**Data Communication and Computer Networks**

**EEE314**

Lab # 06



|  |  |
| --- | --- |
| Name | Muhammad Haris Irfan |
| Registration Number | FA18-BCE-090 |
| Class | BCE-6B |
| Instructor’s Name | Sir Asad Ali Malik. |

**Lab #06 EIGRP Configuration**

**In-Lab Task**

**Task 1**

Chart

Description automatically generated

Table

Description automatically generated

**Home Task**

**TASK 1:**

**Router 0:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 957 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 172.16.1.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

bandwidth 64

ip address 172.16.3.1 255.255.255.252

clock rate 64000

!

interface Serial3/0

ip address 192.168.10.5 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

interface Serial6/0

no ip address

clock rate 2000000

shutdown

!

router eigrp 1

network 172.16.0.0

network 192.168.10.4 0.0.0.3

network 192.168.10.8 0.0.0.3

no auto-summary

!

router rip

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

C 172.16.1.0/24 is directly connected, FastEthernet0/0

D 172.16.2.0/24 [90/40514560] via 172.16.3.2, 00:14:49, Serial2/0

C 172.16.3.0/30 is directly connected, Serial2/0

D 192.168.1.0/24 [90/41026560] via 172.16.3.2, 00:14:47, Serial2/0

192.168.10.0/30 is subnetted, 2 subnets

C 192.168.10.4 is directly connected, Serial3/0

D 192.168.10.8 [90/41024000] via 172.16.3.2, 00:14:49, Serial2/0

**show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.16.3.1 YES manual up up

Serial3/0 192.168.10.5 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

Serial6/0 unassigned YES unset administratively down down

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

172.16.0.0

192.168.10.4/30

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

172.16.3.2 90 5409

Distance: internal 90 external 170

**Router 1:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 873 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 172.16.2.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

bandwidth 64

ip address 172.16.3.2 255.255.255.252

!

interface Serial3/0

bandwidth 1024

ip address 192.168.10.9 255.255.255.252

clock rate 64000

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router eigrp 1

network 172.16.0.0

network 192.168.10.8 0.0.0.3

no auto-summary

!

router rip

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

D 172.16.1.0/24 [90/40514560] via 172.16.3.1, 00:18:27, Serial2/0

C 172.16.2.0/24 is directly connected, FastEthernet0/0

C 172.16.3.0/30 is directly connected, Serial2/0

D 192.168.1.0/24 [90/3014400] via 192.168.10.10, 00:18:25, Serial3/0

192.168.10.0/30 is subnetted, 2 subnets

D 192.168.10.4 [90/41024000] via 172.16.3.1, 00:18:27, Serial2/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.2.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.16.3.2 YES manual up up

Serial3/0 192.168.10.9 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

172.16.0.0

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

172.16.3.1 90 5409

192.168.10.10 90 7387

Distance: internal 90 external 170

**Router 2:**

**Show running-config:**

Router#show running-config

Building configuration...

Current configuration : 880 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 192.168.1.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

ip address 192.168.10.6 255.255.255.252

clock rate 64000

!

interface Serial3/0

bandwidth 1024

ip address 192.168.10.10 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router eigrp 1

network 192.168.1.0

network 192.168.4.0 0.0.0.3

network 192.168.10.8 0.0.0.3

no auto-summary

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

End

**show ip route:**

Router#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

D 172.16.1.0/24 [90/41026560] via 192.168.10.9, 00:21:04, Serial3/0

D 172.16.2.0/24 [90/3014400] via 192.168.10.9, 00:21:04, Serial3/0

D 172.16.3.0/30 [90/41024000] via 192.168.10.9, 00:21:04, Serial3/0

C 192.168.1.0/24 is directly connected, FastEthernet0/0

192.168.10.0/30 is subnetted, 2 subnets

C 192.168.10.4 is directly connected, Serial2/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.10.6 YES manual up up

Serial3/0 192.168.10.10 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**show ip protocol:**

Router# show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

192.168.1.0

192.168.4.0/30

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

192.168.10.9 90 7387

Distance: internal 90 external 170

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about Enhanced Interior Gateway Routing Protocol (EIGRP). This protocol automatically takes routing decisions and makes configuration. Unlike RIP it only sends incremental updates.  Moreover, we implemented this on a topology given to us and successfully sent packets between PC’s connected to different routers. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |