EIGRP MIB

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The EIGRP MIB feature introduces an Enhanced Interior Gateway Routing Protocol (EIGRP) MIB in Cisco IOS software. This MIB is accessed through remote Simple Network Management Support (SNMP) software clients. This MIB provides full EIGRP support for GET requests and limited notification (TRAP) support for stuck-in-active (SIA) and neighbor authentication failure events.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for EIGRP MIB

- EIGRP MIB table objects are not visible via SNMP until an EIGRP routing process is enabled and an SNMP community string is configured on at least one router.

- Support for EIGRP notifications (TRAP) is not activated until a trap destination is configured.

Restrictions for EIGRP MIB

- EIGRP MIB support has not been implemented for the EIGRP Prefix Limit Support feature.
- EIGRP MIB support is available for IPv4 only.

Information About EIGRP MIB

EIGRP MIB Overview

The EIGRP MIB feature introduces EIGRP MIB support in Cisco IOS software. EIGRP routing processes that run over IPv4 are supported. The EIGRP MIB is accessed through remote SNMP software clients. MIB table objects are accessed as read-only through GET, GETINFO, GETMANY, GETNEXT, GETBULK, and SET requests. Counters for MIB table objects are cleared when the EIGRP routing process is reset or when the routing table is refreshed by entering the **clear ip route** or **clear ip eigrp**commands,or by entering **clear eigrp address-family**commands. Managed objects for all EIGRP routing processes are implemented as five table objects on a per-autonomous-system or per-Virtual-Private-Network (VPN) basis.

EIGRP VPN Table

The EIGRP VPN Table contains information regarding which VPNs are configured to run an EIGRP routing process. VPN routes are indexed by the VPN name and the EIGRP autonomous system number. The EIGRP VPN table object and the value populated for that object are described in the table below.

Table 1 *VPN Table Object Description*

Object	Description
cEigrpVpnName	The VPN routing and forwarding (VRF) name. Only VRFs that are configured to run an EIGRP routing process are populated.

EIGRP Traffic Statistics Table

The EIGRP Traffic Statistics Table contains counters and statistics for the specific types of EIGRP packets that are sent and the related collective information that is generated. The objects in this table are populated

on a per-autonomous-system basis. Objects in this table are populated for adjacencies formed on all interfaces with an IP address that is configured under an EIGRP network statement. Traffic statistics table objects and the values populated for each object are described in the table below.

Table 2   ***EIGRP Traffic Statistics Options***

Object	Description
cEigrpNbrCount	Total number of live neighbors. This table object is incremented or decremented as peering sessions are established or expired.
cEigrpHellosSent	Total number of transmitted hello packets. This table object is incremented as packets are transmitted.
cEigrpHellosRcvd	Total number of received hello packets. This table object is incremented as packets are received.
cEigrpUpdatesSent	Total number of transmitted routing update packets. This table object is incremented as packets are transmitted.
cEigrpUpdatesRcvd	Total number of received routing update packets. This table object is incremented as packets are received.
cEigrpQueriesSent	Total number of alternate route query packets transmitted. This table object is incremented as packets are transmitted.
cEigrpQueriesRcvd	Total number of alternate route query packets received. This table object is incremented as packets are received.
cEigrpRepliesSent	Total number of reply packets that are transmitted in response to received query packets. This table object is incremented as packets are transmitted.
cEigrpRepliesRcvd	Total number of reply packets that are received in response to transmitted query packets. This table object is incremented as packets are transmitted.
cEigrpAcksSent	Total number of acknowledgment packets that are transmitted in response to received update packets. This table object is incremented as packets are transmitted.
cEigrpAcksRcvd	Total number of acknowledgment packets that are received in response to transmitted update packets. This table object is incremented as packets are received.

