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## PRAKTIKUM JARINGAN KOMPUTER

### MODUL 4

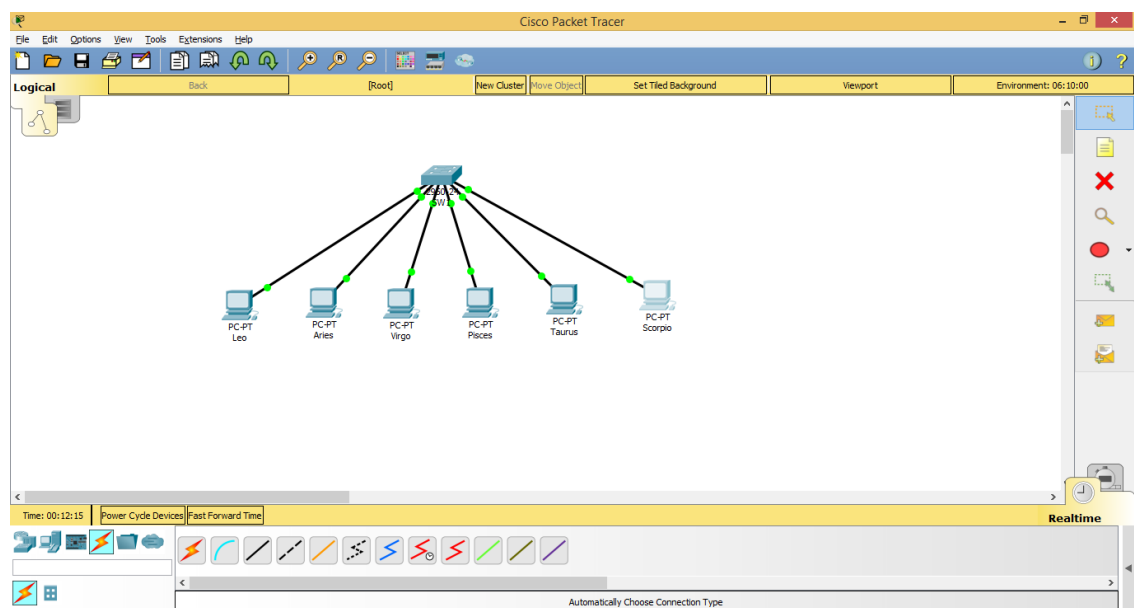
### VIRTUAL LAN DAN TRUNKING

#### Kegiatan Praktikum

##### ❖ Kegiatan 1. Topologi 1

- Membuat topologi dengan menggunakan switch pada packet tracer. Kemudian memberi nama masing-masing perangkat dengan SW1(switch), Leo(PC0), Aries(PC1), Virgo(PC2), Pisces(PC3), Taurus(PC4), dan Scorpio(PC5).

Berikut adalah screenshot dari cisco packet tracer:



- Konfigurasi masing – masing PC dengan nama dan alamat IP berikut ini:

- Leo = 172.21.1.1/24
- Aries = 172.21.1.2/24
- Virgo = 172.21.1.3/24
- Pisces = 172.21.1.4/24
- Taurus = 172.21.1.5/24
- Scorpio = 172.21.1.6/24

Berikut adalah screenshot dari cisco packet tracer pada saat memberi IP Address:

Leo

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::260:2FFF:FE5D:A997

IPv6 Gateway

IPv6 DNS Server

☐ Top

Aries

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::201:C9FF:FE5D:1C0B

IPv6 Gateway

IPv6 DNS Server

☐ Top

Virgo

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::260:47FF:FE59:2ECA

IPv6 Gateway

IPv6 DNS Server

☐ Top

Pisces

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.1.4

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::201:97FF:FE74:4EA1

IPv6 Gateway

IPv6 DNS Server

☐ Top

Taurus

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.1.5

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::2E0:8FFF:FE42:5ED4

IPv6 Gateway

IPv6 DNS Server

☐ Top

Scorpio

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.1.6

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::206:2AFF:FE1A:E14B

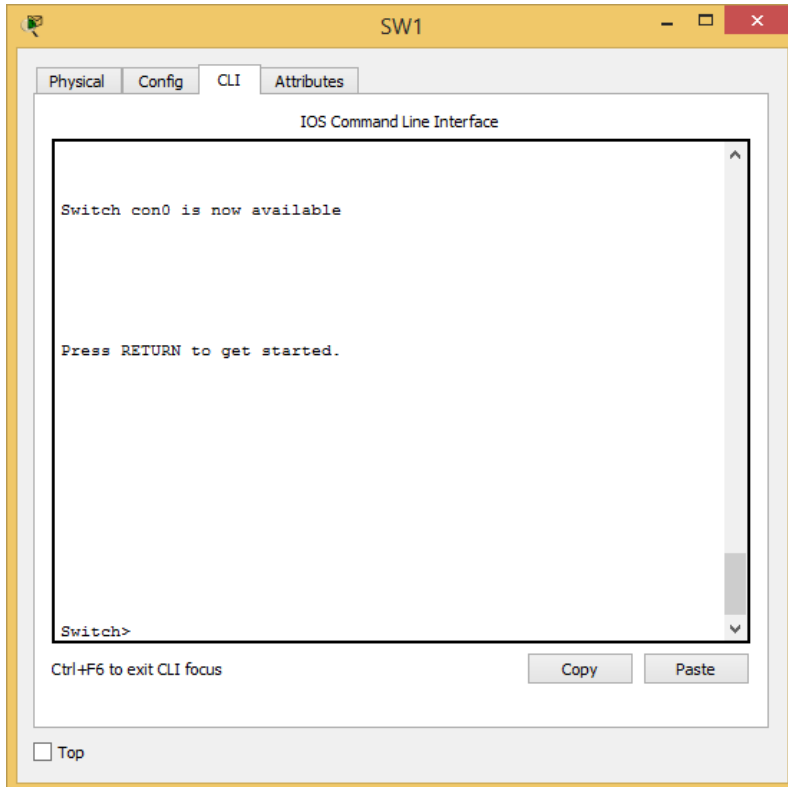
IPv6 Gateway

IPv6 DNS Server

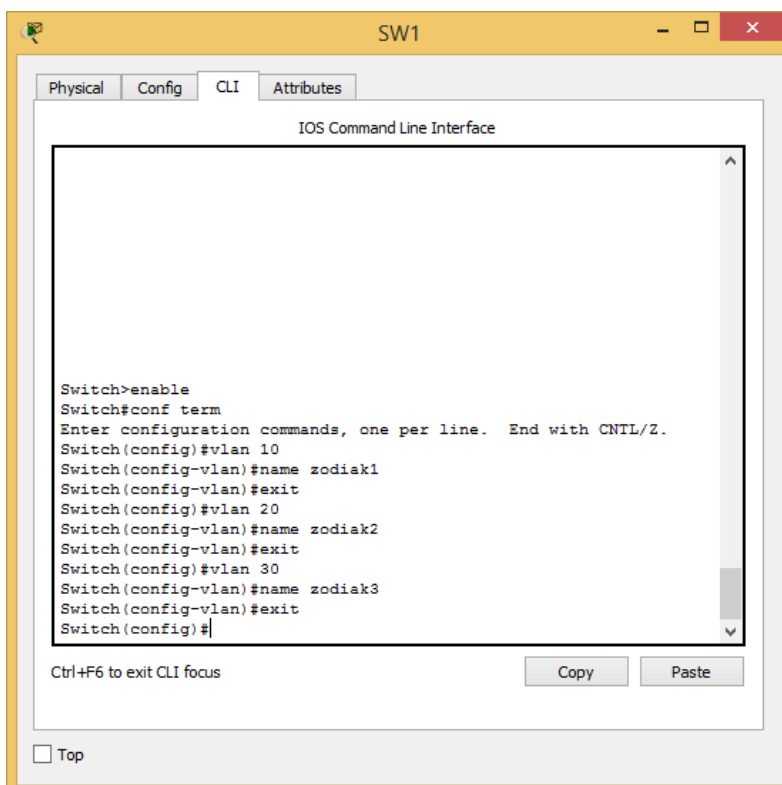
☐ Top

- Konfigurasi pada switch dengan mode user atau mode privileged, buat 3 VLAN dengan nama zodiak1, zodiak2, dan zodiak3. Dengan cara klik pada switch 2 kali, kemudian pilih cli.

Berikut adalah screenshotnya:



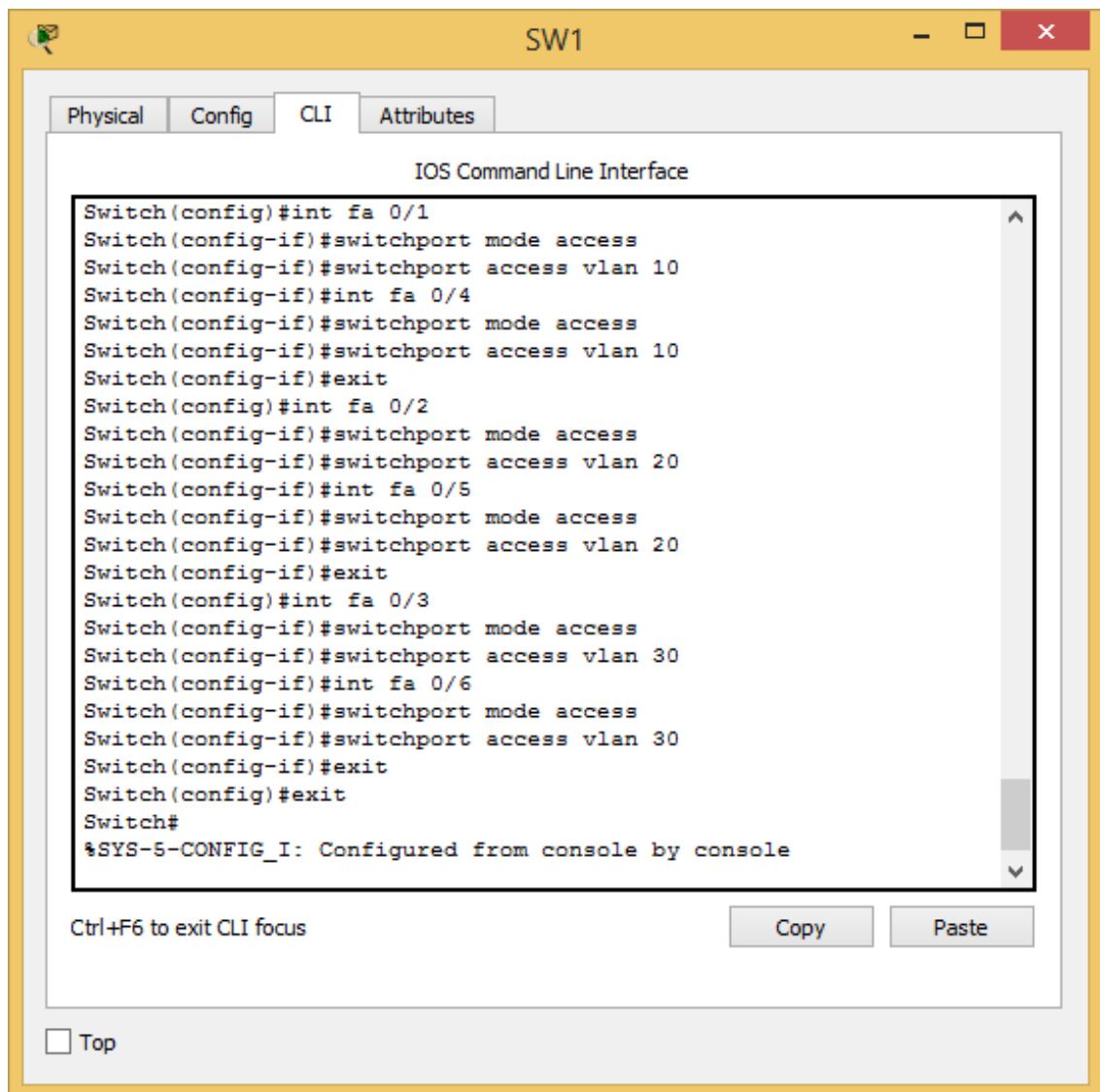
Berikut adalah screenshot dari langkah pengoperasiannya:



➤ Pada mode configuration, konfigurasi port – port switch ke dalam VLAN zodiak1, zodiak2, dan zodiak3 dengan anggota sebagai berikut:

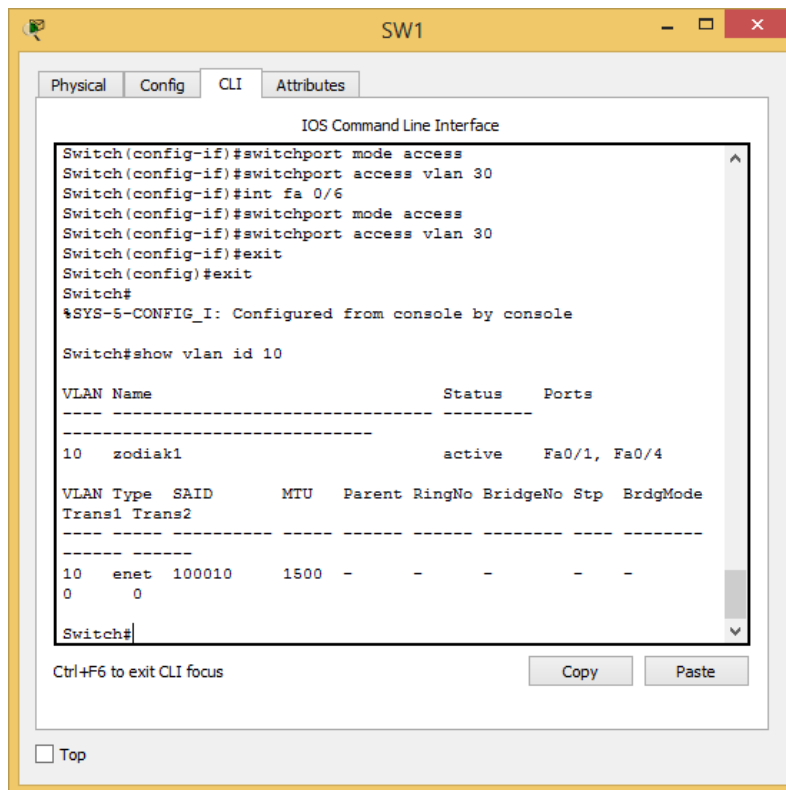
- zodiak1 = Leo dan Pisces
- zodiak2 = Aries dan Taurus
- zodiak3 = Virgo dan Scorpio

Berikut adalah screenshot dari langkah pengoperasiannya:

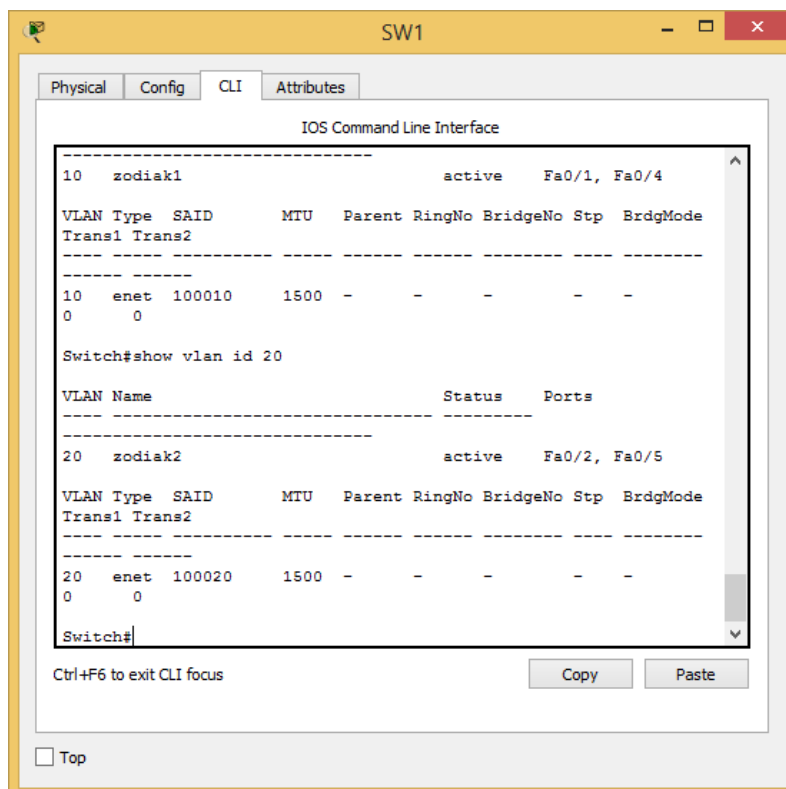


- Pada mode user atau mode privileged, lihat konfigurasi VLAN yang telah dibuat.  
Berikut adalah screenshot pada saat melihat konfigurasi

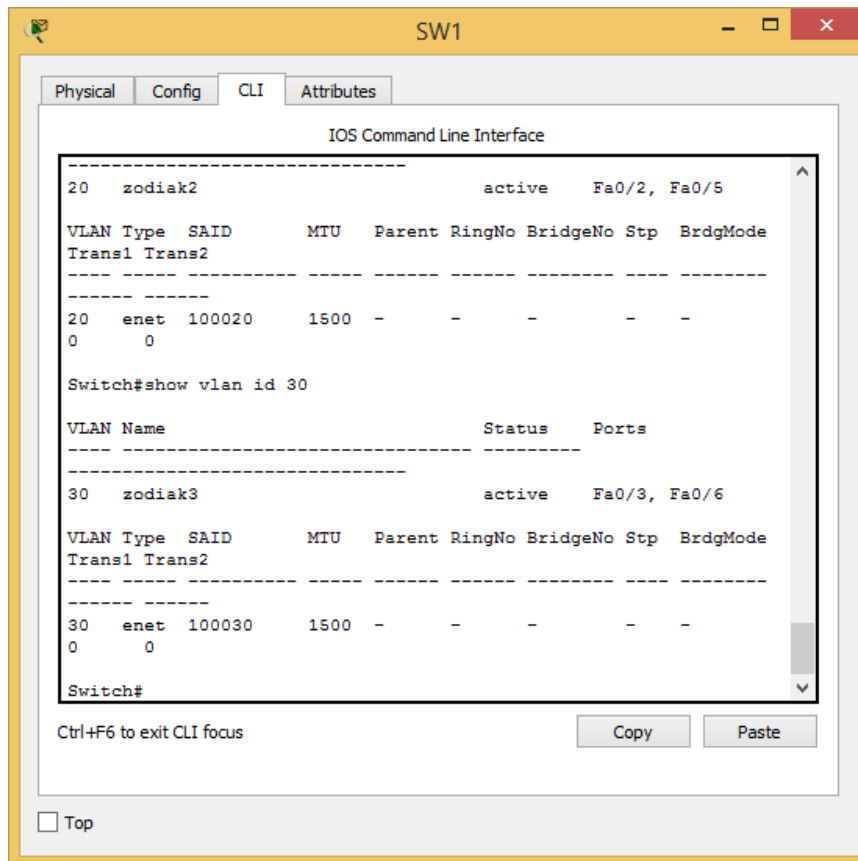
- VLAN 10



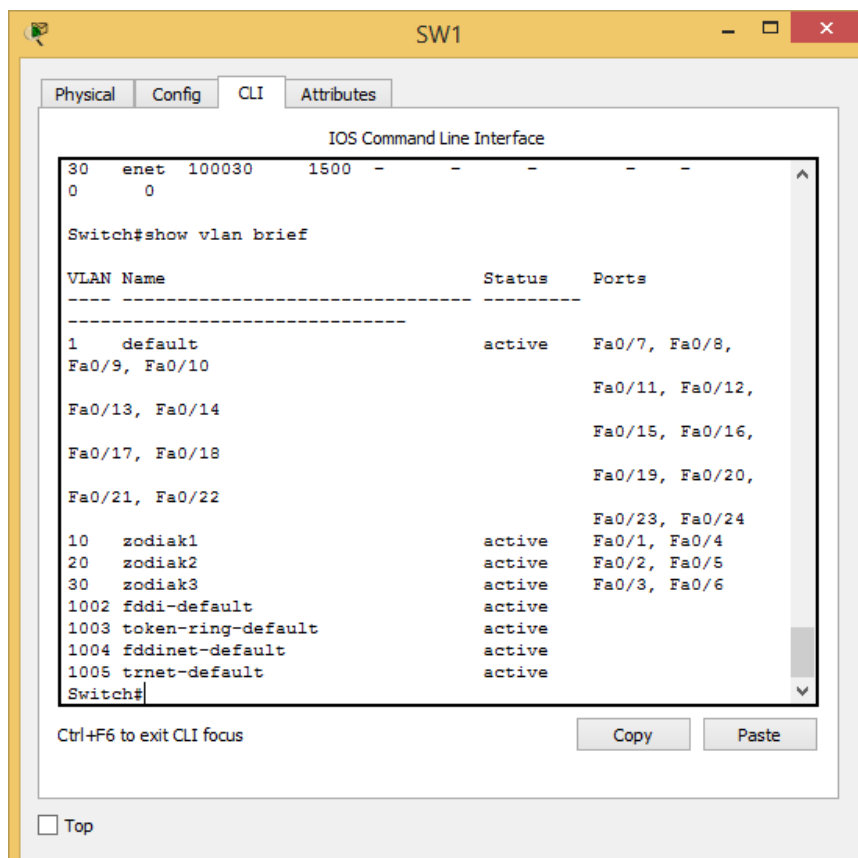
- VLAN 20



- VLAN 30



- VLAN keseluruhan



➤ Tugas 6A

- VLAN 10

No	Variabel	Nilai
1.	Nomor VLAN	10
2.	Nama VLAN	zodiak1
3.	Port	Fa 0/1, Fa 0/4
4.	Status	active

- VLAN 20

No	Variabel	Nilai
1.	Nomor VLAN	20
2.	Nama VLAN	zodiak2
3.	Port	Fa 0/2, Fa 0/5
4.	Status	active

- VLAN 30

No	Variabel	Nilai
1.	Nomor VLAN	30
2.	Nama VLAN	zodiak3
3.	Port	Fa 0/3, Fa 0/6
4.	Status	active

➤ Tugas 6B

- VLAN 10

Dengan nomor VLAN, yaitu 10, nama VLAN adalah zodiak1, memiliki port Fa 0/1 dan Fa 0/4 yang merupakan anggota dari zodiak1, yaitu Leo dan Pisces yang berstatus active.

- VLAN 20

Dengan nomor VLAN, yaitu 20, nama VLAN adalah zodiak2, memiliki port Fa 0/2 dan Fa 0/5 yang merupakan anggota dari zodiak2, yaitu Aries dan Taurus yang berstatus active.

- VLAN 30

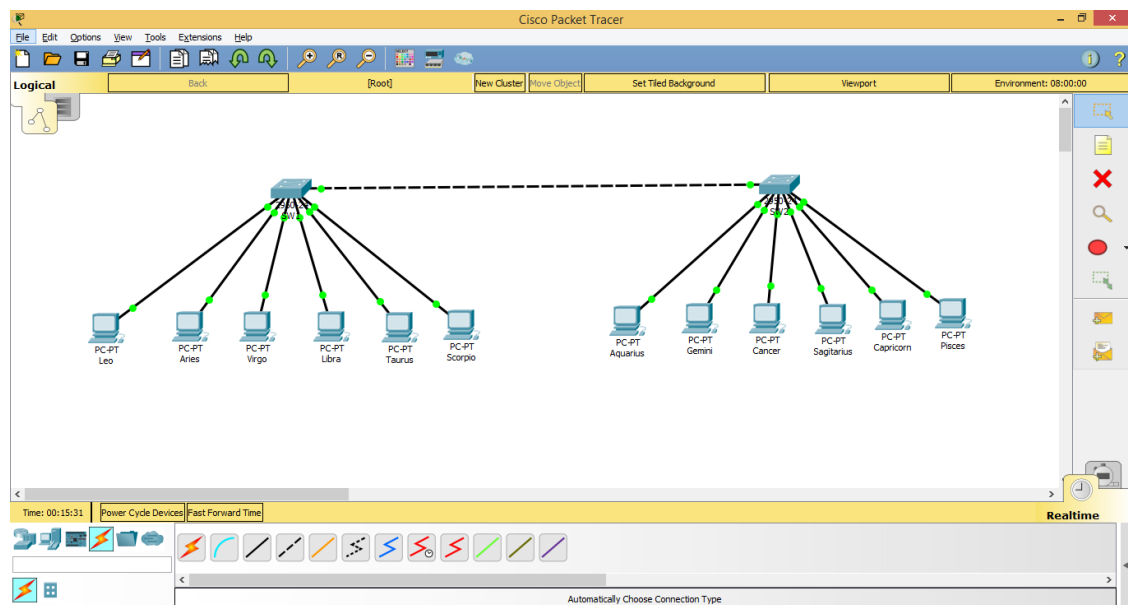


Dengan nomor VLAN, yaitu 30, nama VLAN adalah zodiak3, memiliki port Fa 0/3 dan Fa 0/6 yang merupakan anggota dari zodiak3, yaitu Virgo dan Scorpio yang berstatus active.

