

MREŽNI SERVISI



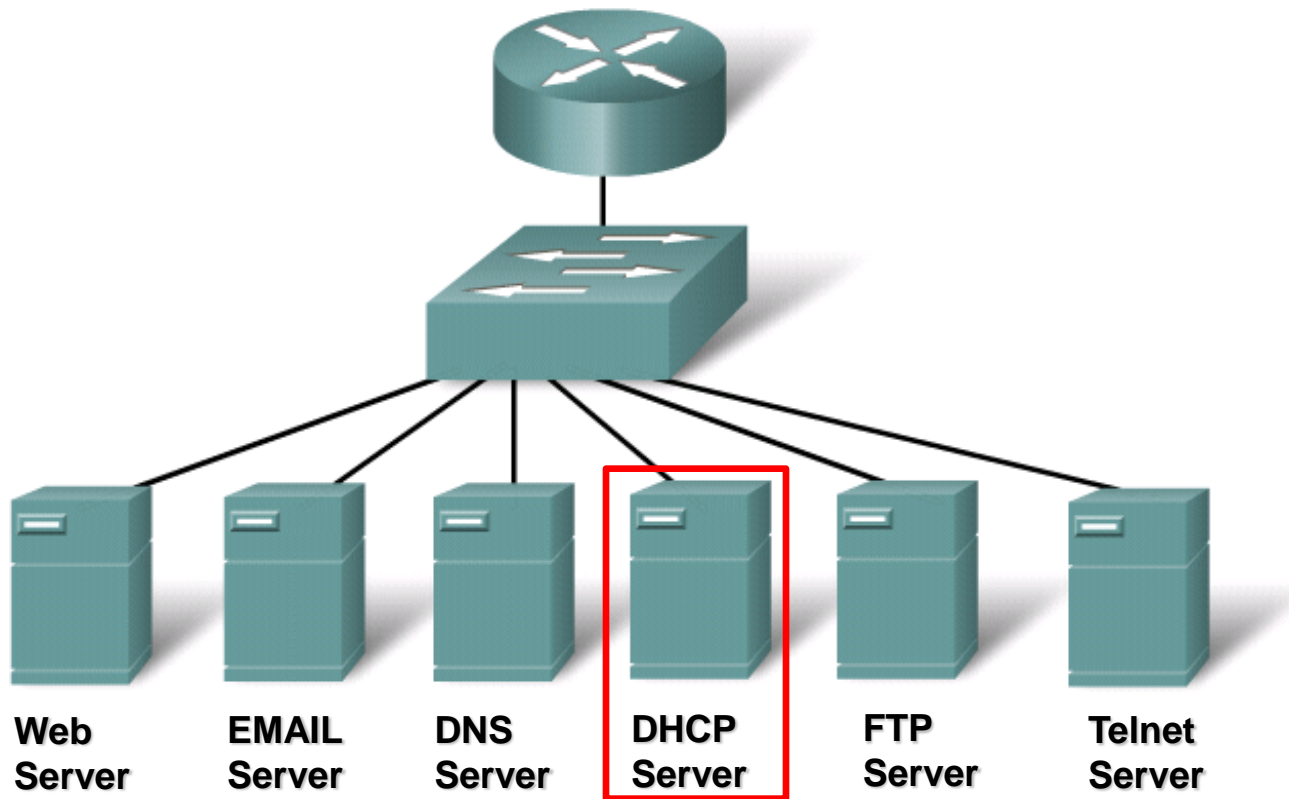
VTS NIŠ
OSNOVNE STRUKOVNE STUDIJE
SAVREMENE RAČUNARSKE TEHNOLOGIJE

dr Dušan Stefanović
email:dusan.stefanovic@vtsnis.edu.rs
Visoka Tehnička škola Niš

