

**Bay Networks**

The Merged Company of SynOptics and Wellfleet

## Customizing SDLC Services

Part No. 110055 A

# Customizing SDLC Services

Router Software Version 8.10  
Site Manager Software Version 2.10

Part No. 110055 Rev. A  
February 1995



**Bay Networks**

The Merged Company of SynOptics and Wellfleet

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# Contents

## Chapter 1 SDLC Overview

SDLC .....	1-2
Topologies .....	1-2
Link Station Roles .....	1-2
Transmission Capabilities .....	1-3
Physical Connections .....	1-3
Node Types .....	1-3
Configurable Window Size .....	1-3
Frame Format .....	1-4
Using DLSw Services with SDLC .....	1-5
Configuration Requirements for DLSw with SDLC Services .....	1-7
Using APPN Services with SDLC .....	1-7
For More Information about SDLC .....	1-8

## Chapter 2

### SDLC Implementation Notes

Dialout .....	2-1
Link Stations .....	2-1
Integrated SDLC .....	2-2
Synchronous Line Parameters .....	2-2

## Chapter 3

### Editing SDLC Parameters

Accessing SDLC Parameters .....	3-2
Editing SDLC Global Parameters .....	3-3
Editing SDLC Interface Parameters .....	3-5
SDLC Interface Parameters .....	3-7
Deleting an SDLC Interface .....	3-18
Adding an SDLC Link Station Configuration .....	3-18
Editing an SDLC Link Station Configuration .....	3-21
SDLC Link Station Configuration Parameters .....	3-22
Deleting SDLC from the Node .....	3-32

## Index

## Figures

Figure 1-1.	SDLC Frame Format .....	1-4
Figure 1-2.	SDLC Conversion in a Switch-to-Switch Configuration .....	1-5
Figure 1-3.	SDLC Conversion in a Single-Switch Configuration .....	1-6
Figure 3-1.	Wellfleet Configuration Manager Window .....	3-2
Figure 3-2.	Edit SDLC Global Parameters Window .....	3-3
Figure 3-3.	SDLC Interface Configuration Window .....	3-5
Figure 3-4.	SDLC Link Station Configuration Window .....	3-19
Figure 3-5.	Link Station Configuration Window .....	3-20



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# About This Guide

If you are responsible for configuring and managing Wellfleet® routers, you need to read this guide. It describes how to customize router software for Synchronous Data Link Control (SDLC) services.

You can refer to this guide for

- An overview of the SDLC protocol and its client protocols (Chapter 1, “SDLC Overview”).
- Implementation notes that may affect how you configure SDLC services (Chapter 2, “SDLC Implementation Notes”).
- Instructions on editing SDLC global and interface parameters (Chapter 3, “Editing SDLC Parameters”).

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

- Initially configuring SDLC services on the router
- Retrieving a configuration file
- Rebooting the router with a configuration file

## Before You Begin

Before using this guide, you must use the Site Manager software to complete the following procedures:

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

Refer to *Configuring Wellfleet Routers* for detailed instructions on how to use Site Manager to complete these tasks.

## 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

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: if command syntax is <b>ping</b> <ip_address>, you enter <b>ping 192.32.10.12</b>
arrow character (→)	Separates menu and option names in instructions. Example: Protocols→AppleTalk identifies the AppleTalk option in the Protocols menu.
brackets ([ ])	Indicate optional elements. You can choose none, one, or all of the options.
<b>user entry text</b>	Denotes text that you need to enter. Example: Start up the Windows environment by entering the following after the prompt: <b>win</b>

---

<b>command text</b>	Denotes command names in text. Example: Use the <b>xmodem</b> command.
<i>italic text</i>	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 Trap Monitor Filters
ellipsis points	Horizontal ( . . . ) and vertical ( ; ) ellipsis points indicate omitted information.
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 <b>show at routes   nets</b> , you enter either <b>show at routes</b> or <b>show at nets</b> , but not both.

## Acronyms

AN	Access Node
APPN	Advanced Peer-to-Peer Networking
ASN	Access Stack Node
CP	Control Point
DLSw	data link switching
ESAF	Ethernet Sync Advanced Filtering
FEP	Front-End Processor
IEEE	Institute of Electrical and Electronic Engineers
LAN	local area network
LLC	logical link control
MAC	media access control
NetBIOS	Network Basic Input-Output System
NRZ	non-return to zero
NRZI	non-return to zero inverted
PDU	protocol data unit

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## Acronyms

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PU	physical unit
RFC	Request for Comments
SAP	Service Access Point
SDLC	Synchronous Data Link Control
SNA	Systems Network Architecture (IBM)
SNMP	Simple Network Management Protocol

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# Chapter 1

## SDLC Overview

This chapter gives an overview of the Synchronous Data Link Control (SDLC) features in a Wellfleet router, including the following:

- ❑ Topologies
- ❑ Link station roles
- ❑ Transmission capabilities
- ❑ Physical connections
- ❑ Node types
- ❑ Configurable window size
- ❑ Frame format
- ❑ Using DLSw services with SDLC
- ❑ Using APPN services with SDLC

## SDLC

SDLC is the synchronous, bit-oriented link control protocol that IBM's System Network Architecture (SNA) uses. SDLC provides data link layer, connection-oriented protocol services to clients such as Data Link Switching (DLSw) and Advanced Peer-to-Peer Networking (APPN). The following sections describe some of the features of SDLC. You can configure most of the features using the SDLC parameters described in Chapter 3.

### Topologies

SDLC supports point-to-point and multipoint topologies. With point-to-point, one SDLC device is connected to the SDLC port. With multipoint topologies, several SDLC devices are connected to the SDLC port via a modem-sharing device.

### Link Station Roles

SDLC supports primary, secondary, and negotiable stations. A primary link station does the following:

- ❑ Controls a data link
- ❑ Issues commands
- ❑ Initiates error-recovery procedures

Only one link station on an SDLC line can be the primary station; all other stations on the line must be secondary.

A secondary link station receives commands from the primary link station and sends back responses. A secondary station can only send data when it is polled by its primary station.

With negotiable link stations, two link stations exchange XIDs to negotiate which one will be the primary station and which will be secondary.

## Transmission Capabilities

SDLC supports full-duplex and half-duplex transmissions over leased lines. With full duplex, data transmissions can occur in both directions (between primary and secondary link stations) at the same time. Half-duplex transmissions occur in only one direction at a time.

## Physical Connections

SDLC supports communication with attached SNA/SDLC devices using V.24 (RS-232), V.35, and X.21 (nonswitched) connections. SDLC supports line speeds to 64 Kb/s, depending on the physical connection. For example, V.24 interfaces can operate at speeds up to 19.2 Kb/s, while V.35 interfaces can operate at speeds up to 64 Kb/s.

