

scramble through service-module t1 lbo

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scramble

To enable scrambling (encryption) of the payload on a T3 or E3 controller or on the PA-T3 and PA-E3 port adapters, use the **scramble** command in interface configuration mode. To disable scrambling, use the **no** form of this command.

scramble
no scramble

Syntax Description

This command has no arguments or keywords.

Command Default

Scrambling is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1CA	This command was introduced.
12.2(11)YT	This command was integrated into Cisco IOS Release 12.2(11)YT and implemented on the following platforms: Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 series, Cisco 3725, and Cisco 3745 routers.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

T3/E3 scrambling is used to assist clock recovery on the receiving end. Scrambling is designed to randomize the pattern of 1s and 0s carried in the physical layer frame. Randomizing the digital bits can prevent continuous, nonvariable bit patterns--in other words, long strings of all 1s or all 0s. Several physical layer protocols rely on transitions between 1s and 0s to maintain clocking.

Scrambling can prevent some bit patterns from being mistakenly interpreted as alarms by switches placed between the Data Service Units (DSUs).

The local interface configuration must match the remote interface configuration. For example, if you enable scrambling on the local port, you must also do the same on the remote port.

To verify that scrambling is configured on the interface, use the **showcontrollersserial**or the **showinterfacesserial**commands.

For T3 controllers, all the DSU modes support scrambling except Clear mode.

For E3 controllers, only Kentrox mode supports scrambling.

Examples

The following example enables scrambling on the PA-E3 port adapter in slot 1, port adapter slot 0, interface 0:

```
Router(config)# interface serial 1/0/0
Router(config-if)# scramble
```

The following example enables scrambling on the controller in slot 1, port 0:

```
Router(config)# interface serial 1/0
Router(config-if)# scramble
```

Related Commands

Command	Description
show controllers serial	Displays information that is specific to the serial controllers.
show interfaces serial	Displays information that is specific to the interface hardware.

serial restart-delay

To set the amount of time that the router waits before trying to bring up a serial interface when it goes down, use the **serialrestart-delay** command in interface configuration mode. To restore the default, use the **no** form of the command.

serial restart-delay *count*
no serial restart-delay

Syntax Description

count	Frequency, in milliseconds, at which the hardware is reset. Range is from 0 to 900. Default is 0.

Command Default

0 milliseconds

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
11.2 P	This command was introduced.
12.2(4)T	The *count* value was changed to set time in milliseconds rather than in seconds.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(2)S	This command was integrated into Cisco IOS Release 15.1(2)S.

Usage Guidelines

The router resets the hardware each time the serial restart timer expires. This command is often used with the dial backup feature and with the **pulse-time** command, which sets the amount of time to wait before redialing when a DTR dialed device fails to connect.

When the*count*value is set to the default of 0, the hardware is not reset when it goes down. In this way, if the interface is used to answer a call, it does not cause DTR to drop, which can cause a communications device to disconnect.

Examples

The following example shows how to set the restart delay on serial interface 0 to 0:

```
Router(config)# interface serial 0
Router(config-if)# serial restart-delay 0
```

Related Commands

Command	Description
pulse-time	Enables pulsing DTR signal intervals on the serial interfaces.
show interfaces serial	Displays information about a serial interface.

server ip address

To configure a static IP address for the Cisco E-Series Server, use the **server ip address** command in interface configuration mode.

server ip address [*ip_address subnet_mask*]
no server ip address

Syntax Description

ip_address	Configures a static IP address for the Cisco E-Series Server.
subnet_mask	The subnet mask associated with the IP address.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
15.2(4)M	This command was introduced.

Usage Guidelines

Use this command from interface configuration mode:

```
Router(config)# interface ucse slot/port
```

Examples

The following example shows how to configure a static IP address for the Cisco E-Series Server:

```
Router(config)# interface ucse 2/0
Router(config-if)# server ip address 10.0.0.2 100.1.1.31
```

service alarm persistency interval

To configure alarm history that helps in defining the periodicity or the interval at which the alarm entries are saved in the designated file., use the **service alarm persistency interval** command.

Syntax Description

Syntax Description

service alarm persistency interval *value*	Configures the alarm history helps in defining the periodicity or the interval at which the alarm entries are saved in the designated file. When alarm history is configured, two log files are created in bootflash:tracelogs.

Command Default

This default is 20 seconds.

Command Modes

Global configuration

Command History

Release	Modification
XE 3.18 SP	Support for this command was introduced on NCS 4200 Series.
XE Everest 16.5.1	This command was integrated on the Cisco NCS 4200 Series and Cisco ASR 900 Series Routers.

Examples

The following example shows the configuration of alarm history:

```
enable
configure terminal
service alarm persistency interval 20-600
end
```

Related Commands

Command	Description
show process | include persis	Verifies the validity of the process during alarm history configuration.

service declassify

To enable the declassification function to monitor the auxiliary (AUX) port Clear To Send (CTS) pin, use the **servicedeclassify** command in global configuration mode. To disable, use the **no** form of this command.

service declassify [**erase-flash** | **erase-nvram** | **erase-all**]
no service declassify [**erase-flash** | **erase-nvram** | **erase-all**]

Syntax Description

erase-flash	(Optional) Erases all files in the Flash memory file system when declassification is invoked.
erase-nvram	(Optional) Erases all files in the NVRAM file system when declassification is invoked.
erase-all	(Optional) Scrubs and erases all files on the router when declassification is invoked.

Note The **servicedeclassify** command is supported on the Cisco 3200 series routers only.

Command Default

Zeroization is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.3(8)YD	This command was introduced.
12.4(2)T	This command was integrated into Cisco IOS Release 12.4(2)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The network interfaces are shut down when declassification is invoked.

No command-line interface (CLI) command invokes the declassification process. Declassification is invoked by using an external signal that appears on the AUX port of the router. When declassification is complete, the ROMMON prompt appears on the console.

The output that appears on the console when declassification is initiated depends on what options have been configured. Because of the complex interactions between the declassification process and the logging process during declassification, it is not possible to document exactly what appears on the screen.

Examples

The following example shows the console output when declassification is invoked:

The erase-all Keyword

The output on the console when the **erase-all** keyword is used resembles the following:

```
Router# service declassify erase-all
*Mar  5 17:44:28.347:
Declassification initiated...
*Mar  5 17:44:30.647: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to
administratively down
*Mar  5 17:44:31.647: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to down
System Bootstrap, Version 12.2(1r) [hftseng-MRC_RM 100], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2002 by cisco Systems, Inc.
C3200 platform with 131072 Kbytes of main memory
rommon 1 >
```



Note If the **servicedeclassifyerase-all** command is configured and the Flash file system is erased, error recovery actions must be initiated to load a bootable image on the router. The startup configuration file is also erased; the router boots from the factory default configuration the next time it is booted.

The erase-flash Keyword

The output on the console when the **erase-flash** keyword is used resembles the following:

```
Router# service declassify erase-flash
*Mar  1 00:01:30.091:
Declassification initiated...
*Mar  1 00:01:34.347: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to
administratively down
*Mar  1 00:01:35.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to down
System Bootstrap, Version 12.2(1r) [hftseng-MRC_RM 100], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2002 by cisco Systems, Inc.
C3200 platform with 131072 Kbytes of main memory
rommon 1 >
```



Note The Flash file system is erased and there will not be a bootable image for the router in the Flash file system if the **servicedeclassifyerase-flash** command is configured. Error recovery actions must be initiated to load a bootable image. The startup configuration file is not erased if the **servicedeclassifyerase-flash** command is configured. When the router is booted, it is configured using its startup configuration file in NVRAM.

The erase-nvram Keyword

The output on the console when the **erase-nvram** keyword is used resembles the following:

```
Router# service declassify erase-nvram
System Bootstrap, Version 12.2(1r) [hftseng-MRC_RM 100], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2002 by cisco Systems, Inc.
C3200 platform with 131072 Kbytes of main memory
rommon 1 >
```

Note If the **servicedeclassifyerase-nvram** command is configured, the Flash file system is not erased. The bootable image in the Flash file system remains, and the router can be booted. The startup configuration file is erased; because the router has no configuration file, it boots from the default configuration

Related Commands

Command	Description
show declassify	Displays the state of the **servicedeclassify** command.

service-engine default-gateway

To define a default gateway router IP address for the Cisco WebEx Node SPA in a Cisco ASR 1000 Series Router, use the **service-enginedefault-gateway**command in interface configuration mode. To remove the default-gateway IP address, use the **no** form of this command.

service-engine default-gateway *gateway-ip-address*
no service-engine default-gateway *gateway-ip-address*

Syntax Description

gateway-ip-address	IP address of the router default gateway.

Command Default

No gateway IP address is configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

The **service-enginedefault-gateway** command specifies the IP address for the default gateway router to be used for the Cisco WebEx Node SPA.

A service-engine interface on the Cisco WebEx Node SPA has two IP addresses:

- Router-side IP address--Configured with the **ipaddress**command. The IP address on the router side acts like a gateway to the WebEx services running on the SPA side. This router-side IP address must match the IP address configured in the **service-enginedefault-gateway** command.
- Internal SPA interface IP address--Configured with the**service-engineipaddress**command.

You must configure the **service-engineipaddress** command before configuring the default gateway.

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Examples

The following example defines the gateway on IP address 10.200.72.17 as the default router for the SPA in slot 1/0/0, which corresponds to the IP address configured on the router side in the**ipaddress**command:

```
Router(config) interface Service-Engine1/0/0
Router(config-if) shutdown
Router(config-if) ip address 10.200.72.17 255.255.255.252
Router(config-if) service-engine ip address 10.200.72.18 255.255.255.252
Router(config-if) service-engine default-gateway 10.200.72.17
```

Related Commands

Command	Description
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine hostname

To specify or modify the hostname or domain name associated with a Cisco WebEx Node SPA on a Cisco ASR 1000 Series Router, use the **service-enginehostname**command in interface configuration mode. To remove the hostname and domain name association, use the **no** form of this command.

service-engine hostname *module-side-hostname module-side-domain-name*
no service-engine hostname *module-side-hostname module-side-domain-name*

Syntax Description

module-side-hostname	Name of the hostname associated with a Cisco WebEx Node SPA.
module-side-domain- name	Name of the domain associated with a Cisco WebEx Node SPA

Command Default

No hostname or domain name is configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

The **service-enginehostname**command specifies the hostname and domain names given to a Cisco WebEx Node SPA. It is an optional configuration and is only used if a Domain Name System (DNS) entry was created for the IP address assigned to the SPA.

To display the configured hostname and domain name for a Cisco WebEx Node SPA, use the **showhw-modulesubslotservice-enginestatus** command.

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Examples

The following example shows how to specify the hostname and domain name for a Cisco WebEx Node SPA:

```
Router(config)# interface service-engine 1/0
Router(config-if)# shutdown
Router(config-if)# service-engine hostname wma-spa-1 cisco.com
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.

Command	Description
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine ip address

To select and configure the internal interface for management traffic for the WebEx Node SPA on a Cisco ASR 1000 Series Router, use the **service-engineipaddress**command in interface configuration mode. To delete the IP address associated with this interface, use the **no** form of this command.

service-engine ip address *module-side-ip-address subnet-mask*
no service-engine ip address *module-side-ip-address subnet-mask*

Syntax Description

module-side-ip-address	Specifies the IP address of the internal network module-side interface.
subnet-mask	Specifies the subnet mask to append to the IP address.

Command Default

No IP address is configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

A service-engine interface on the Cisco WebEx Node SPA has two IP addresses:

- Router-side IP address--Configured with the **ipaddress**command. The IP address on the router side acts like a gateway to the WebEx services running on the SPA side. This router-side IP address must match the IP address configured in the **service-enginedefault-gateway** command.
- Internal SPA interface IP address--Configured with the**service-engineipaddress**command.

To successfully configure the service-engine IP address, consider the following guidelines:

- The router-side IP address must be configured using the **ipaddress** command.
- The service-engine IP address must be on the same subnet as the router-side IP address for the service-engine interface (configured using the **ipaddress**command.)
- The **service-engineipaddress**command must be configured before you configure the **service-enginedefault-gateway** command.

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Examples

The following example shows how to define an IP address for the internal SPA-side interface on the WebEx Node SPA in slot 1 using the **service-engineipaddress**command. The example shows the service-engine IP address on the same subnet as the router-side IP address that is configured with the **ipaddress** command:

```
Router(config) interface Service-Engine1/0/0
Router(config-if) shutdown
Router(config-if) ip address 10.200.72.17 255.255.255.252
Router(config-if) service-engine ip address 10.200.72.18 255.255.255.252
Router(config-if) service-engine default-gateway 10.200.72.17
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine nameserver

To specify the primary and secondary Domain Name System (DNS) used by the Cisco WebEx Node SPA in a Cisco ASR 1000 Series Router, use the **service-enginenameserver**command in interface configuration mode. To remove a DNS name server from the list, use the **no** form of this command.

service-engine nameserver *name-server1-ip-address name-server2-ip-address*
no service-engine nameserver *name-server1-ip-address name-server2-ip-address*

Syntax Description

name-server1-ip- address	IP address of the primary DNS name server for the WebEx Node SPA.
name-server2-ip- address	IP address of a secondary DNS name server for the WebEx Node SPA.

Command Default

No name servers are configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Examples

The following example shows how to specify the hosts at 192.168.2.111 and 192.168.2.112 as the primary and secondary name servers for the WebEx Node SPA in slot 1/0:

```
Router(config)# interface service-engine 1/0
Router(config-if)# shutdown
Router(config-if)# service-engine nameserver 192.168.2.111
 192.168.2.112
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.

Command	Description
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine wma-passcode

To configure the name and key that is used for authentication for a Cisco WebEx Node SPA in a Cisco ASR 1000 Series Router, use the **service-enginewma-passcode** command in interface configuration mode. To disable this function, use the **no** form of this command.

service-engine wma-passcode *name-string key-string*
no service-engine wma-passcode

Syntax Description

name-string	Specifies the authentication name for the WebEx Node SPA.
key-string	Specifies the authentication passcode for the WebEx Node SPA.

Command Default

The name and key used for authentication for a Cisco WebEx Node SPA is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

The **service-enginewma-passcode**command is used to configure the Cisco WebEx Node SPA name and passcode key to identify the node. Both the passcode and the token (configured using the **service-enginewma-token** command) are used together for authentication of the Cisco WebEx Node SPA.

Before you can configure this command, you must first provision the Cisco WebEx Node SPA at the WebEx Data Center. The value of the passcode string provisioned in the Cisco WebEx Node Management System for the SPA must match the value of the passcode string configured in the **service-enginewma-passcode**command. For more information, refer to the “Configuring the Cisco WebEx Node for ASR 1000 Series” chapter of the Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide .

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Once you configure the **service-enginewma-passcode** command and enter the *key-string* into the running configuration, the *key-string* is encrypted. Therefore, you cannot successfully copy the passcode from the running configuration or a backup version of your configuration file to running-configuration. The **service-enginewma-passcode** command must be re-entered.

Examples

The following example defines the authentication SPA name and passcode for the Cisco WebEx Node SPA in slot 1/0:

```
Router(config)# interface service-engine 1/0
```

```
Router(config-if)# shutdown
Router(config-if)# service-engine wma-passcode wma-spa-1 spa1pass
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine wma-token

To configure an encrypted token for a Cisco WebEx Node SPA in a Cisco ASR 1000 Series Router, use the **service-enginewma-token**command in interface configuration mode. To disable this function, use the **no** form of this command.

service-engine wma-token *token-string*
no service-engine wma-token

Syntax Description

token-string	Specifies the encrypted token for the WebEx Node SPA.

Command Default

The encrypted token for a Cisco WebEx Node SPA is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

The **service-enginewma-token**command is used to configure an encrypted token for the Cisco WebEx Node SPA. Both the token and the passcode (configured using the **service-enginewma-passcode**command) are used together for authentication of the Cisco WebEx Node SPA.

