IPv6 adresiranje

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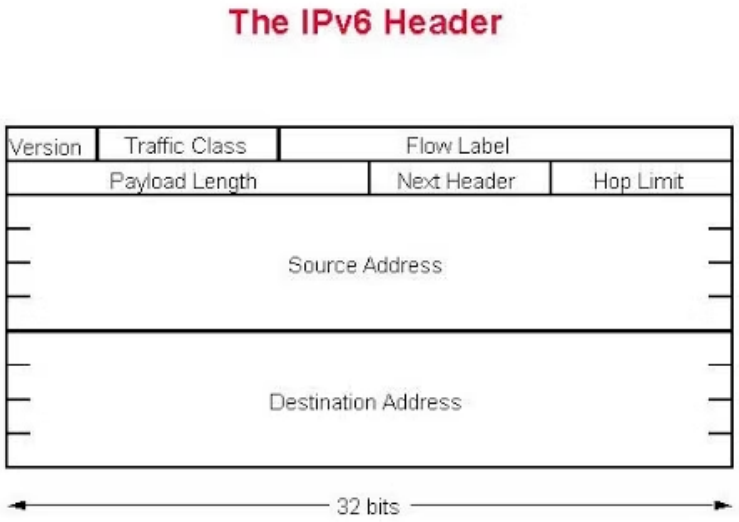
PRIPREMA ZA VJEŽBU

1. Na primjeru objasni format IPv6 adrese.
2. Skiciraj IPv6 zaglavlje i objasni funkcije pojedinih polja.
3. Ukratko objasni novosti koje donosi IPv6.
4. Objasni tipove jednoodredišnih IPv6 adresa.

2.



Verzija: polje dužine 4 bita (6 označava verziju IPv6)
Klasa prometa (engl. Traffic class):
– 4 bita
-omogućava postavljanje željenog prioriteta pri uručivanju paketa
16 mogućih vrsta (0-7 nije bitno kašnjenje, 8-15 u realnom vremenu)
Oznaka toka (engl. Flow label):
-24 bita
-S ishodišnom adresom čini jedinstveni broj koji označava pakete za
-posebno rukovanje kod usmjernika (npr. za VoIP)
Dužina podatka (engl. Payload lenght): duljna korisnog sadržaja
Sljedeće zaglavlje (engl. Next header):
-Označava koji tip zaglavlja slijedi odmah iza IPv6 zaglavlja (npr. TCP ili UDP)
Ograničenje broja skokova (engl. Hop limit):

-polje koje definira koliko usmjernika paket može proći prije nego bude uništen
-Broj od 8 okteta
-Slično TTL polju
Ishodišna adresa:
-128 bitna adresa ishodišta paketa
Odredišna adresa:
-128 bitna adresa odredišta paketa
Zaglavlje proširenja:
-Opcionalna polja koja slijede obvezno zaglavlje
-Osnovno zaglavlje uvijek je iste duljine

3.

Mnogo veći adresni prostor, novi format zaglavlja, ugrađeni sustavi zaštite podataka, poboljšana podrška za kvalitetu usluge (engl. Quality of Service), proširivost.