## Node Types

SDLC supports SNA node types 2.0 and 2.1. Type 2.0 nodes are typically cluster controllers. Type 2.1 represents a special type of node that supports IBM Advanced Peer-to-Peer Networking (APPN). For information on configuring SDLC for use with APPN, refer to *Configuring Wellfleet Routers*.

## Configurable Window Size

In SDLC, a window controls the number of frames that a link station can send before it receives acknowledgment. The size of the window depends on the modulo in use in your network's implementation of SDLC. Modulo 8 operation allows a maximum window size of 7. Modulo 128 operation allows a window size of 127. For example, with a window size of 7, a link station can transmit frames from 0 through 6 before requiring acknowledgment from the receiving station. The sending station will not send more frames until it receives acknowledgment.

## Frame Format

SDLC uses three types of frames:

- ❑ *Supervisory frames* convey ready or busy status, and request retransmission when an error occurs or if frames are received out of sequence.
- ❑ *Information frames* transmit data.
- ❑ *Unnumbered frames* control initialization, polling, and status reporting.

Figure1-1 illustrates the format of SDLC frames.

Flag	Address	Control field	Information field	Frame checking	Flag
------	---------	---------------	-------------------	----------------	------

**Figure 1-1. SDLC Frame Format**

Each frame begins with a 1-byte flag that alerts the receiver to the frame's presence.

The address field can be 1 or 2 bytes. This field identifies the secondary station that is communicating with the primary station. In a poll, the Address field identifies the station being polled. In a response, this field identifies the transmitting secondary station.

The control field is 1 byte, and identifies the function of the frame. This field defines the frame format (supervisory, information, or unnumbered).

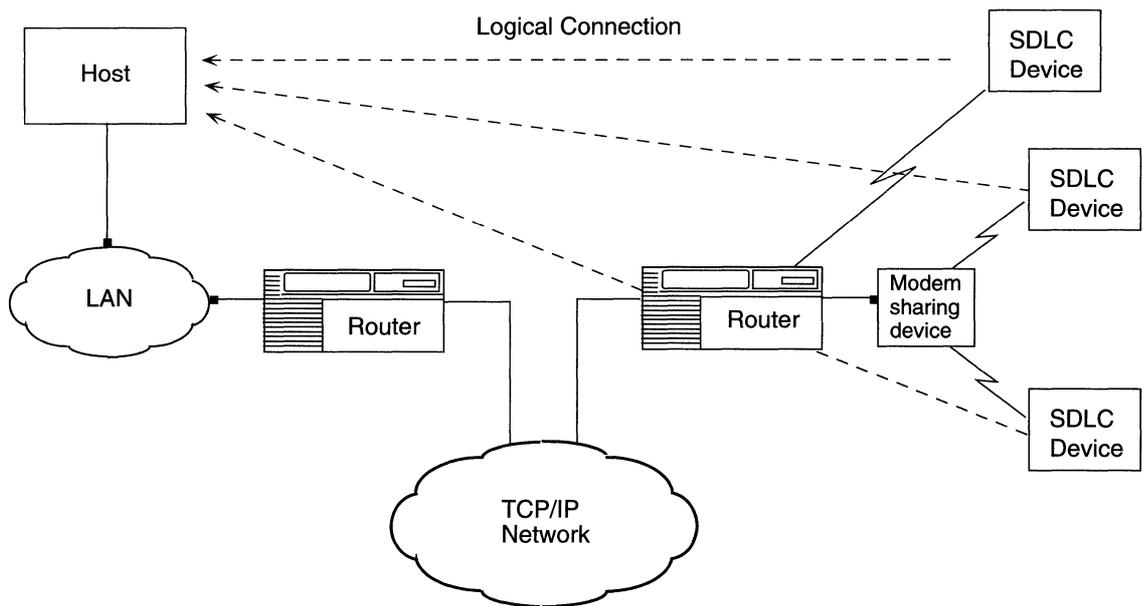
The optional information field is a variable-length field (the length must be a multiple of 8 bits).

A 2-byte frame-checking field lets the receiving station check the received frame for errors.

A 1-byte flag ends the frame.

## Using DLSw Services with SDLC

You can configure any SDLC interface that you add to a router to support the DLSw protocol. Figure 1-2 shows how an SDLC device interacts with DLSw services to communicate over TCP/IP with a host attached to a LAN.



**Figure 1-2. SDLC Conversion in a Switch-to-Switch Configuration**

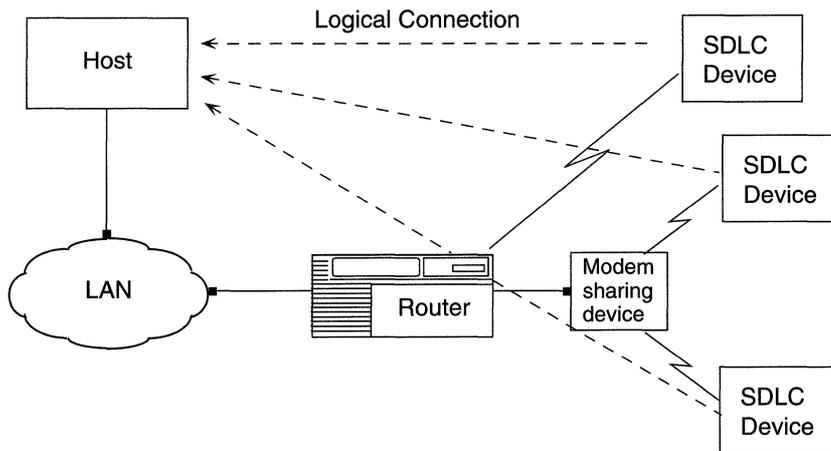
Figure 1-2 depicts the SDLC conversion feature of DLSw. The SDLC session runs between the SDLC devices and the router. The remote router does the following:

- ❑ Terminates the SDLC session
- ❑ Converts the SDLC traffic to DLSw Switch-to-Switch Protocol (SSP) format
- ❑ Maps the SDLC addresses to Token Ring addresses
- ❑ Forwards the data through TCP/IP to the destination host

The SDLC devices appear to the network and to the LAN-attached host as if they are natively attached LAN devices.

In this example, you must configure SDLC services on the remote router.

Figure 1-3 shows how a local SDLC device uses DLSw services to communicate with a host attached to a LAN.



**Figure 1-3. SDLC Conversion in a Single-Switch Configuration**

Figure 1-3 shows a single-switch DLSw between the SDLC device and the LAN. In this case, the local router performs the SDLC to LLC2 conversion, and forwards the traffic across the LAN to the host.