Before you can configure this command, you must first provision the Cisco WebEx Node SPA at the WebEx Data Center. The value of the token string provisioned in the Cisco WebEx Node Management System for the SPA must match the value of the passcode string configured in the **service-enginewma-token**command. For more information, refer to the “Configuring the Cisco WebEx Node for ASR 1000 Series” chapter of the Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide .

Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown**command.

Examples

The following example specifies the token for the Cisco WebEx Node SPA in slot 1/0:

```
Router(config)# interface service-engine 1/0
Router(config-if)# shutdown
Router(config-if)# service-engine wma-token 123456789
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.

Command	Description
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-url	Specifies the URL to which the Cisco WebEx Node SPA must connect to enable WebEx meetings.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service-engine wma-url

To specify the URL to which the Cisco WebEx Node SPA in a Cisco ASR 1000 Series Router must connect to enable WebEx meetings, use the **service-enginewma-url**command in interface configuration mode. To disable this function, use the **no** form of this command.

service-engine wma-url *url-string*
no service-engine wma-url

Syntax Description

url-string	Specifies the URL to connect to the WebEx MediaTone Center.

Command Default

No URL string is configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
IOS XE Release 2.4	This command was introduced.

Usage Guidelines

The**service-enginewma-url** command is used to configure the URL that enables connectivity to the WebEx Data Center.

Before you can configure this command, you must first provision the Cisco WebEx Node SPA at the WebEx Data Center. The URL string provisioned in the Cisco WebEx Node Management System for the SPA must match the value of the URL configured in the **service-enginewma-url**command. For more information, refer to the “Configuring the Cisco WebEx Node for ASR 1000 Series” chapter of the Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide .



Note Before you can configure the Cisco WebEx Node SPA, you must shut down the service-engine interface using the **shutdown** interface configuration command. To activate the service-engine interface, use the **noshutdown** command.

Examples

The following example specifies the URL to which the Cisco WebEx Node SPA in slot 1/0 must connect:

```
Router(config)# interface service-engine 1/0
Router(config-if)# shutdown
Router(config-if)# service-engine wma-url https://spa.webex.com
```

Related Commands

Command	Description
service-engine default-gateway	Defines a default gateway router IP address for the Cisco WebEx Node SPA.

Command	Description
service-engine ip address	Selects and configures the internal interface for management traffic on a Cisco WebEx Node SPA.
service-engine hostname	Specifies or modifies the hostname or domain name associated with a Cisco WebEx Node SPA.
service-engine nameserver	Specifies the primary and secondary domain name server used by the Cisco WebEx Node SPA.
service-engine wma-passcode	Configures the name and key that are used for authentication on a Cisco WebEx Node SPA.
service-engine wma-token	Configures an encrypted token on a Cisco WebEx Node SPA.
show hw-module subslot service-engine status	Displays the Cisco WebEx Node SPA application status.

service single-slot-reload-enable

To enable single line card reloading for all line cards in the Cisco 7500 series router, use the **servicesingle-slot-reload-enable**command in global configuration mode. To disable single line card reloading for the line cards in the Cisco 7500 series router, use the **no** form of this command.

service single-slot-reload-enable
no service single-slot-reload-enable

Syntax Description

This command has no arguments or keywords.

Command Default

Single line card reloading is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.0(13)S	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

In the following example, single line card reloading is enabled for all lines cards on the Cisco 7500 series router:

```
Router(config)# service single-slot-reload-enable
```

Related Commands

Command	Description
show diag	Displays hardware information for a networking device.
show running-config	Displays configuration information.

service-module

To set service module parameters, use the **service-module**commandinprivilegedEXEC mode.

service-module GigabitEthernet *interface-number* {**heartbeat-reset** {**disable** | **enable**} | **password-reset** | **reload** | **reset** | **session** [**clear**] | **shutdown** [**no-confirm**] | **statistics** [**clear**] | **status**}

Syntax Description

GigabitEthernet *interface-number*	Specifies the Gigabit Ethernet interface number.
heartbeat-reset	Specifies the heartbeat failure to reset the service module.
disable	Disables the heartbeat reset.
enable	Enables the heartbeat reset.
password-reset	Specifies the password reset for the service module.
reload	Reloads the service module.
reset	Resets the service module hardware.
session	Specifies the service module session.
clear	(Optional) Clears the existing service module session when used with the **session** keyword. Clears the service module statistics when used with the **statistics** keyword.
shutdown	Shuts down the service module.
no-confirm	(Optional) Configures the system not to confirm before the shutdown.
statistics	Specifies service module statistics.
status	Specifies service module status information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.

Usage Guidelines

Use this command with the **reset** keyword only to recover from the shutdown or failed state. Use the **shutdown** keyword for online removal of a service module. When you shut down a service module on switch modules, the line protocol on the GigabitEthernet interface goes down. If the line protocol does not go down, first shut down the interface using the **shutdown** command in interface configuration mode and then shut down the service module using the **service-moduleGigabitEthernet***interface-number***shutdown** command.

Examples

The following example shows how to disable the heartbeat reset:

```
Router# service-module GigabitEthernet 1/0 heartbeat-reset disable
```

The following example shows the status of the service module:

Router# **service-moduleGigabitEthernet1/0status**

```
Service Module is Cisco GigabitEthernet1/0
Service Module supports session via TTY line 66
Service Module is Shutdown
Service Module reset on error is disabled
Service Module heartbeat-reset is enabled
Service Module status is not available
```

The following example shows how to shut down an interface before shutting down the service module:

```
Router(config)# interface GigabitEthernet 1/0
Router(config-if)# shutdown
```

The following example shows how to shut down a service module:

```
Router# service-module GigabitEthernet 1/0 shutdown
```

Related Commands

Command	Description
show interfaces sm	Displays basic interface configuration information for service modules.
shutdown (interface)	Disables an interface.

service-module 56k clock rate

To configure the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module56kclockrate**command in interface configuration mode. To enable a network line speed of 56 kbps, which is the default, use the **no** form of this command.

service-module 56k clock rate commandservice-module 56k clock rate *speed*
no service-module 56k clock rate *speed*

Syntax Description

speed	Network line speed in kbps. The default speed is 56 kbps. Choose from one of the following optional speeds: • **2.4** -- 2.4 kbps • **4.8** -- 4.8 kbps • **9.6** -- 9.6 kbps • **19.2** -- 19.2 kbps • **38.4** -- 38.4 kbps • **56** -- 56 kbps (default) • **64** -- 64 kbps • **auto** --Automatic line speed mode. Configure this option if your line speed is constantly changing.

Command Default

56 kbps

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The 56-kbps line speed is available in switched mode, which is enabled using the **service-module56knetwork-type** interface configuration command on the 4-wire CSU/DSU. If you have a 2-wire CSU/DSU module, the default is automatically set to switched mode.

The 64-kbps line speed cannot be used with back-to-back digital data service (DDS) lines. The subrate line speeds are determined by the service provider.

The **auto**keyword enables the CSU/DSU to decipher current line speed from the sealing current running on the network. Use the **auto** keyword only when transmitting over telco DDS lines and the clocking source is taken from the line.

Examples

The following example displays two routers connected in back-to-back DDS mode. However, notice that at first the configuration fails because the **auto** option is used. Later in the example the correct matching configuration is issued, which is 38.4 kbps.

```
Router1(config)# interface serial 0
Router1(config-if)# service-module 56k clock source internal
Router1(config-if)# service-module 56k clock rate 38.4
Router2(config-if)# service-module 56k clock rate auto
Router1# ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
Router2(config-if)# service-module 56k clock rate 38.4

Router1# ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 52/54/56 ms
```

When transferring from DDS mode to switched mode, you must set the correct clock rate, as shown in the following example:

```
Router2(config-if)# service-module 56k network-type dds
Router2(config-if)# service-module 56k clock rate 38.4
Router2(config-if)# service-module 56k network-type switched
% Have to use 56k or auto clock rate for switched mode
% Service module configuration command failed: WRONG FORMAT.
Router2(config-if)# service-module 56k clock rate auto
% WARNING - auto rate will not work in back-to-back DDS.
Router2(config-if)# service-module 56k network-type switched
```

Related Commands

Command	Description
service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.
service-module 56k network-type	Sends packets in switched dial-up mode or DDS mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

service-module 56k clock source

To set up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module56kclocksource**command in interface configuration mode. To specify that the clocking come from the line, use the **no** form of this command.

service-module 56k clock source commandservice-module 56k clock source {**line** | **internal**} **no service-module 56k clock source** {**line** | **internal**}

Syntax Description

line	Uses the clocking provided by the active line coming in to the router. This is the default.
internal	Uses the internal clocking provided by the hardware module.

Command Default

Line clock

Command Modes

Interface configuration

Command History

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

Usage Guidelines

In most applications, the CSU/DSU should be configured with the **clocksourceline** command. For back-to-back configurations, configure one CSU/DSU with the **clocksourceinternal** command and the other with **clocksourceline** command.

Examples

The following example configures internal clocking and transmission speed at 38.4 kbps.

```
Router(config)# interface serial 0
Router(config-if)# service-module 56k clock source internal
Router(config-if)# service-module 56k clock rate 38.4
```

Related Commands

Command	Description
clock source (interface)	Controls the clock used by a G.703-E1 interface.
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

service-module 56k data-coding

To prevent application data from replicating loopback codes when operating at 64 kbps on a 4-wire CSU/DSU, use the **service-module56kdata-coding** command in interface configuration mode. To enable normal transmission, use the **no** form of this command.

service-module 56k data-coding {**normal** | **scrambled**}
no service-module 56k data-coding {**normal** | **scrambled**}

Syntax Description

normal	Specifies normal transmission of data. This is the default.
scrambled	Scrambles bit codes or user data before transmission. All control codes such as out-of-service and out-of-frame are avoided.

Command Default

Normal data transmission

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Enable the scrambled configuration only in 64-kbps digital data service (DDS) mode. If the network type is set to switched, the configuration is refused.

If you transmit scrambled bit codes, both CSU/DSUs must have this command configured for successful communication.

Examples

The following example s crambles bit codes or user data before transmission :

```
Router(config)# interface serial 0
Router(config-if)# service-module 56k clock rate 64
Router(config-if)# service-module 56k data-coding scrambled
```

Related Commands

Command	Description
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

service-module 56k network-type

To transmit packets in switched dial-up mode or digital data service (DDS) mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module56knetwork-type**command in interface configuration mode. To transmit from a dedicated leased line in DDS mode, use the **no** form of this command.

service-module 56k network-type {**dds** | **switched**}
no service-module 56k network-type {**dds** | **switched**}

Syntax Description

dds	Transmits packets in DDS mode or through a dedicated leased line. The default is DDS enabled for the 4-wire CSU/DSU.
switched	Transmits packets in switched dial-up mode. On a 2-wire, switched 56-kbps CSU/DSU module, this is the default and only setting.

Command Default

DDS is enabled for the 4-wire CSU/DSU. Switched is enabled for the 2-wire CSU/DSU.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

In switched mode, you need additional dialer configuration commands to configure dial-out numbers. Before you enable the **service-module56knetwork-typeswitched** command, both CSU/DSUs must use a clock source coming from the line and have the clock rate configured to **auto** or **56** kbps. If the clock rate is not set correctly, this command will not be accepted.

The 2-wire and 4-wire, 56/64-kbps CSU/DSU modules use V.25 *bis* dial commands to interface with the router. Therefore, the interface must be configured using the**dialerin-band** command. Data terminal ready (DTR) dial is not supported.



Note Any loopbacks in progress are terminated when switching between modes.

Examples

The following example configures transmission in switched dial-up mode :

```
Router(config)# interface serial 0
Router(config
-if)#
 service-module 56k clock rate auto
Router(config
-if)#
```

```
 service-module 56k network-type switched
Router(config
-if)#
 dialer in-band
Router(config
-if)#
 dialer string 5550111
Router(config
-if)#
 dialer-group 1
```

Related Commands

Command	Description
dialer in-band	Specifies that DDR is to be supported.
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.
service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.
service-module 56k switched-carrier	Selects a service provider to use with a 2- or 4-wire, 56/64-kbps dial-up serial line.

service-module 56k remote-loopback

To enable the acceptance of a remote loopback request on a serial interface on a 2- or 4-wire, 56/64-kbps CSU/DSU module, use the **service-module56kremote-loopback** command in interface configuration mode. To disable the module from entering loopback, use the **no** form of this command.

service-module 56k remote-loopback commandservice-module 56k remote-loopback
no service-module 56k remote-loopback commandservice-module 56k remote-loopback

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The **noservice-module56kremote-loopback** command prevents the local CSU/DSU from being placed into loopback by remote devices on the line. The line provider is still able to put the module into loopback by reversing sealing current. Unlike the T1 module, the 2- or 4-wire, 56/64-kbps CSU/DSU module can still initiate remote loopbacks with the **no** form of this command configured.

Examples

The following example enables transmitting and receiving remote loopbacks:

```
Router(config)# interface serial 0
Router(config
-if)
# service-module 56k remote-loopback
```

Related Commands

Command	Description
loopback remote (interface)	Loops packets through a CSU/DSU, over a DS3 link or a channelized T1 link, to the remote CSU/DSU and back.

service-module 56k switched-carrier

To select a service provider to use with a 2- or 4-wire, 56/64-kbps dial-up serial line, use the **service-module56kswitched-carrier** command in interface configuration mode. To enable the default service provider, use the **no** form of this command.

service-module 56k switched-carrier {**att** | **sprint** | **other**}
no service-module 56k switched-carrier {**att** | **sprint** | **other**}

Syntax Description

att	AT&T or other digital network service provider. This is the default on the 4-wire, 56/64-kbps CSU/DSU module.
sprint	Sprint or other service provider whose network requires echo cancelers. This is the default on the 2-wire, switched 56-kbps CSU/DSU module.
other	Any other service provider.

Command Default

ATT is enabled on the 4-wire, 56/64-kbps CSU/DSU module. Sprint is enabled on the 2-wire, switched 56-kbps CSU/DSU module.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

On a Sprint network, echo-canceler tones are sent during call setup to prevent the echo cancelers from damaging digital data. The transmission of echo-canceler tones may increase call setup times by 8 seconds on the 4-wire module. Having echo cancellation enabled does not affect data traffic.

This configuration command is ignored if the network type is DDS.

Examples

The following example configures AT&T as a service provider :

```
Router(config)# interface serial 0
Router(config
-if)
# service-module 56k network-type switched
Router(config
-if)
# service-module 56k switched-carrier att
```

Related Commands

Command	Description
service-module 56k network-type	Sends packets in switched dial-up mode or DDS mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

service-module analysis-module reload

To perform a graceful halt and reboot of the Network Analysis Module (NAM) software on the NM-NAM network module, use the **service-moduleanalysis-modulereload** command in privileged EXEC mode.

service-module analysis-module *slot*/*unit* **reload**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For the NM-NAM, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)XD	This command was introduced on the following platforms: Cisco 2600XM series, Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.3(8)T4	This command was implemented on the following platforms: Cisco 2811, Cisco 2821, and Cisco 2851.
12.3(11)T	This command was implemented on the Cisco 3800 series.

Usage Guidelines

The **service-moduleanalysis-modulereload**command is the Cisco IOS equivalent of the **reboot** NAM CLI command. These commands can be used to initiate the NAM software upgrade process or to access the NAM helper image.

Examples

The following example shows how to gracefully halt and reboot the NAM application software:

```
Router# service-module analysis-module 1/0 reload

Do you want to proceed with reload?[confirm]
Trying to reload Service Module Analysis-Module1/0.
```

Related Commands

Command	Description
service-module analysis-module reset	Resets the hardware on the NM-NAM.
service-module analysis-module shutdown	Gracefully halts the operating system on the NM-NAM.
service-module analysis-module status	Displays hardware and software status information about the NM-NAM.

service-module analysis-module reset

To reset the hardware on the Network Analysis Module (NM-NAM), use the **service-moduleanalysis-modulereset** command in privileged EXEC mode.

service-module analysis-module *slot*/*unit* **reset**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For the NM-NAM, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)XD	This command was introduced on the following platforms: Cisco 2600XM series, Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.3(8)T4	This command was implemented on the following platforms: Cisco 2811, Cisco 2821, and Cisco 2851.
12.3(11)T	This command was implemented on the Cisco 3800 series.

Usage Guidelines

Use the **service-moduleanalysis-modulereset** command to bring up the NM-NAM after it has been shut down using the **service-moduleanalysis-moduleshutdown** command.

Examples

The following example shows how to reset the hardware on the NM-NAM:

```
Router# service-module analysis-module 1/0 reset

Use reset only to recover from shutdown or failed state
Warning:May lose data on the hard disc!
Do you want to reset?[confirm]
Trying to reset Service Module Analysis-Module1/0.
```

Related Commands

Command	Description
service-module analysis-module reload	Gracefully halts and reboots the software on the NM-NAM.
service-module analysis-module shutdown	Gracefully halts the operating system on the NM-NAM.
service-module analysis-module status	Displays hardware and software status information about the NM-NAM.

service-module analysis-module session

To access the Network Analysis Module (NAM) console from the router, use the **service-moduleanalysis-modulesession** command in privileged EXEC mode.

service-module analysis-module *slot*/*unit* **session** [**clear**]

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For the NM-NAM, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.
clear	(Optional) Clears the NAM console line.

Command Default

The router cannot access the NAM console.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)XD	This command was introduced on the following platforms: Cisco 2600XM series, Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.3(8)T4	This command was implemented on the following platforms: Cisco 2811, Cisco 2821, and Cisco 2851.
12.3(11)T	This command was implemented on the Cisco 3800 series.

Usage Guidelines

When entered without the **clear** keyword, this command opens a NAM console session from the router.

Examples

Opening a NAM console Session

The following example shows how to open a NAM console session when the NM-NAM is installed in router slot 2:

```
Router# service-module analysis-module 2/0 session

Trying 10.1.1.1, 2065 ... Open
<Press Return>

Cisco Network Analysis Module (NM-NAM)
nam1.cisco.com login: root

Password: <password>

Terminal type: vt100
Cisco Network Analysis Module (NM-NAM) Console, 3.2(0.9)
Copyright (c) 1999-2003 by Cisco Systems, Inc.
```

```
WARNING! Default password has not been changed!
root@nam1.cisco.com#
```

Clearing the NAM Console Line

The following example shows how to clear the NAM console line when the NM-NAM is installed in router slot 1:

```
Router# service-module analysis-module 1/0 session clear

[confirm]
 [OK]
```

Related Commands

Command	Description
ssh	Starts an encrypted session with a remote networking device.
telnet	Logs in to a host that supports Telnet.

service-module analysis-module shutdown

To gracefully halt the operating system on the Network Analysis Module (NM-NAM), use the **service-moduleanalysis-moduleshutdown** command in privileged EXEC mode.

service-module analysis-module *slot*/*unit* **shutdown** [**no-confirm**]

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For the NM-NAM, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.
no-confirm	(Optional) No confirmation message appears before shutdown.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)XD	This command was introduced on the following platforms: Cisco 2600XM series, Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.3(8)T4	This command was implemented on the following platforms: Cisco 2811, Cisco 2821, and Cisco 2851.
12.3(11)T	This command was implemented on the Cisco 3800 series.

Usage Guidelines

The **service-moduleanalysis-moduleshutdown** command properly brings down the operating system of the Network Analysis Module (NM-NAM) to protect the network module's hard drive. When the operating system has been shut down, the NM-NAM can be removed from the router.

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

If you enter the **no-confirm** keyword, the confirmation prompt does not appear.

Examples

Gracefully Halt the Operating System with Confirmation

The following example shows how to gracefully halt the operating system of the NM-NAM in slot 1:

```
Router# service-module analysis-module 1/0 shutdown

Shutdown is used for Online removal of Service Module.
Do you want to proceed with shutdown?[confirm]
Use service module reset command to recover from shutdown.
```

Gracefully Halt the Operating System -- No Confirmation

The following example shows how to gracefully halt the operating system of the NM-NAM in slot 2 without any user confirmation:

```
Router# service-module analysis-module 2/0 shutdown no-confirm

Use service module reset command to recover from shutdown.
```

Related Commands

Command	Description
service-module analysis-module reload	Gracefully halts and reboots the software on the NM-NAM.
service-module analysis-module reset	Resets the hardware on the NM-NAM.
service-module analysis-module status	Displays hardware and software status information about the NM-NAM.

service-module analysis-module status

To display hardware and software status information about the Network Analysis Module (NM-NAM), use the **service-moduleanalysis-modulestatus** command in privileged EXEC mode.

service-module analysis-module *slot*/*unit* **status**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For the NM-NAM, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)XD	This command was introduced on the following platforms: Cisco 2600XM series, Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.3(8)T4	This command was implemented on the following platforms: Cisco 2811, Cisco 2821, and Cisco 2851.
12.3(11)T	This command was implemented on the Cisco 3800 series.

Usage Guidelines

Use the **service-moduleanalysis-modulestatus** command to:

- Display the NAM software release version.
- Check the NAM status (steady or down).

Examples

The command in the following example displays information about the NM-NAM in router slot 1:

```
Router# service-module analysis-module 1/0 status

Service Module is Cisco Analysis-Module1/0
Service Module supports session via TTY line 33
Service Module is in Steady state
Getting status from the Service Module, please wait...
Cisco Network Analysis Module (NM-NAM), version 3.2(0.8)
```

Related Commands

Command	Description
show controllers analysis-module	Displays controller information for the analysis module interface.
show interfaces analysis-module	Displays status, traffic data, and configuration information about the analysis module interface.

service-module backup interface

To configure an interface as a secondary or dial backup to the satellite interface, use the **servicemodulebackupinterface** command in satellite interface configuration mode. To remove the backup interface configuration, use the **no** form of this command.

service module backup interface *interface*
no service module backup interface *interface*

Syntax Description

interface	Interface type and number.

Command Default

No default behavior or values

Command Modes

Satellite interface configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.

Examples

The following example shows how to set interface async 1 as the backup to the satellite link:

```
Router(config-if)# service-module backup interface async1
```

Related Commands

Command	Description
service-module backup mode	Sets the terrestrial backup mode for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

service-module backup mode

To set the terrestrial dial backup mode for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), use the **service-modulebackupmode** command in satellite interface configuration mode. To return to the router (default) dial backup mode, use the **no** form of this command.

service-module backup mode [**hub** | **router**]
no service-module backup mode

Syntax Description

hub	Hub dial backup mode.
router	Router dial backup mode.

Command Default

Router dial backup mode

Command Modes

Satellite interface configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

Hub Dial Backup Mode

Hub dial backup mode maintains TCP connections during transitions between primary and backup links. Note, however, that hub dial backup mode provides backup for the satellite *link* , but not for the NM-1VSAT-GILAT network module hardware, the router satellite interface, or other router interfaces. If the satellite link goes down (for example, because of rain fade) in hub dial backup mode, the NM-1VSAT-GILAT network module connects to the hub using dial-on-demand routing (DDR). Common DDR backup links use ISDN BRIs, modems on auxiliary ports, and T1/E1 lines.

The NM-1VSAT-GILAT network module always encapsulates packets using a satellite backbone protocol before sending the packets over the satellite link. In hub dial backup mode, the NM-1VSAT-GILAT network module continues to encapsulate the packets using the satellite backbone protocol before sending the packets over the dial backup link to the hub; this is how hub dial backup mode maintains TCP connections during transitions between the primary satellite link and the dial backup link. Therefore, hub dial backup mode works only when the NM-1VSAT-GILAT network module itself is functioning properly.

Router Dial Backup Mode

If the satellite link goes down in router dial backup mode, the router uses DDR to send data out a different interface. Unlike hub dial backup mode, router dial backup mode does these things:

- Tears down and reestablishes TCP connections during transitions between primary and backup links
- Does not require that the NM-1VSAT-GILAT network module work properly while the backup link is in use

Examples

The following example shows how to specify hub backup mode:

```
Router(config-if)# service-module backup mode hub
```

The following example shows how to specify router backup mode:

```
Router(config-if)# service-module backup mode router
```

Related Commands

Command	Description
service-module backup interface	Specifies the interface to use to back up the satellite interface.

service-module content-engine reload

To perform a graceful halt and reboot of a content engine (CE) network module operating system, use the **service-modulecontent-enginereload** command in privileged EXEC mode.

service-module content-engine *slot*/*unit* **reload**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For CE network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example gracefully halts and reboots the CE network module operating system in slot 1:

```
Router# service-module content-engine 1/0 reload
Do you want to proceed with reload?[confirm]
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
service-module content-engine reset	Resets the hardware on a CE network module.
service-module content-engine shutdown	Gracefully halts a CE network module.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module content-engine reset

To reset the hardware on a content engine (CE) network module, use the **service-modulecontent-enginereset** command in privileged EXEC mode.

service-module content-engine *slot*/*unit* **reset**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For CE network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Note Use the **service-modulecontent-enginereset** command only to recover from a shutdown or failed state because you may lose data.

Examples

The following example resets the hardware on the CE network module in slot 1:

```
Router# service-module content-engine 1/0 reset
Use reset only to recover from shutdown or failed state
Warning: May lose data on the hard disc!
Do you want to reset?[confirm]
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
service-module content-engine reload	Performs a graceful halt and reboot of a CE network module operating system.
service-module content-engine shutdown	Gracefully halts a CE network module.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module content-engine session

To access a content engine (CE) network module console and begin a configuration session, use the **service-modulecontent-enginesession** command in privileged EXEC mode.

service-module content-engine *slot*/*unit* **session** [**clear**]

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For CE network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.
clear	(Optional) Clears the CE configuration session.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines

Only one session at a time is allowed into the content engine from the internal CE network-module-side interface. This interface provides console access to the CE network module from the router command-line interface (CLI) by initiating a reverse Telnet connection that uses the IP address of the CE interface and the terminal (TTY) line associated with the CE network module. The TTY line number is calculated using the formula (n*32) + 1, where *n* is the number of the chassis slot that contains the CE network module. The CE interface must be up before you can use this command.

Once a session is started, you can perform any CE configuration task. You first access the CE console in a user-level shell. To access the privileged EXEC command shell, where most commands are available, use the **enable** command. Note that this is a Cisco Application and Content Networking System (ACNS) software command, not a Cisco IOS software command.

CE configuration tasks are described in the documentation for Cisco Application and Content Networking Software, *Release 4.2. Initial CE configuration tasks are covered in the* Cisco Content Delivery Networking Products Getting Started Guide*, section 6, "Perform an Initial Startup Configuration.*"

After you finish CE configuration and exit the CE console session, use this command with the **clear** keyword to clear the session. At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows a CE session being opened for a CE network module in slot 2:

```
Router# service-module content-engine 2/0 session
Trying 10.10.10.1, 2129 ... Open
CE-netmodule con now available
Press RETURN to get started!
CE-netmodule> enable
CE-netmodule#
```

The following example clears the session that had been used to configure the CE in the network module in slot 1:

```
Router# service-module content-engine 1/0 session clear
[confirm]
 [OK]
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module content-engine shutdown

To gracefully halt a content engine (CE) network module, use the **service-modulecontent-engineshutdown** command in privileged EXEC mode.

service-module content-engine *slot/unit* **shutdown**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For CE network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

The **service-modulecontent-engineshutdown** command brings down the operating system of the specified content engine network module in an orderly fashion to protect the network module's hard drive. When the system has been shut down, the network module can be removed from the router.

Examples

The following example gracefully halts the CE network module in slot 1:

```
Router# service-module content-engine 1/0 shutdown
Shutdown is used for Online removal of Service Module.
Do you want to proceed with shutdown?[confirm]
Use service module reset command to recover from shutdown.
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
service-module content-engine reload	Performs a graceful halt and reboot of a CE network module operating system.
service-module content-engine reset	Resets the hardware on a CE network module.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module content-engine status

To display configuration information related to the hardware and software on the content engine (CE) side of a CE network module, use the **service-modulecontent-enginestatus**command in privileged EXEC mode.

service-module content-engine *slot*/*unit* **status**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For CE network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines

Use the **service-modulecontent-enginestatus** command to:

- Display the CE network module software release version.
- Check the CE network module status (steady or down).
- Display hardware information for the CE network module including CPU, memory, interface, and disk drive information.

Examples

The following example displays information for a CE network module in router slot 1:

```
Router# service-module content-engine 1/0 status
Service Module is Cisco Content-Engine1/0
Service Module supports session via TTY line 33
Service Module is in Steady state
Getting status from the Service Module, please wait..
Application and Content Networking Software (ACNS)
Copyright (c) 1999-2002 by Cisco Systems, Inc.
Application and Content Networking Software Release 4.2.2 (build b3 May  6 2002)
Version: ce2636-sw-<unknown-version>
Compiled 18:03:40 May  6 2002 by engineer
Compile Time Options: PP
System was restarted on Mon Jan  7 20:30:37 1980.
The system has been up for 8 minutes, 30 seconds.
Core CPU is GenuineIntel Pentium III (Coppermine) (rev 8) running at 498MHz.
246 Mbytes of Physical memory.
2 FastEthernet interfaces
1 Console interface
List of disk drives:
disk00: Normal          (h00 c00 i00 l00)    19075MB( 18.6GB)
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module external ip address

To define the IP address for the external LAN interface on a content engine (CE) network module, use the **service-moduleexternalipaddress**command in content-engine interface configuration mode. To delete the IP address associated with this interface, use the **no** form of this command.

service-module external ip address *external-ip-addr subnet-mask*
no service-module external ip address

Syntax Description

external-ip-addr	IP address of the external LAN interface on a CE network module.
subnet-mask	Subnet mask to append to the IP address.

Command Default

No default behavior or values

Command Modes

Content-engine interface configuration

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Examples

The following example defines an IP address for the external LAN interface on the CE network module in slot 1:

```
Router(config)# interface content-engine 1/0
Router(config-if)# service-module external ip address
 172.18.12.28 255.255.255.0
Router(config-if)# exit
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module heartbeat-reset disable

To disable the service module from being reset when the heartbeat is lost, use the service-module heartbeat-reset disable command in configuration interface mode. To allow a reset of the service module when no heartbeat is received, use the **no** form of this command.

service-module heartbeat-reset disable
no service-module heartbeat-reset disable

Syntax Description

This command has no arguments or keywords.

Command Default

Heartbeat reset is enabled.

Command Modes

Configuration interface (config-if)

Command History

Release	Modification
15.1(4)M	This command was introduced.

Usage Guidelines

With the existing IOS code, if no heartbeat is received from a service module after a period of time, the IOS resets the service module. For some applications, this reset function should be disabled because it blocks normal operations.

This command, being a configuration mode command, persists through router reloads.

Alternatively, the service-module ism heartbeat-reset disable command and the service-module sm heartbeat-reset disable command can prevent Cisco IOS software from rebooting the internal service module (ISM) and the SM-SRE service module, respectively, when the heartbeat is lost. However, both these commands are EXEC mode commands and they are lost when the router reboots.

Examples

The following example shows how to disable the heartbeat reset:

```
Router(config)# interface sm 1/0
Router(config-if)# service-module heartbeat-reset disable
```

Related Commands

Command	Description
service-module	Sets service module parameters.
service-module ism heartbeat-reset	Prevents Cisco IOS software from rebooting the ISM when the heartbeat is lost.
service-module sm heartbeat-reset	Prevents Cisco IOS software from rebooting the SM-SRE service module when the heartbeat is lost.

service-module ids-sensor

To reboot, reset, enable console access to, shutdown, and monitor the status of the Cisco Intrusion Detection System (IDS) network module, use the **service-moduleids-sensor** command in privileged EXEC mode.

service-module ids-sensor *slot/port* {**reload** | **reset** | **session** | **shutdown** | **status**}

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *port*	Port number of the network module. For Cisco IDS network modules, always use 0. The slash mark is required between the *slot* argument and the *unit*argument.
reload	Performs a graceful halt and reboot of the operating system on a Cisco IDS network module.
reset	Resets the hardware on the Cisco IDS network module. This command is usually used to recover from a shutdown.
session	Enables console access to the Cisco IDS network module from the router.
shutdown	Shuts down the IDS applications that are running on a Cisco IDS network module.
status	Provides information on the status of the Cisco IDS software.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(4)T	This command was introduced.

Usage Guidelines

If a confirmation prompt is displayed, press **Enter** to confirm the action or **n** to cancel.

The Cisco IDS network module is also referred to as the NM-CIDS.

Examples

The following example gracefully halts and reboots the operating system on the Cisco IDS network module in slot 1:

```
Router# service-module ids-sensor 1/0 reload
Do you want to proceed with reload?[confirm]
```

The following example resets the hardware on the Cisco IDS network module in slot 1. A warning is displayed.

