

| Protocol Header | | | |
|--------------------------|--------|----------|----|
| 8 | 16 | 24 | 32 |
| Version | Opcode | Checksum | |
| Flags | | | |
| Sequence Number | | | |
| Acknowledgment Number | | | |
| Autonomous System Number | | | |
| Type | | Length | |
| Value | | | |

Metric Formula

$$256 * (K_1 * \text{bw} + \frac{K_2 * \text{bw}}{256 - \text{load}} + K_3 * \text{delay}) * \frac{K_5}{\text{rel} + K_4}$$

- **bw** = 10⁷ / minimum path bandwidth in kbps
- **delay** = interface delay in µsecs / 10

EIGRP Configuration

Protocol Configuration

```
! Enable EIGRP
router eigrp <ASN>

! Add networks to advertise
network <IP address> <wildcard mask>

! Configure K values to manipulate metric formula
metric weights 0 <k1> <k2> <k3> <k4> <k5>

! Disable automatic route summarization
no auto-summary

! Designate passive interfaces
passive-interface (<interface> | default)

! Enable stub routing
eigrp stub [receive-only | connected | static | summary]

! Statically identify neighboring routers
neighbor <IP address> <interface>
```

Interface Configuration

```
! Set maximum bandwidth EIGRP can consume
ip bandwidth-percent eigrp <percentage>

! Configure manual summarization of outbound routes
ip summary-address eigrp <AS> <IP address> <mask> [<AD>]

! Enable MD5 authentication
ip authentication mode eigrp <AS> md5
ip authentication key-chain eigrp <AS> <key-chain>

! Configure hello and hold timers
ip hello-interval eigrp <AS> <seconds>
ip hold-time eigrp <AS> <seconds>

! Disable split horizon for EIGRP
no ip split-horizon eigrp <AS>
```

Attributes

| | |
|-----------------------|--------------------|
| Type | Distance Vector |
| Algorithm | DUAL |
| Internal AD | 90 |
| External AD | 170 |
| Summary AD | 5 |
| Standard | Cisco proprietary |
| Protocols | IP, IPX, Appletalk |
| Transport | IP/88 |
| Authentication | MD5 |
| Multicast IP | 224.0.0.10 |
| Hello Timers | 5/60 |
| Hold Timers | 15/180 |

K Defaults

Packet Types

| | | | |
|----------------------|---|----------|-------------|
| K₁ | 1 | 1 | Update |
| K₂ | 0 | 3 | Query |
| K₃ | 1 | 4 | Reply |
| K₄ | 0 | 5 | Hello |
| K₅ | 0 | 8 | Acknowledge |

Terminology

Reported Distance

The metric for a route advertised by a neighbor

Feasible Distance

The distance advertised by a neighbor plus the cost to get to that neighbor

Stuck In Active (SIA)

The condition when a route becomes unreachable and not all queries for it are answered; adjacencies with unresponsive neighbors are reset

Passive Interface

An interface which does not participate in EIGRP but whose network is advertised

Stub Router

A router which advertises only a subset of routes, and is omitted from the route query process

Troubleshooting

```
show ip eigrp interfaces
show ip eigrp neighbors
show ip eigrp topology
show ip eigrp traffic
clear ip eigrp neighbors
debug ip eigrp [packet | neighbors]
```