In Figure 1-2 you must configure SDLC services on the remote router. In Figure 1-3 you must configure SDLC services on the local router. See *Configuring Wellfleet Routers* for information on configuring SDLC services on a router. Chapter 3 describes how to edit an SDLC configuration on a router.

In both cases, you must map the addresses of the SDLC devices to media access control (MAC) addresses and service access points (SAPs). By mapping the addresses, you configure the SDLC devices as local devices, enabling them to appear to the network as natively

attached LAN devices. Refer to *Customizing DLSw Services* for information on configuring local devices.

## Configuration Requirements for DLSw with SDLC Services

To take advantage of the DLSw integrated SDLC feature, you must do the following (before or after you configure DLSw):

1. Add a synchronous circuit to the router, and configure SDLC on that circuit. See *Configuring Wellfleet Routers* for information on adding a circuit and configuring SDLC.

In the process of adding the circuit, you must specify that you want to run the DLSw protocol over the circuit.

2. Configure the DLSw local devices.

You must add local devices when you configure SDLC on the circuit. Later, you can reconfigure those devices, if necessary, when you change DLSw parameters. Refer to *Customizing DLSw Services* for information on configuring local devices.

**Note:** In a single-switch configuration (as shown in Figure 1-3), you do not need to configure DLSw peers.

## Using APPN Services with SDLC

You can configure any SDLC interface that you add to a router to support APPN services. APPN network nodes can communicate with adjacent network nodes, end nodes, and low-entry networking nodes using SDLC links over point-to-point and multipoint configurations. For information on the APPN node types and how to configure APPN, see *Customizing APPN Services*.

## For More Information about SDLC

For more information about SDLC and IBM SNA, refer to the following IBM® publications:

- *IBM Synchronous Data Link Control: Concepts* (GA27-3093)
- *IBM System Network Architecture: Technical Overview* (GC30-30723)
- *IBM System Network Architecture: Concepts and Products* (GC30-3072)
- *Systems Network Architecture APPN Architecture Reference* (SC30-3422-3)
- *APPN Architecture and Product Implementations Tutorial* (GG24-3669)
- *Data Link Switching: Switch-to-Switch Protocol RFC 1434.*

---

# Chapter 2

## SDLC Implementation Notes

Keep the following implementation notes in mind when you configure SDLC services.

### Dialout

Bay Networks' implementation of SDLC does not support dialout capability on switched lines.

### Link Stations

With DLSw, you can configure SDLC as a primary link station only. With APPN, you can configure primary, secondary, and negotiable link stations.

With primary link stations, you must configure the adjacent link station's parameters. With secondary link stations, you must configure the station's own link station parameters. With negotiable link stations, you must configure the station's own link station parameters, as well as the parameters for a potential adjacent link station.

Refer to Chapter 3 for information on configuring SDLC link stations.

## Integrated SDLC

With the integrated SDLC feature of DLSw, Physical Unit (PU) Type 2.1 nodes must be configured as secondary.

## Synchronous Line Parameters

The following synchronous line parameters affect SDLC operation:

- ❑ **Breath of Life (BOFL)** - Enables the transmission of proprietary Breath of Life messages over a point-to-point connection between the local router and a remote peer. Disable this parameter so that the BOFL messages do not interfere with SDLC frames.
- ❑ **Clock Source** - Specifies the origin (Internal or External) of the synchronous timing signals. If you set this parameter to Internal, the router supplies the required timing signals. If you set this parameter to External, an external network device supplies the required timing signals. If you use a modem, set this parameter to External; otherwise, if the link station partner is not providing the clock source, then set the parameter to Internal.
- ❑ **Clock Speed** - Lets you specify the speed of the internal clock. Be sure to use the same clock speed on all ports.
- ❑ **WAN Protocol** - Lets you indicate that you have enabled SDLC on the synchronous circuit.
- ❑ **Sync Line Coding** - Specifies the line coding (NRZ or NRZI) of the physical synchronous line. You can change the value of this parameter to match the line coding of the link station partner.

**Note:** If you use an ASN or AN router or an ESAF (Ethernet Sync Advanced Filtering) link module, you can choose either NRZ or NRZI line coding. If you use any other type of synchronous interface, you can use NRZ line coding only.

When you add SDLC to a synchronous line, Site Manager opens the SDLC Line Parameters window, which prompts you for the clock source, internal clock speed, synchronous line coding, and cable type. To view or change synchronous line parameters that do not appear in the SDLC Line Parameters window, edit the line parameters in the desired circuit.

For information on completing the SDLC Line Parameters window or editing other synchronous line parameters, refer to *Configuring Wellfleet Routers*.



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# Chapter 3

## Editing SDLC Parameters

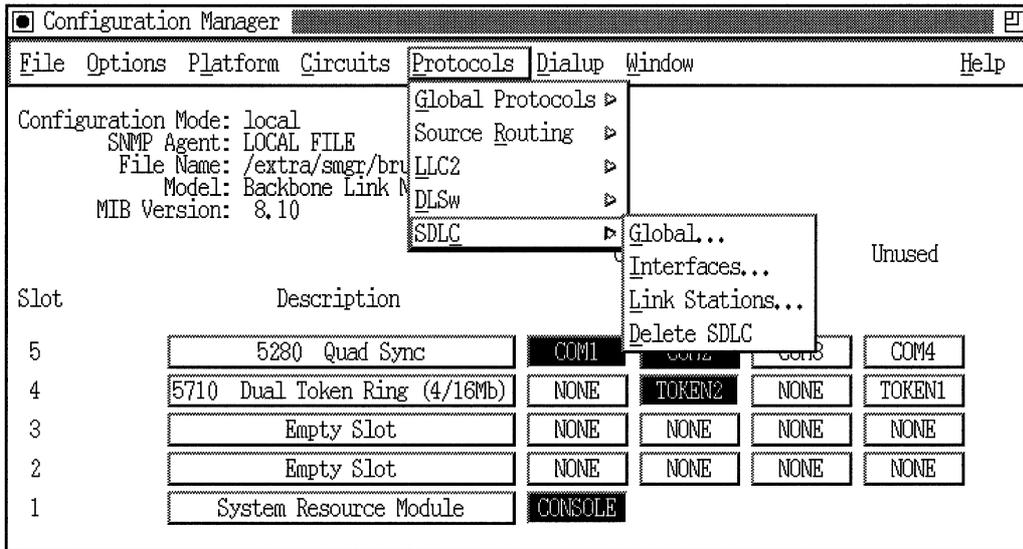
You can use Site Manager to

- ❑ Access SDLC parameters
- ❑ Edit SDLC global parameters
- ❑ Edit SDLC interface parameters
- ❑ Configure SDLC link stations
- ❑ Delete SDLC services from the router

**Note:** This chapter assumes that you have already configured at least one SDLC interface. If you have not yet configured an SDLC interface, refer to *Configuring Wellfleet Routers*.

