

# VJEŽBA 3

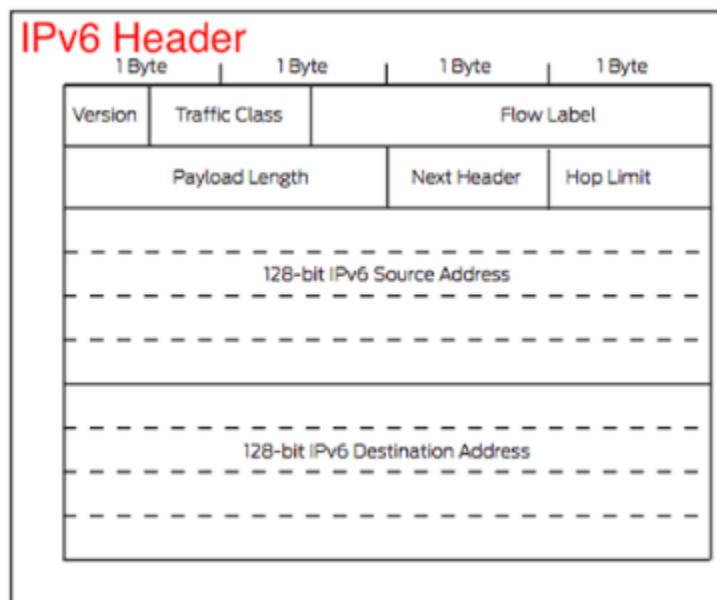
## IPv6 adresiranje

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1. Na primjeru objasni format IPv6 adrese.

**IPv6 adresa:** Ima 128 bita, prikazuje se u osam grupa odvojenih dvotačkama, npr.  
2001:0db8:85a3:0000:0000:8a2e:0370:7334

2. Skiciraj IPv6 zaglavlje i objasni funkcije pojedinih polja.



**IPv6 zaglavlje:** Sadrži polja poput Verzije (4 bita), Dužine podataka (16 bita), Izvorne i odredišne adrese (po 128 bita), itd.

3. Ukratko objasni novosti koje donosi IPv6.

Veći adresni prostor, bolja podrška za mobilnost, ugrađena sigurnost (IPSec), i automatska konfiguracija.

#### 4. Objasni tipove jednodredišnih IPv6 adresa

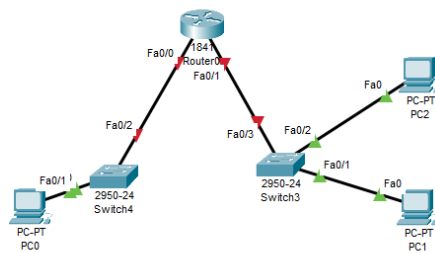
Globalne jednodredišne (javne)

Lokalno jedinstvene (privatne)

Link-local (za komunikaciju unutar mrežnog segmenta).

## IZVOĐENJE VJEŽBE

1. Formiraj mrežu prema prikazanoj topologiji.



Provjeri da li računala PC1 i PC2 imaju automatski konfigurirane adrese na lokalnoj vezi (engl. link-local address). Pinganjem adrese na lokalnoj vezi, provjeri vezu između PC1 i PC2.

Imaju automatski konf adrese.

```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping FE80::20A:41FF:FEAD:CB53
Pinging FE80::20A:41FF:FEAD:CB53 with 32 bytes of data:
Reply from FE80::20A:41FF:FEAD:CB53: bytes=32 time<ms TTL=128
Reply from FE80::20A:41FF:FEAD:CB53: bytes=32 time<ms TTL=128
Reply from FE80::20A:41FF:FEAD:CB53: bytes=32 time<ms TTL=128
Reply from FE80::20A:41FF:FEAD:CB53: bytes=32 time<ms TTL=128
Ping statistics for FE80::20A:41FF:FEAD:CB53:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

2. Usmjernik podrazumijevano nema omogućeno korištenje protokola IPv6 i potrebna je konfiguracija istog. Konfigurirajte adresu na lokalnoj vezi za sučelje FastEthernet 0/0 na sljedeći način:

```
      --- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ipv6 unicast-routing
Router(config)#int fastethernet 0/0
Router(config-if)#ipv6 address FE80::1 link-local
Router(config-if)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up
```

Router1

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947218E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:

Press RETURN to get started!

Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ipv6 unicast-routing
Router(config)#int fastethernet 0/0
Router(config-if)#ipv6 address FE80::20A:41FF:FEAD:CB53
% Incomplete command.
Router(config-if)#IPv6 ADDRESS FE80::1 link-local
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

```

Copy Paste

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Na isti način, konfigurirajte i adresu za sučelje FastEthernet 0/1.

```

* invalid input detected at ... marker.

Router(config-if)#ipv6 address FE::1 link-local
% Invalid link-local address
Router(config-if)#ipv6 address FE80::1 link-local
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

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

```

Koji je rezultat ovih akcija?

Rezultat ovih akcija je uspješno pinganje.

Pinganjem sa računala PC1 i PC2 provjerite dostupnost ovih sučelja.

3. Provjerite da li je konfigurirana adresa na lokalnoj vezi računala PC0. Ukoliko jest, pinganjem provjerite dostupnost računala PC1 i PC2. Kakav je rezultat? Zašto?

```
C:\>ping FE80::260:70FF:FE01:60C2

Pinging FE80::260:70FF:FE01:60C2 with 32 bytes of data:

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

Ping statistics for FE80::260:70FF:FE01:60C2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping FE80::20A:41FF:FEAD:CB53

Pinging FE80::20A:41FF:FEAD:CB53 with 32 bytes of data:

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

Ping statistics for FE80::20A:41FF:FEAD:CB53:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Pinganje je odbijeno jer PC1 i PC2 nisu direktno spojeni na PC0.

4. Kako bismo povezali obje mreže, potrebno je konfigurirati globalne adrese (engl. unicast global address). Za naše dvije mreže, koristit ćemo sljedeće adrese:

Mreža A: 2001:0DB8:AAAA:000A:0000:0000:0000:0000/64

Mreža B: 2001:0DB8:AAAA:000B:0000:0000:0000:0000/64

Kako bismo adrese ovih mreža napisali u skraćenom obliku?

Na već opisan način (u naredbi #ipv6 address izostavite link-local), konfigurirajte globalne adrese za sučelja FastEthernet 0/0 i FastEthernet 0/1, pridajući im prvu moguću adresu u pojedinoj mreži.

5. Računalima statički dodijelite IPv6 adrese:

- a. mrežni dio adrese je prefiks lokalnog mrežnog segmenta
- b. host dio adrese je jednak host dijelu adrese na lokalnoj vezi
- c. IPv6 Gateway je FE80::1 za sva računala

Pinganjem provjerite povezanost računala.