## ❖ Kegiatan 2. Topologi 2

- Membuat topologi dengan menggunakan switch Catalyst 2950 pada cisco packet tracer. Kemudian memberi nama masing – masing perangkat dengan SW1(switch 1), Leo(PC0), Aries(PC1), Virgo(PC2), Libra(PC3), Taurus(PC4), dan Scorpio(PC5) untuk segmen switch 1. Lalu, SW2(switch 2), Aquarius(PC6), Gemini(PC7), Cancer(PC8), Sagitarius(PC9), Capricorn(PC10), dan Pisces(PC11) untuk segmen switch 2.

Berikut adalah screenshot dari cisco packet tracer:

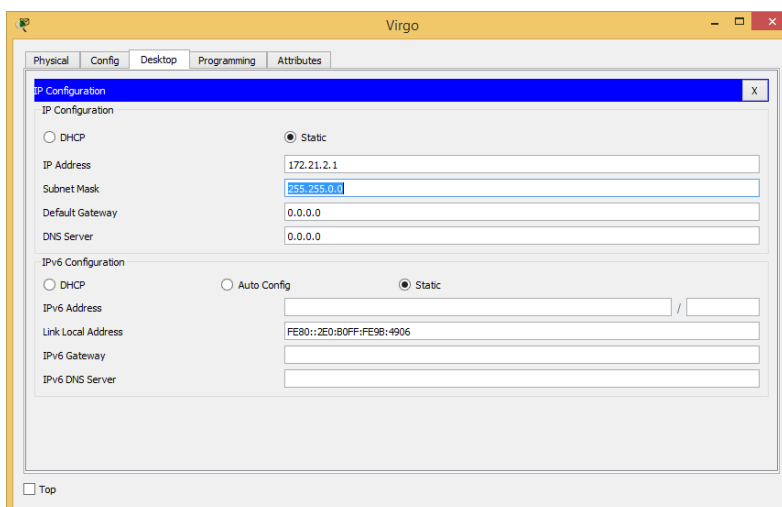
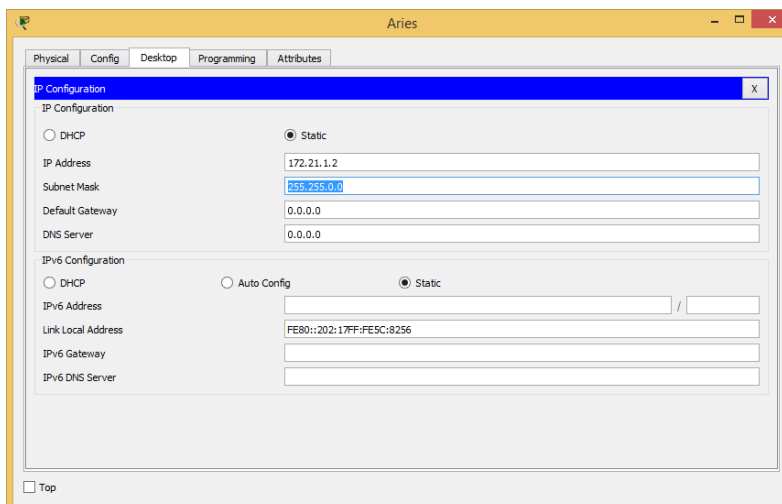
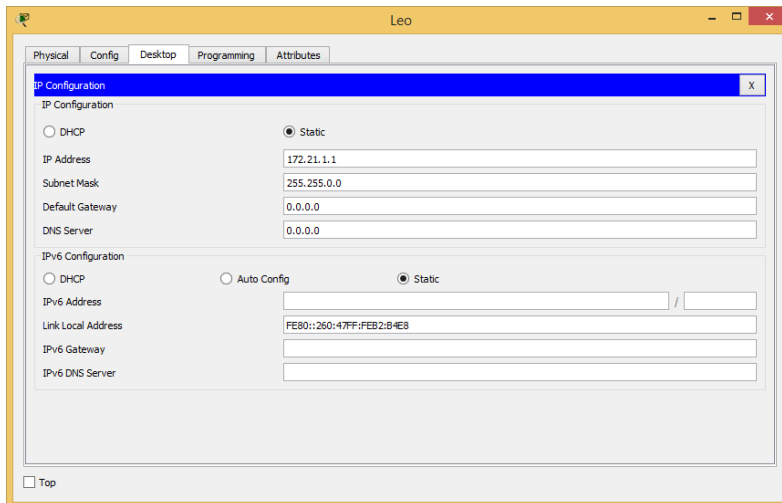


- Konfigurasi masing – masing PC dengan nama dan alamat IP berikut ini:

- Leo = 172.21.1.1/24
- Aries = 172.21.1.2/24
- Virgo = 172.21.2.1/24
- Libra = 172.21.2.2/24
- Taurus = 172.21.3.1/24
- Scorpio = 172.21.3.2/24
- Aquarius = 172.21.1.3/24
- Gemini = 172.21.1.4/24
- Cancer = 172.21.2.3/24
- Sagitarius = 172.21.2.4/24
- Capricorn = 172.21.3.3/24

- Pisces = 172.21.3.4/24

Berikut adalah screenshot dari cisco packet tracer pada saat memberi IP Address:



Libra

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.2.2

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::205:5EFF:FE6C:D96C

IPv6 Gateway

IPv6 DNS Server

☐ Top

Taurus

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.3.1

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::201:42FF:FE11:4BA1

IPv6 Gateway

IPv6 DNS Server

☐ Top

Scorpio

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.3.2

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::200:CFF:FE75:4945

IPv6 Gateway

IPv6 DNS Server

☐ Top

Aquarius

Physical Config Desktop Programming Attributes

IP Configuration

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::260:3EFF:FE3:9060

IPv6 Gateway

IPv6 DNS Server

☐ Top

Gemini

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.1.4

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::203:E4FF:FEA3:20BA

IPv6 Gateway

IPv6 DNS Server

☐ Top

Cancer

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.2.3

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::2E0:A3FF:FE92:EB2E

IPv6 Gateway

IPv6 DNS Server

☐ Top

Sagittarius

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.2.4

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::204:9AFF:FE02:AD06

IPv6 Gateway

IPv6 DNS Server

☐ Top

Capricorn

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.3.3

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::260:47FF:FE3C:265A

IPv6 Gateway

IPv6 DNS Server

☐ Top

Pisces

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 172.21.3.4

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::208:BEFF:FE86:9C32

IPv6 Gateway

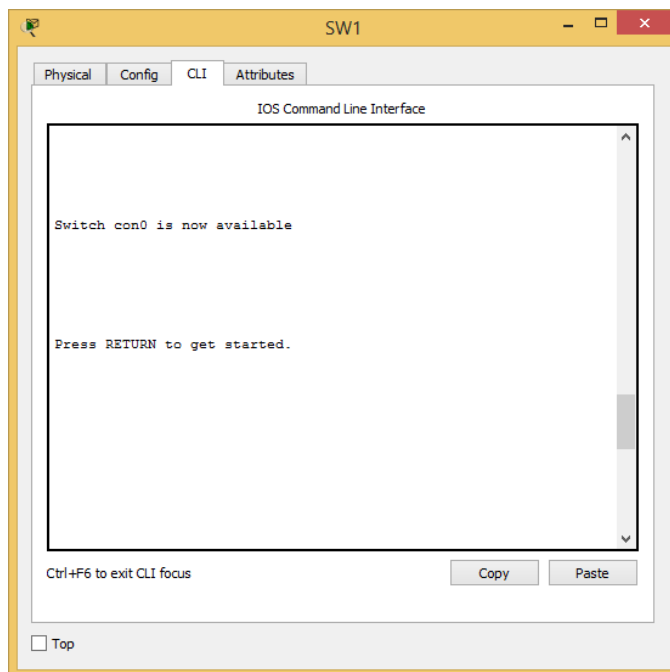
IPv6 DNS Server

☐ Top

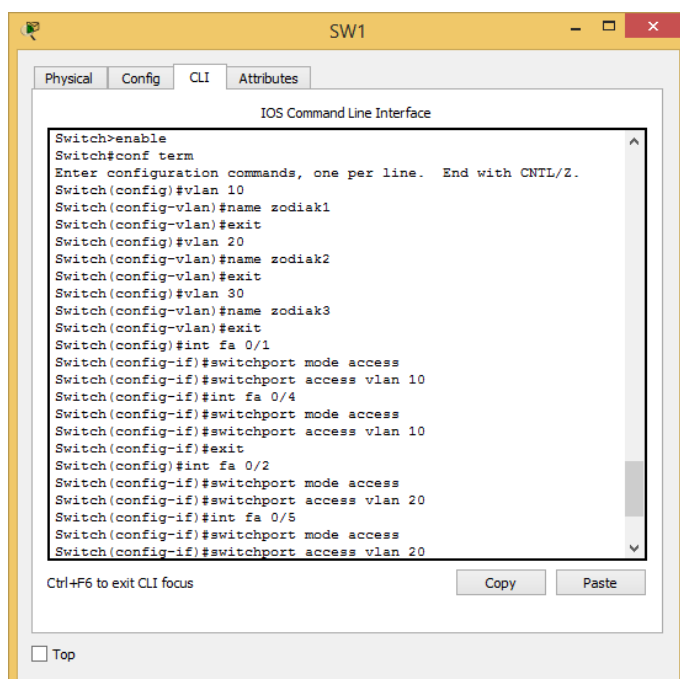
- Konfigurasi pada switch dengan mode user atau mode privileged, buat 3 VLAN dengan nama zodiak1, zodiak2, dan zodiak3. Dengan cara klik pada switch 2 kali, kemudian pilih cli. Pada mode configuration, konfigurasi port – port switch ke dalam VLAN zodiak1, zodiak2, dan zodiak3 dengan anggota sebagai berikut:

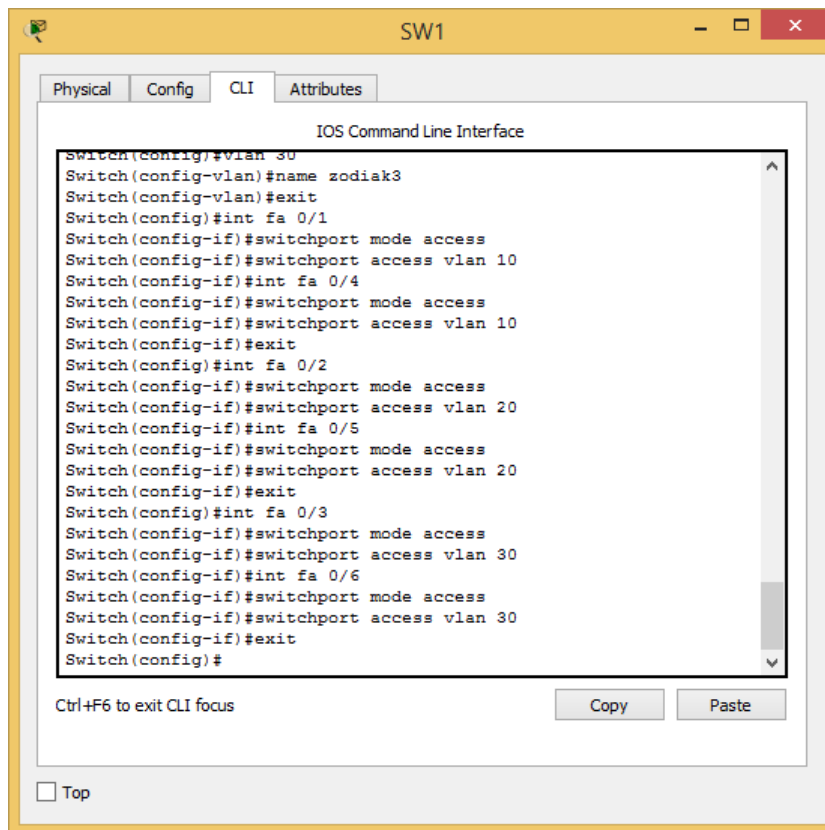
- zodiak1 = Leo dan Pisces
- zodiak2 = Aries dan Taurus
- zodiak3 = Virgo dan Scorpio

Berikut adalah screenshotnya:

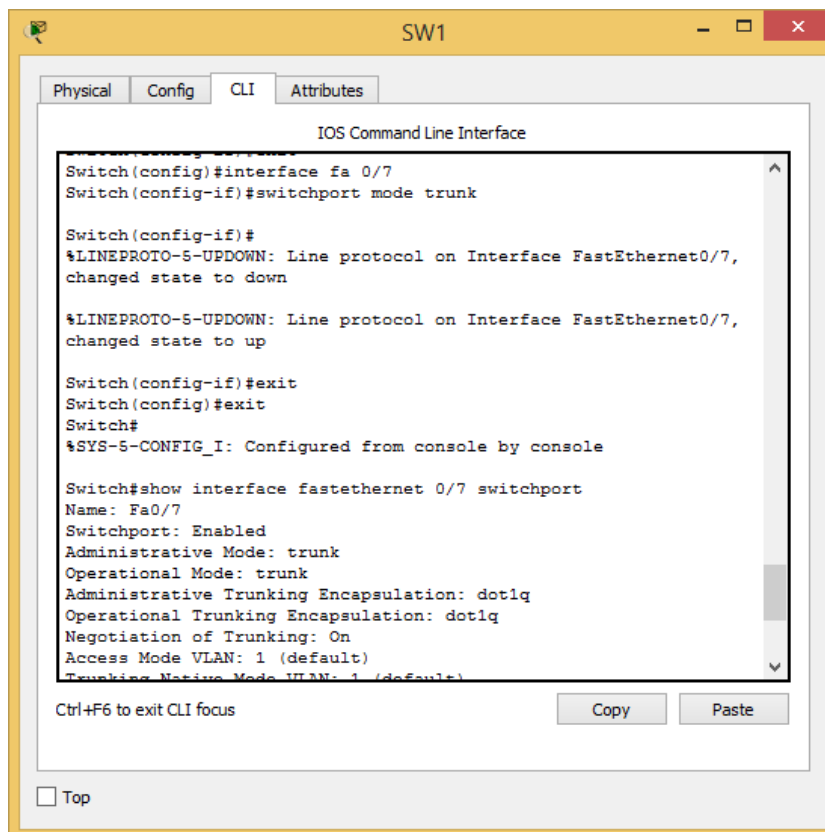


Berikut adalah screenshot dari langkah pengoperasiannya:

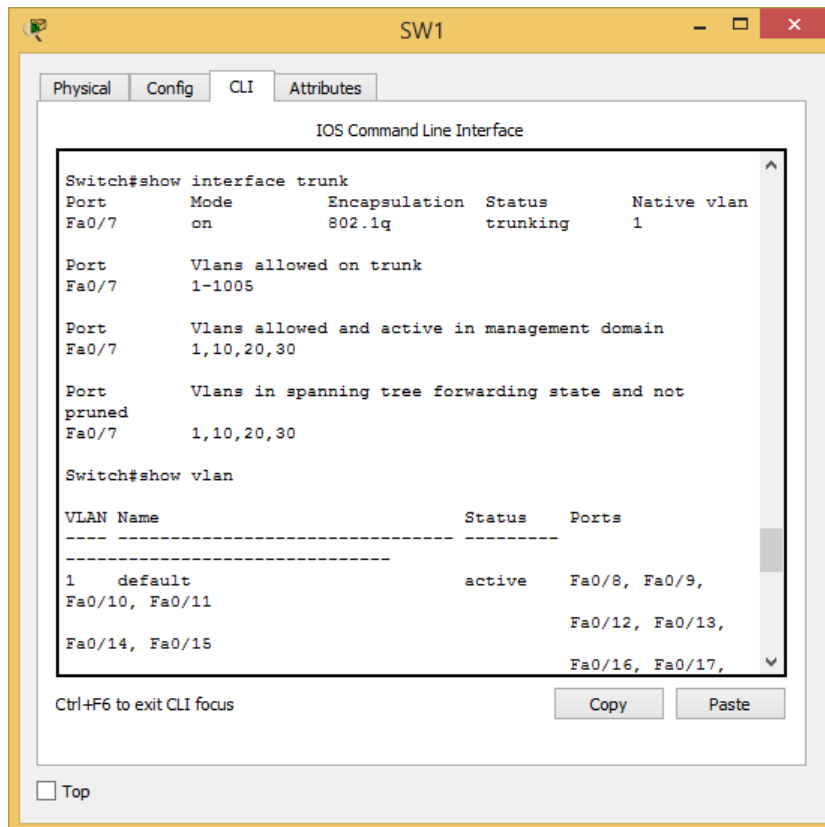
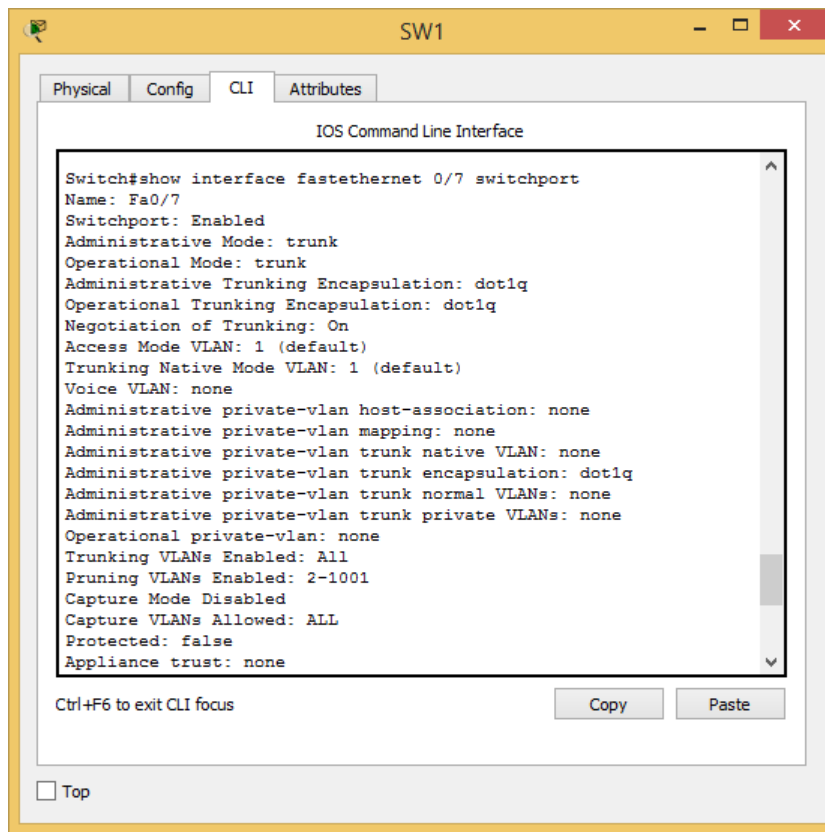




- Melakukan konfigurasi VLAN trunking pada switch 1.  
Berikut adalah screenshot dari langkah pengoperasiannya:



- Pada mode user atau mode privileged, lihat konfigurasi trunking yang telah dibuat. Berikut adalah screenshot dari langkah pengoperasian dan hasilnya:





SW1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch#show vlan
```

VLAN Name	Status	Ports
1 default	active	Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24
10 zodiak1	active	Fa0/1, Fa0/4
20 zodiak2	active	Fa0/2, Fa0/5
30 zodiak3	active	Fa0/3, Fa0/6
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

SW1

Physical Config CLI Attributes

IOS Command Line Interface

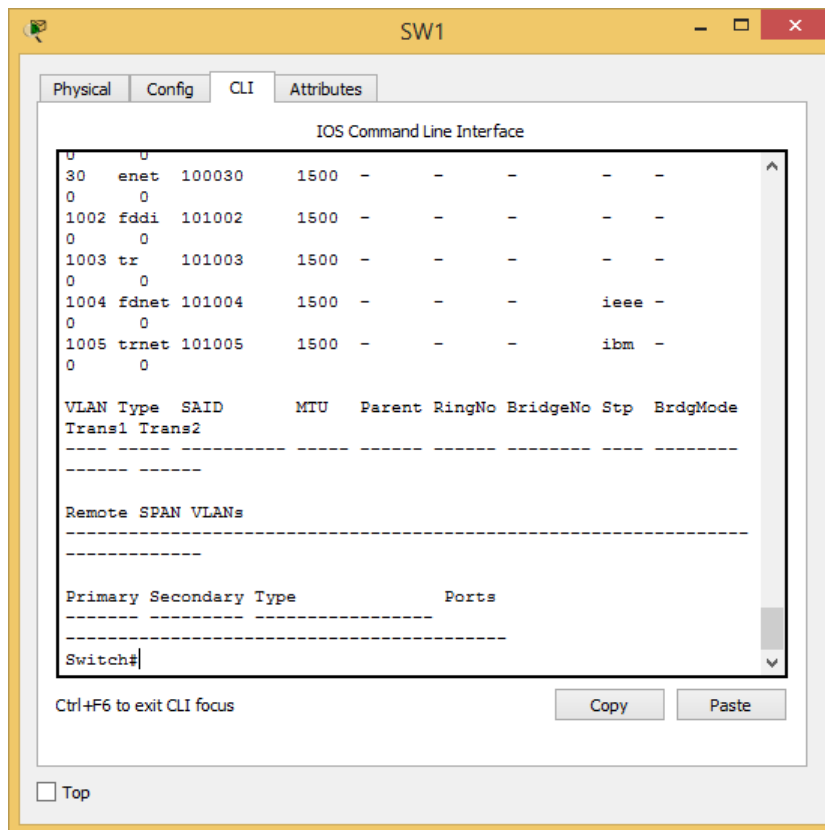
VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						
1	enet 100001	1500	-	-	-	-	-
0	0						
10	enet 100010	1500	-	-	-	-	-
0	0						
20	enet 100020	1500	-	-	-	-	-
0	0						
30	enet 100030	1500	-	-	-	-	-
0	0						
1002	fddi 101002	1500	-	-	-	-	-
0	0						
1003	tr 101003	1500	-	-	-	-	-
0	0						
1004	fdnet 101004	1500	-	-	-	ieee	-
0	0						
1005	trnet 101005	1500	-	-	-	ibm	-
0	0						

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						

Ctrl+F6 to exit CLI focus

Copy Paste

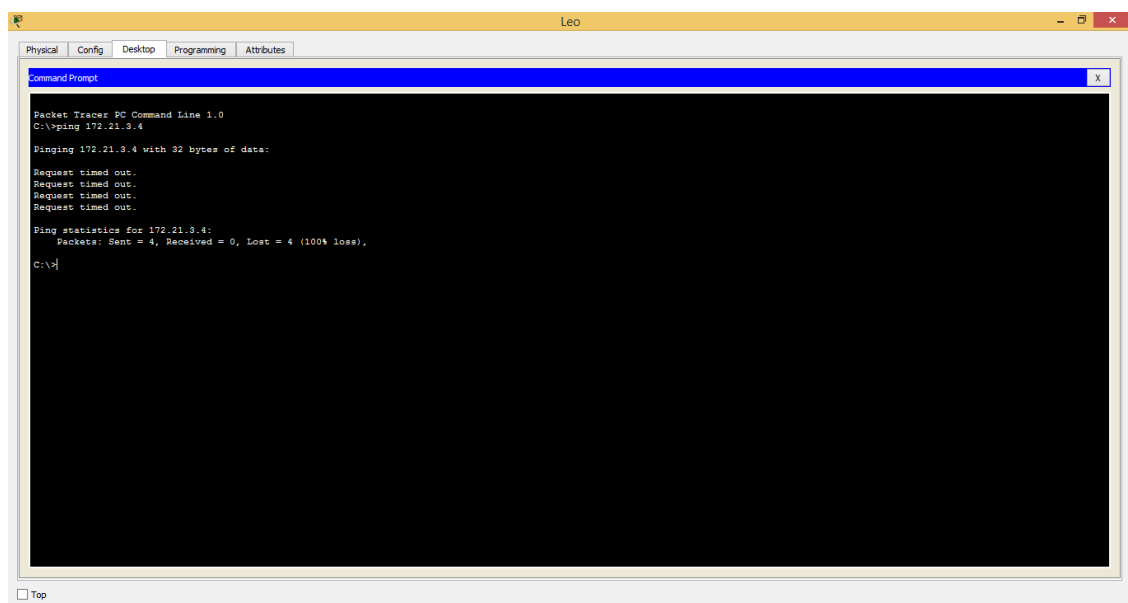
☐ Top



Pada langkah ini port yang sudah terkonfigurasi ke dalam vlan yaitu port 0/1 sampai port 0/6, sedangkan port 0/7 untuk trunking antar switch.

- Melakukan ping dari PC Leo ke PC Pisces

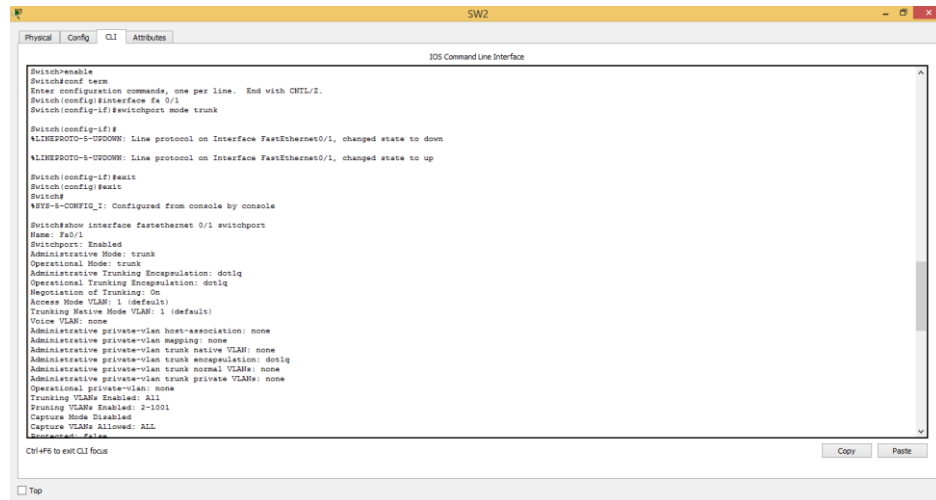
Berikut adalah screenshotnya:



Hasil ping dari PC Leo ke PC Pisces “Request timed out” karena PC Leo dan PC Pisces tidak berada dalam satu VLAN dan memiliki network access yang berbeda.

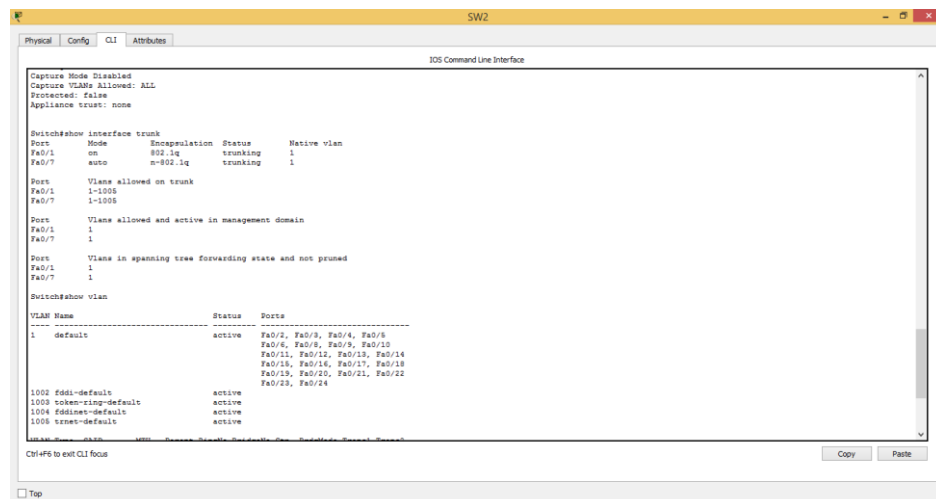
- Melakukan konfigurasi VLAN trunking pada switch 2

Berikut adalah screenshot dari cisco packet tracer:



```
SW2
Switch>enable
Switch>conf t
Switch(config)#
Switch(config)# interface fa 0/1
Switch(config-if)# switchport mode trunk
Switch(config-if)#
Switch(config-if)# exit
Switch(config)# exit
Switch>show interface fastethernet 0/1 switchport
Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

Ctrl-Shift-6 to exit CLI focus
```



```
SW2
Switch>show interface trunk
Port      Mode      Encapsulation  Status        Native vlan
Fa0/1     on        802.1q         trunking      1
Fa0/7     auto      n-802.1q       trunking      1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/7     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1
Fa0/7     1

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1
Fa0/7     1

Switch>show vlan
VLAN Name                Status    Ports
-----
1    default                active    Fa0/2, Fa0/3, Fa0/4, Fa0/5
                                           Fa0/6, Fa0/8, Fa0/9, Fa0/10
                                           Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                           Fa0/16, Fa0/16, Fa0/17, Fa0/18
                                           Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                           Fa0/23, Fa0/24

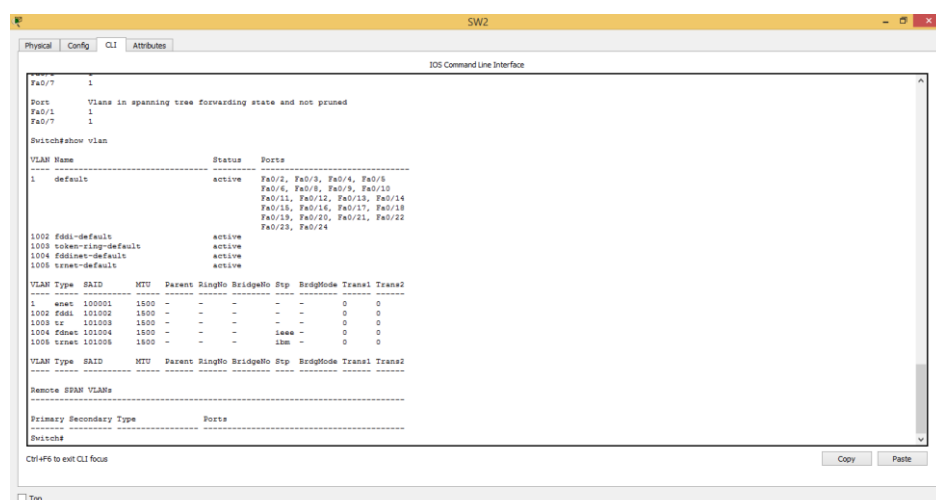
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active

VLAN Name                Status    Ports
-----
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active

VLAN Type  SAID             MTU    Parent RingNo BridgeNo Stp  BrgdMode Trans1 Trans2
-----
1    enet  100001          1500    -     -     -     -     -     0    0
1002 fddi  101002          1500    -     -     -     -     -     0    0
1003 tr  101003          1500    -     -     -     -     -     0    0
1004 fddnet 101004          1500    -     -     -     -     -     0    0
1005 trnet 101005          1500    -     -     -     -     -     0    0

VLAN Type  SAID             MTU    Parent RingNo BridgeNo Stp  BrgdMode Trans1 Trans2
-----
1002 fddi  101002          1500    -     -     -     -     -     0    0
1003 tr  101003          1500    -     -     -     -     -     0    0
1004 fddnet 101004          1500    -     -     -     -     -     0    0
1005 trnet 101005          1500    -     -     -     -     -     0    0

Remote SPAN VLANs
-----
Primary Secondary Type      Ports
-----
Switch#
```



```
SW2
Switch>show vlan
VLAN Name                Status    Ports
-----
1    default                active    Fa0/2, Fa0/3, Fa0/4, Fa0/5
                                           Fa0/6, Fa0/8, Fa0/9, Fa0/10
                                           Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                           Fa0/16, Fa0/16, Fa0/17, Fa0/18
                                           Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                           Fa0/23, Fa0/24