## Accessing SDLC Parameters

To access and edit SDLC parameters, begin from the Wellfleet Configuration Manager window, and select the Protocols→SDLC path to the SDLC options submenu (Figure 3-1).



**Figure 3-1. Wellfleet Configuration Manager Window**

For each SDLC parameter, this chapter provides the following information:

- ❑ Wellfleet default setting (parameter value set by the system software)
- ❑ All valid options (range of values for the parameter)
- ❑ Function or purpose
- ❑ Instructions for setting the parameter value
- ❑ MIB Object ID

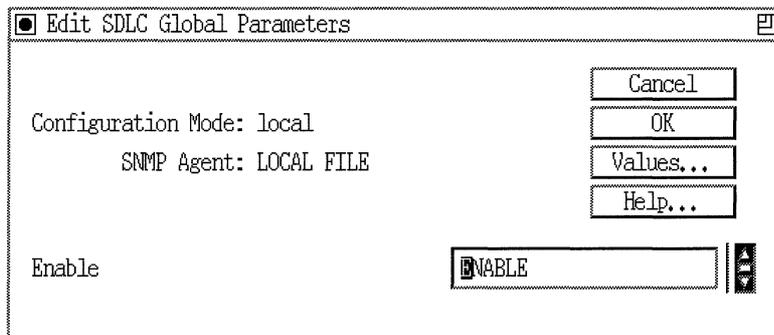
The Technician Interface lets you modify parameters by issuing **set** and **commit** commands with the MIB object ID. This process is equivalent to modifying parameters using Site Manager. For more information about using the Technician Interface to access the MIB, refer to *Using Technician Interface Software*.

You might want to customize parameters for the DLSw or APPN protocols as well, since these use SDLC services on the router. For information on DLSw, refer to *Customizing DLSw Services*. For information on APPN, refer to *Customizing APPN Services*.

## Editing SDLC Global Parameters

SDLC has only one configurable parameter (Enable/Disable) visible at the global level. To change the setting of the global parameter, begin at the Wellfleet Configuration Manager window, and proceed as follows:

1. Select Protocols→SDLC→Global. The Edit SDLC Global Parameters window appears (Figure 3-2).



**Figure 3-2. Edit SDLC Global Parameters Window**

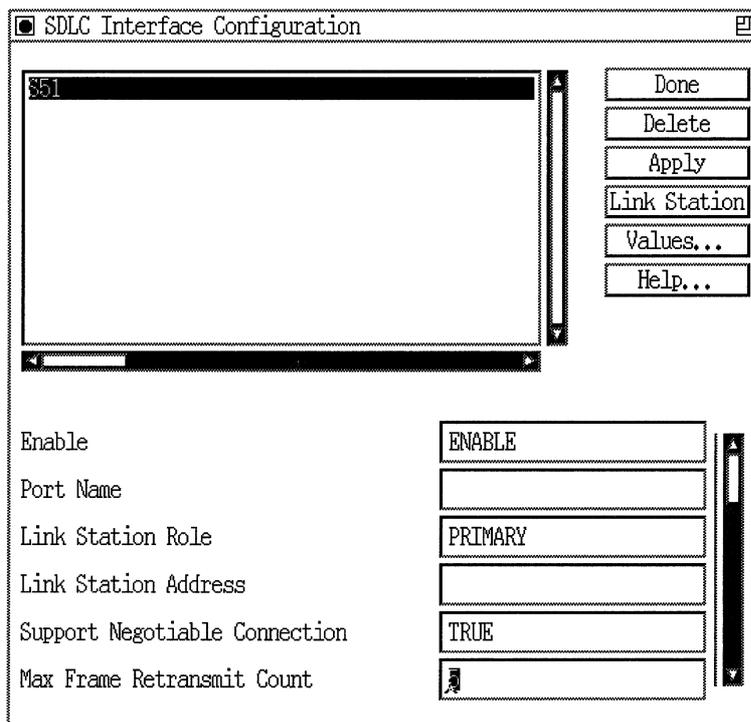
2. Change the setting of the global Enable parameter if necessary. (Refer to the description of the parameter that follows this procedure.)
3. Click on OK to save your changes and exit the window.

<b>Parameter:</b>	<b>Enable/Disable</b>
Default:	Enable
Options:	Enable   Disable
Function:	<p>Enables or disables the system software mechanisms that use the SDLC interface on a synchronous circuit.</p> <p>The system software also performs the following significant actions when you choose a setting:</p> <p>Disable – Switches every SDLC interface enabled on the router to the disabled (inactive) state.</p> <p>Enable – Reinitializes every SDLC interface on the router based on</p> <ul style="list-style-type: none"><li><input type="checkbox"/> The current setting of the associated Interface Enable parameter</li><li><input type="checkbox"/> The current state of the associated circuit.</li></ul>
Instructions:	<p>Select Disable to switch every SDLC interface existing on the node to the inactive state.</p> <p>Select Enable only when an existing SDLC interface is in the Disabled state. You can choose Enable to globally reinitialize all SDLC interfaces configured on the node. Then, each interface maintains the most recent setting of its own Interface Enable parameter.</p>
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.1.2

## Editing SDLC Interface Parameters

To access and edit the SDLC interface parameters, begin at the Wellfleet Configuration Manager window, and proceed as follows:

1. Select Protocols→SDLC→Interface. The SDLC Interface Configuration window appears (Figure 3-3).



**Figure 3-3. SDLC Interface Configuration Window**

The window contains the following information fields:

- ❑ At the upper left quarter is a window with a list of all SDLC interfaces configured on physical circuits belonging to this node. The reference for each interface in the list appears in the form:  
*<physical circuit name>*  
The physical circuit name is in alphanumeric format.
  - ❑ The lower left corner of the window lists the parameters whose values you can edit to suit your network configuration requirements.
  - ❑ The lower right corner of the window lists the parameter values for the SDLC interface you select in the list of interfaces. Selecting a different interface from the list causes the parameter values for that selection to appear in the parameter value windows.
2. Select the interface you want to customize. The parameter values for that interface appear in the parameter value windows. (Click on Values to display the valid range of values for any parameter.)
  3. Edit the parameters you want to change. Refer to the parameter descriptions in the next section.
  4. To add or edit a link station configuration on the interface, click on Link Station. The SDLC Link Station Configuration window appears. See “Adding an SDLC Link Station Configuration” or “Editing an SDLC Link Station Configuration” later in this chapter for information on how to complete the window.
  5. Click on Apply to save your changes.
  6. Repeat Steps 2 through 5 for each interface you want to edit.
  7. Click on Done to exit the SDLC Interface Configuration window.

