

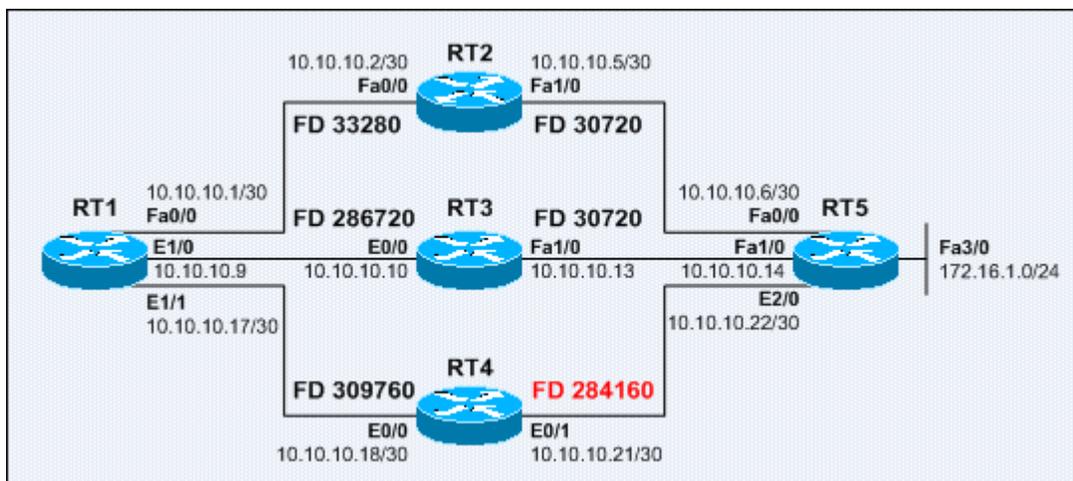
Self-Study Guide: EIGRP – Enhanced Interior Gateway Routing Protocol

Cisco Networking is full of protocols and terminologies, EIGRP is one of them. Started from CCNA (Cisco Certified Network Associate), the protocol goes deeper in concept in CCNP (Cisco Certified Network Professional) and then CCIE (Cisco Certified Internetwork Expert). EIGRP is a proprietary protocol designed by Cisco Systems and is available only on Cisco Devices.

EIGRP is one of those interior gateway routing protocols that have very rapid convergence. In real time scenario, EIGRP scales very well. It is the only protocol that can have a backup path along with the best path to reach a destination. It also supports unequal cost load balancing between routers. Some other features include,

- Fast convergence
- Loop-free topology
- VLSM and route summarization
- Multicast and incremental updates
- Routes for multiple routed protocols

If there are multiple paths to reach a destination, EIGRP will select the best path on the basis of feasible distance that is a metric value calculated out of a lot of parameters like Bandwidth, Load, Delay, Reliability and MTU. Consider the following topology,



Router 1 on the left-hand side has three paths with maybe different bandwidth or delay value set, that's why their FD value is different. EIGRP will choose the path with less FD value. Other paths may or may not be eligible for backup path.

Here, we are covering some terminologies commonly used in EIGRP.

- 1. EIGRP:**
Enhanced Interior Gateway Routing Protocol
- 2. DUAL:**
Diffusing Update Algorithm; used by EIGRP for rapid convergence. It uses distance information (Metric) to provide an efficient loop-free path.
- 3. ASN:**
Autonomous System Number; a group of devices under a single administration.
- 4. Advertise Distance:**
Known as AD or Reported Distance, RD is the metric between next hop router and the destination. It is the metric that a router advertises to its' neighbor router about the destination.
- 5. Feasible Distance:**
Total metric as seen by a local router to reach a specific destination.
- 6. Successor:**
Best path determined by the router to reach a destination.
- 7. Feasible Successor:**
A backup path determined by the router to reach a destination.
- 8. Neighbor Table:**
A table maintained by EIGRP Speaking router to track the information of neighbors.
- 9. Topology Table:**
EIGRP routers can keep all the best and backup path information in the topology table.
- 10. Routing Table:**
Best path information to reach to the destination is stored in routing table
- 11. Active Router:**
A router in EIGRP is considered as active if it is performing some re-computation for a specific route (searching for a successor).
- 12. Passive Router:**
A router in EIGRP is considered as passive if it is not performing some re-computation for a specific route.

13. Reliable Transport Protocol:

EIGRP uses Reliable Transport Protocol (RTP) for guaranteed, ordered delivery of EIGRP packets to all neighbors.

14. Hello Packet:

Used by EIGRP for discovering, setting up and maintaining neighbors.

15. Passive Interface:

Making an interface passive will stop EIGRP from sending multicast or unicast neighborship messages on that link.

16. EIGRP Router-ID:

EIGRP uses the concept of the RID as a loop-prevention mechanism to filter out a router's own routes. In the event of a duplicate RID, the neighbor's routes will not be installed.

17. EIGRP SIA:

Known as EIGRP Stuck in Active is a state which occurs if a router does not receive a reply to a QUERY within the configured active time (3 min).

18. EIGRP Stub:

Stub routers do not advertise all the information to the neighbors plus if a router is configured as stub query packets will not be received by that router.

19. Hold Time:

Defines the time in seconds for the period neighbors information is considered valid by a router.

20. RTO:

Retransmission Timeout; specifies a time after which a packet will be retransmitted if the acknowledgement is not received.

21. SRTT:

Smooth Round Trip Time; Time required to send a packet reliably to a router and receive acknowledgement.

22. Query:

A type of packet that sends enquiries about other available paths if the successor to a destination is lost and there is no feasible successor.

23. Reply Packet:

Received in response to Query, containing the information about alternate the path.

There is so much to EIGRP than just definitions. Being one of the important protocol, there are many questions asked about it in Cisco Exams.

Be prepared for it. Happy Learning!

Recommended Read:

- [Self Study Guide: MPLS – Multiprotocol Label Switching](#)
- [Self Study Guide: BGP Protocol Terminologies](#)
- [Self Study Guide: OSPF Routing Protocol Terminologies](#)
- [Self Study Guide: Spanning Tree Protocol](#)

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