```
Router# service-module ids-sensor 1/0 reset
Use reset only to recover from shutdown or failed state
Warning: May lose data on the hard disk!
Do you want to reset?[confirm]
```

Caution Hard-disk drive data loss occurs only if you issue the reset command without first shutting down the Cisco IDS network module. You can use the reset command safely in other situations.

The following example enables console access to the Cisco IDS network module operating system in slot 1:

```
Router# service-module ids-sensor 1/0 session
```

The following example shuts down IDS applications that are running on the Cisco IDS network module in slot 1:

```
Router# service-module ids-sensor 1/0 shutdown
Trying 10.10.10.1, 2129 ... Open
%SERVICEMODULE-5-SHUTDOWN2:Service module IDS-Sensor1/0 shutdown complete
```

The following example shows the status of the Cisco IDS software:

```
Router# service-module ids-sensor 1/0 status
Service Module is Cisco IDS-Sensor1/0
Service Module supports session via TTY line 33
Service Module is in Steady state
Getting status from the Service Module, please wait...
Service Module Version information received, Major ver = 1, Minor ver= 1
Cisco Systems Intrusion Detection System Network Module
Software version: 4.1(1)S42(0.3)
Model: NM-CIDS
Memory: 254676 KB
```

Related Commands

Command	Description
ids-service-module monitoring	Enables IDS monitoring on a specified interface.

service-module integrated-service-engine default-boot

To configure the integrated-service-engine (ISE) network module to use the default BIOS and bootloader, use the service-module integrated-service-engine **default-boot** command in privileged EXEC mode.

service-module integrated-service-engine slot/unit default-boot

Syntax Description

slot	Number of the router chassis slot for the network module.
unit	Number of daughter cards on the network module, if included. For ISE network modules, always use 0.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for the ISE network module.

Examples

After a downtime event or failed upgrade, use the service-module integrated-**service-engineslot/unitdefault-boot** command to configure the network module to use the primary BIOS and primary bootloader to perform startup routines.

The following is sample output from the **integrated-service-engineslot/unitdefault-boot** command for a port adapter in chassis slot 2 on a Cisco router:

```
Router# service-module integrated-service-engine 2/0 default-boot
clear  Clear Default Boot
set    Set Default Boot

Router# service-module integrated-service-engine 2/0 default-boot clear
Router# service-module integrated-service-engine 2/0 default-boot set
```

service-module integrated-service-engine reload

To perform a graceful shutdown and reboot of the integrated-service-engine (ISE) network module operating system, use the **service-moduleintegrated-service-enginereload** command in privileged EXEC mode.

service-module integrated-service-engine *slot*/*unit* **reload**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For ISE network modules, always use 0. The slash mark (/) is required between the *slot* argument and the *unit*argument.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example gracefully shuts down and reboots the ISE network module's operating system in slot 1:

```
Router# service-module integrated-service-engine 1/0 reload
Do you want to proceed with reload?[confirm]
```

Related Commands

Command	Description
interface integrated-service-engine	Configures an interface for ISE network modules and enters interface configuration mode.
service-module integrated-service-engine reset	Resets the hardware on ISE network modules.
service-module integrated-service-engine shutdown	Gracefully shuts down ISE network modules.
show diag	Displays controller information for ISE network modules.
show interfaces integrated-service-engine	Displays basic interface configuration information for ISE network modules.

service-module integrated-service-engine reset

To reset the integrated-service-engine (ISE) network module hardware, use the **service-moduleintegrated-service-enginereset** command in privileged EXEC mode.

service-module integrated-service-engine *slot*/*unit* **reset**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For ISE network modules, always use 0. The slash mark (/) is required between the *slot* argument and the *unit*argument.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.



Caution Because you may lose data, use the **service-moduleintegrated-service-enginereset** command only to recover from a shutdown or failed state.

Examples

The following example resets the hardware on the ISE network module in slot 1:

```
Router# service-module integrated-service-engine 1/0 reset
Use reset only to recover from shutdown or failed state
Warning: May lose data on the hard disk!
Do you want to reset?[confirm]
```

Related Commands

Command	Description
interface integrated-service-engine	Configures an interface for ISE network modules and enters interface configuration mode.
service-module integrated-service-engine reload	Performs a graceful shutdown and reboot on the ISE network module operating system.
service-module integrated-service-engine shutdown	Gracefully shuts down ISE network modules.
show diag	Displays controller information for ISE network modules.

Command	Description
show interfaces integrated-service-engine	Displays basic interface configuration information for ISE network modules.

service-module integrated-service-engine session

To begin a configuration session with an integrated-service-engine (ISE) network module through a console connection, use the **service-moduleintegrated-service-enginesession** command in privileged EXEC mode.

service-module integrated-service-engine *slot*/*unit* **session** [**clear**]

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For ISE network modules, always use 0. The slash mark (/) is required between the *slot* argument and the *unit*argument.
clear	(Optional) Clears the ISE configuration session.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Usage Guidelines

Only one session at a time is allowed into the network module from the internal ISE network-module-side interface.

After starting a session, you can perform any ISE configuration task. You first access the ISE console in a user-level shell. To access the privileged EXEC command shell, where most commands are available, use the **enable** command.

After you finish ISE configuration and exit the ISE console session, use this command with the **clear** keyword to clear the session. At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows an ISE session being opened for an ISE network module in slot 2:

```
Router# service-module integrated-service-engine 2/0 session
Trying 10.10.10.1, 2129 ... Open
ISE-netmodule con now available
Press RETURN to get started!
ISE-netmodule> enable
ISE-netmodule#
```

The following example clears the session that had been used to configure the ISE in the network module in slot 2:

```
Router# service-module integrated-service-engine 1/0 session clear
[confirm]
 [OK]
```

Related Commands

Command	Description
enable	Enters prviledged EXEC mode.
interface	Configures an interface and enters interface configuration mode.
show diag	Displays controller information for a network module.
show interface integrated-service engine	Displays basic interface configuration information for network modules.

service-module integrated-service-engine shutdown

To gracefully shut down an integrated-service-engine (ISE) network module, use the **service-moduleintegrated-service-engineshutdown** command in privileged EXEC mode.

service-module integrated-service-engine *slot*/*unit* **shutdown**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For ISE network modules, always use 0. The slash mark (/) is required between the *slot* argument and the *unit*argument.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

The **service-moduleintegrated-service-engineshutdown** command brings down the operating system of the specified integrated-service-engine network module in an orderly fashion to protect the hard drive. When the system has been shut down, the module can be removed from the router.

Examples

The following example gracefully shuts down the ISE network module in slot 1:

```
Router# service-module integrated-service-engine 1/0 shutdown
Shutdown is used for Online removal of Service Module.
Do you want to proceed with shutdown?[confirm]
Use service module reset command to recover from shutdown.
```

Related Commands

Command	Description
interface integrated-service-engine	Configures an interface for ISE network modules and enters interface configuration mode.
service-module integrated-service-engine reload	Performs a graceful shut down and reboot of an ISE network module operating system.
service-module integrated-service-engine reset	Resets the hardware on ISE network modules.
show diag	Displays controller information for ISE network modules.
show interfaces integrated-service-engine	Displays basic interface configuration information for ISE network modules.

service-module integrated-service-engine status

To display configuration information related to the hardware and software on the integrated-service-engine (ISE) side of a network module, use the **service-moduleintegrated-service-enginestatus**command in privileged EXEC mode.

service-module integrated-service-engine *slot*/*unit* **status**

Syntax Description

slot	Number of the router chassis slot for the network module.
/ *unit*	Number of the daughter card on the network module. For ISE network modules, always use 0. The slash mark (/) is required between the *slot* argument and the *unit*argument.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Usage Guidelines

Use the **service-moduleintegrated-service-enginestatus** command to

- Display the ISE network module's software release version
- Check the ISE network module status (steady or down)
- Display hardware information for the ISE network module, including CPU, memory, interface, and disk drive information

Examples

The following example displays information for an ISE network module in router slot 1:

```
Router# service-module integrated-service-engine 1/0 status
Service Module is Cisco integrated-service-engine1/0
Service Module supports session via TTY line 33
Service Module is in Steady state
Getting status from the Service Module, please wait..
Application and Content Networking Software (ACNS)
Copyright (c) 1999-2002 by Cisco Systems, Inc.
Application and Content Networking Software Release 4.2.2 (build b3 May  6 2002)
Version: ce2636-sw-<unknown-version>
Compiled 18:03:40 May  6 2002 by engineer
Compile Time Options: PP
System was restarted on Mon Jan  7 20:30:37 1980.
The system has been up for 8 minutes, 30 seconds.
Core CPU is GenuineIntel Pentium III (Coppermine) (rev 8) running at 498MHz.
246 Mbytes of Physical memory.
2 FastEthernet interfaces
1 Console interface
List of disk drives:
disk00: Normal          (h00 c00 i00 l00)    19075MB( 18.6GB)
```

Related Commands

Command	Description
interface integrated-service-engine	Configures an interface for ISE network modules and enters interface configuration mode.
show diag	Displays controller information for ISE network modules.
show interfaces integrated-service-engine	Displays basic interface configuration information for ISE network modules.

service-module integrated-service-engine statistics

To display reset and reload information for an integrated-service-engine (ISE) network module and its Cisco IOS software, use the **service-moduleintegrated-service-enginestatistics**command in EXEC mode.

service-module integrated-service-engine *slot/port* **statistics**

Syntax Description

module	Designates a specific ISE network module installed in the router.
slot	Designates the slot where the selected ISE network module is installed in the router.

Command Default

none

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
12.4(9)T	This command was introduced for ISE network modules.

Examples

The following example displays information for an ISE network module in an access router for slot 2:

```
Router# service-module integrated-service-engine 2/0 statistics
Module Reset Statistics:
  CLI reset count = 1
  CLI reload count = 0
  Registration request timeout reset count = 0
  Error recovery timeout reset count = 0
  Module registration count = 2
The last IOS initiated event was a cli reset at *13:34:33.847 UTC Sun Dec 18 2005
```

service-module ip address

To define the IP address for the internal network-module-side interface on a content engine network module (NM-CE-BP), Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), Cisco cable modem high-speed WAN interface card (HWIC-CABLE-D-2, HWIC-CABLE-E/J-2), or the Cisco Services Ready Engine (Cisco SRE) modules (SM-SRE-XXX-K9, ISM-SRE-XXX-K9) use the **service-moduleipaddress** command in content-engine interface configuration mode, satellite interface configuration mode, content-engine configuration mode, or service-module interface configuration mode. To delete the IP address associated with this interface, use the **no** form of this command.

service-module ip address *nm-side-ip-addr subnet-mask* [*"string"*]
no service-module ip address [*"string"*]

Syntax Description

nm-side-ip-addr	IP address of the internal network-module-side interface on a CE network module (NM-CE-BP), Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), or Cisco cable modem high-speed WAN interface card (HWIC-CABLE-D-2, HWIC-CABLE-E/J-2).
subnet-mask	Subnet mask to append to the IP address.
string	(Optional) Name of the virtual interface on the module side that will be assigned the IP address. The string must be in quotes. This argument is available on Cisco SRE modules only.

Command Default

The well-known diagnostic IP address of 192.168.100.1, is supported on all physical interfaces associated with the cable modem to CPE interface (CMCI).

Command Modes

Content-engine interface configuration Satellite interface configuration Cable-modem interface configuration Service-module interface configuration

Command History

Release	Modification
12.2(11)YT	This command was introduced for the CE network module.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3(14)T	This command was implemented for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
12.4(6)XE	This command was implemented for the Cisco cable modem high-speed WAN interface card (HWIC-CABLE-D-2, HWIC-CABLE-E/J-2).
15.1(4)M	The optional *string* argument was added on Cisco SRE modules only.

Usage Guidelines

Content Engine Network Module (NM-CE-BP)

There are no usage guidelines for this command.

Cisco IP VSAT Satellite WAN Network Module (NM-1VSAT-GILAT)

For the NM-1VSAT-GILAT network module, the **service-moduleipaddress** command is typically not used. The NM-1VSAT-GILAT network module IP address is automatically configured when you enter the **ipaddress** command in satellite interface configuration mode to configure the IP address and subnet mask of the router satellite interface with these conditions:

- The IP address leaves a remainder of 2 when the last octet is divided by 4.
- The subnet mask has /30 or fewer masking bits.

If you use this method to configure the IP address for the router satellite interface, the system automatically configures the IP address and subnet mask on the NM-1VSAT-GILAT network module with these results:

- The IP address is 1 less than the IP address you configured for the router satellite interface.
- The subnet mask is /30.

You can override the automatically configured IP address and mask by manually entering the **service-moduleipaddress** command.

Note The automatically configured IP address does not appear in the router configuration, because the **service-moduleipaddress** command is considered to be set to its default value. Similarly, if you manually configure an IP address and subnet mask that are identical to the automatically configured IP address and subnet mask, the **service-moduleipaddress** command does *not* appear in the router configuration.

Cisco Cable Modem High-Speed WAN Interface Card (HWIC-CABLE-D-2, HWIC-CABLE-E/J-2)

There are no usage guidelines for this command.

Cisco SRE Modules (SM-SRE-XXX-K9, ISM-SRE-XXX-K9)

In Cisco IOS Release 15.1(4)M and later releases, the Cisco SRE modules support an optional "*string*" argument to this command to allow for multiple IP addresses to be configured on the module side. The application running on the SRE module can accept or reject the applied configuration.

Examples

This section provides the following examples:

Content Engine Network Module (NM-CE-BP) Example

The following example shows how to define an IP address for the internal network-module-side interface on the CE network module in slot 1:

```
Router(config)# interface content-engine 1/0

Router(config-if)# service-module ip address 172.18.12.26 255.255.255.0

Router(config-if)# exit
```

Cisco IP VSAT Satellite WAN Network Module (NM-1VSAT-GILAT) Example--Manually Configuring the IP Address

In the following example, the router satellite interface is assigned an IP address (10.0.0.7), the last octet of which does *not* leave a remainder of 2 when divided by 4. The system displays a message to manually configure the IP address for the NM-1VSAT-GILAT network module. Notice that the IP addresses for both the router satellite interface and the NM-1VSAT-GILAT network module appear in the running configuration.

```
Router(config)# interface satellite 1/0

Router(config-if)# ip address 10.0.0.7 255.255.255.0

%VSAT-6-PIMINCOMPADDR:The IP address configured on Satellite1/0
      requires a manually configured IP address for the satellite module
Router(config-if)# service-module ip address 10.0.0.6 255.255.255.0
Router(config-if)# end

Router# show running-config | begin Satellite

interface Satellite 1/0
   ip address 10.0.0.7 255.255.255.0
   service-module ip address 10.0.0.6 255.255.255.0
```

Cisco IP VSAT Satellite WAN Network Module (NM-1VSAT-GILAT) Example--Using the Automatically Configured IP Address

In the following example, the router satellite interface IP address is configured as 10.0.0.6. Because the last octet of the IP address leaves a remainder of 2 when divided by 4, the system automatically configures the IP address for the NM-1VSAT-GILAT network module.

Although the NM-1VSAT-GILAT network module IP address and mask do not appear in the router configuration, you know that the IP address is 1 less than the IP address of the router satellite interface and has a subnet mask of /30. In this case, the NM-1VSAT-GILAT network module is automatically configured with the following IP address and mask: 10.0.0.5 255.255.255.252.

