



MINISTERUL EDUCAȚIEI ȘI CERCETĂRII AL REPUBLICII MOLDOVA
Universitatea Tehnică a Moldovei

RAPORT

Lucrare de laborator nr. 4
la cursul „*Rețele de calculatoare*”

A efectuat:

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Chișinău 2025

Obiective:

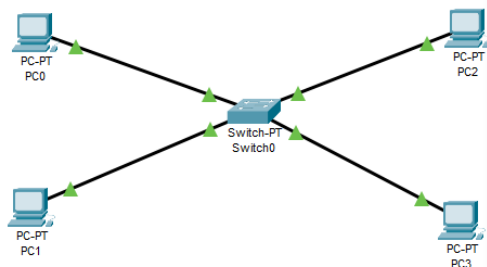
Cunoașterea noțiunii de rețele locale virtuale (Virtual Local Area Networks – VLAN)?

Studierea tipurilor de legături în VLAN-uri (access, trunk)

Configurarea VLAN-urilor în Cisco IOS

Mersul lucrării:

1.



```
Physical  Config  CLI  Attributes
IOS Command Line Interface

Switch0>enable
Switch0#show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa4/1, Fa5/1
10   zece                    active    Fa0/1, Fa2/1
20   douazeci                active    Fa1/1, Fa3/1
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active

Switch0#
%LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

Switch0#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

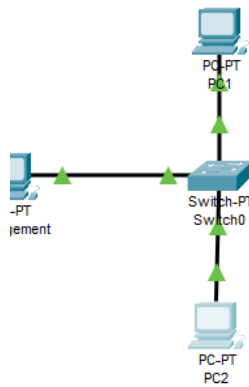
Switch0#show running config
^
% Invalid input detected at '^' marker.

Switch0#show running-config
Building configuration...

Current configuration : 745 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch0
!
!
no ip domain-lookup
!
!
```

2.

Configurarea vlan 100



Physical
Config
CLI
Attributes

IOS Command Line Interface

```

Switch0>enable
Password:
Switch0#vlan 100
^
% Invalid input detected at '^' marker.

Switch0#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch0(config)#vlan 100
Switch0(config-vlan)#name management
Switch0(config-vlan)#inter
Switch0(config-vlan)#interface Fa0/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 100
Switch0(config-if)#exit
Switch0(config)#interface vlan 1
Switch0(config-if)#shutdown

Switch0(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to down

Switch0(config-if)#no ip address
Switch0(config-if)#exit
Switch0(config)#interface vlan 100
Switch0(config-if)#
%LINK-5-CHANGED: Interface Vlan100, changed state to up

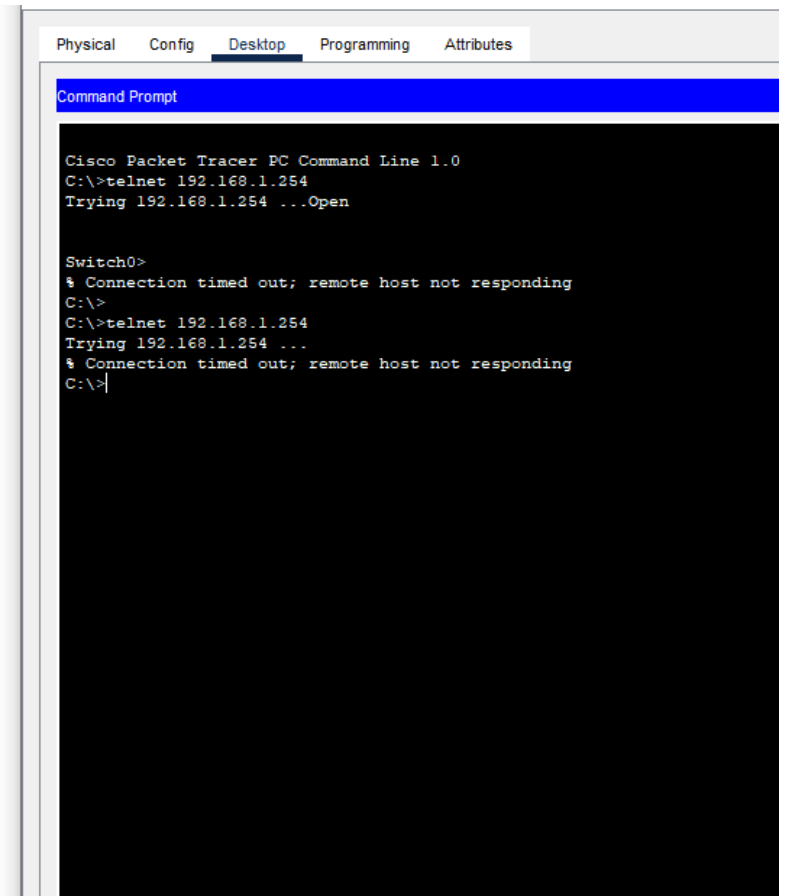
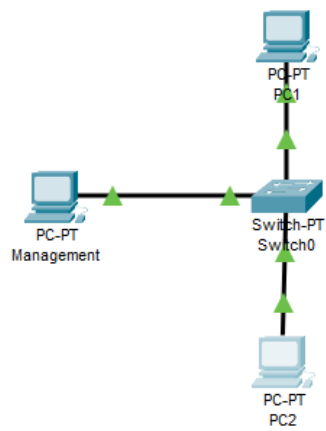
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan100, changed state to up

Switch0(config-if)#no shutdown
Switch0(config-if)#ip address 192.168.1.254 255.255.255.0
Switch0(config-if)#

