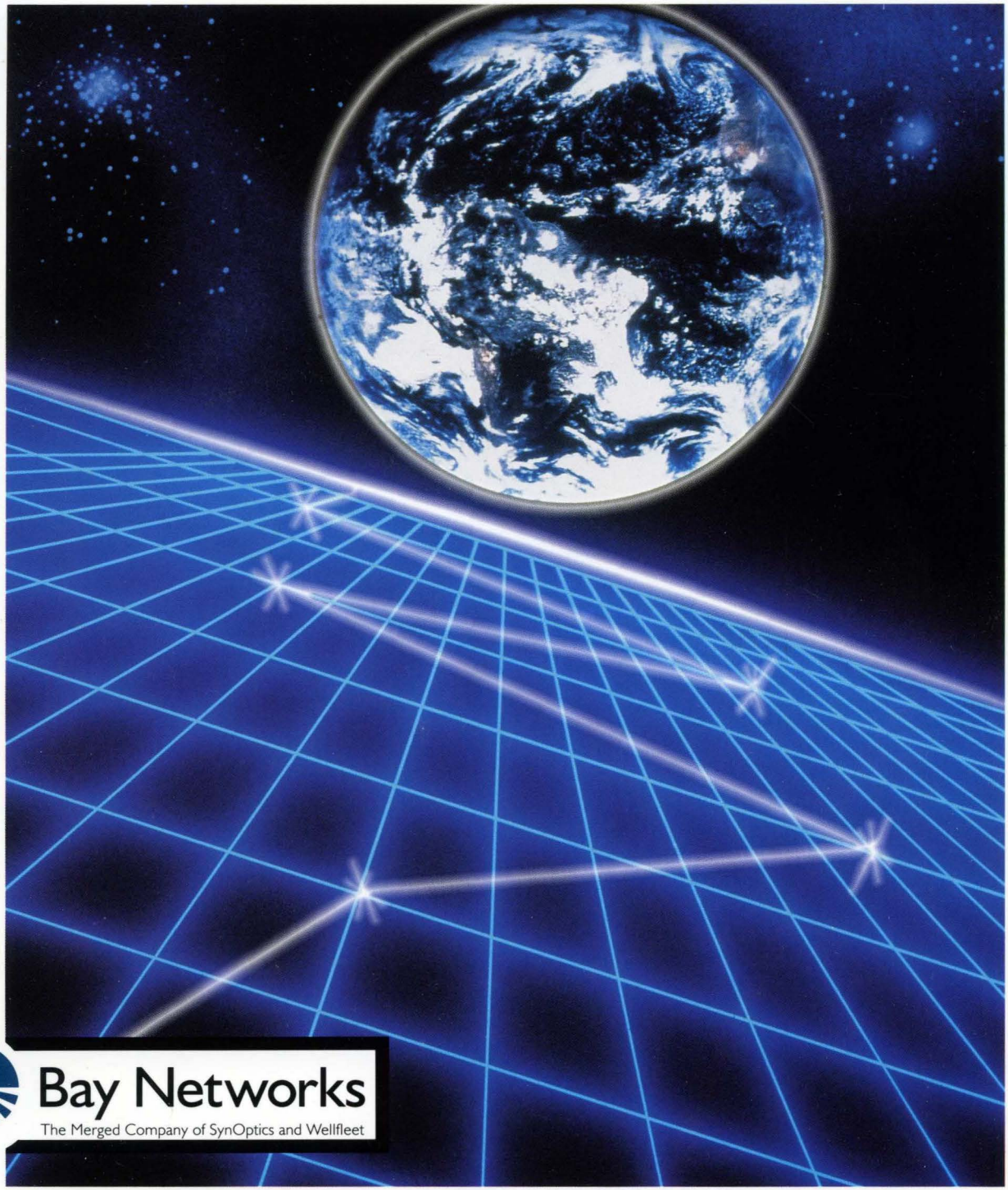

Bay Networks

The Merged Company of SynOptics and Wellfleet

Customizing X.25 Services

Part No. 110059 A

Customizing X.25 Services

Router Software Version 8.10
Site Manager Software Version 2.10

Part No. 110059 Rev. A
February 1995

Bay Networks

The Merged Company of SynOptics and Wellfleet

Bay Networks, Inc., 8 Federal Street, Billerica, MA 01821

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About This Guide

If you are responsible for configuring and managing Wellfleet® routers, you need to read this guide.

This guide describes X.25 services and provides instructions for using Site Manager to configure X.25 parameters for your network.

Refer to this guide for

- An overview of Wellfleet's X.25 services (Chapter 1)
- Information about Wellfleet's implementation of X.25 services (Chapter 2)
- Descriptions of X.25 parameters and instructions for editing those parameters (Chapter 3)

For information and instructions about the following topics, see *Configuring Wellfleet Routers*.

- Initially configuring and saving a WAN interface
- Retrieving a configuration file
- Rebooting the router with a configuration file

Before You Begin

Before using this guide, you must complete the following procedures:

- Create and save a configuration file that contains at least one X.25 interface.
- Retrieve the configuration file in local, remote, or dynamic mode.

Refer to *Configuring Wellfleet Routers* for instructions.

How to Get Help

For additional information or advice, contact the Bay Networks Help Desk in your area:

United States	1-800-2LAN-WAN
Valbonne, France	(33) 92-966-968
Sydney, Australia	(61) 2-903-5800
Tokyo, Japan	(81) 3-328-0052

Conventions

arrow character (→)	Separates menu and option names in instructions. Example: Protocols→AppleTalk identifies the AppleTalk option in the Protocols menu.
italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
`screen text`	Indicates data that appears on the screen. Example: `Set Wellfleet Trap Monitor Filters`
quotation marks (" ")	Indicate the title of a chapter or section within a book.
vertical line (|)	Indicates that you enter only one of the parts of the command. The vertical line separates choices. Do not type the vertical line when entering the command. Example: If the command syntax is **show at routes | nets**, you enter either

Acronyms

BFE	Blacker Front-End
BOFL	Breath of Life (message)
CCITT	International Telegraph and Telephone Consultative Committee
CPU	central processing unit
CUG	closed user group
CUGOA	closed user group with outgoing access
DCE	data communication equipment *also called* data circuit terminating equipment
DDN	Defense Data Network
DOD	Department of Defense
DTE	Data Terminal Equipment
HDLC	High-level Data Link Control
IP	Internet Protocol
ISO	International Organization for Standardization
LAN	local area network
LAP	Link Access Procedure
LAPB	Link Access Procedure Balanced
MIB	Management Information Base
OSI	Open Systems Interconnection
PDN	Public Data Network
PLP	Packet Level Protocol
PPP	Point-to-Point Protocol
RFC	Request for Comments
RPOA	recognized private operating agencies
SNAP	Subnetwork Access Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
VC	virtual circuit

Chapter 1
X.25 Overview

The CCITT X.25 recommendation defines a wide-area networking interface protocol for connecting a packet-mode Data Terminal Equipment (DTE) device to a Data Communication Equipment (DCE) network node on a Public Data Network (PDN). Since PDNs typically use error-prone analog lines, the X.25 protocol provides for extensive error checking, recovery, and packet sequencing. Figure 1.1 shows an X.25 network.

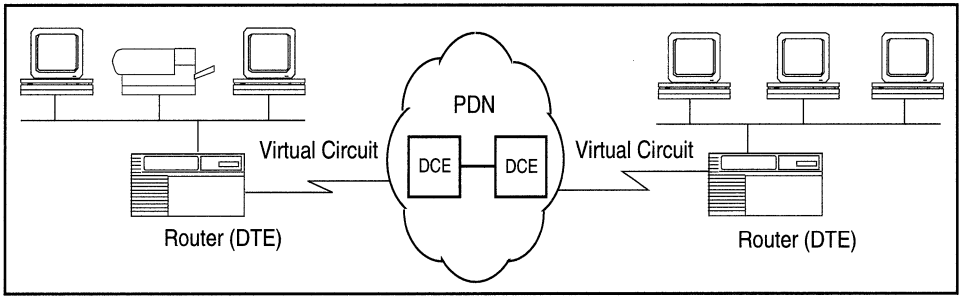


Figure 1-1. X.25 Network

The X.25 protocol allows two DTE devices (for example, routers) to communicate over a PDN, focusing on three of the seven layers in the OSI model: the physical interface layer, the data link layer, and the network or packet layer.

The physical interface layer is the electrical or modem interface. The data link layer defines the link access procedures for transferring frames of data accurately across the access lines between the DTE and the DCE. The network or packet layer maintains the connection with procedures for call establishment, data transfer, flow control, error recovery, and call clearing. The X.25 protocol defines *how* the DTE and its respective DCE communicate and exchange data.

