

send-lifetime

To set the time period during which an authentication key on a key chain is valid to be sent, use the **send-lifetime** command in key chain key configuration mode. To revert to the default value, use the **no** form of this command.

send-lifetime *start-time* {**infinite** | *end-time* | **duration** *seconds*}

no send-lifetime [*start-time* {**infinite** | *end-time* | **duration** *seconds*}]

Syntax Description

<i>start-time</i>	Beginning time that the key specified by the key command is valid to be sent. The syntax can be either of the following: <i>hh:mm:ss Month date year</i> <i>hh:mm:ss date Month year</i> <ul style="list-style-type: none"> • <i>hh</i>—hours • <i>mm</i>—minutes • <i>ss</i>—seconds • <i>Month</i>—first three letters of the month • <i>date</i>—date (1–31) • <i>year</i>—year (four digits) The default start time and the earliest acceptable date is January 1, 1993.
infinite	Key is valid to be sent from the <i>start-time</i> value on.
<i>end-time</i>	Key is valid to be sent from the <i>start-time</i> value until the <i>end-time</i> value. The syntax is the same as that for the <i>start-time</i> value. The <i>end-time</i> value must be after the <i>start-time</i> value. The default end time is an infinite time period.
duration <i>seconds</i>	Length of time (in seconds) that the key is valid to be sent.

Command Default

Forever (the starting time is January 1, 1993, and the ending time is infinite)

Command Modes

Key chain key configuration (config-keychain-key)

Command History

Release	Modification
11.1	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 integrated into Cisco IOS Release 15.0M.

12.2(33)SRE	This command was modified. The 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 modified. The address-family configuration mode was added.

Usage Guidelines

Specify a *start-time* value and one of the following values: **infinite**, *end-time*, or **duration seconds**.

We recommend running Network Time Protocol (NTP) or some other time synchronization method if you intend to set lifetimes on keys.

If the last key expires, authentication will continue and an error message will be generated. To disable authentication, you must manually delete the last valid key.

Examples

The following example configures a key chain named chain1. The key named key1 will be accepted from 1:30 p.m. to 3:30 p.m. and be sent from 2:00 p.m. to 3:00 p.m. The key named key2 will be accepted from 2:30 p.m. to 4:30 p.m. and be sent from 3:00 p.m. to 4:00 p.m. The overlap allows for migration of keys or a discrepancy in the set time of the router. There is a 30-minute leeway on each side to handle time differences.

```
Router(config)# interface ethernet 0
Router(config-if)# ip rip authentication key-chain chain1
Router(config-if)# ip rip authentication mode md5
!
Router(config)# router rip
Router(config-router)# network 172.19.0.0
Router(config-router)# version 2
!
Router(config)# key chain chain1
Router(config-keychain)# key 1
Router(config-keychain-key)# key-string key1
Router(config-keychain-key)# accept-lifetime 13:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 14:00:00 Jan 25 1996 duration 3600
Router(config-keychain-key)# exit
Router(config-keychain)# key 2
Router(config-keychain-key)# key-string key2
Router(config-keychain-key)# accept-lifetime 14:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 15:00:00 Jan 25 1996 duration 3600
```

The following example configures a key chain named chain1 for EIGRP address-family. The key named key1 will be accepted from 1:30 p.m. to 3:30 p.m. and be sent from 2:00 p.m. to 3:00 p.m. The key named key2 will be accepted from 2:30 p.m. to 4:30 p.m. and be sent from 3:00 p.m. to 4:00 p.m. The overlap allows for migration of keys or a discrepancy in the set time of the router. There is a 30-minute leeway on each side to handle time differences.

```
Router(config)# 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)# af-interface ethernet0/0
Router(config-router-af-interface)# authentication key-chain trees
Router(config-router-af-interface)# authentication mode md5
Router(config-router-af-interface)# exit
Router(config-router-af)# exit
Router(config-router)# exit
Router(config)# key chain chain1
Router(config-keychain)# key 1
```

```

Router(config-keychain-key)# key-string key1
Router(config-keychain-key)# accept-lifetime 13:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 14:00:00 Jan 25 1996 duration 3600
Router(config-keychain-key)# exit
Router(config-keychain)# key 2
Router(config-keychain-key)# key-string key2
Router(config-keychain-key)# accept-lifetime 14:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 15:00:00 Jan 25 1996 duration 3600

```

The following named configuration example configures a key chain named chain1 for a Cisco SAF service family. The key named key1 will be accepted from 1:30 p.m. to 3:30 p.m. and be sent from 2:00 p.m. to 3:00 p.m. The key named key2 will be accepted from 2:30 p.m. to 4:30 p.m. and be sent from 3:00 p.m. to 4:00 p.m. The overlap allows for migration of keys or a discrepancy in the set time of the router. There is a 30-minute leeway on each side to handle time differences.

```

Router(config)# eigrp virtual-name
Router(config-router)# service-family ipv4 autonomous-system 4453
Router(config-router-sf)# network 10.0.0.0
Router(config-router-sf)# sf-interface ethernet0/0
Router(config-router-sf-interface)# authentication key-chain trees
Router(config-router-sf-interface)# authentication mode md5
Router(config-router-sf-interface)# exit
Router(config-router-sf)# exit
Router(config-router)# exit
Router(config)# key chain chain1
Router(config-keychain)# key 1
Router(config-keychain-key)# key-string key1
Router(config-keychain-key)# accept-lifetime 13:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 14:00:00 Jan 25 1996 duration 3600
Router(config-keychain-key)# exit
Router(config-keychain)# key 2
Router(config-keychain-key)# key-string key2
Router(config-keychain-key)# accept-lifetime 14:30:00 Jan 25 1996 duration 7200
Router(config-keychain-key)# send-lifetime 15:00:00 Jan 25 1996 duration 3600

