



# Expanded Scope for Cause-Code-Initiated Call Establishment Retries

The Expanded Scope for Cause-Code-Initiated Call Establishment Retries feature enables the gateway to reattempt calls when a disconnect message is received from the public switched telephone network (PSTN) without maintaining extra dial peers.

## Feature Specifications for Cause-Code-Initiated Call Establishment Retries

### Feature History

Release	Modification
12.2(15)T	This feature was introduced.

### Supported Platforms

Cisco AS5350, Cisco AS5400

## Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to [cco-locksmith@cisco.com](mailto:cco-locksmith@cisco.com). An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

### Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

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## Prerequisites for Expanded Scope for Cause-Code-Initiated Call Establishment Retries

To use this feature, you must first configure ISDN (trunks) or the Cisco Signaling System 7 (SS7) on the gateway.

## Restrictions for Expanded Scope for Cause-Code-Initiated Call Establishment Retries

This feature must be used with ISDN Net5 PRI or NI2 PRI switch types.

## Information About Expanded Scope for Cause-Code-Initiated Call Establishment Retries

Before Cisco IOS Release 12.2(15)T, there was no easy way to reattempt most calls when a disconnect was received from the PSTN. The only cause code that would cause a reattempt was 44 and you had to have multiple dial peers to the same destination configured.

Effective with Cisco IOS Release 12.2(15)T, you can configure up to 16 arguments (specifying from 1 to 127 in each argument) for cause codes using the **isdn negotiate-bchan cause-codes** command. Refer to the following URL to access a list of cause codes:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/dbook/disdn.htm>

# How to Configure Expanded Scope for Cause-Code-Initiated Call Establishment Retries

This section contains the following procedures:

- [Configuring Expanded Scope for Cause-Code-Initiated Call Establishment Retries, page 3](#) (optional)
- [Configuration Examples for Expanded Scope for Cause-Code-Initiated Call Establishment Retries, page 4](#) (optional)

## Configuring Expanded Scope for Cause-Code-Initiated Call Establishment Retries

To configure a gateway to reattempt a call when a disconnect message is received from the PSTN, perform the following steps.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type slot/port*
4. **isdn negotiate-bchan** [**resend-setup**] [**cause-codes** {*cause-code1* [*cause-code2*...*cause-code16*]}]
5. **end**
6. **debug isdn q931**
7. **show running-config**
8. **exit**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. Enter your password when prompted.
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface</b> <i>type slot/port</i>  <b>Example:</b> Router(config)# interface serial 0/4	Configures an interface type and enters interface configuration mode.

	Command or Action	Purpose
Step 4	<pre>isdn negotiate-bchan [resend-setup] [cause-codes {cause-code1 [cause-code2...cause-code16]}]  Example: Router(interface)# isdn negotiate-bchan resend-setup cause-codes 34 44 63</pre>	<p>Enables the router to accept a B channel that is different from the B channel requested in the outgoing call setup message and specifies the cause codes.</p> <p><b>Note</b> You must have ISDN trunks configured on your router before you can configure the cause codes.</p>
Step 5	<pre>exit  Example: Router(interface)# exit</pre>	Exits interface configuration mode and enters privileged EXEC mode.
Step 6	<pre>debug isdn q931  Example: Router# debug isdn q931</pre>	Displays calls that have been reattempted.
Step 7	<pre>show running-configuration  Example: Router# show running-config</pre>	Displays the cause codes and values entered to verify that the gateway can reattempt disconnect calls received from the PSTN.
Step 8	<pre>exit</pre>	Exits the configuration.

## Output Example

The following output shows that the ISDN interface has been configured on the gateway and that the gateway has been configured to reattempt disconnect calls received from the PSTN. The cause-code is 18.

```
Router #show running-config
!
interface Serial7/0:0
 no ip address
 isdn switch-type primary-ni
 isdn incoming-voice modem
 isdn T306 30000
 isdn rlm-group 0
 no isdn send-status-inquiry
 isdn negotiate-bchan resend-setup cause-code 18 ==> Cause-code 18 is configured.
 no cdp enable
!
end
```

## Configuration Examples for Expanded Scope for Cause-Code-Initiated Call Establishment Retries

This section provides the following configuration examples:

- [Expanded Scope for Cause-Code-Initiated Call Establishment Retries Example](#)

## Expanded Scope for Cause-Code-Initiated Call Establishment Retries Example

The following example shows that cause codes 34, 44, and 63 have been set on serial slot 0 and port 23 of the gateway:

```
interface serial0:23
  isdn negotiate-bchan resend-setup cause-codes 34 44 63
end
```

## Additional References

The following sections provide additional references related to Expanded Scope for Cause-Code-Initiated Call Establishment Retries feature:

- [Related Documents, page 5](#)
- [Standards, page 5](#)
- [MIBs, page 5](#)
- [RFCs, page 6](#)
- [Technical Assistance, page 6](#)

## Related Documents

Related Topic	Document Title
Voice over IP (VoIP)	The “Voice over IP Overview” chapter of the <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i> , Cisco IOS Release 12.2
VoIP commands	<i>Cisco IOS Voice, Video, and Fax Command Reference</i> , Cisco IOS Release 12.2 T
SS7 for voice gateways	<i>Configuring Media Gateways for the SS7 Interconnect for Voice Gateways Solution</i>

## Standards

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

## MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:  <a href="http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml">http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml</a>

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to [cco-locksmith@cisco.com](mailto:cco-locksmith@cisco.com). An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

## RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

## Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, tools, and lots more. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/public/support/tac/home.shtml">http://www.cisco.com/public/support/tac/home.shtml</a>

## Command Reference

This section documents one modified command. All other commands used with this feature are documented in the Cisco IOS Release 12.2T command reference publications.