The X.25 network transmits data over *virtual circuits (VCs)* between each source and destination on the network. Since as many as 128 VCs can exist on the same physical link at the same time, multiple devices can share the bandwidth of the transmission line, sending data in multiple packets from the source to the destination.

X.25 Architecture

The Wellfleet router complies with the following industry standards to provide X.25 services:

- The Link Access Procedure-Balanced (LAPB) layer complies with 1988 CCITT.
- The X.25 packet layer complies with 1988 CCITT.
- The X.25 services layer complies with RFC 1356 for IP and OSI.

The X.25 software provides the interface between the LAPB procedures and the X.25 packet layer and services layer, and between the X.25 packet layer and the networking protocol layer (Figure 1-2).

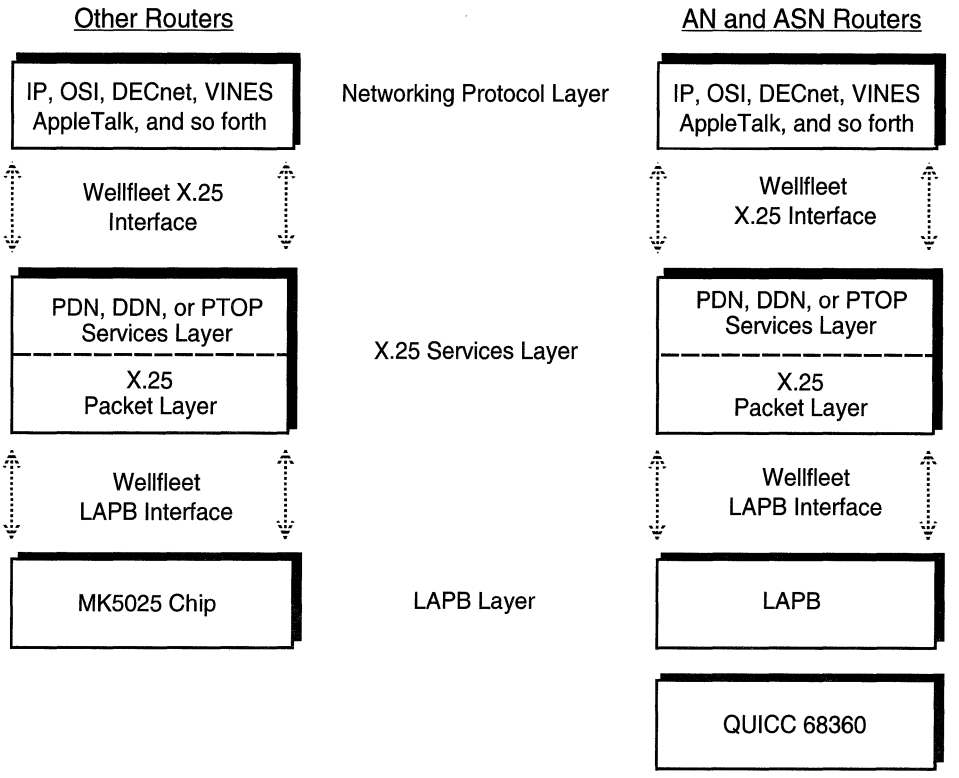


Figure 1-2. Wellfleet X.25 Protocol Stack

Link Access Procedure Balanced Protocol (LAPB)

LAPB is a version of High-level Data Link Control (HDLC). The router uses the services of LAPB to initialize the link between itself and the local DCE device, and to frame X.25 data packets before transmitting them to the DCE. Figure 1-3 shows a LAPB frame and identifies the X.25 data packet. The LAPB information field contains the X.25 packet. Once an X.25 packet reaches the destination router, the LAPB protocol strips away the LAPB frame and delivers the packet to the network layer for further processing.

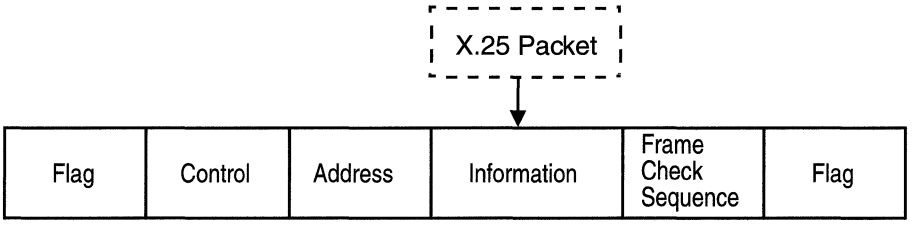


Figure 1-3. LAPB Frame

The implementation of the LAPB protocol is different on the AN and ASN routers than it is on the other Wellfleet routers. For the AN and ASN routers, LAPB is software that uses the QUICC 68360 driver. On the other routers, LAPB is in the hardware and uses the MK5025 chip. Figure 1-2 shows the difference in the architecture.

Note that the different LAPB implementations result in two different LAPB MIBs. This means that if you copy an existing configuration from a Wellfleet router that uses the MK5025 chip to the AN or ASN, the configuration may not work because the location of the LAPB MIB is different.

Although detailed discussion of the LAPB MIB is beyond the scope of this manual, when you configure the X.25 parameters, you automatically set up LAPB for all routers.

Packet Level Protocol

The X.25 Packet Level Protocol (PLP) establishes the virtual circuit and provides flow control, error detection, and recovery for the packet layer. The router uses the services layer to determine destination X.121 addresses and to specify which user-configurable X.25 facilities the services layer supports. The router may negotiate X.25 facilities with its peer DTE during call setup.

X.25 Network Services

The Wellfleet router transmits data across three types of X.25 network services.

- Public Data Network (PDN)

  The X.25 PDN service provides end-to-end connectivity between the router and a remote DTE that supports Internet RFC 1356 X.25 services. IP uses PDN service to transmit IP datagrams. OSI uses PDN service to send OSI protocol data units (PDUs) over the X.25 network. No other protocols use PDN services. The Wellfleet router supports Internet RFC 1356 for IP and OSI.

- Defense Data Network (DDN)

  The X.25 DDN service provides end-to-end connectivity between a router and a remote DTE that supports X.25 DDN "Standard Service." IP uses DDN service to transmit IP datagrams. OSI uses DDN service to send OSI protocol data units (PDUs) over the X.25 network. No other protocols use DDN services.

  You can implement an X.25 DDN network as a Blacker Front End (BFE) Network. BFE is an external, stand-alone encryption device that you connect to your router to establish X.25 DDN networks.

- Point-to-Point Service

  Point-to-Point service is Bay Networks proprietary, so Wellfleet routers must be at both ends of the connection. AppleTalk®, transparent and spanning tree bridging, DECnet, IP, VINES®, XNS, IPX, and OSI can use Point-to-Point X.25 service to transmit datagrams over the X.25 network.

The type of datagram traffic that the router forwards depends upon the type of network layer service enabled on each of the router's network interfaces. For example, if you configure an interface for DDN services, you cannot configure any other type of service. You can, however, configure an interface to run PDN and Point-to-Point services together.

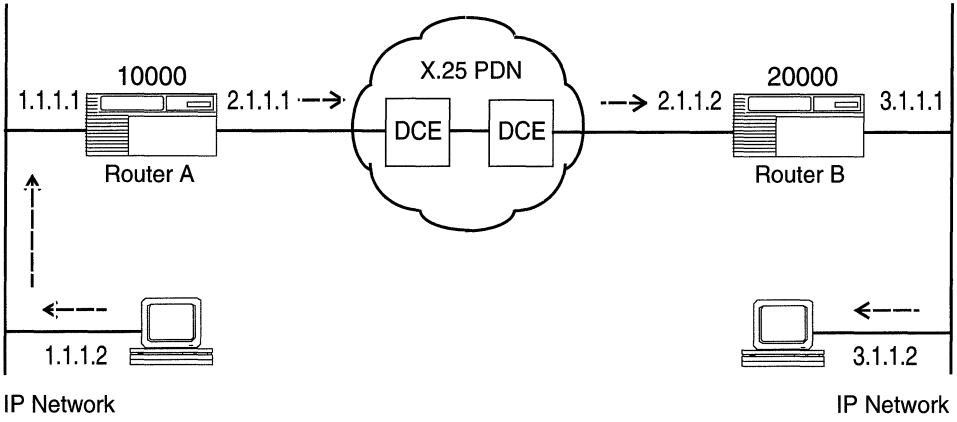
Chapter 2
Implementation Notes

This chapter provides information about special features of the Wellfleet X.25 implementation.

End users on a LAN use the services of the Wellfleet router to access X.25 networks. The router acts as a DTE device; it encapsulates user data in X.25 format and transmits it across the network.