DHCP SERVIS

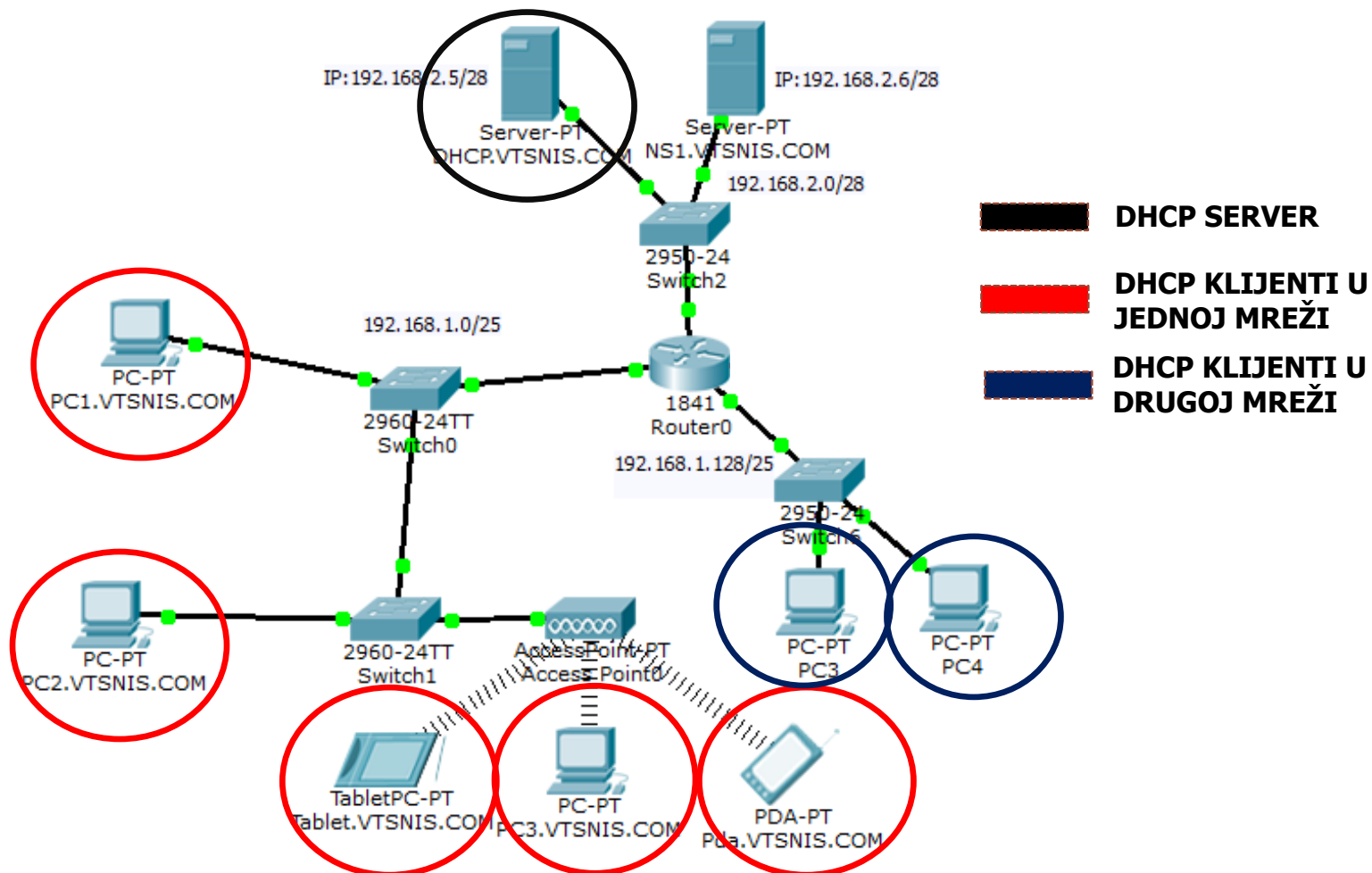


LABORATORIJSKA VEŽBA BROJ 1



DHCP SERVIS

DHCP KONFIGURACIJA – PACKET TRACER



DHCP SERVIS

DHCP KONFIGURACIJA – PACKET TRACER

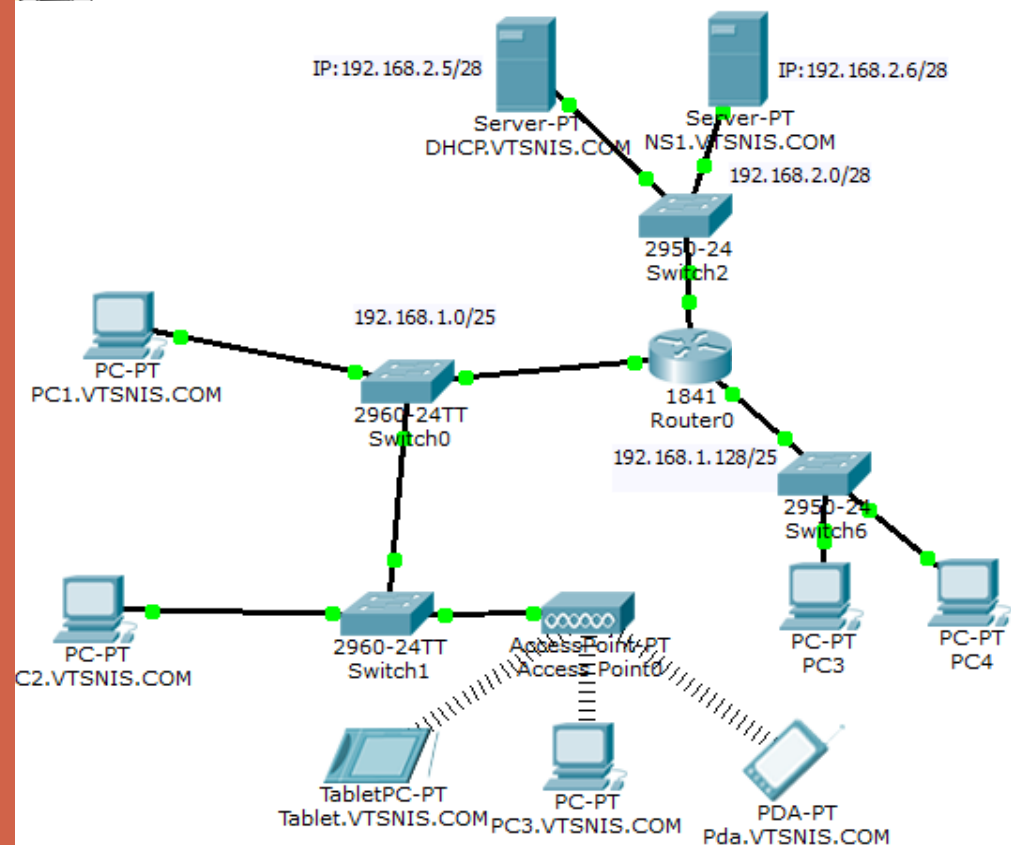
DHCP server opslužuje dve IP mreže.

