

isdn bind-l3

To configure an ISDN D-channel serial interface for signaling backhaul and associate it with a session set, use the **isdn bind-l3** command in interface configuration mode. To disable signaling backhaul on an ISDN D-channel serial interface, use the **no** form of this command.

isdn bind-l3 *set-name*

no isdn bind-l3

Syntax Description	<i>set-name</i>	Session set with which you are associating a D-channel interface.
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Command Default	The ISDN D channel is not configured for signaling backhaul and is not associated with a session set
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.1(1)T	This command was introduced on the Cisco AS5300.
	12.2(4)T	This command was implemented on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco MC3810.
	12.2(2)XB1	This command was implemented on the Cisco AS5850.
	12.2(8)T	This command was implemented on the Cisco IAD2420 series. Support for the Cisco AS5300, Cisco AS5350, Cisco AS5400, and Cisco AS5850 is not included in this release.
	12.2(11)T	This command was implemented on the following platforms: Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Examples	The following example configures T1 signaling channel serial 0:23 for signaling backhaul and associate the D channel with the session set named "Set1":
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```
Router(config)# interface s0:23
Router(config-if)# isdn bind-l3 set1
Router(config-if)# exit
```

Examples	The following example configures E1 signaling channel serial 0:15 for signaling backhaul and associates the D channel with the session set named "Set3":
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```
Router(config)# interface s0:15
Router(config-if)# isdn bind-l3 set3
Router(config-if)# exit
```

isdn bind-l3 (Interface BRI)

To cause a Basic Rate Interface (BRI) port to bind ISDN Layer 3 protocol to either a regular gateway (GW) q931 stack or a Cisco CallManager Transmission Control Protocol (TCP) backhaul application and, if the latter, to operate in Media Gateway Control Protocol (MGCP) mode for backhaul, use the **isdn bind-l3** command in interface-BRI configuration mode. To disable binding and reset the BRI to Session Application mode for backhaul, use the **no** form of this command.

```
isdn bind-l3 {q931 | ccm-manager service mgcp}
```

```
no isdn bind-l3 {q931 | ccm-manager service mgcp}
```

Syntax Description	q931	Regular GW q931 stack. This is the default.
	ccm-manager service mgcp	Cisco CallManager TCP backhaul application. You must also select MGCP service mode for backhaul.

Command Default If the command is not used, the BRI port uses Session Application mode and binding is disabled. If the command is used with no keywords, q931 is assumed.

Command Modes Interface-BRI configuration

Command History	Release	Modification
	12.2(15)ZJ	This command was integrated into Cisco IOS Release 12.2(15)ZJ on the Cisco 26xxXM, Cisco 2691, Cisco 3640, Cisco 3640A, Cisco 3660, and Cisco 37xx.
	12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.

Usage Guidelines This command reinitializes the BRI interface, including the two B-channel voice ports within the BRI, to support MGCP-backhaul call control. It also binds ISDN Q931 Layer 3 to the Cisco CallManager.

This command is visible when the BRI voice interface card (VIC) is present. The BRI VIC provides narrowband digital-voice connectivity in the voice network module on the Cisco 2600 series and Cisco 3600 series.

Before you use this command to enable binding, disable any active calls on the BRI interface by using the **shutdown** (voice-port) command. You need not shut down the interface if no active calls are present or to configure L3 binding.

The combined **ccm-manager service mgcp** keywords are available only for supported BRI interfaces.

Examples The following example sets binding for BRI interface slot 1, port 0:

```
Router (config-if)# isdn bind-l3 q931
```

Related Commands

Command	Description
ccm-manager config	Supplies the local MGCP voice gateway with the IP address or logical name of the TFTP server from which to download XML configuration files and enable the download of the configuration.
debug ccm-manager	Displays debugging information about the Cisco CallManager.
show ccm-manager	Displays a list of Cisco CallManager servers, their current status, and their availability.
show ccm-manager fallback-mgcp	Displays the status of the MGCP gateway fallback feature.
show mgcp	Displays values for MGCP parameters.
shutdown (voice-port)	Takes voice ports for a specific VIC offline.

isdn bind-l3 ccm-manager

To bind Layer 3 of the ISDN PRI interface of the Media Gateway Control Protocol (MGCP) voice gateway to the Cisco CallManager for PRI Q.931 signaling backhaul support, use the **isdn bind-l3 ccm-manager** command in interface configuration mode. To disable this binding, use the **no** form of this command.

isdn bind-l3 ccm-manager

no isdn bind-l3 ccm-manager

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Interface configuration

Command History

Release	Modification
12.2(2)XN	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco Voice Gateway 200 (Cisco VG200).
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T and Cisco CallManager Version 3.2, and implemented on the Cisco IAD2420.

Usage Guidelines This command enables ISDN PRI backhaul on an MGCP-enabled voice gateway.

Examples

The following example binds PRI Layer 3 to the Cisco CallManager:

```
isdn bind-l3 ccm-manager
```

isdn bind-l3 iua-backhaul

To specify ISDN backhaul using Stream Control Transmission Protocol (SCTP) for an interface and to bind Layer 3 to DUA for DPNSS backhaul, use the **isdn bind-l3 iua-backhaul** command in interface configuration mode. To disable the backhaul capability, use the **no** form of this command.

```
isdn bind-l3 iua-backhaul [application-server-name]
```

```
no isdn bind-l3 iua-backhaul
```

Syntax Description	<i>application-server-name</i> (Optional) Name of the application server (AS) to use for backhauling the interface.
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Command Default	No default behavior or values
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.1(1)T	This command was introduced on the Cisco AS5300.
	12.2(4)T	This command was introduced.
	12.2(2)XB1	This command was implemented on the Cisco AS5850.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco 7200 series. Support for the Cisco AS5300, Cisco AS5350, Cisco AS5400, and Cisco IAD2420 series. The Cisco AS5850 is not included in this release.
	12.2(11)T	This command was implemented on the following platforms: Cisco AS5350, Cisco AS5400, and Cisco AS5850.
	12.2(15)ZJ	The capability to bind Layer 3 to DUA for DPNSS backhaul was added.
	12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines	DPNSS is not configured for backhaul and is not associated with a session set.
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Examples	The following example configures DUA for DPNSS backhaul using an AS called "as1:"
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```
Router(config-if)# isdn bind-l3 iua-backhaul as1
```

The following example configures T1 signaling channel serial 0:23 for signaling backhaul and associates the D channel with the session set named "set1":

```
Router(config)# interface s0:23  
Router(config-if)# isdn bind-l3 set1
```

The following example configures E1 signaling channel serial 0:15 for signaling backhaul and associates the D channel with the session set named “set3”:

```
Router(config)# interface s0:15
Router(config-if)# isdn bind-l3 set3
```

The following example shows IUA backhaul on the application server “as1”:

```
interface Serial1/0:23
no ip address
ip mroute-cache
no logging event link-status
isdn switch-type primary-5ess
isdn incoming-voice voice
isdn bind-L3 iua-backhaul as1
```

Related Commands

Command	Description
as	Defines an AS for backhaul.
asp	Defines an ASP for backhaul.

isdn contiguous-bchan

To configure contiguous bearer channel handling on an E1 PRI interface, use the **isdn contiguous-bchan** command in interface configuration mode. To disable the contiguous B-channel handling, use the **no** form of this command.

isdn contiguous-bchan

no isdn contiguous-bchan

Syntax Description This command has no arguments or keywords.

Command Default Contiguous B channel handling is disabled

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	12.0(7)XK	This command was introduced on the following platforms: Cisco 2500 series, Cisco 3600 series, Cisco 7200 series, and Cisco MC3810.
	12.1(2)T	This command was integrated into Cisco IOS Release 12.1(2)T.

Usage Guidelines Use this command to specify contiguous bearer channel handling so that B channels 1 to 30, skipping 16, map to time slots 1 to 31. This is available for E1 PRI interfaces only, when the **primary-qsig** or **primary-dms100** switch type option is configured by using the **isdn switch-type** command.

Examples The following example shows the configuration on the E1 interface of a Cisco 3660 router E1 interface:

```
interface Serial5/0:15
  no ip address
  ip mroute-cache
  no logging event link-status
  isdn switch-type primary-qsig
  isdn overlap-receiving
  isdn incoming-voice voice
  isdn continuous-bchan
```

Related Commands	Command	Description
	isdn switch-type	Configures the primary-qsig or primary-dms100 switch type for PRI support.

isdn dpnss

To indicate whether ISDN DPNSS is to act as PBX A or PBX B, or revert to Layer 2, use the **isdn dpnss** command in interface configuration mode. To reset to the default, use the **no** form of this command.