1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active

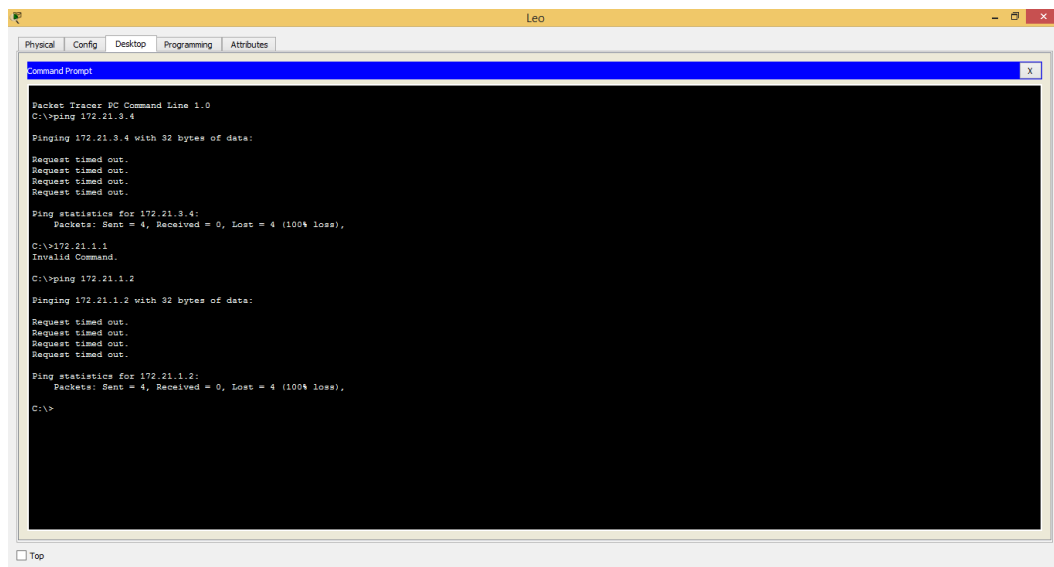
VLAN Type  SAID             MTU    Parent RingNo BridgeNo Stp  BrgdMode Trans1 Trans2
-----
1    enet  100001          1500    -     -     -     -     -     0    0
1002 fddi  101002          1500    -     -     -     -     -     0    0
1003 tr  101003          1500    -     -     -     -     -     0    0
1004 fddnet 101004          1500    -     -     -     -     -     0    0
1005 trnet 101005          1500    -     -     -     -     -     0    0

VLAN Type  SAID             MTU    Parent RingNo BridgeNo Stp  BrgdMode Trans1 Trans2
-----
1002 fddi  101002          1500    -     -     -     -     -     0    0
1003 tr  101003          1500    -     -     -     -     -     0    0
1004 fddnet 101004          1500    -     -     -     -     -     0    0
1005 trnet 101005          1500    -     -     -     -     -     0    0

Remote SPAN VLANs
-----
Primary Secondary Type      Ports
-----
Switch#
```

Pada langkah ini port port fastethernet belum terkonfigurasi ke dalam VLAN, bahkan VLAN nya belum dibuat.

- Melakukan ping dari PC Leo ke PC Aries



```
Packet Tracer PC Command Line 1.0
C:\>ping 172.21.3.4

Pinging 172.21.3.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.3.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>172.21.1.1
Invalid Command.

C:\>ping 172.21.1.2

Pinging 172.21.1.2 with 32 bytes of data:

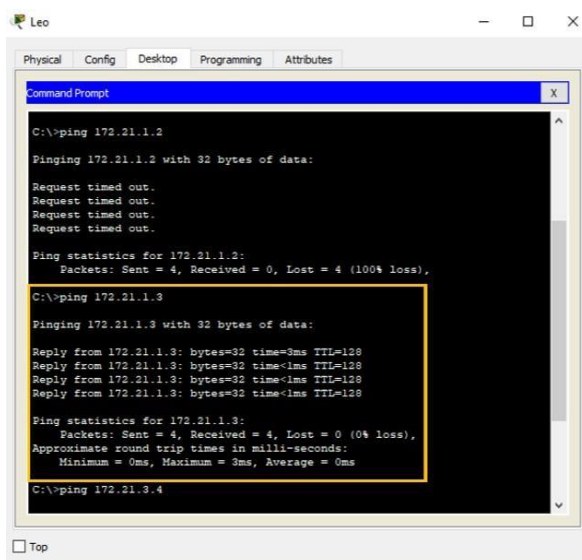
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.1.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Hasil ping dari PC leo ke PC aries “Request timed out” karena PC leo dan PC aries tidak berada dalam satu VLAN meskipun memiliki network access yang sama.

- Melakukan ping dari PC Leo ke PC Aquarius



```
Leo
Physical Config Desktop Programming Attributes

Command Prompt
C:\>ping 172.21.1.2

Pinging 172.21.1.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.1.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 172.21.1.3

Pinging 172.21.1.3 with 32 bytes of data:

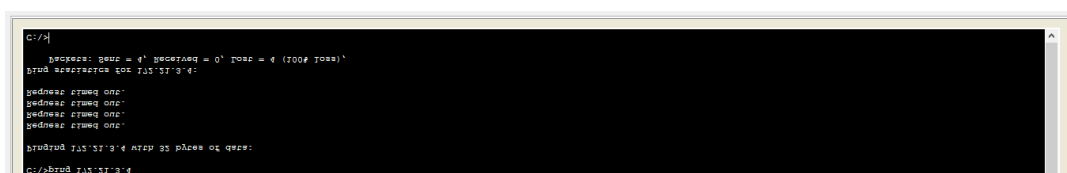
Reply from 172.21.1.3: bytes=32 time=3ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128

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 = 3ms, Average = 0ms

C:\>ping 172.21.3.4
```

Hasil ping dari PC leo ke PC aquarius “Reply” karena PC leo dan PC aquarius berada dalam satu VLAN dan memiliki network access yang sama.

- Melakukan ping dari PC Leo ke PC Pisces



```
C:\>ping 172.21.3.4

Pinging 172.21.3.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

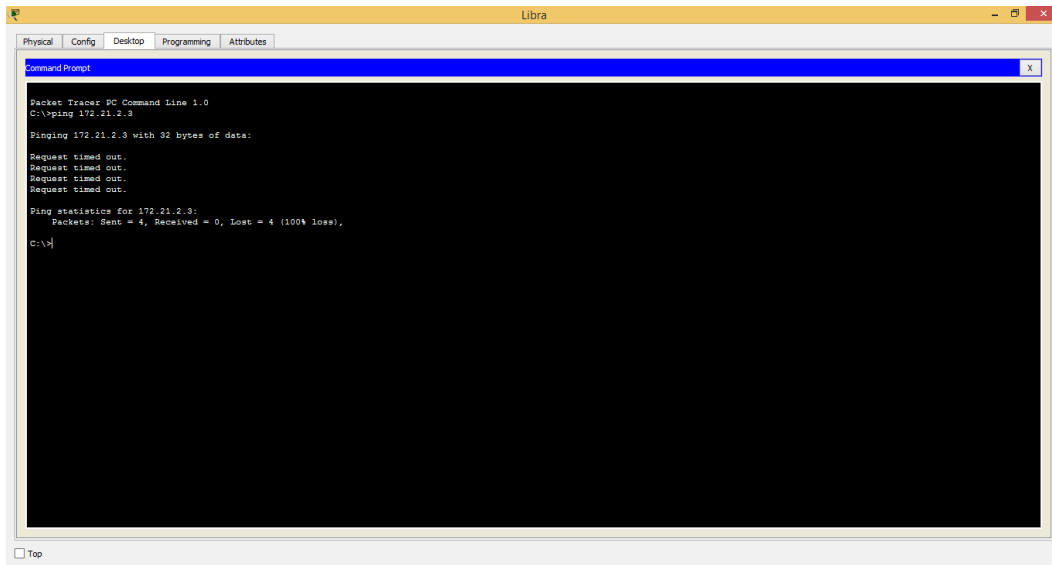
Ping statistics for 172.21.3.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Hasil ping dari PC leo ke PC pisces “Request timed out” karena PC leo dan PC pisces

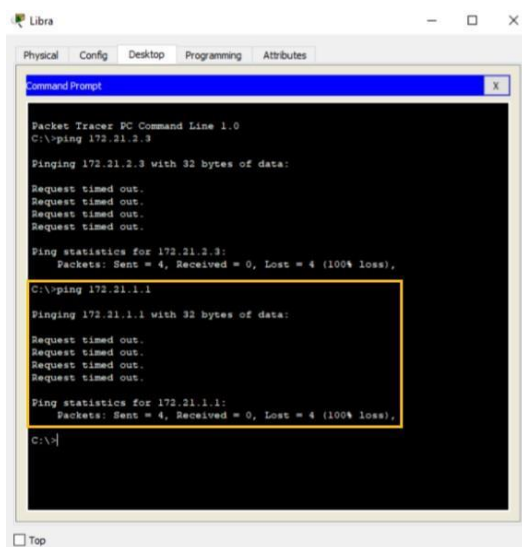
tidak berada dalam satu VLAN dan memiliki network access yang berbeda.

- Melakukan ping dari PC Libra ke Cancer



Hasil ping dari PC libra ke PC cancer “Request timed out” karena PC libra dan PC cancer tidak berada dalam satu VLAN meskipun memiliki network access yang sama.

- Melakukan ping dari PC Libra ke PC Leo



Hasil ping dari PC libra ke PC leo “Request timed out” karena PC libra dan PC leo tidak berada dalam satu VLAN meskipun memiliki network access yang sama.