How X.25 Services Work

To demonstrate how Wellfleet X.25 services work, the following sections provide explanations of how Router A, which is configured for X.25 PDN services, routes data from IP end station 1.1.1.2, over the X.25 network, to IP end station 3.1.1.2. Refer to Figure 2-1 as you read through the next sections.



Legend
DCE = Data Circuit Terminating Equipment
10000, 20000 = X.121 Address

Figure 2-1. Sample X.25 Configuration

Determining the X.121 Destination

In an X.25 network, each interface connecting to the X.25 network has an X.121 address. For example, in Figure 2-1 the X.121 network addresses for Routers A and B are 10000 and 20000, respectively. Router A communicates with Router B over the X.25 network by setting up virtual circuits that connect the two X.25 interfaces.

Data transmission begins when Router A receives an IP datagram from IP end station 1.1.1.2. Router A checks its IP routing table to determine the next hop on the datagram's path to its destination (in this example, IP address 2.1.1.2). Once Router A determines that the next hop is located across the X.25 network, it checks to see which destination X.121 address maps to the next hop's IP address (in this example, X.121 address 20000).

To transmit the datagram across the network, the router must now establish a virtual connection between itself and destination X.121 address 20000. Router A begins by selecting an unused virtual circuit. The router assigns the circuit a 12-bit virtual circuit number (Figure 2-2), which it chooses from a user-specified range of virtual circuit numbers. The virtual circuit number identifies the logical channel portion of the circuit that connects the router and its DCE.

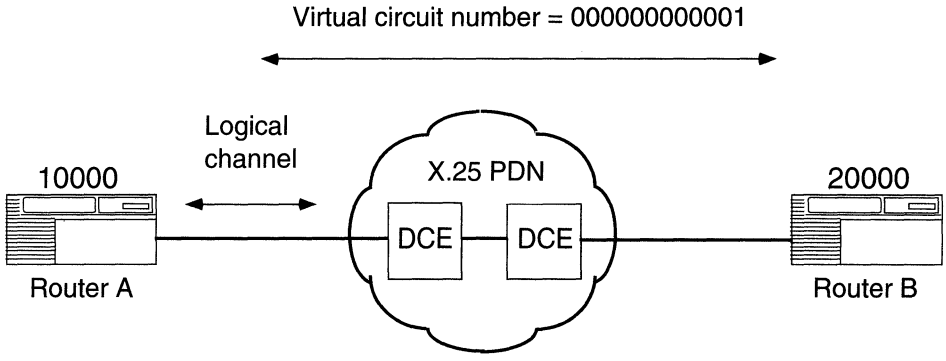


Figure 2-2. Virtual Circuit Connecting Wellfleet Routers

The logical channel consists of a 4-bit logical channel group number concatenated with an 8-bit logical channel number. The logical channel number identifies this circuit as the one that will carry all data transmitted between the router and the destination DTE, once the connection to the destination X.121 address is established.

Generating a Call Request

Once Router A determines the destination X.121 address, it then uses the services of the packet layer protocol to generate a call request packet that it sends to Router B. Along with various optional X.25 facilities, the call request packet specifies the outgoing logical channel number, Router A's X.121 address, and Router B's X.121 address (Figure 2-3).

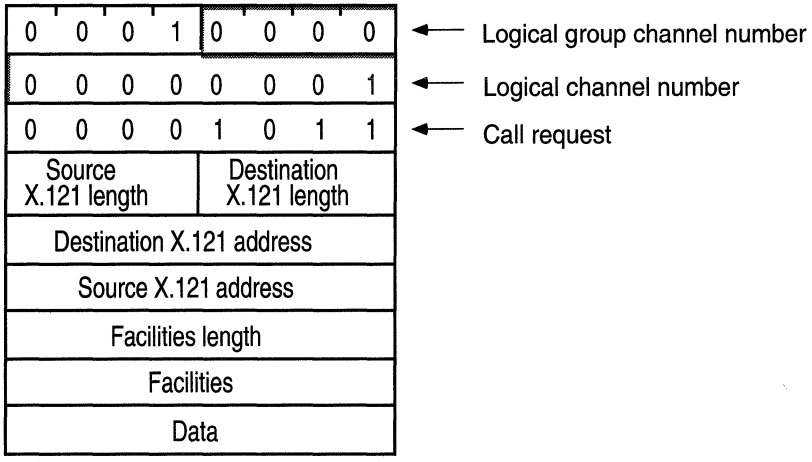


Figure 2-3. X.25 Call Request Packet Format

When the local DCE receives Router A's call request, the DCE forwards it across the X.25 network, where it is eventually routed to Router B. If Router B accepts the call, it responds with a call accept packet that establishes the virtual connection between the two routers.

Once the virtual circuit is established, the router can transmit and receive data (Figure 2-4).

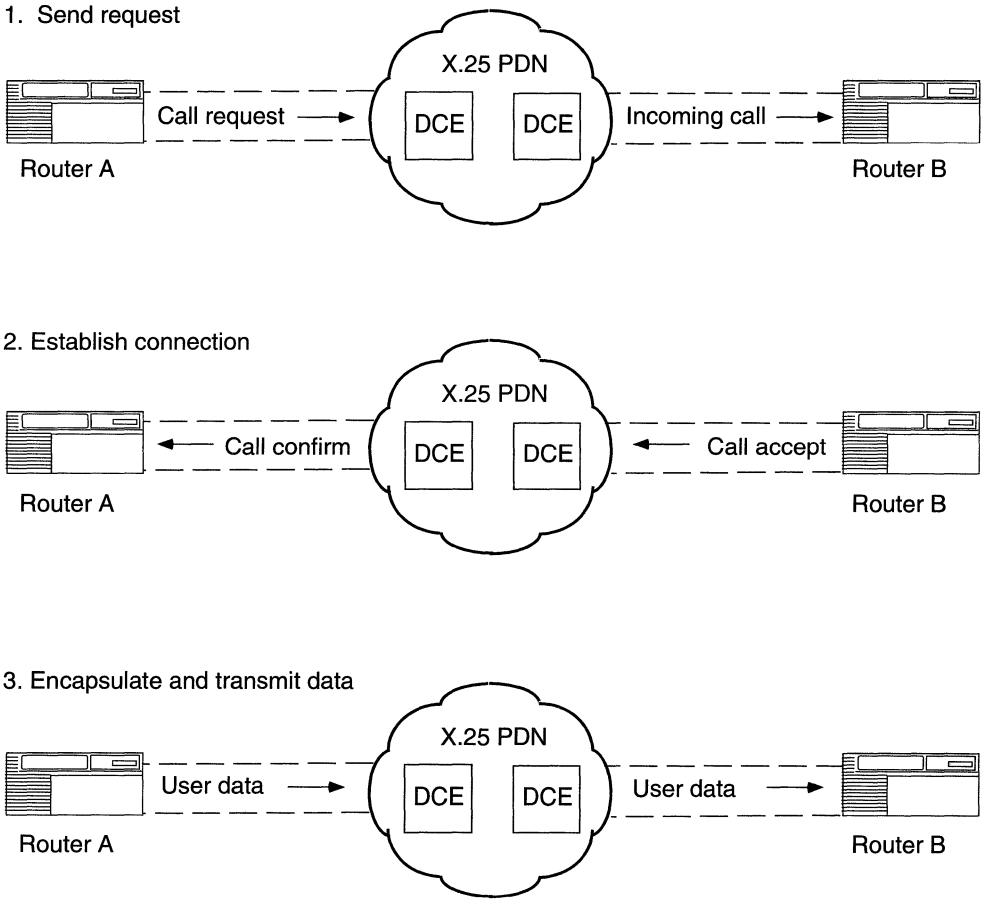


Figure 2-4. Setting Up an X.25 Call Connection

Transmitting Data

Once Router B establishes the circuit, Router A begins processing the packets it receives from IP end station 1.1.1.2, across the X.25 network, to Router B. Router B removes the X.25 packet headers and trailers and forwards only the IP data to IP end station 3.1.1.2 (Figure 2-5). Similarly, IP end station 3.1.1.2 transmits data to end station 1.1.1.2. Note that other IP end stations (for example, 1.1.1.3) may use the virtual circuit to transmit data in the direction of network 3.1.0.0, until the call is cleared.

The call request and call accept packets specify the logical channel numbers assigned to the virtual connections between each router and its corresponding DCE. As a result, subsequent X.25 data packets contain only the logical channel numbers, rather than the complete X.121 destination addresses.