```
!
interface Satellite 1/0
 ip address 10.0.0.6 255.255.255.0
!
```

Cisco IP VSAT Satellite WAN Network Module (NM-1VSAT-GILAT) Example--Overriding the Automatically Configured IP Address

In the following example, the router satellite interface IP address is configured as 10.0.0.6. Because the last octet of the IP address leaves a remainder of 2 when divided by 4, the system automatically configures the IP address and mask for the NM-1VSAT-GILAT network module as 10.0.0.5 255.255.255.252.

Nevertheless, the NM-1VSAT-GILAT network module IP address and mask are manually configured as 10.0.0.1 255.255.255.0 to override the automatically derived IP address and mask. Notice that the IP addresses for both the router satellite interface and the NM-1VSAT-GILAT network module appear in the running configuration.

```
!
interface Satellite 1/0
 ip address 10.0.0.6 255.255.255.0
 service-module ip address 10.0.0.1 255.255.255.0
!
```

Cisco Cable Modem High-Speed WAN Interface Cards (HWIC-CABLE-D-2, HWIC-CABLE-E/J-2) Example

The following example shows how to define an IP address for the cable modem interface in slot 0:

```
Router(config)# interface cable-modem 0

Router(config-if)# service-module ip address 172.18.12.26 255.255.255.0

Router(config-if)# exit
```

Cisco SRE Module (ISM-SRE-XXX-K9, SM-SRE-XXX-K9) Example

The following example shows how to define an IP address for the service module interface in slot 3:

```
Router(config)# interface SM 3/0

Router(config-if)# service-module ip address 172.18.12.26 255.255.255.0

Router (config-if)# service-module ip address 172.18.12.27 255.255.255.0 "VirtualMachine1"
Router (config-if)# service-module ip address 172.18.12.28 255.255.255.0 "VirtualMachine2"
Router(config-if)# exit
```

Related Commands

Command	Description
show controllers content-engine	Displays controller information for CE network modules.
show controllers satellite	Displays controller information about the internal router interface that connects to an installed Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
show interfaces satellite	Displays general interface settings and traffic rates for the internal router interface that connects to an installed Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module ip default-gateway

To define a default gateway (router) for a content engine (CE) network module, use the **service-moduleipdefault-gateway**command in content-engine interface configuration mode. To remove the default gateway from the CE configuration, use the **no** form of this command.

service-module ip default-gateway *gw-ip-addr*
no service-module ip default-gateway

Syntax Description

gw-ip-addr	IP address of the default gateway.

Command Default

No default behavior or values

Command Modes

Content-engine interface configuration

Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Examples

The following example configures a default gateway for the CE network module in slot 1:

```
Router(config)# interface content-engine
 1/0
Router(config-if)# service-module ip default-gateway
 172.18.12.1
Router(config-if)# exit
```

Related Commands

Command	Description
interface content-engine	Configures an interface for a CE network module and enters interface configuration mode.
show controllers content-engine	Displays controller information for CE network modules.
show interfaces content-engine	Displays basic interface configuration information for a CE network module.

service-module ip redundancy

To link the primary HSRP interface status to that of the satellite interface, use the **service-module ip redundancy** command in satellite interface configuration mode. To remove the link between the primary HSRP interface status and the satellite interface status, use the **no** form of this command.

service-module ip redundancy *group-name*
no service-module ip redundancy *group-name*

Syntax Description

group-name	Name of the hot standby group. This name must match the hot standby group name configured for the primary HSRP interface, which is typically an Ethernet interface.

Command Default

HSRP is disabled.

Command Modes

Satellite interface configuration (config-if)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **service-module ip redundancy** command only when you have two Cisco IP VSAT satellite WAN network modules (NM-1VSAT-GILAT) on separate HSRP-redundant routers that connect to the same outdoor unit (ODU).

This command enables the satellite interface to spoof the line protocol UP state.

Examples

The following example shows how to link the primary HSRP interface status to that of the satellite interface:

```
Router (config-if)# service-module ip redundancy grp-hsrp
```

Related Commands

Command	Description
standby ip	Activates HSRP.
standby name	Configures the name of the hot standby group.
standby preempt	Enables preemption on the router and optionally configures a preemption delay.
standby track	Configures an interface so that the hot standby priority changes based on the availability of other interfaces.

service-module ism default-boot

To configure the internal service module (ISM) to use the default BIOS and bootloader, use the **service-moduleismdefault-boot** command in privileged EXEC mode.

service-module ism *slot*/*port* **default-boot**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Default

The default BIOS and bootloader are not used by the ISM.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

After a downtime event or failed upgrade, use this command to configure the service module to use the primary BIOS and primary bootloader to perform startup routines.

Examples

The following is sample output for an ISM:

```
Router# service-module ism 0/0 default-boot
clear  Clear Default Boot
set    Set Default Boot

Router# service-module ism 0/0 default-boot clear
Router# service-module ism 0/0 default-boot set
```

service-module ism heartbeat-reset

To prevent Cisco IOS software from rebooting the internal service module (ISM) when the heartbeat is lost, use the **service-moduleismheartbeat-reset** command in privileged EXEC mode.

service-module ism *slot*/*port* **heartbeat-reset** {**disable** | **enable**}

Syntax Description

slot	Number of the router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.
disable	Disables reset of the ISM if the heartbeat is lost.
enable	Enables reset of the ISM if the heartbeat is lost.

Command Default

ISM is reset when heartbeat is lost.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

When the ISM is booted in fail-safe mode or is undergoing an upgrade, this command prevents a reboot during the process.

When the ISM heartbeat is lost, the router applies a fail-open or fail-close configuration option to the module, stops sending traffic to the module, and sets the module to error state. The router performs a hardware reset on the ISM and monitors it until the heartbeat is reestablished.

Examples

The following example shows how to disable the ISM from being reset if the heartbeat is lost:

```
Router# service-module ism 0/0 heartbeat-reset disable
```

You can display the status of the heartbeat reset feature with the **service-moduleismstatus**command:

```
Router# service-module ism 0/0 status

Service Module is Cisco IDS-Sensor 0/0
Service Module supports session via TTY line 194
Service Module heartbeat-reset is enabled <=====
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
service-module ism reload	Performs a graceful shutdown and reboot of the ISM.

Command	Description
service-module ism reset	Resets the ISM hardware.
service-module ism shutdown	Performs a graceful shutdown of the ISM.
service-module ism status	Displays configuration information related to the hardware and software on an ISM.

service-module ism install

To use Cisco SRE to install an application on a internal service module (Cisco ISM-SRE), use the **service-moduleismsinstall**command in privileged EXEC configuration mode.

service-module ism *slot/port* **install url** *url* [**script** *filename*] [**argument** *"string"*] [**force**]

Syntax Description

slot/port	Location of the services engine module in the router. For internal service modules, the slot and port number must be 0.
url *url*	Address of FTP or HTTP server, as defined in RFC 2396, on which application packages and Tcl scripts are located.
script	(Optional) Changes name of Tcl script to be run from default value to script specified by *filename* argument.
filename	Name of Tcl script.
argument	(Optional) Installer will not present options for the variable specified in the *string* argument.
“ *string* **”**	Alphanumeric characters of variable to be passed directly to the Tcl script via the command line. Variable must be enclosed in quotation marks (“ ”)
force	(Optional) Tcl script automatically proceeds with install without prompting for user input.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command uses a common module-dependent bootloader to install a Linux-based application, such as Cisco Unity Express or Cisco AXP, on an internal service module (Cisco ISM-SRE).

The slash mark (/) is required between the *slot* argument and the *port* argument.

You can only issue one instance of this command at a time on a router. You cannot use this command to install an application on two or more services engine modules in the same router at a time.

The Tcl script to be run must reside in the same FTP or HTTP server and directory as the application packages to be installed. If a credential is required, the user name and password must be imbedded in the url as shown in the following example:

```
Router# service-module ism 0/0 install url ftp://username:passwd@server.com/axp
```

If two or more of the optional keyword/argument combinations are used with this command, they must be issued in the order presented in the command syntax. For example, you cannot use the **force** keyword before the **script** or**argument** keywords, nor the **argument** keyword before the **script** keyword, when you issue this command.

Use the **script***filename* keyword/argument combination with this command to specify that the Cisco IOS software use some Tcl script other than the default installer during the installation.

Use the **argument"***string***"** keyword/argument combination with this command to manually provide variables during installation process and bypass the user interaction feature of the installer. The variable must include the left and right quotation marks (" ").

Use the **force** keyword with this command to install an application without prompting for user input. If you use this keyword and if the application requires you to provide certain variables during the installation, you should also use the **argument"***string***"** keyword/argument combination to manually provide the required variables because the **force** keyword will direct the installer to bypass all user interaction during the installation.

To stop the install while the Tcl script is being downloaded, use the **service-moduleismsinstallabort**command. This command cannot be used once the actual installation begins.

Examples

The following example shows how to use this command to run the "help.sre" Tcl script rather than the default installation Tcl script:

```
Router# service-module ism 0/0 install url ftp://server.com/cue script help.sre
Router#
```

The following example shows how to direct the installer to use the specified language variable for US English instead of prompting you with language options for Cisco Unity Express:

```
Router# service-module ism 0/0 install url ftp://server.com/cue argument "lang=en_us"
Router#
```

The following example shows the messages displayed on the module console during a successful installation using Cisco SRE:

```
Feb  6 19:09:22.526 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-ISM 0/0 PROGRESSING:
Validating package signature ...1 .
Feb  6 19:09:23.058 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-ISM 0/0 PROGRESSING: Parsing
 package manifest files ...1 .
Feb  6 19:09:44.742 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-ISM 0/0 PROGRESSING:
Starting payload download1 .
Feb  6 19:09:52.022 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-ISM 0/0 PROGRESSING:
Performing Hot install ...1 .
Install successful on Service-Module-ISM 0/0 Feb  6 19:10:28.826 EDT: %SM_INSTALL-6-INST_SUCC:
 Service-Module-ISM 0/0 SUCCESS: install-completed .
```

Related Commands

Command	Description
service-module ism install abort	Stops the install process and returns to the boot-loader prompt.
service-module ism uninstall	Uses Cisco SRE to uninstall an SRE-supported application on an SRE-enabled services engine module.

service-module ism install abort

To abort the Cisco SRE install process on a Cisco ISM-SRE, use the **service-moduleismsinstallabort**command in privileged EXEC configuration mode.

service-module ism *slot/port* **install abort** [**force**]

Syntax Description

slot/port	Location of the services engine module in the router. For internal service modules, the slot and port number must be 0.
force	(Optional) Tcl script automatically stops the installation without prompting for confirmation.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command stops the installation during the downloading portion of the process only. You cannot use this command to stop the process once the actual installation has begun.

Use the **force** keyword with this command to stop the process without first prompting for confirmation.

Examples

The following example shows how to use this command to stop an application installation without first prompting for confirmation:

```
Router# service-module ism 0/0 install abort force
.
.
.
boot-loader>
```

Related Commands

Command	Description
service-module ism install	Uses Cisco SRE to install an SRE-supported application on an SRE-enabled services engine module.

service-module ism reload

To perform a graceful shutdown and reboot of the internal service module (ISM) operating system, use the **service-moduleismreload** command in privileged EXEC mode.

service-module ism *slot*/*port* **reload**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced for ISMs.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows how to gracefully shut down and reboot the ISM operating system:

```
Router# service-module ism 0/0 reload

Do you want to proceed with reload?[confirm]
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
service-module ism reset	Resets the ISM hardware.
service-module ism shutdown	Gracefully shuts down the ISM.
show diag	Displays controller information for ISMs.
show interfaces ism	Displays basic interface configuration information for ISMs.

service-module ism reset

To reset the internal service module (ISM) hardware, use the **service-moduleismreset** command in privileged EXEC mode.

service-module ism *slot*/*port* **reset**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced for ISMs.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Caution Because you may lose data, use the **service-moduleismreset** command only to recover from a shutdown or failed state.

Examples

The following example shows how to reset the ISM hardware:

```
Router# service-module ism 0/0 reset

Use reset only to recover from shutdown or failed state
Warning: May lose data on the the NVRAM, nonvolatile file system or unsaved configuration!
Do you want to reset?[confirm]
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
service-module ism reload	Performs a graceful shutdown and reboot of the ISM operating system.
service-module ism shutdown	Gracefully shuts down the ISM.
show diag	Displays controller information for ISMs.
show interfaces ism	Displays basic interface configuration information for ISMs.

service-module ism session

To begin a configuration session for an internal service module (ISM) through a console connection, use the **service-moduleismsession** command in privileged EXEC mode.

service-module ism *slot*/*port* **session** [**clear**]

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.
clear	(Optional) Clears the ISM configuration session.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

Only one session at a time is allowed into the service module from the ISM interface.

After starting a session, you can perform any ISM configuration task. You first access the ISM console in a user-level shell. To access the privileged EXEC command shell, where most commands are available, use the **enable** command.

After you finish configuration tasks and exit the ISM console session, use this command with the **clear** keyword to clear the session. At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows a session being opened for an ISM:

```
Router# service-module ism 0/0 session

Trying 10.10.10.1, 2129 ... Open

ISE-netmodule con now available
Press RETURN to get started!

ISE-netmodule> enable
ISE-netmodule#
```

The following example clears the session that had been used to configure the ISM in slot 0:

```
Router# service-module ism 0/0 session clear
[confirm]
 [OK]
```

Related Commands

Command	Description
enable	Enters privileged EXEC mode.

Command	Description
interface	Configures an interface and enters interface configuration mode.
show diag	Displays controller information for a service module.
show interface ism	Displays basic interface configuration information for service modules.

service-module ism shutdown

To gracefully shut down an internal service module (ISM), use the **service-moduleismshutdown** command in privileged EXEC mode.

service-module ism *slot*/*port* **shutdown**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

This command brings down the operating system of the specified ISM in an orderly fashion to protect the hard drive. When the system has been shut down, the module can be removed from the router.

Examples

The following example shows how to gracefully shut down the ISM:

```
Router# service-module ism 0/0 shutdown

Do you want to proceed with shutdown?[confirm]
Use service module reset command to recover from shutdown.

WARNING: Confirm that the service-module status shows 'is Shutdown' before removing the
module or powering off the system !
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
service-module ism reload	Performs a graceful shut down and reboot of the ISM operating system.
service-module ism reset	Resets the hardware on the ISM.
show diag	Displays controller information for ISMs.
show interfaces ism	Displays basic interface configuration information for ISMs.

service-module ism statistics

To display reset and reload information for an internal service module (ISM) and its Cisco IOS software, use the **service-moduleismstatistics**command in EXEC mode.

service-module ism *slot*/*port* **statistics**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Examples

The following example displays information for an ISM:

```
Router# service-module ism 0/0 statistics

Module Reset Statistics:
 CLI reset count = 0
 CLI reload count = 0
 Registration request timeout reset count = 0
 Error recovery timeout reset count = 0
 Module registration count = 1
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
service-module ism reload	Performs a graceful shutdown and reboot of the ISM operating system.
service-module ism reset	Resets the ISM hardware.
service-module ism shutdown	Gracefully shuts down the ISM.
show interfaces ism	Displays basic interface configuration information for ISMs.

service-module ism status

To display configuration information related to the hardware and software on an internal service module (ISM), use the **service-moduleismstatus**command in privileged EXEC mode.

service-module ism *slot*/*port* **status**

Syntax Description

slot	Router slot in which the service module is installed. For internal service modules, always use 0.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

Use this command to:

- Display the ISMs software release version
- Check the ISM status (steady or down)
- Display hardware information for the ISM, including CPU, memory, and interface information

Examples

The following example displays information for an ISM:

```
Router# service-module ism 0/0 status

Service Module is Cisco ISM0/0
Service Module supports session via TTY line 323
Service Module is in Steady state
Service Module heartbeat-reset is enabled
Getting status from the Service Module, please wait..
Cisco Foundation Software 1.0
FNDN Running on ISM
No install/uninstall in progress
```

Related Commands

Command	Description
interface ism	Configures an interface for an ISM and enters interface configuration mode.
show diag	Displays controller information for service modules.
show interfaces ism	Displays basic interface configuration information for ISMs.

service-module ism uninstall

To use Cisco SRE to uninstall an application on an internal service module (Cisco ISM-SRE), use the **service-moduleismuninstall**command in privileged EXEC configuration mode.

service-module ism *slot*/*port* **uninstall** [**force**]

Syntax Description

slot / *port*	Location of the services engine module in the router. For internal service modules, the slot and port number must be 0.
force	(Optional) Tcl script automatically proceeds with uninstall without prompting for confirmation.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command completely erases the disk or compact flash on the SRE-enabled services engine module and removes the application keys. It does not remove application licenses.