Potrebno je obezbediti da ruter prosleđuje DHCP poruke do DHCP servera jer se DHCP server ne nalazi u mreži DHCP klijenata

Na DHCP serveru kreirati dva pool-a sa odgovarajućim mrežnim prolazima:

Pool1: 192.168.1.10-192.168.1.50

Pool2: 192.168.1.150 – 192.168.1.185



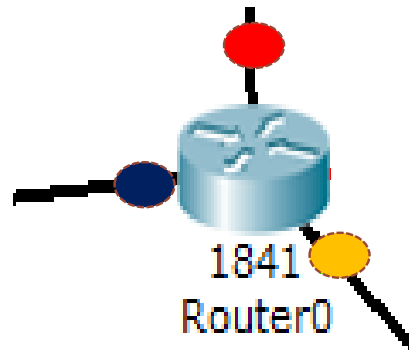
DHCP SERVIS



KONFIGURACIJA IP ADRESA NA RUTERU

FastEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="checkbox"/> Auto
<input type="radio"/> 10 Mbps	<input checked="" type="radio"/> 100 Mbps
Duplex	<input checked="" type="checkbox"/> Auto
<input checked="" type="radio"/> Full Duplex	<input type="radio"/> Half Duplex
MAC Address	0009.7C42.2101
IP Address	192.168.1.1
Subnet Mask	255.255.255.128
Tx Ring Limit	10

