

DHCP

Predmet: Mrežni servisi

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UVOD

DHCP (Dynamic Host Configuration Protocol) je mrežni protokol koji omogućava automatsku dodelu IP adresa i drugih mrežnih parametara u IP mrežama. Koristi se kako bi uređaji koji se priključe na mrežu dobili odgovarajuću konfiguraciju bez potrebe za ručnim podešavanjem svakog korisničkog uređaja.

Ključne karakteristike DHCP-a su: automatska konfiguracija mrežnih parametara, dodela IP adresa na vremenski ograničeni period, različiti načini dodele IP adresa u mreži, kao i podrška za mobilnost korisničkih uređaja.

DHCP automatski dodeljuje IP adresu, kao i ostale mrežne informacije kao što su Subnet Mask, Default Gateway, i DNS (Domain Name Server). Ovo oslobađa korisnike i administratore od potrebe za ručnim unošenjem ovih informacija na svakom uređaju.

UVOD



Prednosti DHCP-a su smanjenje grešaka u konfiguraciji, efikasnost u upotrebi IP adresa, jednostavnost za krajnje korisnike.

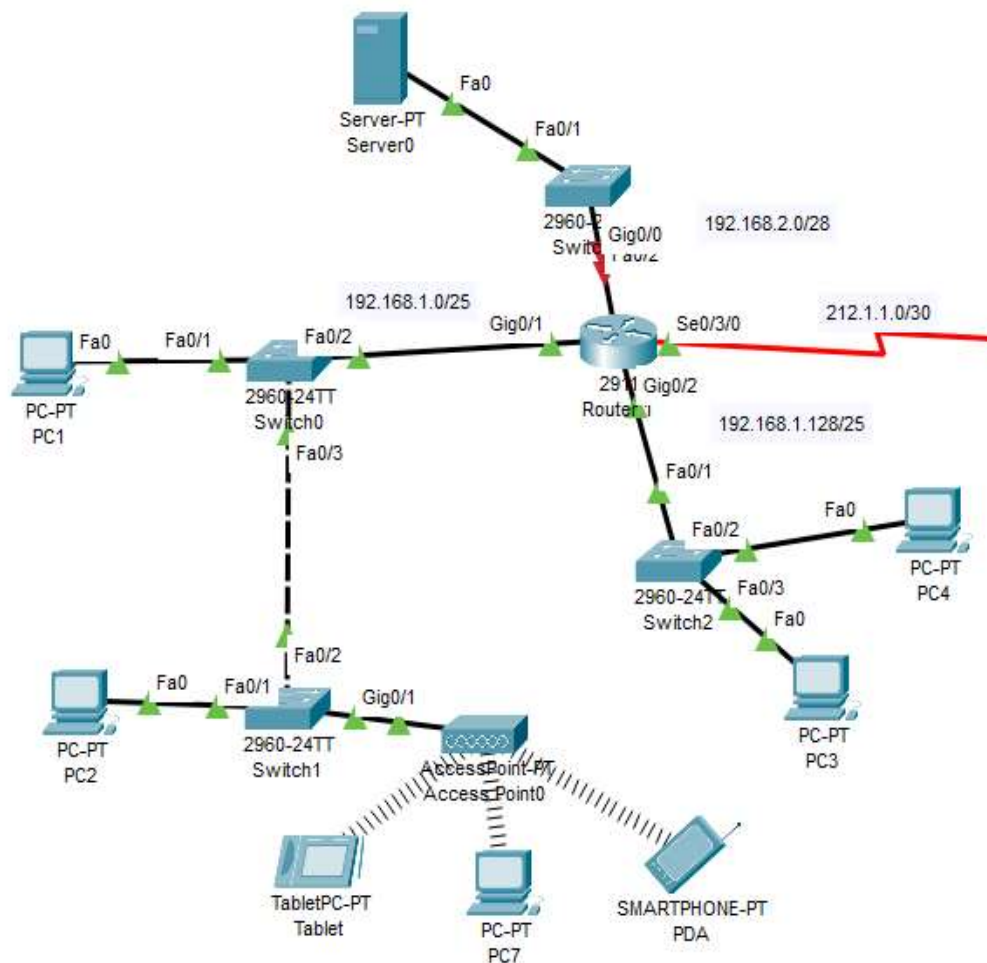
Nedostaci DHCP-a su oslanjanje na server i bezbednosni rizici.