```

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Testarea de pe PC2



Accessul pe switch de pe PC Management este permis

Physical

Management

Physical Config Desktop Programming Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.168.1.254
Trying 192.168.1.254 ...Open

Switch0>

The image shows a network diagram on the left and a command prompt window on the right. The network diagram features a central switch labeled 'Switch-PT Switch0'. To its left is a PC labeled 'PC-PT Management'. To its right, there are two PCs: 'PC-PT PC1' at the top and 'PC-PT PC2' at the bottom. All devices are connected to the central switch. The command prompt window on the right is titled 'Management' and has tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The 'Desktop' tab is active, showing a 'Command Prompt' window. The text in the command prompt shows a telnet session initiated from a Windows command line to the IP address 192.168.1.254, successfully connecting to the switch's command line interface.

3.
Configurarea vlan 10 si 20

Physical
x 1310, y: 717

Physical Config CLI Attributes

IOS Command Line Interface

```

Switch0(config-vlan)#name douazeci
Switch0(config-vlan)#exit
Switch0(config)#do show vlan brief

```

VLAN	Name	Status	Ports
1	default	active	Fa1/1, Fa2/1, Fa3/1, Fa4/1, Fa5/1, Fa6/1, Fa7/1
10	zece	active	
20	douazeci	active	Fa0/1
100	VLAN0100	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```

Switch0(config)#interface fa1/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 10
Switch0(config-if)#exit
Switch0(config)#interface fa2/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 20
Switch0(config-if)#exit
Switch0(config)#interface fa6/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 10
Switch0(config-if)#exit
Switch0(config)#interface fa3/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 20
Switch0(config-if)#exit
Switch0(config)#do show vlan brief

```

VLAN	Name	Status	Ports
1	default	active	Fa4/1, Fa5/1, Fa7/1
10	zece	active	Fa1/1, Fa6/1
20	douazeci	active	Fa2/1, Fa3/1
100	VLAN0100	active	Fa0/1
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

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Top

PC1 și PC4 nu pot comunica

Physical Config Desktop Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.40

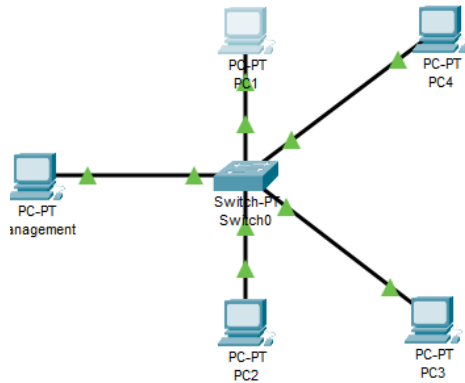
Pinging 192.168.1.40 with 32 bytes of data:

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

Ping statistics for 192.168.1.40:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>

```

PC1 și PC3 pot comunica deoarece fac parte din aceeași rețea vlan



```

Physical  Config  Desktop  Programming  Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.40

Pinging 192.168.1.40 with 32 bytes of data:

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

Ping statistics for 192.168.1.40:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.1.30

Pinging 192.168.1.30 with 32 bytes of data:

Reply from 192.168.1.30: bytes=32 time<1ms TTL=128
Reply from 192.168.1.30: bytes=32 time<1ms TTL=128
Reply from 192.168.1.30: bytes=32 time<1ms TTL=128
Reply from 192.168.1.30: bytes=32 time<1ms TTL=128

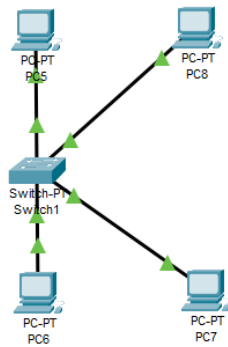
Ping statistics for 192.168.1.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|

```

4.

