LAB-241

EIGRP-AS 101

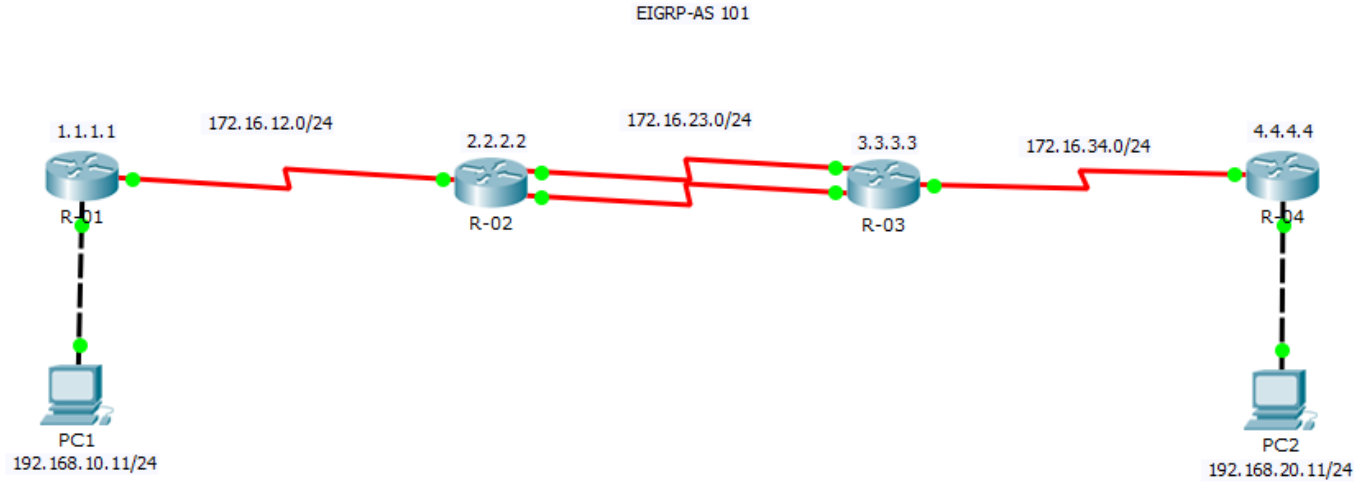## Hedef

Router'larda PPP konfigurasyonu gerçekleştirmek, PPP PAP ve PPP CHAP Authentication konfigurasyonu yapmak ve neticede ise farklı networklerin haberleşmesini gerçekleştirmek.

PC'lerin IP konfigurasyonları

PC1	VLAN 10	192.168.10.11/24	Default GateWay 192.168.10.1
PC2	VLAN 10	192.168.20.11/24	Default GateWay 192.168.20.1

Çalışma-01

Bu çalışmamızda R-01 ve R-02 arasında **PPP PAP Athentication** konfigurasyonu yapacağız. R-02'de ilgili ayarlar önceden konfigure edilmiştir.

Öncelikle R-01'in Serial 0/0/0 interface'inin durumuna bir bakalım:

R-01#**show ip int brief**

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	192.168.10.1	YES	manual	up	up
GigabitEthernet0/1	unassigned	YES	unset	up	down
Serial0/0/0	**172.16.12.1**	**YES**	**manual**	**up**	**down**
Serial0/0/1	unassigned	YES	unset	administratively down	down
Loopback0	1.1.1.1	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

R-01#

Serial 0/0/0 interface'i fiziksel olarak (Layer-1) **UP** olmasına ramen protokol (Layer-2) olarak **DOWN** durumdadır. Bunun sebebi karşılıklı olarak router'ların bu interface'lerde aynı dili (protokolü) konuşmuyor olmasıdır. R-01 bu interface'de **HDLC** protokolünü konuşurken R-02 ilgili interface'de **PPP** protokolünü konuşmaktadır. İlk olarak bu ayrık durumu giderecez ve router'ların birbirlerine bakan interface'lerinden aynı dili konuşmalarını sağlayacağız.

