Cable Commands: cable t

cable tag

To configure a tag for a DOCSIS load balancing group on the CMTS, use the **cable load-balance docsis-group** command in the global configuration mode. To delete the tag and remove it from the CMTS configuration, use the **no** form of this command.

cable tag *1-1000*

no cable tag *1-1000*

Syntax Description

1-1000	Specifies a cable tag number.

Command Default

None.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
12.2(33)SCH	This command was modified. The tag to exclude TLV type was added.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The **cable tag** command creates a tag with the specified number and then enters the CMTS-tag configuration mode. Use the following commands in the CMTS-tag configuration mode to configure the tag:

- **docsis-version**

- **exclude**

- **exit**

- **name**

- **oui**

- **override**

- **service-class**

- **service-type-id**

- tlv

General tagging is used by Cisco CMTS as follows:

- The Cisco CMTS can classify some modems with user-defined modem classifiers using the STID, service class name, DOCSIS version and capability TLVs and MAC Organization Unique Identifier (OUI).

- Each modem classifier has a unique tag. The Cisco CMTS allows each modem to carry one tag. When multiple tags match one cable modem, the tag that has the least index gets applied on the CM.

- The Cisco CMTS classifies a CM and assigns a tag, and if a RLBG with that tag is configured, the CM gets assigned to that RLBG.

- The Cisco CMTS can match multiple tags to a RLBG and a DOCSIS policy.

Examples

The following example shows how to create a tag numbered as "1' following which the system enters the cmts-tag configuration mode:

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# cable tag 1
Router(config-cmts-tag)# name CSCO
Router(config-cmts-tag)# service-type-id commercial
Router(config-cmts-tag)# service-class work
Router(config-cmts-tag)# docsis-version docsis20
Router(config-cmts-tag)# oui 00.1a.c3
Router(config-cmts-tag)# override
```

The following example shows how to configure the tag to exclude a DOCSIS version, a MAC address, a service class name, or a service type ID.

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# cable tag 1
Router(config-cmts-tag)# exclude docsis-version docsis10
Router(config-cmts-tag)# exclude oui 00.1a.c3
Router(config-cmts-tag)# exclude service-class work
Router(config-cmts-tag)# exclude service-type-id commercial
```

In Cisco IOS Release 12.2(33)SCH, **TLV type** was introduced. The following example shows how to configure the tag to exclude the **TLV type**:

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# cable tag 1
Router(config-cmts-tag)# exclude tlv mrcs 4
```

Related Commands

Command	Description
docsis-version	Configures the specified DOCSIS version of the cable modem (CM) for the tag.
exclude	Configures the tag to exclude a DOCSIS version, a MAC address, a service class name, or a service type ID.
name	Specifies the name of the tag.

Command	Description
oui	Configures the specified Organization Unique Identifier (OUI) of the CM for the tag.
override	Overrides type/length/value (TLV) or Simple Network Management Protocol (SNMP) settings when assigning the restricted load balancing group (RLBG) to CMs.
service-class	Configures the specified service class name for the tag.
service-type-id	Configures the specified service type ID for the tag.
tag	Associates the cable modem tag with a RLBG.
tlv	Configures a TLV type matching rule.

cable telco-return enable

To enable telco-return support, use the **cable telco-return enable** command in cable interface configuration mode. To disable this feature, use the **no** form of this command.

telco-return enable

no cable telco-return enable

Syntax Description   This command has no arguments or keywords.

Command Default   Telco-return support is disabled.

Command Modes   Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Examples   The following example shows how to enable telco-return:

```
Router(config-if)# cable telco-return enable
```

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Related Commands

Command	Description
cable telco-return interval	Defines the interval for sending Telephony Channel Descriptor (TCD) and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.

Command	Description
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the service provider descriptor (SPD) that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD message.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return interval

To set the interval for sending Telephony Channel Descriptor (TCD) and Termination System Information (TSI) messages, use the **cable telco-return interval**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return interval *seconds*

no cable telco-return interval

Syntax Description

seconds	Number of seconds between intervals for sending TCD and TSI messages. The valid range is from 2 to 60.

Command Default 2 seconds

Command Modes Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Examples The following example shows how to set the TCD and TSI message interval to 40 seconds:

```
Router(config-if)# cable telco-return interval 40
```

Note This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.

Command	Description
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the service provider descriptor (SPD) that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return registration-ip

To select a different IP address for the telco-return CM to send its registration requests, use the **cable telco-return registration-ip**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return registration-ip *ip-address*

no cable telco-return registration-ip

Syntax Description

ip-address	Registration IP address that is sent in Termination System Information (TSI) messages. Value is any of the cable interface's IP addresses.

Command Default

The downstream channel IP address of the Cisco CMTS is used.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.1(2)EC	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the Registration IP Address parameter in TSI messages. By default, the downstream channel IP address of the Cisco CMTS is also used for the registration IP address. When this **cable telco-return registration-ip** command is configured, telco-return CMs send their registration requests to this IP address instead of to the downstream channel IP address.

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example shows how to send the CM's registration requests to IP address 172.16.1.1:

```
Router(config-if)# cable telco-return registration-ip 172.16.1.1
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending Telephony Channel Descriptor (TCD) and TSI messages.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the service provider descriptor (SPD) that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd dhcp-authenticate

To require the telco-return CM to use a specific Dynamic Host Configuration Protocol (DHCP) server, use the **cable telco-return spd dhcp-authenticate** command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **dhcp-authenticate**

no cable telco-return spd *spd-number* **dhcp-authenticate**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.

Command Default

The CM can use any available DHCP server.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the DHCP Authenticate parameter to TRUE (1) for the specified SPD in the Telephony Channel Descriptor (TCD) messages. It indicates that the CM must use the DHCP server that is specified with the **cable telco-return spd dhcp-server** command.

Note

This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example indicates that for SPD 2, CMs must use the DHCP server identified by IP address 192.168.255.255:

```
Router(config-if)# cable telco-return spd 2 dhcp-authenticate
Router(config-if)# cable telco-return spd 2 dhcp-server 192.168.255.255
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd dhcp-server

To identify the IP address of the Dynamic Host Configuration Protocol (DHCP) server that the telco-return CM must access, use the **cable telco-return spd dhcp-server**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **dhcp-server** *ip-address*

no cable telco-return spd *spd-number* **dhcp-server**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
ip-address	IP address of the DHCP server that CMs must use.

Command Default

The IP address is set to 0.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the DHCP Server parameter in the specified SPD in Telephony Channel Descriptor (TCD) messages. Telco-return CMs use the DHCP server that is identified by this IP address if the **cable telco-return spd dhcp-authenticate** command is configured. If the **cable telco-return spd dhcp-authenticate**command is not configured, the CMs use any available DHCP server.

Note This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example indicates that for SPD 2, CMs must use the DHCP server identified by IP address 192.168.255.255:

```
Router(config-if)# cable telco-return spd 2 dhcp-authenticate
Router(config-if)# cable telco-return spd 2 dhcp-server 192.168.255.255
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd dial-timer

To set the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call, use the **cable telco-return spd dial-timer** command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **dial-timer** *seconds*

no cable telco-return spd *spd-number* **dial-timer**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
seconds	Number of seconds that a connection is idle before the CM disconnects the call. Valid range is 0 through 4,294,967,295. The default of 0 means that the dial-timer is not used.

Command Default

The dial-timer is set to 0, which means that inactive telephone connections are not disconnected.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the Demand Dial Timer parameter for the specified SPD in Telephony Channel Descriptor (TCD) messages. This enables the CM to emulate true dial-on-demand functionality by monitoring inactive networking time and allowing it to disconnect any telephone connection that exceeds the timer.

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example shows how to set the timer to 2 hours:

```
Router(config-if)# cable telco-return spd 2 dial-timer 7200
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd factory-default

To indicate the service provider descriptor (SPD) that the telco-return CM uses during the initialization process, use the **cable telco-return spd factory-default** command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **factory-default**

no cable telco-return spd *spd-number* **factory-default**

Syntax Description

spd-number	Service provider descriptor (SPD) that contains the set of telephony attributes used by the CM during initialization. Valid range is 1 through 5.

Command Default
The Factory Default Flag in the SPD is set to 0, which means that this SPD is not used for the initialization process.

Command Modes
Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines
This command sets the Factory Default parameter in the specified SPD in Telephony Channel Descriptor (TCD) messages. This determines the set of telephony attributes, as defined by the SPD, that are used for the initialization process when the CM is powered on or is reset to its factory default.

> **Note** This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples
The following example shows how to set the telco-return CM to use SPD 2 during the initialization procedure:

```
Router(config-if)# cable telco-return spd 2 factory-default
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific Dynamic Host Configuration Protocol (DHCP) server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd manual-dial

To enable the telco-return CM to operate in manual-dial mode, use the **cable telco-return spd manual-dial**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **manual-dial**

no cable telco-return spd *spd-number* **manual-dial**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.