ZADATAK

Zadatak: Potrebno je dodati i konfigurisati DHCP server tako da svi klijent uređaji u mreži dobiju automatske IP adrese. Potrebno je obezbediti da ruter prosleđuje DHCP poruke do DHCP servera, jer se DHCP server ne nalazi u mreži DHCP klijenata. Na DHCP serveru potrebno je kreirati dva opsega IP adresa sa odgovarajućim mrežnim prolazima:

1. 192.168.1.10-192.168.1.50
2. 192.168.1.150 – 192.168.1.190

Mrežna infrastruktura



Dodeljivanje statičkih mrežnih parametara na DHCP serveru

Physical **Config** Services Desktop Programming Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

Global Settings

Display Name: DHCP.ATVSS.RS

Gateway/DNS IPv4
☐ DHCP
☒ Static
 Default Gateway: 192.168.2.1
 DNS Server:

Gateway/DNS IPv6
☐ Automatic
☒ Static
 Default Gateway:
 DNS Server:

☐ Top

Physical **Config** Services Desktop Programming Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

FastEthernet0

Port Status: ☒ On

Bandwidth: ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex: ☐ Half Duplex ☒ Full Duplex ☒ Auto

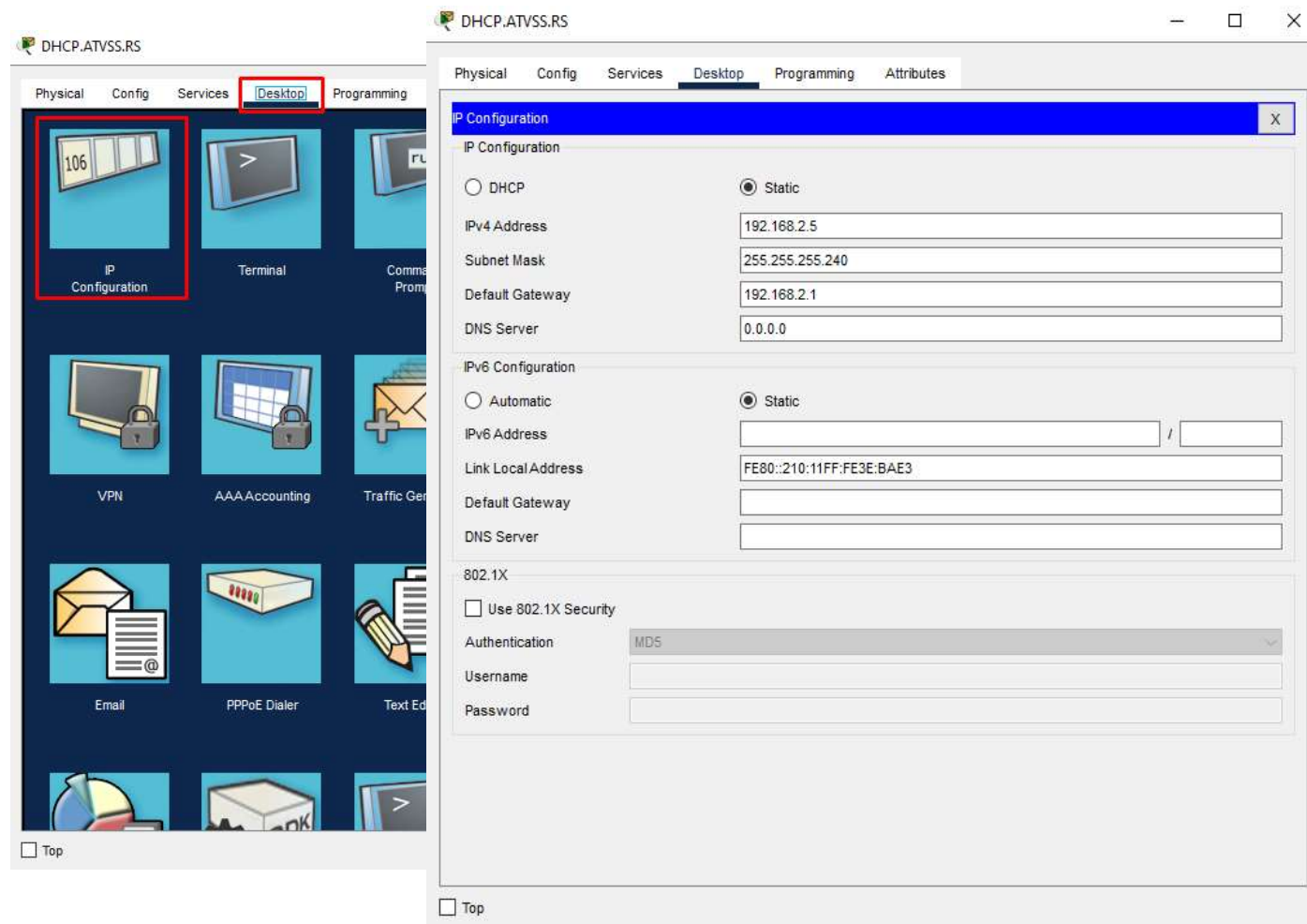
MAC Address: 0010.113E.BAE3

IP Configuration
☐ DHCP
☒ Static
 IPv4 Address: 192.168.2.5
 Subnet Mask: 255.255.255.240

IPv6 Configuration
☐ Automatic
☒ Static
 IPv6 Address:
 Link Local Address: FE80::210:11FF:FE3E:BAE3

☐ Top

Dodeljivanje statičkih mrežnih parametara na DHCP serveru



Konfiguracija rutera R1

The screenshot shows the configuration window for Router 1, specifically the 'Config' tab for the 'GigabitEthernet0/0' interface. The interface is divided into several sections:

- Physical:** Includes 'Port Status' (set to 'On'), 'Bandwidth' (set to '100 Mbps'), 'Duplex' (set to 'Full Duplex'), and 'MAC Address' (0030.A37C.7E01).
- IP Configuration:** Includes 'IPv4 Address' (192.168.2.1) and 'Subnet Mask' (255.255.255.240).
- Tx Ring Limit:** Set to 10.

The 'Config' tab is highlighted in the top navigation bar. The 'GigabitEthernet0/0' interface is selected in the left sidebar. The 'On' checkbox for Port Status is checked. The IP address and Subnet Mask fields are highlighted with red boxes.

