Univerzitet u Sarajevu
Elektrotehnički fakultet

# ZADAĆA 1
iz predmeta Računarske mreže

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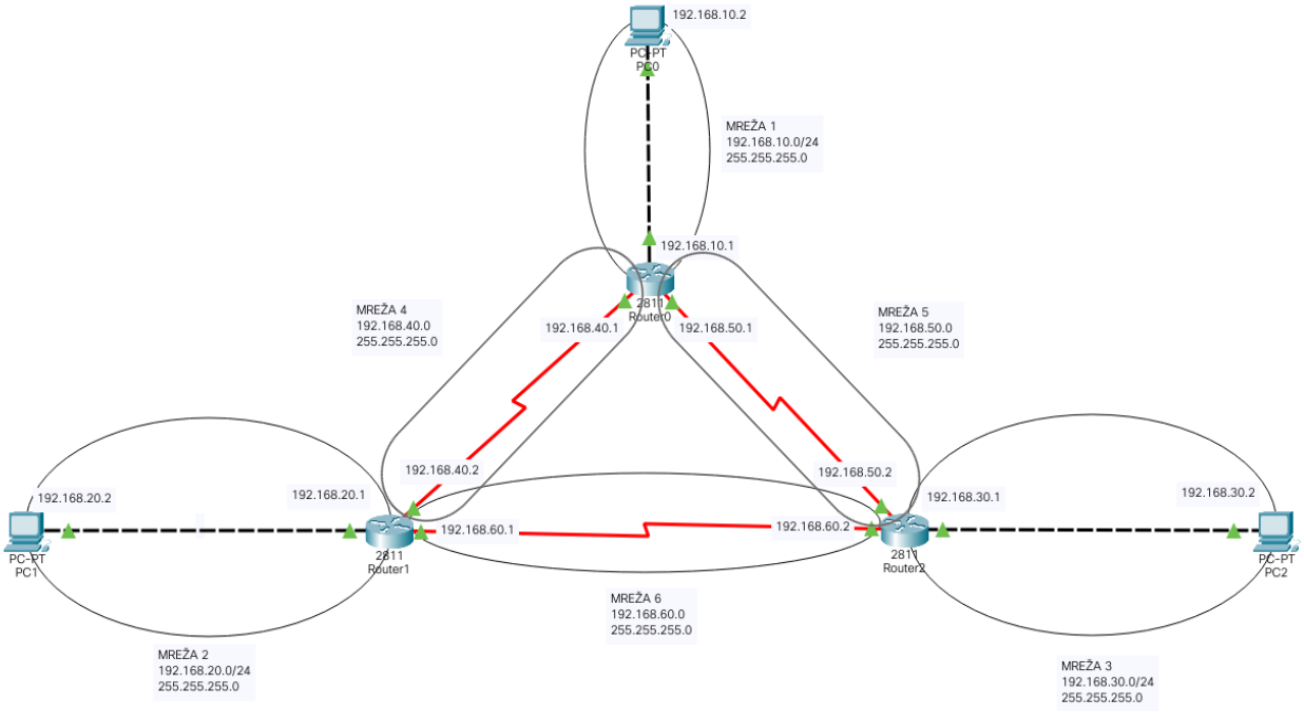
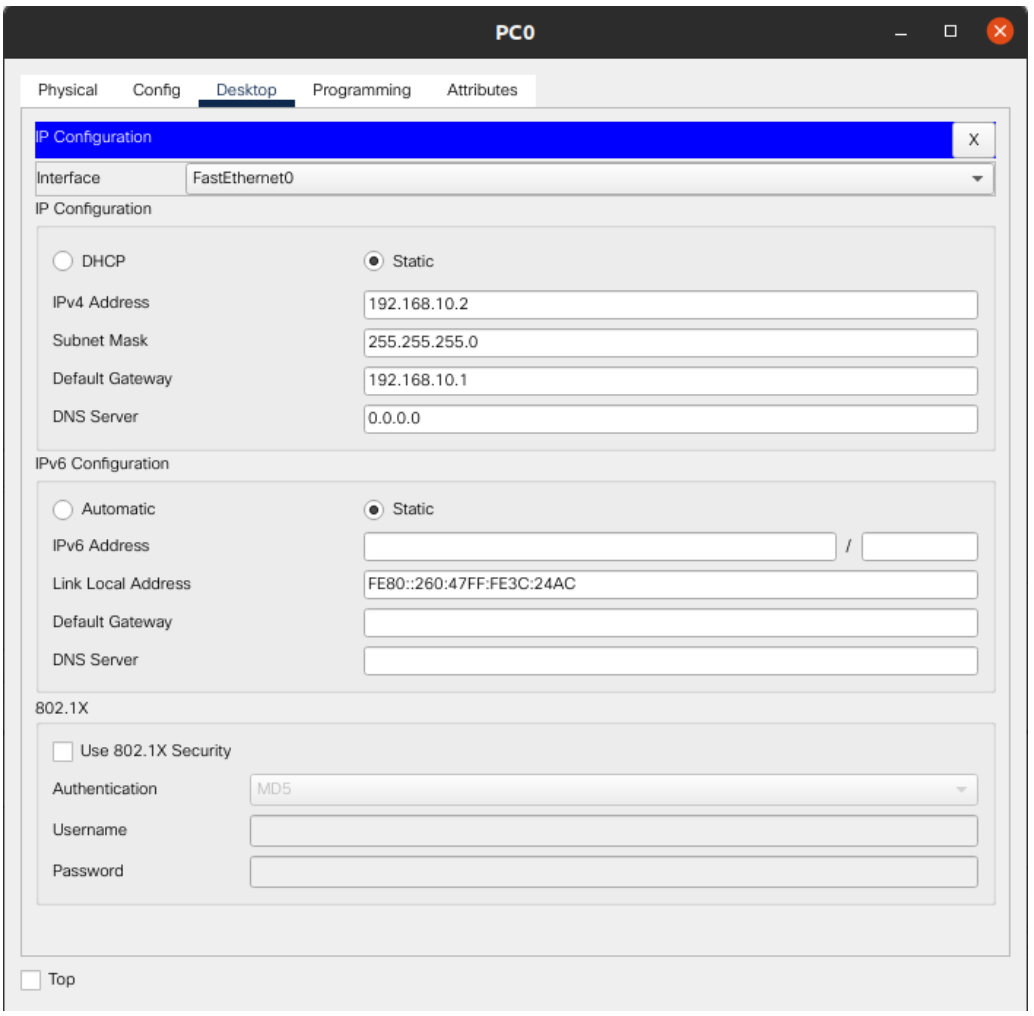
Za izradu ove zadaće bilo je potrebno uspostaviti mrežu datu na slici u postavci zadaće, što je učinjeno koristeći Cisco Packet Tracer. Konačna mreža definisana u ovom alatu prikazana je na slici Slika 1.




