X.25 Station Type for ISDN D-channel Interface

Last Updated: October 7, 2011

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.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

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

- 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

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/dcprt10/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

- Configuring X.25 Encapsulation on ISDN BRI D-channel Interface, page 4

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

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.

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 X25 dce**
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** Router> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Router# configure terminal	Enters global configuration mode.
Step 3	**interface BRI2/0** **Example:** Router# interface BRI2/0	(Optional) Specifies an ISDN BRI interface. **Note** Use this command if the configurable interface for X.25 traffic over ISDN D-channel does not exist.
Step 4	**isdn x25 dchannel** **Example:** Router# isdn x25 dchannel	(Optional) Creates a configurable interface for X.25 traffic over the ISDN D-channel. **Note** Use this command if the configurable interface for X.25 traffic over ISDN D-channel does not exist.

	Command or Action	Purpose
Step 5	**interface BRI2/0:0** **Example:** `Router# interface BRI2/0:0`	Specify an ISDN BRI D-channel interface.
Step 6	**encapsulation X25 dce** **Example:** `Router# encapsulation X.25 dce`	Enables X.25 encapsulation in DCE mode.
Step 7	**end** **Example:** `Router# end`	(Optional) Exits the configuration mode and returns to privileged EXEC mode.

Example

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

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

Related Documents

Related Topic	Document Title
Cisco IOS Release 12.3 Configuration Guides and Command References	Cisco IOS Release 12.3 Configuration Guides and Command References

Related Topic	Document Title
Cisco IOS Dial Technologies Command Reference, Release 12.3	"Dial Technologies Commands: isdn all through isdn x25" section in *Cisco IOS Dial Technologies Command Reference* , Release 12.3

Standards

Standards	Title
None	--

MIBs

MIBs	MIBs Link
• None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

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.	http://www.cisco.com/public/support/tac/home.shtml