Vježba 12: Konfiguracija VLAN-a

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Razred: 2.b

PRIPREMA

1. Koje vrste VLAN-ova poznaješ i po čemu se one razlikuju?

- VLAN-ovi bazirani na **priključcima preklopnika**
- VLAN-ovi bazirani na **tipu protokola**
- VLAN-ovi bazirani na **MAC adresama**
- VLAN-ovi bazirani na **definiranim pravilima**

2. Koje su prednosti uporabe VLAN tehnologije?

- **Glavne prednosti:**
    - Povećanje performansi mreže
    - Olakšana administracija mreža
    - Neovisnost o fizičkoj topologiji mreža
    - Ograničenje razašiljanja prometa na VLAN-u
    - Zaštita od malicioznih korisnika
    - Povećana sigurnost mreže
    - Prioritiziranje mrežnog prometa
- **Glavni nedostatci:**
    - Komunikacija između VLAN-ova
    - Kompleksnost VLAN-ova
    - Noseći kapacitet usmjerivača
    - Neovlašteno uključivanje u pojedini VLAN

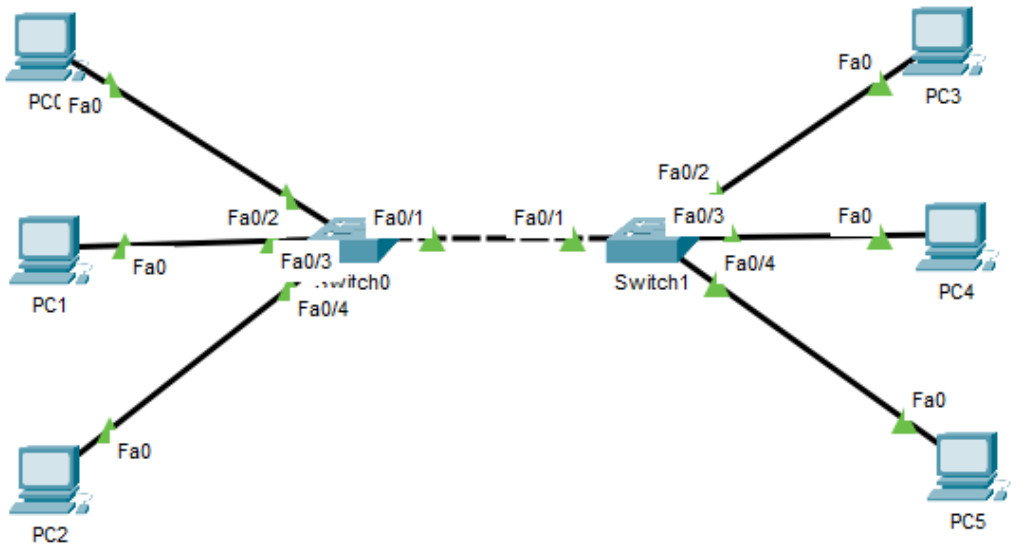
3. Kojem VLAN-u po default-u pripadaju svi portovi? Obrazloži odgovor.

- **VLAN-u 1**
- Svi portovi na switch-u po default-u pripadaju VLAN-u 1 jer kada se switch prvi put pokrene, nema potrebe za dodatnom konfiguracijom kako bi svi portovi mogli komunicirati jedni s drugima

IZVOĐENJE VJEŽBE

1.

(prvi zadatak je krivo riješen, umjesto samo spajanja računala na portove, mi smo ih također podijelili u VLAN-ove, tako da dio vježbe, baš iz tog razloga, netočno riješen)




```
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/5, Fa0/6, Fa0/7
                                                 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   VLAN10_1                          active    Fa0/2, Fa0/3
20   VLAN20_1                          active    Fa0/4
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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
 --More--
```

```
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/5, Fa0/6, Fa0/7
                                                 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   VLAN10_2                          active    Fa0/4
20   VLAN20_2                          active    Fa0/2, Fa0/3
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
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
 --More--
```

2. Uspostaviti temeljnu konfiguraciju preklopnika S1 i S2.

a. **Imenovati preklopnike**

b. **Konfigurirati zaštitu od neovlaštenog pristupa privilegiranom modu**

c. **Konfigurirati zaštitu od neovlaštenog pristupa putem konzole**

d. **Provjeriti i pohraniti temeljnu konfiguraciju**

S1

```
Switch#
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S1
S1(config)#enable password jakaulaznalozinka
S1(config)#line console 0
S1(config-line)#password jakakonzolnalozinka
S1(config-line)#login
S1(config-line)#exit
S1(config)#
```

```
S1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

```
S1#sh run
Building configuration...