Object	Description
cEigrpInputQHighMark	The highest number of packets that have been in the input queue. This table object is incremented only when the previous highest number is exceeded.
cEigrpInputQDrops	Total number of packets dropped from the input queue because the input queue was full. This tabled object is incremented each time a packet is dropped.
cEigrpSiaQueriesSent	Total number of query packets sent in response to a destination that is in a SIA state for a down peer. This table object is incremented each time an SIA query packet is sent.
cEigrpSiaQueriesRcvd	Total number of SIA query packets received from neighbors searching for an alternate path to a destination. This table object is incremented each time an SIA query packet is received.
cEigrpAsRouterIdType	The type of IP address that is used as the router ID. The value for this table object can be an IPv4 address.
cEigrpAsRouterId	The configured or automatically selected router ID in IP address format. This table object is updated if the router ID is manually reconfigured or if the IP address that was automatically selected is removed.
cEigrpTopoRoutes	Total number of EIGRP-derived routes in the topology table. This table object is incremented if a route is added or removed.
cEigrpHeadSerial	Internal sequencing number (serial) applied to EIGRP topology table routes. Routes are sequenced starting with 1. A value of 0 is displayed when there are no routes in the topology table. The "Head" serial number is applied to the first route in the sequence.
cEigrpNextSerial	The serial number applied to the next route in the sequence.
cEigrpXmitPendReplies	Total number of replies expected in response to locally transmitted query packets. This table object contains a value of 0 until a route is placed in an active state.
cEigrpXmitDummies	Total number of temporary entries in the topology table. Dummies are internal entries and not transmitted in routing updates.

EIGRP Topology Table

The EIGRP Topology Table contains information regarding EIGRP routes received in updates and routes that are locally originated. EIGRP sends routing updates to and receives routing updates from adjacent routers to which peering relationships (adjacencies) have been formed. The objects in this table are populated on a per-topology-table-entry (route) basis. Topology table objects and the values populated for each object are described in the table below.

Table 3   *Topology Table Object Descriptions*

Object	Description
cEigrpActive	Displays the active status for routes in the topology table. The value for this table object is displayed on a per-route basis. A value of 1 is displayed when a route has gone into an active state. A value of 2 is displayed when a route is in a passive state (normal).
cEigrpStuckInActive	Displays the SIA status of a route. The value for this table object is displayed on a per-route basis. A value of 1 is displayed when a route is in an SIA state (no reply has been received for queries for alternate paths). SIA queries are transmitted when a route is placed in this state.
cEigrpDestSuccessors	Total number successors (a route that is the next hop to a destination network) for a topology table entry. The topology table will contain a successor for each path to a given destination. This table object is incremented each time a successor is added or removed.
cEigrpFdistance	The feasible (best) distance to a destination network. This value is used to calculate the feasible successor for a topology table entry.
cEigrpRouteOriginAddr	The protocol type of an IP address defined in the origin of the topology table entry.
cEigrpRouteOriginType	Displays the IP address of the router that originated the route in the topology table entry. This table is populated only if the topology table entry was not locally originated.
cEigrpNextHopAddress Type	Displays the protocol type for the next-hop IP address for the route in a topology table entry.
cEigrpNextHopAddress	The next-hop IP address for a route in a topology table entry.

Object	Description
cEigrpNextHopInterface	The interface through which the next-hop IP address is reached to send traffic to the destination.
cEigrpDistance	The computed distance to the destination network entry from the local router.
cEigrpReportDistance	The computed distance to the destination network in the topology entry as reported by the originator of the route.

EIGRP Neighbor Table

The EIGRP Neighbor Table contains information about EIGRP neighbors to which adjacencies have been established. EIGRP uses a "Hello" protocol to form neighbor relationships with directly connected EIGRP neighbors. The objects in this table are populated on a per-neighbor basis. Neighbor table objects and the values populated for each object are described in the table below.

Table 4   Neighbor Table Object Descriptions

Object	Description
cEigrpPeerAddrType	The protocol type of the remote source IP address used by the neighbor to establish the EIGRP adjacency with the local router.
cEigrpPeerAddr	The source IP address of the neighbor that was used to establish EIGRP adjacency with the local router.
cEigrpPeerInterface	The name of the local interface, through which the neighbor can be reached. This table object is populated on a per-neighbor basis.
cEigrpPeerIfIndex	The index of the local interface, through which this neighbor can be reached.
cEigrpHoldTime	The hold timer value for the adjacency with the neighbor. If this timer expires, the neighbor is declared down and removed from the neighbor table.
cEigrpUpTime	The length of time for which the EIGRP adjacency to the neighbor has been in an up state. The time period is displayed in hours:minutes:seconds.
cEigrpSrtt	The computed smooth round trip time (SRTT) for packets transmitted to and received from the neighbor.