```

Related Commands

Command	Description
accept-lifetime	Sets the time period during which the authentication key on a key chain is received as valid.
key	Identifies an authentication key on a key chain.
key chain	Defines an authentication key chain needed to enable authentication for routing protocols.
key-string (authentication)	Specifies the authentication string for a key.
show key chain	Displays authentication key information.

service-family

To configure virtual routing and forwarding (VRF) metrics for a Cisco SAF service-family, use the **service-family ipv4** command in router configuration mode. To disable the service-family configuration, use the **no** form on this command.

```
service-family {ipv4 | ipv6} [vrf vrf-name] autonomous-system autonomous-system-number
```

```
no service-family {ipv4 | ipv6} [vrf vrf-name] autonomous-system autonomous-system-number
```

Syntax Description

ipv4	Specifies the IP Version 4 address family and enters service-family configuration mode.
ipv6	Specifies the IP Version 6 address family and enters service-family configuration mode.
vrf	(Optional) Specifies all virtual routing forwarding (VRF) instance tables or a specific VRF table for an IP address.
<i>vrf-name</i>	(Optional) Names a specific VRF table for an IPv4 address.
autonomous-system	Specifies the autonomous system.
<i>autonomous-system-number</i>	Specifies the autonomous system number.

Command Default

No service family configurations exist.

Command Modes

Router configuration (config-router)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was modified. The 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 modified. The address-family configuration mode was added.
12.2(33)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **service-family** command to enter service-family configuration mode.

**Note**

Using the **service-family ipv6** commands requires an IPv6-enabled SAF client, which currently does not exist.

Examples

The following example configures a service-family autonomous-system number 4533:

```
Router(config)# router eigrp virtual-name  
Router(config-router)# service-family ipv4 autonomous-system 4533
```

Related Commands

Command	Description
exit-service-family	Exits service-family configuration mode.
router eigrp	Configures the EIGRP process.

service-family external-client listen

To configure a Cisco SAF External-Client TCP port, use the **service-family external-client listen** command in global configuration mode. To remove the associated external-client configuration, use the **no** form on this command.

```
service-family external-client listen { ipv4 | ipv6 } tcp-port-number vrf-name
```

```
no service-family external-client listen
```

Syntax Description

ipv4	Specifies the IP Version 4 address family.
ipv6	Specifies the IP Version 6 address family.
<i>tcp-port-number</i>	The TCP port number to listen on. Port numbers range between 1024 and 65536.
<i>vrf-name</i>	VRF name to listen on. Default is base.

Command Default

No external-client configurations exist.

Command Modes

Global configuration (config)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was modified. The 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 modified. The address-family configuration mode was added.
12.2(33)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **service-family external-client listen** command to configure a TCP port on which the Cisco SAF Forwarder is to listen. The **no** form of this command removes all clients from the Cisco SAF network, the External-Client database, tears down all sockets, and removes the TCP listen socket.



Note

Using the **service-family external-client listen ipv6** commands requires an IPv6-enabled SAF client, which currently does not exist.

Use the **show eigrp service-family external-client** command to verify information on EIGRP external clients.

Examples

The following example configures an external-client TCP port number 4355 for the Cisco SAF Forwarder to listen on:

```
Router(config)# service-family external-client listen ipv4 4355
```

Related Commands	Command	Description
	<code>show eigrp service-family external-client</code>	Displays information on Cisco SAF External Clients.

sf-interface

To configure interface-specific commands for a Cisco SAF service family, use the **sf-interface** command in service-family configuration mode. To disable the service-family mode, use the **no** form on this command.

```
sf-interface {interface-type interface-number | default}
```

```
no sf-interface {interface-type interface-number | default}
```

Syntax Description

<i>interface-type</i>	Specifies the interface type.
<i>interface-number</i>	Specifies the interface number.
default	Specifies the service-family default interface configuration.

Command Modes

Service-family configuration (config-router-sf)

Command History

Release	Modification
15.0(1)M	This command was introduced.
12.2(33)SRE	This command was modified. The 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 modified. The address-family configuration mode was added.
12.2(33)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **sf-interface default** command to set the Cisco SAF default configuration for all interfaces on the router.

Use the **sf-interface interface-type interface-number** command to apply a Cisco SAF configuration to a specific interface. Any configuration using this command overrides the default configuration.

Examples

The following example places a router in service-family configuration mode and enables Ethernet interface 0/0, while disabling all other interfaces:

```
Router(config)# router eigrp virtual-name
Router(config-router)# service-family ipv4 autonomous-system 4533
Router(config-router-sf)# sf-interface default
Router(config-router-sf-interface)# shutdown
Router(config-router-sf-interface)# Ethernet 0/0
Router(config-router-sf-interface)# no shutdown
```


Related Commands

Command	Description
exit-service-family	Exits service-family configuration mode.
exit sf-interface	Exits service-family interface configuration mode.
router eigrp	Configures the EIGRP process.
service-family	Configures commands under service-family mode.
shutdown	Disables a service family on the interface.

