

📘 Terms in EIGRP (Enhanced Interior Gateway Routing Protocol)

EIGRP uses the **DUAL (Diffusing Update Algorithm)** to calculate the best and backup routes. The key terms are:

- ◆ **1. Feasible Distance (FD)**
- This is the **total cost (metric)** to reach a destination **from the local router**.
- Includes the cost from **your router to the neighbor + the neighbor's cost to the destination**.

🧠 **This is the value EIGRP uses to install the best route into the routing table.**

Example:

If it costs 20 to reach the neighbor, and the neighbor says it's 30 to the destination,

$$FD = 20 + 30 = 50$$

◆ **2. Reported Distance (RD) (Also called Advertised Distance)**

- The **metric (cost)** that your **neighbor router reports** to reach a destination.
- It's **your neighbor's own feasible distance** to the destination.

Using above example:

RD = 30 (what neighbor reports)

FD = 50 (your cost to neighbor + RD)

◆ **3. Successor**

- The **best path (lowest Feasible Distance)** to reach a network.
 - It's the route that goes directly into the **routing table**.
- Every destination **must have a successor** (or EIGRP can't reach it).

◆ **4. Feasible Successor (Backup Route)**

- A **backup route** that's kept in the **EIGRP topology table**.
 - It's **immediately available** if the successor fails — no recalculation needed.
- 🧠 It must meet this important condition:

🔒 **Feasibility Condition (Very Important)**

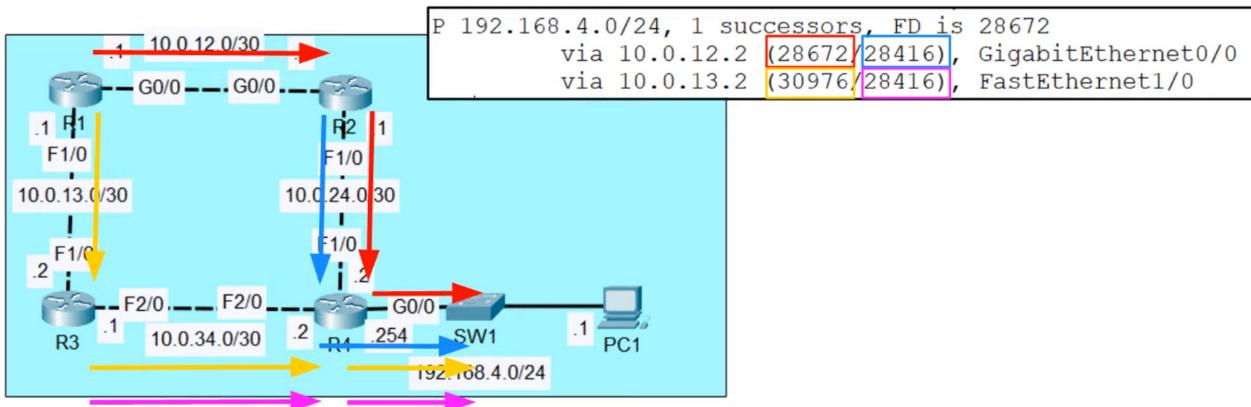
A route can be a Feasible Successor **only if**:

Reported Distance (RD) < Feasible Distance (FD) of the current successor

📌 This prevents **routing loops**.

💡 **Example Scenario:**

- **Feasible Distance** = This router's metric value to the route's destination.
- **Reported Distance** (aka Advertised Distance) = The neighbor's metric value to the route's destination.



Successor = the ROUTE with the LOWEST METRIC to the DESTINATION (the best route)

Feasible Successor = An alternate ROUTE to the DESTINATION (not the best route) which meets the feasibility condition

FEASIBILITY CONDITION : A ROUTE is considered a Feasible Successor if it's Reported Distance is LOWER than the Successor ROUTE's Feasible distance

