set metric (EIGRP)

To set the metric value for Enhanced Interior Gateway Routing Protocol (EIGRP) in a route map, use the **set metric** route-map configuration command. To return to the default metric value, use the **no** form of this command.

set metric *bandwidth delay reliability loading mtu*

no set metric *bandwidth delay reliability loading mtu*

Syntax Description

bandwidth	Metric value or EIGRP bandwidth of the route in kbps. The range is from 0 to 4294967295.
delay	Route delay (in tens of microseconds). It can be in the range from 0 to 4294967295.
reliability	Likelihood of successful packet transmission expressed as a number from 0 to 255. The value 255 means 100 percent reliability; 0 means no reliability.
loading	Effective bandwidth of the route expressed as a number from 0 to 255 (255 is 100 percent loading).
mtu	Minimum maximum transmission unit (MTU) size of the route, in bytes. It can be in the range from 0 to 4294967295.

Defaults

No metric will be set in the route map.

Command Modes

Route-map configuration (config-route-map)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.

Usage Guidelines

We recommend you consult your Cisco technical support representative before changing the default value.

Use the **route-map** global configuration command, and the **match** and **set** route-map configuration commands, to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current

route-map command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

The **set** route-map configuration commands specify the redistribution *set actions* to be performed when all of the match criteria for a router are met. When all match criteria are met, all set actions are performed.

Examples

The following example sets the bandwidth to 10,000, the delay to 10, the reliability to 255, the loading to 1, and the MTU to 1500:

```
Router(config-route-map)# set metric 10000 10 255 1 1500
```

show eigrp address-family accounting

To display prefix accounting information for Enhanced Interior Gateway Routing Protocol (EIGRP) processes, use the **show eigrp address-family accounting** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **accounting**

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF. This keyword/argument pair is available only for IPv4 configurations.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command Default

Prefix accounting information for all EIGRP processes is displayed.

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp accounting** command. Cisco recommends using the **show eigrp address-family accounting** command.

Examples

The following example shows how to display EIGRP prefix accounting information for autonomous-system 22:

```
Router# show eigrp address-family ipv4 22 accounting

EIGRP-IPv4 VR(saf) Accounting for AS(22)/ID(10.0.0.1)
Total Prefix Count: 3  States: A-Adjacency, P-Pending, D-Down
State Address/Source    Interface       Prefix   Restart  Restart/
```

```
                                        Count      Count    Reset(s)
A    10.0.0.2          Et0/0                2          0          0
P    10.0.2.4          Se2/0                0          2        114
D    10.0.1.3          Et0/0                0          3          0
```

Table 3 describes the significant fields shown in the display.

Table 3 show eigrp address-family accounting Field Descriptions

Field	Description
IP-EIGRP accounting for AS...	Identifies the EIGRP instance, AS number, router ID, and table ID.
Total Prefix Count	Number of distinct prefixes that are present in this autonomous system.
State	State of the given neighbor: Adjacency, Pending, or Down.
Address/Source	IP address of the neighbor.
Interface	Interface on which the neighbor is connected.
Prefix Count	Number of prefixes that are advertised by this neighbor.
Restart Count	Number of times this neighbor has been restarted due to exceeding prefix limits.
Restart/Reset(s)	Time remaining until the neighbor will be restarted (if in Pending state) or until the restart count will be cleared (if in Adjacency state.)

Related Commands

Command	Description
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family topology	Displays entries in the EIGRP topology table.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show eigrp address-family events

To display information about Enhanced Interior Gateway Routing Protocol (EIGRP) address-family events, use the **show eigrp address-family events** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **events** [*starting-event-number ending-event-number*] [**errmsg** [*starting-event-number ending-event-number*]] [**sia** [*starting-event-number ending-event-number*]] [**type**]

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.
starting-event-number	(Optional) Number of first event to display.
ending-event-number	(Optional) Number of last event to display.
errmsg	(Optional) Displays error message events.
sia	(Optional) Displays Stuck in Active (SIA) events.
type	(Optional) Displays the types of events being logged.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command Default

All EIGRP address-family events are displayed.

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

The event log is used by Cisco technical support to display a history of EIGRP internal events that are specific to a particular address family.

To display information about EIGRP service-family events, use the **show eigrp service-family events** command.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp events** command. Cisco recommends using the **show eigrp address-family events** command.

Examples

The following example shows how to display EIGRP address-family events for autonomous-system 3:

```
Router# show eigrp address-family ipv4 3 events

Event information for AS 3:
1 15:37:47.015 Change queue emptied, entries: 1
2 15:37:47.015 Metric set: 10.0.0.0/24 307200
3 15:37:47.015 Update reason, delay: new if 4294967295
4 15:37:47.015 Update sent, RD: 10.0.0.0/24 4294967295
5 15:37:47.015 Update reason, delay: metric chg 4294967295
6 15:37:47.015 Update sent, RD: 10.0.0.0/24 4294967295
7 15:37:47.015 Route installed: 10.0.0.0/24 1.1.1.2
8 15:37:47.015 Route installing: 10.0.0.0/24 10.0.1.2
```

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family topology	Displays entries in the EIGRP topology table.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.
show eigrp service-family events	Displays information about EIGRP service-family events.

show eigrp address-family interfaces

To display information about interfaces that are configured for Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show eigrp address-family interfaces** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **interfaces** [**detail**] [*interface-type interface-number*]

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.
detail	(Optional) Displays detailed information about EIGRP interfaces.
interface-type interface-number	(Optional) Interface type and number to display. If unspecified, all enabled interfaces are displayed.

Command Default

All enabled EIGRP interfaces are displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Use the **show eigrp address-family interfaces** command to determine on which interfaces EIGRP is active and to learn EIGRP information about those interfaces.

If an interface is specified, only information about that interface is displayed. Otherwise, information about all interfaces on which EIGRP is running is displayed.

If an autonomous system is specified, only the routing process for the specified autonomous system is displayed. Otherwise, all EIGRP processes are displayed.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp interfaces** command. Cisco recommends using the **show eigrp address-family interfaces** command.

Examples

The following example shows how to display information about EIGRP interfaces for autonomous-system 4453:

```
Router# show eigrp address-family ipv4 4453 interfaces

EIGRP-IPv4 VR(Virtual-name) Address-family Neighbors for AS(4453)
                   Xmit Queue   Mean   Pacing Time   Multicast    Pending
Interface     Peers  Un/Reliable  SRTT   Un/Reliable   Flow Timer   Services
Se0           1          0/0        28      0/15          127           0
Se1           1          0/0        44      0/15          211           0
```

The following example shows how to display detailed information about Loopback interface 1 in autonomous-system 2:

```
Router# show eigrp address-family ipv4 2 interfaces detail Loopback1

EIGRP-IPv4 VR(saf2) Address-family Neighbors for AS(2)
                    Xmit Queue   Mean  Pacing Time     Multicast    Pending
Interface    Peers  Un/Reliable  SRTT  Un/Reliable     Flow Timer   Services
Lo1          166        0/0        48      0/1            258           0
   Hello-interval is 5, Hold-time is 15
   Split-horizon is enabled
   Next xmit serial <none>
   Un/reliable mcasts: 0/0 Un/reliable ucasts: 10148/67233
   Mcast exceptions: 0 CR packets: 0 ACKs suppressed: 8719
   Retransmissions sent: 2696 Out-of-sequence rcvd: 594
   Interface has all stub peers
   Topology-ids on interface - 0
   Authentication mode is not set
```

Table 4 describes the significant fields shown in the display.

Table 4 show eigrp address-family interfaces Field Descriptions

Field	Description
Interface	Interface over which EIGRP is configured.
Peers	Number of EIGRP neighbors connected on this interface.
Xmit Queue Un/Reliable	Number of packets remaining in the Unreliable and Reliable transmit queues.
Mean SRTT	Mean smooth round-trip time interval, in milliseconds.
Pacing Time Un/Reliable	Pacing time used to determine when reliable and unreliable EIGRP packets should be sent out of the interface.
Multicast Flow Timer	Maximum number of seconds the router sends multicast EIGRP packets.
Pending Services	Number of services in the packets in the transmit queue waiting to be sent.
CR packets	Packets marked for conditional Receive.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family topology	Displays entries in the EIGRP topology table.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show eigrp address-family neighbors

To display the neighbors that are discovered by Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show eigrp address-family neighbors** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **neighbors** [**static**] [**detail**] [*interface-type interface-number*]

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.
static	(Optional) Displays static neighbors.
detail	(Optional) Displays detailed EIGRP neighbor information.
interface-type interface-number	(Optional) Interface type and number to display. If unspecified, all enabled interfaces are displayed.

Command Default

Information about all neighbors discovered by EIGRP is displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Use the **show eigrp address-family neighbors** command to determine when neighbors become active and inactive. It is also useful for debugging certain types of transport problems.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp neighbors** command. Cisco recommends using the **show eigrp address-family neighbors** command.

Examples

The following example shows how to display neighbors that are discovered by EIGRP:

```
Router# show eigrp address-family ipv4 4453 neighbors

EIGRP-IPv4 VR(Virtual-name) Address-family Neighbors for AS(4453)
Address                 Interface    Hold Uptime  SRTT  RTO    Q     Seq
                                       (sec)          (ms)  (ms)   Cnt   Num
172.16.81.28              Ethernet1     13   0:00:41  0      11   4     20
172.16.80.28              Ethernet0     14   0:02:01  0      10   12    24
172.16.80.31              Ethernet0     12   0:02:02  0      4    5     20
```

Table 5 describes the significant fields shown in the display.

The following example shows how to display detailed information about neighbors that are discovered by EIGRP, including whether a neighbor has been gracefully restarted:

```
Router# show eigrp address-family ipv4 neighbors detail

EIGRP-IPv4 VR(test) Address-Family Neighbors for AS(3)
H Address Interface Hold Uptime SRTT RTO Q Seq
                    (sec)       (ms) Cnt   Num
172.16.81.28 Et1/1 11 01:11:08 10 200 0 8
Time since Restart 00:00:05
Version 5.0/3.0, Retrans: 2, Retries: 0, Prefixes: 2
Topology-ids from peer - 0
```

Table 5 show eigrp address-family neighbors Field Descriptions

Field	Description
AS(4453)	Autonomous system number specified in the configuration command, in this example 4453.
Address	IP address of the peer.
Interface	Interface on which the router is receiving hello packets from the peer.
Hold time	Length of time, in seconds, that the router will wait to hear from the peer before declaring it down. If the peer is using the default hold time, this number will be less than 15. If the peer configures a nondefault hold time, it will be reflected here.
Uptime	Elapsed time since the local router first heard from this neighbor.
Q Cnt	Number of packets (update, query, and reply) that the software is waiting to send.
Seq Num	Sequence number of the last update, query, or reply packet that was received from this neighbor.
SRTT	Smooth round-trip time. This is the number of milliseconds that it takes for an EIGRP packet to be sent to this neighbor and for the local router to receive an acknowledgment of that packet.
RTO	Retransmission timeout, in milliseconds. Indicates the amount of time EIGRP waits before retransmitting a packet from the retransmission queue to a neighbor.
Time since Restart	Time elapsed since a neighbor has been gracefully restarted.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family topology	Displays entries in the EIGRP topology table.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show eigrp address-family timers

To display information about Enhanced Interior Gateway Routing Protocol (EIGRP) timers and expiration times, use the **show eigrp address-family timers** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **timers**

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.

Command Default

Information about all EIGRP timers is displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command is useful for debugging and troubleshooting by Cisco technical support, but it is not intended for normal EIGRP administration tasks. This command should not be used without guidance from Cisco technical support.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp timers** command. Cisco recommends using the **show eigrp address-family timers** command.