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 <i>name</i> , and the <i>as-number</i> 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
```

show eigrp plugins

```

          : 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 2 describes the significant fields shown in the display.

Table 2 *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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>15.0(1)M</td> <td>This command was introduced.</td> </tr> <tr> <td>12.2(33)SRE</td> <td>This command was integrated into Cisco IOS Release 12.2(33)SRE.</td> </tr> <tr> <td>12.2(33)XNE</td> <td>This command was integrated into Cisco IOS Release 12.2(33)XNE.</td> </tr> <tr> <td>Cisco IOS XE Release 2.5</td> <td>This command was integrated into Cisco IOS XE Release 2.5.</td> </tr> <tr> <td>12.2(33)SX14</td> <td>This command was integrated into Cisco IOS Release 12.2(33)SX14.</td> </tr> </tbody> </table>	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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.
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Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.												
12.2(33)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.												

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 3 describes the significant fields shown in the display.

Table 3 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 service-family

To display information for an Enhanced Interior Gateway Routing Protocol (EIGRP) IPv4 or IPv6 service family, use the **show eigrp service-family** command in user EXEC or privileged EXEC mode.

```
show eigrp service-family {ipv4 | ipv6} [vrf vrf-name] autonomous-system-number
  {accounting |
  clients [detail] |
  events [starting-event-number ending-event-number] | [errmsg starting-event-number
  ending-event-number] | [type] |
  interfaces [interface-type interface-number] | detail interface-type interface-number] |
  neighbors [detail | interface-type interface-number] |
  sia-event [starting-event-number ending-event-number] |
  sia-statistics [ip-address] |
  subscriptions [detail] |
  timers |
  traffic}
```

Syntax	Description
ipv4	Specifies the IP Version 4 address family.
ipv6	Specifies the IP Version 6 address family.
vrf	(Optional) Specifies all virtual routing forwarding (VRF) instance tables or a specific VRF table for an IP address.
<i>vrf-name</i>	(Optional) Names a specific VRF table for an IPv4 address.
<i>autonomous-system-number</i>	Specifies the autonomous system number.
accounting	Displays accounting information.
clients	Displays Client information. If the clients keyword is used without the optional detail keyword,
detail	(Optional) Displays detailed client data.
events	Displays logged event information.
<i>starting-event-number</i>	(Optional) Specifies the starting event number between 1 and 4294967295.
<i>ending-event-number</i>	(Optional) Specifies the ending event number between 1 and 4294967295.
errmsg	(Optional) Displays logged error message events.
<i>starting-event-number</i>	(Optional) Specifies the starting event number between 1 and 4294967295.
<i>ending-event-number</i>	(Optional) Specifies the ending event number between 1 and 4294967295.
type	(Optional) Displays the event types being logged.
interfaces	Displays interface information.
<i>interface-type</i>	(Optional) Specifies the interface type.
<i>interface-number</i>	(Optional) Specifies the interface number.
detail	(Optional) Displays detailed information about an interface (or interfaces).
<i>interface-type</i>	(Optional) Specifies the interface type.

<i>interface-number</i>	(Optional) Specifies the interface number.
neighbors	Displays neighbors discovered by Cisco SAF.
detail	(Optional) Displays detailed information about a neighbor interface (or interfaces).
<i>interface-type</i>	(Optional) Specifies the neighbor interface type.
<i>interface-number</i>	(Optional) Specifies the neighbor interface number.
sia-event	Displays logged Stuck In Active (SIA) information.
<i>starting-event-number</i>	(Optional) Specifies the starting event number between 1 and 4294967295.
<i>ending-event-number</i>	(Optional) Specifies the ending event number between 1 and 4294967295.
sia-statistics	Displays logged SIA statistic information.
<i>ip-address</i>	(Optional) Specifies the IP address of the neighbor to display information about.
subscriptions	Displays subscription information.
detail	(Optional) Displays detailed information about a subscription.
timers	Displays timer information.
traffic	Displays traffic statistical information.

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Using **show eigrp service-family ipv4** command in user EXEC or privileged EXEC mode to see a summary of information on EIGRP IPv4 service families.

**Note**

Using the **show eigrp service-family ipv6** commands requires an IPv6-enabled SAF client, which currently does not exist.

Examples

The following is sample output from the **show eigrp service-family ipv4 accounting** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 accounting

EIGRP-SFv4 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/
      Address/Source   Interface      Count    Count     Reset(s)
-----
A     10.0.0.2           Et0/0          2         0         0
```

[Table 4](#) describes the significant fields shown in the **show eigrp service-family ipv4 accounting** command output.

Table 4 *show eigrp service-family ipv4 accounting Field Descriptions*

Field	Description
EIGRP SFv4 VR(saf) Accounting	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 learned 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 a suspended or penalized state because the maximum prefix limit has been exceeded. D-Down: Neighbor adjacency or redistribution is suspended permanently until a manual reset is performed with the clear ip route command.
Address/Source	Shows the peer IP address of the redistribution source.
Interface	Specifies the interface type.
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 that 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 (pending) 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.

The following is sample output from the **show eigrp service-family ipv4 clients** command:

```
Router> enable
Router# show eigrp service-family ipv4 autonomous-system 1 clients

EIGRP-SFv4 VR(saf) Clients for AS(1)ID(10.0.0.1)

Client                               Callback
Handle Name                           Context/pid/Registered (Y/N)
  1 example                          0x00000000/ 3/N
  2 CME                               0x00000000/ 3/N
```

The following is sample output from the **show eigrp service-family ipv4 clients detail** command:

```
Router> enable
Router# show eigrp service-family ipv4 autonomous-system 1 clients detail

EIGRP-SFv4 VR(saf) Clients for AS(1)ID(10.0.0.1)

Client                               Callback
Handle Name                           Context/pid/Registered (Y/N)
  1 Test                               0x00000000/ 3/N
    Subscribed Services/Notifications: 0/0
    Published Services/Size(kB): 0/0
    Sequence Number Updated: 0

  2 CME                               0x00000000/ 3/N
    Subscribed Services/Notifications: 1/1
    Published Services/Size(kB): 1/2
    Sequence Number Updated: 2
```

Table 5 describes the significant fields shown in the **show eigrp service-family ipv4 clients** command output.

Table 5 *show eigrp service-family ipv4 clients Field Descriptions*

Field	Description
Client Handle	Displays the Cisco SAF Client handle assigned to this client.
Name	Displays the name given to the Cisco SAF Client on registering.
Context	Displays the context given to the specified Cisco SAF Client on registering, used in callbacks.
Pid	Displays the Process ID of a specified client.
Callback Registered (Y/N)	Displays whether a specified client has registered for callbacks.
Subscribed Services	Displays the number of services that a specified Cisco SAF Client has subscribed to.
Notifications	Displays the number of notifications received by the specified client.
Published Services	Displays the number of services that the specified client has currently published.
Size	Displays the total size (kilobytes) of the service the specified client has currently published.
Sequence Number Updated	Displays the number of times that the specified client has updated the sequence number of an existing service.

The following is sample output from the **show eigrp service-family ipv4 interfaces** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 interfaces

EIGRP service-family neighbors for process 4453

Xmit Queue Mean      Pacing Time      Multicast   Pending
Interface Peers  Un/Reliable SRTTUn/Reliable Flow Timer      Services
Se0         1      0/0      28      0/15      127      0
Se1         1      0/0      44      0/15      211      0
```

The following is sample output from the **show eigrp service-family ipv4 interfaces detail** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 interfaces detail Loopback 1

          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[GFM1]EIGRP service-family neighbors for process 4453
```

[Table 6](#) describes the significant fields shown in the **show eigrp service-family ipv4 interfaces** command output.

Table 6 *show eigrp service-family ipv4 interfaces Field Descriptions*

Field	Description
Interface	Interface over which EIGRP is configured.
Peers	Number of directly connected EIGRP neighbors.
Xmit Queue	Transmit queues.
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	Pacing time.
Un/Reliable	Pacing time used to determine when reliable and unreliable EIGRP packets should be sent out.
Multicast Flow Timer	Maximum number of seconds for which the system sends multicast EIGRP packets.
Pending Services	Number of services in the packets that are sitting in the transmit queue waiting to be sent.

The following is sample output from the **show eigrp service-family ipv4 neighbors** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 neighbors

EIGRP SFv4 VR(test) Service-Family Neighbors for AS(4453)

Address      Interfaces  Hold Uptime      SRTT   RTO    Q      Seq
              (sec)      ((sec))          (msec)      Cnt    Num
10.1.1.1     Ethernet0/0  13 00:00:41     30     1014   0      16
10.1.2.1     Ethernet0/0  14 00:02:02     20      200   0      10
```

The following is sample output from the **show eigrp service-family ipv4 neighbors detail** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 neighbors detail

EIGRP SFv4 VR(test) Service-Family Neighbors for AS(4453)

Address      Interfaces  Hold Uptime      SRTT   RTO    Q      Seq
              (sec)      ((sec))          (msec)      Cnt    Num
10.1.1.1     Ethernet0/0  14 00:00:41     1      3000   0      80
    Version 5.0/3.0, Retrans: 1, Retries: 0
    Topology-ids from peer - 0
    Receive-Only Peer Advertising (No) Routes
    Suppressing queries
10.1.2.1     Ethernet0/1  13 00:02:02     28      200   0      883
    Version 5.0/3.0, Retrans: 1, Retries: 0, Prefixes: 1
    Topology-ids from peer - 0
    Stub Peer Advertising (CONNECYTED) Routes
```

[Table 7](#) describes the significant fields shown in the **show eigrp service-family ipv4 neighbors** command output.

Table 7 *show eigrp service-family ipv4 neighbors Field Descriptions*

Field	Description
Address	IP address of the peer.
Interfaces	Interface on which the router is receiving hello packets from the peer.
Hold Uptime	Length of time, in seconds, that the router will wait to hear from the peer before declaring it down.
SRTT	Smooth round-trip time. This is the number of milliseconds it takes for an EIGRP packet to be sent to this neighbor and for the local router to receive an acknowledgement of that packet.
RTO	Retransmission timeout, in milliseconds. The amount of time the system waits before retransmitting a packet from the retransmission queue to a neighbor.
Q Cnt	Number of packets (update, query, and reply) that the system is ready to send.
Seq Num	Sequence number of the last update, query, or replay packet that was received from this neighbor.
Version	EIGRP version and EIGRP packet version of the neighbor.
Receive-Only Peer Advertising	Neighbor is configured as an EIGRP stub, receive-only, router.

Table 7 *show eigrp service-family ipv4 neighbors Field Descriptions (continued)*

Field	Description
Stub Peer Advertising (CONNECTED)	Neighbor is configured as an EIGRP stub, connected, router.
Suppressing queries	EIGRP queries are not sent to this peer because it is receive-only.

The following is sample output from the **show eigrp service-family ipv4 traffic** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 traffic

EIGRP service-family Traffic Statistics for process 4453
  Hello sent/received: 218/205
  Updates sent/received: 7/23
  Queries sent/received: 2/0
  Replies sent/received: 0/2
  Acks sent/received: 21/14
  SIA-Queries sent/received: 0/0
  SIA-Replies sent/received 0/0
  Hello Process ID: 121
  PDM Process ID: 120
  Socket Queue: 0/2000/2/0
  (current/max/highest/drops)
  Input Queue: 0/2000/2/0
  (current/max/highest/drops)
```

