



## X.25 Station Type for ISDN D-channel Interface

---

The X.25 Station Type for ISDN D-channel Interface feature permits configuration of the X.25 station type for the ISDN D-channel interface with the **encapsulation x25** command on this interface. This feature allows the mapping of closed user group (CUG) of the X.25 packets that originates from the point-of-sale devices terminating the ISDN-BRI D-channel interface configured as an X.25 data communications equipment (DCE) station of Cisco routers with an ISDN BRI interface.

The default encapsulation of the BRI D-channel interface is X.25 encapsulation in data terminal equipment (DTE) mode. To change the X.25 station type on the ISDN BRI D-channel interface, use the **encapsulation 25** command with the appropriate keyword in the interface configuration mode. If no keyword is specified, the interface will be configured with X.25 encapsulation in DTE mode.

When a router boots up with the new ISDN BRI interface, the encapsulation will not show up explicitly in the ISDN BRI D-channel interface configuration although the encapsulation will be set as an X.25 DTE station, the default for this interface. When the **no encapsulation** command is issued on the ISDN BRI D-channel interface, the interface will be set as an X.25 DTE station, the default. This will show up in the running configuration of the interface as **encapsulation x25**.

### Feature History for X.25 Station Type for ISDN D-channel Interface

Release	Modification
12.3(7)XR	This feature was introduced.
12.3(14)T	This feature was integrated into Cisco IOS Release 12.3(14)T.

### Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.



---

**Americas Headquarters:**  
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2007 Cisco Systems, Inc. All rights reserved.

# Contents

- [Prerequisites for X.25 Station Type for ISDN D-channel Interface, page 2](#)
- [Information About X.25 Station Type for ISDN D-channel Interface, page 2](#)
- [How to Configure X.25 Encapsulation on ISDN BRI D-channel Interface, page 3](#)
- [Configuration Examples for X.25 Encapsulation on ISDN BRI D-channel Interface, page 5](#)
- [Additional References, page 6](#)
- [Command Reference, page 7](#)

## Prerequisites for X.25 Station Type for ISDN D-channel Interface

- The BRI interface needs to be configured for X.25 traffic over an ISDN D-channel using the **isdn x25 dchannel** command in interface configuration mode.

For more details, see the following URL:

[http://www.cisco.com/univercd/cc/td/doc/product/software/ios123/123cgcr/dial\\_r/dia\\_i2g.htm#1050084](http://www.cisco.com/univercd/cc/td/doc/product/software/ios123/123cgcr/dial_r/dia_i2g.htm#1050084)

- The ISDN BRI D-channel interface of the peer that is connected to this interface should be a complementary station type.

## Information About X.25 Station Type for ISDN D-channel Interface

To configure the X.25 Station Type for ISDN D-channel Interface feature, you should understand the following concepts:

- [Configuring X.25 on ISDN D-channel Interface, page 2](#)
- [X.25 Closed User Groups, page 3](#)

## Configuring X.25 on ISDN D-channel Interface

If the D channel of an ISDN BRI interface will carry X.25 traffic, you need to configure the feature that is described in the [Configuring X.25 on ISDN](#) feature guide.

A BRI is an ISDN interface. It consists of two B channels (B1 and B2) and one D-channel. The B channels are used to transfer data, voice, and video. The D channel controls the B channels.

ISDN uses the D-channel to carry signal information. ISDN can also use the D-channel in a BRI to carry X.25 packets. The D-channel has a capacity of 16 kbps; the X.25 over D-channel can use up to 9.6 kbps.

When this feature is configured, a separate X.25-over-D-channel logical interface is created. You can set its parameters without disrupting the original ISDN interface configuration. The original BRI interface will continue to represent the D, B1, and B2 channels.

An interface configured for X.25 traffic over the D channel can be used as a primary interface where low-volume, sporadic, interactive traffic is the normal mode of operation. Supported traffic includes IPX, AppleTalk, transparent bridging, XNS, DECnet, and IP.

For more details on how to configure the X.25 over ISDN D-channel Interface feature, see the following URL:

[http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed\\_cr/dial\\_c/dcp10/dcxisdn.htm](http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed_cr/dial_c/dcp10/dcxisdn.htm)

## X.25 Closed User Groups

A closed user group (CUG) is a collection of DTE devices for which the network controls access between two members and between a member and a non-member. An X.25 network can support up to 10,000 CUGs (numbered between 0 and 9999), each of which can have any number of member DTE devices. An individual DTE becomes a member of a specific network CUG by subscription. The subscription data includes the local number that the DTE will use to identify the network CUG (which may or may not be the same as the network number, as determined by network administration and the DTE device's requirements), and any restriction that prohibits the DTE from placing a call within the CUG or, conversely, prohibits the network from presenting a call within the CUG to the DTE.

With the X.25 CUGs feature, the router's X.25 DCE interfaces can be configured to perform the standard CUG access controls that are normally associated with a direct attachment to an X.25 network point of presence (POP). The router's DCE interface acts as the boundary between the DTE and the network, and CUG use ensures that only those incoming and outgoing switched virtual circuits (SVCs) consistent with the configured CUG subscriptions are permitted. X.25 CUG configuration commands on the router are specified at every POP, and CUG security decisions are made solely from those commands.