Slika 1. Tražena računarska mreža

Na slici Slika 1 možemo vidjeti da u mreži konfigurišu tri PC-a: PC0, PC1 i PC2, te tri rutera: Router0, Router1 i Router2. Za povezivanje ovih uređaja u jednu mrežu definisano je 6 podmreža:

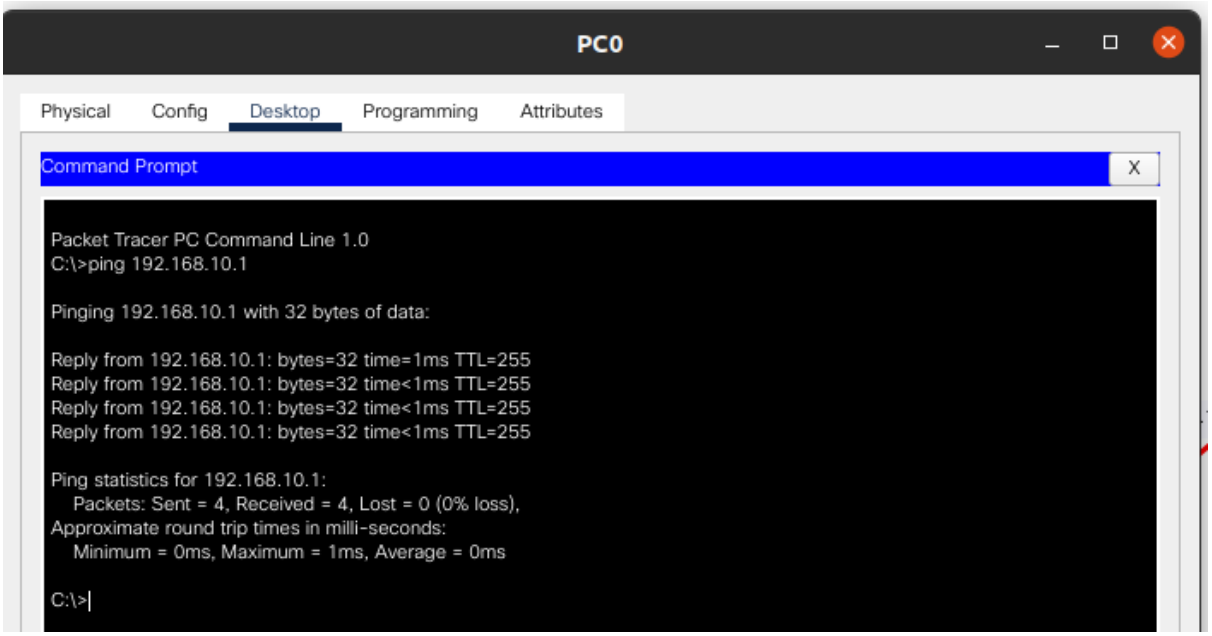
1. Mreža 1(PC0 - Router0)
   Dodijeljeni subnet: 192.168.10.0/24
   Adresa mreže: 192.168.10.0
   Subnetmask: 255.255.255.0
   IP adresa PC0: 192.168.10.2
   Default gateway: 192.168.10.1
   Broadcast: 192.168.10.255



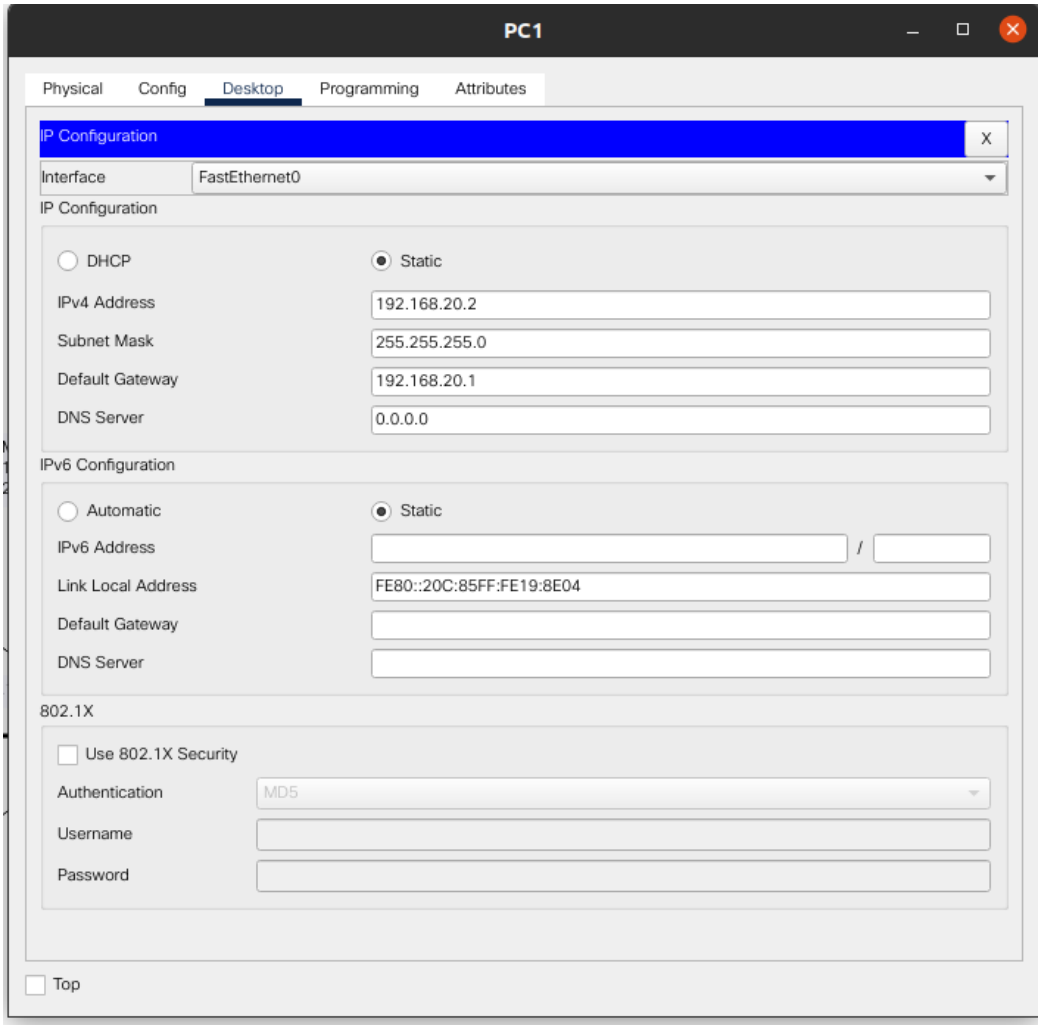

PC0 je spojen svojim Fa0 interfejsom(192.168.10.2)
Router0 je spojen svojim Fast Ethernet 0/0 interfejsom

```
!
interface FastEthernet0/0
 ip address 192.168.10.1 255.255.255.0
 duplex auto
 speed auto
!
```

Provjera komunikacije u ovoj mreži:



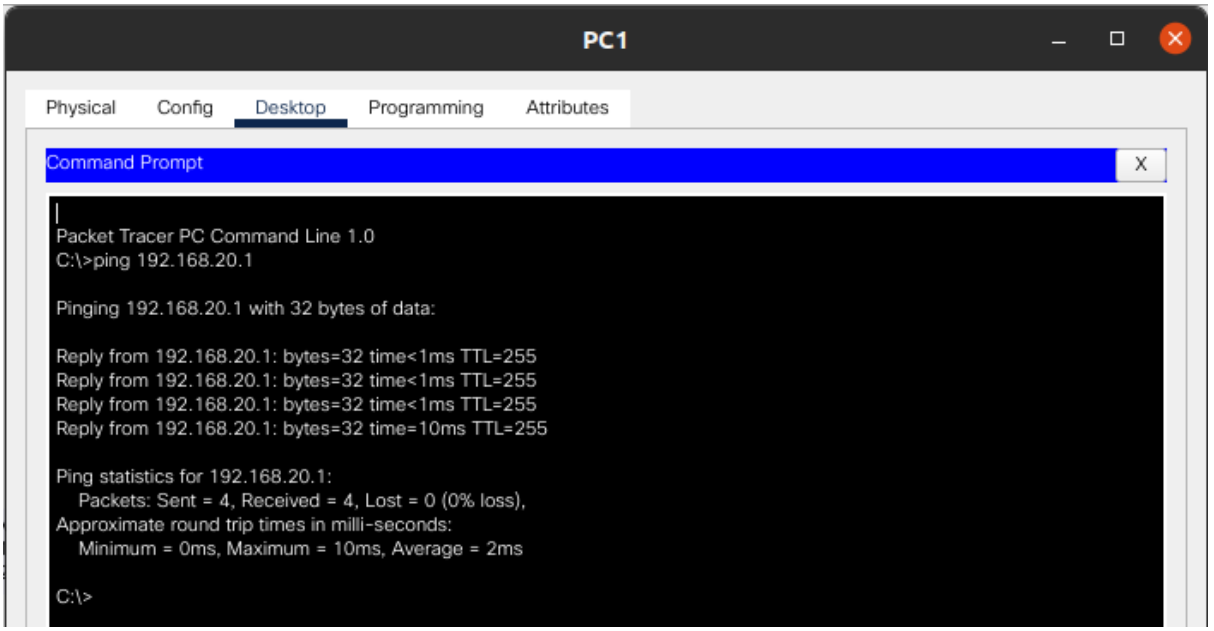

2. Mreža 2(PC1 - Router1)
   Dodijeljeni subnet: 192.168.20.0/24
   Adresa mreže: 192.168.20.0
   Subnetmask: 255.255.255.0
   IP adresa PC1: 192.168.20.2
   Default gateway: 192.168.20.1
   Broadcast: 192.168.20.255



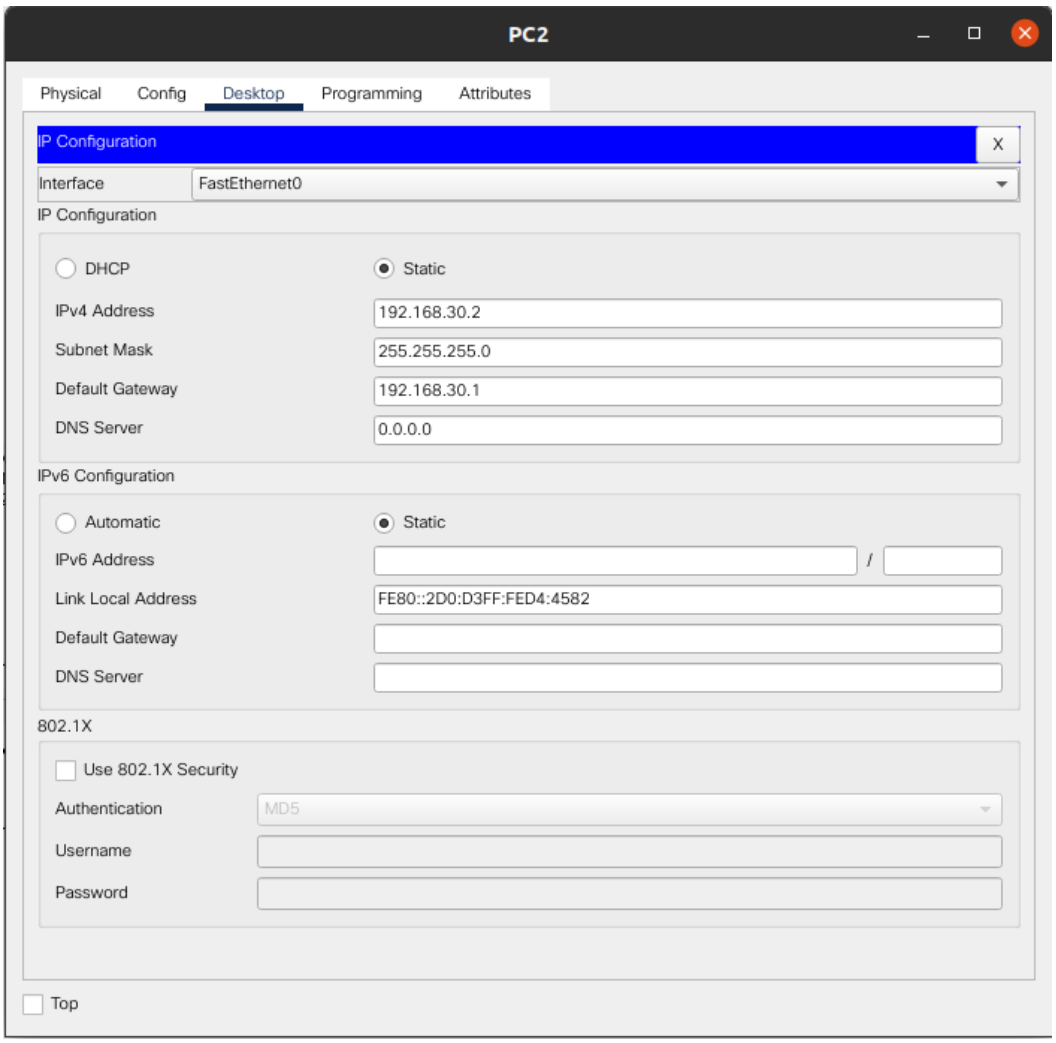

PC1 je spojen svojim Fa0 interfejsom(192.168.20.2)
Router1 je spojen svojim Fast Ethernet 0/0 interfejsom

```
interface FastEthernet0/0
 ip address 192.168.20.1 255.255.255.0
 duplex auto
 speed auto
!
```

Provjera komunikacije u ovoj mreži:



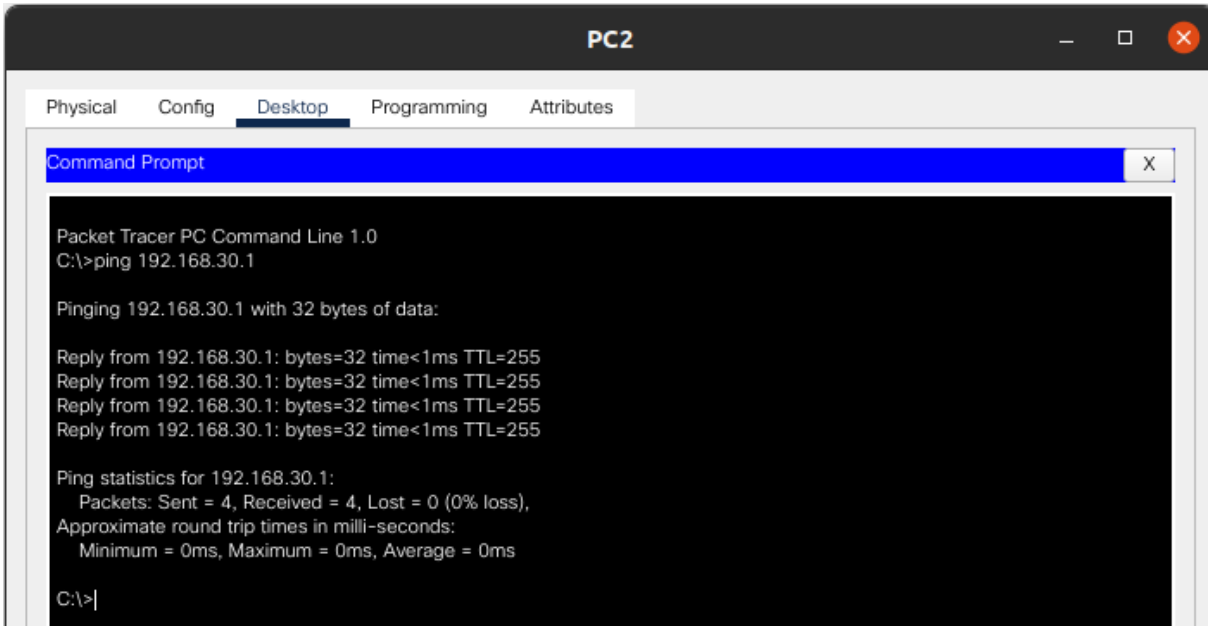

3. Mreža 3(PC2 - Router2)
   Dodijeljeni subnet: 192.168.30.0/24
   Adresa mreže: 192.168.30.0
   Subnetmask: 255.255.255.0
   IP adresa PC2: 192.168.30.2
   Default gateway: 192.168.30.1
   Broadcast: 192.168.30.255




PC2 je spojen svojim Fa0 interfejsom(192.168.30.2)
Router2 je spojen svojim Fast Ethernet 0/0 interfejsom

```
interface FastEthernet0/0
 ip address 192.168.30.1 255.255.255.0
 duplex auto
 speed auto
!
```

Provjera komunikacije u ovoj mreži:




4. Mreža 4(Router0 - Router1)
   Dodijeljeni subnet: 192.168.40.0/24
   Adresa mreže: 192.168.40.0
   Subnetmask: 255.255.255.0
   Default gateway: 192.168.40.1
   Broadcast: 192.168.40.255
   Router0 je spojen svojim Serial 0/0/0 interfejsom

```
interface Serial0/0/0
 ip address 192.168.40.1 255.255.255.0
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
!
```

   Router1 je spojen svojim Serial  0/0/0 interfejsom

```
interface Serial0/0/0
 ip address 192.168.40.2 255.255.255.0
 clock rate 2000000
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
!
```

5. Mreža 5(Router0 - Router2)
   Dodijeljeni subnet: 192.168.50.0/24
   Adresa mreže: 192.168.50.0
   Subnetmask: 255.255.255.0
   Default gateway: 192.168.50.1
   Broadcast: 192.168.50.255
   Router0 je spojen svojim Serial 0/1/0 interfejsom

```
interface Serial0/1/0
 ip address 192.168.50.1 255.255.255.0
 clock rate 2000000
!
interface Serial0/1/1
 no ip address
 clock rate 2000000
!
```

Router2 je spojen svojim Serial  0/1/0 interfejsom

```
interface Serial0/1/0
 ip address 192.168.50.2 255.255.255.0
!
interface Serial0/1/1
 no ip address
 clock rate 2000000
!
```

6. Mreža 6(Router1 - Router2)
   Dodijeljeni subnet: 192.168.60.0/24
   Adresa mreže: 192.168.60.0
   Subnetmask: 255.255.255.0
   Default gateway: 192.168.60.1
   Broadcast: 192.168.60.255
   Router1 je spojen svojim Serial 0/1/0 interfejsom

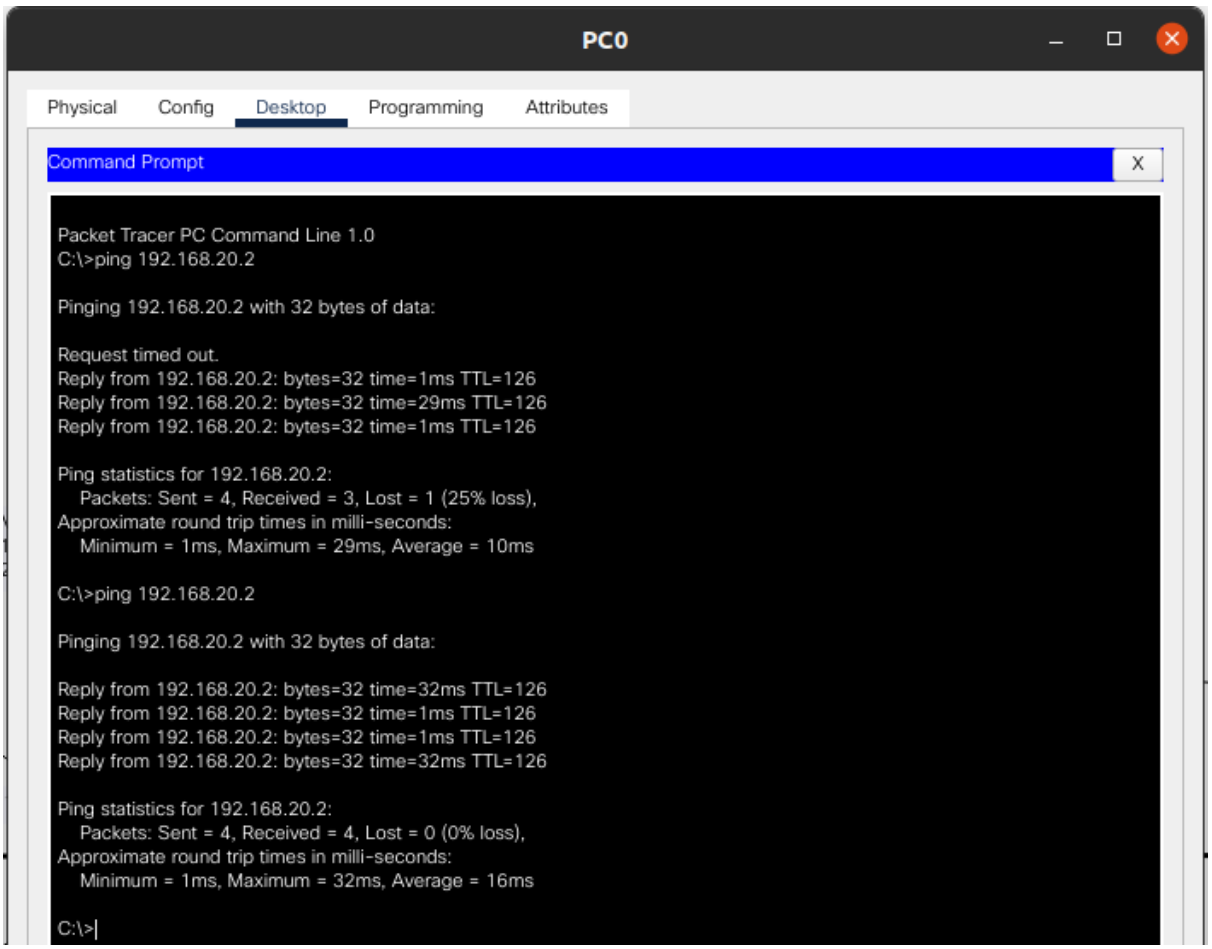
```
interface Serial0/1/0
 ip address 192.168.60.1 255.255.255.0
 clock rate 2000000
!
interface Serial0/1/1
 no ip address
 clock rate 2000000
!
```

