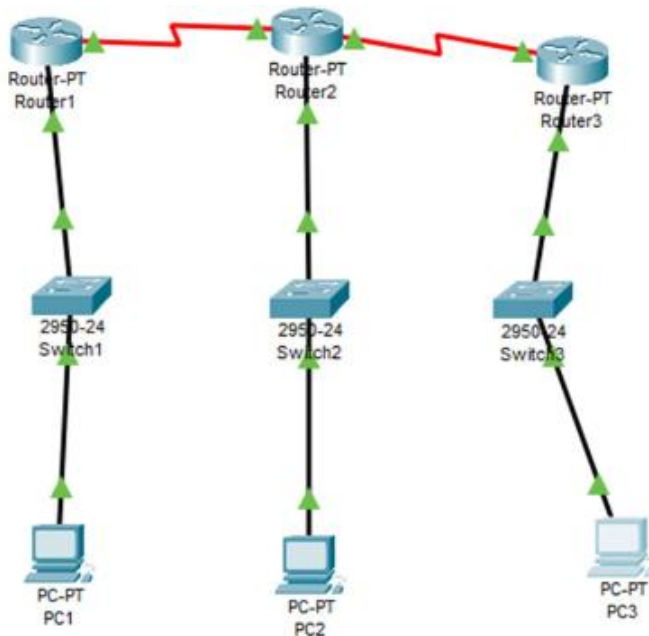


LV14: PPP WAN

1. Oformiti mrežu prema zadanoj topologiji.



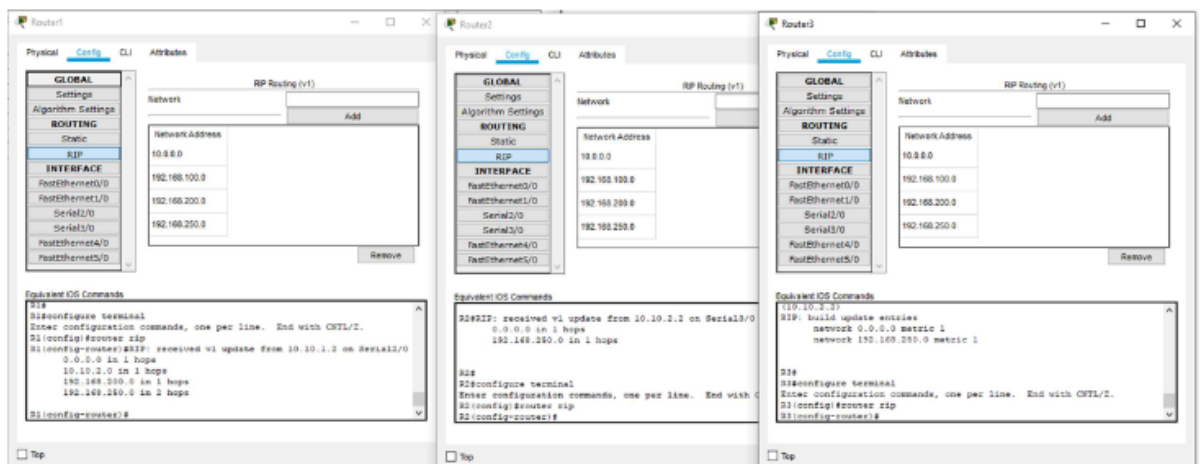
2. Izvršiti temeljnu konfiguraciju usmjernika koristeći ranije zabilješke.