The slash mark (/) is required between the *slot* argument and the *port*argument.

You can only issue one instance of this command at a time on a router. You cannot use this command to uninstall an application on two or more services engine modules in the same router at a time.

Use the **force** keyword with this command to uninstall an application without first prompting for confirmation.

Examples

The following example shows how to use this command to uninstall an application without first prompting for confirmation:

```
Router# service-module ism 0/0 uninstall force
Router#
```

Related Commands

Command	Description
service-module ism install	Uses Cisco SRE to install an SRE-supported application on an SRE-enabled services engine module.

service-module mgf ip address

To place the service module (Cisco SM-SRE or Cisco ISM-SRE) on a subnet, use the **service-modulemgfipaddress**command in interface configuration mode.

service-module mgf ip address *ip-address subnet-mask* [**vlan** *vlan-id*]

Syntax Description

ip-address	IP address of the module's MGF interface.
subnet-mask	Subnet mask to append to the IP address.
vlan *vlan-id*	(Optional) Number of the VLAN to be assigned. The valid range is from 2 to 4094.

Command Default

Service module is not placed on a subnet.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
15.1(3)T	This command was introduced.

Usage Guidelines

Use this command without the **vlan***vlan-id*argument to configure the IP address on the module side for the default VLAN (VLAN 1). Use this command with the **vlan***vlan-id*argument to configure the IP address on the module side for VLANs other than VLAN 1.

Examples

The following example assigns IP addresses to the default VLAN of the port and VLAN 20:

```
Router(config)# interface sm 1/0
Router(config-if)# service-module mgf ip address 192.0.2.0
Router(config-if)# service-module mgf ip address 192.0.2.1 vlan 20
```

service-module mgf ip default-gateway

To define a default gateway (router) for a service module (Cisco SRE SM or Cisco SRE ISM), use the **service-modulemgfipdefault-gateway**command in interface configuration mode.

service-module mgf ip default-gateway *gateway-ip-address* [**vlan** *vlan-id*]

Syntax Description

gateway-ip-address	IP address of the module's default gateway.
vlan *vlan-id*	(Optional) Number of the VLAN to be assigned. The valid range is from 2 to 4094.

Command Default

Default gateway is not defined for a service module.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
15.1(3)T	This command was introduced.

Usage Guidelines

Use this command without the **vlan***vlan-id*argument to configure the default gateway on the module side for the default VLAN (VLAN 1). Use this command with the **vlan***vlan-id*argument to configure the default gateway on the module side for VLANs other than VLAN 1.

Examples

The following example assigns 192.0.2.0 as the default gateway for VLAN 1:

```
Router(config)# interface sm 2/0
Router(config-if)# service-module mgf ip default-gateway 192.0.2.0
```

service-module mgf ipv6 address

To place the service module (Cisco SM-SRE or Cisco ISM-SRE) on a subnet, use the **service-modulemgfipv6address**command in interface configuration mode.

service-module mgf ipv6 address *ipv6-address* [**vlan** *vlan-id*]

Syntax Description

ipv6-address	IPv6 address of the module's MGF interface.
vlan-id	(Optional) Number of the VLAN to be assigned. The valid range is from 2 to 4094.

Command Default

IPv6 address is not configured on the service module.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
15.1(3)T	This command was introduced.

Usage Guidelines

Use this command without the **vlan***vlan-id*argument to configure the IPv6 address on the module side for the default VLAN (VLAN 1). Use this command with the **vlan***vlan-id*argument to configure the IPv6 address on the module side for VLANs other than VLAN 1.

Examples

The following example assigns IPv6 addresses to the default VLAN of the port and VLAN 20:

```
Router(config)# interface sm 2/0
Router(config-if)# service-module mgf ipv6 address 2001:0DB8::/48
Router(config-if)# service-module mgf ipv6 address 2001:0DB8::/48 vlan 20
```

service-module routing redistribute

To enable the router to send its routing database to the satellite network central hub, use the **service-moduleroutingredistribute** command in satellite interface configuration mode. To prevent the router from sending its routing database over the satellite network, use the **no** form of this command.

service-module routing redistribute
no service-module routing redistribute

Syntax Description

This command has no arguments or keywords.

Command Default

The router is enabled to send its routing database to the hub.

Command Modes

Satellite interface configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

The **service-moduleroutingredistribute** command is used on a VSAT router, that is, an earthbound modular access router equipped with a Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT) that connects to a satellite network. When VSAT route updates are enabled, the NM-1VSAT-GILAT network module uses Router Blade Configuration Protocol (RBCP) messages to communicate VSAT routing table changes to the hub.

Entering the **noservice-moduleroutingredistribute** command is useful when you do not want the hub to be aware of all the routes known by the VSAT router, such as when Network Address Translation (NAT) is configured on the router.

The hub must learn the remote VSAT routing database for the satellite network to function properly. Therefore, if you enter the **noservice-moduleroutingredistribute** command, then one of the following actions is required:

- You use RIPv2 as the only routing protocol on your VSAT router. The hub can understand and track RIPv2 route updates.
- On the hub router, configure static routes to the VSAT router networks.

Examples

The following example shows how to prevent the VSAT router from sending its routing database to the satellite network central hub:

```
Router(config-if)# no service-module routing redistribute
```

service-module satellite backup

To test the hub dial backup connection for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), use the **service-modulesatellitebackup** command in privileged EXEC mode.

service module satellite *slot/unit* **backup** {**initiate** | **terminate**}

Syntax Description

slot	Router chassis slot in which the network module is installed.
unit	Interface number. For NM-1VSAT-GILAT network modules, always use 0.
initiate	Initiates a hub dial backup connection.
terminate	Terminates a hub dial backup connection.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

The **service-modulesatellitebackup** command is used only when you configure *hub* dial backup for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

Normally, the hub dial backup connection comes up only when the satellite link goes down (for example, because of a rain-fade event). The **service-modulesatellitebackup** command allows you to artificially bring down the satellite link to test the hub dial backup connection.

Examples

The following example shows how to initiate a satellite backup test:

```
Router# service-module satellite 1/0 backup initiate
```

The following example shows how to terminate a running satellite backup test:

```
Router# service-module satellite 1/0 backup terminate
```

Related Commands

Command	Description
service-module backup interface	Specifies the interface to use to back up the satellite interface on the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
service-module backup mode	Sets the terrestrial backup mode for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

service-module satellite configuration

To enter satellite initial configuration mode, use the **service-modulesatelliteconfiguration**command in user EXEC or privileged EXEC mode.

service-module satellite *slot*/*unit* **configuration**

Syntax Description

slot	Router chassis slot in which the network module is installed.
unit	Interface number. For NM-1VSAT-GILAT network modules, always use 0.

Command Default

No default behavior or values.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

You need a password from your satellite service provider to enter satellite initial configuration mode.

The parameters that you configure in satellite initial configuration mode are saved directly to the network module and do not appear in the router configuration, even though you configure the parameters through the Cisco IOS CLI.

To view the parameter values that were configured in satellite initial configuration mode, use one of the following commands:

- **show** command in satellite initial configuration mode
- **service-module satellite** *slot* **/0 status** command in privileged EXEC mode

Note This command is typically used by an installation technician. Do not use this command unless your satellite service provider instructs you to perform the satellite initial configuration and provides all necessary parameter values.

Examples

The following example shows how to enter satellite initial configuration mode:

```
Router> service-module satellite 1/0 configuration

Password: <mypassword>

Reminder:changing any parameters will result in a software reset of the module.
Router(sat-init-config)>
```

Related Commands

Command	Description
end (satellite initial configuration)	Exits satellite initial configuration mode, saves any new or changed parameters, and resets the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
exit (satellite initial configuration)	Exits satellite initial configuration mode, saves any new or changed parameters, and resets the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
service-module satellite status	Displays status information related to the hardware and software on the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), including the initial configuration parameters.
show (satellite initial configuration)	Displays the initial configuration parameters for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

service-module satellite cw-mode

To enable or disable continuous wave mode, use the **service-modulesatellitecw-mode** command in satellite interface configuration mode.

service-module satellite *slot/unit* **cw-mode** {**off** | **on** **frequency** *frequency* [**time** *time*]}

Syntax Description

slot	Router chassis slot in which the network module is installed.
unit	Interface number. For NM-1VSAT-GILAT network modules, always use 0.
off	Disables continuous wave mode.
on	Enables continuous wave mode.
frequency *frequency*	Frequency, in kilohertz, in the range from 900000 to 1650000.
time *time*	Length of time, in seconds, that continuous wave mode is enabled. The *time* argument is a number in the range from 60 to 1800.

Command Default

Continuous wave mode is disabled.

If the time is not specified, continuous wave mode continues until turned off.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.4(2)T	A password challenge was added to the command-line interface when continuous wave mode is enabled.

Usage Guidelines

Continuous wave mode can be enabled only when the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT) is in boot mode.

When continuous wave mode is enabled, the NM-1VSAT-GILAT network module transmits unmodulated carrier waves that can be used for dish antenna orientation adjustments and for signal quality measurements.

Note This command is typically used by an installation technician. Do not use this command unless your satellite service provider instructs you to do so.

Note You need a password from your satellite service provider to enable continuous wave mode.

Examples

The following example shows how to enable continuous wave mode for 2 minutes, at 900000 kilohertz:

```
Router# service-module satellite 1/0 cw-mode on frequency 900000 time 120

Password: <mypassword>
CW mode obtained.
```

The following example shows how to disable continuous wave mode:

```
Router# service-module satellite 1/0 cw-mode off

CW mode released.
```

The following example shows the message that appears when you try to enable continuous wave mode while the NM-1VSAT-GILAT network module is *not* in boot mode:

```
Router# service-module satellite 1/0 cw-mode on frequency 900000 time 120

Password <mypassword>
% CW mode NOT obtained!  Valid during boot mode only.
```

service-module satellite status

To display status information related to the hardware and software on the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT), including the initial configuration parameters, use the**service-modulesatellitestatus** command in privileged EXEC mode.

service-module satellite *slot/unit* **status** [**log**]

Syntax Description

slot	Router chassis slot in which the network module is installed.
unit	Interface number. For NM-1VSAT-GILAT network modules, always use 0.
log	Extends the output to include the last ring of messages from the firmware and the last crash dump available from the NM-1VSAT-GILAT network module.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.3(14)T	This command was introduced.

Usage Guidelines

Use the **service-modulesatellitestatus** command to troubleshoot the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

Examples

See the table below for **service-modulesatellitestatus** command output field descriptions.

This section provides the following examples:

Normal Operation Example

The following example shows that the link to the hub (backbone status) is up, as is expected in normal working conditions:

```
Router# service-module satellite 2/0 status

Getting status from the satellite module, please wait..
Software Versions, OS:14.2.2, RSP:1.5.1.3, MBC:1.0.0.5
HW Version:00008100
CPA Number:6204, HPS CPA:1, HSP Link:2
AA Group: 258, SW Group: 512, Download: YES
Service Module Uptime:00:06:40, Router Uptime:1 day, 20 hours, 26 minutes
Current router clocktime:*03:11:22.641 UTC Tue Dec 2 2003
Oper Mode:OPERATIONAL
, In Dial Backup:NO, Standby:NO, One-Way:NO
RBCP Received Packets:44, RBCP Sent Packets:41
Bit Error Rate:0e-0, Signal to Noise Ratio:12.4453
IP Address/Mask:10.22.1.1/255.255.255.252
Service Module MAC:00:A0:AC:00:20:60
RX Lock:LOCKED, Sync Lock:LOCKED
```

```
BackBone Status:UP
, Two-Way Mode:YES, DA/RA Mode:RA
Outbound Modulation Type:DVB, OB Code Rate:3/4
Outbound Unicast Packets:61, OB Multicast Packets:23547
Outbound ID:2, OB PID:514, OB Freq:1201000, OB Bit Rate:30000000
Outbound Sync IP address: 172.22.0.3
Inbound Start Freq:1201176, IB Stop Freq:1209336
Inbound Data Rate:307200, IB Freq Offset:0
Inbound Packets:3553
BackBone Hub Link Status:UP
BackBone Received Packets:1, BB Sent:3552
BackBone Received Retransmitted:0, BB Sent Retrans:0
Service Module Eth RX:3550, TX:47110
Service Module Eth Multicast RX:1, Multicast TX:23563
Bufs Configured:5000, Bufs Free:4951
Internal Software State parameters:
   Service Module SW State Var:3
   General IOS FSM:LINK_UP, HSRP FSM:ACTIVE, HSRP VSAT Mode:ACTIVE
   Lost Beats Total:0, Lost Beats This Retry:0
VOIP DA calls:
  NONE
```

Boot Mode Example

The following example shows that the NM-1VSAT-GILAT network module is in boot mode after a software reset, so that the link to the hub (backbone status) is down:

```
Router# service-module satellite 1/0 status

Getting status from the satellite module, please wait..
Software Versions, OS:0.0.0, RSP:1.0.0.5, MBC:0.0.0.0
HW Version:001D1757
CPA Number:6204, HPS CPA:0, HSP Link:2
AA Group: 258, SW Group: 512, Download: YES
Service Module Uptime:00:00:14, Router Uptime:1 day, 20 hours, 19 minutes
Current router clocktime:*03:04:38.017 UTC Tue Dec 2 2003
Oper Mode:BOOT
, In Dial Backup:NO, Standby:NO, One-Way:NO
RBCP Received Packets:1, RBCP Sent Packets:8
Bit Error Rate:0e-0, Signal to Noise Ratio:12.4453
IP Address/Mask:172.27.1.54/255.255.255.252
Service Module MAC:00:A0:AC:00:20:60
RX Lock:LOCKED, Sync Lock:NOT LOCKED
BackBone Status:DOWN
, Two-Way Mode:YES, DA/RA Mode:RA
Outbound Modulation Type:DVB, OB Code Rate:3/4
Outbound Unicast Packets:0, OB Multicast Packets:0
Outbound ID:2, OB PID:514, OB Freq:1201000, OB Bit Rate:30000000
Outbound Sync IP address: 172.22.0.3
Inbound Start Freq:1201176, IB Stop Freq:1209336
Inbound Data Rate:307200, IB Freq Offset:0
COUNTERS OMITTED.  Not available at this time.
Internal Software State parameters:
   Service Module SW State Var:3
   General IOS FSM:LINK_DOWN, HSRP FSM:ACTIVE, HSRP VSAT Mode:ACTIVE
   Lost Beats Total:0, Lost Beats This Retry:0
VOIP DA calls:
  NONE
```