Examples

The following example shows how to display information about EIGRP timers:

```
Router# show eigrp address-family ipv4 4453 timers

EIGRP-IPv4 VR(Virtual-name) Address-family Timers for AS(4453)
```

```
Hello Process
Expiration Type
| 1.022 (parent)
| 1.022 Hello (Et0/0)

Update Process
Expiration Type
| 14.984 (parent)
| 14.984 (parent)
| 14.984 Peer holding

SIA Process
Expiration Type for Topo(base)
| 0.000 (parent)
```

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family topology	Displays entries in the EIGRP topology table.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show eigrp address-family topology

To display entries in the Enhanced Interior Gateway Routing Protocol (EIGRP) topology table, use the **show eigrp address-family topology** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **topology** [*topology-name*] [*ip-address*] [**active**] [**all-links**] [**detail-links**] [**pending**] [**summary**] [**zero-successors**] [**route-type** {**connected** | **external** | **internal** | **local** | **redistributed** | **summary** | **vpn**}]

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Specifies the autonomous system number.
multicast	(Optional) Displays information about multicast instances.
topology-name	(Optional) Named entry in the EIGRP topology table.
ip-address	(Optional) Network or network and mask. When specified, a detailed description of the entry is provided.
active	(Optional) Displays only active entries in the EIGRP topology table.
all-links	(Optional) Displays all entries in the EIGRP topology table (including non-feasible-successor sources).
detail-links	(Optional) Displays detailed information about all entries in the topology table.
pending	(Optional) Displays all entries in the EIGRP topology table that are waiting for an update from a neighbor or are waiting to reply to a neighbor.
summary	(Optional) Displays summary information about the EIGRP topology table.
zero-successors	(Optional) Displays available routes in the EIGRP topology table that have zero successors.
route-type	(Optional) Displays information about services of the specified route type.
connected	(Optional) Displays information about all connected routes.
external	(Optional) Displays information about all external routes.
internal	(Optional) Displays information about all internal routes.
local	(Optional) Displays information about all locally originated routes.
redistributed	(Optional) Displays information about all redistributed routes.
summary	(Optional) Displays information about all summary routes.
vpn	(Optional) Displays information about all VPN sourced routes. Applies to IPv4 only.

Command Default

If this command is used without any keywords or arguments, only routes that are feasible successors are displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp topology** command. Cisco recommends using the **show eigrp address-family topology** command.

Examples

The following example shows how to display entries in the EIGRP topology table:

```
Router# show eigrp address-family ipv4 4453 topology

EIGRP-IPv4 VR(Virtual-name) Topology Table for AS(4453)/ID(10.0.0.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - Reply status, s - sia Status
P  10.17.17.0/24, 1 successors, FD is 409600
          via 10.10.10.2 (409600/128256), Ethernet3/0
P  172.16.19.0/24, 1 successors, FD is 409600
          via 10.10.10.2 (409600/128256), Ethernet3/0
P  192.168.10.0/24, 1 successors, FD is 281600
          via Connected, Ethernet3/0
P  10.10.10.0/24, 1 successors, FD is 281600
          via Redistributed (281600/0)
```

The following example shows how to display EIGRP metrics for specified internal services and external services:

```
Router# show eigrp address-family ipv4 4453 topology 10.10.10.0/24

EIGRP-IPv4 VR(virtual-name) Topology Entry for AS(4453)/ID(10.0.0.1) for 10.10.10.0/24
  State is Passive, Query origin flag is 1, 1 Successor(s), FD is 128256
  Descriptor Blocks:
  0.0.0.0 (Null0), from Connected, Send flag is 0x0
      Composite metric is (128256/0), service is Internal
      Vector metric:
        Minimum bandwidth is 10000000 Kbit
        Total delay is 5000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1514
        Hop count is 0
        Originating router is 10.0.0.1
```

Table 6 describes the significant fields shown in the display.

Table 6 show eigrp address-family topology Field Descriptions

Field	Description
Codes	State of this topology table entry. Passive and Active refer to the EIGRP state with respect to this destination; Update, Query, and Reply refer to the type of packet that is being sent.
P—Passive	No EIGRP computations are being performed for this destination.
A—Active	EIGRP computations are being performed for this destination.
U—Update	An update packet was sent to this destination.
Q—Query	A query packet was sent to this destination.
R—Reply	A reply packet was sent to this destination.
r—reply Status	Flag that is set after the software has sent a query and is waiting for a reply.
s—sia Status	Flag that is set if a route is in a stuck in active state.
successors	Number of successors. This number corresponds to the number of next hops in the IP routing table. If "successors" is capitalized, then the route or next hop is in a transition state.
FD	Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination.
replies	(Not shown in the output.) Number of replies that are still outstanding (have not been received) with respect to this destination. This information appears only when the destination is in the Active state.
state	(Not shown in the output) Exact EIGRP state that this destination is in. It can be the number 0, 1, 2, or 3. This information appears only when the destination is in the Active state.
via	IP address of the peer that told the software about this destination. The first N of these entries, where N is the number of successors, is the current successors. The remaining entries on the list are feasible successors.
(409600/128256)	The first number is the EIGRP metric that represents the cost to the destination. The second number is the EIGRP metric that this peer advertised.
Ethernet3/0	Interface from which this information was learned.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show eigrp address-family traffic

To display the number of Enhanced Interior Gateway Routing Protocol (EIGRP) packets that are sent and received, use the **show eigrp address-family traffic** command in user EXEC or privileged EXEC mode.

show eigrp address-family {**ipv4** | **ipv6**} [**vrf** *vrf-name*] [*autonomous-system-number*] [**multicast**] **traffic**

Syntax Description

ipv4	Selects the IPv4 protocol address family.
ipv6	Selects the IPv6 protocol address family.
vrf *vrf-name*	(Optional) Displays information about the specified VRF.
autonomous-system-number	(Optional) Autonomous system number.
multicast	(Optional) Displays information about multicast instances.

Command Default

The number of all EIGRP packets sent and received is displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show ip eigrp traffic** command. Cisco recommends using the **show eigrp address-family traffic** command.

Examples

The following example shows how to display the number of EIGRP packets sent and received for autonomous system number 4453:

```
Router# show eigrp address-family ipv4 4453 traffic

EIGRP-IPv4 VR(virtual-name) Address-family Traffic Statistics for AS(4453)
  Hellos sent/received: 122/122
  Updates sent/received: 3/1
  Queries sent/received: 0/0
```

```
Replies sent/received: 0/0
Acks sent/received: 0/3
SIA-Queries sent/received: 0/0
SIA-Replies sent/received: 0/0
Hello Process ID: 128
PDM Process ID: 191
Socket Queue: 0/2000/1/0 (current/max/highest/drops)
Input Queue: 0/2000/1/0 (current/max/highest/drops
```

Table 7 describes the significant fields shown in the display.

Table 7 show eigrp address-family traffic Field Descriptions

Field	Description
Hellos sent/received	Number of hello packets sent and received.
Updates sent/received	Number of update packets sent and received.
Queries sent/received	Number of query packets sent and received.
Replies sent/received	Number of reply packets sent and received.
Acks sent/received	Number of acknowledgement packets sent and received.
SIA-Queries sent/received	Number of stuck in active query packets sent and received.
SIA-Replies sent/received	Number of stuck in active reply packets sent and received.
Hello Process ID	Cisco IOS hello process identifier.
PDM Process ID	Protocol-dependent module IOS process identifier.
Socket Queue	IP to EIGRP Hello Process socket queue counters.
Input Queue	EIGRP Hello Process to EIGRP PDM socket queue counters.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.
show eigrp address-family events	Displays information about EIGRP events.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family sia-event	Displays information about EIGRP SIA events.
show eigrp address-family sia-statistics	Displays information about EIGRP SIA statistics.
show eigrp address-family timers	Displays information about EIGRP timers and expiration times.
show eigrp address-family topology	Displays entries in the EIGRP topology table.

show eigrp plugins

To display general information including the versions of the Enhanced Interior Gateway Routing Protocol (EIGRP) protocol features that are currently running, use the **show eigrp plugins** command in user EXEC or privileged EXEC mode.

show eigrp [**vrf**-*name*] [*as-number*] **plugins** [*plugin-name*] [**detailed**]

Syntax Description

vrf-*name*	(Obsolete) (Optional) Specifies a particular VPN routing and forwarding (VRF) instance name. **Note** This keyword and argument are obsolete and configuring them has no effect on the output displayed.
as-number	(Obsolete) (Optional) Autonomous system number. **Note** This argument is obsolete and configuring it has no effect on the output displayed.
plugin-name	(Optional) Name of an EIGRP plugin to display.
detailed	(Optional) Displays detailed information about EIGRP features.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.4(15)T	This command was introduced.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI.
15.0(1)M	This command was modified. The **vrf** keyword, the *name*, and the *as-number* arguments were removed.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Use the **show eigrp plugins** command in user EXEC or privileged EXEC mode to determine if a particular EIGRP feature is available in your Cisco IOS image. This command displays a summary of information about EIGRP service families and address families.

This command is useful when contacting Cisco technical support.

Examples

The following example shows how to display EIGRP plugin information:

```
Router# show eigrp plugins

EIGRP feature plugins:::
    eigrp-release      :   5.00.00 : Portable EIGRP Release
```

```
                    :  19.00.00 : Source Component Release(rel5)
igrp2               :   3.00.00 : Reliable Transport/Dual Database
bfd                 :   1.01.00 : BFD Platform Support
mtr                 :   1.00.01 : Multi-Topology Routing(MTR)
eigrp-pfr           :   1.00.01 : Performance Routing Support
ipv4-af             :   2.01.01 : Routing Protocol Support
ipv4-sf             :   1.01.00 : Service Distribution Support
external-client     :   1.02.00 : Service Distribution Client Support
ipv6-af             :   2.01.01 : Routing Protocol Support
ipv6-sf             :   1.01.00 : Service Distribution Support
snmp-agent          :   1.01.01 : SNMP/SNMPv2 Agent Support
```

Table 8 describes the significant fields shown in the display.

Table 8 show eigrp plugins Field Descriptions

Field	Description
eigrp release	Displays the portable EIGRP release version.
igrp2	Displays the reliable transport and dual database version.
bfd	Displays the EIGRP-BFD feature version.
mtr	Displays the EIGRP multitopology routing (MTR) version.
eigrp-pfr	Displays the EIGRP performance routing feature version.
ipv4-af	Displays the EIGRP IPv4 routing protocol feature version.
ipv4-sf	Displays the EIGRP IPv4 service distribution feature version.
external-client	Displays the EIGRP service distribution client support feature version.
ipv6-af	Displays the EIGRP IPv6 routing protocol feature version.
ipv6-sf	Displays the EIGRP IPv6 service distribution feature version.
snmp-agent	Displays the EIGRP SNMP and SNMPv2 Agent Support version.

Related Commands

Command	Description
clear eigrp service-family	Clears entries from the EIGRP neighbor table.
show eigrp service-family external-client	Displays information about the EIGRP service-family external clients.
show eigrp service-family ipv4 topology	Displays information from the EIGRP IPv4 service-family topology table.
show eigrp service-family ipv6 topology	Displays information from the EIGRP IPv6 service-family topology table.
show eigrp tech-support	Generates a report of all EIGRP-related information.

show eigrp protocols

To display general information about Enhanced Interior Gateway Routing Protocol (EIGRP) protocols that are currently running, use the **show eigrp protocols** command in user EXEC or privileged EXEC mode.

show eigrp protocols [**vrf** *vrf-name*]

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.
12.2(33)SXI4	This command was integrated into Cisco IOS Release 12.2(33)SXI4.

Usage Guidelines

Use the **show eigrp protocols** command in user EXEC or privileged EXEC mode to see a summary of information on EIGRP IPv4 service families or address families.

Examples

The following example shows how to display general EIGRP information:

```
Router# show eigrp protocols

EIGRP-IPv4 Protocol for AS(10)
Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
NSF-aware route hold timer is 240
Router-ID: 1.1.1.1
Topology : 0 (base)
Active Timer: 3 min
Distance: internal 90 external 170
Maximum path: 4
Maximum hopcount 100
Maximum metric variance 1
EIGRP-IPv4 Protocol for AS(5) VRF(red)
Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
NSF-aware route hold timer is 240
Router-ID: 1.1.1.1
Topology : 0 (base)
Active Timer: 3 min
Distance: internal 90 external 170
Maximum path: 4
Maximum hopcount 100
Maximum metric variance 1
```

```
Total Prefix Count: 0
Total Redist Count: 0
```

The following example shows how to display general EIGRP information for VRF1:

```
Router# show eigrp protocols vrf vrf1

EIGRP-IPv4 Protocol for AS(5) VRF(vrf1)
Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
NSF-aware route hold timer is 240
Router-ID: 1.1.1.1
Topology : 0 (base)
Active Timer: 3 min
Distance: internal 90 external 170
Maximum path: 4
Maximum hopcount 100
Maximum metric variance 1
Total Prefix Count: 0
Total Redist Count: 0
```

Table 9 describes the significant fields shown in the display.