```
isdn dpnss [pbxA | layer 2 [retry max-count range] [timers [Tretry timer-value] [Ttest timer-value]] [test frame]]
```

```
no isdn dpnss [pbxA | layer 2 [retry max-count range] [timers [Tretry timer-value] [Ttest timer-value]] [test frame]]
```

Syntax Description

pbxA	(Optional) Enables DPNSS to act as PBX A.
layer 2	(Optional) Reverts to Layer 2.
retry max-count <i>range</i>	(Optional) Selects the number of times a frame will be retried if unacknowledged. The max-count value can be any number from 0 to 64. Default is 4
timers	(Optional) Selects DPNSS timers, which can be Tretry or Ttest .
Tretry <i>timer-value</i>	(Optional) Sets the Tretry timer in ms and seconds. Valid retry time values range from 5 ms to 10 seconds. Default is 500 ms.
Ttest <i>timer-value</i>	(Optional) Sets the Ttest timer in minutes. When the Ttest timer expires, frames are sent on all the DLCs. Valid test time values range from 1 to 60. Default is 5.
test frame	(Optional) Allows test frames to be sent periodically.

Command Default

PBX B

Command Modes

Interface configuration

Command History

Release	Modification
12.2(15)ZJ	This command was introduced.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T.

Examples

The following example sets ISDN DPNSS to act as PBX A:

```
Router(config-if)# isdn dpnss pbxA
```

The following example sets the Tretry and Ttest timers:

```
Router(config-if)# isdn dpnss layer2 timers Tretry 500 Ttest 5
```

The following example selects the number of times a frame will be retried if unacknowledged:

```
Router(config-if)# isdn dpnss layer2 retry max-count 4
```

The following example allows test frames to be sent periodically:

```
Router(config-if)# isdn dpnss layer2 test frame
```

Related Commands

Command	Description
isdn bind-l3 iua-backhaul	Binds Layer 3 for DPNSS to DUA.
isdn switch-type (PRI)	Specifies the central office switch type on the ISDN interface.

isdn gateway-max-interworking

To prevent an H.323 gateway from checking for ISDN protocol compatibility and dropping information elements (IEs) in call messages, use the **isdn gateway-max-interworking** command global configuration mode. To reset to the default, use the **no** form of this command.

isdn gateway-max-interworking

no isdn gateway-max-interworking

Syntax Description This command has no arguments or keywords.

Command Default The gateway checks for protocol compatibility.

Command Modes Global configuration

Command History

Release	Modification
12.1(3)XI	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(2)XA	This command was implemented on the Cisco AS5400 and Cisco AS5350.
12.2(2)XB1	This command was implemented on the Cisco AS5850.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.

Usage Guidelines

If this command is enabled on an originating H.323 gateway, the information elements (IEs) in call messages to the terminating gateway are not checked for end-to-end protocol compatibility. If this command is enabled on a terminating gateway, IEs are not checked in the reverse direction. If this command is not enabled, and the ISDN protocols are not compatible on the originating and terminating gateways, the gateway drops all IEs, including the progress indicator. The gateway then inserts a progress indicator of 1 into all Progress messages.

Examples

The following example enables maximum interworking:

```
isdn gateway-max-interworking
```

isdn global-disconnect

To allow passage of “release” and “release complete” messages over the voice network, use the **isdn global-disconnect** command in interface configuration mode. To disable the passage of these messages, use the **no** form of this command.

isdn global-disconnect

no isdn global-disconnect

Syntax Description This command has no arguments or keywords.

Command Default Passage of messages is disabled by default; “release” and “release complete” messages terminate locally by default.

Command Modes Interface configuration

Command History	Release	Modification
	12.1(2)T	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, Cisco 7200 series, and Cisco MC3810.

Usage Guidelines Enter this command under the isdn interface with switch type bri-qsig or pri-qsig. Use this command to allow passage of “release” and “release complete” messages end-to-end across the network. This is required for certain types of QSIG PBXs whose software or features require either Facility or User Info IEs in those messages to be passed end-to-end between the PBXs. All QSIG interfaces that connect the PBXs to the routers must have this command enabled. This command is available when using the BRI QSIG or PRI QSIG switch type in either master or slave mode.

Examples The following example shows the configuration on the T1 PRI interface of a Cisco 3660 router:

```
interface Serial5/0:23
 no ip address
 ip mroute-cache
 no logging event link-status
 isdn switch-type primary-qsig
 isdn global-disconnect
 isdn overlap-receiving
 isdn incoming-voice voice
```

Related Commands	Command	Description
	isdn protocol-emulate	Configures the interface to serve as either the QSIG slave or the QSIG master.
	isdn switch-type	Configures the switch type for BRI or PRI support.

isdn gtd

To enable generic transparency descriptor (GTD) mapping for information elements (IEs) sent in ISDN Setup messages, use the **isdn gtd** command in interface configuration mode. To disable GTD mapping, use the **no** form of this command.

isdn gtd

no isdn gtd

Syntax Description This command has no arguments or keywords.

Command Default GTD mapping is enabled.

Command Modes Interface configuration

Command History

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

Usage Guidelines

Use the **isdn gtd** command to enable parameter mapping for the following ISDN IEs to corresponding GTD parameters:

- Originating Line Information—OLI
- Bearer Capability—USI and TMR
- Called Party Number—CPN
- Calling Party Number—CGN
- Redirecting Number—RGN, OCN and RNI

The following GTD parameters, which have no corresponding ISDN IEs, are also supported:

- Calling Party Category—CPC
- Forward Call Indicators—FCI
- Protocol Name—PRN

Examples

The following example enables GTD parameter mapping:

```
isdn gtd
```

isdn ie oli

To configure the value of the Originating Line Information (OLI) information element (IE) identifier when the gateway receives ISDN signaling from an MCI switch, use the **isdn ie oli** command in interface configuration mode. To disable the OLI IE identifier, use the **no** form of this command.

isdn ie oli *value*

no isdn ie oli *value*

Syntax Description	<i>value</i>	Hexadecimal number specifying the value that indicates OLI information from the MCI switch. Range is 00-7F.
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Command Default	This command is disabled.
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.2(15)T	This command was introduced.

Usage Guidelines	Use the isdn ie oli command to configure gateway support for the MCI ISDN variant by specifying the IE value that indicates OLI information.
-------------------------	---

Examples	The following example configures the OLI IE value to a hex value of 7A:
-----------------	---

```
isdn ie oli 7A
```

Related Commands	Command	Description
	isdn gtd	Enables GTD parameter mapping for ISDN IEs.

isdn integrate calltype all

To enable integrated mode on an ISDN PRI interface, use the **isdn integrate calltype all** command in interface configuration mode. To disable integrated mode, use the **no** form of this command.

isdn integrate calltype all

no isdn integrate calltype all

Syntax Description This command has no arguments or keywords.

Command Default Integrated mode is disabled on the interface.

Command Modes Interface configuration

Command History	Release	Modification
	12.4(4)XC	This command was introduced.
	12.4(9)T	This command was integrated into Cisco IOS Release 12.4(9)T.

Usage Guidelines Configure this command from a PRI interface only. This command is not supported from a BRI interface. Any incoming calls from an interface that has been configured for integrate calltype all is rejected with cause-code **invalid number 0x1C** if inbound dial-peer is not selected.

Examples In the following example, the interface is shut down.

```
Router(config)# interface Serial4/1:15
Router(config-if)# shutdown
```

In the following example, integrated mode is enabled.