The X.25 CUGs feature is used for additional X.25 access protection and security. In a setup where DTE devices are attached to a public data network (PDN), you can derive a private subnetwork by subscribing your DTE devices to a set of CUGs, which allows closer control of your DTE devices, such as permitting or restricting which DTE can talk to other DTE devices and for what particular purpose. For example, a distinct CUG can be defined to handle each of the different modes of connectivity, such as following:

- Datagram encapsulation operation between all company sites
- Packet assembler/disassembler (PAD) services for customers seeking public information
- PAD services for system administration internal access to consoles
- Qualified Logical Link Control (QLLC) access restricted to the company financial centers

For more details, see the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/120newft/120t/120t7/x25scugs.htm>

## How to Configure X.25 Encapsulation on ISDN BRI D-channel Interface

This section contains following procedure:

- [Configuring X.25 Encapsulation on ISDN BRI D-channel Interface, page 3](#)

## Configuring X.25 Encapsulation on ISDN BRI D-channel Interface

To configure X.25 encapsulation on ISDN BRI D-channel Interface, perform the following steps.

## SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface BRI2/0**
4. **isdn x25 dchannel**
5. **interface BRI2/0:0**
6. **encapsulation X.25 dce**
7. **end**

**Note**

Use the **interface BRI2/0** and **isdn x25 dchannel** commands if the configurable interface for X.25 traffic over ISDN D-channel does not exist.

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"><li>• Enter your password if prompted.</li></ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface BRI2/0</b>  <b>Example:</b> Router# interface BRI2/0	(Optional) Specifies an ISDN BRI interface. <b>Note</b> Use this command if the configurable interface for X.25 traffic over ISDN D-channel does not exist.
Step 4	<b>isdn x25 dchannel</b>  <b>Example:</b> Router# isdn x25 dchannel	(Optional) Creates a configurable interface for X.25 traffic over the ISDN D-channel. <b>Note</b> Use this command if the configurable interface for X.25 traffic over ISDN D-channel does not exist.
Step 5	<b>interface BRI2/0:0</b>  <b>Example:</b> Router# interface BRI2/0:0	Specify an ISDN BRI D-channel interface.
Step 6	<b>encapsulation X25 dce</b>  <b>Example:</b> Router# encapsulation X.25 dce	Enables X.25 encapsulation in DCE mode.
Step 7	<b>end</b>  <b>Example:</b> Router# end	(Optional) Exits the configuration mode and returns to privileged EXEC mode.

## Examples

The following example configures the X.25 encapsulation in DCE mode on an BRI interface 2/0:0:

```
interface BRI2/0:0
ip address 1.1.1.2 255.255.255.0
 encapsulation X.25 dce
 no ip mroute-cache
 X.25 subscribe cug-service
 X.25 subscribe local-cug 10 network-cug 100
!
```

# Configuration Examples for X.25 Encapsulation on ISDN BRI D-channel Interface

This section provides following configuration example:

- [Configuring X.25 Encapsulation on ISDN BRI D-channel Interface, page 3](#)

## X.25 Encapsulation on an ISDN BRI D-channel Interface: Example

The following example shows X.25 encapsulation configured on interface BRI2/0:

```
Current configuration: 2275 bytes
!
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Router
!
boot system flash c1700-voice-mz
enable password cisco
!
memory-size iomem 15
tdm clock bri-auto
voice-card 2
!
no aaa new-model
ip subnet-zero
!
!
!
no ftp-server write-enable
isdn switch-type basic-net3
!

no voice hpi capture buffer
no voice hpi capture destination
!
interface FastEthernet0/0
 ip address 10.0.2.199 255.255.255.0
 speed 100
!
interface BRI2/0
 no ip address
 isdn switch-type basic-net3
```

```

isdn protocol-emulate network
isdn layer1-emulate network
no isdn outgoing display-ie
isdn x25 static-tei 1
isdn x25 dchannel
isdn skipsend-idverify
!
interface BRI2/0:0
no ip address
encapsulation x25 dce
x25 subscribe cug-service incoming-access outgoing-access
x25 subscribe local-cug 5000 network-cug 55 preferential
!
interface BRI2/1
no ip address
shutdown
isdn switch-type basic-net3
!
ip classless
no ip http server
!
voice-port 2/0
!
voice-port 2/1
!
line con 0
line aux 0
line vty 0 4
login
!
end

```

## Additional References

The following sections provide references related to the X.25 Station Type for ISDN D-channel Interface feature.

## Related Documents

Related Topic	Document Title
Cisco IOS Release 12.3 Configuration Guides and Command References	<a href="#">Cisco IOS Release 12.3 Configuration Guides and Command References</a>
Cisco IOS Dial Technologies Command Reference, Release 12.3	“Dial Technologies Commands: isdn all through isdn x25” section in <a href="#">Cisco IOS Dial Technologies Command Reference</a> , Release 12.3

## Standards

Standards	Title
None	—

## MIBs

MIBs	MIBs Link
<ul style="list-style-type: none"> <li>None</li> </ul>	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

## RFCs

RFCs	Title
None	—

## 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, and tools. 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

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Wide-Area Networking Command Reference* at [http://www.cisco.com/en/US/docs/ios/wan/command/reference/wan\\_book.html](http://www.cisco.com/en/US/docs/ios/wan/command/reference/wan_book.html). For information about all Cisco IOS commands, go to the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or to the *Cisco IOS Master Commands List*.

- **debug x25**
- **encapsulation x25**
- **show x25 cug**
- **x25 subscribe cug-service**
- **x25 subscribe local cug**

---

CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0711R)

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

© 2007 Cisco Systems, Inc. All rights reserved.