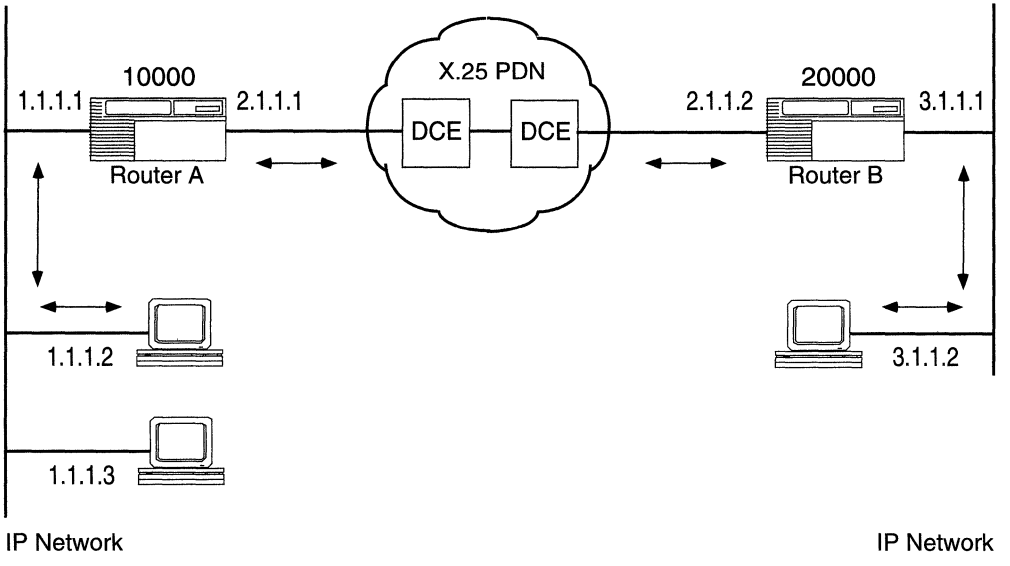


Figure 2-5. Routing IP Traffic across the X.25 Network

Load Sharing

The Wellfleet implementation of X.25 includes load sharing across as many as four VCs, using a round-robin algorithm to distribute traffic. This feature improves performance by increasing the effective window size, or the number of packets that a DTE may transmit before it receives an acknowledgment.

To take advantage of using multiple virtual connections and load sharing across them, you must set the Maximum Connections service record parameter to a value greater than 1.

Clocking Sources for Routers Set Back to Back

If two Wellfleet routers are operating back to back without a clocking source, you must configure internal clocking on both routers. Use a crossover cable to connect the ports.

The default clocking source for X.25 is external. When you configure X.25 and LAPB in an existing network, external clocking can cause unpredictable results on any internally clocked line. Clocking sources must be the same for each device within the network.

Values for Packet-level Parameters: Window Size and Packet Length

When you configure X.25 packet-level parameters, make certain to set the Max Window Size and Max Packet Length parameters for peer routers to the same value. If you do not, the routers cannot perform network service-level negotiations.

For example, if you set the Max Window Size for Router A to 7, you should set the Max Window Size for Router B to 7. Similarly, if you set the Max Packet Length for router A to 512, set the Max Packet Length for peer Router B to 512.

Flow Control Negotiation

The Wellfleet implementation of X.25 enables the router to negotiate flow control. For flow control negotiation to work properly, you must set the following parameters accordingly.

X.25 Packet Level Parameters

Parameter	Value
Flow Control Negotiation	ON
Max Window Size	See the parameter descriptions for options
Max Packet Size	See the parameter descriptions for options
Release Format	DEFEXT (specifies default Basic format)
Acceptance Format	DEFEXT (specifies default Basic format)

X.25 Service Record Parameters

Parameter	Value
Window Size	See the parameter descriptions for options
Packet Size	See the parameter descriptions for options
Flow Facility	Negot (negotiate flow facility)

Configuring Synchronous Lines with X.25

If you enable X.25 on a circuit, note that the following synchronous line parameters are set as follows:

X.25 Line Parameters

Parameter	Value
BOFL	Disable
Promiscuous	Enable
Service	Transparent
WAN Protocol	X.25

For more information on these parameters, refer to the manual *Configuring Wellfleet Routers*.

Chapter 3
Editing X.25 Parameters

This chapter provides information on how to customize X.25 parameters for the X.25 interfaces that you configured on the router.

Note: To edit X.25 parameters, you must have already configured at least one X.25 interface on the router. If you have *not* yet configured an X.25 interface, or want to add additional X.25 interfaces, see *Configuring Wellfleet Routers*.

You can access all X.25 parameters from the Configuration Manager window shown in Figure 3-1. (Refer to *Configuring Wellfleet Routers* for instructions on accessing this window).

For each X.25 parameter that you configure, descriptions in this chapter provide the default setting, all valid setting options, the parameter function, and instructions for setting the parameter.

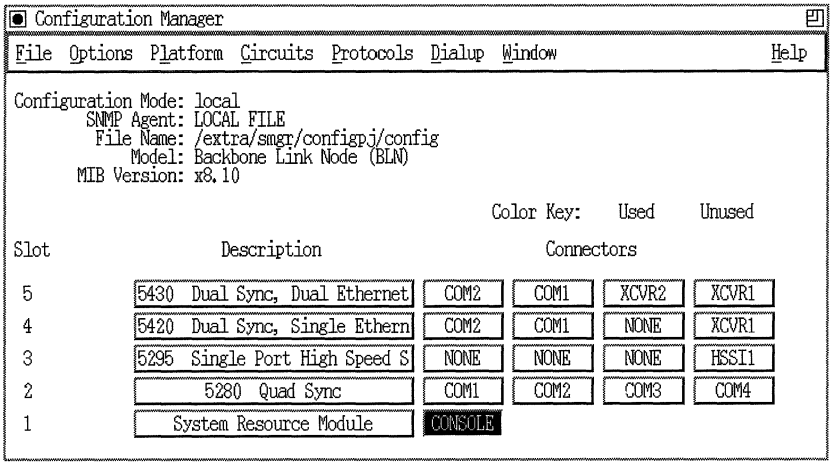


Figure 3-1. Configuration Manager Window

Editing the X.25 Global Parameter

The X.25 global parameter enables X.25 services for the entire router. To edit the X.25 global parameter, begin at the Configuration Manager window shown in Figure 3-1 and proceed as follows:

1. Select Protocols→X25→Global.

   The X.25 Global Parameters window appears (Figure 3-2).

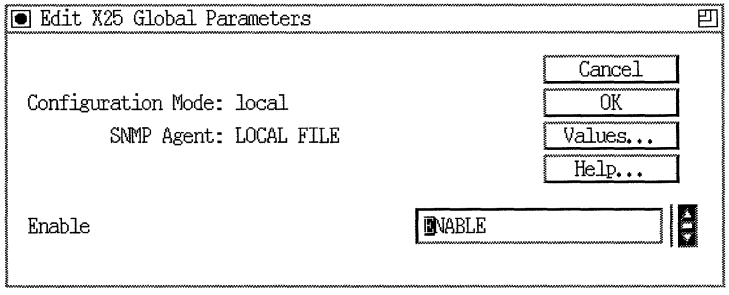


Figure 3-2. X.25 Global Parameters Window

2. Enable or disable X.25 services, using the Enable parameter as described below.
3. Click on the OK button to save your changes.

X.25 Global Parameter Description

Parameter:	**Enable**
Default:	Enable
Options:	Enable | Disable
Function:	Globally enables or disables X.25 services.
Instructions:	Set to Disable if you want to disable X.25 services.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.1.2

Editing X.25 Packet Level Parameters

The X.25 packet level parameters are specific to individual X.25 interfaces. To edit an interfaces's X.25 packet level parameters, begin at the Configuration Manager window shown in Figure 3-1 and proceed as follows:

1. Select Circuits→Edit Circuits.

   The Circuit List window appears.

2. Click on the X.25 interface that you want to edit; then click on the Edit button.

   The Circuit Definition window appears.

3. Select X25 Protocol→Packet.

   The X.25 Packet Level Edit window appears (see Figure 3-3).

4. Edit the packet level parameters that you want to change.
5. Click on the Save button to exit the window.

Note: When you reconfigure an interface in dynamic configuration mode, X.25 packet level and LAPB service restart on that interface.