[Table 8](#) describes the significant fields shown in the **show eigrp service-family ipv4 traffic** command output.

Table 8 *show eigrp service-family ipv4 traffic Field Descriptions*

Field	Description
process	Autonomous system number specified in the configuration command.
Hellos	Displays the number of sent and received hello messages.
Updates	Displays the number of sent and received update messages.
Queries	Displays the number of sent and received query messages.
Replies	Displays the number of sent and received reply messages.
Acks	Displays the number of sent and received acknowledge messages.
SIA-Queries	Displays the number of sent and received stuck-in-active queries.
SIA-Replies	Displays the number of sent and received stuck-in-active replies.
Hello Process ID	Displays the hello process ID.
PDM Process ID	Displays the PDM process ID.

Table 8 *show eigrp service-family ipv4 traffic Field Descriptions (continued)*

Field	Description
Socket Queue	Displays the current, maximum, and highest seen queue depth for the output socket. Displays the number of packets dropped due to the queue being full.
Input Queue	Displays the current, maximum, and highest seen queue depth for the input socket. Displays the number of packets dropped due to the queue being full.

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 service-family external-client

To display information about Cisco Service Advertisement Framework (Cisco SAF) external clients, use the **show eigrp service-family external-client** command in user EXEC or privileged EXEC mode.

show eigrp service-family external-client [*client-label*]

Syntax Description

client-label (Optional) Displays detailed client information for the specified client label.

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.
15.1(2)S	The command was modified. The output was revised to include additional information about the clients, such as basename and socket ID.
Cisco IOS XE Release 3.3S	The command was modified. The output was revised to include additional information about the clients, such as basename and socket ID.

Usage Guidelines

Use the **show eigrp service-family external-client** command in user or privileged EXEC mode to see a summary of the information about Cisco SAF external clients that are currently registered with the Cisco SAF system.

Examples

The following is sample output from the **show eigrp service-family external-client** command if any clients are registered:

```
Router# show eigrp service-family external-client
SAF External Clients
```

```
example-using-basename (basename)
  Client Socket   Keep  Address      Port  Tag
  Handle FD      (ms)
  1      1      3268319  10.1.1.1    47519 @12
  2      2      3268347  192.168.100.101 36997 @1
```

```
example-configured-but-no-clients-connected
No connected clients
```

```
example-client-without-basename
  Client Socket   Keep  Address      Port  Tag
  Handle FD      (ms)
  3      3      208373  10.1.1.2    51294 --
```

Table 9 describes the significant fields shown in the display.

Table 9 *show eigrp service-family external-client Field Descriptions*

Field	Description
Client Handle	Specifies the Cisco SAF internal client handle.
Socket FD (File Descriptor)	Specifies the socket API file descriptor for this Cisco SAF External Client.
Keep (ms)	Specifies the remaining keepalive time (in milliseconds) before the client will be disconnected if no further communications are received from the client.
Address	Specifies the IP address of the selected external client.
Port	Specifies the TCP port number of the selected external client.
Tag	Specifies the identifying tag provided by the client if the <i>client-label</i> argument was configured using the basename keyword. The basename keyword allows SAF external clients to uniquely identify themselves using the naming convention in the form of <i>client-label@tag</i> (where tag is a number from 1 to 50).

The following is sample output from the **show eigrp service-family external-client** *client-label* command if the specified client is registered:

```
Router# show eigrp service-family external-client example-using-basename@12
SAF External Client "example-using-basename" (basename)
  Listening on port 1024, keepalive time 3600000 ms
  VR(saf) SFv4 AS(1) Topology(base)

Client Socket  Keep  Address          Port  Tag
Handle  FD      (ms)
1       1       3322871  10.1.1.1        47519 @12
Client name "thisistheclientnameweprovided"
Page size 1, currently allowed to send 1
Protocol version 1.0
2 subscriptions
```


Table 10 describes the significant fields shown in the display.