```
Router(config)# interface Serial4/1:15
Router(config-if)# isdn integrate calltype all
% This command line will enable the Serial Interface to "integrated service" mode.
% The "isdn incoming-voice voice" setting will be removed from the interface.
% Continue? [confirm]
```

When you confirm, the default incoming-voice configuration is removed from the interface, and the interface is now in integrated service mode. The interface does not reset back to voice mode if an incoming call is originated from the interface.

In the following example, the interface is set to active.

```
Router(config)# interface Serial4/1:15
Router(config-if)# no shutdown
```

Related Commands

Command	Description
dial-peer data	Creates a data dial peer and enters dial peer configuration mode.
dial-peer search	Optimizes voice or data dial-peer searches.
isdn incoming-voice	Routes all incoming voice calls to the modem and determine how they will be treated.

isdn network-failure-cause

To specify the cause code to pass to the PBX when a call cannot be placed or completed because of internal network failures, use the **isdn network-failure-cause** command in interface configuration mode. To disable use of this cause code, use the **no** form of this command.

isdn network-failure-cause *value*

no isdn network-failure-cause *value*

Syntax Description	<i>value</i>	Number, from 1 to 127. See Table 29 for a list of failure cause code values.
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Command Default	No default behavior or values
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.1(2)T	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, Cisco 7200 series, and Cisco MC3810.

Usage Guidelines

The PBX can reroute calls based on the cause code returned by the router.

This command allows the original cause code to be changed to the value specified if the original cause code is not one of the following:

- NORMAL_CLEARING (16)
- USER_BUSY (17)
- NO_USER_RESPONDING (18)
- NO_USER_ANSWER (19)
- NUMBER_CHANGED (22)
- INVALID_NUMBER_FORMAT (28)
- UNSPECIFIED_CAUSE (31)
- UNASSIGNED_NUMBER (1)

[Table 29](#) describes the cause codes.

Table 29 ISDN Failure Cause Codes

Failure Cause Code	Meaning
1	Unallocated or unassigned number.
2	No route to specified transit network.
3	No route to destination.

Table 29 ISDN Failure Cause Codes (continued)

Failure Cause Code	Meaning
6	Channel unacceptable.
7	Call awarded and being delivered in an established channel.
16	Normal call clearing.
17	User busy.
18	No user responding.
19	No answer from user (user alerted).
21	Call rejected.
22	Number changed.
26	Nonselected user clearing.
27	Destination out of order.
28	Invalid number format.
29	Facility rejected.
30	Response to status enquiry.
31	Normal, unspecified.
34	No circuit/channel available.
38	Network out of order.
41	Temporary failure.
42	Switch congestion.
43	Access information discarded.
44	Requested channel not available.
45	Preempted.
47	Resources unavailable, unspecified.
49	Quality of service unavailable.
50	Requested facility not subscribed.
52	Outgoing calls barred.
54	Incoming calls barred.
57	Bearer capability not authorized.
58	Bearer capability not available now.
63	Service or option not available, unspecified.
65	Bearer capability not implemented.
66	Channel type not implemented.
69	Requested facility not implemented.
70	Only restricted digital information bearer capability is available.
79	Service or option not implemented, unspecified.
81	Invalid call reference value.
82	Identified channel does not exist.

Table 29 ISDN Failure Cause Codes (continued)

Failure Cause Code	Meaning
83	Suspended call exists, but this call ID does not.
84	Call ID in use.
85	No call suspended.
86	Call with requested call ID is cleared.
88	Incompatible destination.
91	Invalid transit network selection.
95	Invalid message, unspecified.
96	Mandatory information element missing.
97	Message type nonexistent or not implemented.
98	Message not compatible with call state or message type nonexistent or not implemented.
99	Information element nonexistent or not implemented.
100	Invalid information element contents.
101	Message not compatible with call state.
102	Recovery on timer expiry.
111	Protocol error, unspecified.
127	Interworking, unspecified.

Examples

The following example specifies a cause code to pass to a PBX when a call cannot be placed or completed of internal network failures:

```
isdn network-failure-cause 28
```

isdn outgoing display-ie

To enable the display information element to be sent in the outgoing ISDN message if provided by the upper layers, such as voice or modem. To disable the displaying of the information element in the outgoing ISDN message, use the no form of this command.

isdn outgoing display-ie

no isdn outgoing display-ie

Syntax Description There are no arguments or keywords.

Command Default No default behavior or values

Command Modes Interface configuration

Command History	Release	Modification
	12.2(13)T	This command was introduced.

Usage Guidelines The **isdn outoing display-ie** command is direction dependent, such as network-to-user or user-to-network. Not all ISDN switch types support the **isdn outgoing display-ie** command. The following shows the direction dependency by switch type, and this command can be used to override the dependency:

- ETSI (NTT, NET3, and NET5)—Only network-to-user
- DMS—Both ways
- TS014—Only network-to-user
- TS013—Only network-to-user
- 1TR6—Only network-to-user



Note The 4ESS, 5ESS, NI1, and NI2 switch types are not supported in any direction.



Note When the **isdn protocol-emulate** command is switched between network and user, this command reverts to its default value. The **isdn outoing display-ie** command must be enabled again.

Examples

The following is a running configuration, showing how the the **isdn outgoing display-ie** command is used on a specified serial interface:

```
Router# show running-config interface serial10:23
interface Serial10:23
  no ip address
  dialer idle-timeout 999999
  isdn switch-type primary-ni
  isdn protocol-emulate network
  isdn T310 30000
  isdn outgoing display-ie
```

Related Commands

Command	Description
isdn protocol-emulate	Configures an ISDN data or voice port to emulate network or user functionality.

isdn protocol-emulate

To emulate the network side of an ISDN configuration for a PRI Net5 or PRI NTT switch type, use the **isdn protocol-emulate** command in interface configuration mode. To disable ISDN emulation, use the **no** form of this command.

```
isdn protocol-emulate {network | user}
```

```
no isdn protocol-emulate {network | user}
```

Syntax Description

network	Network side of an ISDN configuration.
user	User side of an ISDN configuration.

Command Default

No default behavior or values

Command Modes

Interface configuration mode

Command History

Release	Modification
12.0(3)XG	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco MC3810 concentrator.
12.1(1)T	This command was introduced in the T train.
12.2(2)XB	This command was implemented on the Cisco AS5350 and Cisco AS5400.
12.2(2)XB1	This command was implemented on the Cisco AS5850.
12.2(8)T	This command was implemented on the Cisco IAD2420 series. This command is not supported on the access servers in this release.
12.2(11)T	This command was implemented on the following platforms: Cisco AS5350, Cisco AS5400, and Cisco AS5850.
12.3	This command was enhanced to support network emulation capability on the Lucent 4ESS, 5ESS, and Nortel DMS-100 ISDN switch types. These switch types can be configured as a network, but no additional changes were made and not all network side features are supported.
12.3(8)T	Added support for the PRI NTT switch type.

Usage Guidelines

- The current ISDN signaling stack can emulate the ISDN network side, but it does not conform to the specifications of the various switch types in emulating the network side.
- This command enables the Cisco IOS software to replicate the public switched network interface to a Private Branch Exchange (PBX).
- To emulate NT (network) or TE (user) functionality, use this command to configure the layer 2 and layer 3 port protocol of a BRI voice port or a PRI interface.

- Use this command to configure the Cisco AS5300 PRI interface to serve as either the primary QSIG slave or the primary QSIG master. To disable QSIG signaling, use the **no** form of this command; the layer 2 and layer 3 protocol emulation defaults to **user**.
- This feature is supported for the PRI Net5 and PRI NTT switch types.

Examples

The following example configures the interface (configured for Net5) to emulate the network-side ISDN:

```
Router(config)# int s0:15
Router(config-if)# isdn protocol-emulate network
```

The following example configures the layer 2 and layer 3 function of T1 PRI interface 23 to act as the QSIG master (NT):

```
interface serial 1:23
 isdn protocol-emulate network
```

The following example configures the layer 2 and layer 3 function of a BRI voice port to operate as QSIG slave (TE):

```
interface bri 1
 isdn protocol-emulate user
```

The following example configures the layer 2 and layer 3 function of an E1 PRI interface to operate as QSIG slave (TE):