Table 9 show eigrp protocols Field Descriptions

Field	Description
EIGRP-IPv4 Protocol for AS(10)	EIGRP instance and AS number.
Metric weight	EIGRP metric calculations.
NSF-aware route hold timer	Route-hold timer value for an NSF-aware router.
Router-ID	Router ID.
Topology	Number of entries in the EIGRP topology table.
Active Timer	EIGRP routing active time limit.
Distance	Internal and external administrative distance.
Maximum path	Maximum number of parallel routes that EIGRP can support.
Maximum hop count	Maximum hop count (in decimal).
Maximum metric variance	Metric variance used to find feasible paths for a route.
EIGRP-IPv4 Protocol	EIGRP instance and AS number for VRF Red.
Total Prefix Count	The aggregate sum of the prefixes in an EIGRP instance topology table. It includes prefixes learned from all neighbors or from redistribution.
Total Redist Count	The number of prefixes redistributed into an EIGRP process.

Related Commands

Command	Description
clear eigrp service-family	Clears entries from the EIGRP neighbor table.
show eigrp service-family external-client	Displays information about the EIGRP service-family external clients.
show eigrp service-family ipv4 topology	Displays information from the EIGRP IPv4 service-family topology table.
show eigrp service-family ipv6 topology	Displays information from the EIGRP IPv6 service-family topology table.
show tech-support	Generates a report of all EIGRP-related information.

show eigrp tech-support

To generate a report of Enhanced Interior Gateway Routing Protocol (EIGRP) internal state information, use the **show eigrp tech-support** command in privileged EXEC mode.

show eigrp tech-support [**detailed**]

Syntax Description

detailed	(Optional) Displays additional detail not shown with the basic command.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.
12.2(33)SXI4	This command was integrated into Cisco IOS Release 12.2(33)SXI4.

Usage Guidelines

Use the **show eigrp tech-support** command in privileged EXEC mode to display various internal EIGRP states.

Note This command is useful for debugging and troubleshooting by Cisco technical support, but it is not intended for normal EIGRP administration tasks. This command should not be used without guidance from Cisco technical support.

Examples

The following is sample output from the **show eigrp tech-support detailed** command:

```
Router# show eigrp tech-support detailed

EIGRP Internal Process States

procinfoQ:
1: 0x54ABD10 vrid:2 afi:1 as:2 tableid:0 vrfid:0 tid:0 name:
topo_ddbQ(1) 0x55243E8 tableid:0 name:base
topo_ddbQ.count: 1
procinfoQ.count: 1

deadQ:
ddbQ:
1: 0x55243E8 name:base
ddbQ.count: 1
------------------------------------------------------
EIGRP-IPv4 Protocol for AS(2)
{vrid:2 afi:1 as:2 tableid:0 vrfid:0 tid:0 name: }
PIDs: Hello: 204 PDM: 203
```

```
Router-ID: 6.6.6.6
Threads: procinfo: 0x4A3EC70 ddb: 0x4A3EE50
workQ:
iidbQ: Se2/0 Se2/1 Se3/0 Et0/1
count: 4
temp_iidbQ:
passive_iidbQ: Et0/0
count: 1
peerQ:
static_peerQ:
suspendQ:
networkQ: 1.0.0.0
2.0.0.0
count: 2
summaryQ: 2.0.0.0/16 - Et0/1 (intf: 1)
1.0.0.0/8 - Et0/1 (intf: 1)
count: 2
Socket Queue: 0/2000/2/0 (current/max/highest/drops)
Input Queue: 0/2000/2/0 (current/max/highest/drops)
GRS/NSF: enabled hold-timer: 240
Active Timer: 3 min
Distance: internal 90 external 170
Max Path: 4
Max Hopcount: 100
Variance: 1
------------------------------------------------------------
```

Related Commands

Command	Description
show eigrp plugins	Displays general information including the versions of the EIGRP protocol features currently running.

show ip eigrp accounting

To display prefix accounting information for Enhanced Interior Gateway Routing Protocol (EIGRP) processes, use the **show ip eigrp accounting** command in privileged EXEC mode.

show ip eigrp [**vrf** {*vrf-name* | *****}] [*autonomous-system-number*] **accounting**

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
vrf *	(Optional) Displays information about all VRFs.
autonomous-system-number	(Optional) Autonomous system number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(29)S	This command was introduced.
12.3(14)T	This command was integrated into Cisco IOS Release 12.3(14)T.
15.0(1)M	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf accounting** command.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family accounting** command. Cisco recommends using the **show eigrp address-family accounting** command.

Examples

The following is sample output from the **show ip eigrp accounting** command:

```
Router# show ip eigrp vrf RED accounting

EIGRP-IPv4 Accounting for AS(100)/ID(10.0.2.1) VRF(RED)
Total Prefix Count: 4  States: A-Adjacency, P-Pending, D-Down
State Address/Source   Interface        Prefix   Restart  Restart/
                                        Count     Count   Reset(s)
 P    Redistributed     ----               0           3         211
 A    10.0.1.2          Et0/0              2           0          84
 P    10.0.2.4          Se2/0              0           2         114
 D    10.0.1.3          Et0/0              0           3           0
```

Note Connected and summary routes are not listed individually in the output of this command but are counted in the total aggregate count per process.

Table 10 describes the significant fields shown in the display.

Table 10 show ip eigrp accounting Field Descriptions

Field	Description
EIGRP IPv4 Accounting for AS...	Identifies the EIGRP instance along with the AS number, router ID, and table ID.
Total Prefix Count	Shows the aggregate sum of the prefixes in an EIGRP instance topology table. It includes prefixes learned from all neighbors and redistribution sources.
States: A-Adjacency, P-Pending, D-Down	A-Adjacency: Indicates a stable adjacency with the neighbor or a normal redistribution state. P-Pending: Neighbor adjacency or redistribution is suspended or in a penalized state because the maximum prefix limit has been exceeded. D-Down: Neighbor adjacency or redistribution is suspended permanently until a manually reset is performed with the **clear ip eigrp neighbor** command.
Address/Source	Shows either the neighbor IP address or the redistribution source.
Interface	Shows the interface on which neighbor information is received.
Prefix Count	Displays the total number of learned prefixes by source. **Note** Routes can be learned for the same prefix from multiple sources, and the sum of all prefix counts in this column may be greater than the figure displayed in the "Prefix Count" field.
Restart Count	Number of times a route source has exceeded the maximum-prefix limit.
Restart Reset(s)	Displays the time, in seconds, that a route source is in a P (penalized) state. If the route source is in an A (stable or normal) state, the displayed time, in seconds, is the time period until penalization history is reset.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.

show ip eigrp events

To display the Enhanced Interior Gateway Routing Protocol (EIGRP) event log, use the **show ip eigrp events** command in user EXEC or privileged EXEC mode.

show ip eigrp [**vrf** *vrf-name*] **events** [*starting-event-number ending-event-number*] | [**errmsg** [*starting-event-number ending-event-number*]] [**sia** [*starting-event-number ending-event-number*]] [**type**]

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
starting-event-number	(Optional) Number of first event to display.
ending-event-number	(Optional) Number of last event to display.
errmsg	(Optional) Displays error message events.
sia	(Optional) Displays Stuck in Active (SIA) events.
type	(Optional) Displays the types of events being logged.

Command Default

All events in the EIGRP event log are displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

The EIGRP event log is used by Cisco technical support to display a history of EIGRP internal events.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family events** command. Cisco recommends using the **show eigrp address-family events** command.

The output of this command is displayed in reverse order, with the most recent events displayed first and the oldest events displayed last.

Examples

The following example shows how to display the EIGRP event log:

```
Router# show ip eigrp events

1    02:37:58.171 NSF stale rt scan, peer: 10.0.0.0
```

```
2    02:37:58.167 Metric set: 10.0.0.1/24 284700416
3    02:37:58.167 FC sat rdbmet/succmet: 284700416 0
4    02:37:58.167 FC sat nh/ndbmet: 10.0.0.2 284700416
5    02:37:58.167 Find FS: 10.0.0.0/24 284700416
6    02:37:58.167 Rcv update met/succmet: 284956416 284700416
7    02:37:58.167 Rcv update dest/nh: 10.0.0.0/24 10.0.0.1
8    02:37:58.167 Peer nsf restarted: 10.0.0.1 Tunnel0
9    02:36:38.383 Metric set: 10.0.0.0/24 284700416
10   02:36:38.383 RDB delete: 10.0.0.0/24 10.0.0.1
11   02:36:38.383 FC sat rdbmet/succmet: 284700416 0
12   02:36:38.383 FC sat nh/ndbmet: 0.0.0.0 284700416
```

Related Commands

Command	Description
eigrp event-log size	Specifies the size of the EIGRP event log.
show eigrp address-family events	Displays the EIGRP event log.

show ip eigrp interfaces

To display information about interfaces that are configured for Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show ip eigrp interfaces** command in privileged EXEC mode.

show ip eigrp [**vrf** {*vrf-name* | *****}] [*autonomous-system-number*] **interfaces** [*type number*] [**detail**]

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
vrf *	(Optional) Displays information about all VRFs.
autonomous-system-number	(Optional) Filters that output by autonomous system number.
type	(Optional) Interface type.
number	(Optional) Interface number.
detail	(Optional) Displays detailed information about the EIGRP interfaces for a specific EIGRP process.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.2	This command was introduced.
12.2(18)SXE	Support for the Bidirectional Forwarding Detection (BFD) feature was added. The **detail** keyword was added.
12.0(31)S	The BFD feature was integrated into Cisco IOS Release 12.0(31)S. Support was added for the Cisco 12000 series Internet router.
12.4(4)T	Support for the BFD feature was added. The **detail** keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
15.0(1)M	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf interfaces** command.
12.2(33)SRE	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf interfaces** command.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Use the **show ip eigrp interfaces** command to display active EIGRP interfaces, as well as EIGRP-specific interface settings and statistics.

If an interface is specified, only information about that interface is displayed. Otherwise, information about all interfaces on which EIGRP is running is displayed.

If an autonomous system is specified, only the routing process for the specified autonomous system is displayed. Otherwise, all EIGRP processes are displayed.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family interfaces** command. Cisco recommends using the **show eigrp address-family interfaces** command.

Examples

The following is sample output from the **show ip eigrp interfaces** command:

```
Router# show ip eigrp interfaces

EIGRP-IPv4 Interfaces for AS(60)

                    Xmit Queue    Mean   Pacing Time   Multicast   Pending
Interface   Peers   Un/Reliable   SRTT   Un/Reliable   Flow Timer  Routes
Di0           0         0/0          0      11/434          0          0
Et0           1         0/0        337       0/10          0          0
SE0:1.16      1         0/0         10       1/63        103          0
Tu0           1         0/0        330       0/16          0          0
```

The following is sample output that displays detailed information about all active EIGRP interfaces:

```
Router# show ip eigrp interfaces detail

EIGRP-IPv4 Interfaces for AS(1)
                       Xmit Queue   Mean   Pacing Time   Multicast    Pending
Interface        Peers  Un/Reliable  SRTT   Un/Reliable   Flow Timer   Routes
Et0/0              0        0/0         0       0/1            0           0
  Hello-interval is 7, Hold-time is 21
  Split-horizon is disabled
  Next xmit serial <none>
  Un/reliable mcasts: 0/0  Un/reliable ucasts: 0/0
  Mcast exceptions: 0  CR packets: 0  ACKs suppressed: 0
  Retransmissions sent: 0  Out-of-sequence rcvd: 0
  Next-hop-self disabled, next-hop info forwarded
  Topology-ids on interface - 0
  Authentication mode is md5,  key-chain is "TEST"
  BFD is enabled

Et0/1              0        0/0         0       0/10           0           0
  Hello-interval is 5, Hold-time is 15
  Split-horizon is enabled
```

Table 11 describes the significant fields shown in the display.

Table 11 show ip eigrp interfaces Field Descriptions

Field	Description
Interface	Interface over which EIGRP is configured.
Peers	Number of directly connected EIGRP neighbors.
Xmit Queue Un/Reliable	Number of packets remaining in the Unreliable and Reliable transmit queues.
Mean SRTT	Mean smooth round-trip time (SRTT) interval (in seconds).
Pacing Time Un/Reliable	Pacing time (in seconds) used to determine when EIGRP packets should be sent out the interface (unreliable and reliable packets).
Multicast Flow Timer	Maximum number of seconds for which the router will send multicast EIGRP packets.

Table 11 show ip eigrp interfaces Field Descriptions (continued)

Field	Description
Pending Routes	Number of routes in the packets in the transmit queue waiting to be sent.
BFD is...	BFD enable state.

