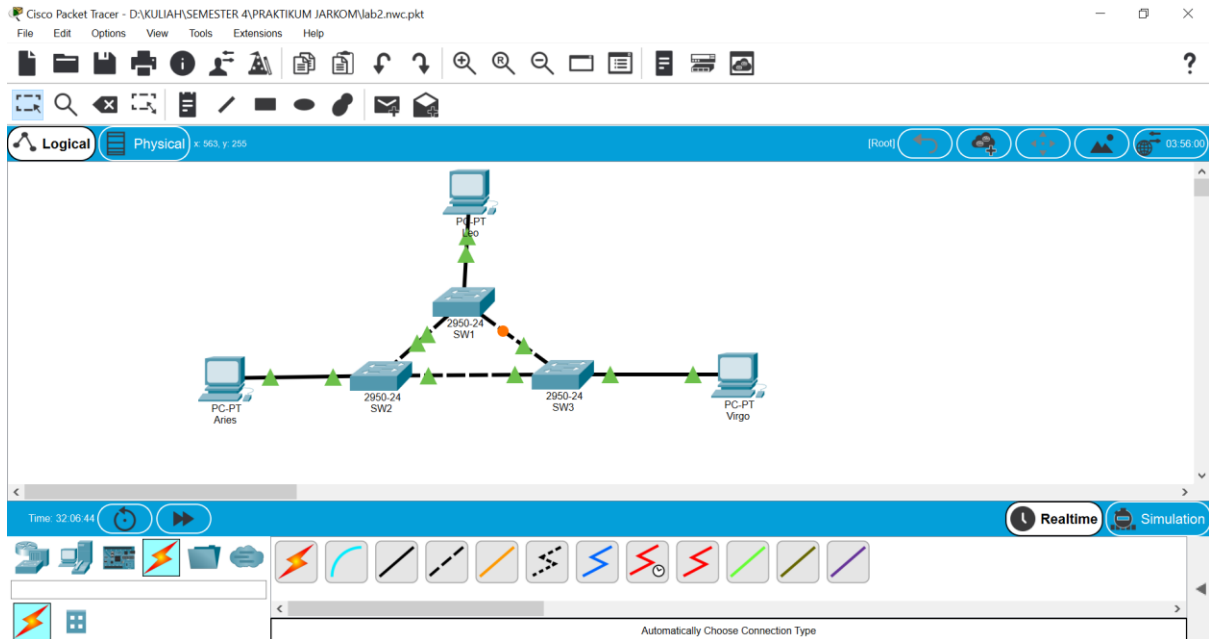


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MODUL 6. SPANNING TREE PROTOCOL

Kegiatan 1. Topologi 1

- a. Menggunakan PACKET TRACER buat topologi dengan menggunakan switch Catalyst 2950.



Tugas 1A: Tulis langkah-langkah pembuatan topologi.

- Memilih device Switch 2950-24 dan PC-PT sebanyak 3 device.
 - Drag and drop device yang telah dipilih
 - Menghubungkan setiap device menggunakan kabel
- b. Beri nama masing-masing Switch dengan SW1, SW2, dan SW3


Tugas 2A: Tulis langkah pemberian nama Switch mulai dari *mode user*.

- Double-klik device Switch 2950-24 sehingga muncul jendela properties Switch 2950-24
 - Pilih tab Config
 - Pada menu Global, pilih Settings
 - Pada bagian Display Name, isikan SW1, SW2, dan SW3 pada masing-masing Switch
- c. Konfigurasi masing-masing PC dengan alamat IP:
- Leo = 172.21.1.1/24
 - Aries = 172.21.1.2/24
 - Virgo = 172.21.1.3/24
- d. Pada *mode user* atau *mode privileged*, lihat status STP pada masing-masing Switch.
- Langkah pengoperasian

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

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

SW1.