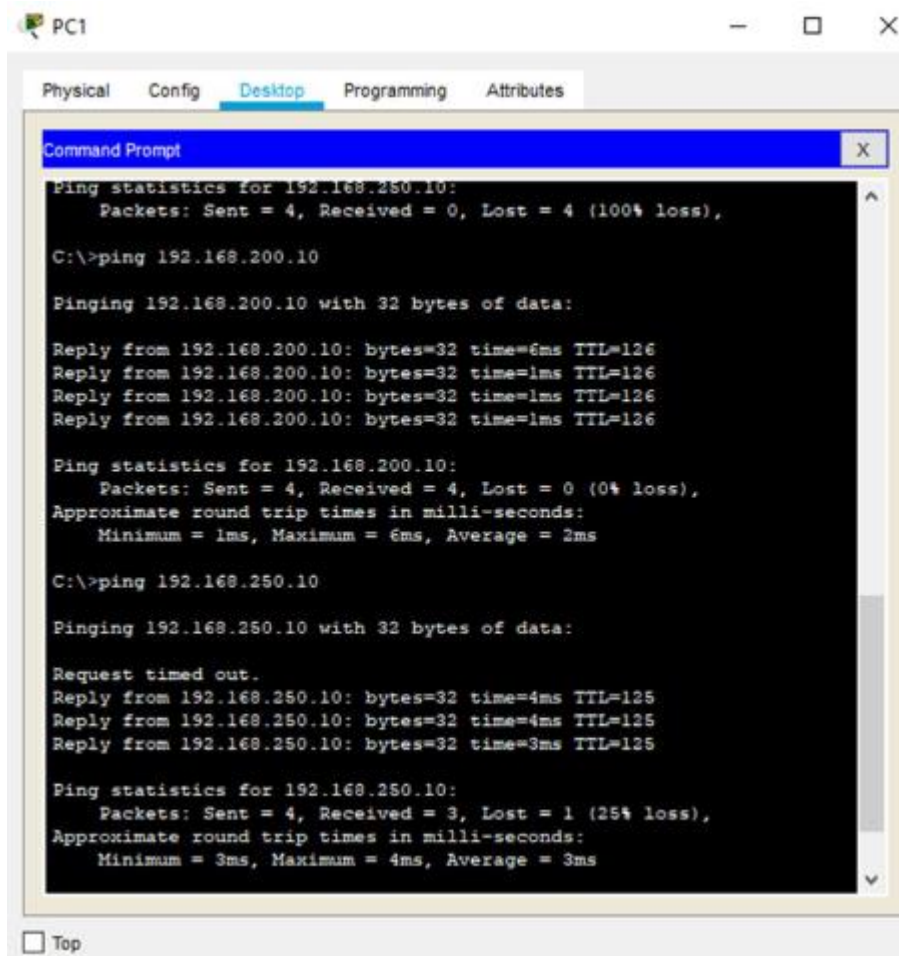
Otvorjeno.

3. Izvršiti konfiguraciju sučelja usmjernika i računala PC1, PC2 i PC3 prema podacima zadanim u tablici. Preklopnici rade sa zadanim (default) postavkama.

Otvorjeno.

4. Konfigurirati RIPv1 rutinški protokol na R1, R2 i R3. Vezu provjeriti pinganjem između PC1, PC2 i PC3. Rezultate pinganja zapiši u bilježnicu.





The screenshot shows a PC1 window with a 'Desktop' tab selected. Inside, a Command Prompt window displays the following text:

```
Ping statistics for 192.168.250.10:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.200.10

Pinging 192.168.200.10 with 32 bytes of data:

Reply from 192.168.200.10: bytes=32 time=6ms TTL=126
Reply from 192.168.200.10: bytes=32 time=1ms TTL=126
Reply from 192.168.200.10: bytes=32 time=1ms TTL=126
Reply from 192.168.200.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.200.10:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 2ms

C:\>ping 192.168.250.10

Pinging 192.168.250.10 with 32 bytes of data:

Request timed out.
Reply from 192.168.250.10: bytes=32 time=4ms TTL=125
Reply from 192.168.250.10: bytes=32 time=4ms TTL=125
Reply from 192.168.250.10: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.250.10:
  Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 4ms, Average = 3ms
```

At the bottom of the Command Prompt window, there is a 'Top' button.

Na svim računalima su bili uspješni rezultati pinganja.

5. Izdavanjem naredbe `show interface serial XX` (gdje je XX oznaka serijskog sučelja usmjernika), provjeriti koja je enkapsulacija postavljena. Iz izvještaja prepisi čitav redak u bilježnicu.

R1 S2/0

```
R1#show interface serial 2/0
Serial2/0 is up, line protocol is up (connected)
  Hardware is HD64570
  Internet address is 10.10.1.1/30
  MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 96 kilobits/sec
  5 minute input rate 32 bits/sec, 0 packets/sec
  5 minute output rate 21 bits/sec, 0 packets/sec
    28 packets input, 3088 bytes, 0 no buffer
    Received 21 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    29 packets output, 2516 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
--More-- RIP: received v1 update from 10.10.1.2 on Serial2/0
```