Software Reset Example

The following example shows what appears during the beginning stages of a software reset:

```
Router# service-module satellite 2/0 status

   Getting status from the satellite module, please wait..
   % Satellite2/0 card is busy.  Status is not available.  Try later.
```

Hub Dial Backup Example

The following example shows that the hub dial backup link is being used instead of the satellite link. Note, however, that hub dial backup keeps the backbone status up. In hub dial backup mode, the NM-1VSAT-GILAT network module connects to the hub over a specified dial backup link and maintains TCP connections.

```
Router# service-module satellite 1/0 status

Getting status from the satellite module, please wait..
Software Versions, OS:14.2.3, RSP:1.5.1.3, MBC:1.0.0.5
HW Version:00008100
CPA Number:3201, HPS CPA:1, HSP Link:2
AA Group: 258, SW Group: 512, Download: YES
Service Module Uptime:02:09:38, Router Uptime:2 hours, 10 minutes
Current router clocktime:*19:28:20.195 UTC Wed Apr 7 2004
Oper Mode:OPERATIONAL, In Dial Backup:YES
, Standby:NO, One-Way:NO
RBCP Received Packets:31511, RBCP Sent Packets:31358
Bit Error Rate:0e-0, Signal to Noise Ratio:12.4453
IP Address/Mask:10.0.0.100/255.255.255.0
Service Module MAC:00:A0:AC:00:20:66
RX Lock:LOCKED, Sync Lock:NOT LOCKED
BackBone Status:UP
, Two-Way Mode:YES, DA/RA Mode:RA
Outbound Modulation Type:DVB, OB Code Rate:3/4
Outbound Unicast Packets:39944, OB Multicast Packets:45612
Outbound ID:2, OB PID:514, OB Freq:1201000, OB Bit Rate:30000000
Outbound Sync IP address: 172.22.0.3
Inbound Start Freq:1201176, IB Stop Freq:1209336
Inbound Data Rate:307200, IB Freq Offset:0
Inbound Packets:8281
BackBone Hub Link Status:UP
BackBone Received Packets:37894, BB Sent:39162
BackBone Received Retransmitted:1, BB Sent Retrans:12
Service Module Eth RX:37840, TX:129000
Service Module Eth Multicast RX:202, Multicast TX:45970
Bufs Configured:5000, Bufs Free:4949
Internal Software State parameters:
   Service Module SW State Var:3
   General IOS FSM:LINK_UP, HSRP FSM:N/A, HSRP VSAT Mode:N/A
   Lost Beats Total:0, Lost Beats This Retry:0
```

VoIP Example

The following example shows the status of VoIP calls. Note that dedicated access (DA) mode is in use, and you can see the bandwidth (26 kilobits per second) being used on the DA channels.

```
Router# service-module satellite 1/0 status

Getting status from the satellite module, please wait..
Software Versions, OS:14.2.3, RSP:1.5.1.3, MBC:1.0.0.5
HW Version:00008100
CPA Number:6202, HPS CPA:1, HSP Link:2
AA Group: 258, SW Group: 512, Download: YES
Service Module Uptime:00:34:53, Router Uptime:2 days, 21 hours, 23 minutes
Current router clocktime:*08:33:51.301 UTC Mon Feb 16 2004
Oper Mode:OPERATIONAL, In Dial Backup:NO, Standby:NO, One-Way:NO
RBCP Received Packets:335, RBCP Sent Packets:332
Bit Error Rate:0e-0, Signal to Noise Ratio:12.4453
IP Address/Mask:10.2.0.2/255.255.0.0
Service Module MAC:00:A0:AC:00:20:67
RX Lock:LOCKED, Sync Lock:LOCKED
BackBone Status:UP, Two-Way Mode:YES, DA/RA Mode:DA

Outbound Modulation Type:DVB, OB Code Rate:3/4
Outbound Unicast Packets:758, OB Multicast Packets:139823
Outbound ID:2, OB PID:514, OB Freq:1201000, OB Bit Rate:30000000
Outbound Sync IP address: 172.22.0.3
Inbound Start Freq:1201176, IB Stop Freq:1209336
Inbound Data Rate:307200, IB Freq Offset:0
Inbound Packets:346
BackBone Hub Link Status:UP
BackBone Received Packets:335, BB Sent:288
BackBone Received Retransmitted:0, BB Sent Retrans:0
Service Module Eth RX:356, TX:280163
Service Module Eth Multicast RX:1, Multicast TX:139918
Bufs Configured:5000, Bufs Free:4951
Internal Software State parameters:
   Service Module SW State Var:3
   General IOS FSM:LINK_UP, HSRP FSM:N/A, HSRP VSAT Mode:N/A
   Lost Beats Total:0, Lost Beats This Retry:0
VOIP DA calls:

   Call ID  BW (kb)
  Dst Port  Src Port  Dest Addr
  ========  ======= ========  ========  ==============
     16075      26
     18310     16866  162.0.0.2
```

Firmware Debug Log Example

The following example includes the firmware debug message log:

```
Router# service-module satellite 1/0 status log

Getting status from the satellite module, please wait..
Software Versions, OS:14.2.3, RSP:1.5.1.3, MBC:1.0.0.5
HW Version:00008100
CPA Number:1203, HPS CPA:1, HSP Link:2
AA Group: 258, SW Group: 512, Download: YES
Service Module Uptime:19:01:32, Router Uptime:1 week, 4 days, 16 hours,
15 minutes
Current router clocktime:*15:12:45.310 UTC Mon May 13 2002
Oper Mode:OPERATIONAL, In Dial Backup:NO, Standby:NO, One-Way:NO
RBCP Received Packets:9279, RBCP Sent Packets:9276
Bit Error Rate:0e-0, Signal to Noise Ratio:12.4453
IP Address/Mask:14.0.0.6/255.255.255.0
```

```
Service Module MAC:00:A0:AC:00:20:72
RX Lock:LOCKED, Sync Lock:LOCKED
BackBone Status:UP, Two-Way Mode:YES, DA/RA Mode:RA
Outbound Modulation Type:DVB, OB Code Rate:3/4
Outbound Unicast Packets:11099797, OB Multicast Packets:429401
Outbound ID:2, OB PID:514, OB Freq:1201000, OB Bit Rate:30000000
Outbound Sync IP address: 172.22.0.3
Inbound Start Freq:1201176, IB Stop Freq:1209336
Inbound Data Rate:307200, IB Freq Offset:0
Inbound Packets:674619
BackBone Hub Link Status:UP
BackBone Received Packets:11084921, BB Sent:93899
BackBone Received Retransmitted:352, BB Sent Retrans:2
Service Module Eth RX:10001424, TX:18532485
Service Module Eth Multicast RX:2615, Multicast TX:431486
Bufs Configured:5000, Bufs Free:1240
Internal Software State parameters:
   Service Module SW State Var:3
   General IOS FSM:LINK_UP, HSRP FSM:N/A, HSRP VSAT Mode:N/A
   Lost Beats Total:4, Lost Beats This Retry:0
VOIP DA calls:
  NONE
Last forced reset log from card
==============================
bb 01 e3 a3 28 00 00 10 00 01 ff 6f f0 00 00 10
00 00 2a aa 00 4f f9 5f c4 00 00 01 2a ff ff ff
ff 00 00 80 00 01 ff 6f f0 00 00 00 00 01 ff 76
b0 01 e3 a3 28 00 00 90 02 00 00 00 00 00 00 00
13 00 18 84 1c 00 00 00 00 01 e3 a3 28 00 2b 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 2b 00 00 01 ff 76 b0 00 2a a2 80 00 00 88
88 00 00 90 02 00 0a 7f 58 00 00 00 00 00 00 00
00 40 00 00 43 20 00 00 00 00 00 00 00 01 ff 76
b0 00 00 00 00 01 ff 70 20 ff ff ff
```

The table below describes the significant fields shown in the displays.

Table 1: service-module satellite status Field Descriptions

Field	Description
Software Versions HW Version	Software (not Cisco IOS) and hardware versions on the NM-1VSAT-GILAT network module. Useful for technical support.
CPA Number HPS CPA HSP Link AA Group SW Group Download	VSAT-to-hub link parameters.
Oper Mode	Operational mode; one of the following values: • OPERATIONAL--Boot complete and running operational code. • BOOT HOLD--Held in boot mode. • BOOT--In boot mode after a reset. • IDLE--Transitional state. • UNKNOWN--Indicates an error.

Field	Description
In Dial Backup	YES indicates that the satellite link is down and that the hub dial backup connection is in use. NO means that the hub dial backup connection is not in use or not configured. **Note** This field does not indicate whether *router* dial backup mode is in use.
Standby	YES indicates that the router in which the NM-1VSAT-GILAT network module is installed is in standby mode for Hot Standby Router Protocol (HSRP). NO indicates that the router in which the NM-1VSAT-GILAT network module is installed is either in active mode for HSRP, or HSRP is not configured.
One-Way	YES indicates one-way operational mode. NO indicates two-way operational mode.
RBCP Received Packets RBCP Sent Packets	Number of sent and received Router Blade Configuration Protocol (RBCP) packets.
IP Address/Mask	IP address and subnet mask of the NM-1VSAT-GILAT network module.
RX Lock Sync Lock	Corresponds to the following LEDs on the NM-1VSAT-GILAT network module faceplate: • RX LOCK--Indicates whether or not the DVB (outbound) receiver is locked. • SYNC--Indicates whether or not the NM-1VSAT-GILAT network module is synchronized with the hub timing. For both fields: • LOCKED indicates that the initial connection to the hub was successful. This means that the dish antenna is positioned correctly and the satellite initial configuration parameters are valid. • NOT LOCKED indicates that the NM-1VSAT-GILAT network module is in a transitional state during the boot process. If NOT LOCKED does not eventually become LOCKED, then the satellite initial configuration parameters are incorrect, there is a hardware problem, or the satellite signal has faded because of rain-fade or obstruction.
BackBone Status	Backbone link to the hub, either fully established (UP) or not fully established (DOWN). Corresponds to the ON LINE LED on the NM-1VSAT-GILAT network module faceplate.

Field	Description
Two-Way Mode	YES indicates two-way operational mode. NO indicates one-way operational mode.
DA/RA Mode	Indicates whether the satellite link is operating in random access (RA) or dedicated access (DA) mode. DA mode is required for VoIP calls.
Outbound Modulation Type OB Code Rate Outbound ID OB PID OB Freq OB Bit Rate Outbound Sync IP address	Satellite initial configuration parameters: • Outbound modulation type • Outbound Viterbi code rate • Outbound VSAT ID • Outbound packet identifier (PID) • Outbound frequency • Outbound data rate • Outbound synchronization IP address
Internal Software State parameters	Internal states that are useful for technical support.
VOIP DA calls	Information about VoIP calls, which use DA mode. **Note** This field appears only on routers that run VoIP-enabled Cisco IOS software images.
Last forced reset log from card	Debug information used by technical support.

Related Commands

Command	Description
show (satellite initial configuration)	Displays the initial configuration parameters for the Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
show controllers satellite	Displays controller information about the internal router interface that connects to an installed Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).
show interfaces satellite	Displays general interface settings and traffic rates for the internal router interface that connects to an installed Cisco IP VSAT satellite WAN network module (NM-1VSAT-GILAT).

service-module service-engine

To enter the Cisco Unity Express command environment using a network module (NM) or an advanced Integration Module (AIM) card module, use the **service-moduleservice-engine** command in privileged EXEC mode.

service-module service-engine *slot/port* **session**

Syntax Description

slot	Slot number of the NM or AIM.
port	Port number of the NM or AIM.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(15)ZJ	This command was introduced for NMs.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T.
12.3(7)T	Support was added for AIMs.

Usage Guidelines

This command may only be used for NMs and AIMs running Cisco Unity Express. If your system does not have this hardware, then you will be unable to enter this command.

The **no** form of this command (**nointerfaceservice-engine**) is not available. You can enter the **exit** command to return to the router.

Examples

The following example shows the command for enabling Cisco Unity Express command environment using either a NM or AIM located in slot 4, port 0:

```
Router# service-module service-engine 4/0 session
Router# Trying 172.18.106.66, 2129 ... Open
```

service-module sm default-boot

To configure the SM-SRE service module to use the default BIOS and bootloader, use the **service-modulesmdefault-boot** command in privileged EXEC mode.

service-module sm *slot*/*port* **default-boot**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

After a downtime event or failed upgrade, use this command to configure the service module to use the primary BIOS and primary bootloader to perform startup routines.

Examples

The following is sample output for a service module:

```
Router# service-module sm 1/0 default-boot
clear  Clear Default Boot
set    Set Default Boot

Router# service-module sm 1/0 default-boot clear
Router# service-module sm 1/0 default-boot set
```

service-module sm heartbeat-reset

To prevent Cisco IOS software from rebooting the SM-SRE service module when the heartbeat is lost, use the **service-modulesmheartbeat-reset** command in privileged EXEC mode.

service-module sm *slot*/*port* **heartbeat-reset** {**disable** | **enable**}

Syntax Description

slot	Number of the router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.
disable	Disables reset of the service module if the heartbeat is lost.
enable	Enables reset of the service module if the heartbeat is lost.

Command Default

Service module is reset when heartbeat is lost.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

When the service module is booted in failsafe mode or is undergoing an upgrade, this command prevents a reboot during the process.

When the service module heartbeat is lost, the router applies a fail-open or fail-close configuration option to the module, stops sending traffic to the module, and sets the module to error state. The router performs a hardware reset on the service module and monitors it until the heartbeat is reestablished.

Examples

The following example shows how to disable the service module from being reset if the heartbeat is lost:

```
Router# service-module sm 1/0 heartbeat-reset disable
```

You can display the status of the heartbeat reset feature with the **service-modulesmstatus**command:

```
Router# service-module sm 1/0 status

Service Module is Cisco IDS-Sensor 1/0
Service Module supports session via TTY line 194
Service Module heartbeat-reset is enabled <=====
```

Related Commands

Command	Description
interface sm	Configures an interface for a service module and enters interface configuration mode.
service-module sm reload	Performs a graceful shutdown and reboot of the service module.

Command	Description
service-module sm reset	Resets the service module hardware.
service-module sm shutdown	Performs a graceful shutdown of the service module.
service-module sm status	Displays configuration information related to the hardware and software on a service module.

service-module sm install

To use Cisco SRE to install an application on a service module (Cisco SM-SRE), use the **service-modulesminstall**command in privileged EXEC configuration mode.

service-module sm *slot*/*port* **install url** *url* [**script** *filename*] [**argument** *"string"*] [**force**]

Syntax Description

slot / *port*	Location of the services engine module in the router. For service modules, the slot number is 1 to 4 and the port number must be 0.
url *url*	Address of FTP or HTTP server, as defined in RFC 2396, on which application packages and Tcl scripts are located.
script	(Optional) Changes name of Tcl script to be run from default value to script specified by *filename* argument.
filename	Name of Tcl script.
argument	(Optional) Installer will not present options for the variable specified in the *string* argument.
string	Alphanumeric characters of variable to be passed directly to the Tcl script via the command line. Variable must be enclosed in quotation marks (“ ”)
force	(Optional) Tcl script automatically proceeds with install without prompting for user input.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command uses a common module-dependent bootloader on Cisco SRE to install a Linux-based application, such as Cisco Unity Express or Cisco AXP, on a service module (Cisco SM-SRE).

The slash mark (/) is required between the *slot* argument and the *port* argument.

You can only issue one instance of this command at a time on a router. You cannot use this command to install an application on two or more services engine modules in the same router at a time.

The Tcl script to be run must reside in the same FTP or HTTP server and directory as the application packages to be installed. If a credential is required, the user name and password must be imbedded in the url as shown in the following example:

```
Router# service-module sm 1/0 install url ftp://username:passwd@server.com/axp
```

If two or more of the optional keyword/argument combinations are used with this command, they must be issued in the order presented in the command syntax. For example, you cannot use the **force** keyword before the **script** or**argument** keywords nor the **argument** keyword before the **script** keyword when you issue this command.