Rețelele vlan 10 și 20 au fost create dar încă nu au statii ce le corespund



```

Switch1
Physical  Config  CLI  Attributes
IOS Command Line Interface

Switch1(config)#do show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa0/1, Fa1/1, Fa2/1, Fa3/1
10   zece                   active    Fa4/1, Fa5/1
20   douazeci               active
1002 fddi-default          active
1003 token-ring-default   active
1004 fddinet-default      active
1005 trnet-default        active

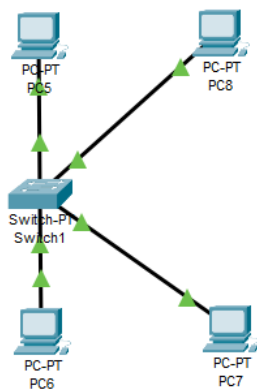
Switch1(config)#
Switch1(config)#interface fa0/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 10
Switch1(config-if)#exit
Switch1(config)#switchport fa3/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 10
Switch1(config-if)#exit

```

După adăugarea acestora, pentru

Vlan10 îi corespund Fa0/1 (PC5) și Fa3/1 (PC7)

Vlan20 îi corespund Fa1/1 (PC6) și Fa2/1 (PC8)



Switch1

Physical Config **CLI** Attributes

IOS Command Line Interface

```

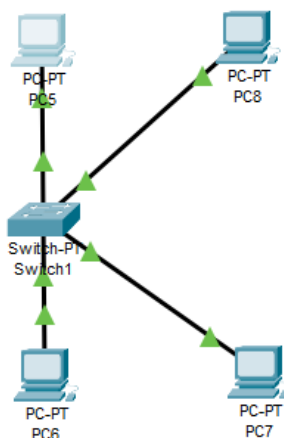
1003 token-ring-default      active
1004 fddinet-default         active
1005 trnet-default           active
Switch1(config)#
Switch1(config)#interface fa0/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 10
Switch1(config-if)#exit
Switch1(config)#switchport fa3/1
Switch1(config)#
% Invalid input detected at '^' marker.

Switch1(config)#interface fa3/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 10
Switch1(config-if)#exit
Switch1(config)#interface fa1/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 20
Switch1(config-if)#exit
Switch1(config)#interface fa2/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 20
Switch1(config-if)#exit
Switch1(config)#do show vlan brief
Switch1(config)#
Switch1(config)#

```

VLAN	Name	Status	Ports
1	default	active	Fa4/1, Fa5/1
10	zece	active	Fa0/1, Fa3/1
20	douazeci	active	Fa1/1, Fa2/1
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

Legătura între PC5 și PC8 nu poate fi efectuată:



PC5

Physical Config **Desktop** Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.234.160

Pinging 172.16.234.160 with 32 bytes of data:

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

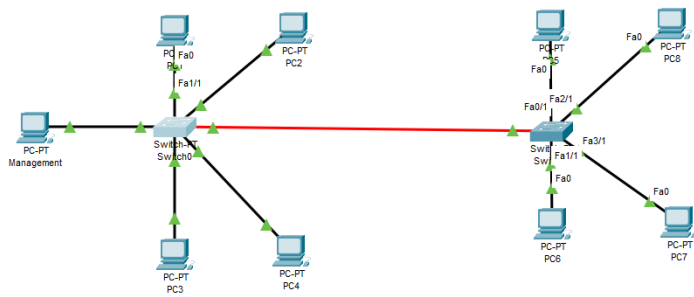
Ping statistics for 172.16.234.160:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

```

5.

Switch-urile au fost conectate prin cablu fibra, iar switch0 a fost configurat în mod trunk, acesta include și Vlan 100