Table 10 *show eigrp service-family external-client client-label Field Descriptions*

Field	Description
Client name	Specifies the descriptive name provided by the client to identify itself.
Page size	Specifies the page size provided by the client and specifies the number of additional requests allowed to be sent at the time the show command is issued (between 0 and the number specified for Page size).
Protocol version	Specifies the version of the SAF External Client protocol being used by the client to communicate with the SAF forwarder.
subscriptions	Specifies the number of SAF subscriptions owned by the client. When the number of subscriptions is 0, this field displays “No subscriptions”.

Related Commands

Command	Description
clear eigrp service-family	Clears entries from the EIGRP neighbor table.
show eigrp service-family	Displays EIGRP IPv4 service-family information.
show eigrp service-family ipv4 topology	Displays information in the EIGRP IPv4 service-family topology table.
show eigrp service-family ipv6 topology	Displays information in the EIGRP IPv6 service-family topology table.
external-client	Configures a Cisco SAF Service Advertisement Framework (Cisco SAF) External Client.

show eigrp service-family ipv4 topology

To display topology information for an Enhanced Interior Gateway Routing Protocol (EIGRP) IPv4 service family, use the **show eigrp service-family ipv4 topology** command in user EXEC or privileged EXEC mode.

```
show eigrp service-family ipv4 [vrf vrf-name] autonomous-system-number topology
[service-instance-number |
active |
all-links |
detail-links |
pending
service-type [connected | external | internal | local | redistributed | summary] |
summary |
zero-successors]
```

Syntax	Description
vrf	(Optional) Specifies all virtual routing forwarding (VRF) instance tables or a specific VRF table for an IP address.
<i>vrf-name</i>	(Optional) Names a specific VRF table for an IPv4 address.
<i>autonomous-system-number</i>	Specifies the autonomous-system number.
<i>service-instance-number</i>	(Optional) Displays detailed information about the specified service-instance number. Service-instance numbers display as service:subservice:instance.instance.instance. Service-instance numbers can range from 1:1:0.0.0.1 to 65534:65534:FFFFFFFF.FFFFFFFFF.FFFFFFFFF.FFFFFFFFFE.
active	(Optional) Displays only active entries in the topology table.
all-links	(Optional) Displays all service sources (including non-feasible sources) in the topology table.
detail-links	(Optional) Specifies all links in the topology table.
pending	(Optional) Displays all active entries in the topology table that are waiting either for an update or reply from a neighbor.
service-type	(Optional) Specifies the service with the given type in the topology table.
connected	(Optional) Displays only connected services.
external	(Optional) Displays all external services.
internal	(Optional) Displays all internal services.
local	(Optional) Display all locally originated services.
redistributed	(Optional) Displays all redistributed services.
summary	(Optional) Displays all summary services.
summary	(Optional) Specifies a summary of the topology table.
zero-successors	(Optional) Displays only services in the topology table that have zero successors.

Command Modes

User EXEC (>)
Privileged EXEC (#)

show eigrp service-family ipv4 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.
12.2(33)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **show eigrp service-family ipv4 topology** command in user EXEC or privileged EXEC mode to see a summary of information on EIGRP IPv4 service-families services.

Examples

The following is sample output from the **show eigrp service-family ipv4 topology** command:

```
Router> enable
Router# show eigrp service-family ipv4 4453 topology

EIGRP-SFv4 Topology Table for process 4453

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply, r - Reply status

P 1:2:0.0.0.3, 2 successors, FD is 0
   via 10.16.80.28 (46251776/46226176), Ethernet0
   via 10.16.81.28 (46251776/46226176), Ethernet1
   via 10.16.80.31 (46277376/46251776), Serial0

P 4:5:0.0.0.6, 1 successors, FD is 37200
   via Connected, Ethernet1
   via 10.16.81.28 (307200/281600), Ethernet1S
   via 10.16.80.28 (307200/281600), Ethernet0
   via 10.16.80.31 (332800/307200), Serial0
```

The following is sample output from the **show eigrp service-family ipv4 topology** command for a specified service:

```
Router> enable
Router# show eigrp service-family ipv4 4453 topology 1:2:0.0.0.3

EIGRP-SFv4 VR(example) Topology Table entry for AS(4453)/ID(10.1.1.1)1:2:0.0.0.3
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
Service Description Blocks:
1:2:3:0.0.0.3 (Ethernet0/0), from 10.2.1.1, 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
External data:
  Originating router is 10.89.245.1
  AS number of route is 0
  External protocol is Connected, external metric is 0
  Administrator tag is 0 (0x00000000)
```

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply, r - Reply status

```
P 1:2:0.0.0.3, 2 successors, FD is 0
  via 10.16.80.28 (46251776/46226176), Ethernet0
  via 10.16.81.28 (46251776/46226176), Ethernet1
  via 10.16.80.31 (46277376/46251776), Serial0

P 4:5:0.0.0.6, 1 successors, FD is 37200
  via Connected, Ethernet1
  via 10.16.81.28 (307200/281600), Ethernet1S
  via 10.16.80.28 (307200/281600), Ethernet0
  via 10.16.80.31 (332800/307200), Serial0
```

Table 11 describes the significant fields shown in the **show eigrp service-family ipv4 topology** command output.