 SW1

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     0001.4256.7A9A
            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     00D0.BC4D.0388
            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        Root FWD 19        128.3    P2p
Fa0/2        Altn BLK 19        128.2    P2p

Switch#show mac-address-table
          Mac Address Table
-----
Vlan      Mac Address      Type      Ports
-----
1         00d0.d3c8.1703   DYNAMIC   Fa0/3
Switch#
  
```

Ctrl+F6 to exit CLI focus

☐ Top

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 0001.4256.7A9A

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 0001.4256.7A9A

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 Desg FWD 19 128.2 P2p

Fa0/1 Desg FWD 19 128.1 P2p

Switch#show mac-address-table

Mac Address Table

Vlan Mac Address Type Ports

1 0000.0c45.1403 DYNAMIC Fa0/3

1 00d0.5839.5303 DYNAMIC Fa0/2

Switch#

Ctrl+F6 to exit CLI focus

☐ Top

SW3.



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    0001.4256.7A9A
            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    0001.6447.349C
            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          Root FWD 19        128.3    P2p

Switch#show mac-address-table
      Mac Address Table
-----
Vlan    Mac Address      Type        Ports
-----
1       0000.0c45.1402   DYNAMIC     Fa0/2
1       00d0.d3c8.1702   DYNAMIC     Fa0/3
Switch#
```

Ctrl+F6 to exit CLI focus

☐ Top

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

SW1

No	Variabel	Nilai
1	Root ID	32769. 0001.4256.7A9A
2	Priority	32769
3	MAC Address	00d0.d3c8.1703
4	Bridge ID	32769. 00D0.BC4D.0388
5	Cost(0/1;0/2;0/3)	Cost 19, Port 0/3
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

SW2

No	Variabel	Nilai
1	Root ID	32769. 0001.4256.7A9A
2	Priority	32769
3	MAC Address	0000.0c45.1403

		00d0.5839.5303
4	Bridge ID	32769. 0001.4256.7A9A
5	Cost(0/1;0/2;0/3)	root
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

SW3

No	Variabel	Nilai
1	Root ID	32769. 0001.4256.7A9A
2	Priority	32769
3	MAC Address	0000.0c45.1402
		00d0.d3c8.1702
4	Bridge ID	32769. 0001.6447.349C
5	Cost(0/1;0/2;0/3)	Cost 19, Port 0/3
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

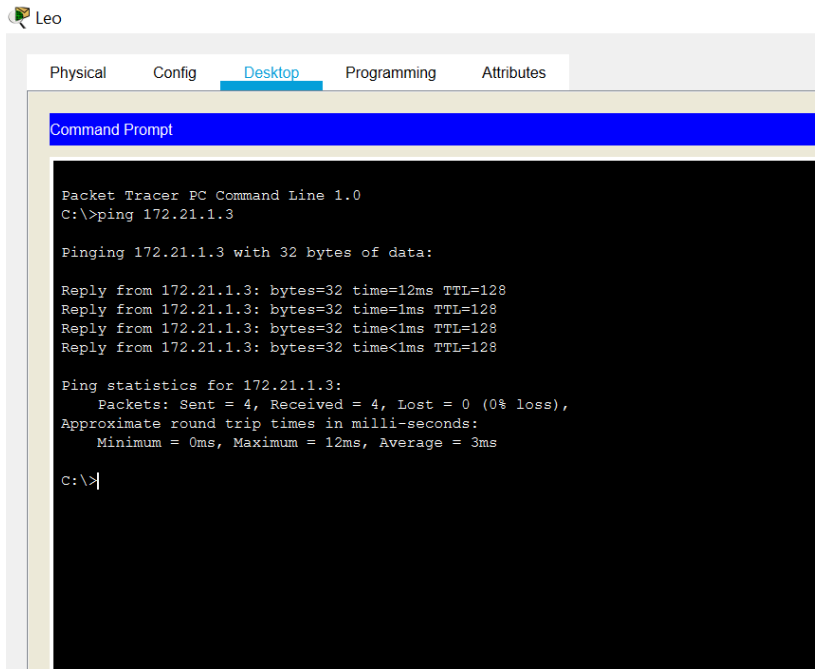
Tugas 4C: Pada kondisi default tersebut, switch dan port mana aja yang:

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

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

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

- e. Dari PC Leo lakukan ping ke PC Virgo



The screenshot shows the Packet Tracer interface for PC Leo. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of the command 'C:\>ping 172.21.1.3'. The output indicates a successful ping to 172.21.1.3 with 32 bytes of data. The ping statistics show 4 packets sent, 4 received, and 0% loss, with an average round trip time of 3ms.

```
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=12ms 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 = 12ms, Average = 3ms

C:\>
```

Tugas 5A: Tulis langkah untuk melakukan perintah ping

- Double-klik pada PC
- Pilih Desktop, kemudian pilih Command Prompt
- Kemudian ketikkan perintah ping ke PC yang akan di uji

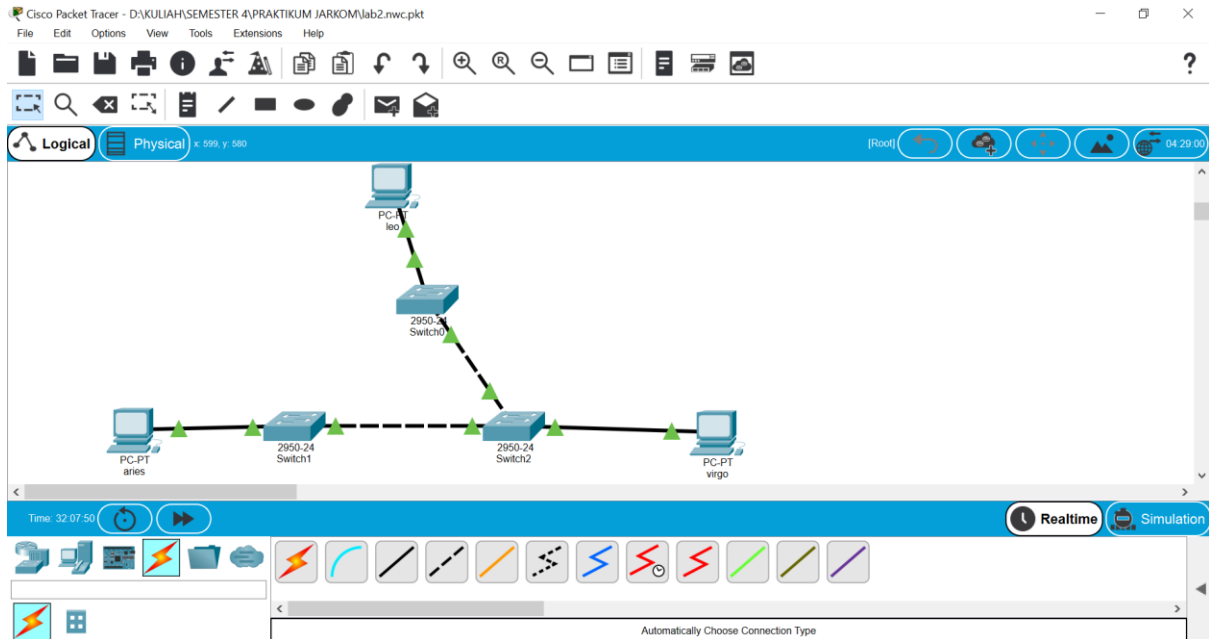
- f. Simpan konfigurasi jaringan dengan nama lab2.nwc

Tugas 6A: Tulis langkah untuk menyimpan konfigurasi jaringan

- Klik file pada jendela Packet Tracer di pojok kiri atas.
- Pilih save as, kemudian pilih lokasi penyimpanan.
- Ketikkan nama baru untuk file konfigurasi dengan nama lab2.nwc.

Kegiatan 2. Topologi 2

- a. Menggunakan PACKET TRACER ubah topologi menjadi seperti topologi seperti ini:



- b. Simpan topologi dan buka topologi tersebut pada lingkungan Packet Tracer.
Kemudian load file konfigurasi lab2.ncw
- c. Lakukan langkah lab 4 dan lab 5

Tugas 9A: Kerjakan tugas seperti pada tugas langkah lab 4.