```

Physical Config CLI Attributes
IOS Command Line Interface
10 sece active Fa1/1, Fa4/1
20 douazeci active Fa2/1, Fa3/1
100 VLAN100 active Fa0/1
1002 fddi-default active
1003 tokenring-default active
1004 fddinet-default active
1005 trnet-default active
Switch0#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch0(config)#int fastEthernet 4/1
Switch0(config-if)#switchport mode trunk
Switch0(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet4/1, changed state to down
Switch0(config-if)#switchport trunk allowed vlan all
Switch0(config-if)#exit
Switch0(config)#exit
Switch0#
%SYS-5-CONFIG_I: Configured from console by console

Switch0#show interfaces trunk
Port Mode Encapsulation Status Native vlan
Fa4/1 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa4/1 1-1005

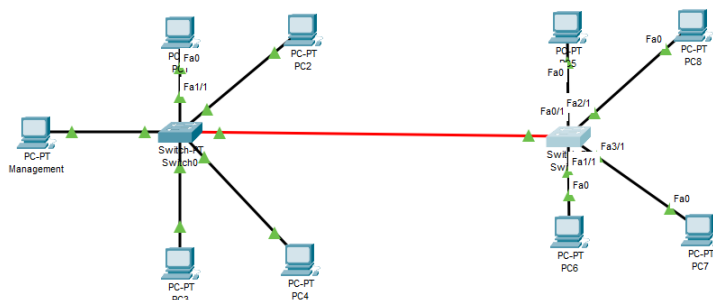
Port Vlans allowed and active in management domain
Fa4/1 1,10,20,100

Port Vlans in spanning tree forwarding state and not pruned
Fa4/1 1,10,20,100

Switch0#
Copy Past

```

Configurarea switch1



```

IOS Command Line Interface
Switch1#
Switch1#%SPANTREE-2-RECV_FVID_ERR: Received 802.1Q BPDU on non trunk FastEthernet4/
VLAN1.
Switch1#%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking FastEthernet4/1 on VLAN0001. Inconsistent po
type.
Switch1#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet4/1, changed state to d
Switch1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch1(config)#int fastEthernet 4/1
Switch1(config-if)#switchport mode trunk
Switch1(config-if)#switchport trunk allowed vlan all
Switch1(config-if)#exit
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#show interfaces trunk
Port Mode Encapsulation Status Native vlan
Fa4/1 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa4/1 1-1005

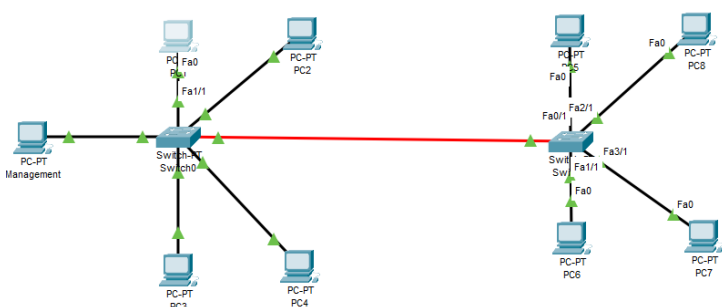
Port Vlans allowed and active in management domain
Fa4/1 1,10,20

Port Vlans in spanning tree forwarding state and not pruned
Fa4/1 1,10,20

Switch1#
Copy

```

Conexiunea dintre PC1 și PC7



```

Command Prompt
C:\>ping 172.16.234.30
Pinging 172.16.234.30 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.16.234.30:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 172.16.234.40
Pinging 172.16.234.40 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.16.234.40:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