```
interface serial 4:23
 isdn protocol-emulate user
```

Related Commands

Command	Description
isdn	Configures an ISDN PRI interface to make outgoing call selection in ascending, descending, or round-robin order.
bchan-number-order	
isdn logging	Enables logging of ISDN syslog messages.
isdn switch-type (PRI)	Specifies the central office switch type on the ISDN PRI interface.
network-clock-priority	Specifies the clock-recovery priority for the BRI voice ports in a BVM.
pri-group nec-fusion	Configures the NEC PBX to support FCCS.
show cdapi	Displays the CDAPI.
show rawmsg	Displays the raw messages owned by the required component.

isdn rlm-group

To specify the RLM group number that ISDN will start using, use the **isdn rlm-group** command in interface configuration mode. To disable this function, use the **no** form of this command.

isdn rlm-group *number*

no isdn rlm-group *number*

Syntax Description	<i>number</i>	Number of the RLM group, from 0 to 5.
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Command Default	Disabled
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.0(2)T	This command was introduced.

Usage Guidelines	The isdn rlm-group command allows Redundant Link Manager (RLM) to be used as a way of transporting the D channel information (signalling) over Ethernet.
-------------------------	---

Examples	The following example defines RLM group 1:
-----------------	--

```
interface Serial0:23
 ip address 10.0.0.1 255.0.0.0
 encapsulation ppp
 dialer map ip 10.0.0.2 name hawaii 1111111
 dialer load-threshold 1 either
 dialer-group 1
 isdn switch-type primary-ni
 isdn incoming-voice modem
 isdn rlm-group 1
 ppp authentication chap
 ppp multilink
 hold-queue 75 in
```

Related Commands	Command	Description
	clear interface virtual-access	Resets the hardware logic on an interface.
	clear rlm group	Clears all RLM group time stamps to zero.
	interface	Defines the IP addresses of the server, configures an interface type, and enters interface configuration mode.
	link (RLM)	Specifies the link preference.

Command	Description
protocol rlm port	Reconfigures the port number for the basic RLM connection for the whole rlm-group.
retry keepalive	Allows consecutive keepalive failures a certain amount of time before the link is declared down.
server (RLM)	Defines the IP addresses of the server.
show rlm group statistics	Displays the network latency of the RLM group.
show rlm group status	Displays the status of the RLM group.
show rlm group timer	Displays the current RLM group timer values.
shutdown (RLM)	Shuts down all of the links under the RLM group.
timer	Overwrites the default setting of timeout values.

isdn skipsend-idverify

To stop the user side of a BRI interface from sending ID verify information, use the **isdn skipsend-idverify** command in interface configuration mode. To restore the user-side notification, use the **no** form of this command.

isdn skipsend-idverify

no isdn skipsend-idverify

Syntax Description This command has no arguments or keywords.

Command Default By default, the user side sends the ID verify information. The **no** form of this command is in effect by default.

Command Modes Interface configuration

Command History	Release	Modification
	12.1(3)XI	This command was introduced.
	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines For user-side BRI interfaces, you can send ID verify messages to confirm the status of a particular terminal endpoint identifier (TEI) when there is doubt about whether the TEI is in use (for example, after a Layer 1/Layer 2 flap). ID is the TEI value.

For network-side BRI interfaces, the command should always be set. In some cases, the command will automatically be configured after the BRI network-side protocol emulation is set. If not, you can manually configure the command on the network-side BRI interface. After the command has been configured either automatically or manually, it cannot be further changed. A network-side BRI interface should always be set so that it does not send ID verify information.

Examples

The following example shows user-side output, with the default in effect, so the ID verify is sent:

```
Router# show isdn status br0/0

Global ISDN Switchtype = basic-net3
ISDN BRI0/0 interface
    dsl 0, interface ISDN Switchtype = basic-net3
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 95, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Active dsl 0 CCBs = 0
    The Free Channel Mask: 0x80000003
    Total Allocated ISDN CCBs = 0
```

The following sample output shows network-side output, with the default in effect:

```
ISDN BRI1/1 interface
    ***** Network side configuration *****
    dsl 9, interface ISDN Switchtype = basic-qsig
    **** Master side configuration ****
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 64, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Active dsl 9 CCBs = 0
    The Free Channel Mask: 0x80000003
    Total Allocated ISDN CCBs = 0
```

The following sample output shows the BRI interface with the **isdn skipsend-idverify** command in effect (so the ID verify will *not* be sent):

```
Router# show run interface br0/0

Building configuration...

Current configuration : 185 bytes
!
interface BRI0/0
 no ip address
 encapsulation ppp
 no ip mroute-cache
 isdn switch-type basic-net3
 isdn point-to-point-setup
 isdn incoming-voice voice
 isdn skipsend-idverify
end
```

The following example shows the return to default so that the ID verify will be sent:

```
Router# configure

Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface br0/0
Router(config-if)#no isdn skipsend-idverify
Router(config-if)#
```

The following output shows that the skip send has been removed (so the ID verify information *will* be sent):

```
Router# show run interface br0/0

Building configuration...

Current configuration : 161 bytes
!
interface BRI0/0
 no ip address
 encapsulation ppp
 no ip mroute-cache
 isdn switch-type basic-net3
 isdn point-to-point-setup
 isdn incoming-voice voice
end
```

This configuration example shows the warning message that appears when the command is applied or when the **no** form of the command is entered on a network-side BRI interface:

```
Router# configure

Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int br1/1
Router(config-if)#isdn skipsend-idverify
% Network side should never send ID VERIFY <---- warning message
Router(config-if)#
```

Related Commands

Command	Description
interface bri	Specifies the interface and enters interface configuration mode.

isdn supp-service calldiversion

To ensure that all calls on an ISDN serial interface can be traced if diverted, use the **isdn supp-service calldiversion** command in interface configuration mode. To disable tracing of diverted ISDN calls, use the **no** form of this command.

isdn supp-service calldiversion

no isdn supp-service calldiversion

Syntax Description This command has no arguments or keywords.

Command Default VoIP calls, when diverted, are not traceable and are translated into a Redirection Information Element (RedirectionIE).

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	12.4(2)T	This command was introduced.

Usage Guidelines You must explicitly specify an ISDN serial interface. The D channel is always the :23 channel for T1 and the :15 channel for E1.

To enable traceability, the call diversion service requires that a VoIP call (when diverted) translates into a divertingLegInformation2 IE instead of a RedirectionIE. When the **isdn supp-service calldiversion** command is configured, the redirecting information coming from the application is packed in the Facility Information Element (FAC IE) as DiversionLeg2 information and sent in the outgoing SETUP message.

The **isdn supp-service calldiversion** command works only for NET5 switches.

Examples The following example shows how to configure the primary NET5 switch so that the call diversion tracing service is enabled:

```
interface serial3:23
no ip address
isdn switch-type primary-net5
isdn supp-service calldiversion
```

Related Commands	Command	Description
	interface serial	Specifies a serial interface created on a channelized E1 or channelized T1 controller for ISDN PRI, CAS, or robbed-bit signaling.

isdn supp-service mcid

To enable an ISDN serial interface for Malicious Caller Identification (MCID), use the **isdn supp-service mcid** command in interface configuration mode. To disable MCID functionality, use the **no** form of this command.

isdn supp-service mcid

no isdn supp-service mcid

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Interface configuration

Command History	Release	Modification
	12.2(15)T	This command was introduced.

Usage Guidelines The ISDN interface must use the NET5 switch type, which is set using the **isdn switch-type primary-net5** command. Protocol emulation must be set to user, which is the default for the **isdn protocol-emulate** command. This command is valid only at the ISDN interface level.

Examples The following configuration example shows MCID enabled for the PRI:

```
interface serial0:23
 isdn switch-type primary-net5
 ip address 10.10.10.0 255.255.255.0
 isdn supp-service mcid
 isdn T-Activate 5000
```

Related Commands	Command	Description
	interface serial	Specifies a serial interface created on a channelized E1 or channelized T1 controller for ISDN PRI, channel-associated signaling, or robbed-bit signaling.
	isdn protocol-emulate	Configures the PRI interface to serve as either the primary slave (user) or the primary master (network).
	isdn switch-type	Specifies the central office switch type on the ISDN interface.
	isdn t-activate	Specifies how long the ISDN serial interface must wait for the malicious caller to be identified.

isdn supp-service name calling

To set the calling name display parameters sent out an ISDN serial interface, use the **isdn supp-service name calling** command in interface configuration mode. To disable calling name delivery, use the **no** form of this command.

isdn supp-service name calling

no isdn supp-service name calling

Syntax Description There are no arguments or keywords.

Command Default Calling name delivery is disabled.

Command Modes Interface configuration

Command History

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

Usage Guidelines

You must explicitly specify an ISDN serial interface. The D channel is always the :23 channel for T1 and the :15 channel for E1.

Examples

The following configuration example shows that the primary-net5 switch is configured and that the calling name service is enabled and functioning on IE 40:

```
interface serial0:23
  isdn switch-type primary-net5
  ip address 10.10.10.0 255.255.255.0
  isdn supp-service name calling
```

Related Commands

Command	Description
interface serial	Specifies a serial interface created on a channelized E1 or channelized T1 controller for ISDN PRI, channel-associated signaling, or robbed-bit signaling.

isdn supp-service tbct

To enable ISDN Two B-Channel Transfer (TBCT) on PRI trunks, use the **isdn supp-service tbct** command in interface or trunk group configuration mode. To reset to the default, use the **no** form of this command.

isdn supp-service tbct [notify-on-clear | tbct-with-crflg]

no isdn supp-service tbct

Syntax Description		
notify-on-clear	(Optional) ISDN switch notifies the gateway whenever a transferred call is cleared.	
tbct-with-crflg	(Optional) Includes the call reference flag while sending a TBCT request.	

Command Default TBCT is disabled.

Command Modes Interface configuration
Trunk-group configuration

Command History	Release	Modification
	12.3(1)	This command was introduced.

Usage Guidelines This command enables TBCT for a specific PRI when used in interface configuration mode. This command configures TBCT for all PRIs in a trunk group when used in trunk-group configuration mode. The **notify-on-clear** keyword is necessary for the gateway to track billing. This keyword is supported only for user-side ISDN interfaces. You must configure the ISDN switch to send a notify message when a call is cleared.

On some PBX switches, the call reference flag (including the call reference value of the other call) is mandatory. To include the call reference flag in a TBCT request, use the **tbct-with-crflg** keyword. The call reference flag can be 00 or 80. So, for example, if the call reference value is 02, the call reference flag is 0002 or 8002.

Examples The following example shows how to enable TBCT for interface 0:23:

```
interface Serial0:23
 isdn supp-service tbct
```

The following example shows how to enable TBCT for trunk group 1:

```
trunk group 1
 isdn supp-service tbct
```

The following example shows how to include the call reference flag in TBCT requests for trunk group 1:

```
trunk group 1
 isdn supp-service tbct tbct-with-crflg
```

Related Commands

Command	Description
call application voice transfer mode	Specifies the call-transfer behavior of a TCL or VoiceXML application.
show call active voice redirect	Displays information about active calls that are being redirected using RTPvt or TBCT.
tbct clear call	Terminates billing statistics for one or more active TBCT calls.
tbct max call-duration	Sets the maximum duration allowed for a call that is redirected using TBCT.
tbct max calls	Sets the maximum number of active calls that can use TBCT.
trunk group	Enters trunk-group configuration mode to define or modify a trunk group.

isdn t-activate

To specify how long the gateway waits for a response from the PSTN after sending a MCID request, use the **isdn t-activate** command in interface configuration mode. To disable the timer, use the **no** form of this command.

isdn t-activate *ms*

no isdn t-activate *ms*

Syntax Description	<i>ms</i>	Number of milliseconds (ms). Range is 1000 to 15000. Default is 4000; 5000 is recommended.
---------------------------	-----------	--

Command Default	4000 ms
------------------------	---------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	12.2(15)T	This command was introduced.

Usage Guidelines	This command starts a timer when the voice gateway sends a Facility message to the PSTN. If a response is not received within the specified time, the TCL IVR script for MCID is notified. Depending on how the script is written, it could reinvoke MCID or perform some other action, such as playing a message if the MCID attempt fails. This command is valid only at the ISDN interface level. The ISDN interface must use the NET5 switch type, which is set using the isdn switch-type primary-net5 command. Protocol emulation must be set to user, which is the default for the isdn protocol-emulate command.
-------------------------	--

Examples	The following example shows the configuration of the timer on serial interface 0:23:
-----------------	--

```
interface serial0:23
 isdn switch-type primary-net5
 ip address 10.10.10.0 255.255.255.0
 isdn suppserv mcid
 isdn T-Activate 5000
```

Related Commands	Command	Description
	interface serial	Specifies a serial interface created on a channelized E1 or channelized T1 controller for ISDN PRI, channel-associated signaling, or robbed-bit signaling.
	isdn protocol-emulate	Configures the PRI interface to serve as either the primary slave (user) or the primary master (network).

Command	Description
isdn switch-type	Specifies the central office switch type on the ISDN interface.
isdn suppserv mcid	Configures an ISDN serial interface for MCID.

isdn tei-negotiation (interface)

To configure when Layer 2 becomes active and ISDN terminal endpoint identifier (TEI) negotiation occurs, use the **isdn tei-negotiation** command in interface configuration mode. To remove TEI negotiation from an interface, use the **no** form of this command.

```
isdn tei-negotiation {first-call | powerup} {preserve | remove}
```

```
no isdn tei-negotiation {first-call | powerup} {preserve | remove}
```

Syntax Description

first-call	ISDN TEI negotiation should occur when the first ISDN call is placed or received.
powerup	ISDN TEI negotiation should occur when the router is powered on.
preserve	Preserves dynamic TEI negotiation when ISDN Layer 1 flaps, and when the clear interface or the shut and no shut EXEC commands are executed.
remove	Removes dynamic TEI negotiation when ISDN Layer 1 flaps, and when the clear interface or the shut and no shut EXEC commands are executed.

Command Default

The **powerup** state is the default condition. Depending upon the ISDN switch type configured, the default will be to preserve or remove the TEI negotiation options. See the “Usage Guidelines” and “Examples” sections for further explanation.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
11.3 T	This command was introduced as an interface command.
12.2	The preserve and remove keywords were added.

Usage Guidelines

This command is for BRI configuration only.

The **first-call** and **powerup**, and **preserve** and **remove** command pairs are mutually exclusive, that is, you must choose only one command from either the **first-call** and **powerup** or **preserve** and **remove** command pairs, per command line.

The **no isdn tei-negotiation** command returns the configuration to default to the **powerup** state.

The **preserve** keyword depends on the ISDN switch type configured, that is, the TEI negotiation configured will be preserved during ISN Layer 1 flaps, and when the **clear interface** or the **shut** and **no shut EXEC** commands are executed, on the switch types listed in [Table 30](#).

Table 30 Switch Types with Preserved TEI Negotiation

Switch Type	Cisco IOS Keyword
French ISDN switch types	vn2, vn3
Lucent (AT&T) basic rate 5ESS switch	basic-5ess

Table 30 *Switch Types with Preserved TEI Negotiation (continued)*

Switch Type	Cisco IOS Keyword
Northern Telecom DMS-100 basic rate switch	basic-dms100
National ISDN basic rate switch	basic-ni
PINX (PBX) switches with QSIG signaling per Q.931	basic-qsig

For all other ISDN switch types, the TEI negotiation will be removed during ISDN Layer 1 flaps, and when the **clear interface** or the **shut** and **no shut** EXEC commands are executed. Use the **remove** keyword to specifically set one of the switches listed in [Table 30](#) to the remove state.

Examples

The following example shows the ISDN TEI negotiation configuration with default settings. (Defaults settings do not appear in the router configuration.)