Related Commands

Command	Description
show ip eigrp neighbors	Displays the neighbors discovered by EIGRP.
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.

show ip eigrp neighbors

To display neighbors discovered by Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show ip eigrp neighbors** command in privileged EXEC mode.

show ip eigrp [**vrf** {*vrf-name* | *****}] [*autonomous-system-number*] **neighbors** [*interface-type* | **static** | **detail**]

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
vrf *	(Optional) Displays information about all VRFs.
autonomous-system-number	(Optional) Filters that output by a*utonomous system number.*
interface-type	(Optional) Filters that output by interface.
static	(Optional) Displays static neighbors.
detail	(Optional) Displays detailed neighbor information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
10.3	This command was introduced.
12.0(7)T	The **static** keyword was added.
12.2(15)T	Support for NSF restart operations was integrated into the output.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
15.0(1)M	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf neighbors** command.
12.2(33)SRE	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf neighbors** command.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Use the **show ip eigrp neighbors** command to display dynamic and static neighbor states. It is also useful for debugging certain types of transport problems.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family neighbors** command. Cisco recommends using the **show eigrp address-family neighbors** command.

Examples

The following is sample output from the **show ip eigrp neighbors** command:

```
Router# show ip eigrp neighbors

H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
0   10.1.1.2                 Et0/0            13 00:00:03 1996  5000  0  5
2   10.1.1.9                 Et0/0            14 00:02:24   206  5000  0  5
1   10.1.2.3                 Et0/1            11 00:20:39   2202  5000  0  5
```

Table 12 describes the significant fields shown in the display.

Table 12 show ip eigrp neighbors Field Descriptions

Field	Description
AS(60)	Autonomous system number for these neighbors.
Address	IP address of the EIGRP peer.
Interface	Interface on which the router is receiving hello packets from the peer.
Holdtime	Length of time EIGRP will wait to hear from the peer before declaring it down.
Uptime	Elapsed time (in hours:minutes: seconds) since the local router first heard from this neighbor.
Q Count	Number of EIGRP packets (update, query, and reply) that the software is waiting to send.
Seq Num	Sequence number of the last update, query, or reply packet that was received from this neighbor.
SRTT	Smooth round-trip time. This is the number of milliseconds required for an EIGRP packet to be sent to this neighbor and for the local router to receive an acknowledgment of that packet.
RTO	Retransmission timeout (in milliseconds). This is the amount of time the software waits before resending a packet from the retransmission queue to a neighbor.

The following is sample output from the **show ip eigrp neighbors** command when issued with the **detail** keyword:

```
Router# show ip eigrp neighbors detail

EIGRP-IPv4 Neighbors for AS(60)
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q Seq
                                            (sec)         (ms)       Cnt Num
3 1.1.1.3                 Et0/0             12 00:04:48 1832  5000  0  14
   Version 12.2/1.2, Retrans:0, Retries:0
   Restart time 00:01:05
0   10.4.9.5                Fa0/0             11 00:04:07  768  4608  0  4
   Version 12.2/1.2, Retrans: 0, Retries: 0
2   10.4.9.10               Fa0/0             13 1w0d        1  3000  0  6
   Version 12.2/1.2, Retrans: 1, Retries: 0
1   10.4.9.6                Fa0/0             12 1w0d        1  3000  0  4
   Version 12.2/1.2, Retrans: 1, Retries: 0
```

Table 13 describes the significant fields shown in the display.

Table 13 show ip eigrp neighbors detail Field Descriptions

Field	Description
AS(60)	Autonomous system number for these neighbors.
H	This column lists the order in which a peering session was established with the specified neighbor. The order is specified with sequential numbering starting with 0.
Address	IP address of the EIGRP peer.
Interface	Interface on which the router is receiving hello packets from the peer.
Holdtime	Length of time EIGRP will wait to hear from the peer before declaring it down.
Uptime	Elapsed time (in hours:minutes: seconds) since the local router first heard from this neighbor.
Q Count	Number of EIGRP packets (update, query, and reply) that the software is waiting to send.
Seq Num	Sequence number of the last update, query, or reply packet that was received from this neighbor.
SRTT	Smooth round-trip time. This is the number of milliseconds required for an EIGRP packet to be sent to this neighbor and for the local router to receive an acknowledgment of that packet.
RTO	Retransmission timeout (in milliseconds). This is the amount of time the software waits before resending a packet from the retransmission queue to a neighbor.
Version	The software version that the specified peer is running.
Retrans	The number of times that a packet has been retransmitted.
Retries	The number of times an attempt was made to retransmit a packet.
Restart time	Elapsed time (in hours:minutes: seconds) since the specified neighbor has restarted.

Related Commands

Command	Description
show eigrp address-family neighbors	Displays the neighbors discovered by EIGRP.

show ip eigrp topology

To display entries in the Enhanced Interior Gateway Routing Protocol (EIGRP) topology table, use the **show ip eigrp topology** command in privileged EXEC mode.

show ip eigrp [**vrf** {*vrf-name* | *****}] [*autonomous-system-number*] **topology** [*ip-address* [*mask*]] | [**name**] [**active** | **all-links** | **detail-links** | **pending** | **summary** | **zero-successors**]

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
vrf *	(Optional) Displays information about all VRFs.
autonomous-system-number	(Optional) Autonomous system number.
ip-address	(Optional) IP address. When specified with a mask, a detailed description of the entry is provided.
mask	(Optional) Subnet mask. The mask is entered as a slash mark followed by the prefix length.
name	(Optional) EIGRP-IPv4 topology table name. This name is the topology identifier and shows the topology-related information for Multi-Topology Routing (MTR). **Note** Effective with Cisco IOS Release 12.2(33)SRE, this keyword was removed.
active	(Optional) Displays all topology entries that are in an active state.
all-links	(Optional) Displays all topology entries and all links (paths) instead of displaying only feasible paths.
detail-links	(Optional) Displays all topology entries with additional detail.
pending	(Optional) Displays all topology entries pending updates queued to send to neighbors.
summary	(Optional) Displays a summary of the EIGRP topology table.
zero-successors	(Optional) Displays topology entries that fail to install in the routing table due to administrative distance.

Command Default

If this command is used without any optional keywords, then only topology entries with feasible successors are displayed and only the feasible paths are shown.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.3(8)T	This command was enhanced to display internal and external EIGRP routes.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SRB	The **name** keyword was added to support MTR.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

Release	Modification
15.0(1)M	This command was modified. The **vrf**, *vrf-name*, and * keywords and arguments were added. This command replaces the **show ip eigrp vrf topology** command.
12.2(33)SRE	This command was modified. The **vrf**, *vrf-name*, and * keywords and arguments were added. The **name** keyword was removed. This command replaces the **show ip eigrp vrf topology** command.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Us the **show ip eigrp topology** command to display topology entries, feasible and non-feasible paths, metrics, and states. This command can be used without any keywords or arguments, in which case only topology entries with feasible successors are displayed, and only the feasible paths are shown. The **all-links** keyword displays all paths, whether feasible successors or not, and the **detail-links** keyword displays additional detail about these paths.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family topology** command. Cisco recommends using the **show eigrp address-family topology** command.

Examples

The following is sample output from the **show ip eigrp topology** command:

```
Router# show ip eigrp topology

EIGRP-IPv4 Topology Table for AS(1)/ID(10.0.0.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - Reply status, s - sia status
P 10.0.0.0/8, 1 successors, FD is 409600
        via 1.1.1.2 (409600/128256), Ethernet0/0
P 172.16.1.0/24, 1 successors, FD is 409600
        via 1.1.1.2 (409600/128256), Ethernet0/0
P 10.0.0.0/8, 1 successors, FD is 281600
        via Summary (281600/0), Null0
P 10.0.1.0/24, 1 successors, FD is 281600
        via Connected, Ethernet0/0
```

The following example displays detailed information for a single prefix. The prefix shown is an EIGRP internal route:

```
Router# show ip eigrp topology 10.0.0.0/8

EIGRP-IPv4 Topology Entry for AS(1)/ID(10.0.0.1) for 10.0.0.0/8
  State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
  Descriptor Blocks:
  10.0.0.2 (Ethernet0/0), from 10.0.1.2, Send flag is 0x0
      Composite metric is (409600/128256), route is Internal
      Vector metric:
        Minimum bandwidth is 10000 Kbit
        Total delay is 6000 microseconds
        Reliability is 255/255
        Load is 1/255
```

```
        Minimum MTU is 1500
        Hop count is 1
        Originating router is 10.0.1.2
```

The following example displays detailed information for a single prefix. The prefix shown is an EIGRP external route:

```
Router# show ip eigrp topology 172.16.1.0/24

EIGRP-IPv4 Topology Entry for AS(1)/ID(10.0.0.1) for 10.0.0.0/8
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
  Descriptor Blocks:
  10.0.0.2 (Ethernet0/0), from 10.0.1.2, Send flag is 0x0
      Composite metric is (409600/128256), route is External
      Vector metric:
        Minimum bandwidth is 10000 Kbit
        Total delay is 6000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 1
        Originating router is 10.0.1.2
      External data:
        AS number of route is 0
        External protocol is Connected, external metric is 0
        Administrator tag is 0 (0x00000000)
```

The following example demonstrates the **all-links** keyword, which displays all paths, even those that are not feasible:

```
Router# show ip eigrp topology all-links

EIGRP-IPv4 Topology Table for AS(1)/ID(10.0.0.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 172.16.1.0/24, 1 successors, FD is 409600, serno 14
        via 10.10.1.2 (409600/128256), Ethernet0/0
        via 10.1.04.3 (2586111744/2585599744), Serial3/0, serno 18
```

The following example demonstrates the **detail-links** keyword, which displays additional detail about the routes:

```
Router# show ip eigrp topology detail-links

EIGRP-IPv4 Topology Table for AS(1)/ID(10.0.0.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 10.0.0.0/8, 1 successors, FD is 409600, serno 6
        via 1.1.1.2 (409600/128256), Ethernet0/0
P 172.16.1.0/24, 1 successors, FD is 409600, serno 14
        via 1.1.1.2 (409600/128256), Ethernet0/0
P 10.0.0.0/8, 1 successors, FD is 281600, serno 3
        via Summary (281600/0), Null0
P 10.1.1.0/24, 1 successors, FD is 281600, serno 1
        via Connected, Ethernet0/0
```

Table 14 describes the significant fields shown in the displays.

Table 14 show ip eigrp topology Field Descriptions

Field	Description
Codes	State of this topology table entry. Passive and Active refer to the EIGRP state with respect to this destination; Update, Query, and Reply refer to the type of packet that is being sent.
P – Passive	No EIGRP computations are being performed for this destination.
A – Active	EIGRP computations are being performed for this destination.
U – Update	Indicates that a pending update packet is waiting to be sent for this route.
Q – Query	Indicates that a pending query packet is waiting to be sent for this route.
R – Reply	Indicates that a pending reply packet is waiting to be sent for this route.
r – Reply status	Indicates that EIGRP has sent a query for the route and is waiting for a reply from the specified path.
10.16.90.0	Destination IP network number.
255.255.255.0	Destination subnet mask.
successors	Number of successors. This number corresponds to the number of next hops in the IP routing table. If “successors” is capitalized, then the route or next hop is in a transition state.
serno	Serial number.
FD	Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination.
via	IP address of the peer that told the software about this destination. The first *n* of these entries, where *n* is the number of successors, is the current successors. The remaining entries on the list are feasible successors.
(409600/128256)	The first number is the EIGRP metric that represents the cost to the destination. The second number is the EIGRP metric that this peer advertised.

Related Commands

Command	Description
show eigrp address-family topology	Displays entries in the EIGRP topology table.

show ip eigrp traffic

To display the number of Enhanced Interior Gateway Routing Protocol (EIGRP) packets sent and received, use the **show ip eigrp traffic** command in privileged EXEC mode.

show ip eigrp [**vrf** {*vrf-name* | *****}] [*autonomous-system-number*] **traffic**

Syntax Description

vrf *vrf-name*	(Optional) Displays information about the specified VRF.
vrf *	(Optional) Displays information about all VRFs.
autonomous-system-number	(Optional) Autonomous system number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.0(1)M	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf traffic** command.
12.2(33)SRE	This command was modified. The **vrf**, *vrf-name*, and ***** keywords and arguments were added. This command replaces the **show ip eigrp vrf traffic** command.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family traffic** command. Cisco recommends using the **show eigrp address-family traffic** command.