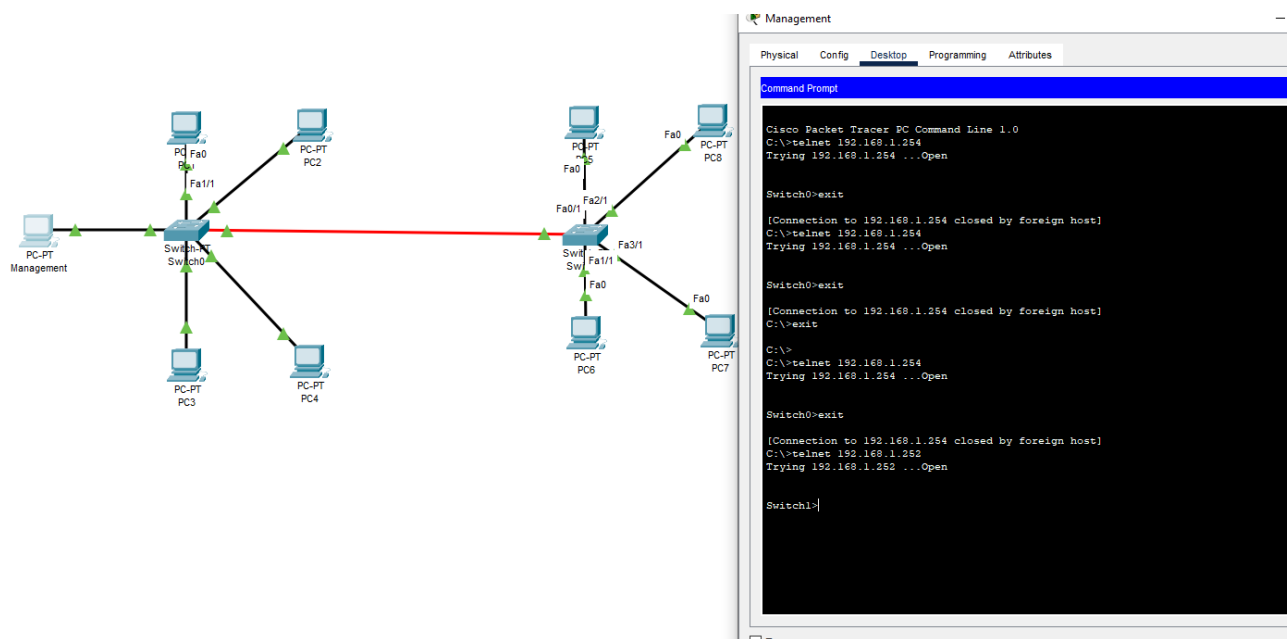
C:\>ping 172.16.234.40
Pinging 172.16.234.40 with 32 bytes of data:
Reply from 172.16.234.40: bytes=32 time=1ms TTL=128
Reply from 172.16.234.40: bytes=32 time=1ms TTL=128
Reply from 172.16.234.40: bytes=32 time=1ms TTL=128
Reply from 172.16.234.40: bytes=32 time=1ms TTL=128

Ping statistics for 172.16.234.40:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

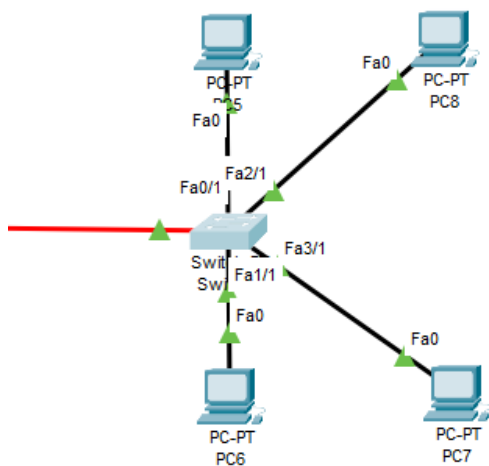
C:\>

```

6. Conectarea la switch1 de pe stația Management



Configurația acesuia



Physical Config **CLI** Attributes

IOS Command Line Interface

```
Switch1(config-if)#exit
Switch1(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa5/1
10	zece	active	Fa0/1, Fa3/1
20	douazeci	active	Fa1/1, Fa2/1
100	management	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch1(config)#interface Fa0/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 100
Switch1(config-if)#exit
Switch1(config)#do show vlan brief
```

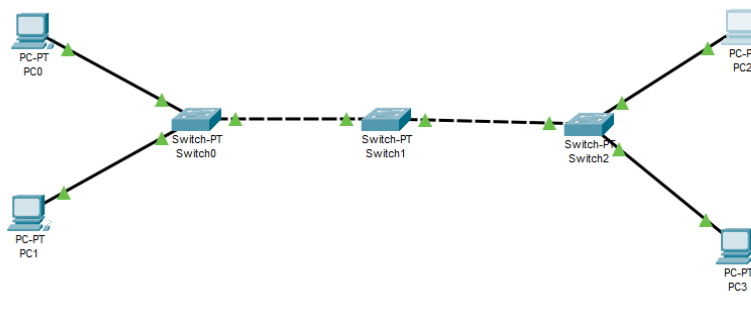
VLAN	Name	Status	Ports
1	default	active	Fa5/1
10	zece	active	Fa3/1
20	douazeci	active	Fa1/1, Fa2/1
100	management	active	Fa0/1
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch1(config)#
Switch1(config)#interface vlan 100
Switch1(config-if)#ip address 192.168.1.252 255.255.255.0
Switch1(config-if)#exit
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#exit
```

7.