```
interface BRI0/0
  no ip address
  isdn switch-type basic-ni
  cdapi buffers regular 0
  cdapi buffers raw 0
  cdapi buffers large 0
```

The following example shows how to set TEI negotiation timing to the first call:

```
Router(config-if)# isdn tei-negotiation first-call
Router(config-if)# exit
Router(config)# exit
Router# show startup-config
.
.
.
interface BRI0/0
  no ip address
  isdn switch-type basic-ni
  isdn tei-negotiation first-call
  cdapi buffers regular 0
  cdapi buffers raw 0
  cdapi buffers large 0interface BRI0/0
```

The following example shows how to change TEI negotiation timing back to the default power-up state:

```
Router(config-if)# no isdn tei-negotiation first-call
Router(config-if)# exit
Router(config)# exit
Router# show startup-config
.
.
.
interface BRI0/0
  no ip address
  isdn switch-type basic-ni
  cdapi buffers regular 0
  cdapi buffers raw 0
  cdapi buffers large 0
```

The following example shows how to remove TEI negotiation when ISDN Layer 1 flaps (the preserve state is the default for the National ISDN basic rate switch):

```
Router(config-if)# isdn tei-negotiation remove
Router(config-if)# exit
Router(config)# exit
Router# show startup-config
.
.
.
interface BRI0/0
  no ip address
  isdn switch-type basic-ni
  isdn tei-negotiation first-call
  isdn tei-negotiation remove
  cdapi buffers regular 0
  cdapi buffers raw 0
  cdapi buffers large 0
```

The following example shows how to return the National ISDN basic rate switch to its default preserve state:

```
Router(config-if)# no isdn tei-negotiation remove
Router(config-if)# exit
Router(config)# exit
Router# show startup-config
.
.
.
interface BRI0/0
  no ip address
  isdn switch-type basic-ni
  isdn tei-negotiation first-call
  cdapi buffers regular 0
  cdapi buffers raw 0
  cdapi buffers large 0
```

iua

To specify backhaul using Stream Control Transmission Protocol (SCTP) and to enter IDSN User Adaptation Layer (IUA) configuration mode, use the **iua** command in terminal configuration mode.

iua

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values

Command Modes Global configuration

Command History	Release	Modification
	12.2(4)T	This command was introduced.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco 7200 series. Support for the Cisco AS5300, Cisco AS5350, Cisco AS5400, and Cisco AS5850 is not included in this release.
	12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T and support was added for the Cisco AS5300 and Cisco AS5850.
	12.2(15)T	This command was implemented on the Cisco 2420, Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series; and Cisco AS5300, Cisco AS5350, Cisco AS5400, and Cisco AS5850 network access server (NAS) platforms.

Usage Guidelines You must first enter IUA configuration mode to access SCTP configuration mode. First enter IUA configuration mode by using the example below and then enter **sctp** at the Router(config-iua)#prompt to bring up SCTP configuration mode. See the **sctp** command.

Examples The following example shows how to enter iua configuration mode:

```
Router# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)# iua
```

```
Router(config-iua)#
```

The following example shows how to configure the failover-timer by setting the failover time (in milliseconds) to 1 second for a particular AS:

```
Router(config-iua)# as as5400-3 fail-over-timer 1000
```

The following example configure the number of SCTP streams for this AS to 57, which is the maximum value allowed:

```
Router(config-iaa)# as as5400-3 sctp-streams 57
```

Related Commands

Command	Description
isdn bind-L3 iua-backhaul	Specifies ISDN backhaul using SCTP for an interface.
show iua as	Shows information about the current condition of an AS.
show iua asp	Shows information about the current condition of an ASP.

ivr asr-server

To specify the location of an external media server that provides automatic speech recognition (ASR) functionality to voice applications, use the **ivr asr-server** command in global configuration mode. To remove the server location, use the **no** form of this command.

ivr asr-server *url*

no ivr asr-server

Syntax Description

<i>url</i>	Location of the ASR resource on the media server, in uniform resource locator (URL) format.
------------	---

Command Default

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5300, Cisco AS5350, and Cisco AS5400.
12.4(15)T	The <i>url</i> argument was modified to accept a Media Resource Control Protocol version 2 (MRCP v2) server URL.

Usage Guidelines

This command sets the server location globally for all voice applications on the gateway.

For Nuance media servers that use the default installation, specify the URL as follows:

ivr asr-server rtsp://host:[port]/recognizer

(*host* is the host name of the media server; *port* is optional.)

For media servers using MRCP v2, specify the URL as follows:

ivr asr-server sip:server-name@host-name | ip-address

You can specify the location of the media server within a VoiceXML document, overriding the Cisco gateway configuration. For more information, see the [Cisco VoiceXML Programmer's Guide](#).

Examples

The following example specifies that voice applications use the ASR server named "asr_serv":

```
Router(config)# ivr asr-server rtsp://asr_serv/recognizer
```

The following example specifies that voice applications use the MRCP v2 ASR server named "asr_mrcpv2serv":

```
Router(config)# ivr asr-server sip:asr_mrcpv2serv@mediaserver.com
```

Related Commands

Command	Description
ivr tts-server	Specifies the location of a media server that provides TTS functionality to voice applications.
ivr tts-voice-profile	Specifies the location of the voice profile that is used by the TTS server.

ivv autoloa d mode

To loa d files from TFTP to memory using either verbose or silent mode, use the **ivv autoloa d mode** command in global configuration mode. To disable this function, use the **no** form of this command.

ivv autoloa d mode { **verbose** [*url location* | *retry number*] } | { **silent** [*url location* | *retry number*] }

no ivv autoloa d mode

Syntax Description

verbose	Displays the file transfer activity to the console. This mode is recommended while debugging.
url location	URL that is used to locate the index file that contains a list of all available audio files.
retry number	(Optional) Number of times that the system tries to transfer a file when there are errors. This parameter applies to each file transfer. Range is from 1 to 5. Default is 3.
silent	Performs the file transfer in silent mode, meaning that no file transfer activity is displayed to the console.

Command Default

Silent

Command Modes

Global configuration

Command History

Release	Modification
12.0(7)T	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco AS5300.
12.2(2)XB1	This command was implemented on the Cisco AS5850.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.

Usage Guidelines

The index file contains a list of audio files (URL) that can be downloaded from the TFTP server. Use this command to download audio files from TFTP to memory. The command only starts up a background process. The background process (loader) does the actual downloading of the files.

The background process first reads the index file from either Flash or TFTP. It parses the files line by line looking for the URL. It ignores lines that start with # as comment lines. Once it has a correct URL, it tries to read that.au file into memory and creates a media object. If there are any errors during the reading of the file, it retries the configured number of times. If the mode is set to **verbose**, the loader logs the transaction to console. Once parsing has reached the end of the index file, the background process exits memory.

Perform the following checks before initiating the background process. If one of the checks fails, it indicates the background process is not started, and instead you see an error response to the command.

- Check if any prompt is being actively used (IVR is actively playing some prompts). If there are active prompts, the command fails, displaying the following error message (.au files are also referred to as prompts):

```
command is not allowed when prompts are active
```

- Check if there is already a background process in progress. If there is a process, the command fails, displaying the following error:

```
previous autoload command is still in progress
```

- Check if an earlier **ivr autoload url** command has already been configured. If an **ivr autoload url** command has already been configured, the user sees the following response when the command is issued:

```
previous command is being replaced
```

- When the **no ivr autoload url** command is issued, if there was already an **ivr autoload url** command in progress, the original command is aborted.

The audio files (prompts) loaded using the **ivr autoload url** command are not dynamically swapped out of memory. They are considered to be autoloaded prompts, as opposed to dynamic prompts. (See the **ivr prompt memory** command for details on dynamic prompts.)

Examples

The following example configures verbose mode:

```
ivr autoload mode verbose url tftp://blue/orange/tclware/index4 retry 3
```

The following example shows the resulting index file:

```
more index4
tftp://blue/orange/tclware/au/en/en_one.au
tftp://blue/orange/tclware/au/ch/ch_one.au
tftp://blue/orange/tclware/au/ch/ch_one.au
```

The following example shows an index file on Flash memory:

```
flash:index
```

Related Commands

Command	Description
ivr prompt memory	Configures the maximum amount of memory that the dynamic audio files occupy in memory.

ivr autoloading retry

To specify the number of times that the system tries to load audio files from TFTP to memory when there is an error, use the **ivr autoloading retry** command in global configuration mode. To disable this function, use the **no** form of this command.

ivr autoloading retry *number*

no ivr autoloading retry

Syntax Description	<i>number</i>	Number of load attempts. Range is from 1 to 5. The default is 3.
---------------------------	---------------	--

Command Default	3 tries	
------------------------	---------	--

Command Modes	Global configuration	
----------------------	----------------------	--

Command History	Release	Modification
	12.0(7)T	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco AS5300.
12.2(2)XB1	This command was implemented on the Cisco AS5850.	
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.	

Examples	The following example configures the system to try four times to load audio files: <pre>ivr autoloading retry 4</pre>	
-----------------	--	--

Related Commands	Command	Description
	ivr prompt memory	Configures the maximum amount of memory that the dynamic audio files (prompts) occupy in memory.

ivr autoload url

To load files from a particular TFTP server (as indicated by a defined URL), use the **ivr autoload** command in global configuration mode. To disable this function, use the **no** form of this command.

ivr autoload url *location*

no ivr autoload url *location*

Syntax Description	url <i>location</i>	URL that is to be used to locate the index file that contains a list of all available audio files.
---------------------------	----------------------------	--

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	Global configuration
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Command History	Release	Modification
	12.0(7)T	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco AS5300.
	12.2(2)XB1	This command was implemented on the Cisco AS5850.
	12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.

Usage Guidelines

The index file contains a list of audio files URLs that can be downloaded from the TFTP server. Use this command to download audio files from TFTP to memory. The command starts up a background process. The background process (loader) does the actual downloading of the files.

The background process first reads the index file from either Flash memory or TFTP. It parses the files line by line, looking for the URL. It ignores lines that start with # as comment lines. Once it has a correct URL, it tries to read that .au file into memory and creates a media object. If there are any errors during the reading of the file, it retries the configured number of times. If the *mode* is set to “verbose,” in the **ivr autoload** mode command the loader logs the transaction to console. Once parsing has reached the end of the index file, the background process exits memory.

Perform the following checks before initiating the background process. If one of the checks fails, it indicates that the background process is not started, and instead you see an error response to the command.

- Check to see if any prompt is being actively used (IVR is actively playing some prompts). If there are active prompts, the command fails, displaying the following error message (.au files are also referred to as prompts):

```
command is not allowed when prompts are active
```

- Check to see if there is already a background process in progress. If there is a process, the command fails, displaying the following error:

```
previous autoload command is still in progress
```

- Check to see if an earlier **ivr autoload url** command has already been configured. If an **ivr autoload** command has already been configured, the user sees the following response when the command is issued:

```
previous command is being replaced
```

- When the **no ivr autoload url** command is issued, If there is already an **ivr autoload url** command in progress, it is aborted.

The audio files (prompts) loaded using the **ivr autoload** command are not dynamically swapped out of memory. They are considered as autoloaded prompts as opposed to “dynamic” prompts. (See the **ivr prompt memory** command for details on dynamic prompts.)

Examples

The following example loads audio files from the TFTP server (located at //jurai/mgindi/tclware/index4):

```
ivr autoload url tftp://jurai/mgindi/tclware/index4
```

The following example shows the resulting index file:

```
more index4
tftp://jurai/mgindi/tclware/au/en/en_one.au
tftp://jurai/mgindi/tclware/au/ch/ch_one.au
tftp://jurai/mgindi/tclware/au/ch/ch_one.au
```

The following example shows an index file on Flash:

```
flash:index
```

Related Commands

Command	Description
ivr prompt memory	Configures the maximum amount of memory that the dynamic audio files (prompts) occupy in memory.

ivv prompt streamed

To stream audio prompts from particular media types during playback, use the **ivv prompt streamed** command in global configuration mode. To reset to the default, use the **no** form of this command.

```
ivv prompt streamed {all | flash | http | none | tftp}
```

```
no ivv prompt streamed {all | flash | http | none | tftp}
```

Syntax Description

all	All audio prompts, from all URL types (Flash memory, HTTP, TFTP).
flash	Audio prompts from Flash memory.
http	Audio prompts from an HTTP URL. This is the default value.
none	No audio prompts from any media type.
tftp	Audio prompts from a TFTP URL.

Command Default

Audio prompts from HTTP URLs and other media types are not streamed during playback.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(11)T	This command was introduced on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5300, Cisco AS5350, and Cisco AS5400.
12.4(15)T	The default was changed from streaming for audio prompts during playback to no streaming.

Usage Guidelines

To enable streaming for multiple media types, either enter this command for each URL type or enter the **ivv prompt streamed all** command. If this command is not entered, audio prompts from HTTP servers are streamed; audio prompts from Flash and TFTP servers are not streamed.



Note

Prompts from a Real Time Streaming Protocol (RTSP) server are always streamed during playback.

Examples

The following example indicates that audio prompts from Flash memory and TFTP are streamed when they are played back:

```
ivv prompt streamed flash
ivv prompt streamed tftp
```

Related Commands

Command	Description
ivr prompt memory	Sets the maximum amount of memory that dynamic audio prompts can occupy in memory.

ivr record memory session

To set the maximum amount of memory that can be used to record voice messages during a single call session, use the **ivr record memory session** command in global configuration mode. To reset to the default, use the **no** form of this command.

ivr record memory session *kilobytes*

no ivr record memory session

Syntax Description	<i>kilobytes</i>	Memory size, in kilobytes. Range is 0 to 256000. The default is 256.
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Command Default	256 KB
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Command Modes	Global configuration
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Command History	Release	Modification
	12.2(2)XB	This command was introduced on the Cisco AS5300.
12.2(11)T	This command was implemented on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5350, and Cisco AS5400.	

Usage Guidelines	Use this command to limit the maximum memory allowed for audio recordings during a single call session on a VoiceXML-enabled gateway.
-------------------------	---



Note

This command configures memory limits only for voice messages recorded to local memory on the gateway. Memory limits are not configurable on the gateway for HTTP, Real Time Streaming Protocol (RTSP), or Simple Mail Transfer Protocol (SMTP) recordings.

Examples	The following example sets the maximum memory limit to 512 KB for a single call session:
-----------------	--

```
ivr record memory session 512
```

Related Commands	Command	Description
	ivr record memory system	Sets the maximum amount of memory that can be used to store all voice recordings on the VoiceXML-enabled gateway.

ivrr record memory system

To set the maximum amount of memory that can be used to store all voice recordings on the gateway, use the **ivrr record memory system** command in global configuration mode. To reset to the default, use the **no** form of this command.

ivrr record memory system *kilobytes*

no ivrr record memory system

Syntax Description

kilobytes Memory limit, in kilobytes. Range is 0 to 256000. If 0 is configured, the RAM recording function is disabled on the gateway. The default for Cisco 3640 and Cisco AS5300 is 10000. The default for Cisco 3660, Cisco AS5350, and Cisco AS5400 is 20000.

Command Default

Cisco 3640 and Cisco AS5300: 10,000 KB
Cisco 3660, Cisco AS5350, and Cisco AS5400: 20,000 KB

Command Modes

Global configuration

Command History

Release	Modification
12.2(2)XB	This command was introduced on the Cisco AS5300.
12.2(11)T	This command was implemented on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5350, and Cisco AS5400.

Usage Guidelines

Use this command to limit the maximum amount of gateway memory that is used for storing all voice recordings.



Note

This command configures memory limits only for voice messages recorded to local memory on the gateway. Memory limits are not configurable on the gateway for HTTP, Real Time Streaming Protocol (RTSP), or Simple Mail Transfer Protocol (SMTP) recordings.

Examples

The following example sets the total memory limit for all recordings to 8000 KB:

```
ivrr record memory system 8000
```

Related Commands

Command	Description
ivrr record memory session	Sets the maximum amount of memory that can be used to record voice messages during a single call session.

ivr tts-server

To specify the location of an external media server that provides text-to-speech (TTS) functionality to voice applications, use the **ivr tts-server** command in global configuration mode. To remove the server location, use the **no** form of this command.

ivr tts-server *url*

no ivr tts-server

Syntax Description	<i>url</i>	Location of the TTS resource on the media server, in uniform resource locator (URL) format.
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Command Default	No default behavior or values
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Command Modes	Global configuration (config)
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Command History	Release	Modification
	12.2(11)T	This command was introduced on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5300, Cisco AS5350, and Cisco AS5400.
	12.4(15)T	The <i>url</i> argument was modified to accept a Media Resource Control Protocol version 2 (MRCP v2) server URL.

Usage Guidelines

This command sets the server location globally for all voice applications on the gateway. For Nuance media servers that use the default installation, specify the URL as follows:

ivr tts-server rtsp://host:port/synthesizer

(*host* is the host name of the media server; *:port* is optional.)

For media servers using MRCP v2, specify the URL as follows:

ivr tts-server sip:server-name@host-name | ip-address

You can specify the location of the media server within a VoiceXML document, overriding the Cisco gateway configuration. For more information, see the [Cisco VoiceXML Programmer's Guide](#).

To specify the voice profile that the TTS server uses for voice synthesis operations, use the **ivr tts-voice-profile** command.

Examples

The following example specifies that voice applications use the TTS server named "tts_serv":

```
Router(config)# ivr tts-server rtsp://tts_serv/synthesizer
```

The following example specifies that voice applications use the MRCP v2 TTS server named “tts_mrcpv2serv”:

```
Router (config)# ivr tts-server sip:tts_mrcpv2serv@mediaserver.com
```

Related Commands

Command	Description
ivr asr-server	Specifies the location of a media server that provides ASR functionality to IVR applications.
ivr tts-voice-profile	Specifies the location of the voice profile that is used by the TTS server.

ivr tts-voice-profile

To specify the location of the voice profile that is used by text-to-speech (TTS) servers, use the **ivr tts-voice-profile** command in global configuration mode. To remove the voice profile, use the **no** form of this command.

ivr tts-voice-profile *url*

no ivr tts-voice-profile

Syntax Description

<i>url</i>	Location of the TTS voice profile file, in URL format.
------------	--

Command Default

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the following platforms: Cisco 3640, Cisco 3660, Cisco AS5300, Cisco AS5350, and Cisco AS5400.

Usage Guidelines

This command specifies the voice profile that a TTS server uses for voice synthesis operations. The voice profile is a W3C Simple Markup Language (SML) file that specifies voice parameters like gender, speed, and so forth. The TTS server uses this voice profile unless the markup file that it is translating has overriding values.

The TTS voice profile can be stored on an HTTP server or on RTSP, TFTP, or FTP servers if the media sever supports these locations.

The TTS voice profile location can also be specified in the VoiceXML document by using the Cisco proprietary property `com.cisco.tts-voice-profile`. The VoiceXML property in the document overrides the value that is configured by using this command.

To specify the location of the external media server that is providing TTS functionality, use the **ivr tts-server** command.

Examples

The following example tells the TTS server to use the voice profile file named “vprofil2”, which is located on an HTTP server:

```
ivr tts-voice-profile http://ttserver/vprofil2.sml
```

Related Commands	Command	Description
	ivr asr-server	Specifies the location of a media server that provides ASR functionality to IVR applications.
	ivr tts-server	Specifies the media server that provides TTS functionality to IVR applications.

ixi application cme

To enter XML application configuration mode for the Cisco Unified CallManager Express (Cisco Unified CME) application, use the **ixi application cme** command in global configuration mode.

ixi application cme

Syntax Description

This command has no keywords or arguments.

Command Default

XML parameters are not set for the Cisco Unified CME application.

Command Modes

Global configuration

Command History

Cisco IOS Release	Modification
12.4(4)XC	This command was introduced.

Usage Guidelines

In Cisco Unified CME 4.0 and later versions, an XML interface is provided through the Cisco IOS XML Infrastructure (IXI), in which the parser and transport layers are separated from the application itself.

When you are using the Cisco IOS XML Infrastructure, the same HTTP transport layer can be used by multiple applications. The **ixi application cme** command enters XML application configuration mode to allow you to set Cisco IOS XML Infrastructure parameters for the Cisco Unified CME application. In this configuration mode, you can set the response timeout parameter using the **response timeout** command and enable communication with the application using the **no shutdown** command.

The **ixi transport** command allows you to set parameters for the Cisco IOS XML Infrastructure transport layer.

Examples

The following example configures the Cisco Unified CME application to overwrite the Cisco IOS XML Infrastructure transport-level timeout with a 30-second response timeout and enables XML communication with the application.

```
Router(config)# ixi application cme
Router(conf-xml-app) response timeout 30
Router(conf-xml-app)# no shutdown
```

Related Commands

Command	Description
ixi transport	Enters XML transport configuration mode.
no shutdown	Enables XML communication with the application.
response (XML application)	Sets a timeout for responding to the XML application and overwrites the IXI transport-level timeout.

ixi application mib

To enter XML application configuration mode, use the **ixi application mib** command in global configuration mode.

ixi application mib

Syntax Description	mib	XML application for which parameters will be configured. Valid value: mib .
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Command Default	No XML applications are configured.
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Command Modes	Global configuration mode
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Command History	Release	Modification
	12.4(6)T	This command was introduced.

Usage Guidelines

The Cisco IOS XML Infrastructure (IXI) simplifies the implementation and deployment of XML-based applications in Cisco IOS software. IXI applications can be clients and or servers where the parser and transport layers are separated from the application itself. This modularity provides scalability and enables future XML supports to be developed.

An eXtensible Markup Language (XML) application programming interface (API) supports Cisco IOS commands allowing you to specify certain parameters associated with the XML API.

Once you are in XML application configuration mode, you can use the following commands:

- **default**—XML application configuration parameters defaults.
- **exit**—Apply changes and exit from XML application configuration mode.
- **help**—Display of the interactive help system.
- **no**—Negate a command or set its defaults.
- **response**—Response parameters.
- **shutdown**—Stop the application.

Examples

The following example shows how to enter XML application configuration mode, set the XML application timeout period to 30 seconds, format the response parameters to in human readable XML, and exit XML application configuration mode:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# ixi application mib
Router(conf-xml-app)# response timeout 30
Router(conf-xml-app)# response formatted
Router(conf-xml-app)# exit
```

Related Commands	Command	Description
	ixi transport http	Sets XML transport parameters.
	response (XML application)	Sets XML application mode response parameters.

ixi transport http

To enter XML transport configuration mode, use the **ixi transport** command in global configuration mode.

ixi transport http

Syntax Description	http	Specifies the http transport protocol.
Command Default	No XML transport is configured.	
Command Modes	Global configuration mode	
Command History	Release	Modification
	12.4(6)T	This command was introduced.

Usage Guidelines

The Cisco IOS XML Infrastructure (IXI) simplifies the implementation and deployment of XML-based applications in Cisco IOS software. IXI applications can be clients and or servers where the parser and transport layers are separated from the application itself. This modularity provides scalability and enables future XML supports to be developed. IXI allows applications to be written in a transport independent manner. The **ixi transport** command enters XML transport configuration mode where you can set transport configuration parameters.

Once you are in XML transport configuration mode, you can access the following commands:

- **default option**—XML transport configuration command defaults.
- **exit**—Apply changes and exit from XML application configuration mode.
- **help**—Display the interactive help system.
- **no**—Negate a command or set its defaults.
- **request**—Request handling parameters.
- **response size**—Response transport fragment size.
- **shutdown**—Stop the transport.

Examples

The following example shows how to enter XML transport configuration mode, set the XML transport fragment size to 32 Kbytes, and exit XML transport configuration mode:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# ixi transport http
Router(conf-xml-trans)# response size 32
Router(conf-xml-trans)# exit
```

Related Commands	Command	Description
	ixi application mib	Sets XML application parameters.
	request (XML transport)	Sets XML transport request handling parameters.
	response size (XML transport)	Set the XML transport fragment size.