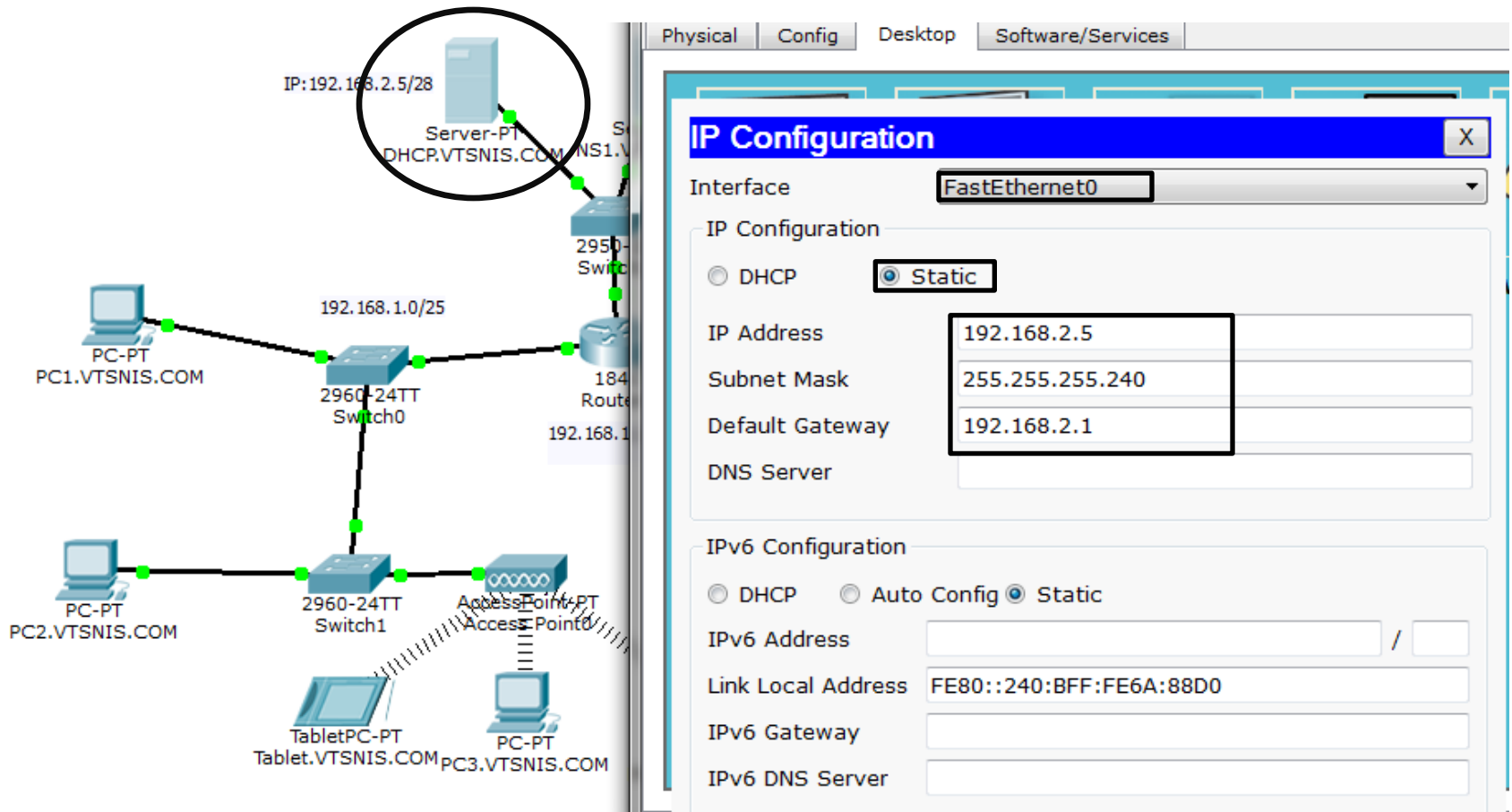
FastEthernet0/1	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="checkbox"/> Auto
<input type="radio"/> 10 Mbps	<input checked="" type="radio"/> 100 Mbps
Duplex	<input checked="" type="checkbox"/> Auto
<input checked="" type="radio"/> Full Duplex	<input type="radio"/> Half Duplex
MAC Address	0009.7C42.2102
IP Address	192.168.2.1
Subnet Mask	255.255.255.240
Tx Ring Limit	10



```
VIS>enable
VIS#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
VIS(config)#interface vlan 1
VIS(config-if)#ip address 192.168.1.129 255.255.255.128
VIS(config-if)#
```