Command Default

Manual-dial mode is disabled.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the Manual Dial vendor-specific parameter in the specified SPD in Telephony Channel Descriptor (TCD) messages.

Note

This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example shows how to set manual-dial mode for SPD 1:

```
Router(config-if)# cable telco-return spd 1 manual-dial
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.

Command	Description
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd password

To set the password that the telco-return CM uses for authentication when establishing a PPP connection with the access server, use the **cable telco-return spd password**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **password** *password-string*

no cable telco-return spd *spd-number* **password**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
password-string	Login password that the CM uses for authentication during the initialization procedure.

Command Default   No password is used.

Command Modes   Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   This command sets the Login Password parameter for the specified SPD in Telephony Channel Descriptor (TCD) messages.

> **Note**   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples   The following example shows how to set the password to 9JwoKd7 in service provider descriptor 2:

```
Router(config-if)# cable telco-return spd 2 password 9JwoKd7
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd phonenum

To set the telephone numbers that the telco-return CM uses when connecting to the headend's network access server, use the **cable telco-return spd phonenum**command in cable interface configuration mode. To delete previously entered telephone numbers, use the **no** form of this command.

cable telco-return spd *spd-number* **phonenum** *dial-string*

no cable telco-return spd *spd-number* **phonenum** *dial-string*

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
dial-string	Telephone number that the CM uses to connect to the headend's network access server.

Command Default   None

Command Modes   Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   This command sets the Phone Number parameters in the specified SPD in Telephony Channel Descriptor (TCD) messages. You can repeat this command, entering as many as three telephone numbers for the CM to use when attempting to establish a PPP connection with the network access server. The phone numbers are mapped to the parameters Phone Number1, Phone Number2, Phone Number3 in the order in which you enter them. The CM attempts to connect using Phone Number1 first. If it fails to connect, and its number of retries exceeds the limit set with the **cable telco-return spd threshold** command, the CM dials the next number in the list.

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example shows how to set the primary phone number to 9255551212. If the CM fails to connect using that number, it tries the next phone number, 9255551234:

```
Router(config-if)# cable telco-return spd 2 phonenum 9255551212
Router(config-if)# cable telco-return spd 2 phonenum 9255551234
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd ppp-authenticate

To select the authentication method used when the telco-return CM is establishing a PPP connection, use the **cable telco-return spd ppp-authenticate**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **ppp-authenticate** [**both**| **chap**| **pap**]

no cable telco-return spd *spd-number* **ppp-authenticate**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
both	Challenge Handshake Authentication Protocol (CHAP) is used if the network access server supports CHAP. Password Authentication Protocol (PAP) is used only if the network access server does not support CHAP.
chap	CHAP authentication is used.
pap	PAP authentication is used.

Command Default

The default is **both**; either CHAP or PAP is used depending on the methods supported by the network access server.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the PPP Authentication parameter for the specified SPD in Telephony Channel Descriptor (TCD) messages.

Note This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples   The following example requires the CM to perform CHAP authentication:

```
Router(config-if)# cable telco-return spd 2 ppp-authenticate chap
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd radius-realm

To select a RADIUS server domain to use for the login response string, use the **cable telco-return spd radius-realm**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **radius-realm** *string*

no cable telco-return spd *spd-number* **radius-realm**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
string	Alphanumeric string identifying a RADIUS server domain.

Command Default The default value is the null string.

Command Modes Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines This command sets the RADIUS Realm parameter for the specified SPD in Telephony Channel Descriptor (TCD) messages. When this command is configured, telco-return CMs use this realm string to construct a domain name for the login username when responding to a PPP login query.

Note This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples The following example shows a login response string of "sandy@sunol":

```
Router(config-if)# cable telco-return spd 3 radius-realm sunol
Router(config-if)# cable telco-return spd 3 username sandy
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd service-provider

To include the service provider name in the SPD, use the **cable telco-return service-provider**command in cable interface configuration mode. To remove the parameter from the SPD, use the **no** form of this command.

cable telco-return spd *spd-number* **service-provider** *spd-string*

no cable telco-return spd *spd-number* **service-provider**

Syntax Description

spd-number	Service provider descriptor number for which this parameter is set. Valid range is 1 through 5.
spd-string	Alphanumeric string that identifies the service provider.

Command Default   None

Command Modes   Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   This command sets the Service Provider Name parameter for the specified SPD in the Telephony Channel Descriptor (TCD) messages.

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples   The following example shows the service provider name being set to "san_jose" for SPD 2:

```
Router(config-if)# cable telco-return spd 2 service-provider san_jose
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd threshold

To set the number of failed dial-up connections that can occur before the CM indicates a connection failure, use the **cable telco-return spd threshold**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **threshold** *threshold-number*

no cable telco-return spd *spd-number* **threshold**

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
threshold-number	Number of dial-up attempts that fail before the CM declares a connection failure. Valid range is 1 through 255.