Table 11 *show eigrp service-family ipv4 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 an update packet was sent to this destination.
Q	Query—Indicates that a query packet was sent to this destination.
R	Reply—Indicates that a reply packet was sent to this destination.
r	Reply status—A flag set after the service has sent a query and is waiting for a reply.
1:2:0.0.0.3	Service number.
successors	Number of successors. 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	Flexible distance—The best metric to reach the destination or the best metric that was known when the service went active.
via	IP address of the peer that told the service about this destination. The first n of these entries, where n is the number of successors, is the current successors. The remaining entries in the list are feasible successors. If “all-links” or “detailed-links” is specified, the feasible successors are followed by sources that are neither successors nor feasible successors.

Table 11 *show eigrp service-family ipv4 topology Field Descriptions*

Field	Description
(46251776/46226176)	Two EIGRP metric numbers. The first number represents the cost to the destination; the second number is the metric that this peer advertised.
Ethernet0	Indicates the interface from which this information was learned.

Related Commands

Command	Description
clear eigrp service-family	Clears entries from the EIGRP neighbor table.
show eigrp service-family	Displays information about Cisco SAF service-family Clients, External Clients, and subscriptions.
show eigrp service-family external-client	Displays information about the Cisco SAF service-family External Clients.
show eigrp service-family ipv6 topology	Displays information from the Cisco SAF IPv6 service-family topology table.

show eigrp service-family ipv6 topology

To display topology information for an Enhanced Interior Gateway Routing Protocol (EIGRP) IPv6 service family, use the **show eigrp service-family ipv6 topology** command in user EXEC or privileged EXEC mode.

```
show eigrp service-family ipv6 [vrf vrf-name] autonomous-system-number topology
[service-instance-number |
active |
all-links |
detail-links |
pending
service-type [connected | external | internal | local | redistributed | summary] |
summary |
zero-successors]
```

Syntax Description

vrf	(Optional) Specifies all virtual routing forwarding (VRF) instance tables or a specific VRF table for an IP address.
<i>vrf-name</i>	(Optional) Names a specific VRF table for an IPv6 address.
<i>autonomous-system-number</i>	Specifies the autonomous-system number.
<i>service-instance-number</i>	(Optional) Displays detailed information about the specified service-instance number. Service-instance numbers display as service:subservice:instance.instance.instance. Service-instance numbers can range from 1:1:0.0.0.1 to 65534:65534:FFFFFFFF.FFFFFFFFF.FFFFFFFFF.FFFFFFFFFE.
active	(Optional) Displays only active entries in the topology table.
all-links	(Optional) Displays all service sources (including non-feasible sources) in the topology table.
detail-links	(Optional) Specifies all links in the topology table.
pending	(Optional) Displays all active entries in the topology table that are waiting for an update or reply from a neighbor.
service-type	(Optional) Specifies the service with the given type in the topology table.
connected	(Optional) Displays only connected services.
external	(Optional) Displays all external services.
internal	(Optional) Displays all internal services.
local	(Optional) Display all locally originated services.
redistributed	(Optional) Displays all redistributed services.
summary	(Optional) Displays all summary services.
summary	(Optional) Specifies a summary of the topology table.
zero-successors	(Optional) Displays only services in the topology table that have zero successors.

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **show eigrp service-family ipv6 topology** command in user EXEC or privileged EXEC mode to see a summary of information on EIGRP IPv6 service-family topology services.

**Note**

Using the **show eigrp service-family ipv6 topology** commands requires an IPv6-enabled SAF client, which currently does not exist.

Examples

The following is sample output from the **show eigrp service-family ipv6 topology** command:

```
Router> enable
Router# show eigrp service-family ipv6 4453 topology

EIGRP-SFv4 Topology Table for process 4453

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply, r - Reply status

P 1:2:0.0.0.3, 2 successors, FD is 0
   via 10.16.80.28 (46251776/46226176), Ethernet0
   via 10.16.81.28 (46251776/46226176), Ethernet1
   via 10.16.80.31 (46277376/46251776), Serial0

P 4:5:0.0.0.6, 1 successors, FD is 37200
   via Connected, Ethernet1
   via 10.16.81.28 (307200/281600), Ethernet1S
   via 10.16.80.28 (307200/281600), Ethernet0
   via 10.16.80.31 (332800/307200), Serial0
```

The following is sample output from the **show eigrp service-family ipv6 topology** command for a specified service:

```
Router> enable
Router# show eigrp service-family ipv6 4453 topology 1:2:0.0.0.3

EIGRP-SFv4 VR(example) Topology Table entry for AS(4453)
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
Service Description Blocks:
1:2:3.0.0.0.3 (Ethernet0/0), from 10.2.1.1, 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
External data:
  Originating router is 10.89.245.1
```

```
AS number of route is 0
External protocol is Connected, external metric is 0
Administrator tag is 0 (0x00000000)
```

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply, r - Reply status

```
P 1:2:0.0.0.3, 2 successors, FD is 0
  via 10.16.80.28 (46251776/46226176), Ethernet0
  via 10.16.81.28 (46251776/46226176), Ethernet1
  via 10.16.80.31 (46277376/46251776), Serial0

P 4:5:0.0.0.6, 1 successors, FD is 37200
  via Connected, Ethernet1
  via 10.16.81.28 (307200/281600), Ethernet1S
  via 10.16.80.28 (307200/281600), Ethernet0
  via 10.16.80.31 (332800/307200), Serial0
```

Table 12 describes the significant fields shown in the **show eigrp service-family ipv6 topology** command output.