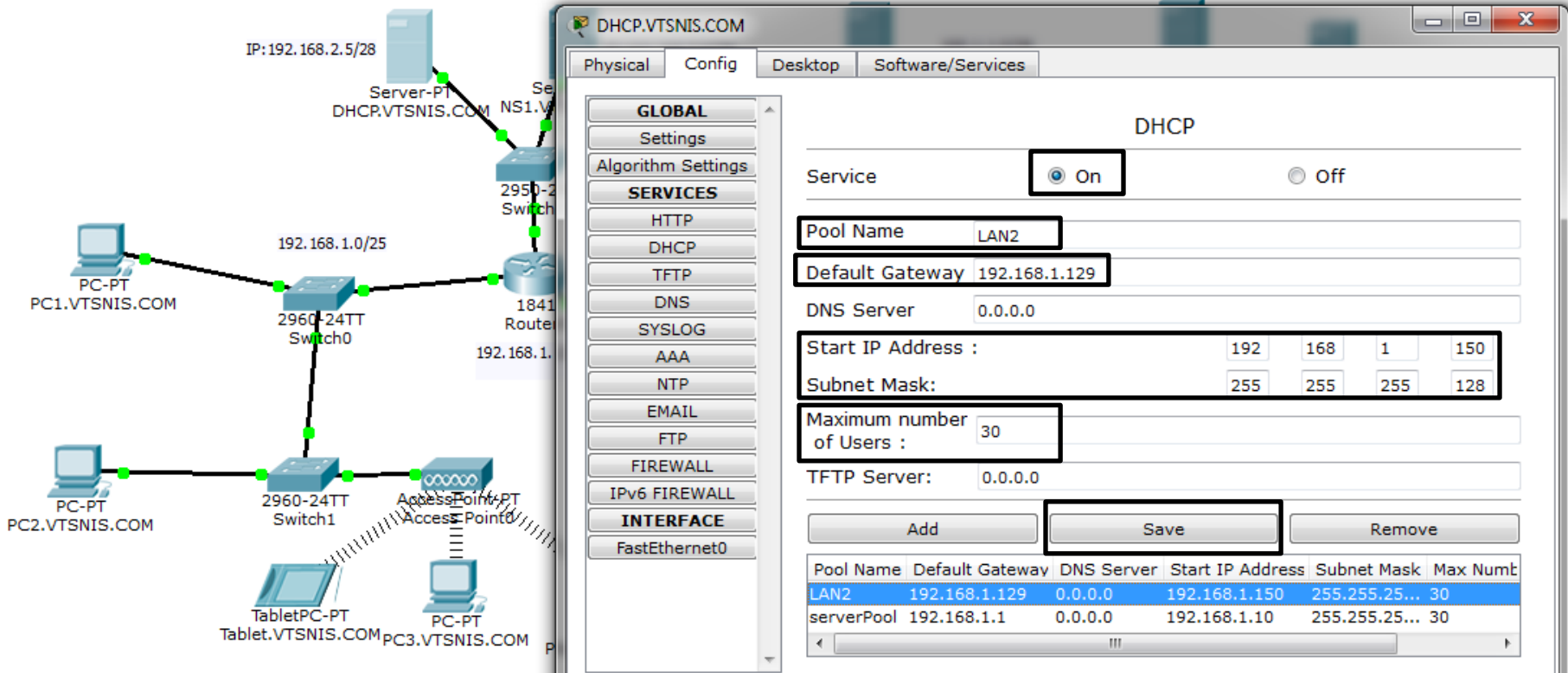
DHCP SERVIS

KONFIGURACIJA STATIČKE IP ADRESE NA DHCP SERVERU



DHCP SERVIS

KONFIGURACIJA ADRESNOG POOL-a NA DHCP SERVERU



The image displays a network diagram on the left and a DHCP configuration window on the right. The network diagram shows a central 2950-24TT Switch connected to a Server-PT (DHCP.VTSNIS.COM, IP: 192.168.2.5/28) and a 2960-24TT Switch0. Switch0 is connected to a 1841 Router (IP: 192.168.1.1) and another 2960-24TT Switch1. Switch1 is connected to PC-PT PC1.VTSNIS.COM (IP: 192.168.1.0/25), PC-PT PC2.VTSNIS.COM, TabletPC-PT Tablet.VTSNIS.COM, and PC-PT PC3.VTSNIS.COM. An Access Point is also connected to Switch1.

The DHCP configuration window (DHCP.VTSNIS.COM) shows the following settings:

- Service: On
- Pool Name: LAN2
- 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: 30
- TFTP Server: 0.0.0.0

The configuration window also includes a table of existing DHCP pools:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max Num
LAN2	192.168.1.129	0.0.0.0	192.168.1.150	255.255.25...	30
serverPool	192.168.1.1	0.0.0.0	192.168.1.10	255.255.25...	30

DHCP SERVIS

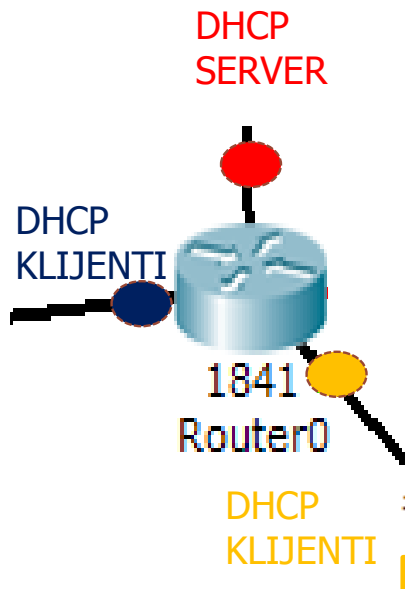
KONFIGURACIJA RELAY-AGENT NA RUTERU

DHCP klijenti koriste IP broadcast za pronalaženje DHCP servera u mreži

Routeri ne prosleđuju broadcast poruke u drugim mrežama

Administratori mogu da podese ruter da određene broadcast poruke na osnovu UDP porta prosleđuju na drugim segmentima

```
interface FastEthernet0/0
 ip address 192.168.1.1 255.255.255.128
 ip helper-address 192.168.2.5
 duplex auto
 speed auto
```



```
interface Vlan1
 ip address 192.168.1.129 255.255.255.128
 ip helper-address 192.168.2.5
```