R2 S2/0

```
R2#show interface serial 2/0
Serial2/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.1.2/30
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 96 kilobits/sec
5 minute input rate 21 bits/sec, 0 packets/sec
5 minute output rate 32 bits/sec, 0 packets/sec
  27 packets input, 2372 bytes, 0 no buffer
    Received 18 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  24 packets output, 2660 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
--More-- RIP: sending v1 update to 255.255.255.255 via Serial2/0
```

R2 S3/0

```
R2#show interface serial 3/0
Serial3/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.2.1/30
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 96 kilobits/sec
5 minute input rate 21 bits/sec, 0 packets/sec
5 minute output rate 32 bits/sec, 0 packets/sec
  21 packets input, 1660 bytes, 0 no buffer
    Received 18 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  24 packets output, 2632 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
--More-- RIP: received v1 update from 10.10.1.1 on Serial2/0
```

R3 S3/0

```
R3#show interface serial 3/0
Serial3/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.2.2/30
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 96 kilobits/sec
5 minute input rate 32 bits/sec, 0 packets/sec
5 minute output rate 21 bits/sec, 0 packets/sec
  28 packets input, 3060 bytes, 0 no buffer
    Received 23 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  23 packets output, 1804 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
--More--
```


6. Konfigurirati PPP WAN protokol na svim upotrijebljenim serijskim sučeljima svih usmjernika, na slijedeći način:

R(config)# interface serial xx

R(config-if)# encapsulation ppp

```
R1(config)#interface serial 2/0
R1(config-if)#encapsulation ppp
R1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed
state to down
```

7. Provjeri koja je enkapsulacija postavljena, koristeći isti postupak kao u t.5 Iz izvještaja prepisi čitav redak u bilježnicu.

R1 S2/0

```
R1#show interface serial 2/0
Serial2/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.1.1/30
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set, keepalive set (10 sec)
LCP Open
Open: IPCP, CDPCP
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 96 kilobits/sec
5 minute input rate 22 bits/sec, 0 packets/sec
5 minute output rate 9 bits/sec, 0 packets/sec
    48 packets input, 5168 bytes, 0 no buffer
    Received 40 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    42 packets output, 3452 bytes, 0 underruns
--More-- RIP: sending v1 update to 255.255.255.255 via Serial2/0
```

R2 S2/0

```
R2#show interface serial 2/0
Serial2/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.1.2/30
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set, keepalive set (10 sec)
LCP Open
Open: IPCP, CDPCP
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 96 kilobits/sec
5 minute input rate 15 bits/sec, 0 packets/sec
5 minute output rate 22 bits/sec, 0 packets/sec
    49 packets input, 3936 bytes, 0 no buffer
    Received 39 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    46 packets output, 5084 bytes, 0 underruns
--More-- |
```

R3 S3/0

```
R3#show interface serial 3/0
Serial3/0 is up, line protocol is up (connected)
  Hardware is HD64570
  Internet address is 10.10.2.2/30
  MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  LCP Open
  Open: IPCP, CDPCP
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 96 kilobits/sec
  5 minute input rate 34 bits/sec, 0 packets/sec
  5 minute output rate 21 bits/sec, 0 packets/sec
    55 packets input, 5844 bytes, 0 no buffer
    Received 49 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    45 packets output, 3388 bytes, 0 underruns
  --More-- RIP: received v1 update from 10.10.2.1 on Serial3/0
```

