

Protocol Header

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

Metric Formula

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

- **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 <AS> <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

K₁ 1

K₂ 0

K₃ 1

K₄ 0

K₅ 0

Packet Types

1 Update

3 Query

4 Reply

5 Hello

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]
```