---

## SDLC Interface Parameters

The SDLC Interface Configuration window includes the following entries:

**Parameter: Enable**

Default: Enable

Options: Enable | Disable

Function: Enables or disables the SDLC interface added previously to this WAN physical circuit.

Instructions: Select Enable if you disabled this SDLC interface previously, and now want to re-enable the interface on its associated WAN physical circuit.  
Select Disable if you wish to disable this SDLC interface on its associated WAN physical circuit.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.2

**Parameter: Port Name**

Default: None

Range: Any valid port name.

Function: Defines the port name you want to assign to this SDLC interface.

Instructions: Enter the name of the port you want to assign to this SDLC interface. You can use any combination of alphanumeric characters. We recommend you use the same name as the circuit to which you added SDLC, such as S51.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.4

**Parameter: Link Station Role**

Default: PRIMARY

Options: PRIMARY | SECONDARY | NEGOTIABLE

Function: Defines the link station role.

Instructions: Enter PRIMARY or SECONDARY if you want to assign a specific role to the link station. Enter NEGOTIABLE if you want the link station to exchange XIDs with another negotiable link station to determine which will be primary and which will be secondary.

Note that with DLSw, you can configure primary SDLC stations as link stations. With APPN, you can configure primary, secondary, and negotiable link stations.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.27

**Parameter: Link Station Address**

Default: 2

Range: 1 to 254

Function: Specifies the address of the port if the link station role is secondary or negotiable.

Instructions: Enter a value from 1 to 254.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.29

**Parameter: Support Negotiable Connection**

Default: FALSE

Options: TRUE | FALSE

Function: Specifies whether the SDLC supports negotiable connections.

Instructions: Enter TRUE if the SDLC supports negotiable connections; otherwise, enter FALSE.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.33

**Parameter: Max Frame Retransmit Count**

Default: 5

Range: 1 to 7

Function: Specifies the maximum number of times to retransmit a frame or group of frames.

Instructions: Enter a value from 1 to 7.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.23

**Parameter: Non-productive Timer**

Default: 2000 milliseconds

Range: 1 to 65535

Function: Specifies the time allowed for receipt of a valid frame from the primary. This parameter is used with the Non-productive Retry Limit parameter. SDLC primary uses this timer to produce an outage when a secondary station produces continuous frames without setting the F-bit (Final bit).

Instructions: Enter a value from 1 to 65535.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.12

---

**Parameter: Non-productive Retry Limit**

Default: 15

Range: 1 to 65535

Function: Used with the Non-productive Timer parameter to provide the overall time before SDLC sends an outage message to the device.

Instructions: Enter a value from 1 to 65535, where 1 causes SDLC to generate an outage after the first Non-productive Timer expiration, and 65535 specifies an unlimited retry count.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.13

**Parameter: Idle Line Timer**

Default: 3000 milliseconds

Range: 1 to 65535

Function: Specifies the length of time to pass to determine whether a line is completely inactive. This parameter is used with the Idle Retry Limit parameter.

Instructions: Enter a value from 1 to 65535. Enter the maximum value, 65535, if you never want to terminate sessions on the line, even if it is completely inactive. If you enter a smaller value and the time expires without any activity occurring on the line, all sessions on that line terminate.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.10

**Parameter: Idle Line Retry Limit**

Default: 10

Range: 1 to 65535

Function: Specifies the number of times to rerun the Idle Line Timer before failure. This parameter is used with the Idle Line Timer parameter to provide the overall idle timeout period.

Instructions: Enter a value from 1 to 65535, where 1 causes SDLC to generate an outage after the first Idle Line Timer expiration, and 65535 specifies an unlimited retry count.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.11

**Parameter: Port Write Timer**

Default: 3000 milliseconds

Range: 1 to 65535

Function: Specifies the maximum amount of time allowed to transmit a complete frame. This parameter is used with the Port Write Retry Limit parameter.

Instructions: Enter a value from 1 to 65535 milliseconds.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.14

**Parameter: Port Write Retry Limit**

Default: 10

Range: 1 to 65535

Function: Used with the Port Write Timer parameter to provide the overall time before SDLC sends an outage message to the device.

Instructions: Enter a value from 1 to 65535, where 1 causes SDLC to generate an outage after the first Port Write Timer expiration, and 65535 specifies an unlimited retry count.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.15

**Parameter: Link Connection Timer**

Default: 3000 milliseconds

Range: 1 to 65535

Function: Used with the Link Connection Retry Limit parameter to provide the time interval after which SDLC fails an attempt to activate a port because it has not received a Data Set Ready (DSR) response.

This feature is for switched lines only, and is not implemented in Revision 8.10.

Instructions: Accept the default. This parameter is reserved for future enhancements.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.16

**Parameter: Link Connection Retry Limit**

Default: 10

Range: 1 to 65535

Function: Specifies the number of times the link has been tested for a connection before it fails the pending activate port request. The maximum value for this parameter specifies an infinite number of times. This parameter is used with the Link Connection Timer parameter.

Instructions: Accept the default. This parameter is reserved for future enhancements.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.17

**Parameter: Primary Full Duplex**

Default: FALSE

Options: TRUE | FALSE

Function: Specifies whether the primary SDLC station supports full-duplex transmission.

Instructions: Enter TRUE if the primary SDLC station supports full-duplex transmission. Enter FALSE if the primary station supports half-duplex transmission.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.18

---

**Parameter: Secondary Full Duplex**

Default: FALSE

Options: TRUE | FALSE

Function: Specifies whether the secondary SDLC station supports full-duplex transmission.

Instructions: Enter TRUE if the secondary SDLC station supports full-duplex transmission. Enter FALSE if the secondary station supports half-duplex transmission.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.19

**Parameter: Enable Reject Frame**

Default: TRUE

Options: TRUE | FALSE

Function: Specifies whether SDLC can send a reject (REJ) frame upon receiving an out-of-sequence Information frame. If the REJ command is not used, SDLC requests retransmission of frames through Receiver Ready (RR), Receiver Not Ready (RNR), or Information frames. Use of the REJ command is useful only with full-duplex transmission.

Instructions: Enter TRUE to use REJ commands for out-of-sequence Information frames; otherwise, enter FALSE.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.20

**Parameter: Max XID Size**

Default: 256

Range: 2 to 256

Function: Specifies the maximum XID size that will be sent or received on this link.

