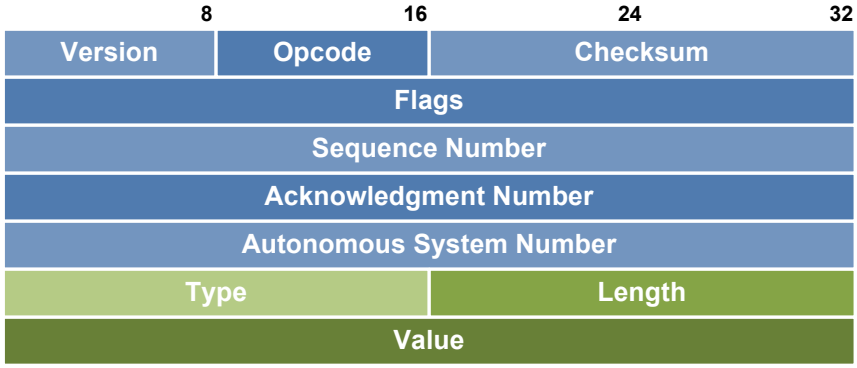
EIGRP

Protocol Header



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** = 10^7 / 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 neighoring 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	
K_1	1
K_2	0
K_3	1
K_4	0
K_5	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]
```