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1)** INTERFACE CONFIGURATION **
** R1**
```
int s0/0/0
ip address 192.168.1.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown

int s0/0/1
ip address 192.168.7.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown

int s0/2/0
ip address 192.168.6.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown

int s0/2/1
ip address 10.0.0.2 255.0.0.0
encapsulation hdlc
no shutdown
```

** R2 **
```
int s0/0/0
ip address 192.168.1.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
ip address 192.168.2.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown
```

** R3 **
```
int f0/0
ip address 192.168.11.1 255.255.255.0
no shutdown

int s0/0/0
ip address 192.168.2.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
```

```
ip address 192.168.3.1 255.255.255.0
encapsulation hdlc
clockrate 64000
no shutdown

** R4 **
int s0/0/0
ip address 192.168.7.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
ip address 192.168.8.1 255.255.255.0
encapsulation hdlc
clockrate 64000
no shutdown

** R5 **
int f0/0
ip address 192.168.10.1 255.255.255.0
no shutdown

int s0/0/0
ip address 192.168.3.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
ip address 192.168.8.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/2/0
ip address 192.168.4.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/2/1
ip address 192.168.9.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown

** R6 **
int f0/0
ip address 192.168.12.1 255.255.255.0
no shutdown

int s0/0/0
ip address 192.168.6.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
ip address 192.168.5.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown
```

```
** R7 **
int s0/0/0
ip address 192.168.5.2 255.255.255.0
encapsulation hdlc
no shutdown

int s0/0/1
ip address 192.168.4.1 255.255.255.0
encapsulation hdlc
clock rate 64000
no shutdown

** R8 **
int s0/0/0
ip address 192.168.9.2 255.255.255.0
encapsulation hdlc
no shutdown

** ISP **
int s0/0/0
ip address 10.0.0.1 255.0.0.0
encapsulation hdlc
clock rate 64000
no shutdown

2)** Configure loopback **
* ISP *
int loopback 1
ip address 12.0.0.1 255.0.0.0

int loopback 2
ip address 11.0.0.1 255.0.0.0

* R2 *
int loopback 1
ip add 172.16.0.1 255.255.255.248

int loopback 3
ip add 172.16.2.13 255.255.255.248

* R7 *
int loopback 1
ip address 1.0.0.1 255.0.0.0

int loopback 2
ip address 2.0.0.1 255.0.0.0

int loopback 3
ip address 3.0.0.1 255.0.0.0

3)*** EIGRP ROUTING ***
** R1 **
router eigrp 10
network 192.168.1.0
network 192.168.7.0
network 192.168.6.0
no auto-summary
exit
```

```
ip route 0.0.0.0 0.0.0.0 s0/2/1

** R2 **
router eigrp 10
network 192.168.1.0
network 192.168.2.0
network 172.16.2.8 255.255.255.248
network 172.16.0.0 255.255.255.248
no auto-summary

** R3 **
router eigrp 10
network 192.168.2.0
network 192.168.11.0
network 192.168.3.0
no auto-summary

** R4 **
router eigrp 10
network 192.168.8.0
network 192.168.7.0
no auto-summary

** R5 **
router eigrp 10
network 192.168.3.0
network 192.168.8.0
network 192.168.4.0
network 192.168.9.0
network 192.168.10.0
no auto-summary

** R6 **
router eigrp 10
network 192.168.5.0
network 192.168.12.0
network 192.168.6.0
no auto-summary

** R7 **
router eigrp 10
network 192.168.5.0
network 192.168.4.0
network 1.0.0.0
network 2.0.0.0
network 3.0.0.0
no auto-summary

** R8 **
router eigrp 10
network 192.168.9.0
no auto-summary

** ISP **
ip route 0.0.0.0 0.0.0.0 s0/0/0

4)** Rredistribution **
*R1*
conf t
```

```
router eigrp 10
redistribute static
end

5)** Unequal cost load balancing **
*R1*(to reach 192.168.9.0 and 192.168.10.0 network)
First we have to match FC after that we have to increase varience
#conf t
#router eigrp 10
#varience 2
#end

*R5*(to reach internet network)
First we have to match FC after that we have to increase varience
#conf t
#router eigrp 10
#varience 2
#end

6)*** configure MANUAL SUMMARIZATION ***
#conf t
int s0/0/0
ip summary-address eigrp 10 172.16.0.0 255.255.252.0
int s0/0/1
ip summary-address eigrp 10 172.16.0.0 255.255.252.0
end

7)** to configure STUB router **
conf t
router eigrp 10
eigrp stub
exit

8)** configure eigrp router ID **
* R6 *
conf t
router eigrp 10
eigrp router-id 5.5.5.5
end

9)*** EIGRP AUTHENTICATION*(bitween R6 and R7)**
*R6*
conf t
key chain noor
key 1
key-string ccnp
exit
exit

int s0/0/1
ip authentication mode eigrp 10 md5
ip authentication key-chain eigrp 10 noor
exit

*R7*
conf t
key chain noor1
key 1
key-string ccnp
```

```
exit
exit

int s0/0/0
ip authentication mode eigrp 10 md5
ip authentication key-chain eigrp 10 noor1
exit

10)** Verification in EIGRP **

#show ip interface brief
#show interface s0/0/0
#show ip eigrp neighbors
#show ip eigrp topology
#show ip route
#show ip route eigrp
#traceroute 192.168.9.2 (to trace path from source to destination)
#show ip protocols
#show ip eigrp 10 int detail s0/0/0 (to verify hello and hold on timer)
#show ip eigrp traffic

(verify all eigrp packets)
#debug eigrp packet
#terminal monitor
#undebug all
#terminal no monitor

(verify eigrp hello packets)
#debug eigrp packets hello
#terminal monitor
#undebug all
#terminal no monitor

(verify eigrp update packets)
#debug eigrp packets update
#terminal monitor
#undebug all
#terminal no monitor

(verify eigrp query packets)
#debug eigrp packets query
#terminal monitor
#undebug all
#terminal no monitor

(verify eigrp reply packets)
#debug eigrp packets reply
#terminal monitor
#undebug all
#terminal no monitor

(verify eigrp ACK packets)
#debug eigrp packets ack
#terminal monitor
#undebug all
#terminal no monitor

#show ip eigrp topology all-links
#show ip route 192.168.9.2 255.255.255.0 (to verify the traffic share between
```

routes)

* authentication verification *
#show key chain (to verify key chain)
#debug eigrp packets update
#terminal monitor
#clear ip eigrp neighbor