

Vježba br. 14 – PPP WAN enkapsulacija - rad na uređajima

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Uvod:

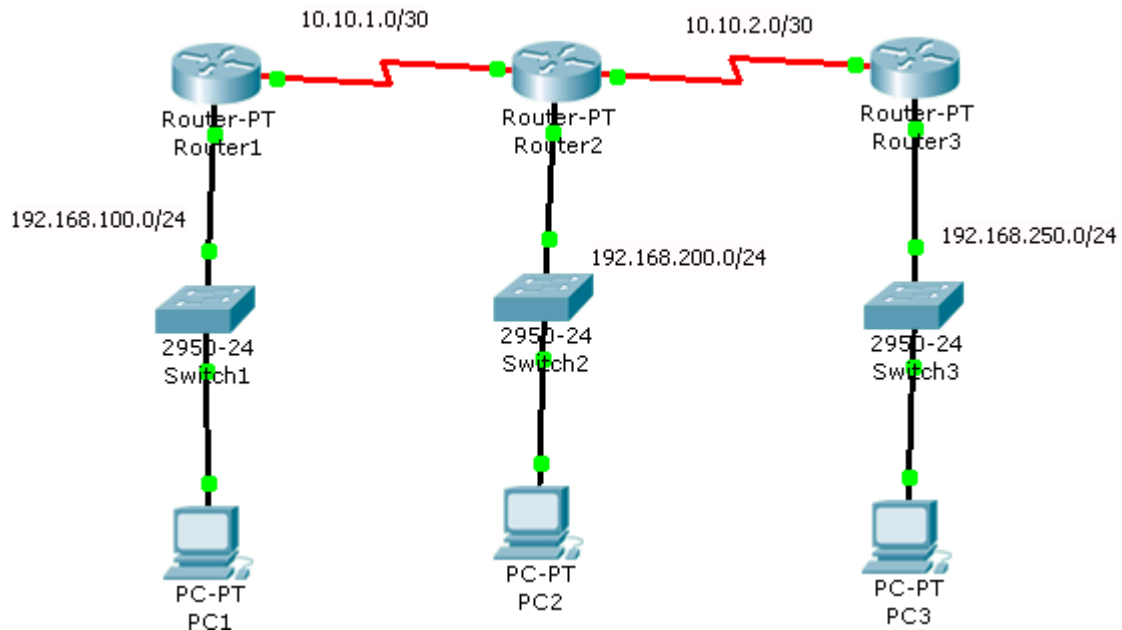
PPP je složeni WAN protokol koji se temelji na HDLC (defaultni) protokolu.

Kada povezujemo dva Cisco rutera, HDLC je zadani protokol. Kod povezivanja Cisco i ne-Cisco rutera moramo na obje strane primijeniti PPP protokol.

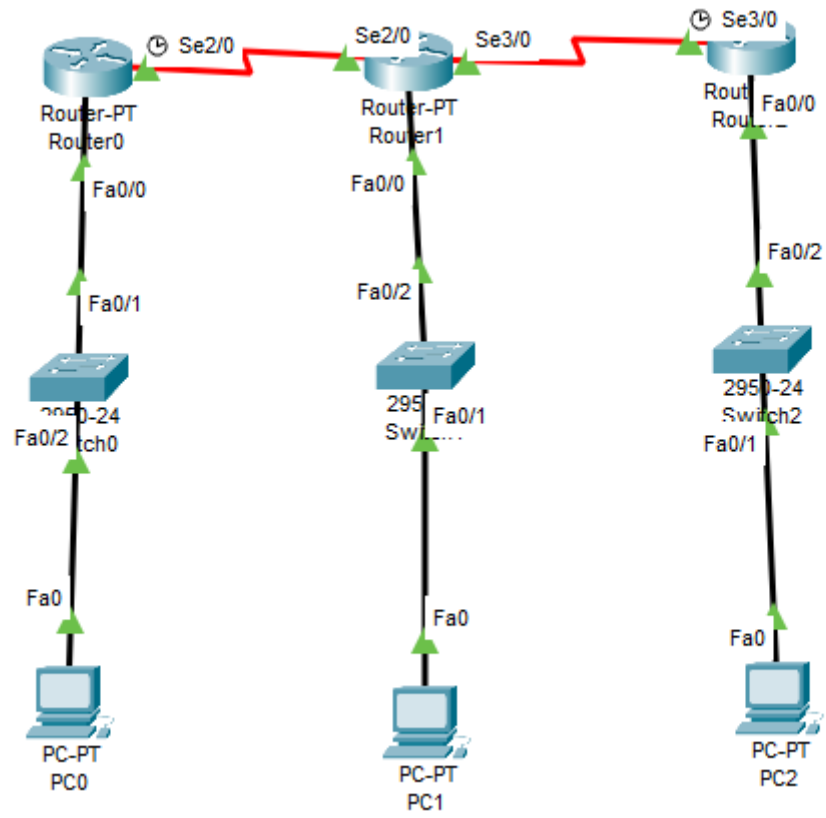
- Omogućava nadzor kvalitete veze, ako je broj grešaka u prijenosu velik, veza pada.
- Omogućava sigurnosne postavke za autentifikaciju, kako bi se spriječilo neovlašteno spajanje, primjenom PAP ili CHAP protokola.
- Uspostavljanje veze i održavanje veze tijekom korištenja PPP je složeni postupak tijekom kojeg se strane (ruteri) „dogovaraju“ o nekim detaljima, kao što su:
 - Autentifikacija
 - Kompresija i
 - Brzina

Zadaci

1. Oformiti mrežu prema zadanoj topologiji.



2. Izvršiti temeljnu konfiguraciju usmjernika koristeći ranije zabilješke



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

Ruter	Adresa Fastethernet sučelja	Mrežna maska	Oznaka ser. sučelja	Tip ser. sučelja	Adresa serijskog sučelja	Mrežna maska	Default gateway
R1	192.168.100.1	255.255.255.0	S2/0	DCE	10.10.1.1	255.255.255.252	
R2	192.168.200.1	255.255.255.0	S2/0	DTE	10.10.1.2	255.255.255.252	
			S3/0	DCE	10.10.2.1	255.255.255.252	
R3	192.168.250.1	255.255.255.0	S3/0	DTE	10.10.2.2	255.255.255.252	
PC1	192.168.100.10	255.255.255.0					192.168.100.1
PC2	192.168.200.10	255.255.255.0					192.168.200.1
PC3	192.168.250.10	255.255.255.0					192.168.250.1

Jesmo.

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

Ako je pinganje bilo uspješno, obavijestiti nastavnika.

```
Router(config)#router rip
Router(config-router)#network 192.168.100.0
Router(config-router)#network 10.10.1.0
Router(config-router)#exit
Router(config)#

Router(config)#router rip
Router(config-router)#network 192.168.200.0
Router(config-router)#network 10.10.1.0
Router(config-router)#network 10.10.2.0
Router(config-router)#exit

Router(config)#router rip
Router(config-router)#network 192.168.250.0
Router(config-router)#network 10.10.2.0
Router(config-router)#eexit
^
% Invalid input detected at '^' marker.

Router(config-router)#exit
Router(config)#

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=18ms TTL=125
Reply from 192.168.250.10: bytes=32 time=3ms TTL=125
Reply from 192.168.250.10: bytes=32 time=28ms TTL=125
Reply from 192.168.250.10: bytes=32 time=12ms TTL=125

Ping statistics for 192.168.250.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 28ms, Average = 15ms

C:\>
```

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.

```
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
```

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
```

```
Router(config)#interface serial 2/0
```

```
Router(config-if)#encapsulation ppp
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
```

```
Router(config-if)#exit
```

```
Router(config)#
```

```
Router(config)#interface serial 2/0
```

```
Router(config-if)#encapsulation ppp
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
```

```
Router(config-if)#exit
```

```
Router(config)#interface serial 3/0
```

```
Router(config-if)#encapsulation ppp
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to down
```

```
exit
```

```
Router(config)#
```

```
Router#config terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#interface serial 3/0
```

```
Router(config-if)#encapsulation ppp
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```

```
exit
```

```
Router(config)#
```

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

```
Encapsulation PPP, loopback not set, keepalive set (10 sec)
```

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

```
R2(config)# interface serial xx
```

```
R2(config-if)# encapsulation hdlc
```

```
Router(config)#interface Serial2/0
```

```
Router(config-if)#encapsulation hdlc
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to dow
```

```
exit
```

```
Router(config)#
```

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

PC1 na PC2 ne možemo pingati

```
C:\>ping 192.168.200.10

Pinging 192.168.200.10 with 32 bytes of data:

Reply from 192.168.100.1: Destination host unreachable.
Request timed out.
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.

Ping statistics for 192.168.200.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC2 na PC3 možemo pingati

```
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=12ms TTL=126
Reply from 192.168.250.10: bytes=32 time=10ms TTL=126
Reply from 192.168.250.10: bytes=32 time=1ms 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 = 12ms, Average = 6ms

C:\>
```

PC3 na PC1 ne možemo pingati

```
C:\>ping 168.192.100.10

Pinging 168.192.100.10 with 32 bytes of data:

Reply from 192.168.250.1: Destination host unreachable.
Request timed out.
Reply from 192.168.250.1: Destination host unreachable.
Reply from 192.168.250.1: Destination host unreachable.

Ping statistics for 168.192.100.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```