Inițial există legătură între PC1 - PC3 și PC1 - PC2



```
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.4

Pinging 192.168.0.4 with 32 bytes of data:

Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Reply from 192.168.0.3: bytes=32 time<1ms TTL=128
Reply from 192.168.0.3: bytes=32 time<1ms TTL=128
Reply from 192.168.0.3: bytes=32 time<1ms TTL=128
Reply from 192.168.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Configurarea switch0

Switch0

Physical

Config

CLI

Attributes

IOS Command Line Interface

```

Switch0(config-if)#switchport mode trunk

Switch0(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to up

Switch0(config-if)#switchport trunk allowed vlan all
Switch0(config-if)#do show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa3/1, Fa4/1, Fa5/1
10   zece                    active    Fa0/1
20   douazeci                active    Fa1/1
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active
Switch0(config-if)#show interfaces trunk
^
% Invalid input detected at '^' marker.

Switch0(config-if)#do show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa2/1     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa2/1     1-1005

Port      Vlans allowed and active in management domain
Fa2/1     1,10,20

Port      Vlans in spanning tree forwarding state and not pruned
Fa2/1     1,10,20

Switch0(config-if)#

```

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Configurarea switch2

Switch2

Physical Config CLI Attributes

IOS Command Line Interface

```
%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking FastEthernet0/1 on VLAN0001. Inconsistent port type.

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

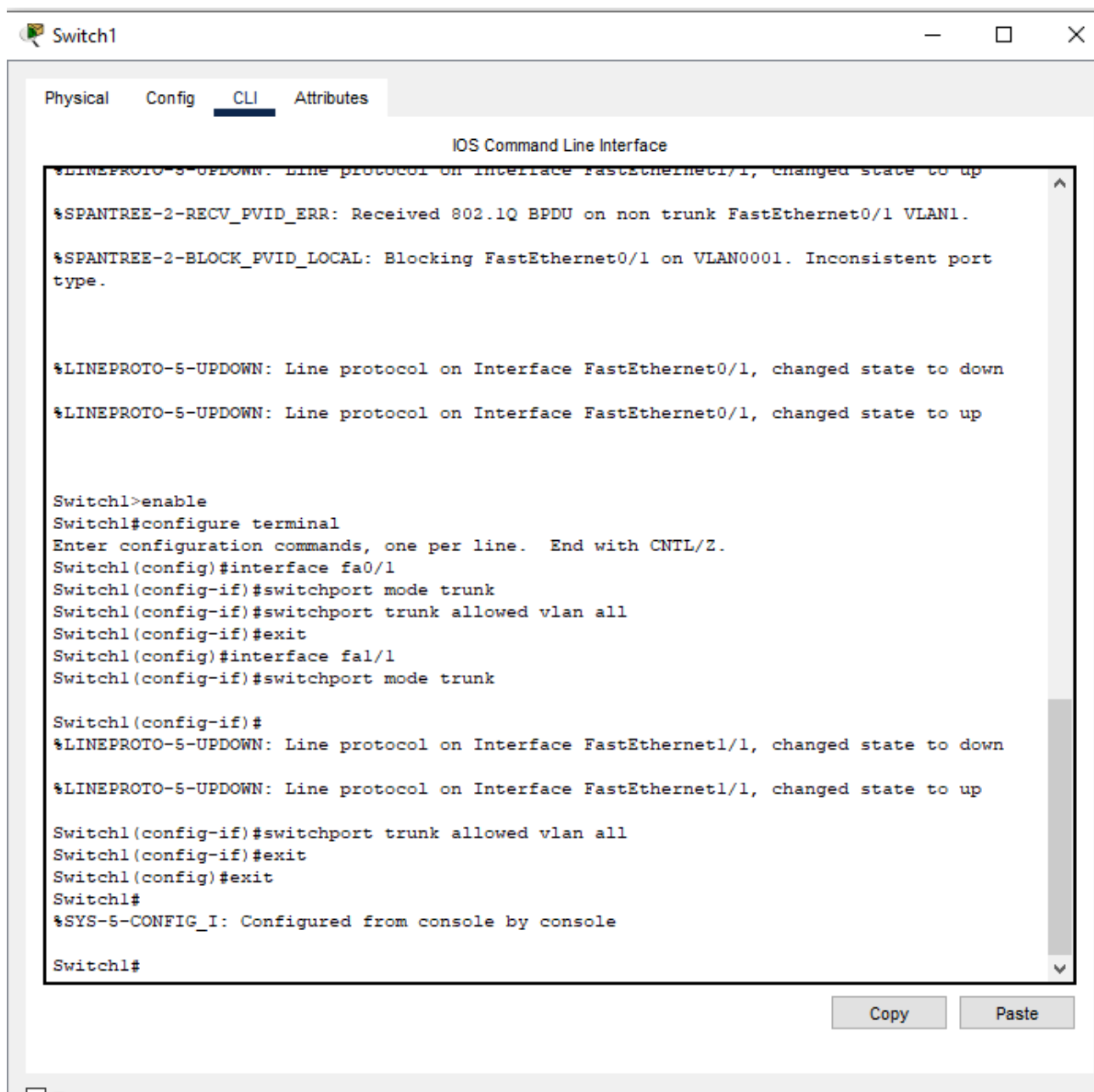
Switch2>enable
Switch2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch2(config)#vlan 10
Switch2(config-vlan)#name zece
Switch2(config-vlan)#exit
Switch2(config)#vlan 20
Switch2(config-vlan)#name douazeci
Switch2(config-vlan)#exit
Switch2(config)#interface fa1/1
Switch2(config-if)#switchport mode access
Switch2(config-if)#switchport access vlan 20
Switch2(config-if)#exit
Switch2(config)#interface fa2/1
Switch2(config-if)#switchport mode access
Switch2(config-if)#switchport access vlan 10
Switch2(config-if)#exit
Switch2(config)#interface fa0/1
Switch2(config-if)#switchport mode trunk
Switch2(config-if)#switchport trunk allowed vlan all
Switch2(config-if)#exit
Switch2(config)#exit
Switch2#
%SYS-5-CONFIG_I: Configured from console by console