Command Default

The default value is 1.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the Connection Threshold parameter for the specified SPD in the Telephony Channel Descriptor (TCD) messages. A dial-up attempt is considered a connection failure if an answer connection is not made after ten rings. The CM continues to try to connect until the connection threshold is reached. If multiple phone numbers are configured using the **cable telco-return spd phonenum** command, the CM dials each phone number until it makes a connection or exceeds the configured threshold.

Note This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples   The following example shows the connection threshold being set to 20:

```
Router(config-if)# cable telco-return spd 2 threshold 20
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd username	Sets the username that the telco-return CM uses for authentication when establishing a PPP connection.

cable telco-return spd username

To set the username that the telco-return CM uses for authentication when establishing a PPP connection with the access server, use the **cable telco-return spd username**command in cable interface configuration mode. To restore the default value, use the **no** form of this command.

cable telco-return spd *spd-number* **username** *login-string*

no cable telco-return spd *spd-number* **username** *login-string*

Syntax Description

spd-number	Service provider descriptor (SPD) number for which this parameter is set. Valid range is 1 through 5.
login-string	Username that the CM uses for authentication during the initialization procedure.

Command Default

The default value is *guest*.

Command Modes

Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the Login Username parameter for the specified SPD in the Telephony Channel Descriptor (TCD) messages.

Note   This command is available only in images that support telco-return. These images have a "t" as part of the image name.

Examples

The following example shows the username being set to "sandy" for SPD 3:

```
Router(config-if)# cable telco-return spd 3 username sandy
```

Related Commands

Command	Description
cable telco-return enable	Enables telco-return functionality.
cable telco-return interval	Defines the interval for sending TCD and Termination System Information (TSI) messages.
cable telco-return registration-ip	Selects a different IP address for the telco-return CM to send its registration requests.
cable telco-return spd dhcp-authenticate	Indicates that telco-return CMs must use a specific DHCP server.
cable telco-return spd dhcp-server	Identifies the IP address of the DHCP server that the telco-return CMs must use.
cable telco-return spd dial-timer	Sets the number of seconds that a telephone connection is idle before the telco-return CM disconnects the call.
cable telco-return spd factory-default	Indicates the SPD that the telco-return CM uses during the initialization process.
cable telco-return spd manual-dial	Enables the telco-return CM to operate in manual-dial mode.
cable telco-return spd password	Sets the password that the telco-return CM uses for authentication when establishing a PPP connection.
cable telco-return spd phonenum	Sets the telephone numbers that the telco-return CM dials when connecting to the headend's network access server.
cable telco-return spd ppp-authenticate	Selects the authentication procedure to use when the telco-return CM is establishing a PPP connection.
cable telco-return spd radius-realm	Selects a RADIUS server domain to use for the login response string.
cable telco-return spd service-provider	Includes the service provider name in the SPD.
cable telco-return spd threshold	Sets the number of failed dial-up connections that can occur before the CM indicates a connection failure.

cable tftp-enforce

To require that all CMs on a cable interface attempt to download a DOCSIS configuration file using the Trivial File Transfer Protocol (TFTP) through the cable interface before being allowed to register and come online, use the **cable tftp-enforce** command in cable interface configuration mode. To disable this feature, use the **no** form of this command.

cable tftp-enforce [mark-only]

no cable tftp-enforce [mark-only]

Syntax Description

mark-only	(Optional) Allow CMs to come online without attempting to download a DOCSIS configuration file through the Cisco CMTS cable interface, but prints a warning message and marks those CMs with a pound sign (#) in the **show cable modem** command.

Command Default   TFTP downloads through the Cisco CMTS are not required (**no cable tftp-enforce**).

Command Modes   Interface configuration—cable interface only (config-if)

Command History

Release	Modification
12.1(11b)EC1	This command was introduced for the Cisco uBR7100 series and Cisco uBR7200 series universal broadband routers.
12.1(19)EC	CMs that fail the TFTP checked are now marked with a reject(c) error in the **show cable modem** command, instead of the original reject(m) error, so as to be consistent with the behavior in the Release 12.2 BC train.
12.2(8)BC2	Support for this command was added to the 12.2 BC release train for the Cisco uBR7100 series, Cisco uBR7200 series, and Cisco uBR10012 universal broadband routers.
12.2(15)BC1	The command was enhanced on the Cisco uBR10012 router to prevent the router from rejecting cable modems that did properly download a DOCSIS configuration file.
IOS-XE 3.15.OS	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines The **cable tftp-enforce** cable interface configuration command requires all cable modems on a cable interface to attempt a TFTP request for the DOCSIS configuration file through the cable interface with the Cisco CMTS router before being allowed to register and come online. This can help prevent the following situations from occurring:

- Users who attempt theft-of-service by reconfiguring their local networks to allow the downloading of an unauthorized DOCSIS configuration file from a local TFTP server. Typically, some users do this to obtain services that they have not paid for, such as higher guaranteed bandwidths or a higher priority Quality of Service (QoS) profile.

- Some brands or models of cable modems might be running older software releases that cache the DOCSIS configuration file and use the cached version instead of downloading the actual file from a TFTP server during the registration process. Although this can marginally speed up the registration process, it also violates the DOCSIS requirements and could create a situation in which the cable modem is not using the proper DOCSIS configuration file. A user might then be mistakenly accused of theft-of-service, when in reality the problem is the non-DOCSIS-compliant cable modem.

The **cable tftp-enforce** command identifies these situations and can block these cable modems from registering and coming online. This command also has a **mark-only** option that allows these cable modems to come online, but it also identifies the cable modems so that the network administrators can investigate the situation further before taking any action.

When the command is used without the **mark-only** option, cable modems that do not download a TFTP file through the cable interface are blocked from registering and coming online. The following message is displayed on the console when such a cable modem attempts to register:

```
06:53:57: %UBR7200-4-REGISTRATION_BEFORE_TFTP: Registration request unexpected:
Cable Modem did not attempt TFTP. Registration Rejected. CM Mac Addr <00ff.ff66.12fb>
```

The **mark-only** option allows cable modems that do not download the TFTP file to come online, but it also prints a warning message on the console and marks the cable modem in the **show cable modem** command with a pound sign (#). The following message is displayed on the console when such a cable modem registers with the Cisco CMTS.

```
06:53:57: %UBR7200-4-REGISTRATION_BEFORE_TFTP: Registration request unexpected:
Cable Modem did not attempt TFTP. Modem marked with #. CM Mac Addr <00ff.ff66.12fb>
```

🔍

Tip Cisco recommends that you initially configure cable interfaces with the **mark-only** option, so that potential problems are identified without immediately interfering with users' ability to come online. After you identify and resolve these initial problems, reconfigure the cable interfaces without the **mark-only** option to block problem cable modems that attempt to come online without downloading a valid DOCSIS configuration file.

The default behavior is not to require the TFTP download through the cable interface with the Cisco CMTS router. Each cable interface must be configured with this command to require the TFTP download.

✎

Note The **cable tftp-enforce** command cannot be used on subinterfaces or on non-cable interfaces.

Operation on the Cisco uBR10012 Router

In Cisco IOS Release 12.2(15)BC1 and later releases, the Cisco uBR10012 router can occasionally allow a cable modem to temporarily come online before the system has received confirmation that the cable modem has downloaded the proper DOCSIS configuration file. This situation can occur when the cable interface line card receives a registration request (REG-REQ) message from a cable modem before the PRE1 module has notified the line card whether the modem did download the proper file from the TFTP server.

In previous Cisco IOS releases, these cable modems were not allowed to come online (or marked as TFTP violators) even if they had successfully downloaded the appropriate DOCSIS configuration file. In Cisco IOS Release 12.2(15)BC1 and later releases, however, the Cisco uBR10012 router allows these cable modems to temporarily come online until the PRE1 module has finished determining the modem's TFTP status. If the system determines that the modem did not download the appropriate DOCSIS configuration file, it is then taken offline (or marked as a TFTP violator).

Note   In the above situation, cable modems that do not download a DOCSIS configuration file are marked as "offline" instead of "reject(c)" by the **show cable modem** command. The console still displays the %UBR10000-4-REGISTRATION_BEFORE_TFTP error message, however, to allow you to identify these cable modems as TFTP violators.

Examples   The following example shows how to enforce TFTP downloads for all of the cable modems on cable interface 3/0. These cable modems must attempt a TFTP download of the DOCSIS configuration file through the cable interface with the Cisco CMTS. If they do not, they are not allowed to register or come online, and they are marked as having either a registration error—reject(c)—in the **show cable modem** command.

Note   The initial version of this feature marked CMs that failed the TFTP check as having a Message Integrity Check (MIC) failure—reject(m). The command was changed to show reject(c) in Cisco IOS Release 12.2(8)BC2 and Release 12.1(19)EC.