Instructions: Enter a value up to the maximum, 256.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.22

**Parameter: Max Frame Size**

Default: 2057

Options: 265 | 521 | 1033 | 2057

Function: Specifies the maximum frame size SDLC supports. This value includes the Transmission Header (TH) and Request Header (RH).

Instructions: Enter a frame size that is equal to or larger than the largest frame size that will be received.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.24

**Parameter: Total Link Station Limit**

Default: 16

Range: 1 to 254

Function: Specifies the total link station activation limit.

Instructions: Enter the total number of link stations (from 1 to 254) that you want to reserve for inbound and outbound activation on this port.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.30

**Parameter: Inbound Link Station Limit**

Default: 8

Range: 1 to 254

Function: Specifies the inbound link station activation limit.

Instructions: Enter the number of link stations (from 1 to 254) that you want to reserve for inbound activation on this port.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.31

**Parameter: Outbound Link Station Limit**

Default: 8

Range: 1 to 254

Function: Specifies the outbound link station activation limit.

Instructions: Enter the number of link stations (from 1 to 254) that you want to reserve for outbound activation on this port.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.32

**Parameter: Receive Buffer Pool Size**

Default: 7 buffers

Range: 1 to 255

Function: Sets the receive buffer pool size; that is, the number of buffers you want to pre-allocate for receiving frames from the line.

Instructions: Enter the number of buffers you want for the receive buffer pool. You can enter a value from 1 to 255; however, we recommend that you accept the default, since increasing the receive buffer pool size uses up more memory.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.34

**Parameter: Initial Flow Control Credit**

Default: 7 frames

Range: 1 to 50

Function: Regulates the flow of data from the SDLC device to the SDLC interface.

Instructions: Accept the default. This parameter is reserved for future enhancements.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.9

**Parameter: Enable Stats Collection**

Default: TRUE

Options: TRUE | FALSE

Function: Turns stats collection on or off for this port.

Instructions: Enter TRUE to enable statistics collection; otherwise, enter FALSE.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.2.1.35

---

## Deleting an SDLC Interface

To delete an SDLC interface from its associated physical circuit:

1. Select from the SDLC Interface Configuration window the SDLC interface you want to delete from the node configuration.
2. Click on Delete.

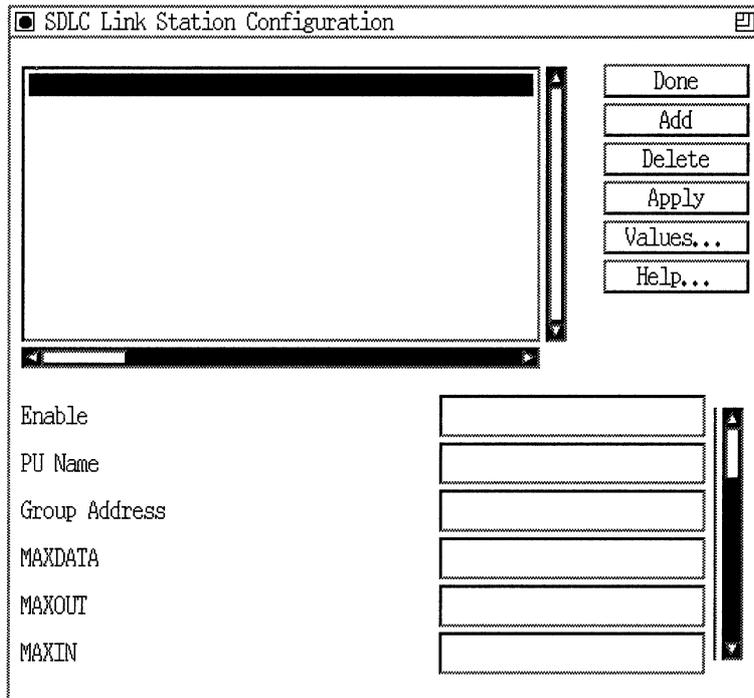
The system deletes the SDLC entry you selected, and the entry disappears from the list of SDLC interfaces in the SDLC Interface Configuration window.

To simultaneously delete all SDLC interfaces from the node, follow the steps in the section “Deleting SDLC from the Node.”

## Adding an SDLC Link Station Configuration

To add an SDLC link station, follow these steps:

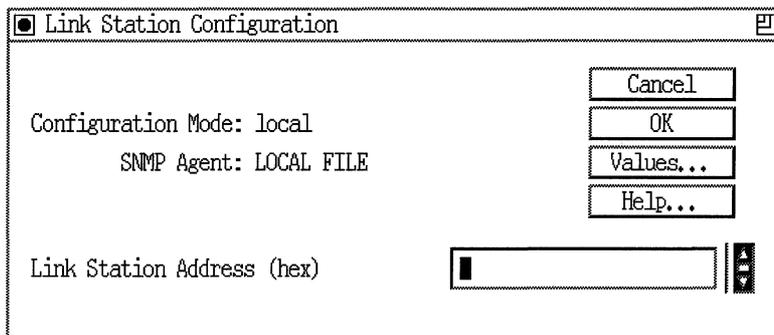
1. Click on Link Station in the SDLC Interface Configuration window (Figure 3-3). The SDLC Link Station Configuration window appears (Figure 3-4).



**Figure 3-4. SDLC Link Station Configuration Window**

2. Click on Add in the SDLC Link Station Configuration window.

A window prompts you for the address of the link station (Figure 3-5).



**Figure 3-5. Link Station Configuration Window**

3. Enter the link station address. (Refer to the description of the parameter that follows this procedure.)
4. Click on OK to save your changes and exit the window.

The SDLC Link Station Configuration window reappears (Figure 3-4) with the new entry added to the list of existing link stations.

5. Complete the procedure in the next section, “Editing an SDLC Link Station Configuration” to define the configuration information for the link station you just added.

**Note:** If you are using SDLC with DLSw, you must configure a local device for each SDLC link station you add. For information on configuring local devices, refer to *Customizing DLSw Services*.

<b>Parameter:</b>	<b>Link Station Address</b>
Default:	None
Options:	Any valid hexadecimal link station address from 0x01 to 0xFE.
Function:	Specifies the address of the link station.
Instructions:	Enter the link station address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.29

## Editing an SDLC Link Station Configuration

To edit SDLC link station parameters, complete the following steps (if you just completed the procedure in “Adding an SDLC Link Station Configuration,” go to Step 3).

1. Do either of the following:
  - From the Configuration Manager window (Figure 3-1), select Protocols→SDLC→Link Stations. The SDLC Link Station Configuration window appears (Figure 3-4).
  - From the Configuration Manager window, select Protocols→SDLC→Interfaces. The SDLC Interface Configuration window appears (Figure 3-3). Click on Link Station.