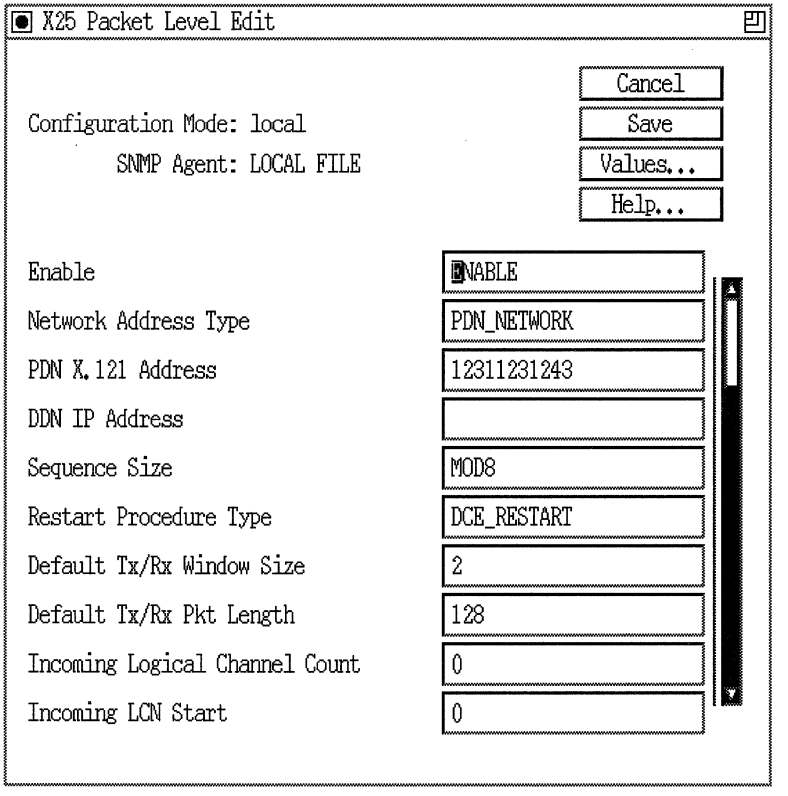


Figure 3-3. X.25 Packet Level Edit Window

X.25 Packet Level Parameter Descriptions

Use the following descriptions as guidelines when you configure the parameters on the X.25 Packet Level Edit window.

Parameter: **Enable**

Default: Enable

Options: Enable | Disable

Function: Enables or disables packet level services for the interface.

Instructions: Set to Disable to disable packet level services.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.2

Parameter: **Network Address Type**

Default: None

Options: PDN_Network | DDN_Network | BFE_Network

Function: Specifies the X.25 network type to which the interface connects. The value of this parameter, in turn, specifies the format of the local X.121 address.

Note that you do not set this parameter if you have a Point-to-Point connection.

Instructions: Specify PDN_Network for a Public Data Network. Specify DDN_Network for a Defense Data Network. Specify BFE_Network for a DDN Network that uses BFE encryption.

Note that:

— If you specify PDN_Network, then you must enter the local address in X.121 address format, that is, you must specify a value for the PDN X.121 Address parameter.

— If you specify DDN_Network or BFE_Network, you must enter the local address in IP address format. That is, you must specify a value for the DDN IP Address parameter. The router will translate the address into X.121 format.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.50

Parameter: **PDN X.121 Address**

Default: None

Options: Any valid X.121 address

Function: Specifies the X.121 address assigned to this interface. The X.25 network service provider supplies the X.121 address.

Note that you use this parameter only if you set the Network Address Type parameter to PDN_Network.

Instructions: Enter the appropriate X.121 address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.52

Parameter: **DDN IP Address**

Default: None

Options: Any valid IP address

Function: Specifies the IP address assigned to this interface. The router then translates the address into X.121 format and uses it as the local address.

Note that you use this parameter only if you set the Network Address Type parameter to DDN_Network or BFE_Network.

Instructions: Enter the appropriate IP address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.51

Parameter:	**Sequence Size**
Default:	MOD8
Range:	MOD8 to MOD128
Function:	Specifies the modulo of sequence numbering.
Instructions:	Set to the appropriate sequence size.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.10

Parameter:	**Restart Procedure Type**
Default:	DTE_Restart (for DTE)/DCE_Restart (for DCE)
Options:	DTE_Restart | DTE_Norestart | DTE_DXE | DCE_Restart
Function:	For each X.25 interface, this parameter specifies the station type (DTE or DCE) at the X.25 packet level. It also enables you to turn on restart procedures, which clear all virtual circuits and let you initialize a link. You can also use the restart procedures to recover from a network failure.
Instructions:	Select the value that matches your station type and determine whether you want to enable restart procedures. Select DTE_Restart if your interface is a DTE. Select DCE_Restart if your interface is a DCE. Select DTE_Norestart if you have a DTE interface but do not want to enable restart procedures. DTE_DXE is for a DTE/DTE environment, and it leaves the DTE unassigned, while still providing restart procedures.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.45

Parameter:	**Default Tx/Rx Window Size**
Default:	2
Range:	1 to 7 (for MOD8) | 1 to 128 (for MOD128)
Function:	Specifies a default window size for this packet layer.
Instructions:	To specify a nonstandard default window size, enter a value within the specified range.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.42

Parameter:	**Default Tx/Rx Pkt Length**
Default:	128
Options:	16 | 32 | 64 | 128 | 256 | 512 | 1024 | 2068 | 4096
Function:	Defines a default packet size for this packet layer.
Instructions:	To specify a nonstandard default packet size, set to one of the available options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.43

Note: The network administrator assigns the logical channel boundaries. Use assigned values to set channel parameters.

Parameter:	**Incoming Logical Count**
Default:	0
Range:	0 to 512
Function:	Specifies the number of one-way logical channels that you assign to accept incoming calls only.
Instructions:	Enter the number of channels that you assign to incoming calls only.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.36

Parameter:	**Incoming LCN Start**
Default:	0
Range:	0 to 4095
Function:	The router assigns a *range* of logical channel numbers to those one-way channels that accept incoming calls. This parameter specifies the low end of this range.
Instructions:	Enter the low end of the range of logical channel numbers set aside for only incoming call channels.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.37

Parameter:	**Bidirectional Logical Channel Count**
Default:	0
Range:	0 to 512
Function:	Specifies the number of logical channels that you assign to be bidirectional. Bidirectional channels can both accept incoming calls and transmit outgoing calls.
Instructions:	Enter the number of logical channels that are bidirectional.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.38

Parameter:	**Bidirectional LCN Start**
Default:	0
Range:	0 to 4095
Function:	The router assigns a *range* of logical channel numbers to those channels that are bidirectional. This parameter specifies the low end of this range.
Instructions:	Enter the low end of the range of logical channel numbers designated for bidirectional channels.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.39

Parameter:	**Outgoing Logical Channel Count**
Default:	0
Range:	0 to 512
Function:	Specifies the number of one-way logical channels that transmit outgoing calls only.
Instructions:	Enter the number of channels that you assign to outgoing calls only.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.40

Parameter:	**Outgoing LCN Start**
Default:	0
Range:	0 to 4095
Function:	The router assigns a *range* of logical channel numbers to those one-way channels that transmit outgoing calls. This parameter specifies the low end of this range.
Instructions:	Enter the low end of the range of logical channel numbers designated for outgoing-call-only channels.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.41

Parameter: **T1 Timer**

Default: 60 seconds

Range: 1 to 999

Function: The value of the T1 timer specifies how long the router waits to receive an acknowledgment for a transmitted command frame. Specifically, the T1 timer specifies, in seconds, the timeout values for Restart, Reset, and Clear commands. The router uses this timer to set up data links.

Instructions: We recommend that you accept the default value, 60.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.32

Caution: We recommend that you accept the default T1 Timer, T2 Timer, T3 Timer, and T4 Timer values. Reset these parameters with caution.

Parameter: **T2 Timer**

Default: 180 seconds

Range: 1 to 999

Function: The T2 timer is the call-confirmation timeout value in seconds. The value for this timer is the amount of time the router has to respond to a call confirmation condition. This timer represents the CCITT T11 timer for the DCE and the T21 timer for the DTE.

Instructions: We recommend that you accept the default value, 180.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.33

Parameter:	**T3 Timer**
Default:	200 milliseconds
Range:	200 to 2000
Function:	The T3 timer is the congestion or busy condition watchdog timeout value in milliseconds. It is the length of time the router has to respond to a congestion or busy condition.
Instructions:	We recommend that you accept the default value, 200.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.34

Parameter:	**T4 Timer**
Default:	200 milliseconds
Range:	200 to 2000
Function:	The T4 timer is the data packet transmission watchdog timer in milliseconds. It is the length of time that the router has to respond to an acknowledgment frame. This is a Wellfleet proprietary internal timer.
Instructions:	We recommend that you accept the default value, 200.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.35

Parameter: **Flow Control Negotiation**

Default: OFF

Options: ON | OFF

Function: Enables the flow control negotiation facility on this interface.

When you enable flow control negotiation, the router can negotiate the maximum window size and packet length for virtual circuits on this interface on a per-call basis. It uses the Max Window Size and Max Packet Length parameter settings as a boundary check during negotiations. The receiving DTE may accept these values or reply with a counterproposal.

When you disable flow control negotiation, the router uses the values specified by these parameters:

— Default Tx/Rx Pkt Length

— Default Tx/Rx Window Size

Configure the remote peer router to match these default values.