```
Router# configure terminal

Router(config)# interface cable 3/0

Router(config-if)# cable tftp-enforce
Router(config-if)# exit

Router(config)#
Router# show cable modems

Interface    Prim  Online      Timing Rec    QoS CPE IP address     MAC address
             Sid   State       Offset Power
Cable3/0/U1  1     online(pt)  2734   0.50   5   0   10.1.1.38      00ff.fffa.0a35
Cable3/0/U0  2     online(pt)  2729   0.25   5   0   10.1.1.50      00ff.ff07.382f
Cable3/0/U0  3     init(i)     2732   0.25   2   0   10.1.1.48      00ff.ff03.307d
Cable3/0/U1  4     online(pt)  2737   0.75   5   0   10.1.1.34      00ff.ff59.4477
Cable3/0/U1  5     reject(m)   2215   0.25   2   0   10.1.1.47      00ff.ff66.12fb
Router#
```

Note   DOCSIS-compliant cable modems that are rejected with a MIC failure go into the offline state for a short period of time and then retry the registration process.

The **debug cable registration** command can be used to display additional information:

```
Router# debug cable interface c3/0 verbose
```

```
Router# debug cable registration CMTS registration debugging is on
Jun  6 23:27:15.859: Registration request from 00ff.ff66.12fb, SID 7 on Cable3/0/U1
Jun  6 23:27:15.859: Found a network access control parameter: Ok
Jun  6 23:27:15.859: Found a class of service block: Ok
Jun  6 23:27:15.859: Found Baseline Privacy config: Ok
Jun  6 23:27:15.859: Found Max CPE: Ok
Jun  6 23:27:15.859: Found CM MIC: Ok
Jun  6 23:27:15.859: Found CMTS MIC: Ok
Jun  6 23:27:15.859: Found modem ip: Ok
Jun  6 23:27:15.859: Found modem capabilities: Ok
Jun  6 23:27:15.859: Finished parsing REG Request
Jun  6 23:27:15.859: Cable Modem sent Registration Request without attempting required TFTP
22:33:21 %UBR7200-4-REGISTRATION_BEFORE_TFTP: Registration request unexpected:
Cable Modem did not attempt TFTP. Registration Rejected. CM Mac Addr <00ff.ff66.12fb>
Registration failed for Cable Modem 00ff.ff66.12fb on interface Cable3/0/U0:
           CoS/Sflow/Cfr/PHS failed in REG-REQ
Jun  6 23:27:15.859: REG-RSP Status : failure (2)
Jun  6 23:27:15.859: Registration Response:
Jun  6 23:27:15.859: 0x0000: C2 00 00 1B 00 00 00 50 73 4E B4 19 00 05 00 E0
Jun  6 23:27:15.859: 0x0010: 56 AC 00 09 00 00 03 01 07 00 00 02 02
Jun  6 23:27:15.859: Registration Response Transmitted
```

The following example of the **mark-only** option shows how that cable modems that do not attempt a TFTP download through the Cisco CMTS are allowed to register and come online, but they are marked with a pound sign (#) when using the **show cable modem** command.

```
Router# configure terminal

Router(config)# interface cable 3/0

Router(config-if)# cable tftp-enforce mark-only
Router(config-if)# exit

Router(config)#
Router# show cable modems

Interface    Prim  Online     Timing Rec   QoS CPE IP address     MAC address
             Sid   State      Offset Power
Cable3/0/U1 1     online(pt) 2734   0.50  5   0   10.1.1.38      00ff.fffa.0a35
Cable3/0/U0 2     online(pt) 2729   0.25  5   0   10.1.1.50      00ff.ff07.382f
Cable3/0/U0 3     init(i)    2732   0.25  2   0   10.1.1.48      00ff.ff03.307d
Cable3/0/U1 4     online(pt) 2737   0.75  5   0   10.1.1.34      00ff.ff59.4477
Cable3/0/U1 5     #online    2213   0.25  6   0   10.1.1.47      00ff.ff66.12fb
Router#
```

The**debug cable registration** command can be used to display additional information:

```
Jun  6 23:27:15.859: Registration request from 00ff.ff66.12fb, SID 7 on Cable3/0/U1
Jun  6 23:27:15.859: Found a network access control parameter: Ok
Jun  6 23:27:15.859: Found a class of service block: Ok
Jun  6 23:27:15.859: Found Baseline Privacy config: Ok
Jun  6 23:27:15.859: Found Max CPE: Ok
Jun  6 23:27:15.859: Found CM MIC: Ok
Jun  6 23:27:15.859: Found CMTS MIC: Ok
Jun  6 23:27:15.859: Found modem ip: Ok
Jun  6 23:27:15.859: Found modem capabilities: Ok
Jun  6 23:27:15.859: Finished parsing REG Request
Jun  6 23:27:15.859: Cable Modem sent Registration Request without attempting required TFTP
23:27:15 %UBR7200-4-REGISTRATION_BEFORE_TFTP: Registration request unexpected:
Cable Modem did not attempt TFTP. Modem marked with #. CM Mac Addr <00ff.ff66.12fb>
Jun  6 23:27:15.859: Sec sids obtained for all requested classes of service
Jun  6 23:27:15.859: Performing connection admission control (CAC) for each Sid
Jun  6 23:27:15.859: CAC Status for ClassID:1 is CAC_SUCCESS
Jun  6 23:27:15.859: Registration Status: ok (0)
Jun  6 23:27:15.859: Registration Response Transmitted
```

Tip You can also use the **show interface cable sid** and **show cable qos profile**commands to examine the SID and service classes in use, to determine whether a CM has registered using unauthorized QoS parameters.

Related Commands

Command	Description
cable dynamic-secret	Enables the dynamic shared secret feature, so that DOCSIS configuration files are verified with a dynamically generated shared secret.
cable shared-secondary-secret	Configures one or more secondary shared-secret keys that CMs can use to successfully process the DOCSIS configuration file and register with the CMTS.
cable shared-secret	Configures an authentication shared-secret key that CMs must use to successfully process the DOCSIS configuration file and register with the CMTS.
debug cable registration	Displays debug messages for the CM registration process.
show cable modem	Displays information for the registered and unregistered CMs.

cable throttle-modem

To enable the Cable Modem Registration Throttling feature, which improves the cable modem online speed at initial ranging stage by reducing CPU usage, use the **cable throttle-modem** command in global configuration mode. To disable this feature, use the **no** form of this command.

cable throttle-modem init-rate *value* **holdoff-time** *value* **flush-rate** *value*

no cable throttle-modem

Syntax Description

init-rate *value*	Specifies the maximum number of modems allowed to pass the initialization step per second. The valid range is from 1 to 1000. The default value is 32.
holdoff-time *value*	Specifies the maximum number of seconds a cable modem is allowed to wait in the throttling queue. The valid range is from 5 to 100. The default value is 45.
flush-rate *value*	Specifies the maximum number of modems flushed per second from the throttling queue after the holdoff time expires. The valid range is from 100 to 1000. The default value is 300.

Command Default

This command is disabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCF3	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The **cable throttle-modem** command enables dynamic adjustment of number of cable modems in the registration queue thus reducing CPU usage.

You must manually disable the **cable throttle-ranging** command (applicable only for Cisco uBR10K Series Routers) configuration to enable the **cable throttle-modem** command configuration.

Note   The **cable throttle-modem** command is available only on the Cisco uBR10012 CMTS.

Examples   The following example shows how to enable the Cable Modem Registration Throttling feature on a Cisco CMTS:

```
Router# configure terminal
Router(config)# cable throttle-modem init-rate 1 holdoff-time 5 flush-rate 100
```

Related Commands

Command	Description
(For Cisco uBR10K Series Routers) **cable throttle-ranging**	Enables faster cable modem registration times.
show cable throttle-modem	**Displays cable throttle configuration information.**

cable throttle-ranging

To enable faster cable modem registration times, use the **cable throttle-ranging** command in global configuration mode. To disable faster cable modem registration times, use the **no** form of this command.

cable throttle-ranging

no cable throttle-ranging

Syntax Description   This command has no arguments or keywords

Command Default   This command is disabled by default.

Command Modes   Global configuration (config)

Command History

Release	Modification
12.3(21)BC	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   The **cable throttle-ranging** command enables faster cable modem registration times on the CMTS.

Reload the Cisco CMTS with a Cisco IOS Release 12.3(21)BC image and configure the **cable throttle-ranging** command on the CMTS. Once the **cable throttle-ranging** has been configured, save the new configuration and reload the Cisco CMTS again. Faster cable modem registration times will now be enabled on the Cisco CMTS.

Note   The **cable throttle-ranging** command is only available on an ubr10k CMTS.

Examples   The following example shows how to enable Fast CM registration feature on a Cisco CMTS:

```
Router(config)# cable throttle-ranging
```

cable time-server

To enable the integrated time-of-day (ToD) server on the Cisco CMTS series, enter the **cable time-server** command in global configuration mode. To disable the time-of-day server function, use the **no** form of this command.

cable time-server

no cable time-server

Syntax Description   This command has no keywords or arguments.

Command Default   The integrated time-of-day (ToD) server is disabled.

Command Modes   Global configuration (config)

Command History

Release	Modification
12.0(4)XI	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   Per the DOCSIS specifications, the ToD server uses the UDP protocol, so UDP minor servers must also be enabled using the **service udp-small-servers max-servers no-limit** command.

Examples   The following example shows how to enable the time-of-day server:

```
Router# configure terminal

Router(config)# service udp-small-servers max-servers no-limit
Router(config)# cable time-server
Router(config)#
```

cable trust

To enable packets from trusted source MAC addresses in DHCP, use the **cable trust** command in global configuration mode. To remove a trusted MAC address from the MAC exclusion list, use the **no** form of this command. Removing a MAC address from the exclusion list subjects all packets from that source to standard DHCP source verification.

cable trust *mac-address*

no cable trust *mac-address*

Syntax Description

mac-address	The MAC address of a trusted DHCP source, and from which packets will not be subject to standard DHCP source verification.

Command Default

Disabled

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(13a)BC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Per the DOCSIS specifications, the ToD server uses the UDP protocol, so UDP minor servers must also be enabled using the **service udp-small-servers max-servers no-limit** command.

This command and capability are only supported in circumstances in which the Cable Source Verify feature is first enabled on the Cisco CMTS.

When this feature is enabled in addition to cable source verify, a packet's source must belong to the MAC Exclude list on the Cisco CMTS. If the packet succeeds this exclusionary check, then the source IP address is verified against Address Resolution Protocol (ARP) tables as per normal and previously supported source verification checks. The service ID (SID) and the source IP address of the packet must match those in the ARP host database on the Cisco CMTS. If the packet check succeeds, the packet is allowed to pass. Rejected packets are discarded in either of these two checks.

Any trusted source MAC address in the optional exclusion list may be removed at any time. Removal of a MAC address returns previously trusted packets to non-trusted status, and subjects all packets to standard source verification checks on the Cisco CMTS.

Note	When the **cable source-verify dhcp** feature is enabled, and a statically-defined IP address has been added to the CMTS for a CM using the **cable trust** command to override the **cable source-verify dhcp** checks for this device, packets from this CM will continue to be dropped until an entry for this CM is added to the ARP database of the CMTS. To achieve this, disable the **cable source-verify dhcp** feature, ping the CMTS from the CM to add an entry to the ARP database, and re-enable the **cable source-verify dhcp** feature.

Examples   The following example shows how to enable the time-of-day server:

```
Router# configure terminal
Router(config)# cable trust 0007.0e03.69f9
Router(config)# Ctrl^Z
Router#
```

cable tx-power-headroom

To configure cable modems with the extended transmit power capability based on the Organizational Unique Identifier (OUI), use the **cable tx-power-headroom** command in global configuration mode. To disable this configuration, use the **no** form of this command.

cable tx-power-headroom *OUI dB-value*

no cable tx-power-headroom *OUI dB-value*

Syntax Description

OUI	First 24 bits of a MAC address that is unique to the cable modem vendor.
dB-value	Decibel value for the upstream channel transmit power. The valid range is from 1 to 6.

Command Default   None

Command Modes   Global configuration (config)

Command History

Release	Modification
Cisco IOS Release 12.2(33)SCE3	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines   You can use the **cable tx-power-headroom** command for each unique OUI. You can specify either the MAC address or the OUI value with this command. If you specify the MAC address, only its OUI value is saved.

Examples   The following example shows how to configure extended transmit power on the Cisco CMTS router in Cisco IOS Release 12.2(33)SCE3:

```
Router# configure terminal
Router(config)# cable tx-power-headroom 0025.2ed0.8cba 3
```

Related Commands

Command	Description
cable upstream max-channel-power-off	Specifies the power budget offset value on the Cisco CMTS router for the reduced channel set assignment.

Command	Description
show cable modem	Displays transmit power values for each assigned upstream channel along with cable modem details.