Equivalent IOS Commands:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
```

Na portu koji je povezan sa serverskim delom mreže potrebno je dodeliti:
IP adresu: 192.168.2.1
Subnet Mask: 255.255.255.240

DHCP Pool 1

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: Pool1

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

Start IP Address: 192 168 1 10

Subnet Mask: 255 255 255 128

Maximum Number of Users: 40

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Buttons: Add, Save, Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	0.0.0.0	0.0.0.0	192.168....	255.255....	512	0.0.0.0	0.0.0.0

Pool Name: Pool1

Default Gateway: 192.168.1.1

Start IP Address: 192.168.1.10

Subnet Mask: 255.255.255.128

Number of Users: 40

DHCP Pool 2

DHCP.ATVSS.RS

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: Pool2

Default Gateway: 192.168.1.129

DNS Server: 0.0.0.0

Start IP Address: 192 168 1 150

Subnet Mask: 255 255 255 128

Maximum Number of Users: 40

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
Pool1	192.168....	0.0.0.0	192.168....	255.255....	40	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168....	255.255....	512	0.0.0.0	0.0.0.0

☐ Top

Pool Name: Pool2

Default Gateway: 192.168.1.129

Start IP Address: 192.168.1.150

Subnet Mask: 255.255.255.128

Number of Users: 40

IP Helper Address

DHCP klijenti koriste IP broadcast za pronalaženje DHCP servera u mreži. Međutim, ruteri ne prosleđuju broadcast poruke u drugim mrežama. Zbog toga je potrebno konfigurisati ruter Router1 da određene broadcast poruke na osnovu UDP porta prosleđuje na drugim segmentima.

Zbog toga je potrebno dodati helper adresu na samom ruteru kako bi se uspostavila konekcija i preuzimanje IP adrese od strane klijent uređaja sa DHCP servera. Ovo je potrebno konfigurisati na samom ruteru Router1 u kartici CLI.

IP Helper Address

Pokrenuti konfiguraciju terminala komandom Configure terminal - **config t**

Pokrenuti konfiguraciju interfejsa koji želimo konfigurisati - **interface g0/0**

Definisati mrežne parametre na interfejsu (portu) – **ip address 192.168.1.1 255.255.255.128**

Definisati helper adresu koja predstavlja IP adresu DHCP servera - **ip helper-address 192.168.2.5**

Protok saobraćaja u oba smera automatski - **duplex auto**

Brzina protoka je automatska - **speed auto**

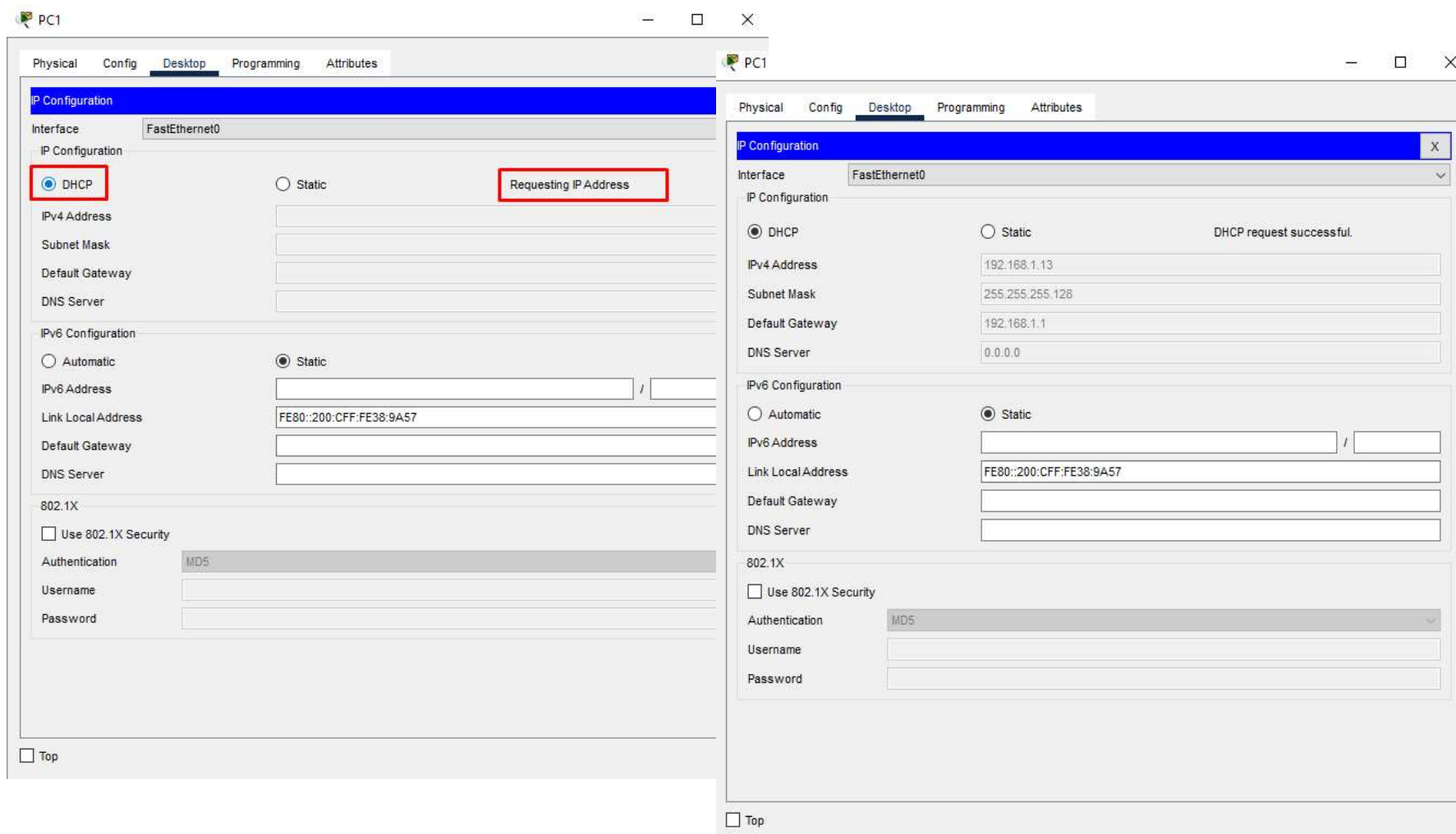
```

Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#in g0/1
Router(config-if)#ip address 192.168.1.1 255.255.255.128
Router(config-if)#ip helper-address 192.168.2.5
Router(config-if)#duplex auto
Router(config-if)#speed auto
Router(config-if)#exit
Router(config)#in g0/2
Router(config-if)#ip address 192.168.1.129 255.255.255.128
Router(config-if)#ip helper-address 192.168.2.5
Router(config-if)#duplex auto
Router(config-if)#speed auto
Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

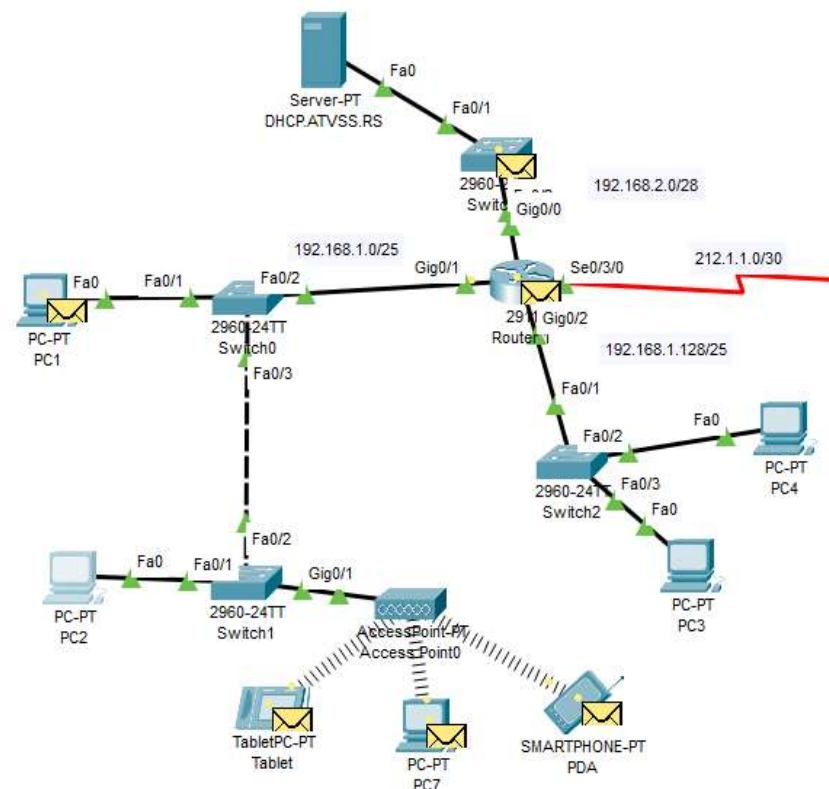
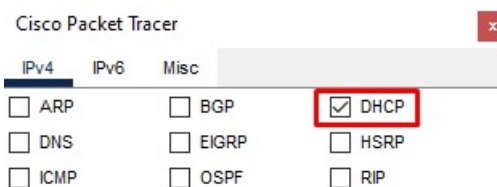
Router#
Router#
Router#
Router#

```

Testiranje dodeljivanja adresa