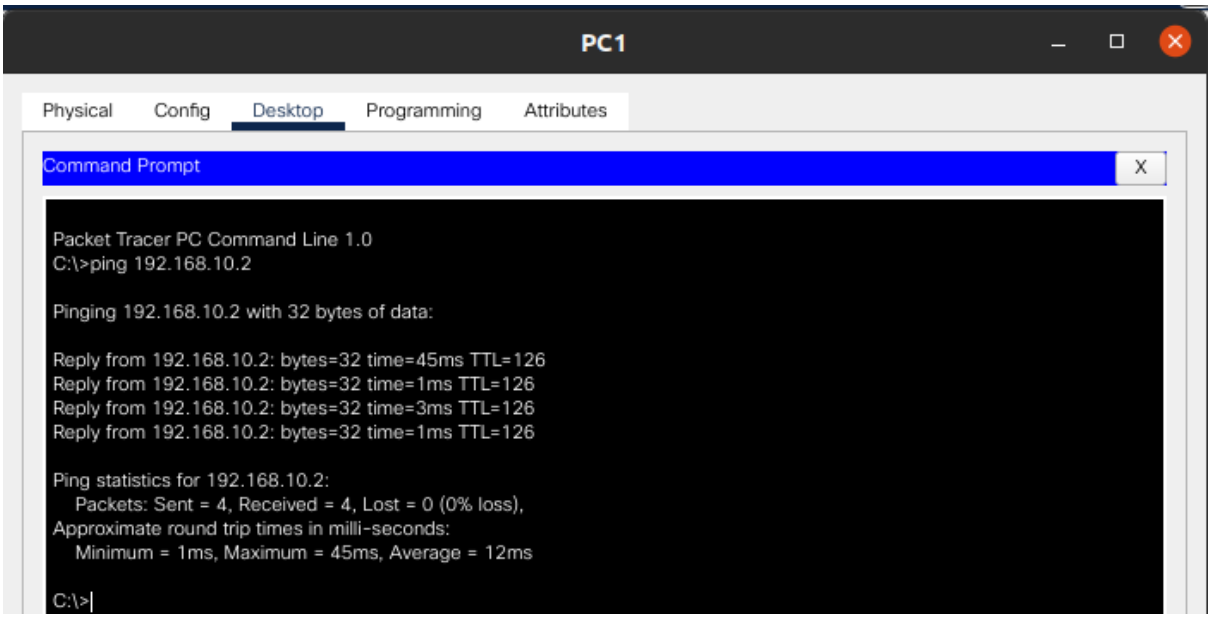
Router2 je spojen svojim Serial 0/0/0 interfejsom

```
interface Serial0/0/0
 ip address 192.168.60.2 255.255.255.0
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
!
```

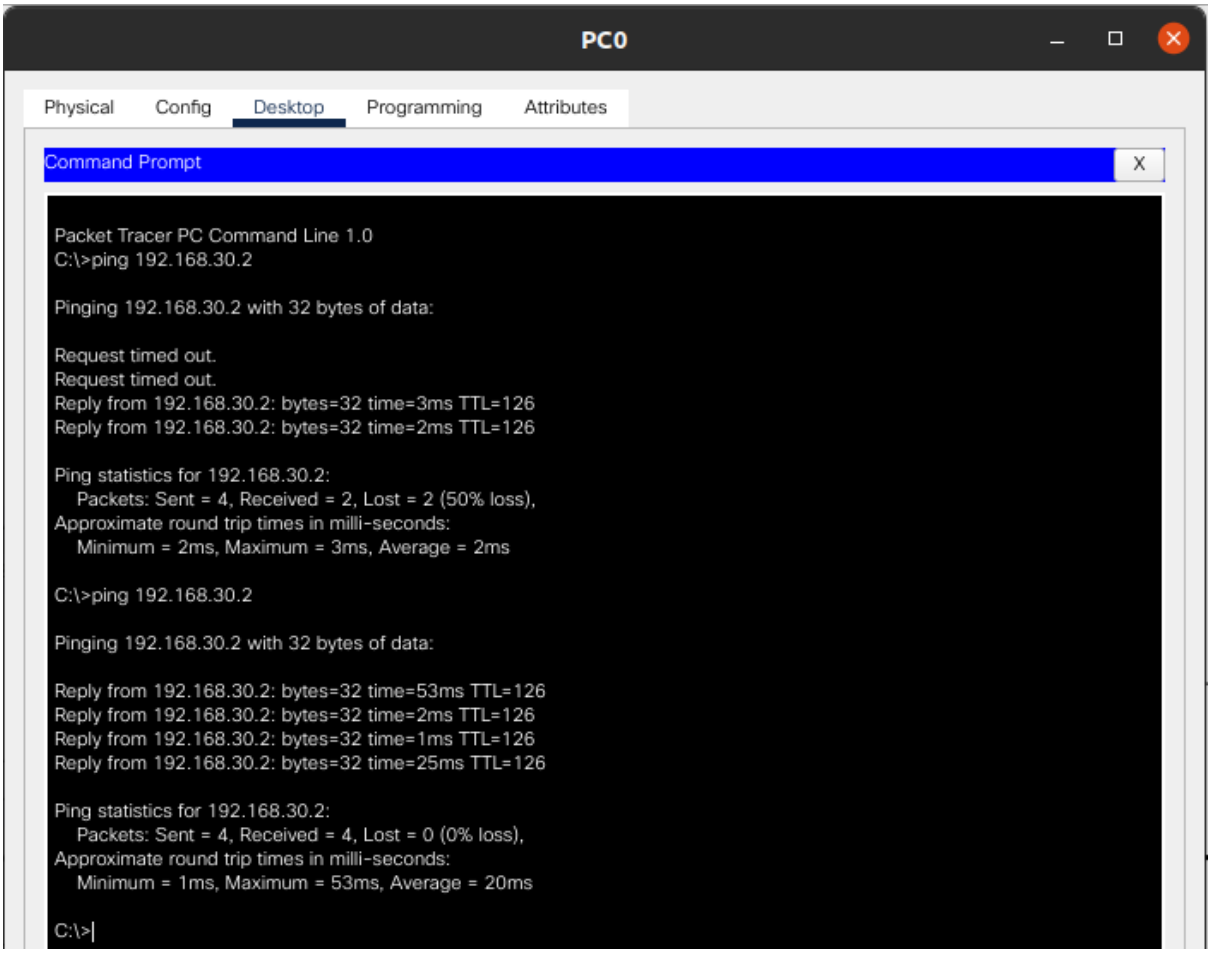
Provjera komunikacije svih PC-eva međusobno:

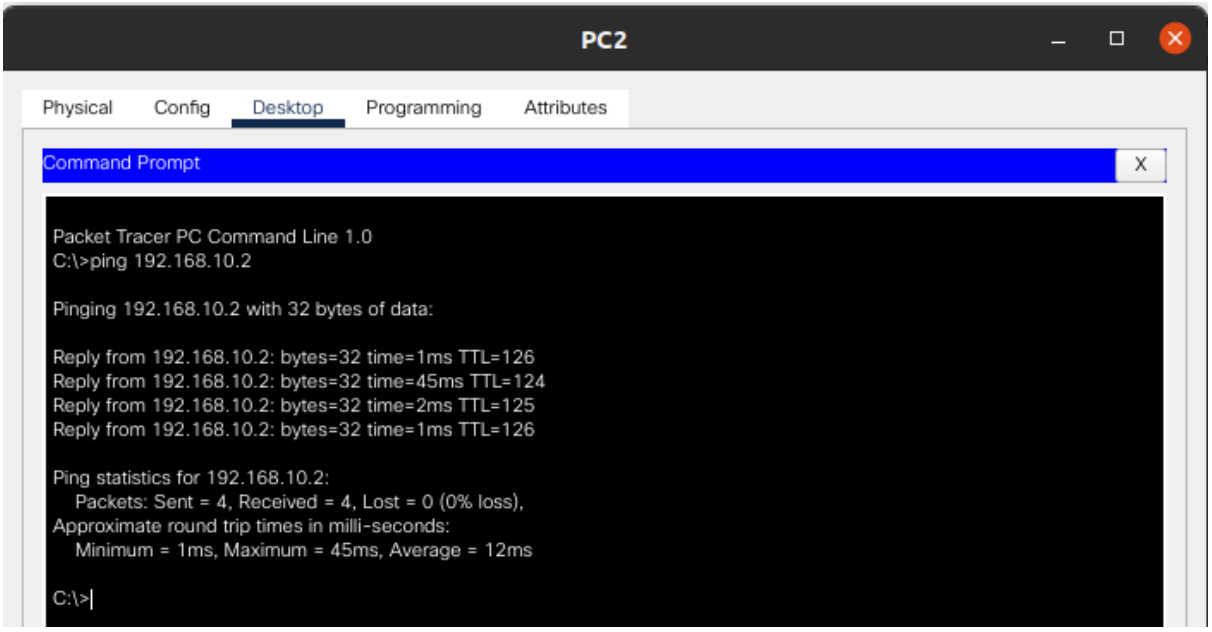
- PC0 i PC1


PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.2: bytes=32 time=1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=29ms TTL=126
Reply from 192.168.20.2: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 29ms, Average = 10ms
C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time=32ms TTL=126
Reply from 192.168.20.2: bytes=32 time=1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=32ms TTL=126
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 32ms, Average = 16ms
C:\>

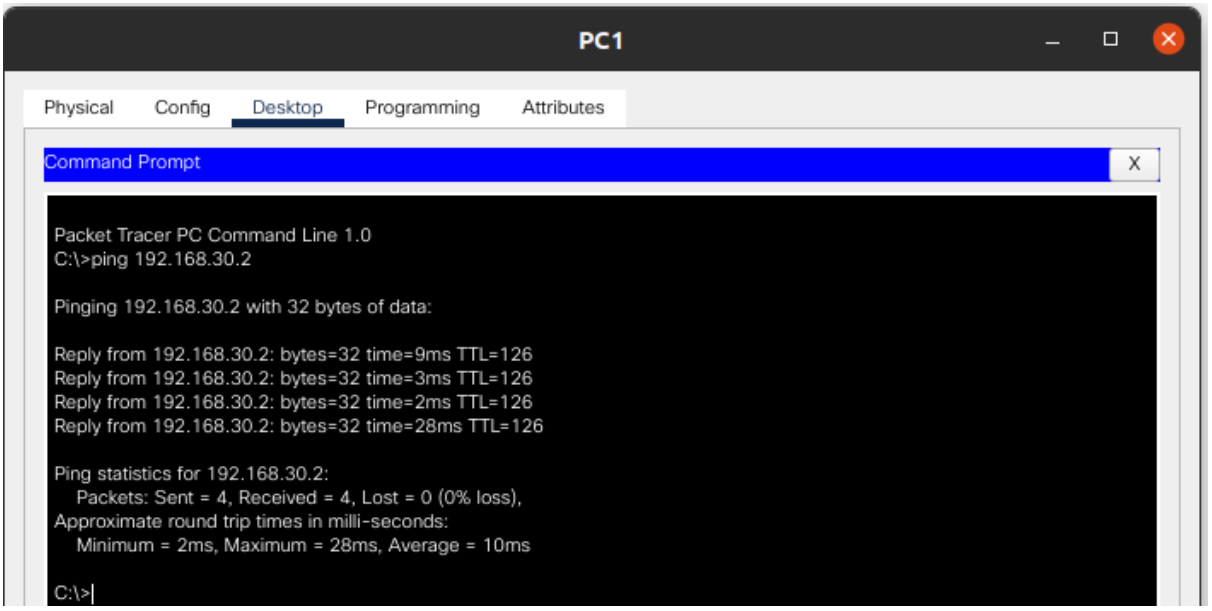

PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time=45ms TTL=126
Reply from 192.168.10.2: bytes=32 time=1ms TTL=126
Reply from 192.168.10.2: bytes=32 time=3ms TTL=126
Reply from 192.168.10.2: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 45ms, Average = 12ms
C:\>

