

Telephone Return for the Cisco uBR7200 Series Cable Router

Feature Overview

This feature module provides software support for telephone return in a cable-routed system. Telephone return in a cable environment is that part of the cable network which connects the subscriber's cable modem with the headend cable router over standard phone lines (as opposed to an all-cable network connecting the headend router with cable modems).

Benefits

Telephone (or telco) return allows Multi-Service Operators (MSOs) to support their cable subscribers without replacing existing hardware.

Related Documents

For more information on cable routers, see:

- *Voice, Video, and Home Applications Configuration Guide*
- *Voice, Video, and Home Applications Command Reference*

Supported Platforms

Cisco uBR7200 Series

Supported MIBs and RFCs

MIBs

None

RFCs

- DOCSIS Telephony Return
- SP-CMTRI-I01-970804

Configuration Tasks

Perform the following tasks to configure the features discussed in this document:

- Configuring Telco Return
- Verifying Telco Return Configuration

Configuring Telco Return

- Step 1** Boot the uBR7200 with the Telco-return bootflash image.
- Step 2** Verify uBR7200 output power level and downstream/upstream transmission.
- Step 3** Boot the Telco-return modems and verify modem registration.
- Step 4** Verify that the uBR7200 can ping the Telco-return modems.

Verifying Telco Return Configuration

To verify that the subscriber modem can log into the CMTS in telco-return mode:

- Step 1** Reboot the subscriber modem.
- Step 2** Allow the subscriber modem to complete telco registration (will take several minutes).
- Step 3** Enter the **show cable modem** command on the uBR cable router to verify that the subscriber modem is shown in the list. The letter “T” indicates that a modem is a telco-return modem.

```
ubr7246-1#show cable modem
Interface  Prim Online  Timing Rec   QoS CPE IP address  MAC address
          Sid  State   Offset Power
Cable4/0/U0 2  online  2848  -0.50  5  1  10.2.0.3    0010.7b6b.53d5
Cable4/0/T  3  offline  0      0.00  2  1  10.2.0.101  0020.4001.4af6
Cable4/0/U0 4  online  2852  -0.75  5  1  10.2.0.6    0010.7b6b.7255
Cable4/0/U0 5  online  2850  0.25  5  1  10.2.0.7    0010.7b6b.5669
Cable4/0/U0 6  online  2851  0.00  2  1  10.2.0.4    0010.7b6b.53c9
Cable4/0/T  7  offline  0      0.00  2  0  10.2.0.102  0020.4001.4b32
```

- Step 4** Ping the subscriber modem from the uBR cable router to ensure the uBR cable router receives the echo reply packets.

Configuration Examples

The following example shows how to configure the cable router interface to support telco return:

```
#cable telco-return enable
ubr7223#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
ubr7223 (config)#int c2/0
ubr7223 (config-if)#cable telco-return spd 1 factory-default
ubr7223 (config-if)#cable telco-return spd 1 phonenum 8005551212
ubr7223 (config-if)#cable telco-return spd 1 phonenum 4085551212
ubr7223 (config-if)#cable telco-return spd 1 phonenum 6505551212
ubr7223 (config-if)#cable telco-return spd 1 service-provider norcal
ubr7223 (config-if)#cable telco-return spd 1 dhcp-server 172.172.172.172
ubr7223 (config-if)#cable telco-return spd 1 username joe
ubr7223 (config-if)#cable telco-return spd 1 password password
ubr7223 (config-if)#cable telco-return spd 1 dhcp-authenticate
ubr7223 (config-if)#cable telco-return spd 1 threshold 5
ubr7223 (config-if)#cable telco-return spd 1 ppp-authenticate both
ubr7223 (config-if)#cable telco-return spd 1 manual-dial
ubr7223 (config-if)#cable telco-return spd 1 dial-timer 7200
```

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references:

- **cable telco-return enable**
- **cable telco-return interval**
- **cable telco-return spd service-provider**
- **cable telco-return spd radius-realm**
- **cable telco-return spd service-provider**
- **cable telco-return spd dhcp-authenticate**
- **cable telco-return spd dhcp-server**
- **cable telco-return spd dial-timer**
- **cable telco-return spd factory-default**
- **cable telco-return spd manual-dial**
- **cable telco-return spd ppp-authenticate**
- **cable telco-return spd service-provider**
- **cable telco-return spd username**

cable telco-return enable

To enable telephone return support, use the **cable telco-return enable** interface configuration command. Use the **no** form of this command to disable this feature:

```
cable telco-return enable  
no cable telco-return enable
```