Table 12 *show eigrp service-family ipv6 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 an update packet was sent to this destination.
Q	Query—Indicates that a query packet was sent to this destination.
R	Reply—Indicates that a reply packet was sent to this destination.
r	Reply status—A flag set after the service has sent a query and is waiting for a reply.
1:2:0.0.0.3	Service number.
successors	Number of successors. 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	Flexible distance—The best metric to reach the destination or the best metric that was known when the service went active.

Table 12 *show eigrp service-family ipv6 topology Field Descriptions*

Field	Description
via	IP address of the peer that told the service about this destination. The first n of these entries, where n is the number of successors, is the current successors. The remaining entries in the list are feasible successors. If “all-links” or “detailed-links” is specified, the feasible successors are followed by sources that are neither successors nor feasible successors.
(46251776/46226176)	Two EIGRP metric numbers. The first number represents the cost to the destination; the second number is the metric that this peer advertised.
Ethernet0	Indicates the interface from which this information was learned.

Related Commands

Command	Description
clear eigrp service-family	Clears entries from the EIGRP neighbor table.
show eigrp service-family	Displays information about Cisco SAF IPv4 service-family Clients, External Clients, and subscriptions.
show eigrp service-family external-client	Displays information about Cisco SAF service-family External Clients.
show eigrp service-family ipv4 topology	Displays information from Cisco SAF IPv4 service-family topology table.

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
```

show eigrp tech-support

```

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.

shutdown (service-family)

To disable an Enhanced Interior Gateway Routing Protocol (EIGRP) service family, or all service families and address families configured for a router preventing neighbor discovery and establishment and remove all services and registered clients, use the **shutdown** command in router configuration, service-family configuration mode, or service-family interface configuration mode.

To disable neighbor discovery and establishment on an interface, use the **shutdown** command in service-family interface configuration mode. This configuration does not affect clients or any locally published (connected) services.

To reenable the service-family protocol, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default Service-family protocol is enabled.

Command Modes
 Router configuration (config-router)
 Service-family configuration (config-router-sf)
 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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines Use the **shutdown** command to disable the service-family protocol for a specific routing instance. The service-family protocol continues to run and the current service-family configurations are available; however the service-family protocol will not create any adjacencies on any interface and will clear the service-family topology database.

Examples

The following example shows the placement of the **shutdown** command for each configuration level:

```
Router(config-router)# shutdown  
Router(config-router-sf)# shutdown  
Router(config-router-sf-interface)# shutdown
```

Related Commands

Command	Description
router eigrp	Configures the EIGRP process.
sf-interface	Configures interface-specific commands under the service-family interface configuration mode.

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

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.

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	<i>seconds</i>	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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

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.

topology

To configure topology-specific commands for an Enhanced Interior Gateway Routing Protocol (EIGRP) service family, use the **topology** command in service-family interface configuration mode. To disable the service-family topology configuration mode, use the **no** form of this command.

topology {base}

no topology {base}

Syntax Description

base	Configures the base topology.
-------------	-------------------------------

Command Modes

Service-family configuration (config-router-sf)

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **topology** command to configure Cisco SAF for multitopology networks.



Note

In Cisco IOS Release 15.0(1)M, only the base topology is supported.

Use the **show eigrp service-family ipv4 topology** command to verify the topology base configuration.

Examples

The following example configures the base topology:

```
Router(config)# router eigrp virtual-name
Router(config-router)# service-family ipv4 autonomous-system 4533
Router(config-router-sf)# sf-interface default
Router(config-router-sf-interface)# no shutdown
Router(config-router-sf-interface)# exit-sf-interface
Router(config-router-sf)# topology base
```

Related Commands

Command	Description
exit-service-family	Exits service-family configuration mode.
exit sf-interface	Exits service-family interface configuration mode.
router eigrp	Configures the EIGRP process.
sf-interface	Configures interface-specific commands under the service-family interface configuration mode.
show eigrp service-family ipv4 topology	Displays information on EIGRP service-family IPv4 topologies.
shutdown	Disables service family on the interface.

username (SAF)

To configure username for a Cisco SAF External-Client, use the **username** command in external-client label configuration mode. To negate the username, use the **no** form of this command.

username *name*

no username *name*

Syntax Description

<i>name</i>	Specifies the name for the external client between 1 and 64 characters.
-------------	---

Command Modes

External-client label configuration (config-external-client-mode)

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)SX14	This command was integrated into Cisco IOS Release 12.2(33)SX14.

Usage Guidelines

Use the **username** command to configure Cisco SAF External Clients. Entering a new username value overwrites the old value, but the new value will only take affect after the Cisco SAF External Client re-registers.

Use the **show eigrp service-family ipv4 external-client** command to verify the Cisco SAF External Client configuration.

Examples

The following example configures a Cisco SAF External Client named example:

```
Router(config)# service-family external-client listen ipv4 2444
Router(config-external-client)# external-client example
Router(config-external-client-mode)# username example
```

Related Commands

Command	Description
external-client	Configures Cisco SAF External Clients.
service-family external-client listen	Configures Cisco SAF External Client listen TCP ports.
show eigrp service-family ipv4 external-client	Displays information on Cisco SAF External Clients.