R-01#**configure terminal**
R-01(config)#**interface serial 0/0/0**
R-01(config-if)#**encapsulation ppp**
R-01(config-if)#**end**
R-01#

R-01'de Serial 0/0/0 interface'inin konuştuğu protokolü değiştirmemize karşılık hala interface'in UP olmadığını görmekteyiz. Çünki karşı taraf PPP PAP Authentication beklemektedir. İlgili ayarları yapıyoruz:

```
R-01#configure terminal
R-01(config)#
R-01(config)#username R-02 password cisco
R-01(config)#
R-01(config)#interface serial 0/0/0
R-01(config-if)#
R-01(config-if)#ppp authentication pap
R-01(config-if)#ppp pap sent-username R-01 password cisco
R-01(config-if)#
R-01(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
R-01(config-if)#
%DUAL-5-NBRCHANGE: IP-EIGRP 101: Neighbor 172.16.12.2 (Serial0/0/0) is
up: new adjacency
R-01(config-if)#end
R-01#
```

Loglardan da görüldüğü gibi hem interface UP konumuna geçti hemde EIGRP komşuluğu tesis edildi.

```
R-01#show ip interface brief
Interface              IP-Address      OK? Method Status                 Protocol

GigabitEthernet0/0     192.168.10.1    YES manual up                     up

GigabitEthernet0/1     unassigned      YES unset  up                     down

Serial0/0/0            172.16.12.1     YES manual up                     up

Serial0/0/1            unassigned      YES unset  administratively down down

Loopback0              1.1.1.1         YES manual up                     up

Vlan1                  unassigned      YES unset  administratively down down

R-01#show ip eigrp neighbors
IP-EIGRP neighbors for process 101
H   Address          Interface     Hold Uptime    SRTT   RTO   Q    Seq
                                   (sec)          (ms)         Cnt  Num
0   172.16.12.2      Se0/0/0       13   00:02:43  40     1000  0    11
R-01#
```

R-01#**show interfaces serial 0/0/0**

Serial0/0/0 is up, line protocol is up (connected)
  Hardware is HD64570
  Internet address is 172.16.12.1/24
  MTU 1500 bytes, BW 1544 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 1158 kilobits/sec
  5 minute input rate 102 bits/sec, 0 packets/sec
  5 minute output rate 104 bits/sec, 0 packets/sec
     223 packets input, 13323 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     218 packets output, 13009 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
     DCD=up DSR=up DTR=up RTS=up CTS=up

R-01#

Çalışma-02

Bu çalışmamızda R-04 ve R-03 arasında **PPP CHAP Athentication** konfigurasyonu yapacağız. R-03'de ilgili ayarlar önceden konfigure edilmiştir.

Öncelikle R-04'in Serial 0/0/0 interface'inin durumuna bir bakalım:

```
R-04#show ip int brief

Interface            IP-Address      OK? Method Status               Protocol

GigabitEthernet0/0   192.168.20.1    YES manual up                   up

GigabitEthernet0/1   unassigned      YES unset  administratively down down

Serial0/0/0          172.16.34.4     YES manual up                   down

Serial0/0/1          unassigned      YES unset  administratively down down

Loopback0            4.4.4.4         YES manual up                   up

Vlan1                unassigned      YES unset  administratively down down

R-04#
```

Serial 0/0/0 interface'i fiziksel olarak (Layer-1) **UP** olmasına ramen protokol (Layer-2) olarak **DOWN** durumdadır. Bunun sebebi karşılıklı olarak router'ların bu interface'lerde aynı dili (protokolü) konuşmuyor olmasıdır. R-04 bu interface'de **HDLC** protokolünü konuşurken R-03 ilgili interface'de **PPP** protokolünü konuşmaktadır. İlk olarak bu ayrık durumu giderecez ve router'ların birbirlerine bakan interface'lerinden aynı dili konuşmalarını sağlayacağız.

```
R-04#configure terminal
R-04(config)#interface serial 0/0/0
R-04(config-if)#encapsulation ppp
R-04(config-if)#end
R-04#
```

R-04'de Serial 0/0/0 interface'inin konuştuğu protokolü değiştirmemize karşılık hala interface'in UP olmadığını görmekteyiz. Çünki karşı taraf PPP CHAP Authentication beklemektedir. İlgili ayarları yapıyoruz:

```
R-04#configure terminal
R-04(config)#
R-04(config)#username R-03 password cisco
R-04(config)#
R-04(config)#interface serial 0/0/0
R-04(config-if)#
R-04(config-if)#ppp authentication chap
R-04(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
```

```
%DUAL-5-NBRCHANGE: IP-EIGRP 101: Neighbor 172.16.34.3 (Serial0/0/0) is
up: new adjacency
R-04(config-if)#
R-04(config-if)#end
R-04#
```

Loglardan da görüldüğü gibi hem interface UP konumuna geçti hemde EIGRP komşuluğu tesis edildi.