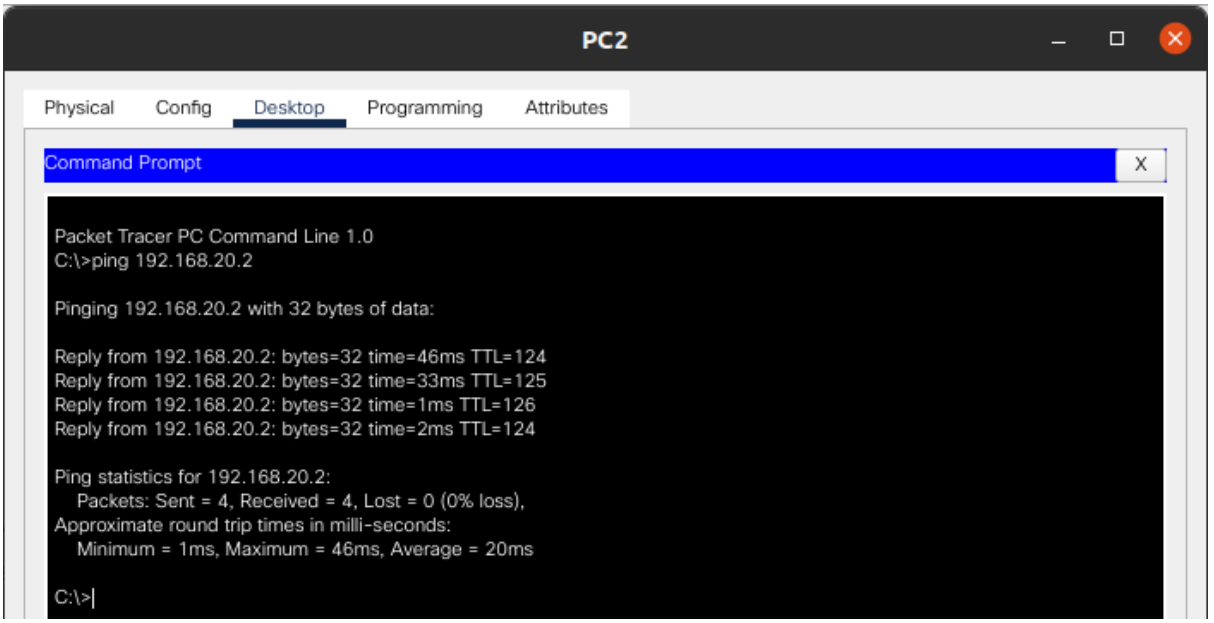
- PC0 i PC2


PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.2
Pinging 192.168.30.2 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 192.168.30.2: bytes=32 time=3ms TTL=126
Reply from 192.168.30.2: bytes=32 time=2ms TTL=126
Ping statistics for 192.168.30.2:
Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 3ms, Average = 2ms
C:\>ping 192.168.30.2
Pinging 192.168.30.2 with 32 bytes of data:
Reply from 192.168.30.2: bytes=32 time=53ms TTL=126
Reply from 192.168.30.2: bytes=32 time=2ms TTL=126
Reply from 192.168.30.2: bytes=32 time=1ms TTL=126
Reply from 192.168.30.2: bytes=32 time=25ms TTL=126
Ping statistics for 192.168.30.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 53ms, Average = 20ms
C:\>


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time=1ms TTL=126
Reply from 192.168.10.2: bytes=32 time=45ms TTL=124
Reply from 192.168.10.2: bytes=32 time=2ms TTL=125
Reply from 192.168.10.2: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 45ms, Average = 12ms
C:\>