Examples

The following is sample output from the **show ip eigrp traffic** command:

```
Router# show ip eigrp traffic

EIGRP-IPv4 Traffic Statistics for AS(60)
Hellos sent/received: 21429/2809
Updates sent/received: 22/17
Queries sent/received: 0/0
Replies sent/received: 0/0
Acks sent/received: 16/13
```

```
SIA-Queries sent/received: 0/0
SIA-Replies sent/received: 0/0
Hello Process ID: 204
PDM Process ID: 203
Socket Queue: 0/2000/2/0 (current/max/highest/drops)
Input Queue: 0/2000/2/0 (current/max/highest/drops)
```

Table 15 describes the significant fields shown in the display.

Table 15 show ip eigrp traffic Field Descriptions

Field	Description
Hellos sent/received	Number of hello packets sent and received.
Updates sent/received	Number of update packets sent and received.
Queries sent/received	Number of query packets sent and received.
Replies sent/received	Number of reply packets sent and received.
Acks sent/received	Number of acknowledgement packets sent and received.
SIA-Queries sent/received	Number of stuck in active query packets sent and received.
SIA-Replies sent/received	Number of stuck in active reply packets sent and received.
Hello Process ID	Hello process identifier.
PDM Process ID	Protocol-dependent module IOS process identifier.
Socket Queue	The IP to EIGRP Hello Process socket queue counters.
Input queue	The EIGRP Hello Process to EIGRP PDM socket queue counters.

Related Commands

Command	Description
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

show ip eigrp vrf accounting

Note Effective with Cisco IOS Release 15.0(1)M, this command was replaced by the **show ip eigrp accounting** command. See the **show ip eigrp accounting** command for more information.

To display prefix accounting information for an Enhanced Interior Gateway Routing Protocol (EIGRP) VPN routing and forwarding instance (VRF), use the **show ip eigrp vrf accounting** command in privileged EXEC mode.

show ip eigrp vrf {*vrf-name* | *****} **accounting** [*autonomous-system-number*]

Syntax Description

vrf-name	Specifies the VRF name.
*	Displays all VRFs.
autonomous-system-number	(Optional) Specifies the autonomous system number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(29)S	This command was introduced.
12.3(14)T	This command was integrated into Cisco IOS Release 12.3(14)T.
15.0(1)M	This command was replaced by the **show ip eigrp accounting** command.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family accounting** command. Cisco recommends using the **show eigrp address-family accounting** command.

Examples

The following is sample output from the **show ip eigrp vrf accounting** command:

```
Router# show ip eigrp vrf RED accounting

IP-EIGRP accounting for AS(100)/ID(10.0.2.1) Routing Table: RED
Total Prefix Count: 4  States: A-Adjacency, P-Pending, D-Down
State Address/Source   Interface        Prefix   Restart  Restart/
                                        Count     Count   Reset(s)
 P    Redistributed     ----               0         3         211
 A    10.0.1.2          Et0/0              2         0          84
 P    10.0.2.4          Se2/0              0         2         114
 D    10.0.1.3          Et0/0              0         3           0
```

Note Connected and summary routes are not listed individually in the output of this command but are counted in the total aggregate count per process.

Table 16 describes the significant fields shown in the display.

Table 16 show ip eigrp vrf accounting Field Descriptions

Field	Description
IP-EIGRP accounting for AS...	Identifies the EIGRP instance along with the AS number, Router ID and Table ID.
Total Prefix Count	Shows to the aggregate sum of the prefixes in an EIGRP instance topology table. It includes prefixes learnt from all neighbors or from redistribution.
States: A-Adjacency, P-Pending, D-Down	A-Adjacency: Indicates a stable adjacency with the neighbor or a normal redistribution state. P-Pending: Neighbor adjacency or redistribution in suspended or in a penalized state because the maximum prefix limit has been exceeded. D-Down: Neighbor adjacency or redistribution is suspended permanently until a manually reset is performed with the **clear ip route** command.
Address/Source	Shows the peer IP address of the redistribution source.
Prefix Count	Displays the total number of learned prefixes by source. **Note** Routes can be learned for the same prefix from multiple sources, and the sum of all prefix counts in this column may be greater than the figure displayed in the "Prefix Count" field.
Restart Count	Number of times a route source has exceeded the maximum-prefix limit.
Restart/Reset(s)	Displays the time, in seconds, that a route source is in a P (penalized) state. If the route source is in an A (stable or normal) state, the displayed time, in seconds, is the time period until penalization history is reset.

Related Commands

Command	Description
show eigrp address-family accounting	Displays prefix accounting information for EIGRP processes.

show ip eigrp vrf interfaces

Note Effective with Cisco IOS Release 15.0(1)M, this command was replaced by the **show ip eigrp interfaces** command. See the **show ip eigrp interfaces** command for more information.

To display information about interfaces that carry VPN routing and forwarding (VRF) information and that are configured for Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show ip eigrp vrf interfaces** command in privileged EXEC mode.

show ip eigrp vrf {*vrf-name* | *****} **interfaces** [*autonomous-system-number*] [*interface-type*] [**detail** *interface-type*] [**static** *interface-type*]

Syntax Description

vrf-name	Specifies the VRF name.
*	Displays all VRFs.
autonomous-system-number	(Optional) Specifies the autonomous system number.
interface-type	(Optional) Specifies the VRF interface for which to display EIGRP information.
detail *interface-type*	(Optional) Displays detailed VRF peer information. The interface can be specified after this keyword is entered.
static *interface-type*	(Optional) Displays VRF information for static neighbors. The interface can be specified after this keyword is entered. The *interface-type* argument allows you to display information about static neighbors for VRFs that are configured on specific interfaces.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(15)T	This command was integrated into 12.2(15)T.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
15.0(1)M	This command was replaced by the **show ip eigrp interfaces** command.

Usage Guidelines

Use the **show ip eigrp vrf interfaces** command to display EIGRP interfaces that are defined under the specified VRF. If an interface is specified with the *interface-type* argument, only the specified interface is displayed. Otherwise, all interfaces on which EIGRP is running as part of the specified VRF are displayed.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family interfaces** command. Cisco recommends using the **show eigrp address-family interfaces** command.

Examples

The following is sample output from the **show ip eigrp vrf interfaces** command:

```
Router# show ip eigrp vrf VRF-PINK interfaces

IP-EIGRP interfaces for process 1

                        Xmit Queue   Mean   Pacing Time   Multicast    Pending
Interface        Peers  Un/Reliable  SRTT   Un/Reliable   Flow Timer   Routes
Et3/0              1        0/0       131       0/10         528         0
```

Table 17 describes the significant fields shown in the display.

Table 17 show ip eigrp vrf interfaces Field Descriptions

Field	Description
IP-EIGRP interfaces for process...	Displays the autonomous system number for the specified VRF.
Interface	Interface over which EIGRP is configured.
Peers	Number of directly connected EIGRP neighbors.
Xmit Queue Un/Reliable	Number of packets remaining in the Unreliable and Reliable transmit queues.
Mean SRTT	Mean smooth round-trip time (SRTT) interval (in milliseconds).
Pacing Time Un/Reliable	Pacing time used to determine when EIGRP packets should be sent out the interface (unreliable and reliable packets).
Multicast Flow Timer	Maximum number of seconds in which the router will send multicast EIGRP packets.
Pending Routes	Number of routes in the packets in the transmit queue waiting to be sent.

Related Commands

Command	Description
show eigrp address-family interfaces	Displays information about interfaces configured for EIGRP.
clear ip eigrp vrf neighbors	Clears neighbor entries of the specified VRF from the RIB.
show ip eigrp vrf neighbors	Displays neighbors discovered by EIGRP that carry VRF information.
show ip eigrp vrf topology	Displays VRF entries in the EIGRP topology table.
show ip eigrp vrf traffic	Displays EIGRP VRF traffic statistics.

show ip eigrp vrf neighbors

Note Effective with Cisco IOS Release 15.0(1)M, this command was replaced by the **show ip eigrp neighbors** command. See the **show ip eigrp neighbors** command for more information.

To display Enhanced Interior Gateway Routing Protocol (EIGRP) neighbors that are on interfaces that are part of the specified Virtual Private Network (VPN) routing and forwarding instance (VRF), use the **show ip eigrp vrf neighbors** command privileged EXEC mode.

show ip eigrp vrf {*vrf-name* | *}} **neighbors** [*autonomous-system-number*] [*interface-type*] [**detail** *interface-type*] [**static** *interface-type*]

Syntax Description

vrf-name	Specifies the VRF name.
*	Displays all VRFs.
autonomous-system-number	(Optional) Autonomous system number.
interface-type	(Optional) Interface to display neighbor information under the specified VRF.
detail *interface-type*	(Optional) Displays detailed VRF peer information. The interface can be specified after this keyword is entered.
static *interface-type*	(Optional) Displays VRF information for static neighbors. The interface can be specified after this keyword is entered. The *interface-type* argument allows you to display information about static neighbors for VRFs that are configured on specific interfaces.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(15)T	This command was integrated into 12.2(15)T.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
15.0(1)M	This command was replaced by the **show ip eigrp neighbors** command.

Usage Guidelines

Use the **show ip eigrp vrf neighbors** command to determine when VRF neighbors become active and inactive. This command is also useful for debugging certain types of transport problems.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family neighbors** command. Cisco recommends using the **show eigrp address-family neighbors** command.

Examples

The following is sample output from the **show ip eigrp vrf neighbors** command:

```
Router# show ip eigrp vrf VRF-GREEN neighbors

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q
Seq Type
                                            (sec)         (ms)       Cnt
Num
0   10.10.10.2              Et3/0             10 1d16h     131   786  0  3
```

Table 18 describes the significant fields shown in the display.

Table 18 show ip eigrp vrf neighbors Field Descriptions

Field	Description
IP-EIGRP neighbors for process...	Displays the autonomous-system number for the specified EIGRP VRF.
Address	IP address of the EIGRP peer.
Interface	Interface on which the router is receiving hello packets from the peer.
Hold Uptime	Length of time (in seconds) that the Cisco IOS software will wait to hear from the peer before declaring it down, and the length in time (in seconds) since the local router first heard from this neighbor.
SRTT	Smooth round-trip time. This is the number of milliseconds required for an EIGRP packet to be sent to this neighbor and for the local router to receive an acknowledgment of that packet.
RTO	Retransmission timeout (in milliseconds). This is the amount of time the software waits before resending a packet from the retransmission queue to a neighbor.
Q	Number of EIGRP packets (update, query, and reply) that the software is waiting to send.

Related Commands

Command	Description
show eigrp address-family neighbors	Displays neighbors discovered by EIGRP.

show ip eigrp vrf topology

Note Effective with Cisco IOS Release 15.0(1)M, this command was replaced by the **show ip eigrp topology** command. See the **show ip eigrp topology** command for more information.

To display Virtual Private Network (VPN) routing and forwarding instance (VRF) entries in the Enhanced Interior Gateway Routing Protocol (EIGRP) topology table, use the **show ip eigrp topology** command in privileged EXEC mode.

show ip eigrp vrf {*vrf-name* | *****} **topology** [*as-number*] [*ip-address* [*mask*]] [**active** | **all-links** | **pending** | **summary** | **zero-successors**]

Syntax Description

vrf-name	Specifies the VRF name.
*	Displays all VRFs.
as-number	(Optional) Autonomous system number.
ip-address	(Optional) IP address. When specified with a mask, a detailed description of the entry is provided.
mask	(Optional) Subnet mask.
active	(Optional) Displays only active entries in the EIGRP topology table.
all-links	(Optional) Displays all entries in the EIGRP topology table.
pending	(Optional) Displays all entries in the EIGRP topology table that are waiting for an update from a neighbor or are waiting to reply to a neighbor.
summary	(Optional) Displays a summary of the EIGRP topology table.
zero-successors	(Optional) Displays available routes in the EIGRP topology table.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(15)T	This command was integrated into 12.2(15)T.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
15.0(1)M	This command was replaced by the **show ip eigrp topology** command.

Usage Guidelines

The **show ip eigrp vrf topology** command can be used without any keywords or arguments, but you must specify either a VRF name or use the * character as a wild card. If this command entered this way, only routes that are feasible successors are displayed. The **show ip eigrp vrf topology** command can be used to determine Diffusing Update Algorithm (DUAL) states and to debug possible DUAL problems.

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family topology** command. Cisco recommends using the **show eigrp address-family topology** command.