R-04#**show ip interface brief**

```
Interface            IP-Address      OK? Method Status                 Protocol

GigabitEthernet0/0   192.168.20.1    YES manual up                     up

GigabitEthernet0/1   unassigned      YES unset  administratively down down

Serial0/0/0          172.16.34.4     YES manual up                     up

Serial0/0/1          unassigned      YES unset  administratively down down

Loopback0            4.4.4.4         YES manual up                     up

Vlan1                unassigned      YES unset  administratively down down

R-04#
```

R-04#**show ip eigrp neighbors**

```
IP-EIGRP neighbors for process 101
H   Address          Interface       Hold Uptime    SRTT   RTO   Q    Seq
                                     (sec)          (ms)         Cnt  Num
0   172.16.34.3      Se0/0/0         11   00:01:31  40     1000  0    6

R-04#
```

```
R-04#show interfaces serial 0/0/0

Serial0/0/0 is up, line protocol is up (connected)
  Hardware is HD64570
  Internet address is 172.16.34.4/24
  MTU 1500 bytes, BW 1544 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 1158 kilobits/sec
  5 minute input rate 104 bits/sec, 0 packets/sec
  5 minute output rate 105 bits/sec, 0 packets/sec
     112 packets input, 6676 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     108 packets output, 6460 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
     DCD=up  DSR=up  DTR=up  RTS=up  CTS=up

R-04#
```

PC'lerin birbirlerinie erişimine test edebiliriz. PC1 den PC2'ye ping atıp durumu kontrol ediyoruz.

```
PC>ping 192.168.20.11

Pinging 192.168.20.11 with 32 bytes of data:

Reply from 192.168.20.11: bytes=32 time=3ms TTL=124
Reply from 192.168.20.11: bytes=32 time=6ms TTL=124
Reply from 192.168.20.11: bytes=32 time=12ms TTL=124
Reply from 192.168.20.11: bytes=32 time=3ms TTL=124

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 12ms, Average = 6ms

PC>
```

Router'ların son config`leri

```
R-01#show running-config
Building configuration...

Current configuration : 1086 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R-01
!
no ip cef
no ipv6 cef
!
username R-02 password 0 cisco
!
license udi pid CISCO2901/K9 sn FTX1524ALVY
!
no ip domain-lookup
!
spanning-tree mode pvst
!
interface Loopback0
 ip address 1.1.1.1 255.255.255.255
!
interface GigabitEthernet0/0
 ip address 192.168.10.1 255.255.255.0
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 172.16.12.1 255.255.255.0
 encapsulation ppp
 ppp authentication pap
 ppp pap sent-username R-01 password 0 cisco
!
```

```
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router eigrp 101
 network 1.1.1.1 0.0.0.0
 network 172.16.12.1 0.0.0.0
 network 192.168.10.1 0.0.0.0
!
ip classless
!
ip flow-export version 9
!
line con 0
 exec-timeout 0 0
 logging synchronous
!
line aux 0
!
line vty 0 4
 login
!
end
```

```
R-04#show running-config
Building configuration...

Current configuration : 1052 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R-04
!
no ip cef
no ipv6 cef
!
username R-03 password 0 cisco
!
license udi pid CISCO2901/K9 sn FTX1524UDPU
!
no ip domain-lookup
!
spanning-tree mode pvst
!
interface Loopback0
 ip address 4.4.4.4 255.255.255.255
!
interface GigabitEthernet0/0
 ip address 192.168.20.1 255.255.255.0
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 ip address 172.16.34.4 255.255.255.0
 encapsulation ppp
 ppp authentication chap
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
```

```
!
interface Vlan1
 no ip address
 shutdown
!
router eigrp 101
 network 4.4.4.4 0.0.0.0
 network 172.16.34.4 0.0.0.0
 network 192.168.20.1 0.0.0.0
!
ip classless
!
ip flow-export version 9
!
line con 0
 exec-timeout 0 0
 logging synchronous
!
line aux 0
!
line vty 0 4
 login
!
end
```

https://goo.gl/rn8Lzq

Umarım faydalı bir LAB çalışması olmuştur.
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