Syntax Description

This command has no arguments or keywords.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7233(config-if)#cable telco-return enable
```

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 interval

To specify the intervals for sending TCD enrollment messages and TSI messages, use the **cable telco-return interval** interface configuration command. Use the **no** form of this command to set the time interval to the default:

cable telco-return interval *seconds*
no cable telco-return interval

Syntax Description

seconds Specifies the number of seconds for TCD or TSI messages. Valid range is from 2 to 60 seconds.

Defaults

2 seconds

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223(config-if)#cable telco-return interval 40
```

Related Commands

Command	Description
cable telco-return enable	Enables or disables the telco return feature.

cable telco-return spd dhcp-authenticate

To set the DHCP Authenticate parameter in TCD messages as TRUE (1), which specifies the DHCP server that must be used, use the **cable telco-return spd dhcp-authenticate** interface configuration command. Use the **no** form of this command to set the DHCP Authenticate parameter to the default value and remove the parameter from subsequent TCD messages:

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

Syntax Description

spd *number* Specifies the SPD number.

Defaults

FALSE (0)

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Usage Guidelines

The DHCP Authenticate parameter, which is an optional parameter, is expressed as a boolean value.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 dhcp-authenticate
```

Related Commands

Command	Description
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.

cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.
---	--

cable telco-return spd dhcp-server

To specify the IP address of the DHCP server parameter in TCD messages, use the **cable telco-return spd dhcp-server** interface configuration command. Use the **no** form of this command to set the default value and remove the parameter from subsequent TCD messages:

```
cable telco-return spd number dhcp-server ip address
no cable telco-return spd dhcp-server
```

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>ip address</i>	Specifies the IP address of the DHCP server.

Defaults

0

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 dhcp-server 206.44.207.255
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.
cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.

cable telco-return spd dial-timer

To specify the Demand Dial Timer TCD parameter for TCD messages, use the **cable telco-return spd dial-timer EXEC** command. Use the **no** form of this command to set the default value and remove the dial-timer parameter from subsequent TCD messages:

```
cable telco-return spd number dial-timer seconds
no cable telco-return spd dial-timer
```

Syntax Description

spd <i>number</i>	Specifies the SPD number.
dial-timer <i>seconds</i>	Specifies the number of seconds of the Demand Dial Timer parameter for TCD messages. Valid range is from 0 to 4294967295.

Defaults

0

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 dial-timer 7200
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.
cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.

cable telco-return spd factory-default

To indicate the service provider descriptor (SPD) used by cable modems during the factory default procedure, use the **cable telco-return spd factory-default** interface configuration command. Use the **no** form of this command to disable this feature:

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

Syntax Description

spd *number* Specifies the SPD number.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Usage Guidelines

The SPD specified is the factory default SPD.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 factory-default
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.

cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.
---	--

cable telco-return spd manual-dial

To specify the manual dial parameter in TCD messages, use the **cable telco-return spd manual-dial** interface configuration command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

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

Syntax Description

spd *number* Specifies the SPD number.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 1 manual-dial
```

Related Commands

Command	Description
cable telco-return spd username	Specifies the Login Username parameter in TCD messages.
cable telco-return password	Specifies the Login Password parameter in TCD messages.
cable telco-return spd radius-realm	Specifies the RADIUS Realm parameter in TCD messages.

cable telco-return spd password

To specify the Login Password parameter in TCD messages, use the **cable telco-return spd password** interface configuration command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

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

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>string</i>	Specifies the login password.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 password 9JwoKd7
```

Related Commands

Command	Description
cable telco-return service- provider	Specifies the Service Provider Name parameter in TCD messages.
cable telco-return spd username	Specifies the Login Username parameter in TCD messages.
cable telco-return spd radius-realm	Specifies the RADIUS Realm parameter in TCD messages.

cable telco-return spd phonenum

To specify the Telephone Numbers parameter in TCD messages, use the **cable telco-return spd phonenum** interface configuration command. Use the **no** form of this command to delete any or all previously entered telephone numbers.

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

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>string</i>	Specifies the telephone number to be used by the Telephone Numbers parameter in TCD messages.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Usage Guidelines

You can repeat this command to enter up to three telephone numbers that are mapped to the Telephone Numbers parameters (in TCD messages). The phone numbers appear as Phone Number 1, Phone Number 2, and Phone Number 3 in the order in which you enter them.

Examples

```
ubr7223(config-if)#cable telco-return spd 2 phonenum 9255551212
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.

cable telco-return spd phonenum

cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.