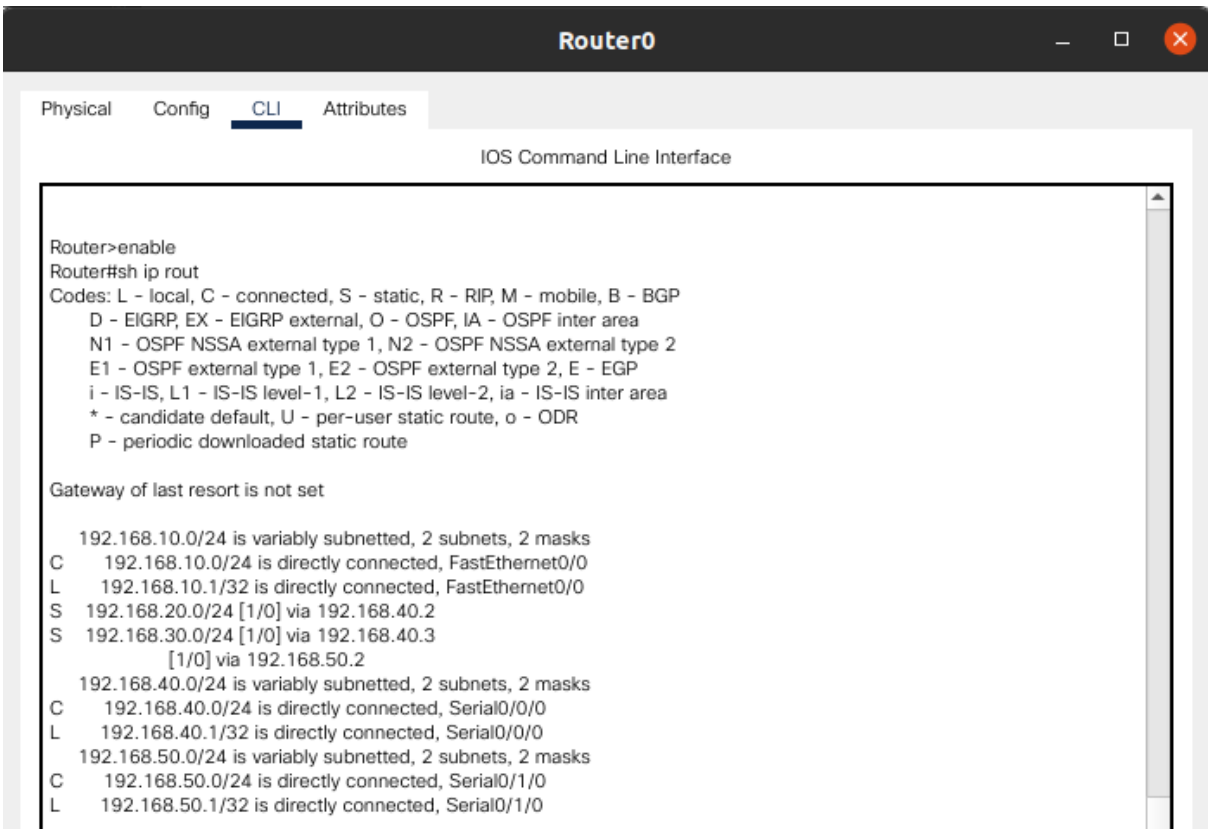
- PC1 i PC2



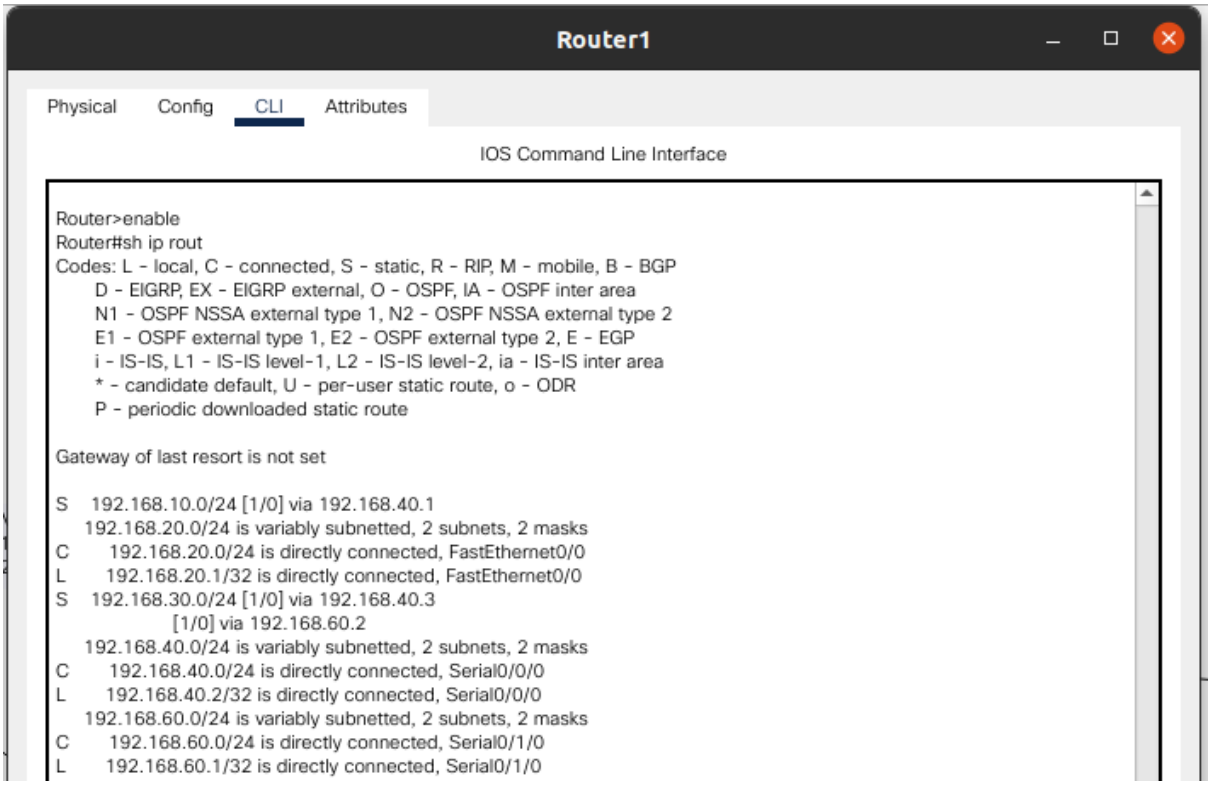




Na kraju ćemo prikazati tabele rutiranja za svaki od rutera koje i omogućavaju prethodno prikazanu komunikaciju(što je moguće očitati komandom `sh ip rout`):

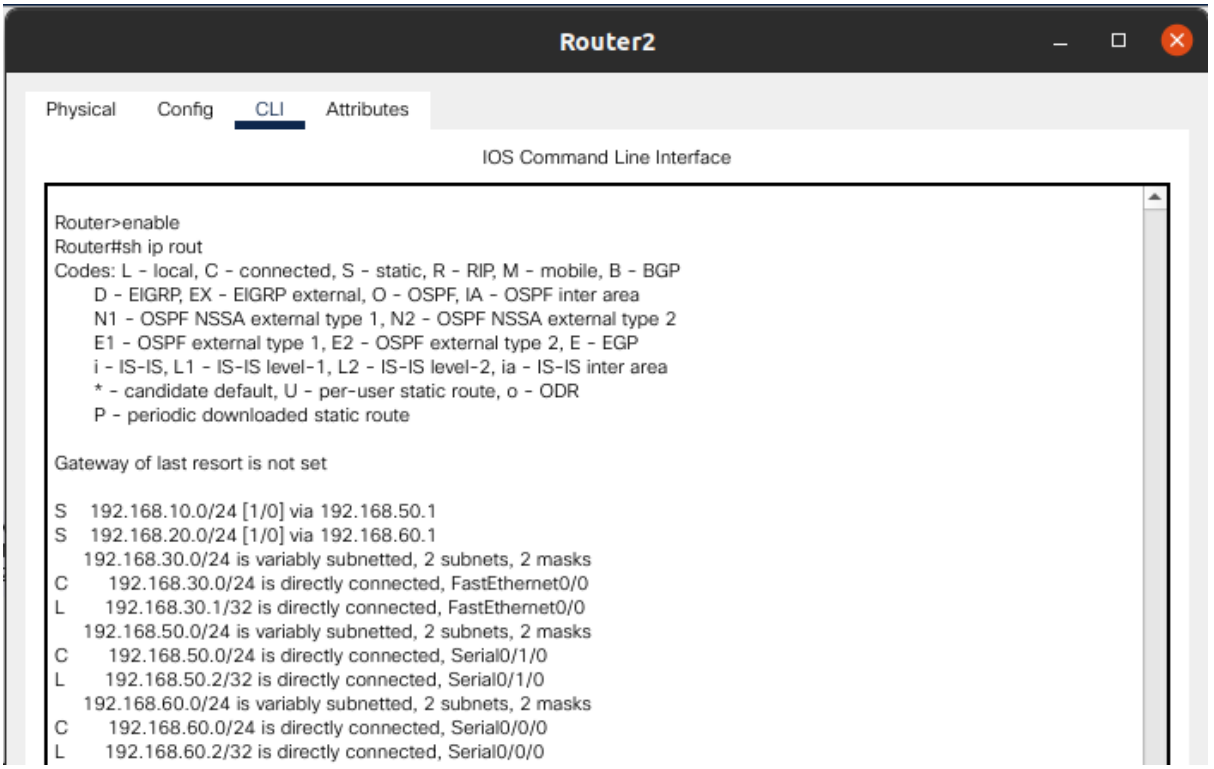
- Router0




- Router1

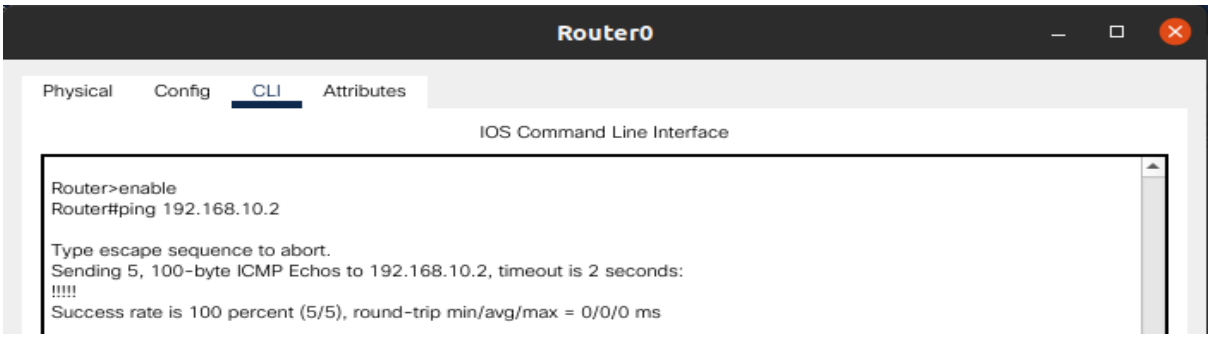



- Router2




Zbog smanjenja opsega izvještaja u ovom dijelu ćemo prikazati samo jedan primjer provjere komunikacije sa rutera unutar lokalne i vanjske mreže. Kako je ranije već pokazano da PC-evi ispravno komuniciraju, ovdje ćemo za primjer uzeti ruter Router0, a analogno se pokazuje i za ostale.

Lokalna mreža




Vanjska mreža