Switch0

Switch0

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 0001.9646.3935

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 0060.3E88.5E08

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

Fa0/1 Desg FWD 19 128.1 P2p

Switch#show mac-address-table

Mac Address Table

Vlan Mac Address Type Ports

1 0001.4237.5c48 DYNAMIC Fa0/2

1 0001.97c2.5c02 DYNAMIC Fa0/2

1 0050.0fba.91ed DYNAMIC Fa0/1

1 00d0.d3c4.598c DYNAMIC Fa0/2

Switch#

Ctrl+F6 to exit CLI focus

☐ Top

Switch0

No	Variabel	Nilai
1	Root ID	32769. 0001.9646.3935
2	Priority	32769
3	MAC Address	0001.4237.5c48
		0001.97c2.5c02
		0050.0fba.91ed
		00d0.d3c4.598c
4	Bridge ID	32769. 0060.3E88.5E08
5	Cost(0/1;0/2;0/3)	Cost 19, Port 0/2
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

Switch1



Physical

Config

CLI

Attributes

IOS Command Line Inter

Switch>enable

Switch#show spanning-tree

VLAN0001

Spanning tree enabled protocol ieee

Root ID Priority 32769

Address 0001.9646.3935

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 0090.0C43.AC2A

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

Fa0/1 Desg FWD 19 128.1 P2p

Switch#show mac-address-table

Mac Address Table

Vlan Mac Address Type Ports

1 0001.97c2.5c03 DYNAMIC Fa0/2

Switch#

Ctrl+F6 to exit CLI focus

☐ Top

Switch1

No	Variabel	Nilai
1	Root ID	32769. 0001.9646.3935
2	Priority	32769
3	MAC Address	0001.97c2.5c03
4	Bridge ID	32769. 0090.0C43.AC2A
5	Cost(0/1;0/2;0/3)	Cost 19, Port 0/2
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

Switch2

Switch2

Physical

Config

CLI

Attributes

IOS Command Line Inter

Switch>enable

Switch#show spanning-tree

VLAN0001

Spanning tree enabled protocol ieee

Root ID Priority 32769

Address 0001.9646.3935

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 0001.9646.3935

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

Switch#show mac-address-table

Mac Address Table

Vlan Mac Address Type Ports

1 0050.0f02.4802 DYNAMIC Fa0/3

1 0060.2fe2.9602 DYNAMIC Fa0/2

Switch#

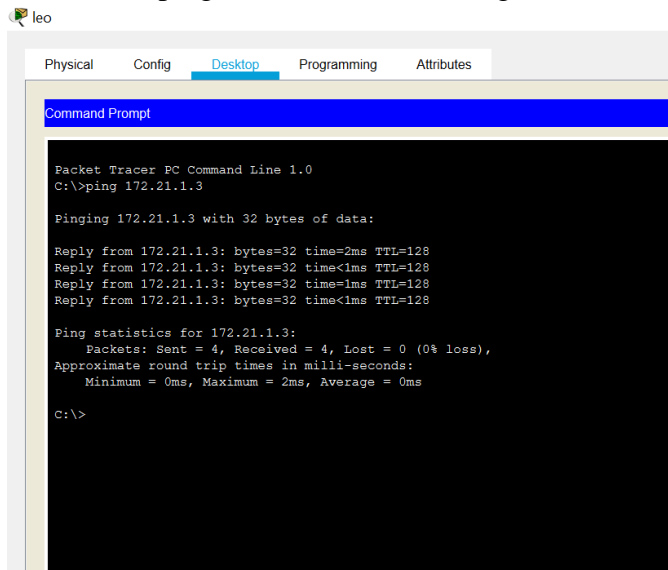
Ctrl+F6 to exit CLI focus

☐ Top

Switch2

No	Variabel	Nilai
1	Root ID	32769. 0001.9646.3935
2	Priority	32769
3	MAC Address	0050.0f02.4802
		0060.2fe2.9602
4	Bridge ID	32769. 0001.9646.3935
5	Cost(0/1;0/2;0/3)	root
6	Hello Time	2 sec
7	MaxAge	20 sec
8	Forward Delay	15 sec

Melakukan ping dari PC leo ke PC virgo



The screenshot shows the Packet Tracer PC Command Line 1.0 interface. The 'Desktop' tab is selected. The command prompt displays the following output:

```
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=2ms 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 = 2ms, Average = 0ms

C:\>
```