Instructions: To enable the flow control negotiation, set this parameter to ON.

In addition to setting this parameter to ON, be sure to set the following parameters accordingly or flow control negotiation will not work.

X.25 Packet Layer Parameters

Parameter	Value
max window/ max packet	See parameter descriptions
Release Format	DEFEXT
Acceptance Format	DEFEXT

X.25 Service Record Parameters

Parameter	Value
window size/ packet size	See parameter descriptions
Flow Facility	Negot

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.14

Parameter: **Max Window Size**

Default: 2

Range: 1 to 7 (for MOD8) | 1 to 128 (for MOD128)

Function: Specifies the maximum window size allowed in the facilities field of outgoing/incoming call request packets that are generated by the router and transmitted on this interface.

Instructions: If you set the Sequence Size parameter to MOD8, accept the default, 2, or enter a value between 1 and 7. If you set the Sequence Size parameter to MOD128, enter a value between 1 and 128.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.11

Parameter: **Max Packet Length**

Default: 128

Options: 16 | 32 | 64 | 128 | 256 | 512 | 1024 | 2048 | 4096

Function: Specifies the maximum length, in bytes, of the information field of outgoing X.25 packets generated by the router and transmitted on this interface.

Instructions: Accept the default, 128, or set to one of the available options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.12

Caution: Remember that the window size and packet size can affect packet throughput across the X.25 network. Setting either the Max Window Size or Max Packet Length parameter too low could cause the router to drop packets. For example, if you set the Max Window Size for Router A to 7, then set the Max Window Size for peer Router B to 7.

Also note that on peer routers, the value of the Max Window Size parameter must be the same on both interfaces; the value of the Max Packet length parameter must also be the same on both interfaces.

Parameter: **Tx/Rx Throughput Class**

Default: 3

Range: 3 to 12
Each number in the range represents a throughput rate. 3=73, 4=150, 5=300, 6=600, 7=1200, 8=2400, 9=4800, 10=9600, 11=19200, 12=48000.

Function: Specifies the default data throughput rate (amount of data in bits per second) for packets transmitted and received on this X.25 interface. This is the throughput value that the router first uses when bringing up the line.

If the router receives an incoming call requesting to negotiate a throughput rate different from this value, the router checks the Max Throughput Class parameter value to determine if it can support the requested rate.

Instructions: To specify a nonstandard default data throughput rate, enter a value within the specified range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.44

Parameter:	**Throughput Class Negotiation**
Default:	OFF
Options:	ON | OFF
Function:	Permits the negotiation of throughput classes, allowing you to determine the amount of throughput you want to go through the switch. When you enable Throughput Class Negotiation, the router can negotiate the throughput rate for virtual circuits on this interface on a per-call basis. The receiving DTE may accept the proposed rate or reply with a counterproposal.
Instructions:	If you want the router to accept calls with throughput negotiation, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.15

Parameter:	**Max Throughput Class**
Default:	19200
Options:	75 | 150 | 300 | 600 | 1200 | 2400 | 4800 | 9600 | 19200 | 48,000
Function:	Specifies the maximum throughput rate (amount of data in bits per second) that this interface can send across the X.25 network. Note that if the Throughput Class Negotiation parameter is set to ON, then the default is the maximum value allowed by this packet level.
Instructions:	Accept the default, 19200, or one of the available options.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.13

Parameter:	**Network User Identification**
Default:	OFF
Options:	ON | OFF
Function:	Specifies whether this interface supports network user identification (NUI) service facility. When you enable Network User Identification, the router can provide administrative and management information to the DCE on a per-call basis.
Instructions:	To enable Network User Identification facility support, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.16

Parameter:	**Incoming Calls Accept**
Default:	ON
Options:	ON | OFF
Function:	Specifies whether this interface accepts incoming calls. When you enable Incoming Calls Accept, the router can accept incoming call requests on this interface.
Instructions:	To disable incoming calls, set this parameter to OFF.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.17

Parameter:	**Outgoing Calls Accept**
Default:	ON
Options:	ON | OFF
Function:	Specifies whether this interface generates outgoing call requests. When you enable Outgoing Calls Accept, the router can initiate outgoing call requests on this interface.
Instructions:	To disable outgoing calls, set this parameter to OFF.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.18

Parameter:	**Fast Select Accept**
Default:	OFF
Options:	ON | OFF
Function:	Enables the fast select accept facility on this interface. When you enable Fast Select Accept, the router can accept incoming call requests with fast select facility on this interface.
Instructions:	To enable the fast select accept facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.19

Parameter:	**Reverse Charge Accept**
Default:	OFF
Options:	ON | OFF
Function:	Enables or disables the reverse charge accept facility on this interface. When you enable Reverse Charge Accept, the router can accept calls with reverse charge facility.
Instructions:	To enable the reverse charge accept facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.20

Note: When the Reverse Charge Accept parameter is set to ON, the router accepts calls with reverse charge facility, but it does not maintain a record of the charges.

Parameter:	**Fast Select**
Default:	OFF
Options:	ON | OFF
Function:	Enables the fast select request facility on this interface. When you enable Fast Select, call request packets the router generates and transmits on this interface can contain up to 128 bytes of user data.
Instructions:	To enable the fast select request facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.21

Parameter:	**Reverse Charging**
Default:	OFF
Options:	ON | OFF
Function:	Enables or disables the reverse charge request facility on this interface. Packet network charges accrue whenever the router generates an outgoing call request packet. When you enable Reverse Charging, these packet network charges are charged to the receiving DTE.
Instructions:	To enable the reverse charge request facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.22

Parameter:	**CUG Selection**
Default:	Null
Options:	Null | Basic (16) | Extended (32)
Function:	Specifies the type of closed user group (CUG) facility that the interface supports.
Instructions:	If you accept the default value, Null, no closed user groups are supported; if you set this parameter to Basic, the Basic facility is supported; if you set this parameter to Extended, the Extended facility is supported. Ensure that the value in this parameter matches the value in the network service record parameter CUG Facility Format.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.23

Parameter:	**CUG Outgoing Access**
Default:	Null
Options:	Null | CUGOA
Function:	Specifies whether or not this interface supports a closed user group (CUG) with outgoing access.
Instructions:	To enable CUG with outgoing access, set this parameter to CUGOA. If you enable this option, set the CUG Selection parameter to Extended. In addition, set the network service record parameter, CUG Facility Type, to OA.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.24

Parameter:	**CUG Bilateral Selection**
Default:	Null
Options:	Null | Bilateral
Function:	Specifies whether or not this interface supports a bilateral closed user group (CUG).
Instructions:	To enable CUG with bilateral facility support, set this parameter to Bilateral. If you enable this feature, set the CUG Selection parameter to Extended. In addition, set the network service record parameter, CUG Facility Type, to Bilateral.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.25

Parameter:	**RPOA Selection**
Default:	OFF
Options:	ON | OFF
Function:	Enables the recognized private operating agencies (RPOA) selection facility on this interface. When you enable RPOA Selection, the router can accept incoming calls with this facility; the router accepts both RPOA Basic format and Extended format.
Instructions:	To enable the RPOA facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.26

Note: When the RPOA Selection parameter is set to ON, the router accepts calls with RPOA facility, but it does not validate them.

Parameter:	**Charging Information**
Default:	OFF
Options:	ON | OFF
Function:	Specifies whether this packet layer accepts incoming calls with charging information; however, the packet layer does not collect any charging information.
Instructions:	To enable the charging information facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.27

Parameter:	**Transit Delay**
Default:	OFF
Options:	ON | OFF
Function:	Specifies whether this packet layer accepts incoming calls with transit delay. Note that the router does not send outgoing calls with transit delay.
Instructions:	To enable transit delay, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.28

Parameter:	**Full Addressing**
Default:	ON
Options:	ON | OFF
Function:	Specifies whether the router includes a full local DTE address in all outgoing call requests transmitted on this interface.
Instructions:	To enable full addressing, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.29

Parameter: **Acceptance Format**

Default: Basic (2)

Options: Basic (2) | AllEXT (255) | DEFEXT (128)

Function: Specifies the call accept packet format as follows:

— Basic is Basic call accept packet format.

— AllEXT is Extended call accept packet format.

— DEFEXT specifies that when an incoming call does not include facilities, a default Basic call accept packet format is used.

Instructions: Select the appropriate call accept packet format.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.30

Parameter: **Release Format**

Default: Basic (2)

Options: Basic (2) | AllEXT (255) | DEFEXT (128)

Function: Specifies the format of the call clear packet as follows:

— Basic is Basic call clear packet format.

— AllEXT is Extended call clear packet format.

— DEFEXT specifies that when an incoming call does not include facilities, a default Basic call clear packet format is used.