Switch2#
```

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Configurarea switch1



The screenshot shows a network switch interface with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the IOS Command Line Interface. The interface shows a series of status messages and configuration commands. The messages include line protocol status changes for FastEthernet0/1 and FastEthernet1/1, and a warning about receiving a BPDU on a non-trunk port. The configuration commands include enabling the switch, configuring the terminal, and setting up two interfaces (fa0/1 and fa1/1) as trunk ports, allowing all VLANs. The interface also shows the switch exiting configuration mode and a message indicating it was configured from the console.

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%SPANTREE-2-RECV_PVID_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/1 VLAN1.
%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking FastEthernet0/1 on VLAN0001. Inconsistent port
type.

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch1>enable
Switch1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch1(config)#interface fa0/1
Switch1(config-if)#switchport mode trunk
Switch1(config-if)#switchport trunk allowed vlan all
Switch1(config-if)#exit
Switch1(config)#interface fa1/1
Switch1(config-if)#switchport mode trunk

Switch1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/1, changed state to down

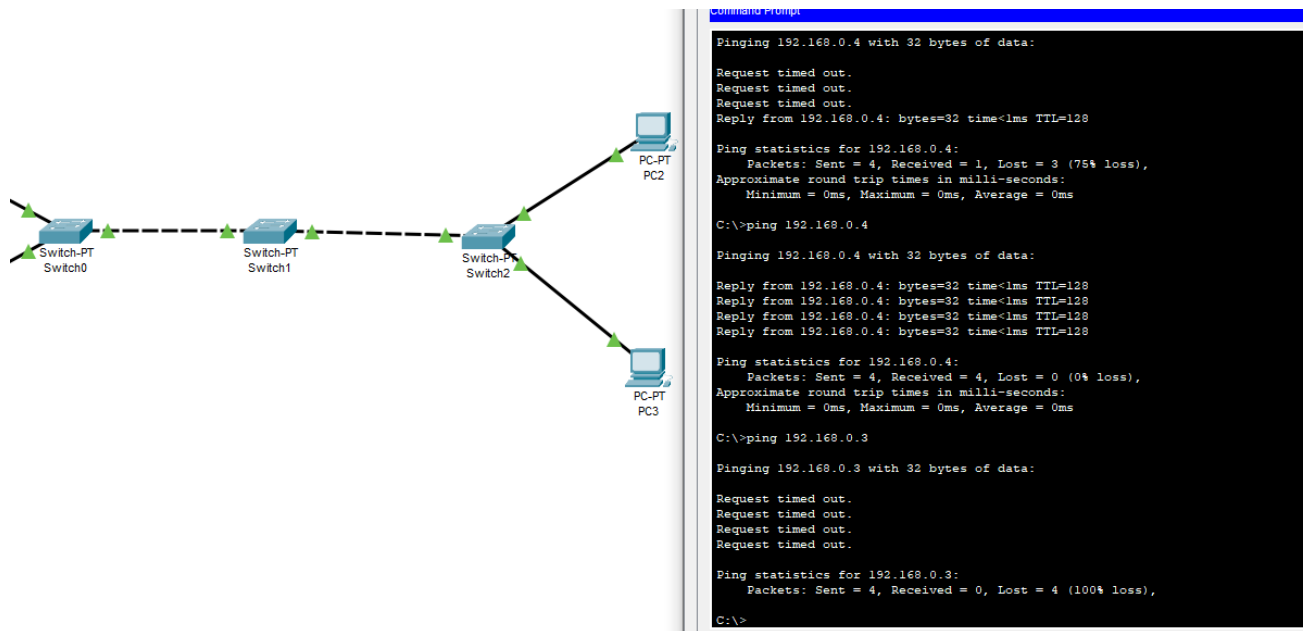
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/1, changed state to up

Switch1(config-if)#switchport trunk allowed vlan all
Switch1(config-if)#exit
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#
```