Use the **script***filename* keyword/argument combination with this command to specify that the Cisco IOS software use some Tcl script other than the default installer during the installation.

Use the **argument“***string***”** keyword/argument combination with this command to manually provide variables during installation process and bypass the user interaction feature of the installer. The variable must include the left and right quotation marks (“ ”).

Use the **force** keyword with this command to install an application without prompting for user input. If you use this keyword and if the application requires you to provide certain variables during the installation, you should also use the **argument“***string***”** keyword/argument combination to manually provide the required variables because the **force** keyword will direct the installer to bypass all user interaction during the installation.

To stop the install while the Tcl script is being downloaded, use the **service-modulesminstallabort** command. This command cannot be used once the actual installation begins.

Examples

The following example shows how to use this command to run a “help.sre” Tcl script rather than the default installation Tcl script:

```
Router# service-module sm 1/0 install url ftp://server.com/cue script help.sre
Router#
```

The following example shows how to direct the installer to use the specified language variable for US English instead of prompting you with language options for Cisco Unity Express:

```
Router# service-module sm 1/0 install url ftp://server.com/cue argument "lang=en_us"
Router#
```

The following example shows the messages displayed on the module console during a successful installation using Cisco SRE:

```
Feb  6 19:09:22.526 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-SM 1/0 PROGRESSING:
Validating package signature ...1 .
Feb  6 19:09:23.058 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-SM 1/0 PROGRESSING: Parsing
 package manifest files ...1 .
Feb  6 19:09:44.742 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-SM 1/0 PROGRESSING: Starting
 payload download1 .
Feb  6 19:09:52.022 EDT: %SM_INSTALL-6-INST_PROG: Service-Module-SM 1/0 PROGRESSING:
Performing Hot install ...1 .
Install successful on Service-Module-SM 1/0 Feb  6 19:10:28.826 EDT: %SM_INSTALL-6-INST_SUCC:
 Service-Module-SM 1/0 SUCCESS: install-completed .
```

Related Commands

Command	Description
service-module sm install abort	Stops the install and returns to the boot-loader prompt.
service-module sm uninstall	Uses Cisco SRE to uninstall an SRE-supported application on an SRE-enabled services engine module.

service-module sm install abort

To abort the Cisco SRE install process on a Cisco SM-SRE, use the **service-modulesminstallabort**command in privileged EXEC configuration mode.

service-module sm *slot/port* **install abort** [**force**]

Syntax Description

slot/port	Location of the services engine module in the router. For service modules, the slot number is 1 to 4 and the port number must be 0.
force	(Optional) Tcl script automatically stops the installation without prompting for confirmation.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command stops the installation during the downloading portion of the process only and returns the console to the boot-loader prompt. You cannot use this command to stop the process once the actual installation has begun.

Use the **force** keyword with this command to stop the process without first prompting for confirmation.

Examples

The following example shows how to use this command to stop an application installation without first prompting for confirmation:

```
Router# service-module sm 4/0 install abort force
.
.
.
boot-loader>
```

Related Commands

Command	Description
service-module sm install	Uses Cisco SRE to install an SRE-supported application on an SRE-enabled services engine module.

service-module sm reload

To perform a graceful shutdown and reboot of the SM-SRE service module operating system, use the **service-modulesmreload** command in privileged EXEC mode.

service-module sm *slot*/*port* **reload**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows how to gracefully shut down the module and reboot the operating system:

```
Router# service-module sm 1/0 reload

Do you want to proceed with reload?[confirm]
```

Related Commands

Command	Description
interface sm	Configures an interface for a service module and enters interface configuration mode.
service-module sm reset	Resets the service module hardware.
service-module sm shutdown	Gracefully shuts down the service module.
show diag	Displays controller information for service modules.
show interfaces sm	Displays basic interface configuration information for service modules.

service-module sm reset

To reset the SM-SRE service module hardware, use the **service-modulesmreset** command in privileged EXEC mode.

service-module sm *slot*/*port* **reset**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Caution Because you may lose data, use the **service-modulesmreset** command only to recover from a shutdown or failed state.

Examples

The following example shows how to reset the service module hardware:

```
Router# service-module sm 1/0 reset

Use reset only to recover from shutdown or failed state
Warning: May lose data on the the NVRAM, nonvolatile file system or unsaved configuration!
Do you want to reset?[confirm]
```

Related Commands

Command	Description
interface sm	Configures an interface for a service module and enters interface configuration mode.
service-module sm reload	Performs a graceful shutdown and reboot of the service module operating system.
service-module sm shutdown	Gracefully shuts down the service module.
show diag	Displays controller information for service modules.
show interfaces sm	Displays basic interface configuration information for service modules.

service-module sm session

To begin a configuration session for an SM-SRE service module through a console connection, use the **service-modulesmsession** command in privileged EXEC mode.

service-module sm *slot*/*port* **session** [**clear**]

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.
clear	(Optional) Clears the service module configuration session.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

Only one session at a time is allowed into the service module from the service module interface.

After starting a session, you can perform any service module configuration task. You first access the service module console in a user-level shell. To access the privileged EXEC command shell, where most commands are available, use the **enable** command.

After you finish configuration tasks and exit the service module console session, use this command with the **clear** keyword to clear the session. At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

Examples

The following example shows a session being opened for an SM-SRE:

```
Router# service-module sm 1/0 session

Trying 10.10.10.1, 2129 ... Open

SE-Module con now available
Press RETURN to get started!

SE-Module> enable
```

The following example clears the session that had been used to configure the SM-SRE in slot 1:

```
Router# service-module sm 1/0 session clear
[confirm]
 [OK]
```

Related Commands

Command	Description
enable	Enters privileged EXEC mode.

Command	Description
interface	Configures an interface and enters interface configuration mode.
show diag	Displays controller information for a service module.
show interface sm	Displays basic interface configuration information for service modules.

service-module sm shutdown

To gracefully shut down an SM-SRE service module, use the **service-modulesmshutdown** command in privileged EXEC mode.

service-module sm *slot*/*port* **shutdown**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

At the confirmation prompt, press **Enter** to confirm the action or **n** to cancel.

This command brings down the operating system of the specified service module in an orderly fashion to protect the hard drive. When the system is shut down, the module can be removed from the router.

Examples

The following example shows how to gracefully shut down the service module:

```
Router# service-module sm 1/0 shutdown

Do you want to proceed with shutdown?[confirm]
Use service module reset command to recover from shutdown.

WARNING: Confirm that the service-module status shows 'is Shutdown' before removing the
module or powering off the system !
```

Related Commands

Command	Description
interface sm	Configures an interface for an SM-SRE and enters interface configuration mode.
service-module sm reload	Performs a graceful shut down and reboot of the SM-SRE operating system.
service-module sm reset	Resets the hardware on the SM-SRE.
show diag	Displays controller information for service modules.
show interfaces sm	Displays basic interface configuration information for SM-SREs.

service-module sm statistics

To display reset and reload information for an SM-SRE service module and its Cisco IOS software, use the **service-modulesmstatistics**command in EXEC mode.

service-module sm *slot*/*port* **statistics**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Examples

The following example displays information for a service module in slot 1:

```
Router# service-module sm 1/0 statistics

Module Reset Statistics:
 CLI reset count = 0
 CLI reload count = 0
 Registration request timeout reset count = 1
 Error recovery timeout reset count = 1
 Module registration count = 1
```

Related Commands

Command	Description
interface sm	Configures an interface for an SM-SRE and enters interface configuration mode.
service-module sm reload	Performs a graceful shutdown and reboot of the SM-SRE operating system.
service-module sm reset	Resets the SM-SRE hardware.
service-module sm shutdown	Gracefully shuts down the SM-SRE.
show interfaces sm	Displays basic interface configuration information for SM-SREs.

service-module sm status

To display configuration information related to the hardware and software on an SM-SRE service module, use the **service-modulesmstatus**command in privileged EXEC mode.

service-module sm *slot*/*port* **status**

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

Use this command to:

- Display the SM-SREs software release version
- Check the SM-SRE status (steady or down)
- Display hardware information for the SM-SRE, including CPU, memory, and interface information

Examples

The following example displays information for an SM-SRE:

```
Router# service-module sm 1/0 status

Service Module is Cisco SM1/0
Service Module supports session via TTY line 67
Service Module is in Steady state
Service Module heartbeat-reset is enabled
Getting status from the Service Module, please wait..
Cisco Foundation Software 1.0
FNDN Running on SM
No install/uninstall in progress
```

Related Commands

Command	Description
interface sm	Configures an interface for an SM-SRE and enters interface configuration mode.
show diag	Displays controller information for service modules.
show interfaces sm	Displays basic interface configuration information for SM-SREs.

service-module sm uninstall

To use Cisco SRE to uninstall an application on a service module (Cisco SM-SRE), use the **service-modulesmuninstall**command in privileged EXEC configuration mode.

service-module sm *slot*/*port* **uninstall** [**force**]

Syntax Description

slot / *port*	Location of the services engine module in the router. For service modules, the slot number is 1 to 4 and port number must be 0.
force	(Optional) Tcl script automatically proceeds with uninstall without prompting for confirmation.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

This command completely erases the disk or compact flash of the SRE-enabled services engine module and removes the application keys. It does not remove application licenses.

The slash mark (/) is required between the *slot* argument and the *port* argument.

You can only issue one instance of this command at a time on a router. You cannot use this command to uninstall an application on two or more services engine modules in a router at a time.

Use the **force** keyword with this command to uninstall an appliction without first prompting for confirmation.

Examples

The following example shows how to use this command to uninstall an application without first prompting for confirmation:

```
Router# service-module
 sm uninstall 1/0 force
Router#
```

Related Commands

Command	Description
service-module sm install	Uses Cisco SRE to install an SRE-supported application on an SRE-enabled services engine module.

service-module t1 cablelength short

To set transmission attenuation for shorter cable lengths, use the **service-modulet1cablelengthshort** command in interface configuration mode. To disable transmission attenuation for shorter cable lengths, use the **no** form of this command.

service-module t1 cablelength short {**110ft** | **220ft** | **330ft** | **440ft** | **550ft** | **660ft**}
no service-module t1 cablelength short

Syntax Description

110ft	Sets a cable length from 0 to 110 feet.
220ft	Sets a cable length from 111 to 220 feet.
330ft	Sets a cable length from 221 to 330 feet.
440ft	Sets a cable length from 331 to 440 feet.
550ft	Sets a cable length from 441 to 550 feet.
660ft	Sets a cable length from 551 to 660 feet.

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
12.2(15)ZL	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.

Usage Guidelines

This command is intended only for the Version 2 card, WIC-1-DSU-T1 V2, as part of the **service-modulet1** configuration options.

Use this command to configure the transmission (tx) attenuation for cables whose length is shorter than or equal to 660 feet. The related command, **service-modulet1lbo**, is used to define the line-build-out values for cable lengths longer than 660ft. At any time, only one, either the short configuration or the lbo configuration, can exist. They cannot co-exist. The configuration of one command will cause the effect of the other command to cease and only the new command will be in effect.

Examples

The following example shows how to set the short cablelength to 220 feet.

```
Router(config)# interface serial 0/0
Router(config-if)# service-module t1 cablelength short 220ft
```

Related Commands

Command	Description
service-module t1 lbo	Configures the CSU line-build-out (lbo) on a fractional T1/T1 DSU/CSU module.

service-module t1 clock source

To specify the clock source for the fractional T1/T1 CSU/DSU module, use the **service-modulet1clocksource** command in interface configuration mode. To return to the default line clock, use the **no** form of this command.

service-module t1 clock source {**internal** | **line**}
no service-module t1 clock source

Syntax Description

internal	Specifies the CSU/DSU internal clock.
line	Specifies the line clock. This is the default.

Command Default

Line clock

Command Modes

Interface configuration

Command History

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

Examples

The following example sets an internal clock source on serial line 0:

```
Router(config)# interface serial 0
Router(config
-if)
# service-module t1 clock source internal
```

Related Commands

Command	Description
service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.

service-module t1 data-coding

To guarantee the ones density requirement on an alternate mark inversion (AMI) line using the fractional T1/T1 module, use the **service-modulet1data-coding**command in interface configuration mode. To enable normal data transmission, use the**no**form of this command.

service-module t1 data-coding {**inverted** | **normal**}
no service-module t1 data-coding

Syntax Description

inverted	Inverts bit codes by changing all 1 bits to 0 bits and all 0 bits to 1 bits.
normal	Requests that no bit codes be inverted before transmission. This is the default.

Command Default

Normal transmission

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Data inversion is used to guarantee the ones density requirement on an AMI line when using bit-oriented protocols such as High-Level Data Link Control (HDLC), PPP, X.25, and Frame Relay. If the time slot speed is set to 56 kbps, this command is rejected because line density is guaranteed when transmitting at 56 kbps. Use this command with the 64-kbps line speed.

If you transmit inverted bit codes, both CSU/DSUs must have this command configured for successful communication.

Examples

The following example inverts bit codes using a time slot speed of 64 kbps:

```
Router(config)# interface serial 0
Router(config
-if)
# service-module t1 timeslots all speed 64
Router(config
-if)
# service-module t1 data-coding inverted
```

Related Commands

Command	Description
service-module t1 linecode	Selects the linecode for the fractional T1/T1 module.
service-module t1 timeslots	Defines time slots that constitute a fractional T1/T1 (FT1/T1) channel.

service-module t1 fdl

To set the facilities data link (FDL) parameter to either ATT or ANSI, use the**service-modulet1fdl** command in interface configuration mode. To ignore the FDL parameter, use the **no** form of this command.

service-module t1 fdl {**ansi** | **att**}
no service-module t1 fdl

Syntax Description

ansi	Sets the FDL parameter to ANSI.
att	Sets the FDL parameter to ATT.

Command Default

Determined by the telephone company

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The default is **noservice-modulet1fdl**. The **ansi** or **att** options are determined by your service provider or telephone company.

Examples

The following example sets the FDL parameter to ANSI:

```
Router(config)# interface serial 0
Router(config
-if)
# service-module t1 fdl ansi
```

service-module t1 framing

To select the frame type for a line using the fractional T1/T1 (FT1/T1) module, use the **service-modulet1framing** command in interface configuration mode. To revert to the default, Extended Super Frame, use the **no**form of this command.

service-module t1 framing commandservice-module t1 framing {**esf** | **sf**}
no service-module t1 framing commandservice-module t1 framing {**esf** | **sf**}

Syntax Description

esf	Specifies extended super frame (ESF) as the T1 frame type. This is the default.
sf	Specifies D4 super frame (SF) as the T1 frame type.

Command Default

esf

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Use this command in configurations in which the router communicates with FT1/T1 data lines. The service provider determines which framing type, either **esf** or **sf**, is required for your circuit.

Examples

The following example enables Super Frame as the FT1/T1 frame type:

```
Router(config
-if)
# service-module t1 framing sf
```

service-module t1 lbo

To configure the CSU line-build-out (LBO) on a fractional T1/T1 CSU/DSU module, use the **service-modulet1lbo**command in interface configuration mode. To disable line-build-out, use the **no**form of this command.

service-module t1 lbo {**-15 db** | **-7.5 db** | **none**}
no service-module t1 lbo {**-15 db** | **-7.5 db** | **none**}

Syntax Description

-15 db	Decreases outgoing signal strength by 15 dB.
-7.5 db	Decreases outgoing signal strength by 7.5 dB.
none	Transmits packets without decreasing outgoing signal strength.

Command Default

Disabled

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Use this command to decrease the outgoing signal strength to an optimum value for a fractional T1 line receiver. The ideal signal strength should be -15 dB to -22 dB, which is calculated by adding the phone company loss, cable length loss, and line build out.

You may use this command in back-to-back configurations, but it is not needed on most actual T1 lines.

Examples

The following example sets the LBO to -7.5 dB:

```
Router(config)# interface serial 0
Router(config
-if)
# service-module t1 lbo -7.5 db
```