Examples

The following is sample output from the **show ip eigrp vrf topology** command:

```
Router# show ip eigrp vrf VRF-PINK topology

IP-EIGRP Topology Table for AS(1)/ID(192.168.10.1) Routing Table:VRF-PINK

Codes:P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 10.17.17.0/24, 1 successors, FD is 409600
         via 10.10.10.2 (409600/128256), Ethernet3/0
P 172.16.19.0/24, 1 successors, FD is 409600
         via 10.10.10.2 (409600/128256), Ethernet3/0
P 192.168.10.0/24, 1 successors, FD is 281600
         via Connected, Ethernet3/0
P 10.10.10.0/24, 1 successors, FD is 281600
         via Redistributed (281600/0)
```

Table 19 describes the significant fields shown in the display.

Table 19 show ip eigrp vrf topology Field Descriptions

Field	Description
Codes	State of this topology table entry. Passive and Active refer to the EIGRP state with respect to this destination; Update, Query, and Reply refer to the type of packet that is being sent.
P—Passive	No EIGRP computations are being performed for this destination.
A—Active	EIGRP computations are being performed for this destination.
U—Update	An update packet was sent to this destination.
Q—Query	A query packet was sent to this destination.
R—Reply	A reply packet was sent to this destination.
r—reply Status	Flag that is set after the software has sent a query and is waiting for a reply.
s—sia Status	Flag that is set if a route is in a stuck in active state.
successors	Number of successors. This number corresponds to the number of next hops in the IP routing table. If “successors” is capitalized, then the route or next hop is in a transition state.
FD	Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination.

Table 19 show ip eigrp vrf topology Field Descriptions (continued)

Field	Description
replies	(Not shown in the output) Number of replies that are still outstanding (have not been received) with respect to this destination. This information appears only when the destination is in Active state.
state	(Not shown in the output) Exact EIGRP state that this destination is in. It can be the number 0, 1, 2, or 3. This information appears only when the destination is in the active state.
via	IP address of the peer that told the software about this destination. The first N of these entries, where N is the number of successors, is the current successors. The remaining entries on the list are feasible successors.
(409600/128256)	The first number is the EIGRP metric that represents the cost to the destination. The second number is the EIGRP metric that this peer advertised.
Ethernet 3/0	Interface from which this information was learned.

Related Commands

Command	Description
show eigrp address-family topology	Displays entries in the EIGRP topology table.

show ip eigrp vrf traffic

Note Effective with Cisco IOS Release 15.0(1)M, the **show ip eigrp vrf traffic** command is replaced by the **show ip eigrp traffic** command. See the **show ip eigrp traffic** command for more information.

To display sent and received statistics for Enhanced Interior Gateway Routing Protocol (EIGRP) Virtual Private Networking (VPN) routing and forwarding instance (VRF) packets, use the **show ip eigrp vrf traffic** command in privileged EXEC mode.

show ip eigrp vrf {*vrf-name* | *****} **traffic** [*as-number*]

Syntax Description

vrf-name	VRF name.
*	Displays all VRFs.
as-number	(Optional) Autonomous system number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(15)T	This command was integrated into 12.2(15)T.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
15.0(1)M	This command was replaced by the **show ip eigrp traffic** command.

Usage Guidelines

This command can be used to display information about EIGRP named configurations and EIGRP autonomous-system (AS) configurations.

This command displays the same information as the **show eigrp address-family traffic** command. Cisco recommends using the **show eigrp address-family traffic** command.

Examples

The following is sample output from the **show ip eigrp vrf traffic** command:

```
Router# show ip eigrp vrf VRF-RED traffic

IP-EIGRP Traffic Statistics for AS 101
  Hellos sent/received: 600/585
  Updates sent/received: 23/22
  Queries sent/received: 7/0
  Replies sent/received: 0/6
  Acks sent/received: 55/42
  Input queue high water mark 0, 0 drops
```

Table 20 describes the significant fields shown in the display.

Table 20 show ip eigrp vrf traffic Field Descriptions

Field	Description
IP-EIGRP Traffic Statistics for AS...	Displays the autonomous system number for the specified EIGRP VRF .
Hellos sent/received	Number of hello packets sent and received.
Updates sent/received	Number of update packets sent and received.
Queries sent/received	Number of query packets sent and received.
Replies sent/received	Number of reply packets sent and received.
Acks sent/received	Number of acknowledgment packets sent and received.
Input queue high water mark..., ... drops	Number of received packets that are approaching the maximum receive threshold and number of dropped packets.

Related Commands

Command	Description
show eigrp address-family traffic	Displays the number of EIGRP packets sent and received.

shutdown (address-family)

To disable the Enhanced Interior Gateway Routing Protocol (EIGRP) address-family protocol for a specific routing instance without removing any existing address-family configuration parameters, use the **shutdown** command in the appropriate configuration mode. To reenable the EIGRP address-family protocol, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Command Default

The EIGRP address-family protocol for routing instances is not disabled.

Command Modes

Router configuration (config-router)
Address-family configuration (config-router-af)
Address-family interface configuration (config-router-af-interface)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

When you configure the **shutdown** (address-family) command, the EIGRP address-family protocol continues to run on the router and you can continue to use the current address-family configuration. The address-family will not form any adjacencies on any interface and the address-family topology database is cleared.

Configure the **shutdown** command in address-family configuration mode to shut down all topologies under that address family. Configure this command in router configuration mode to shut down all address and service families and their topologies.

Examples

The following example shows how to disable the address-family protocol in router configuration mode:

```
Router(config)# router eigrp virtual-name
Router(config-router)# shutdown
```

The following example shows how to disable the address-family protocol in address-family configuration mode:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
```

```
Router(config-router-af)# shutdown
```

The following example shows how to disable the address-family protocol in address-family interface configuration mode:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# af-interface default
Router(config-router-af-interface)# shutdown
```

Related Commands

Command	Description
address-family (EIGRP)	Enters address-family configuration mode to configure an EIGRP routing instance.
af-interface	Enters address-family interface configuration mode to configure interface-specific EIGRP commands.
router eigrp	Configures the EIGRP address-family process.

split-horizon (EIGRP)

To enable Enhanced Interior Gateway Routing Protocol (EIGRP) split-horizon, use the **split-horizon** command in address-family interface configuration mode or service-family interface configuration mode. To disable EIGRP split-horizon, use the **no** form of this command.

split-horizon

no split-horizon

Syntax Description

This command has no arguments or keywords.

Command Default

EIGRP split-horizon is enabled by default. However, for ATM interfaces and subinterfaces **split-horizon** is disabled by default.

Command Modes

Address-family interface configuration (config-router-af-interface)
Service-family interface configuration (config-router-sf-interface)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.
12.2(33)SXI4	This command was integrated into Cisco IOS Release 12.2(33)SXI4.

Usage Guidelines

The split-horizon rule prohibits a router from advertising a route through an interface that the router itself uses to reach the destination. The following are general rules for EIGRP split-horizon:

- Split-horizon behavior is turned on by default.
- When you change the EIGRP split-horizon setting on an interface, all adjacencies with EIGRP neighbors reachable over that interface are reset.
- Split-horizon should typically be disabled only on non-broadcast multi-access interfaces.
- The EIGRP split-horizon behavior is not controlled or influenced by the **ip split-horizon** command.

To configure split-horizon for an EIGRP address family, use the **split-horizon** command in address-family interface configuration mode.

To configure split-horizon for an EIGRP service family, use the **split-horizon** command in service-family interface configuration mode.

Examples

The following example disables EIGRP split-horizon for serial interface 3/0 in address-family 5400:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 5400
Router(config-router-af)# af-interface serial3/0
Router(config-router-af-interface)# no split-horizon
```

The following example disables EIGRP split-horizon for serial interface 3/0 in service-family 5400:

```
Router(config)# router eigrp virtual-name
Router(config-router)# service-family ipv4 autonomous-system 5400
Router(config-router-sf)# sf-interface serial3/0
Router(config-router-sf-interface)# no split-horizon
```

Related Commands

Command	Description
address-family (EIGRP)	Enters address-family configuration mode to configure an EIGRP routing instance.
af-interface	Enters address-family interface configuration mode to configure interface-specific EIGRP commands.
router eigrp	Configures the EIGRP address-family process.
service-family ipv4	Configures commands under service-family configuration mode.
sf-interface	Configures interface-specific commands under service-family configuration mode.

stub

Note Effective with Cisco IOS Release 15.0(1)M and 12.2(33)SRE, the **stub** command was replaced by the **eigrp stub** command. See the **eigrp stub** command for more information.

To configure a router as a stub using Enhanced Interior Gateway Routing Protocol (EIGRP), use the **stub** command in router configuration mode. To disable the EIGRP stub routing feature, use the **no** form of this command.

stub [**receive-only** | **connected** | **static** | **summary** | **redistributed**]

no stub [**receive-only** | **connected** | **static** | **summary** | **redistributed**]

Syntax Description

receive-only	(Optional) Sets the router as a receive-only neighbor.
connected	(Optional) Advertises connected routes.
static	(Optional) Advertises static routes.
summary	(Optional) Advertises summary routes.
redistributed	(Optional) Advertises redistributed routes from other protocols and autonomous systems.

Command Default

Stub routing is not enabled.

Command Modes

Router configuration (config-router)

Command History

Release	Modification
12.4(6)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
15.0(1)M	This command was replaced by the **eigrp stub** command.
12.2(33)SRE	This command was replaced by the **eigrp stub** command.

Usage Guidelines

Use the **stub** command to configure a router as a stub where the router directs all IPv6 traffic to a distribution router.

The **stub** command can be modified with keywords, and more than one keyword can be used in the same syntax. These options can be used in any combination, except for the **receive-only** keyword. The **receive-only** keyword will restrict the router from sharing any of its routes with any other router in that EIGRP autonomous system, and the **receive-only** keyword will not permit any other option to be specified because it prevents any type of route from being sent. The **connected**, **static**, **summary**, and **redistributed** keywords can be used in any combination but cannot be used with the **receive-only** keyword.

If any of these four keywords is used with the **stub** command, only the route types specified by the particular keywords will be sent. Route types specified by the nonused keywords will not be sent.

The **connected** keyword permits the EIGRP stub routing feature to send connected routes. If the connected routes are not covered by a network statement, it may be necessary to redistribute connected routes with the **redistribute connected** command under the EIGRP process. This option is enabled by default.

The **static** keyword permits the EIGRP stub routing feature to send static routes. Without the configuration of this option, EIGRP will not send any static routes, including internal static routes that normally would be automatically redistributed. It will still be necessary to redistribute static routes with the **redistribute static** command.

The **summary** keyword permits the EIGRP stub routing feature to send summary routes. Summary routes can be created manually with the **ipv6 summary address eigrp** command or automatically at a major network border router with the **auto-summary** command enabled. This option is enabled by default.

The **redistributed** keyword permits the EIGRP stub routing feature to send other routing protocols and autonomous systems. Without the configuration of this option, EIGRP will not advertise redistributed routes.

Note Multiaccess interfaces such as ATM, Ethernet, Frame Relay, ISDN PRI, and X.25 are supported by the EIGRP stub routing feature only when all routers on that interface, except the hub, are configured as stub routers.

Examples

In the following example, the **stub** command is used to configure the router as a stub that advertises connected and summary routes:

```
ipv6 router eigrp 1
 network 3FEE:12E1:2AC1:EA32::/64
 stub
```

In the following example, the **stub** command is issued with the **connected** and **static** keywords to configure the router as a stub that advertises connected and static routes (sending summary routes will not be permitted):

```
ipv6 router eigrp 1
 network 3FEE:12E1:2AC1:EA32::/64
 stub connected static
```

In the following example, the **stub** command is issued with the **receive-only** keyword to configure the router as a receive-only neighbor (connected, summary, and static routes will not be sent):

```
ipv6 router eigrp 1
 network 3FEE:12E1:2AC1:EA32::/64 eigrp
 stub receive-only
```

In the following example, the **stub** command is issued with the **redistributed** keyword to configure the router to advertise other protocols and autonomous systems:

```
ipv6 router eigrp 1
 network 3FEE:12E1:2AC1:EA32::/64 eigrp
 stub redistributed
```

Related Commands

Command	Description
auto-summary (EIGRP)	Allows automatic summarization of subnet routes into network-level routes.
ipv6 summary-address eigrp	Configures a summary aggregate address for a specified interface.
redistribute (IPv6)	Redistributes IPv6 routes from one routing domain into another routing domain.

summary-address (EIGRP)

To configure a summary address for Enhanced Interior Gateway Routing Protocol (EIGRP), use the **summary-address** (EIGRP) command in address-family interface configuration mode. To remove an EIGRP summary address, use the **no** form of this command.

summary-address *ip-address mask* [*administrative-distance* [**leak-map** *leak-map-name*]]

no summary-address *ip-address mask* [*administrative-distance* [**leak-map** *leak-map-name*]]

Syntax Description

ip-address	Summary address designated for a range of addresses.
mask	IP subnet mask used for the summary route.
administrative-distance	(Optional) Administrative distance. Valid range is 1 to 255. Default is 5.
leak-map	(Optional) Allows dynamic addresses based on a leak map.
leak-map-name	(Optional) The name of a leak-map.

Command Default

All routes are advertised individually.

Command Modes

Address-family interface configuration (config-router-af-interface)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

The **summary-address** (EIGRP) command is used to configure interface-level address summarization. EIGRP summary routes are given an administrative distance value of 5. The administrative distance metric is used to advertise a summary address without installing it in the routing table.

By default, EIGRP summarizes subnet routes to the network level. The **no auto-summary** command can be entered to configure subnet-level summarization.

EIGRP Support for Leaking Routes

Configuring the **leak-map** keyword allows you to advertise a component route that would otherwise be suppressed by the manual summary. Any component subset of the summary routes or addresses can be leaked. A route map and access list must be defined to source the leaked route.

The following is default behavior if an incomplete configuration is entered:

- If the **leak-map** keyword is configured to reference a nonexistent route map, the configuration of this keyword has no effect. The summary address is advertised, but all component routes are suppressed.

- If the **leak-map** keyword is configured but the access list does not exist or the route map does not reference the access list, the summary address and all component routes are sent.

Examples

The following example shows how to configure an EIGRP summary address:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# af-interface ethernet0/0
Router(config-router-af-interface)# summary-address 192.168.0.0 255.255.0.0 95
```

Related Commands

Command	Description
address-family (EIGRP)	Enters address-family configuration mode to configure an EIGRP routing instance.
af-interface	Enters address-family interface configuration mode to configure interface-specific EIGRP commands.
auto-summary (EIGRP)	Allow automatic summarization of subnet routes into network-level routes.
router eigrp	Configures the EIGRP address-family process.

summary-metric

To configure a fixed metric for an Enhanced Interior Gateway Routing Protocol (EIGRP) summary aggregate address, use the **summary-metric** command in address-family topology configuration mode. To remove a configured metric, use the **no** form of this command.

summary-metric *network-address subnet-mask* [*bandwidth delay reliability load mtu*] [**distance** *administrative-distance*]

no summary-metric *network-address subnet-mask*

Syntax Description

network-address	IP summary aggregate address to apply to an interface.
subnet-mask	Subnet mask.
bandwidth	(Optional) Minimum bandwidth of the router, in kilobits per second. Valid values are 0 or any positive integer.
delay	(Optional) Route delay, in tens of microseconds. Valid values are 0 or any positive number that is a multiplier of 39.1 nanoseconds.
reliability	(Optional) Likelihood of successful packet transmission expressed as a number between 0 and 255, where 255 is 100 percent reliability and 0 is no reliability.
load	(Optional) Effective load of the route expressed as a number from 0 to 255, where 255 is 100 percent loading.
mtu	(Optional) Minimum maximum transmission unit (MTU) size of the route, in bytes. Valid values are 0 or any positive integer.
distance *administrative-distance*	(Optional) Administrative distance. Valid range is 1 to 255.

Command Default

EIGRP summary aggregate addresses do not have a fixed metric.

Command Modes

Address-family topology configuration (config-router-af-topology)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.
Cisco IOS XE Release 3.2S	This command was modified. The **distance** keyword and *administrative-distance* argument were added.

Usage Guidelines

When EIGRP creates a summary route, it includes a metric with the route in order to advertise it.

EIGRP searches for components of the summary to be suppressed and represented by the summary. EIGRP finds the component with the best metric and copies the metric from it into the summary. Components of the summary may come and go, which means that every time the best component changes, the summary needs to be re-advertised to all of its peers. Even if the best component is not the one that changed, EIGRP still has to search every topology entry to make sure the summary is not affected. This can add significant processing overhead.

Use the **summary-metric** command to mitigate this metric churn and processing overhead. Rather than searching for the best component metric, EIGRP uses the values configured with the **summary-metric** command.

Changes Beginning in Cisco IOS XE 3.2S

One of the sets of optional values is required after the subnet mask. That is, you can configure bandwidth, delay, reliability, load, and MTU, along with administrative distance, without administrative distance, or you can configure only administrative distance.

The preferred way to configure administrative distance for summaries is by using the **summary-metric** command; the administrative distance option in the **summary-address** command is being deprecated.

If the **summary-address** with administrative distance is entered, and:

- if a **summary-metric** command with administrative distance already exists, the **summary-address** command is accepted, but the administrative distance value is ignored.
- if a **summary-metric** command does not exist or does not have the administrative distance specified, then the **summary-address** administrative distance value is used to automatically create a summary-metric (or set the administrative distance value on an existing summary-metric when administrative distance is not specified).

Examples

The following example configures an EIGRP summary address and sets the bandwidth to 10,000, the delay to 10, the reliability to 255, the load to 1, and the MTU to 1500 for the summary address 192.168.0.0/16:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# af-interface ethernet0/0
Router(config-router-af-interface)# summary-address 192.168.0.0 255.255.0.0
Router(config-router-af-interface)# exit
Router(config-router-af)# topology base
Router(config-router-af-topology)# summary-metric 192.168.0.0/16 10000 10 255 1 1500
```

In the following example, for summary address 2.0.0.0/8, only administrative distance is specified. For summary address 3.0.0.0/8, metrics are specified, but no distance. For summary address 4.0.0.0/8, both metrics and distance are specified. For summary address 2.0.0.0/8 in VRF red, a different distance is specified.

```
router eigrp 1
 summary-metric 2.0.0.0/8  distance 20     ! <-- Specify admin distance only for 2.0.0.0/8
 summary-metric 3.0.0.0/8  10000 10 255 1 1500    ! <-- Specify metric only for 3.0.0.0/8
 summary-metric 4.0.0.0/8  1 1 1 1 1  distance 20 ! <-- metric and distance for 4.0.0.0/8
!
 address-family ipv4 vrf red autonomous-system 2
 summary-metric 2.0.0.0/8  distance 55   ! <-- different distance for 2.0.0.0/8 in vrf red
```

In the following VRF Lite example, the user specifies the **summary-address** command with an administrative distance of 33 and receives a message that the command is being deprecated. Then the system automatically creates a **summary-metric** with the distance of 33 in address-family blue.

```
Router(config)# interface ethernet 1
Router(config-if)# vrf forwarding blue
Router(config-if)# ip summary-address eigrp 1  1.0.0.0 255.0.0.0  33

%EIGRP: summary-address accepted but distance option deprecated; use summary-metric
command for distance.

Router(config-if)#do show run | s vrf blue
 address-family ipv4 vrf blue autonomous-system 1
 summary-metric 1.0.0.0/8 distance 33
```

Related Commands

Command	Description
address-family (EIGRP)	Enters address-family configuration mode to configure an EIGRP routing instance.
af-interface	Enters address-family interface configuration mode to configure interface-specific EIGRP commands.
router eigrp	Configures the EIGRP address-family process.
summary-address (EIGRP)	Configures a summary address for EIGRP.
topology (EIGRP)	Configures an EIGRP process to route IP traffic under the specified topology instance and enters address-family topology configuration mode.

timers active-time

To adjust Enhanced Interior Gateway Routing Protocol (EIGRP) routing wait time, use the **timers active-time** command in router configuration mode or address-family topology configuration mode. To disable this function, use the **no** form of the command.

timers active-time [*time-limit* | **disabled**]

no timers active-time

Syntax Description

time-limit	(Optional) EIGRP active-time limit (in minutes). Valid range is 1 to 65535.
disabled	(Optional) Disables the timers and permits the routing wait time to remain active indefinitely.

Command Default

This command is disabled by default.

Command Modes

Router configuration (config-router)
Address-family topology configuration (config-router-af-topology)

Command History

Release	Modification
10.0	This command was introduced.
12.4(6)T	Support for IPv6 was added.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.0(1)M	This command was modified. Address-family topology configuration mode was added. You must enter this command in address-family topology configuration mode for EIGRP named configurations.
12.2(33)SRE	This command was modified. Address-family topology configuration mode was added. You must enter this command in address-family topology configuration mode for EIGRP named configurations.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

In EIGRP, there are timers that control the time that the router waits (after sending a query) before declaring the route to be in the stuck in active (SIA) state.

Examples

In the following example, the routing wait time is 200 minutes on the specified route:

```
Router(config)# router eigrp 5
Router(config-router)# timers active-time 200
```

In the following example, the routing wait time is 200 minutes on the specified address-family route:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# network 10.0.0.0
Router(config-router-af)# topology base
Router(config-router-af-topology)# timers active-time 200
```

In the following example, the routing wait time is indefinite if a route becomes active:

```
Router(config)# router eigrp 5
Router(config-router)# timers active-time disabled
```

In the following example, the routing wait time is indefinite on the specified address-family route:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# network 10.0.0.0
Router(config-router-af)# topology base
Router(config-router-af-topology)# timers active-time disabled
```

In the following example, the routing wait time is 100 minutes on the specified route:

```
Router(config)# ipv6 router eigrp 1
Router(config-router)# timers active-time 100
```

In the following example, the routing wait time is 100 minutes on the specified address-family route:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv6 autonomous-system 4453
Router(config-router-af)# topology base
Router(config-router-af-topology)# timers active-time disabled
```

Related Commands

Command	Description
address-family (EIGRP)	Enters address-family configuration mode to configure an EIGRP routing instance.
ipv6 router eigrp	Configures the EIGRP IPv6 routing process.
network (EIGRP)	Specifies the network for an EIGRP routing process.
router eigrp	Configures the EIGRP address-family process.
show ip eigrp topology	Displays the EIGRP topology table.
show ipv6 eigrp topology	Displays the IPv6 EIGRP topology table.
topology (EIGRP)	Configures an EIGRP process to route IP traffic under the specified topology instance and enters address-family topology configuration mode.

timers graceful-restart purge-time

To set the route-hold timer to determine how long a nonstop forwarding (NSF)-aware router that is running Enhanced Interior Gateway Routing Protocol (EIGRP) will hold routes for an inactive peer, use the **timers graceful-restart purge-time** command in router configuration, address-family, or service-family configuration mode. To return the route-hold timer to the default value, use the **no** form of this command.

timers graceful-restart purge-time *seconds*

no timers graceful-restart purge-time

Syntax Description

seconds	Time, in seconds, for which EIGRP will hold routes for an inactive peer. The configurable time range is from 20 to 300 seconds. The default is 240 seconds.

Command Default

EIGRP NSF awareness is enabled by default. The default value for the route-hold timer is 240 seconds.

Command Modes

Router configuration (config-router)
Address-family configuration (config-router-af)
Service-family configuration (config-router-sf)

Command History

Release	Modification
15.0(1)M	This command was introduced. This command replaces the **timers nsf route-hold** command.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.
12.2(33)SXI4	This command was integrated into Cisco IOS Release 12.2(33)SXI4.

Usage Guidelines

The route-hold timer sets the maximum period of time for which the NSF-aware router will hold known routes for an NSF-capable neighbor during a switchover operation or a well-known failure condition. The route-hold timer is configurable so that you can tune network performance and avoid undesired effects, such as “black holing” routes if the switchover operation takes too much time. When this timer expires, the NSF-aware router scans the topology table and discards any stale routes, allowing EIGRP peers to find alternate routes instead of waiting during a long switchover operation.