cable telco-return spd ppp-authenticate

To specify the PPP Authentication parameter in TCD messages, use the **cable telco-return spd ppp-authenticate EXEC** command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

```
cable telco-return spd number ppp-authenticate [both | chap | pap]
no cable telco-return spd ppp-authenticate
```

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>both</i>	Specifies PAP and CHAP authentication.
<i>chap</i>	Specifies CHAP authentication.
<i>pap</i>	Specifies PAP authentication.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 ppp-authenticate chap
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.

cable telco-return spd threshold	Specifies the Connection Attempt Threshold parameter for TCD messages.
---	--

cable telco-return spd radius-realm

To specify the RADIUS Realm service provider descriptor (SPD) parameter in TCD messages, use the **cable telco-return spd radius-realm** interface configuration command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

```
cable telco-return spd number radius-realm string
no cable telco-return spd number radius-realm
```

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>string</i>	Specifies the RADIUS Realm name.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd radius-realm sunol
```

Related Commands

Command	Description
cable telco-return service- provider	Specifies the Service Provider Name parameter in TCD messages.
cable telco-return spd username	Specifies the Login Username parameter in TCD messages.
cable telco-return password	Specifies the Login Password parameter in TCD messages.

cable telco-return spd service-provider

To specify the Service Provider Name parameter in TCD messages, use the **cable telco-return service-provider** interface configuration command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

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

Syntax Description

spd *number* Specifies the SPD number.
string Specifies the service provider name.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 service-provider san_jose
```

Related Commands

Command	Description
cable telco-return spd username	Specifies the Login Username parameter in TCD messages.
cable telco-return password	Specifies the Login Password parameter in TCD messages.
cable telco-return spd radius-realm	Specifies the RADIUS Realm parameter in TCD messages.

cable telco-return spd threshold

To specify the Connection Attempt Threshold parameter for TCD messages, use the **cable telco-return spd threshold** interface configuration command. Use the **no** form of this command to set the default threshold:

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

Syntax Description

spd <i>number</i>	Specifies the SPD number.
threshold <i>number</i>	Specifies the connection attempt threshold. Valid range is from 1 to 255.

Defaults

1

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 2 threshold 200
```

Related Commands

Command	Description
cable telco-return spd dhcp-authenticate	Specifies the DHCP Authenticate parameter in TCD messages as TRUE.
cable telco-return spd dhcp-server	Specifies the IP address of the DHCP server parameter in TCD messages.
cable telco-return spd dial-timer	Specifies the Demand Dial Timer TCD parameter for TCD messages.
cable telco-return spd factory-default	Indicates the factory default service provider descriptor (SPD) used by cable modems.
cable telco-return spd ppp-authenticate	Specifies the PPP Authentication parameter in TCD messages.
cable telco-return spd phonenum	Specifies the Telephone Numbers parameter in TCD messages.

cable telco-return spd username

To specify the Login Username parameter in TCD messages, use the **cable telco-return spd username** interface configuration command. Use the **no** form of this command to remove the parameter from subsequent TCD messages:

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

Syntax Description

spd <i>number</i>	Specifies the SPD number.
<i>string</i>	Specifies the login username.

Defaults

No default behavior or values.

Command Modes

Interface Configuration

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223 (config-if) #cable telco-return spd 3 username sandy
```

Related Commands

Command	Description
cable telco-return service- provider	Specifies the Service Provider Name parameter in TCD messages.
cable telco-return password	Specifies the Login Password parameter in TCD messages.
cable telco-return spd radius-realm	Specifies the RADIUS Realm parameter in TCD messages.

Debug Commands

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

- **debug cable telco-return**
- **debug cable telco-return msg**

debug cable telco-return

To display debug messages for telco-return events, use the **debug cable telco-return EXEC** command. Use the **no** form of this command to disable debugging output.

[no] debug cable telco return

Syntax Description

This command has no arguments or keywords.

Defaults

Debugging for telco-return events is not enabled.

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
CMTS-ubr7223#debug cable telco-return  
CMTS telco-return debugging is on
```

Related Commands

Command	Description
debug telco-return msg	Displays debug messages for telco-return events.

debug telco-return msg

To display debug messages for telco-return events, use the **debug cable telco-return msg EXEC** command. Use the **no** form of this command to disable debugging output.

[no] debug cable telco-return msg

Syntax Description

This command has no arguments or keywords.

Defaults

Debugging for telco-return messages is not enabled.

Command History

Release	Modification
12.0(4)XI	This command was introduced.

Examples

```
ubr7223#debug cable telco-return msg
CMTS telco-return msg debugging is on
```

Related Commands

Command	Description
debug cable telco-return	Displays debug messages for telco-return events.