Object	Description
cEigrpRto	The computed retransmission timeout (RTO) for the neighbor. The value for this table object is computed as an aggregate average of the time required for packet delivery. This table object is populated on a per-neighbor basis.
cEigrpPktsEnqueued	Total number of EIGRP packets (all types) currently queued for transmission to a neighbor. This table object is populated on a per-neighbor basis.
cEigrpLastSeq	The number of the last sequence number of a packet transmitted to a neighbor. This table object is incremented as the sequence number increases.
cEigrpVersion	The EIGRP version information reported by the remote neighbor. This table object is populated on a per-neighbor basis.
cEigrpRetrans	Cumulative number of packets retransmitted to the neighbor, while the neighbor is in an up state. This table object is populated on a per-neighbor basis.
cEigrpRetries	Total number of times an unacknowledged packet has been sent to a neighbor. This table object is populated on a per-neighbor basis.

EIGRP Interface Table

The EIGRP Interface Table contains information and statistics for each interface that EIGRP has been configured to run over. The objects in this table are populated on a per-interface basis. Interface table objects and the values populated for each object are described in the table below.

Table 5 *EIGRP Interface Table Object Descriptions*

Object	Description
cEigrpPeerCount	Total number of neighbor adjacencies formed through this interface.
cEigrpXmitReliableQ	Total number of packets waiting in the reliable transport transmission queue (acknowledgment is required) to be sent to a neighbor.
cEigrpXmitUnreliableQ	Total number of packets waiting in the unreliable transmission queue (no acknowledgment required).
cEigrpMeanSrtt	The computed SRTT for packets transmitted to and received from all neighbors on the interface.

Object	Description
cEigrpPacingReliable	The configured time interval (in milliseconds) between EIGRP packet transmissions on this interface when the reliable transport is used.
cEigrpPacingUnreliable	The configured time interval (in milliseconds) between EIGRP packet transmissions on this interface when the unreliable transport is used.
cEigrpMFlowTimer	The configured multicast flow control timer value (in milliseconds) for this interface.
cEigrpPendingRoutes	Total number of routing updates queued for transmission on this interface.
cEigrpHelloInterval	The configured time interval (in seconds) between Hello packet transmissions for this interface.
cEigrpXmitNextSerial	The serial number of the next packet that is queued for transmission on this interface.
cEigrpUMcasts	Total number of unreliable (no acknowledgment required) multicast packets transmitted on this interface.
cEigrpRMcasts	Total number of reliable (acknowledgment required) multicast packets transmitted on this interface.
cEigrpUUcasts	Total number of unreliable (no acknowledgment required) unicast packets transmitted on this interface.
cEigrpRUcasts	Total number of reliable (acknowledgment required) unicast packets transmitted on this interface.
cEigrpMcastExcept	The total number of EIGRP multicast exception transmissions that have occurred on this interface.
cEigrpCRpkts	Total number conditional-receive packets sent on this interface.
cEigrpAcksSuppressed	Total number of individual acknowledgment packets that have been suppressed and combined in an already enqueued outbound reliable packet on this interface.
cEigrpRetranSent	Total number of packet retransmissions sent on this interface.
cEigrpOOSrvcd	Total number of out-of-sequence packets received on this interface.

Object	Description
cEigrpAuthMode	The authentication mode configured for traffic that uses this interface. The value of 0 is displayed when no authentication is enabled. The value of 1 is displayed when message digest algorithm 5 (MD5) authentication is enabled.
cEigrpAuthKeyChain	The name of the authentication key chain configured on this interface. The key chain is a reference to which set of secret keys is to be accessed to determine which key string to use. The key-chain name is not the key string (password).

EIGRP Notifications

The EIGRP MIB provides limited notification (TRAP) support for SIA and neighbor authentication failure events. The **snmp-server enable traps eigrp** command is used to enable EIGRP notifications on a Cisco router. Support for TRAP events is not activated until a trap destination is configured with the **snmp-server host** command and a community string is defined with the **snmp-server community** command. EIGRP notifications are described in the table below.

Table 6   EIGRP Notifications

EIGRP Traps (Notifications)	Description
cEigrpAuthFailureEvent	When EIGRP MD5 authentication is enabled on any interface and neighbor adjacencies are formed, a notification is sent if any adjacency goes down as a result of an authentication failure. This notification will be sent once per down event. This notification includes the source IP address of the neighbor from which the authentication failure occurred.
cEigrpRouteStuckInActive	During the query phase for a new route to a destination network, the route is placed in the active state (an alternate path is actively being sought) and a query packet is broadcast to the network. If no replies are received to the query, an SIA query packets are broadcast. If a reply is not received for the SIA queries, the neighbor adjacency is dropped, the route is declared SIA, and this notification is sent.