The SDLC Link Station Configuration window appears.

2. Select the address of the link station whose configuration you want to edit.
3. Edit the configuration parameter values. For information, refer to the parameter descriptions that follow this procedure.
4. Click on Apply to save your changes.
5. If you brought up the SDLC Link Station Configuration window from the SDLC Interface Configuration window, click on Done to exit.

## SDLC Link Station Configuration Parameters

Use the following descriptions as guidelines when you configure the parameters in the SDLC Link Station Configuration window.

**Parameter:** **Enable**  
**Default:** Enable  
**Options:** Enable | Disable  
**Function:** Enables or disables the link station on the port.  
**Instructions:** Enter Enable to enable the link station on the port; otherwise, enter Disable.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.7.5.1.2

**Parameter:** **PU Name**  
**Default:** None  
**Options:** Any valid 8-byte ASCII name.  
**Function:** Specifies the name of the adjacent link station. This name uniquely identifies the station for statistics and Alert messages.  
**Instructions:** Enter the 8-byte ASCII link station name.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.7.5.1.32

**Parameter: Group Address**

Default: 0

Range: 1 to 254

Function: Specifies the address of the group to which this link station belongs (for secondary link stations only).

Instructions: If the link station is not part of a group (as is the case in a point-to-point topology), leave the default, 0. If the link station is part of a group, enter its group poll address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.5

**Parameter: MAXDATA**

Default: 2057

Options: 265 | 521 | 1033 | 2057

Function: Specifies the maximum frame size SDLC supports. This value includes the Transmission Header (TH) and Request Header (RH).

Instructions: Enter a maximum frame size that is equal to or larger than the largest frame size that will be received.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.7

---

<b>Parameter:</b>	<b>MAXOUT</b>
Default:	7
Range:	1 to 127
Function:	Controls the maximum number of consecutive frames that an SDLC link station can send without acknowledgment.
Instructions:	Enter a value from 1 to 127.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.10
<b>Parameter:</b>	<b>MAXIN</b>
Default:	7
Range:	1 to 127
Function:	Controls the maximum number of unacknowledged frames that an SDLC link station can receive.
Instructions:	Enter a value from 1 to 127.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.9
<b>Parameter:</b>	<b>Response Timer</b>
Default:	100 milliseconds
Range:	100 to 64000
Function:	Specifies the time that SDLC waits before turning the poll bit around when it has no work to do.
Instructions:	Enter a value from 100 to 64000 milliseconds.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.28

**Parameter: RNR Timer**

Default: 3 minutes

Range: 1 to 90

Function: Controls the length of time that an SDLC link station allows its adjacent link station to remain in a busy (RNR) state before declaring it inoperative. This parameter is used with the RNR Retry Limit parameter.

Instructions: Enter a value from 1 to 90 minutes.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.15

**Parameter: RNR Retry Limit**

Default: 4

Range: 1 to 64000

Function: Used with the RNR Timer parameter to provide the overall timeout before sending an outage message to a device.

Instructions: Enter a value from 1 to 64000, where 64000 specifies an infinite number of retries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.27

**Parameter: REPLYTO Timer**

Default: 30 tenths of a second

Range: 1 to 600

Function: Specifies the maximum time a primary station waits (after sending a frame with a poll bit) for a response frame before trying to poll another station. This timer restarts when a frame without the F-bit is received, and stops only when a frame with an F-bit is received.

Instructions: Enter any valid value, from the minimum of 1 tenth of a second to the maximum of 600 tenths of a second. You should set the timeout to a value not less than twice the transmission time for the longest I-frame plus adjacent station frame processing time.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.8

**Parameter: REPLYTO Retry Limit**

Default: 10

Range: 1 to 64000

Function: Controls the number of times an adjacent secondary station fails to respond before the primary sends an outage message.

Instructions: Enter a value from 1 to 64000, where 64000 specifies an infinite number of retries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.26

**Parameter: Fast Poll Timer**

Default: 400 milliseconds

Range: 1 to 64000

Function: Controls the timeout required before reinserting an adjacent secondary station into the polling list after it has been removed for no response. This parameter is used with the Fast Poll Count Limit parameter.

Instructions: Enter a value from 1 to 64000 milliseconds. Although the timer value is in milliseconds, you should specify a value so that the timer runs for seconds.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.22

**Parameter: Fast Poll Count Limit**

Default: 16

Range: 1 to 65535

Function: Controls the number of times a station is removed from the polling list on the normal poll timer before SDLC switches to the slow poll timer. This parameter is used with the Fast Poll Timer parameter.

Instructions: Enter a value from 1 to 65535, where 65535 specifies an infinite number of retries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.23

---

**Parameter: Slow Poll Timer**

Default: 1000 milliseconds

Range: 1 to 64000

Function: Allows polling to continue (using this timer) when the Fast Poll Count Limit expires. This parameter is used with the Slow Poll Count Limit parameter.

Instructions: Enter a value from 1 to 64000 milliseconds.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.24

**Parameter: Slow Poll Count Limit**

Default: 65535

Range: 1 to 65535

Function: Controls the number of times a station is removed from the polling list before sending an outage message to a device. This parameter is used with the Slow Poll Timer parameter.

Instructions: Enter a value from 1 to 65535, where 65535 specifies an infinite number of retries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.25

**Parameter: Pre-Activation Contact Frame**

Default: XID

Options: XID | DISC | SNRM | SNRME | TEST

Function: Specifies the frame to use for pre-activation polling.

Instructions: Enter the type of poll frame you want to use.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.30

**Parameter: Fast Contact Timer**

Default: 4000 milliseconds

Range: 1 to 64000

Function: Controls the timeout required before retransmitting an unacknowledged Set Normal Response Mode (SNRM) or XID. This parameter is used for primary SDLC only. This parameter is used with the Fast Contact Retry Limit parameter. This parameter is also used for special pre-activation polling.

Instructions: Enter a value from 1 to 64000 milliseconds. The value you enter must be greater than the REPLYTO Timer value described earlier.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.16

**Parameter: Fast Contact Retry Limit**

Default: 4

Range: 1 to 64000

Function: Controls the number of times to transmit a contact frame (for example, SNRM) before switching to the Slow Contact Timer. This parameter is used with the Fast Contact Timer parameter.