### Modified Command

- [isdn negotiate-bchan](#)

# isdn negotiate-bchan

To enable the router to accept a B channel that is different from the B channel requested in the outgoing call setup message and to specify the cause code, use the **isdn negotiate-bchan** command in interface configuration mode. To restore the default condition, use the **no** form of this command.

**isdn negotiate-bchan** [**resend-setup**] [**cause-codes** {*cause-code1* [*cause-code2*...*cause-code16*]}]

**no isdn negotiate-bchan** [**resend-setup**] [**cause-codes** {*cause-code1* [*cause-code2*...*cause-code16*]}]

<b>Syntax Description</b>	<p><b>resend-setup</b> (Optional) Enables one resend of a setup message if cause code of 44 is received. Cause-code 44 means that the requested circuit or channel is not available. For more information, refer to the International Telecommunications Union [ITU] Q.850 standard.)</p> <p><b>Note</b> Supports NET5 and NI2 PRI switches only.</p>
	<p><b>cause-codes</b> (Optional) Specifies a cause code from 1 to 127. The reattempt may or may not be on the same B channel as the previous attempt.</p> <p>If the <b>cause-codes</b> keyword is entered, at least one <i>cause code</i> argument must be entered or the configuration is rejected. You must also specify the cause code 44 in at least one argument or the cause code 44 will no longer cause a call reattempt. Refer to the following URL for a list of valid cause codes:</p> <p><a href="http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/dbook/disdn.htm">http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/dbook/disdn.htm</a></p> <p><b>Note</b> The validity of each cause code is not checked by the gateway.</p>

**Defaults** B channel negotiation is not enabled. Most PRI switch types set the default channel ID to Exclusive in the setup message. An exception is the NI2 switch, which sets the default to Preferred.

If the **cause-codes** keyword is not entered, cause code 44 becomes the default.

**Command Modes** Interface configuration

Command History	Release	Modification
	11.3	This command was introduced.
	12.2	The <b>resend-setup</b> keyword was implemented for NET5 and NI2 PRI switches.
	12.2(15)T	The <b>cause-codes</b> keyword was implemented on the Cisco AS5350 and Cisco AS5400.

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**Usage Guidelines**

The **isdn negotiate-bchan** command enables the router to negotiate the B channel by setting the channel ID information element to Preferred in the setup message. If this command is not configured, the channel ID is set to the default of the switch, which is usually Exclusive. Exclusive means that only the requested B channel is accepted. If the requested B channel is not available, the call is cleared.

The **isdn negotiate-bchan** command is supported for all PRI switch types. The **resend-setup** keyword is supported only for NET5 and NI2 switches. This command is not supported for BRI interfaces.

The **cause-codes** keyword allows you to configure the gateway to reattempt a call when a cause code other than 44 is received from the PSTN.

If the **cause-codes** keyword is not entered, a setup message is resent only on receipt of cause code 44. If the **cause-codes** keyword is entered, at least one cause code must be entered. Up to 16 cause codes may be entered. The value of each cause code is from 1 to 127. The validity of the cause code is not checked by the gateway.

**Note**


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If you enter the **cause-codes** keyword, it is not assumed that you also want cause code 44. If you want to include 44 as a cause-code option, you must include it as a separate entry.

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**Examples**

The following example enables a call to be reattempted when a disconnect with cause code of 44 is received before alerting:

```
interface serial0:23
 isdn negotiate-bchan resend-setup
```

The following example shows that cause codes 34, 44, and 63 have been configured:

```
interface serial0:23
 isdn negotiate-bchan resend-setup cause-codes 34 44 63
```

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**Related Commands**

Command	Description
<b>isdn bchan-number-order</b>	Configures an ISDN PRI interface to make an outgoing call selection in ascending or descending order.
<b>isdn switch-type (PRI)</b>	Specifies the Central Office switch type on the ISDN PRI interface.

# Glossary

**CLI**—An interface that allows the user to interact with the operating system by entering commands and optional arguments. The UNIX operating system and DOS provide CLIs.

**HSSI**—High-Speed Serial Interface. HSSI is the network standard for high-speed (up to 52 Mbps) serial connections over WAN links.

**IEEE**—Institute of Electrical and Electronics Engineers. IEEE is a professional organization whose activities include the development of communications and network standards. IEEE LAN standards are the predominant LAN standards today.

**LEX**—LAN Extender (interface).

**NPM**—Networking Products Marketplace.

**PSTN**—public switched telephone network. PSTN is a general term that refers to the variety of telephone networks and services in place worldwide. PSTN is sometimes called plain old telephone service (POTS).

**PVC**—permanent virtual circuit. A PVC is a virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and teardown in situations where certain virtual circuits must exist all the time. In ATM terminology, a PVC is called a permanent virtual connection.

**RLM**—Redundant Link Manager.

**VoIP**—Voice over IP. VoIP has the capability of carrying normal telephony-style voice over an IP-based internet with POTS-like functionality, reliability, and voice quality. VoIP enables a router to carry voice traffic (for example, telephone calls and faxes) over an IP network. In VoIP, the digital signal processor (DSP) segments the voice signal into frames, which then are coupled in groups of two and stored in voice packets. These voice packets are transported using IP in compliance with International Telecommunication Union Telecommunication Standardization Sector (ITU-T) specification H.323.



Note

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Refer to the [Internetworking Terms and Acronyms](#) for terms not included in this glossary.

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