Current configuration : 1240 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S1
!
enable password jakaulaznalozinka
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/3
 --More--
```

S2

```
Switch>
Switch>ena
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S2
S2(config)#enable password jakaulaznalozinka
S2(config)#line console 0
S2(config-line)#password jakakonzolnalozinka
S2(config-line)#login
S2(config-line)#exit
S2(config)#exit
S2#
%SYS-5-CONFIG_I: Configured from console by console

S2#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
S2#sh run
Building configuration...

Current configuration : 1240 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S2
!
enable password jakaulaznalozinka
!
!
!
!
```

3. Provjeri pinganjem komunikaciju između računala, a rezultate upiši u bilježnicu

- Ovaj dio je iz razloga spomenutog u 1. zadatku, netočan …

a. PC1 – PC2

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.21

Pinging 192.168.10.21 with 32 bytes of data:

Reply from 192.168.10.21: bytes=32 time<1ms TTL=128
Reply from 192.168.10.21: bytes=32 time<1ms TTL=128
Reply from 192.168.10.21: bytes=32 time=4ms TTL=128
Reply from 192.168.10.21: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.21:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

C:\>
```

b. PC1 – PC6

```
C:\>ping 192.168.10.32

Pinging 192.168.10.32 with 32 bytes of data:

Request timed out.
```

c. PC4 – PC5

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.22

Pinging 192.168.10.22 with 32 bytes of data:

Reply from 192.168.10.22: bytes=32 time=6ms TTL=128
Reply from 192.168.10.22: bytes=32 time=4ms TTL=128
Reply from 192.168.10.22: bytes=32 time<1ms TTL=128
Reply from 192.168.10.22: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>
```

d. PC4 – PC3

```
C:\>ping 192.168.10.31

Pinging 192.168.10.31 with 32 bytes of data:

Request timed out.
```

4. Na preklopniku S1 konfigurirati podatkovne VLAN-ove (VLAN 10 i VLAN 20) te im pridijeliti sučelja definirana topologijom.

a. **Provjeri konfiguraciju preklopnika. (Koju si instrukciju koristio?)**

b. **Provjeri konfiguraciju VLAN-ova na S1 (Koju si instrukciju koristio?)**

c. **Konfiguriraj preklopnik S2 na isti način.**

d. **Provjeri pinganjem povezanost računala unutar VLAN-ova i između njih. (Napiši zaključak)**

- Zbog razloga spomenutog u 1. zad. … nije potrebno rješavati zadatke 3 (a, b, c, d)

e. **Provjeri sadržaj tablice MAC adresa. (Koju instrukciju si koristio? Da li se u tablici nalaze svi hostovi?)**

```
S1#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0090.2b42.1701    DYNAMIC     Fa0/1
S1#

S2#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0009.7cdb.4601    DYNAMIC     Fa0/1
S2#
```

f. **Kreiraj VLAN 99 (upravljački VLAN) te konfiguriraj trunk sučelja na oba preklopnika.**

```
S1#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/5, Fa0/6, Fa0/7, 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   VLAN10_1                          active    Fa0/2, Fa0/3
20   VLAN20_1                          active    Fa0/4
99   VLAN0099                          active
```

```
S1#show int f0/1 sw
Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: Off
Access Mode VLAN: 99 (VLAN0099)
Trunking Native Mode VLAN: 99 (VLAN0099)
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
Protected: false
 --More-- |

S1#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       on           802.1q         trunking      99

Port        Vlans allowed on trunk
Fa0/1       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1,10,20,99

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1,10,20,99

S1#

S2#show int f0/1 sw
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: 99 (Inactive)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: nor
Administrative private-vlan trunk encapsulation: d
Administrative private-vlan trunk normal VLANs: no
Administrative private-vlan trunk private VLANs: r
Operational private-vlan: none
Trunking VLANs Enabled: All
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
 --More-- |
```

```
S2#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       on           802.1q         trunking      99

Port        Vlans allowed on trunk
Fa0/1       1-1005

Port        Vlans allowed and active in management domain
Fa0/1       1,10,20

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1,10,20
```

g. Ponovno provjeri pinganjem povezanost računala unutar VLAN-ova i između njih. (Napiši zaključak)

```
C:\>ping 192.168.10.32

Pinging 192.168.10.32 with 32 bytes of data:

Reply from 192.168.10.32: bytes=32 time<1ms TTL=128
Reply from 192.168.10.32: bytes=32 time<1ms TTL=128
Reply from 192.168.10.32: bytes=32 time<1ms TTL=128
Reply from 192.168.10.32: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.32:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
C:\>ping 192.168.10.12

Pinging 192.168.10.12 with 32 bytes of data:

Request timed out.
```

```
C:\>ping 192.168.10.31

Pinging 192.168.10.31 with 32 bytes of data:

Request timed out.
```

- Zaključujemo da sada računala s istim VLAN-ovim ali spojeni na različite preklopnike, i dalje mogu komunicirati