Instructions: Select the appropriate call clear packet format.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.31

Parameter: **CCITT Conformance**

Default: DXE1988

Options: DXE1980 | DXE1984 | DXE1988 | FDSEL1980 FDSEL1984 | FDSEL1988

Function: Specifies the year of the CCITT specification to which the router's operation conforms.

Instructions: Select a CCITT conformance year that matches your network requirements. For example, if you are connecting to a DXE1980-compliant network, select DXE1980.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.46

Parameter: **Network Standard**

Default: None

Options: None | ISO | DOD

Function: Determines the network standard with which your router complies. The value of this parameter is in addition to the CCITT specification with which your network conforms.

Instructions: Select the appropriate network standard. Choose None if you want to follow only the CCITT Conformance value. Select ISO if you are connecting to network that complies with the International Organization for Standardization. Select DOD if you are connecting to a network that complies with Department of Defense specifications.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.5.1.47

Parameter:	**Statistics Computation**
Default:	Enable
Options:	Enable | Disable
Function:	Specifies whether the router computes statistics for the packet level and all the virtual circuits associated with this line instance. If you set this parameter to Disable, the router computes no statistics, which maximizes data throughput. If you set this parameter to Enable, the router computes statistics.
Instructions:	Set this parameter to Enable or Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.5.1.49

Configuring X.25 Network Service Records

This section provides information on how to configure X.25 network service records. Network service records define remote X.25 destinations that the network can reach using the local interface.

This section includes information on how to perform the following four tasks:

- Add new network service records to X.25 interfaces.
- Enable routing protocols on X.25 interfaces.
- Edit the parameters for any network service records you have previously added. (The network service record parameters are specific to individual X.25 interfaces.)
- Delete network service records you have previously added.

Adding New X.25 Network Service Records

To add a new network service record to an X.25 interface, begin at the Configuration Manager window (Figure 3-1) and proceed as follows:

1. Select Circuits→Edit Circuits.

   The Circuit List window appears.

2. Click on the X.25 interface to which you want to add network service records.

3. Click on the Edit button.

   The Circuit Definition window appears.

4. Select X25 Protocol→Services.

   The X.25 Service Configuration window appears (Figure 3-4). It lists all network service records currently defined for the interface.

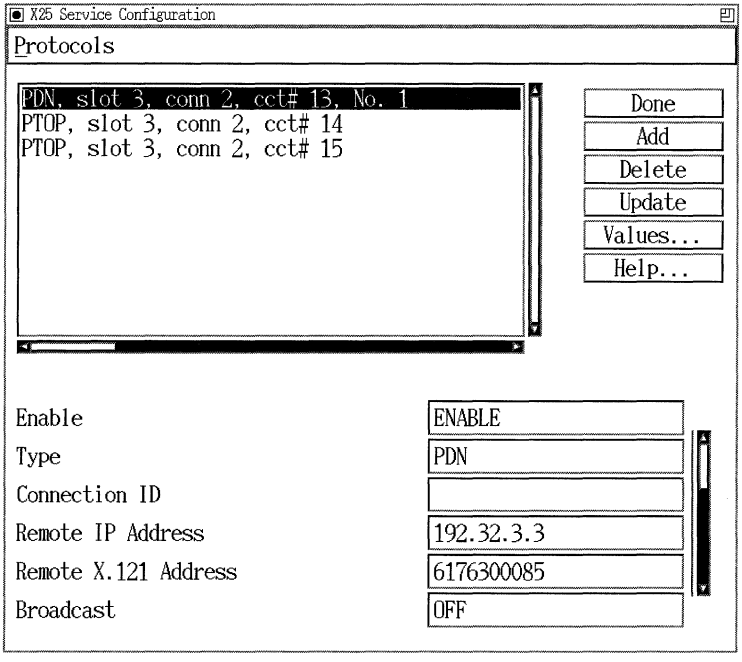


Figure 3-4. X.25 Service Configuration Window

5. Click on the Add button.

   The X.25 Service window appears (see Figure 3-5).

6. Set the Type parameter for the service record.

   The Type parameter lets you specify the network service record type as PDN, DDN, or PTOP.

   Note that you cannot add both PDN and DDN network service records to the same X.25 interface. That is, if you already added PDN network service records to an X.25 interface, you cannot add DDN network service records, and vice versa.

   Similarly, you cannot add both PTOP and DDN network service records to the same X.25 interface.

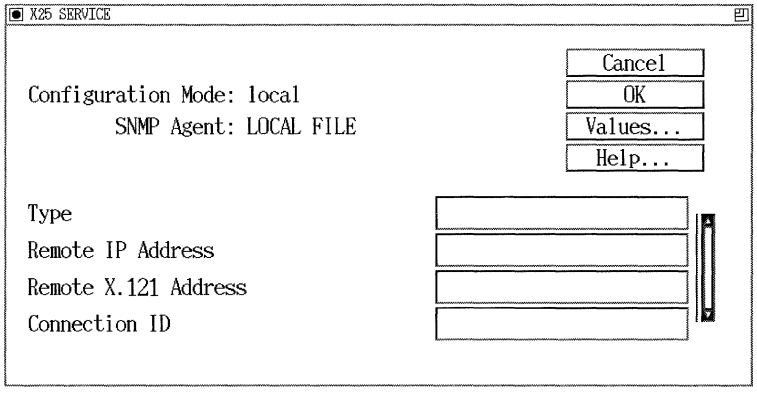


Figure 3-5. X.25 Service Window

7. Depending on which network service type you select, define the corresponding X.25 service parameters.

   For descriptions of the Remote IP Address, Remote X.121 Address, and Connection ID parameters see "Editing Network Service Record Parameters."

8. Click on the OK button to save the network service record.

   The X.25 Service Configuration window now displays the network service record you added.

To add bridging and routing protocols to the network service record, see "Enabling Routing Protocols on X.25 Interfaces."

9. Click on the Done button to exit the X.25 Service Configuration window when you finish.

Enabling Routing Protocols on X.25 Interfaces

Once you add a service record to an X.25 interface (see "Adding New X.25 Network Service Records" for more information), you can enable routing protocols on the interface.

Before you begin, note the following:

- If you add DDN or PDN network service records to an X.25 interface, then you have to enable routing protocols on the interface only *once*. This is true even if you add more than one DDN or PDN network service record to the same interface.
- If you add multiple PTOP network service records to an X.25 interface, then you have to enable routing protocols for *each* PTOP network service record you add. This is because the router uses a different internal circuit for each PTOP network service record.

To enable routing protocols on an X.25 interface, begin at the X.25 Service Configuration window shown in Figure 3-4 and proceed as follows:

1. Click on the network service record to select it.
2. Select Protocols→Add or Delete.

   The Protocols window appears.
3. Select all of the routing protocols that you want to enable, then click on the OK button.

   The Configuration Manager displays autoconfiguration windows for each protocol you select.
4. Specify and save the autoconfiguration information for each protocol.

If you need more information on how to set the autoconfiguration parameters for each protocol, refer to *Configuring Wellfleet Routers*, which describes how to configure the X.25 protocol.

5. Click on the Done button to exit the X.25 Service Configuration window.

Editing Network Service Records

To edit the parameters for an existing X.25 network service record, begin at the Configuration Manager window shown in Figure 3-1 and proceed as follows:

1. Select the Circuits→Edit Circuits option.

   The Circuit List window appears.

2. Select an X.25 interface; then click on the Edit button.

   The Circuit Definition window appears.

3. Select the X25 Protocol→Services option.

   The X.25 Service Configuration window appears (Figure 3-4). It lists all currently defined network service records.

4. Click on the network service record you want to edit.
5. Edit those network service parameters that you want to change, using the parameter descriptions that follow these instructions as guidelines.
6. Click on the Apply button to implement your changes.
7. Click on the Done button to exit the X.25 Service Configuration window when you finish.

Network Service Record Parameter Descriptions

This section provides information on how to set all network service record parameters on the X.25 Service Configuration window shown in Figure 3-4.

Parameter: **Enable**

Default: Enable

Options: Enable | Disable

Function: Enables or disables the network service record.

Instructions: Set this parameter to Disable only if you want to disable this service record.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.2

Parameter: **Type**

Default: None

Options: PDN | DDN | PTOP

Function: Specifies the X.25 service the router uses to connect to the remote address specified in this service record.

Instructions: Select PDN for Public Data Network service, DDN for Department of Defense Network service, or PTOP for Point-to-Point network service.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.9

Parameter: **Connection ID**

Default: 1

Range: 1 to 255

Function: Identifies each circuit to its destination when there are multiple Point-to-Point circuits configured to the same X.121 destination.

Note: You use this parameter with PDNs only.