Praćenje paketa podataka

[Edit ACL Filters](#)

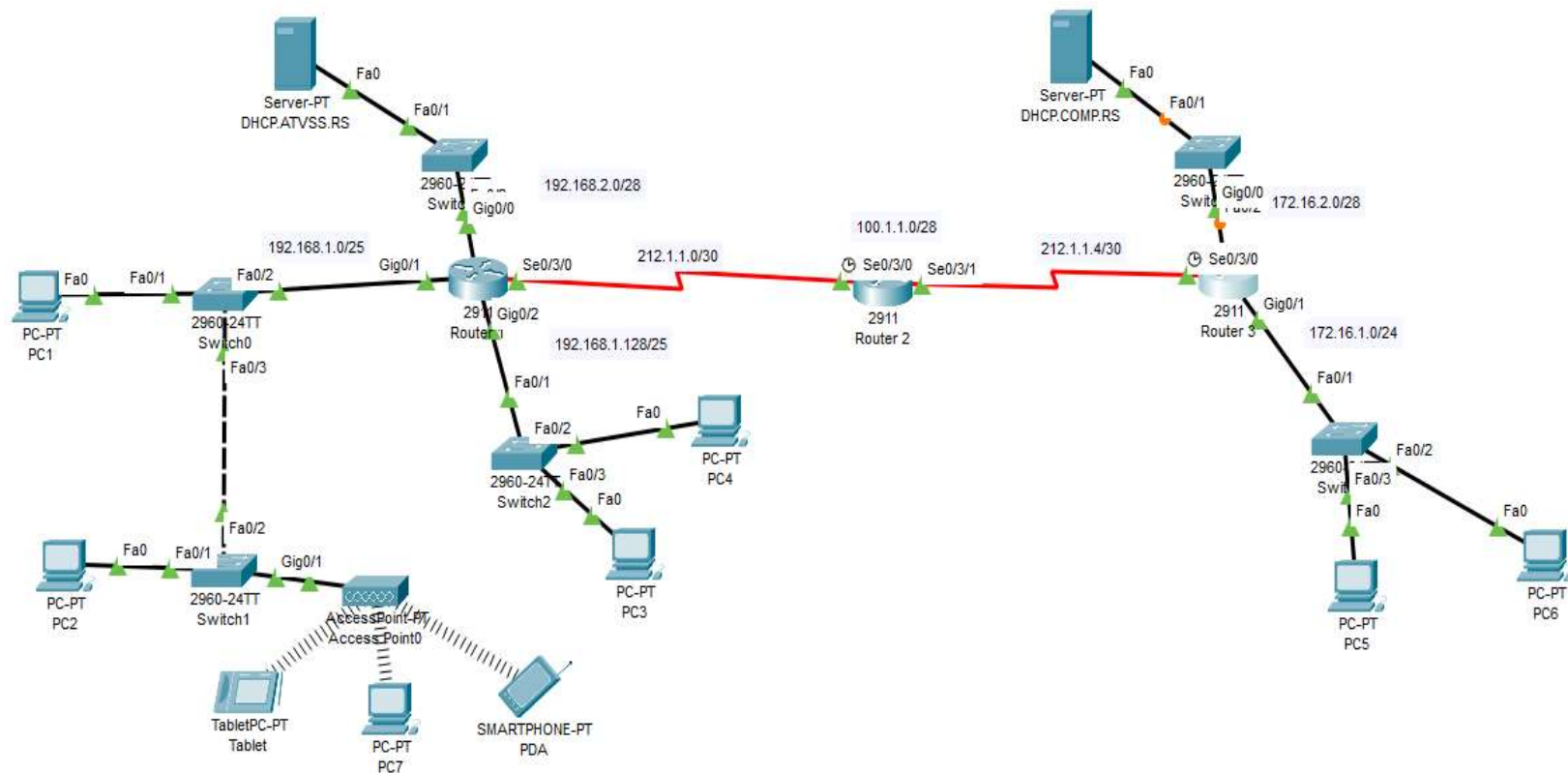
Praćenje paketa podataka

The screenshot displays a network simulation environment. On the left, a network topology diagram shows various devices including a Server-PT, several switches (2960-24TT), a router (2911), and multiple PCs (PC1, PC2, PC3, PC4, PC7). A red line highlights a specific data path from PC2 through a switch and a router. In the center, the 'PC2' configuration window is open, showing the 'Desktop' tab with 'IP Configuration' selected. The configuration is set to DHCP for the 'FastEthernet0' interface. On the right, the 'Simulation Panel' is visible, featuring an 'Event List' table that tracks network events over time.