DHCP SERVIS

KONFIGURACIJA DHCP KLIJENTA

PC1.VTSNIS.COM

IP Configuration

IP Configuration

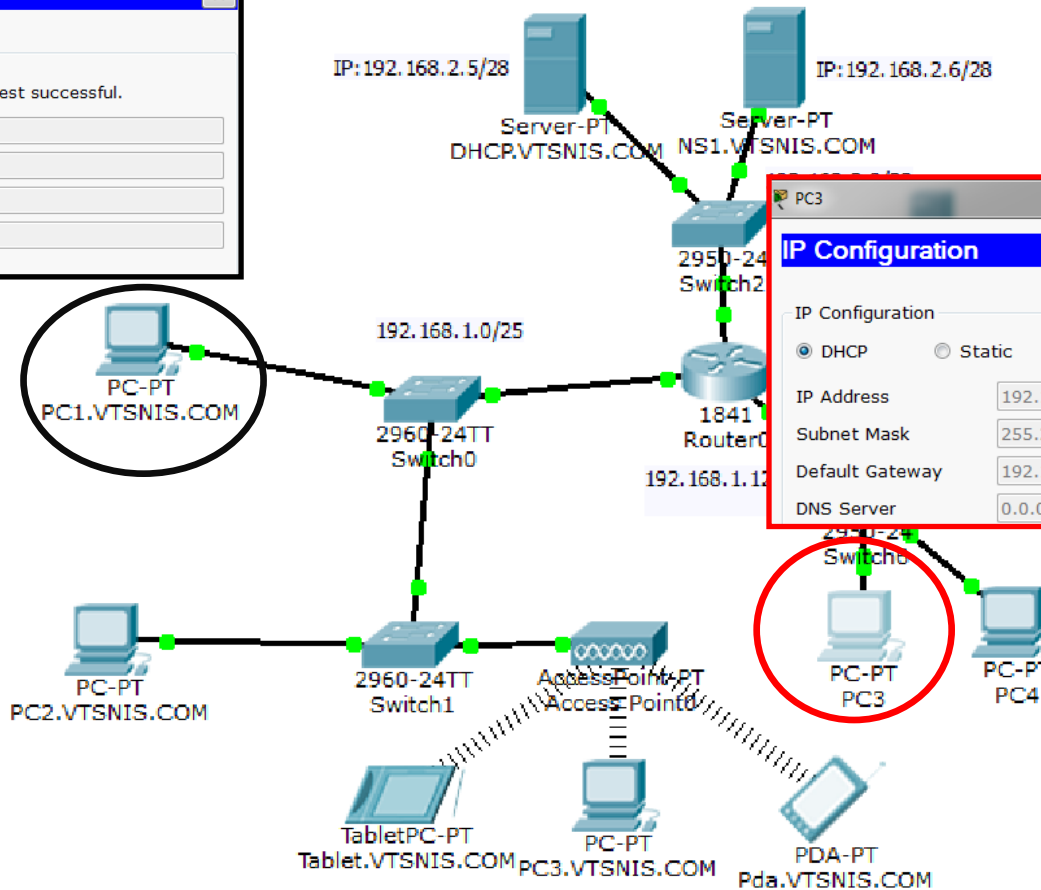
DHCP Static DHCP request successful.

IP Address: 192.168.1.13

Subnet Mask: 255.255.255.128

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0



PC3

IP Configuration

IP Configuration

DHCP Static DHCP request successful.