Instructions: Assign a connection ID for each service record.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.11

Parameter:	**Remote IP Address**
Default:	0.0.0.0
Options:	Any valid IP address
Function:	Specifies a destination IP address that is reachable over this X.25 interface. You must specify a remote IP Address if you plan to enable IP on this interface. For DDN services, the router translates the remote IP address you specify into an X.121 address so that it can route IP traffic over the network. For PDN services, the router uses the remote IP address you specify to define an adjacency for the IP interface. (You can ignore this parameter if this is a Point-to-Point service.)
Instructions:	Enter a 32-bit destination IP address in dotted decimal notation format. Note that if you run OSI over DDN, you must enter the IP address in this field, and you must also enter the IP address in the SNPA field of the OSI External Address Adjacency Configuration window. To enter this value in the SNPA field, you must convert the IP address into X.121 format. Refer to *Customizing OSI Services* for more information.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.13

Parameter:	**Remote X.121 Address**
Default:	None
Options:	Any valid X.121 address
Function:	Specifies a destination X.121 address. You must specify a destination X.121 address if you are configuring PDN or Point-to-Point services. If you are configuring DDN services, then the router derives this address from the remote IP address.
Instructions:	Enter a destination X.121 address that is reachable over this X.25 interface.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.12

Parameter:	**Broadcast**
Default:	OFF
Options:	ON | OFF
Function:	Indicates whether you want the X.25 service to send IP broadcast messages to the remote IP address.
Instructions:	Set this parameter to ON if you want the X.25 service to send broadcast messages to the IP address. Otherwise, accept the default, OFF.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.14

Parameter: **Max Connections**

Default: 2

Range: 1 to 4

Function: Specifies the maximum number of virtual circuits that the router can establish with the remote device specified in this record. Increasing the number of connections to the same destination may improve the rate of data throughput.

To take advantage of using multiple virtual connections and load sharing across them, configure this parameter for a value greater than 1.

Notes:

Point-to-Point connections do not use this parameter.

You use this parameter with PDNs only.

Instructions: Accept the default, 2, or enter a Max Connections value within the specified range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.15

Parameter: **Precedence**

Default: OFF

Options: ON | OFF

Function: Specifies the priority of IP packets that are transmitted by this X.25 interface transmits and that traverse the X.25 network. This parameter has meaning only for DDN services.

Instructions: To enable IP packet prioritization, set Precedence to ON.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.16

Parameter:	**Max Idle (Mins)**
Default:	2
Range:	1 to 999
Function:	Specifies the maximum number of minutes that a virtual circuit can remain idle. Once the Max Idle timer expires, X.25 clears the circuit. Point-to-point connections do not use this parameter. Use this parameter is to minimize CPU and network overhead during periods of low datagram traffic.
Instructions:	Accept the default value, 2, or enter a max idle timeout value within the specified range.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.17

Parameter:	**Call Retry**
Default:	60
Range:	10 to 999
Function:	Specifies the interval in seconds between call request packets the router sends to a specific destination. In the event of an unsuccessful call attempt, the router waits the number of seconds specified by the Call Retry parameter before sending another call request packet to the destination. If the router receives any IP datagrams for this destination, it drops them during this period.
Instructions:	Accept the default, 60, or enter a call retry interval within the specified range.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.18

Parameter:	**Flow Facility**
Default:	Default
Options:	Negot | Default
Function:	Enables or disables the negotiation of X.25 flow facility on each virtual circuit. If you enable this parameter, calls the router transmits to the remote X.121 address this record specifies will contain flow control. You must also enable the flow-control facility at the packet layer.
Instructions:	To enable flow-control facility negotiations, set this parameter to Negot.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.19

Parameter:	**Window Size**
Default:	2
Range:	1 to 7 (for MOD7) | 1 to 127 (for MOD128)
Function:	Specifies the window size that appears in the facilities field of outgoing call request packets to the X.121 address specified in this service record.
Instructions:	Accept the default, 2, or enter a window size within the specified range.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.20

Note: Remember that the window size and packet size can affect packet throughput across the X.25 network. Setting the Window Size and/or Packet Size parameters too low could cause the router to drop packets.

Parameter:	**Packet Size**
Default:	128
Options:	16 | 32 | 64 | 128 | 256 | 512 | 1024 | 2048 | 4096
Function:	Specifies the packet size that appears in the facilities field of the call request packet to the remote X.121 address this service record specifies.
Instructions:	Accept the default, 2, or enter a packet size within the specified range.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.21

Note: Do not set the Packet Size parameter to a greater value than you specify for the packet layer parameter, Max Packet Length.

Parameter:	**Fast Select Request**
Default:	OFF
Options:	ON | OFF
Function:	Enables the fast select request facility on each virtual circuit. When you enable the fast select request facility, call request packets generated by the router and transmitted to the remote X.121 address this service record specifies contain the fast select request facility.
Instructions:	To enable the fast select request facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.22

Parameter:	**Fast Select Accept**
Default:	OFF
Options:	ON | OFF
Function:	Enables the fast select accept facility. When you enable the fast select accept facility, the router can accept incoming fast select call requests from the remote X.121 address this service record specifies.
Instructions:	To enable the fast select accept facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.23

Parameter:	**Reverse Charge Request**
Default:	OFF
Options:	ON | OFF
Function:	Enables or disables the reverse charge request facility. Packet network charges accrue whenever the router generates an outgoing call request packet. When you enable Reverse Charge Request, these packet network charges accrue to the receiving DTE.
Instructions:	To enable the reverse charge request facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.24

Parameter:	**Reverse Charge Accept**
Default:	OFF
Options:	ON | OFF
Function:	Enables or disables the reverse charge accept facility. When you enable Reverse Charge Accept, the router accepts network packet charges from incoming reverse-charged call request packets.
Instructions:	To enable the reverse charge accept facility, set this parameter to ON.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.25

Parameter:	**DDN BFE**
Default:	Disable
Options:	Disable | Enable
Function:	Enables or disables DDN Blacker Front-End (BFE) support.
Instructions:	To enable DDN BFE support, set this parameter to Enable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.31

Parameter:	**User Facility (hex)**
Default:	None
Options:	Any facility that needs to be included in the call request packet
Function:	Allows you to add support for a facility Wellfleet does not offer.
Instructions:	Specify a facility in hexadecimal form.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.29

Note: If you need to set the User Facility back to nil after you have configured it, you must:

a. Select User Facility from the appropriate network service record (refer to "Editing Network Service Records" earlier in this chapter).

b. Overwrite the erroneous value by typing all spaces where you previously entered a hex value.

c. Click on the Apply button to implement your changes.

d. Click on the Done button to exit the X.25 Service Configuration window when you finish.

Parameter:	**CUG Facility Format**
Default:	None
Options:	None | Basic | Extended
Function:	Specifies the CUG facility format that the interface can accept. The value for this parameter should match the value in the X.25 packet level parameter CUG Selection.
Instructions:	If you are not configuring a CUG for this interface, enter None. To configure the Basic format, enter Basic. To configure the extended format, enter Extended.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.4.2.1.26

Parameter:	**CUG Facility Type**
Default:	Normal
Options:	Normal | OA | Bilateral
Function:	Defines the type of CUG facility that the interface will accept. This parameter works with the X.25 packet level parameters CUG Outgoing Access and CUB Bilateral Selection, as described in the following instructions.
Instructions:	Select Normal to enable routing between CUGs. Select OA to allow communication between CUGs with outgoing access. If you choose OA, ensure

that you set the packet level parameter, CUG Outgoing Access, to CUGOA.

Select Bilateral to allow communication between bilateral CUGs. If you select this option, ensure that you set the packet level parameter, CUG Bilateral Selection, to Bilateral.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.27

Parameter: **CUG Number**

Default: 0

Range: A value between 0-9999

Function: Identifies each CUG with a number so that information is routed to the correct CUG.

Instructions: Enter a number for the closed user group.

MIB Object ID: 1.3.6.1.4.1.18.3.5.9.4.2.1.28

Deleting X.25 Network Service Records

To delete a network service record, begin at the X.25 Service Configuration window shown in Figure 3-4 and proceed as follows:

1. Click on the network service record that you want to delete.
2. Click on the Delete button.

   The X.25 Service Configuration window no longer lists the network service record you deleted.
3. Click on the Done button to save your changes and exit the window.

Deleting X.25 from the Router

To delete X.25 from the router globally, begin at the Configuration Manager window shown in Figure 3-1 and proceed as follows:

1. Select Protocols→X.25→Delete X.25. A window pops up and prompts:

   ```
   Do you REALLY want to delete X.25?
   ```

2. Click on the OK button.

Site Manager returns you to the Configuration Manager window. X.25 is no longer configured on the router.

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