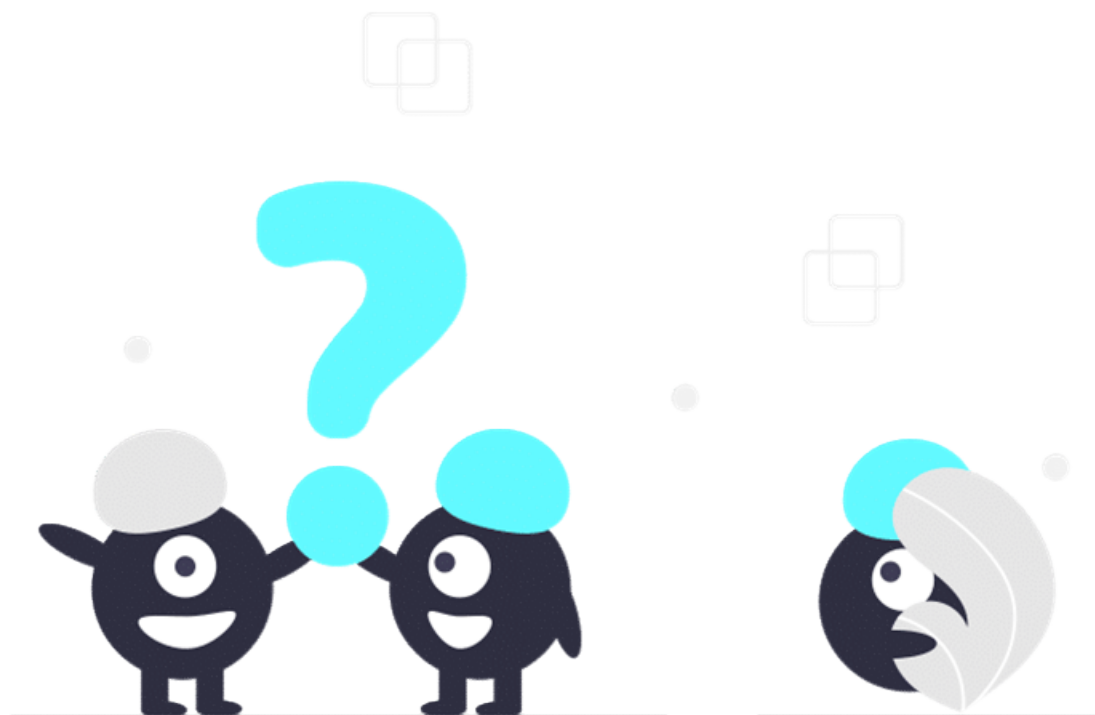
Vis.	Time(sec)	Last Device
	0.000	--
	0.000	--
	0.001	PC2
	0.001	--
	0.002	PC2
	0.002	Switch1
	0.002	Switch1
	0.003	Access Point0
	0.003	Access Point0
	0.003	Switch1
	0.003	Switch1
	0.003	Switch0
	0.003	Switch0
	0.003	Access Point0
	0.004	Access Point0
	0.004	Access Point0
	0.004	Switch0
	0.004	Switch0
	0.004	Access Point0

ZADATAK ZA SAMOSTALNI RAD

Konfigurisati DHCP Pool za mrežnu infrastrukturu za COMP.RS domen i omogućiti automatsku dodelu mrežnih parametara svim klijent računarima.



Hvala na pažnji.



PITANJA?!