



Loop Prevention Mechanisms



EIGRP has two major loop prevention mechanisms:

- 1. Split horizon** Blocks route information from being advertised by a router out of any interface from which that information originated. It is enabled on all interfaces by default.
- 2. DUAL (Diffusing Update Algorithm)** Uses FC (Feasibility Condition) to compute loop free Topology



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EIGRP Modes

CLASSIC Mode	NAMED Mode
Supported on Cisco Routers before IOS v15	Supported on Cisco Routers after IOS v15
32-bit metric calculations	64-bit metric calculations
Supports Clear Text and MD5 authentication	Supports Clear Text, MD5 and SHA-256 authentication

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EIGRP Neighbour Conditions



For two EIGRP Routers to become neighbours, following three conditions must be met:

- 1. Same Subnet** Routers should be in the same IP subnet
- 2. Same AS** AS number should be same
- 3. Metrics** Metrics (K1-K5) should be identical

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EIGRP Route Types

Internal EIGRP Route	Routes that are originated within the AS. Denoted by D in Cisco Routers
Summary EIGRP Route	Routes that are summarized in the Router. Denoted by D in Cisco Routers
External EIGRP Route	Routes that are redistributed into EIGRP. Denoted by D EX in Cisco Routers

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EIGRP Tables

Neighbour Table	All Adjacent Routers List
Topology Table	LSA's Table (complete info about the networks in same area)
Routing Table	Best Routes

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EIGRP/DUAL Status Flags

P (Passive)	Indicates an available and stable network which can be installed into the Routing Table
A (Active)	Indicates an unavailable network which has outstanding queries and cannot be installed into the Routing Table
U (Update)	Indicates that a network is being updated and the Router is waiting for an Ack for the update packet
Q (Query)	Indicates that a network has an outstanding Query or the Router is waiting for an Ack for a Query Packet
R (Reply)	Indicates that the Router is generating a reply for the network or is waiting for an Ack for the reply packet
r (Reply Status)	Indicates that the Router is waiting for the Reply to a Query packet from a neighboring Router

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EIGRP Advanced Features

EIGRP Stub Routing	Stub Routing speeds up network convergence & efficiency. Stub Routing is only supported by Stub Routers i.e. Routers with only one exit path. There are seven types of EIGRP stub Routers called: EIGRP Stub (default), EIGRP Stub Connected, EIGRP Stub Leak-Map, EIGRP Stub Receive-Only, EIGRP Stub Redistribute, EIGRP Stub Static and EIGRP Stub Summary
EIGRP Filtering	Filtering is used to control/filter the routes that EIGRP receives & sends on a particular interface. Filtering can be achieved through: Passive Interface, Distribute-list (ACL), Prefix-list, Route-maps, Offset Lists, AD, Per Neighbor AD, Per Neighbor Prefix Limit and Redistribution Prefix Limit
Graceful Shutdown	Graceful Shutdown allows a Router to advertise/send 'Goodbye Message' that it is being deactivated, thereby allowing its neighbors to react immediately, rather than wait for the Hold timer to expire
EIGRP FRR	FRR enables traffic that passes through a failed link to be rerouted around the failure. IPFRR / LFA-FRR (Loop-Free Alternate Fast ReRoute) feature allows the EIGRP to reduce the routing transition time to less than 50ms by pre-computing Backup Routes and installing these routes in the RIB

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