How to Enable EIGRP MIB

Enabling EIGRP MIB

Perform this task to enable an EIGRP MIB. This task specifies an SNMP server host, configures an SNMP community access string, and enables EIGRP notifications.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server host** {*hostname* | *ip-address*} [**vrf** *vrf-name*] [**traps** | **informs**] [**version** {**1** | **2c** | **3** [**auth** | **noauth** | **priv**]}] *community-string* [**udp-port** *port*] [*notification-type*] [**vrrp**]
4. **snmp-server community** *string* [**view** *view-name*] [**ro** | **rw**] [**ipv6** *nacl*] [*access-list-number*]
5. **snmp-server enable traps eigrp**
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** Router> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Router# configure terminal	Enters global configuration mode.
Step 3	**snmp-server host** {*hostname*	*ip-address*} [**vrf** *vrf-name*] [**traps**	**informs**] [**version** {**1**	**2c**	**3** [**auth**	**noauth**	**priv**]}] *community-string* [**udp-port** *port*] [*notification-type*] [**vrrp**] **Example:** Router(config)# snmp-server host 10.0.0.1 traps version 2c NETMANAGER eigrp	Specifies the destination host or address for SNMP notifications.
Step 4	**snmp-server community** *string* [**view** *view-name*] [**ro**	**rw**] [**ipv6** *nacl*] [*access-list-number*] **Example:** Router(config)# snmp-server community EIGRP1NET1A	Configures a community access string to permit SNMP access to the local router by the remote SNMP software client. • Only IPv4 is supported in Cisco IOS Releases 12.3(14)T and 12.2(33)SRB.

Command or Action	Purpose
Step 5 **snmp-server enable traps eigrp** **Example:** Router(config)# snmp-server enable traps eigrp	Enables SNMP support for EIGRP notifications. • Notifications can be configured for only SIA and neighbor authentication failure events.
Step 6 **end** **Example:** Router(config)# end	Exits global configuration mode and returns to privileged EXEC mode.

Configuration Examples for Enabling EIGRP MIB

Example EIGRP MIB Configuration

In the following example, an SNMP server host is specified, a community string is configured, and support for EIGRP notifications is enabled:

```
Router(config)# snmp-server host 10.0.0.1 traps version 2c NETMANAGER eigrp
Router(config)# snmp-server community EIGRP1NET1A
Router(config)# snmp-server enable traps eigrp
```

Example EIGRP MIB Verification

In the following example, the local SNMP configuration is verified by entering the **show running-config** command:

```
Router# show running-config | include snmp
snmp-server community EIGRP1NET1A
snmp-server enable traps eigrp
snmp-server host 10.0.0.1 version 2c NETMANAGER
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases

Related Topic	Document Title
EIGRP commands	*Cisco IOS IP Routing: EIGRP Command Reference*
Basic EIGRP configuration tasks	Configuring EIGRP module
Troubleshooting SIA events	What Does the EIGRP DUAL-3-SIA Error Message Mean?
SNMP commands	*Cisco IOS Network Management Command Reference*
SNMP configuration tasks	Configuring SNMP Support module of the *Cisco IOS Network Management Configuration Guide*

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	--

MIBs

MIB	MIBs Link
CISCO-EIGRP-MIB.my	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 1213	Management Information Base for Network Management of TCP/IP-based Internets: MIB-II

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for EIGRP MIB

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 7   Feature Information for EIGRP MIB

Feature Name	Releases	Feature Information
EIGRP MIB	12.2(33)SRB 12.2(33)SXI4 12.2(33)XNE 12.3(14)T 15.0(1)M	The EIGRP MIB feature introduces an EIGRP MIB in Cisco IOS software. This MIB is accessed through remote Simple Network Management Support (SNMP) software clients. This MIB provides full EIGRP support for GET requests and limited notification (TRAP) support for stuck-in-active (SIA) and neighbor authentication failure events. The following commands were new or modified for this release: **snmp-server enable traps eigrp**, **snmp-server host**.

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