8. Na usmjerniku R2 promijeniti enkapsulaciju na sučelju prema R1 ponovno u HDLC:

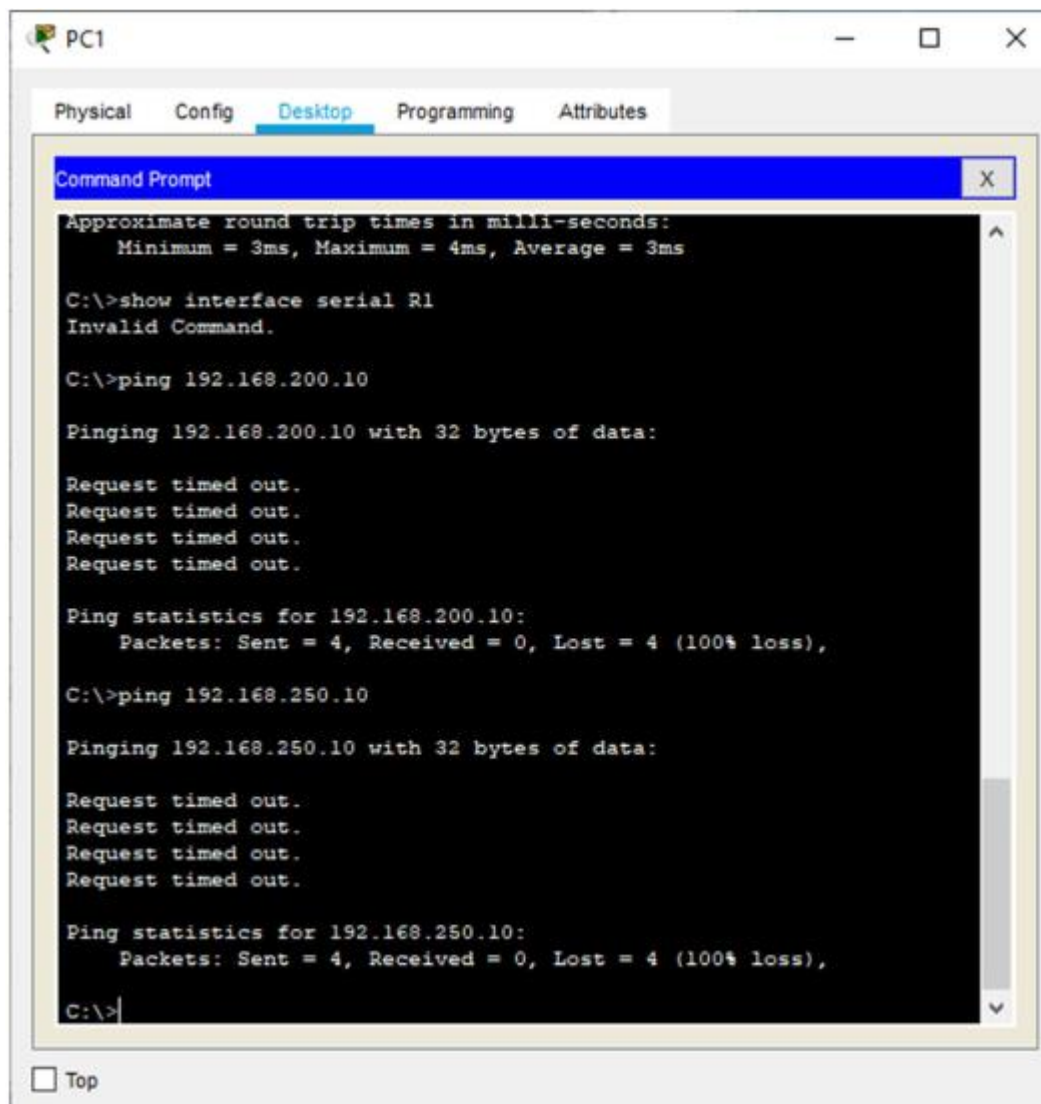
R2(config)# interface serial xx

R2(config-if)# encapsulation hdlc

```
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface serial 2/0
R2(config-if)#encapsulation hdlc
R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed
state to down
```

9. Provjeri pinganjem veze između računala, zapiši rezultate i komentiraj ih.

Povezanost sa PC1 na svim računalima je bila uklonjena kada smo promijenili enkapsulaciju na sučelju prema R1. Dok je povezanost između PC2 i PC3 normalna.



Physical Config Desktop Programming Attributes

Command Prompt

X

```
Ping statistics for 192.168.100.10:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping 192.168.100.10
```

```
Pinging 192.168.100.10 with 32 bytes of data:
```

```
Reply from 192.168.200.1: Destination host unreachable.  
Request timed out.
```

```
Reply from 192.168.200.1: Destination host unreachable.  
Reply from 192.168.200.1: Destination host unreachable.
```

```
Ping statistics for 192.168.100.10:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ping 192.168.250.10
```

```
Pinging 192.168.250.10 with 32 bytes of data:
```

```
Reply from 192.168.250.10: bytes=32 time=1ms TTL=126
```

```
Reply from 192.168.250.10: bytes=32 time=1ms TTL=126
```

```
Reply from 192.168.250.10: bytes=32 time=3ms TTL=126
```

```
Reply from 192.168.250.10: bytes=32 time=1ms TTL=126
```

```
Ping statistics for 192.168.250.10:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 1ms, Maximum = 3ms, Average = 1ms
```

```
C:\>
```

☐ Top

