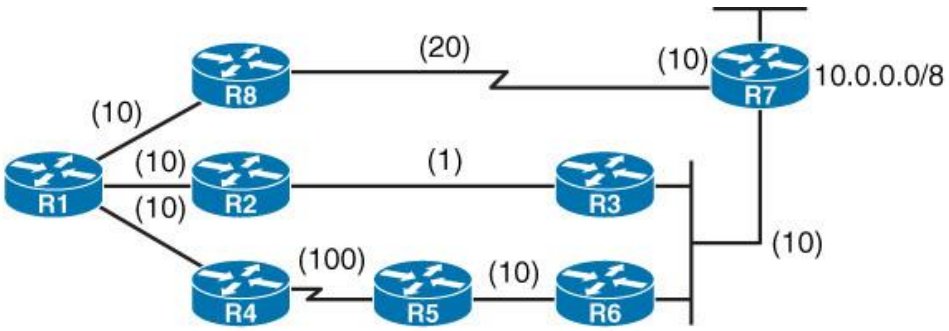
EIGRP Terminologies:

EIGRP is a complex protocol. It uses several terms to refer to its components and functions. Let's discuss these terms and their meanings.

Advertised Distance (AD)/Reported Distance (RD):

The cost from the neighbor to the destination. The metric advertised by the neighboring router for a specific route. This is the metric of the route used by the neighboring router to reach that specific destination network.

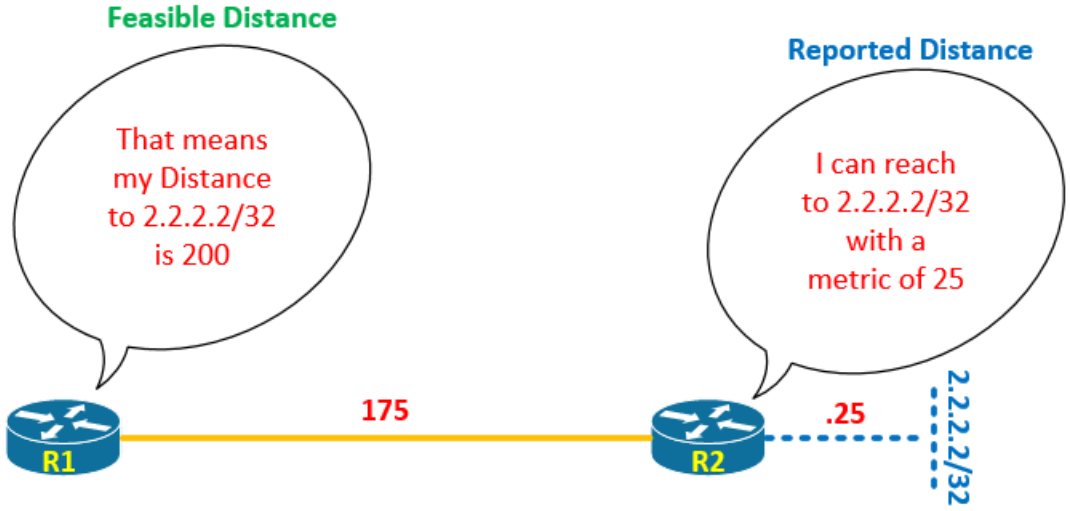


- Reported distance = distance to a destination as advertised by an upstream neighbor

Destination	RD	Neighbor
10.0.0.0/8	20+10=30	R8
10.0.0.0/8	1+10+10=21	R2
10.0.0.0/8	100+10+10+10=130	R4

Feasible Distance (FD):

The total cost to reach a destination network. The local router's metric of the best route to reach a specific network. The route with the lowest FD will be placed in the routing table.

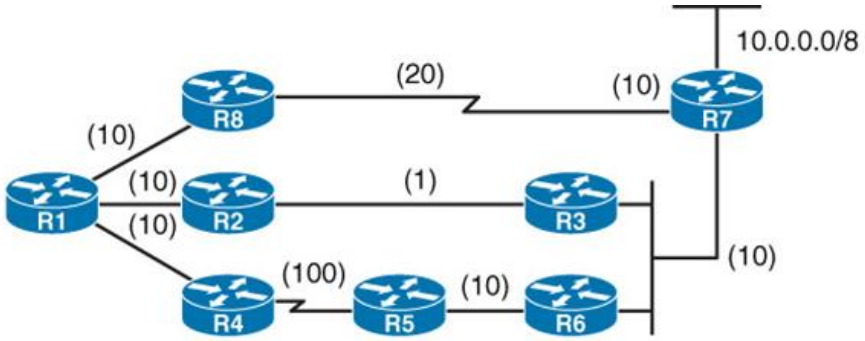


Successor:

The primary route used to reach a destination. The successor route is kept in the routing table. Notice that successor is the best route to that destination. The route with the lowest path metric to reach a destination. This route will be placed in the routing table. The successor route is the best route to reach a subnet, based on the advertised distance (AD) from the neighbor plus the distance to reach that neighbor.

Feasible Successor:

The backup route. To be a feasible successor, the route must have an AD less than the FD of the current successor route. Alternative routes to a particular network that can be used immediately if the currently best route (the successor) fails, without causing a routing loop. These routes are stored in the EIGRP topology table. The feasible successor route is a route which has a higher metric than the successor route to reach a subnet but meets the feasibility condition and can be used in the event that the successor route goes down.



- Route over R2 becomes successor.
- Alternative route over R8 becomes feasible successor.

Destination	RD	Metric	Neighbor	Status
10.0.0.0/8	30	40	R8	FS
10.0.0.0/8	21	31 (FD)	R2	S
10.0.0.0/8	130	140	R4	Non-S

Feasibility Condition:

If a non-successor route's Advertised Distance is less than the Feasible Distance, then the Feasibility Condition has been met. The feasibility condition states that a route may become a feasible successor route if the advertised distance is less than the Feasible Distance.

```
R2#show ip eigrp topology
EIGRP-IPv4 Topology Table for AS(1)/ID(10.1.24.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 172.16.8.0/24, 1 successors, FD is 130816
        via 10.1.24.2 (130816/128256), GigabitEthernet0/1
P 172.30.2.0/24, 1 successors, FD is 3104
        via 10.1.23.2 (3104/2848), GigabitEthernet0/2
P 192.168.2.0/24, 1 successors, FD is 3328
        via 10.1.23.2 (3328/3072), GigabitEthernet0/2
P 10.1.12.0/30, 1 successors, FD is 2816
        via Connected, GigabitEthernet0/0
P 172.16.5.0/24, 1 successors, FD is 130816
        via 10.1.24.2 (130816/128256), GigabitEthernet0/1
P 10.1.35.0/30, 1 successors, FD is 3072
        via 10.1.23.2 (3072/2816), GigabitEthernet0/2
P 172.30.3.0/24, 1 successors, FD is 3104
        via 10.1.23.2 (3104/2848), GigabitEthernet0/2
```

```
R2#show ip eigrp topology | sec 10.1.35.0
P 10.1.35.0/30, 1 successors, FD is 3072
        via 10.1.23.2 (3072/2816), GigabitEthernet0/2
```

FD

```
R2#show ip eigrp topology all-links | sec 10.1.35.0
P 10.1.35.0/30, 1 successors, FD is 3072, serno 15
        via 10.1.23.2 (3072/2816), GigabitEthernet0/2
        via 10.1.12.1 (3328/3072), GigabitEthernet0/0
R2#
```

AD