IP Address: 192.168.1.152

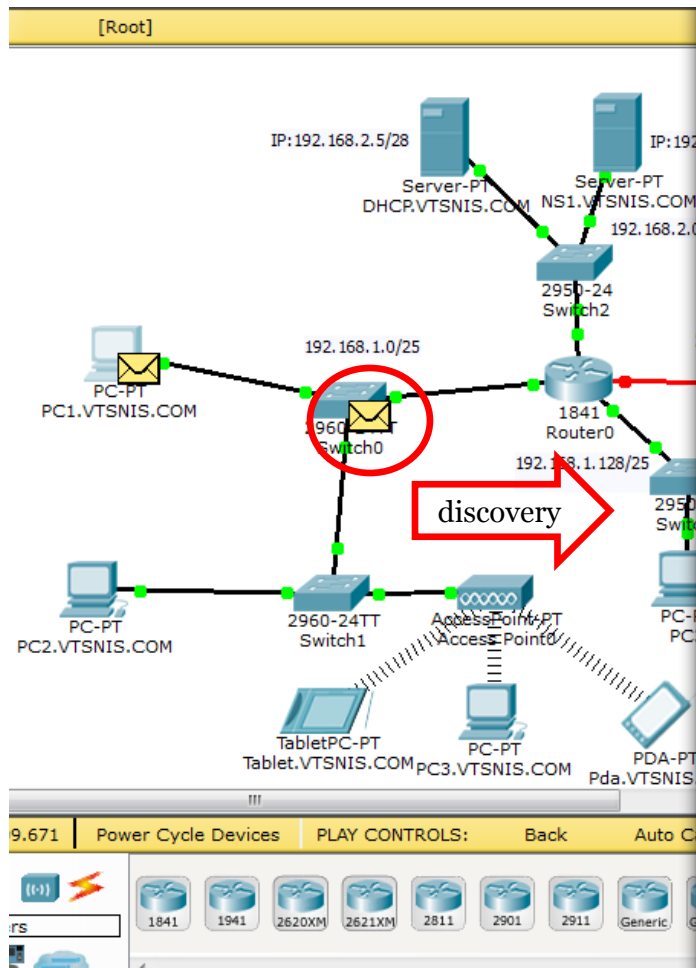
Subnet Mask: 255.255.255.128

Default Gateway: 192.168.1.129

DNS Server: 0.0.0.0

DHCP SERVIS

SIMULACIJA PRAĆENJA DHCP PORUKA



PDU Formats

PREAMBLE: 101010...1011	DEST MAC: FFFF.FFFF.FFFF	SRC MAC: 0040.0B58.4ADD
TYPE: 0x800	DATA (VARIABLE LENGTH)	FCS: 0x0

IP

0	4	8	16	19	31 Bits
4	IHL	DSCP: 0x0	TL: 62		
ID: 0xa		0x0	0x0		
TTL: 128	PRO: 0x11	CHKSUM			
SRC IP: 0.0.0.0					
DST IP: 255.255.255.255					
OPT: 0x0				0x0	
DATA (VARIABLE LENGTH)					

UDP

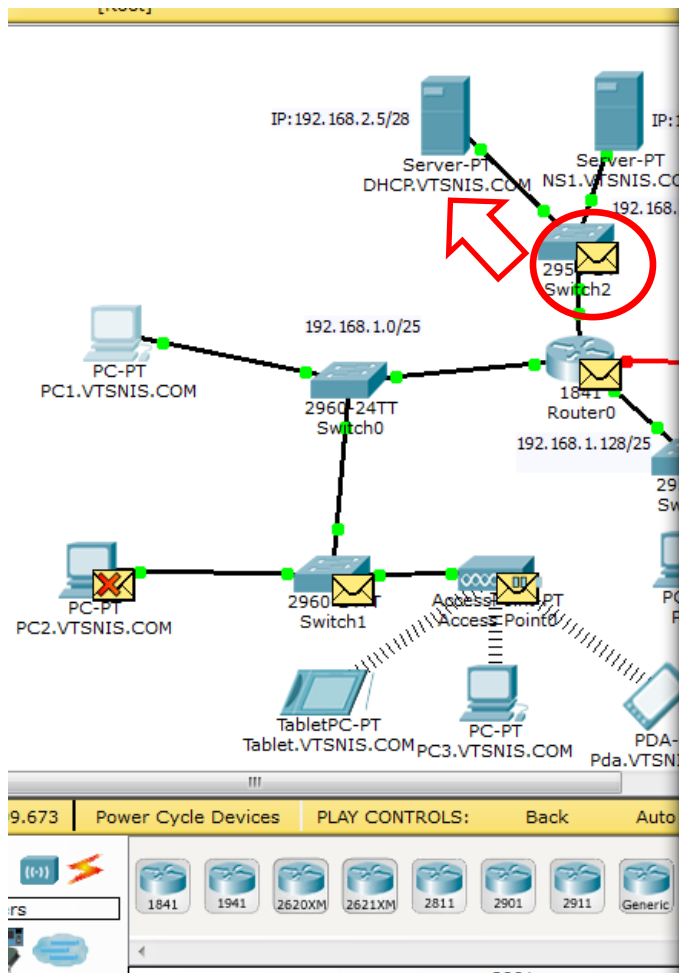
0	16	31 Bits
SRC PORT: 68		DEST PORT: 67
LENGTH: 0x2a		CHECKSUM: 0x0
DATA (VARIABLE)		

DHCP

0	8	16	31 Bits
OP: 0x1	HW TYPE	HW LEN	HOPS
TRANSACTION ID (4 BYTES)			
SECS		FLAGS	
CLIENT ADDRESS: 0.0.0.0			
"YOUR" CLIENT ADDRESS: 0.0.0.0			
SERVER ADDRESS: 0.0.0.0			
RELAY AGENT ADDRESS			
CLIENT HARDWARE ADDRESS: 0040.0B58.4ADD			

DHCP SERVIS

SIMULACIJA PRAĆENJA DHCP PORUKA



PDU Formats

PREAMBLE: 101010...1011		DEST MAC: 0040.0B6A.88D0	SRC MAC: 0009.7C42.2102
TYPE: 0x800	DATA (VARIABLE LENGTH)		FCS: 0x0

IP

0				4				8				16				19				31 Bits			
4		IHL	DSCP: 0x0		TL: 62																		
ID: 0xa				0x0				0x0															
TTL: 128		PRO: 0x11		CHKSUM																			
SRC IP: 192.168.1.1																							
DST IP: 192.168.2.5																							
OPT: 0x0				0x0																			
DATA (VARIABLE LENGTH)																							

UDP

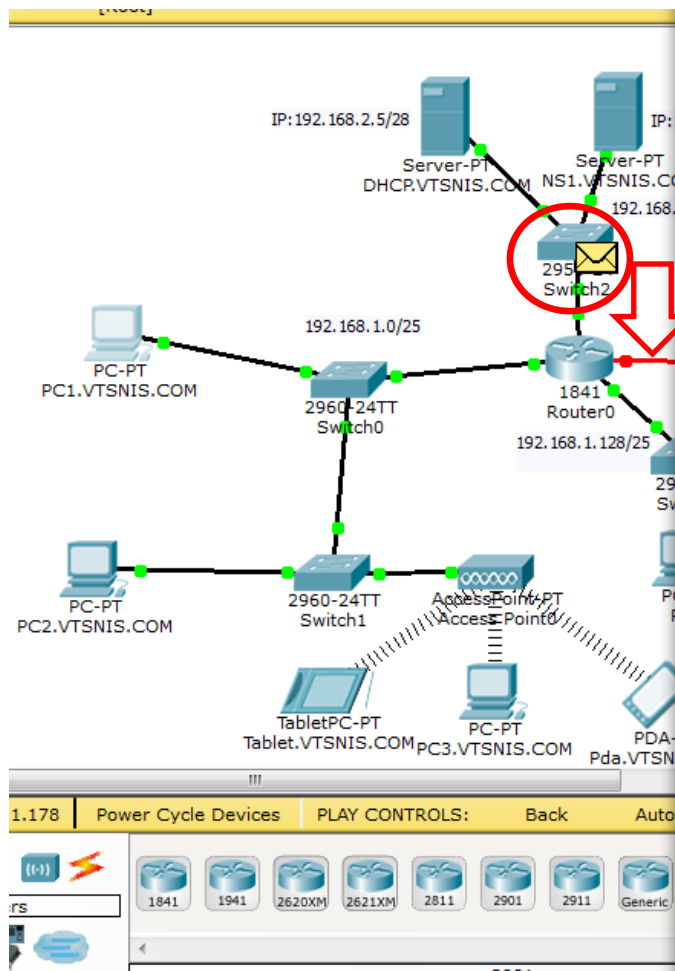
0		16		31 Bits	
SRC PORT: 68		DEST PORT: 67			
LENGTH: 0x2a		CHECKSUM: 0x0			
DATA (VARIABLE)					

DHCP

0		8		16		31 Bits	
OP: 0x1		HW TYPE		HW LEN		HOPS	
TRANSACTION ID (4 BYTES)							
SECS				FLAGS			
CLIENT ADDRESS: 0.0.0.0							
"YOUR" CLIENT ADDRESS: 0.0.0.0							
SERVER ADDRESS: 0.0.0.0							
RELAY AGENT ADDRESS							
CLIENT HARDWARE ADDRESS: 0040.0B58.4ADD							

DHCP SERVIS

SIMULACIJA PRAĆENJA DHCP PORUKA



PDU Formats

PREAMBLE: 101010...1011	DEST MAC: 0009.7C42.2102	SRC MAC: 0040.0B6A.88D0
TYPE: 0x800	DATA (VARIABLE LENGTH)	FCS: 0x0

IP

0	4	8	16	19	31 Bits
4	IHL	DSCP: 0x0	TL: 62		
ID: 0x25		0x0	0x0		
TTL: 128	PRO: 0x11	CHKSUM			
SRC IP: 192.168.2.5					
DST IP: 192.168.1.1					
OPT: 0x0			0x0		
DATA (VARIABLE LENGTH)					

UDP

0	16	31 Bits
SRC PORT: 67		DEST PORT: 67
LENGTH: 0x2a	CHECKSUM: 0x0	
DATA (VARIABLE)		

DHCP

0	8	16	31 Bits
OP: 0x2	HW TYPE	HW LEN	HOPS
TRANSACTION ID (4 BYTES)			
SECS		FLAGS	
CLIENT ADDRESS: 0.0.0.0			
"YOUR" CLIENT ADDRESS: 192.168.1.15			
SERVER ADDRESS: 192.168.2.5			
RELAY AGENT ADDRESS			
CLIENT HARDWARE ADDRESS: 0040.0B58.4ADD			

DHCP SERVIS



ZADATAK

Obezbediti da klijenti u mreži 172.16.1.0/24 dobiju mrežne parametre od DHCP servera.

DHCP server se nalazi u mreži 192.168.2.0/28

Podesiti neophodne IP adrese na ruteru, DHCP servery i DHCP Relay Agent opciju