Instructions: Enter a value from 1 to 64000, where 1 causes the switch to the Slow Contact Timer after the first Fast Contact Timer expiration. Enter 64000 for an infinite number of retries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.17

---

**Parameter: Slow Contact Timer**

Default: 4000 milliseconds

Range: 1 to 64000

Function: Allows contact polling to continue (using this timer) when the Fast Contact Retry Limit expires. This prevents leased (multidrop) links from being overwhelmed by poll frames for absent stations. This parameter is used with the Slow Contact Retry Limit parameter.

Instructions: Enter a value from 1 to 64000 milliseconds.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.18

**Parameter: Slow Contact Retry Limit**

Default: 8

Range: 1 to 65535

Function: Controls the number of times a contact frame (for example, SNRM) is transmitted before sending an outage message to the SDLC device. This parameter is used with the Slow Contact Timer parameter.

Instructions: Enter a value from 1 to 64000, where 1 causes an outage after the first Slow Contact Timer expiration, and 65535 indicates an unlimited retry count.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.19

**Parameter: DISC Retransmit Timer**

Default: 4000 milliseconds

Range: 1 to 64000

Function: Controls the length of time before retransmitting an unacknowledged Disconnect (DISC) command. This parameter is used for primary SDLC only. This parameter is used with the DISC Retransmit Retry Limit parameter.

Instructions: Enter a value from 1 to 64000 milliseconds.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.20

**Parameter: DISC Retransmit Retry Limit**

Default: 4

Range: 1 to 65535

Function: Controls the number of times to transmit a Disconnect (DISC) command. This parameter is used with the DISC Retransmit Timer parameter.

Instructions: Enter a value from 1 to 64000, where 1 causes an outage after the first Retransmit DISC Timer expiration, and 65535 specifies an unlimited retry count.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.21

<b>Parameter:</b>	<b>Poll Bit Set In I-Frame</b>
Default:	TRUE
Options:	TRUE   FALSE
Function:	Specifies whether this link station is permitted to send the poll bit on an I-frame. Certain SDLC implementations do not handle receipt of I-frames carrying the poll bit.
Instructions:	Enter TRUE if this link station can send the poll bit on an Information frame.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.31

## Deleting SDLC from the Node

You can delete all SDLC interfaces from the node, in two steps.

To delete SDLC, begin at the Wellfleet Configuration Manager window (Figure 3-1) and complete the following steps:

1. Select Protocols→SDLC→Delete SDLC.

A confirmation window appears.

2. Click on OK in the confirmation window.

The SDLC interfaces are no longer configured on the router.

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# Index

## A

adding SDLC link station configuration,  
3-18

address field in SDLC frames, 1-4

APPN

using with SDLC, 1-7

## B

BOFL parameter, 2-2

## C

Clock Source parameter, 2-2

Clock Speed parameter, 2-2

configuring

SDLC link stations, 3-18

connections

physical, 1-3

control field in SDLC frames, 1-4

## D

deleting

SDLC from the node, 3-32

SDLC interface, 3-18

dialout on switched lines (unsupported),  
2-1

DISC Retransmit Retry Limit parameter,  
3-31

DISC Retransmit Timer parameter, 3-31

DLSw

single-switch configuration, 1-6

switch-to-switch configuration, 1-5

using with SDLC, 1-5 to 1-7

configuration requirements, 1-7

## E

editing SDLC link station configuration,  
3-21

Enable parameter, 3-7, 3-22

Enable Reject Frame parameter, 3-14

Enable Stats Collection parameter, 3-17

Enable/Disable parameter, 3-4

## F

Fast Contact Retry Limit parameter, 3-29

Fast Contact Timer parameter, 3-29

Fast Poll Count Limit parameter, 3-27

Fast Poll Timer parameter, 3-27

flag field in SDLC frames, 1-4

formats

SDLC frames, 1-4

frame checking field in SDLC frames, 1-4

frame formats, 1-4

full-duplex transmission, 1-3

---

## G

Group Address parameter, 3-23

## H

half-duplex transmission, 1-3

## I

Idle Line Retry Limit parameter, 3-11

Idle Line Timer parameter, 3-10

Inbound Link Station Limit parameter,  
3-16

information field in SDLC frames, 1-4

information frames, 1-4

Initial Flow Control Credit parameter, 3-17

## L

Link Connection Retry Limit parameter,  
3-13

Link Connection Timer parameter, 3-12

Link Station Address parameter, 3-8, 3-21

Link Station Role parameter, 3-8

link stations

- configuration considerations, 2-1

- configuring, 3-18

- editing configurations, 3-21

- roles, 1-2

## M

Max Frame Retransmit Count parameter,  
3-9

Max Frame Size parameter, 3-15

Max XID Size parameter, 3-15

MAXDATA parameter, 3-23

MAXIN parameter, 3-24

MAXOUT parameter, 3-24

multipoint topology, 1-2

## N

negotiable link stations, 1-2

- configuring, 2-1

node types, 2-2

- SNA, 1-3

Non-productive Retry Limit parameter,  
3-10

Non-productive Timer parameter, 3-9

NRZ/NRZI, 2-2

## O

Outbound Link Station Limit parameter,  
3-16

## P

physical connections, 1-3

point-to-point topology, 1-2

Poll Bit Set In I-Frame parameter, 3-32

Port Name parameter, 3-7

Port Write Retry Limit parameter, 3-12

Port Write Timer parameter, 3-11

Pre-Activation Contact Frame parameter,  
3-28

Primary Full Duplex parameter, 3-13

primary link stations, 1-2

- configuring, 2-1

PU Name parameter, 3-22

---

---

## R

Receive Buffer Pool Size parameter, 3-17  
REPLYTO Retry Limit parameter, 3-26  
REPLYTO Timer parameter, 3-26  
Response Timer parameter, 3-24  
RNR Retry Limit parameter, 3-25  
RNR Timer parameter, 3-25

## S

### SDLC

conversion  
    in a single-switch configuration, 1-6  
    in a switch-to-switch configuration,  
    1-5  
deleting all interfaces from the node,  
    3-32  
interface  
    deleting, 3-18  
    publications about, 1-8  
Secondary Full Duplex parameter, 3-14  
secondary link stations, 1-2  
    configuring, 2-1  
size  
    window, 1-3  
Slow Contact Retry Limit parameter, 3-30  
Slow Contact Timer parameter, 3-30  
Slow Poll Count Limit parameter, 3-28  
Slow Poll Timer parameter, 3-28  
SNA node types, 1-3  
supervisory frames, 1-4  
Support Negotiable Connect parameter,  
    3-9  
Sync Line Coding parameter, 2-2  
Synchronous line parameters, 2-2

## T

topologies, 1-2  
Total Link Station Limit parameter, 3-16  
transmission capabilities, 1-3

## U

unnumbered frames, 1-4

## W

WAN Protocol parameter, 2-2  
window size, 1-3