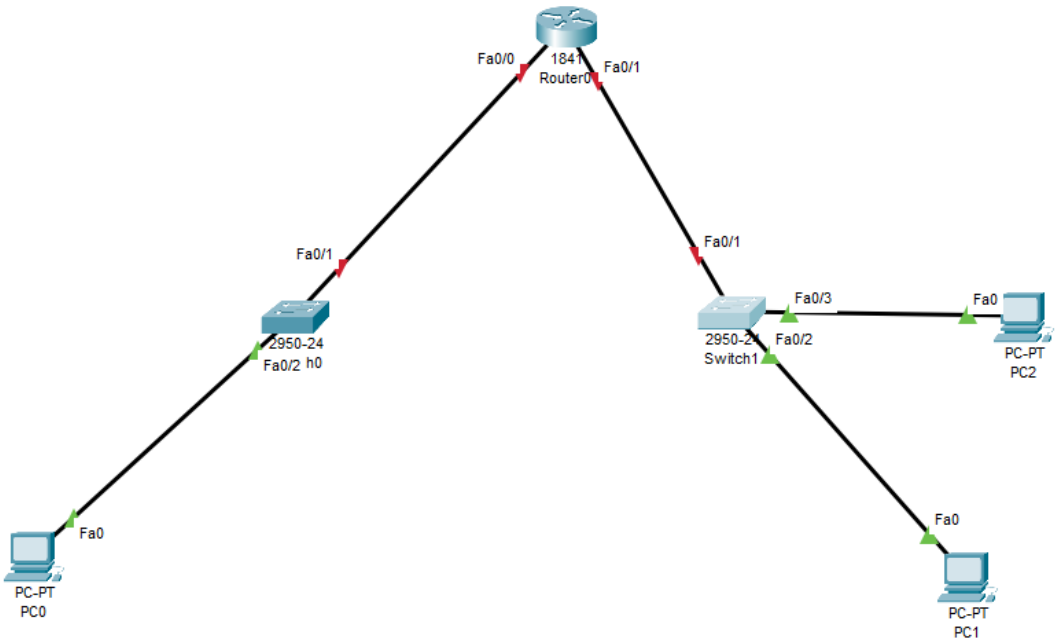
4.

1. Adresa na lokalnoj vezi (engl. link-local unicast address) – koriste se pri autokonfiguraciji mreže kako bi uređaji imali neku adresu za komunikaciju s usmjernikom. Prefiks FE80::/10

2. Adresa lokalne mreže (engl. site-local unicast address) – ista uloga kao i privatne adrese u IPv4. Adresiranje uređaja koji nisu spojeni na internet – domet unutar lokalne mreže.

Izvođenje vježbe

1. Formiraj mrežu prema prikazanoj topologiji.




```
C:\>ping FE80::2E0:8FFF:FE4C:9152

Pinging FE80::2E0:8FFF:FE4C:9152 with 32 bytes of data:

Reply from FE80::2E0:8FFF:FE4C:9152: bytes=32 time<1ms TTL=128
Reply from FE80::2E0:8FFF:FE4C:9152: bytes=32 time<1ms TTL=128
Reply from FE80::2E0:8FFF:FE4C:9152: bytes=32 time<1ms TTL=128
Reply from FE80::2E0:8FFF:FE4C:9152: bytes=32 time<1ms TTL=128

Ping statistics for FE80::2E0:8FFF:FE4C:9152:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2.

```
Router#enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#upv6 unicast-routing
                ^
% Invalid input detected at '^' marker.

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
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

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

PC1

```
Ping statistics for FE90::1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping FE80::1

Pinging FE80::1 with 32 bytes of data:

Reply from FE80::1: bytes=32 time<1ms TTL=255
Reply from FE80::1: bytes=32 time<1ms TTL=255
Reply from FE80::1: bytes=32 time<1ms TTL=255
Reply from FE80::1: bytes=32 time<1ms TTL=255

Ping statistics for FE80::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

3.

```
C:\>ping Fe80::2E0:8FFF:FE4C:9152

Pinging Fe80::2E0:8FFF:FE4C:9152 with 32 bytes of data:

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

Ping statistics for FE80::2E0:8FFF:FE4C:9152:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.................: 00E0.8F4C.9152
   Link-local IPv6 Address.........: FE80::2E0:8FFF:FE4C:9152
   IPv6 Address....................: ::
   IPv4 Address....................: 0.0.0.0
   Subnet Mask.....................: 0.0.0.0
   Default Gateway.................: ::
                                     0.0.0.0
   DHCP Servers....................: 0.0.0.0
   DHCPv6 IAID.....................:
```

Mreže nisu povezane.

4.

```
Router#enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fastethernet0/0
Router(config-if)#ipv6 address 2001:0DB8:AAAA:000A:0000:0000:0000:0000/64
Router(config-if)#exit
Router(config)#int fastethernet 0/1
Router(config-if)#ipv6 address 2001:0DB8:AAAA:000B:0000:0000:0000:0000/64
Router(config-if)#exit
Router(config)#
```

Kraći oblici:

A: 2001:DB8:AAAA:A::/64

B: 2001:DB8:AAAA:B::/64

5.