Examples

The following configuration example sets the route-hold timer value for an NSF-aware address family. In the example, the route-hold timer is set to 1 minute:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 1
Router(config-router-af)# timers graceful-restart purge-time 60
```

The following configuration example sets the route-hold timer value for an NSF-aware service-family. In this example, the route-hold timer is set to 300 seconds:

```
Router(config)# router eigrp virtual-name
Router(config-router)# service-family ipv4 autonomous-system 4533
Router(config-router-sf)# timers graceful-restart purge-time 300
```

Related Commands

Command	Description
debug eigrp nsf	Displays EIGRP NSF-specific events in the console of a router.
debug ip eigrp notifications	Displays EIGRP events and notifications in the console of the router.
show eigrp neighbors	Displays the neighbors discovered by IP EIGRP.
show ip protocols	Displays the parameters and current state of the active routing protocol process.

timers nsf converge

To adjust the maximum time that a restarting router will wait for the end of table (EOT) notification from a nonstop forwarding (NSF)-capable or NSF-aware peer, use the **timers nsf converge** command in router configuration mode or address-family configuration mode. To return the signal timer to the default value, use the **no** form of this command.

timers nsf converge *seconds*

no timers nsf converge

Syntax Description

seconds	Time, in seconds, for which a restarting router will wait for an EOT notification. Valid range is 60 to 180 seconds. The default is 120 seconds.

Command Default

Enhanced Interior Gateway Routing Protocol (EIGRP) NSF awareness is enabled by default. EIGRP NSF awareness uses 120 seconds as the default value if this command is not configured or if the **no** form of this command is entered.

Command Modes

Router configuration (config-router)
Address-family configuration (config-router-af)

Command History

Release	Modification
12.2(18)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
15.0(1)M	This command was modified. Address-family configuration mode was added.
12.2(33)SRE	This command was modified. Address-family configuration mode was added.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command is entered only on an NSF-capable router. The converge timer is be used to wait for the last EOT update if all startup updates have not been received within the signal timer period. If an EIGRP process discovers no neighbor, or if it has received all startup updates from its neighbor within the signal timer period, the converge timer will not be started.

Examples

The following configuration example adjusts the converge timer on an NSF-capable router. In the example, the converge timer is set to 1 minute:

```
Router(config-router)# timers nsf converge 60
```

The following EIGRP named configuration example adjusts the converge timer on an NSF-capable router. In the example, the converge timer is set to 1 minute:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 1
Router(config-router-af)# timers nsf converge 60
```

Related Commands

Command	Description
debug eigrp nsf	Displays notifications and information about NSF events for an EIGRP routing process.
debug ip eigrp notifications	Displays information and notifications for an EIGRP routing process. This output includes NSF notifications and events.
nsf (EIGRP)	Enables or disables EIGRP NSF on an NSF-capable router.
show ip protocols	Displays the parameters and current state of the active routing protocol process. The status of EIGRP NSF configuration and support is displayed in the output.
timers nsf graceful-restart purge-time	Sets the route-hold timer to determine how long a NSF-aware router that is running EIGRP will hold routes for an inactive peer.
timers nsf route-hold	Adjusts the maximum period of time that a supporting peer will hold known routes for an NSF-capable router during a restart operation or during a well-known failure condition.
timers nsf signal	Adjusts the maximum time for the initial restart period.

timers nsf route-hold

Note Effective with Cisco IOS Release 15.0(1)M and 12.2(33)SRE, the **timers nsf route-hold** command was replaced by the **timers graceful-restart purge-time** command. See the **timers graceful-restart purge-time** command for more information.

To set the route-hold timer to determine how long a nonstop forwarding (NSF)-aware router that is running Enhanced Interior Gateway Routing Protocol (EIGRP) will hold routes for an inactive peer, use the **timers nsf route-hold** command in router configuration mode. To return the route-hold timer to the default value, use the **no** form of this command.

timers nsf route-hold *seconds*

no timers nsf route-hold

Syntax Description

seconds	Time, in seconds, for which EIGRP will hold routes for an inactive peer. Valid range is 20 to 300 seconds. The default is 240 seconds.

Command Default

EIGRP NSF awareness is enabled by default. The default value for the route-hold timer is 240 seconds.

Command Modes

Router configuration (config-router)

Command History

Release	Modification
12.2(15)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
15.0(1)M	This command was replaced by the **timers graceful-restart purge-time** command.
12.2(33)SRE	This command was replaced by the **timers graceful-restart purge-time** command.

Usage Guidelines

The route-hold timer sets the maximum period of time that the NSF-aware router will hold known routes for an NSF-capable neighbor during a switchover operation or a well-known failure condition. The route-hold timer is configurable so that you can tune network performance and avoid undesired effects, such as “black holing” routes if the switchover operation takes too much time. When this timer expires, the NSF-aware router scans the topology table and discards any stale routes, allowing EIGRP peers to find alternate routes instead of waiting during a long switchover operation.

Examples

The following configuration example sets the route-hold timer value for an NSF-aware router. In the example, the route-hold timer is set to 2 minutes:

```
Router(config-router)# timers nsf route-hold 120
```

Related Commands

Command	Description
debug eigrp nsf	Displays EIGRP NSF-specific events in the console of a router.
debug ip eigrp notifications	Displays EIGRP events and notifications in the console of the router.
show ip eigrp neighbors	Displays the neighbors discovered by IP EIGRP.
show ip protocols	Displays the parameters and current state of the active routing protocol process.

timers nsf signal

To adjust the maximum time for the initial signal timer restart period, use the **timers nsf signal** command in router configuration mode or address-family configuration mode. To return the signal timer to the default value, use the **no** form of this command.

timers nsf signal *seconds*

no timers nsf signal

Syntax Description

seconds	Time, in seconds, for which Enhanced Interior Gateway Routing Protocol (EIGRP) will hold routes for an inactive peer. Valid range is 10 to 30 seconds. The default is 20 seconds.

Command Default

EIGRP NSF awareness is enabled by default. EIGRP NSF awareness uses 20 seconds as the default value if this command is not configured or if the **no** form of this command is entered.

Command Modes

Router configuration (config-router)
Address-family configuration (config-router-af)

Command History

Release	Modification
12.2(15)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
15.0(1)M	This command was modified. Address-family configuration mode was added.
12.2(33)SRE	This command was modified. Address-family configuration mode was added.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command is entered only on a nonstop forwarding (NSF)-capable router. The EIGRP process starts a signal timer when it is notified of a switchover event. Hello packets with the RS bit set are sent during this period.

The converge timer is used to wait for the last end of table (EOT) update if all startup updates have not been received within the signal timer period. If an EIGRP process discovers no neighbor, or if it has received all startup updates from its neighbor within the signal timer period, the converge timer will not be started.

Examples

The following configuration example adjusts the signal timer value on an NSF-capable router. In the example, the signal timer is set to 30 seconds:

```
Router(config-router)# timers nsf signal 30
```

The following EIGRP named configuration example adjusts the signal timer value on an NSF-capable router. In the example, the signal timer is set to 30 seconds:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 1
Router(config-router-af)# timers nsf signal 30
```

Related Commands

Command	Description
debug eigrp nsf	Displays notifications and information about NSF events for an EIGRP routing process.
debug ip eigrp notifications	Displays information and notifications for an EIGRP routing process. This output includes NSF notifications and events.
nsf (EIGRP)	Enables or disables EIGRP NSF on an NSF-capable router.
show ip protocols	Displays the parameters and current state of the active routing protocol process. The status of EIGRP NSF configuration and support is displayed in the output.
timers nsf converge	Adjusts the maximum time that restarting router will wait for the EOT notification from an NSF-capable or NSF-aware peer.
timers nsf graceful-restart purge-time	Sets the route-hold timer to determine how long a NSF-aware router that is running EIGRP will hold routes for an inactive peer.
timers nsf route-hold	Adjusts the maximum period of time that a supporting peer will hold known routes for an NSF-capable router during a restart operation or during a well-known failure condition.

topology (EIGRP)

To configure an Enhanced Interior Gateway Routing Protocol (EIGRP) process to route IP traffic under the specified topology instance and to enter address-family topology configuration mode, use the **topology** command in address-family configuration mode. To disassociate the EIGRP routing process from the topology instance, use the **no** form of this command.

topology {**base** | *topology-name* **tid** *number*}

no topology *topology-name*

Syntax Description

base	Specifies the base topology.
topology-name	Topology name. The *topology-name* argument is case-sensitive.
tid *number*	Specifies the topology ID number. The value for this argument can be a number from 1 to 65535.

Command Default

EIGRP routing processes are not configured to route IP traffic under a topology instance.

Command Modes

Address-family configuration (config-router-af)

Command History

Release	Modification
12.2(33)SRB	This command was introduced.
15.0(1)M	This command was integrated into Cisco IOS Release 15.0(1)M.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

The **topology** command is used in a Multi-Topology Routing (MTR) configuration to enable an EIGRP process under the specified topology. The **topology** command is entered under address-family configuration mode. Command configurations are applied only to the topology instance. The topology must be defined globally with the **global-address-family** command in global address-family configuration mode before the topology can be configured under the EIGRP process.

The **tid** keyword associates an ID with the topology instance. Each topology must be configured with a unique topology ID. The topology ID is used to identify and group Network Layer Reachability Information (NLRI) for each topology in EIGRP updates.

The topology ID must be consistent across routers so that EIGRP can correctly associate topologies.

Examples

The following example configures EIGRP process 1 to route traffic for the 192.168.0.0/16 network under the VOICE topology instance:

```
Router(config)# router eigrp 1
Router(config-router)# address-family ipv4 unicast autonomous-system 3
```

```
Router(config-router-af)# topology VOICE tid 100
Router(config-router-af-topology)# no auto-summary
Router(config-router-af-topology)# network 192.168.0.0 0.0.255.255
Router(config-router-af-topology)# end
```

Related Commands

Command	Description
clear ip eigrp	Resets EIGRP process and neighbor session information.
global-address-family ipv4	Enters global address family configuration mode to configure MTR.
topology (interface)	Configures an MTR topology instance on an interface.

traffic-share balanced

To control how traffic is distributed among routes when multiple routes for the same destination network have different costs, use the **traffic-share balanced** command in router configuration mode or address-family topology configuration mode. To disable this function, use the **no** form of the command.

traffic-share balanced

no traffic-share balanced

Syntax Description

This command has no arguments or keywords.

Command Default

Traffic is distributed proportionately to the ratios of the metrics.

Command Modes

Router configuration (config-router)
Address-family topology configuration (config-router-af-topology)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.0(1)M	This command was modified. Address-family topology configuration mode was added.
12.2(33)SRE	This command was modified. Address-family topology configuration mode was added.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

This command applies only to Enhanced Interior Gateway Routing Protocol (EIGRP). With the default setting, routes that have higher metrics represent less-preferable routes and get less traffic.

Examples

In the following example, traffic is balanced across multiple routes:

```
Router(config)# router eigrp 5
Router(config-router)# traffic-share balanced
Router(config-router)# variance 1
```

In the following EIGRP named configuration example, traffic is balanced across multiple routes:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
```

```
Router(config-router-af)# network 10.0.0.0
Router(config-router-af)# topology base
Router(config-router-af-topology)# traffic-share balanced
Router(config-router-af-topology)# variance 1
```

Related Commands

Command	Description
variance (**EIGRP**)	Controls load balancing in an EIGRP network.

variance (EIGRP)

To control load balancing in an internetwork based on the Enhanced Interior Gateway Routing Protocol (EIGRP), use the **variance** command in router configuration mode or address-family topology configuration mode. To reset the variance to the default value, use the **no** form of this command.

variance *multiplier*

no variance

Syntax Description

multiplier	Metric value used for load balancing. It can be a value from 1 to 128. The default is 1, which means equal-cost load balancing.

Command Default

EIGRP uses equal-cost load balancing.

Command Modes

Router configuration (config-router)
Address-family topology configuration (config-router-af-topology)

Command History

Release	Modification
10.0	This command was introduced.
12.4(6)T	Support for IPv6 was added.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.0(1)	This command was modified. Address-family topology configuration mode was added.
12.2(33)SRE	This command was modified. Address-family topology configuration mode was added.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Setting a variance value enables EIGRP to install multiple loop-free routes with unequal cost in a local routing table. A route learned through EIGRP must meet two criteria to be installed in the local routing table:

- The route must be loop- free. This condition is satisfied when the reported distance is less than the total distance or when the route is a feasible successor.
- The metric of the route must be lower than the metric of the best route (the successor) multiplied by the variance configured on the router.

Thus, if the variance is set to 1, only routes with the same metric as the successor are installed in the local routing table. If the variance is set to 2, any EIGRP-learned route with a metric less than 2 times the successor metric will be installed in the local routing table.

Note EIGRP does not load-share between multiple routes; it only installs the routes in the local routing table. Then, the local routing table enables switching hardware or software to load-share between the multiple paths.

Examples

The following example sets a variance value of 4:

```
Router(config)# router eigrp 109
Router(config-router)# variance 4
```

The following example sets a variance value of 4 in address-family topology configuration mode:

```
Router(config)# router eigrp virtual-name
Router(config-router)# address-family ipv4 autonomous-system 4453
Router(config-router-af)# network 10.0.0.0
Router(config-router-af)# topology base
Router(config-router-af-topology)# variance 4
```