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PC0 și PC3 sunt în aceeași rețea Vlan, deci pot comunica între ele, pe cand PC0 și PC4 nu pot



8.

PC0 nu era configurat în mod access, iar PC1 aparținea rețelei Vlan 20, deci comunicarea între ele era imposibilă.

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface

no ip domain-lookup
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  switchport access vlan 20
  switchport mode access
!
interface FastEthernet1/1
  switchport access vlan 20
  switchport mode access
!
interface FastEthernet2/1
  switchport access vlan 10
  switchport mode access
!

Switch0#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch0(config)#interface fa1/1
Switch0(config-if)#switchport access vlan 10
Switch0(config-if)#exit
Switch0(config)#exit
Switch0#
%SYS-5-CONFIG_I: Configured from console by console

Switch0#show running-config
Building configuration...

Current configuration : 754 bytes
!
version 12.1
no service timestamps log datetime msec
```

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Switch 1 nu a fost configurat să permită toate rețelele vlan în trunk, deci comunicarea între PC2 și PC4 care aparțin vlan 20 nu era posibilă.

Switch1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch1#show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa3/1     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa3/1     10

Port      Vlans allowed and active in management domain
Fa3/1     10

Port      Vlans in spanning tree forwarding state and not pruned
Fa3/1     10

Switch1#show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa4/1, Fa5/1
10   VLAN0010                active    Fa0/1, Fa2/1
20   VLAN0020                active    Fa1/1
1002 fddi-default            active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active

Switch1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch1(config)#interface fa3/1
Switch1(config-if)#switchport trunk allowed vlan all
Switch1(config-if)#exit
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa3/1     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa3/1     1-1005

Port      Vlans allowed and active in management domain
Fa3/1     1,10,20

Port      Vlans in spanning tree forwarding state and not pruned
Fa3/1     1,10,20

Switch1#
```

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Concluzii:

În urma realizării acestor exerciții, am dobândit cunoștințe esențiale despre configurarea rețelelor virtuale VLAN și administrarea acestora prin legături de tip trunk în Packet Tracer.

Am observat modul în care VLAN-urile permit segmentarea logică a rețelei, oferind izolare la nivelul 2 și reducerea traficului de broadcast. Configurarea legăturilor de tip trunk a fost esențială pentru a permite comunicația între VLAN-uri pe multiple switch-uri, utilizând protocolul 802.1Q.

Prin analiza arborelui de acoperire (Spanning Tree Protocol - STP), am înțeles rolul său în prevenirea buclilor de rețea. Am observat cum anumite porturi sunt plasate în stare blocată pentru a menține topologia fără bucle și cum acest arbore se modifică atunci când schimbăm switch-ul rădăcină.

Am utilizat comenzi precum: ping pentru testarea conectivității între stații, show interfaces trunk pentru a verifica configurarea trunk-urilor, show vlan brief pentru vizualizarea VLAN-urilor configurate.

Prin depanarea problemelor de conectivitate, am identificat erori frecvente, precum porturi care nu sunt asignate corect unui VLAN sau VLAN-uri care nu sunt permise pe un trunk.

Am configurat VLAN-ul de management (VLAN 100), atribuind o adresă IP switch-ului, permițând astfel administrarea la distanță prin Telnet. Aceasta este o practică importantă pentru gestionarea eficientă a rețelelor mari.