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Configuring SDLC Services

NORTEL NETWORKS™

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Preface

This guide describes Synchronous Data Link Control (SDLC) services and what you do to start and customize SDLC services on a Nortel Networks™ router.

You can use the Bay Command Console (BCC™) or Site Manager to configure SDLC services on a router. In this guide, you will find instructions for using both the BCC and Site Manager.

Before You Begin

Before using this guide, you must complete the following procedures. For a new router:

- Install the router (see the installation guide that came with your router).
- Connect the router to the network and create a pilot configuration file (see *Quick-Starting Routers*, *Configuring BayStack Remote Access*, or *Connecting ASN Routers to a Network)*.

Make sure that you are running the latest version of Nortel Networks BayRS™ and Site Manager software. For information about upgrading BayRS and Site Manager, see the upgrading guide for your version of BayRS.

Text Conventions

This guide uses the following text 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 the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.
italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Trap Monitor Filters`

separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This guide uses the following acronyms:

APPC	Advanced Peer-to-Peer Communications
APPN	Advanced Peer-to-Peer Networking
CP	control point
DLSw	data link switching
DM	disconnect mode
F-bit	final bit
FEP	front-end processor
IEEE	Institute of Electrical and Electronic Engineers
LAN	local area network
LEN	low-entry networking end node
LLC	logical link control
MAC	media access control
MCT1	Multichannel T1
NetBIOS	Network Basic Input-Output System
NRZ	nonreturn to zero
NRZI	nonreturn to zero-inverted
PDU	protocol data unit

PU	physical unit
RFC	Request for Comments
SAP	service access point
SDLC	Synchronous Data Link Control
SNA	Systems Network Architecture (IBM)
XID	exchange identification

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If you purchased a Nortel Networks service program, contact one of the following Nortel Networks Technical Solutions Centers:

Technical Solutions Center	Telephone Number
Billerica, MA	800-2LANWAN (800-252-6926)
Santa Clara, CA	800-2LANWAN (800-252-6926)
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-7041

Chapter 1
Synchronous Data Link Control Overview

This chapter describes the following Synchronous Data Link Control (SDLC) features and services:

- SDLC networking
  - -- Link station roles
  - -- Primary SDLC support
  - -- Secondary SDLC support
  - -- Enhanced synchronous pass-through
  - -- Transmission capabilities
  - -- SDLC support over MCT1 links
  - -- Physical connections
  - -- Frame format
- Using APPN and DLSw services with SDLC

Read this chapter if you are configuring Advanced Peer-to-Peer Networking (APPN) or data link switching (DLSw) networks using SDLC. SDLC parameter settings can influence APPN and DLSw performance.

SDLC Networking

SDLC is the synchronous, bit-oriented link control protocol in the IBM Systems Network Architecture (SNA). SDLC's connection-oriented protocol operates with the Data Link Switching (DLSw) protocol and the Advanced Peer-to-Peer Networking (APPN) architecture.

SDLC supports point-to-point and multipoint topologies. In point-to-point topologies, one SDLC device connects to another SDLC device. In multipoint topologies, several SDLC devices connect to one central SDLC device via a modem-sharing type device.

SDLC Features

You can configure most of the following features using the SDLC parameters described in Chapter 4.

Link Station Roles

A link station is a logical connection between adjacent nodes, where one node is a primary link station and the other, a secondary link station. Only one link station on an SDLC line can be the primary station; all others must be secondary. SDLC supports primary, secondary, and negotiable link stations.

In DLSw configurations, for PU 1.0, 2.0, and 2.1 nodes, you must configure a Nortel Networks router as either a primary or secondary link station. When primary, the router communicates with downstream nodes; when secondary, with front-end processors (FEPs) and similar communications controllers. For PU 4.0 devices in DLSw configurations, you can configure a Nortel Networks router as a negotiable link station on point-to-point link.

In APPN configurations (PU 2.1 devices only), a Nortel Networks router supports negotiable link stations on point-to-point links. In negotiable configurations, the two link stations exchange XIDs to negotiate which one will be primary and which secondary.

Primary SDLC Support

A Nortel Networks router configured as a primary device on an SDLC link can:

- Control the data link.
- Issue commands.
- Initiate error-recovery procedures.

The primary link station addresses and sends command frames to any or all secondary link stations on the network. Each frame carries the individual, group, or broadcast address of the station or stations to which the frame is directed. A secondary link station receives commands and responds to primary link station polls.

Figure 1-1 illustrates DLSw single- and dual-switch networks where Nortel Networks routers function as primary SDLC nodes.

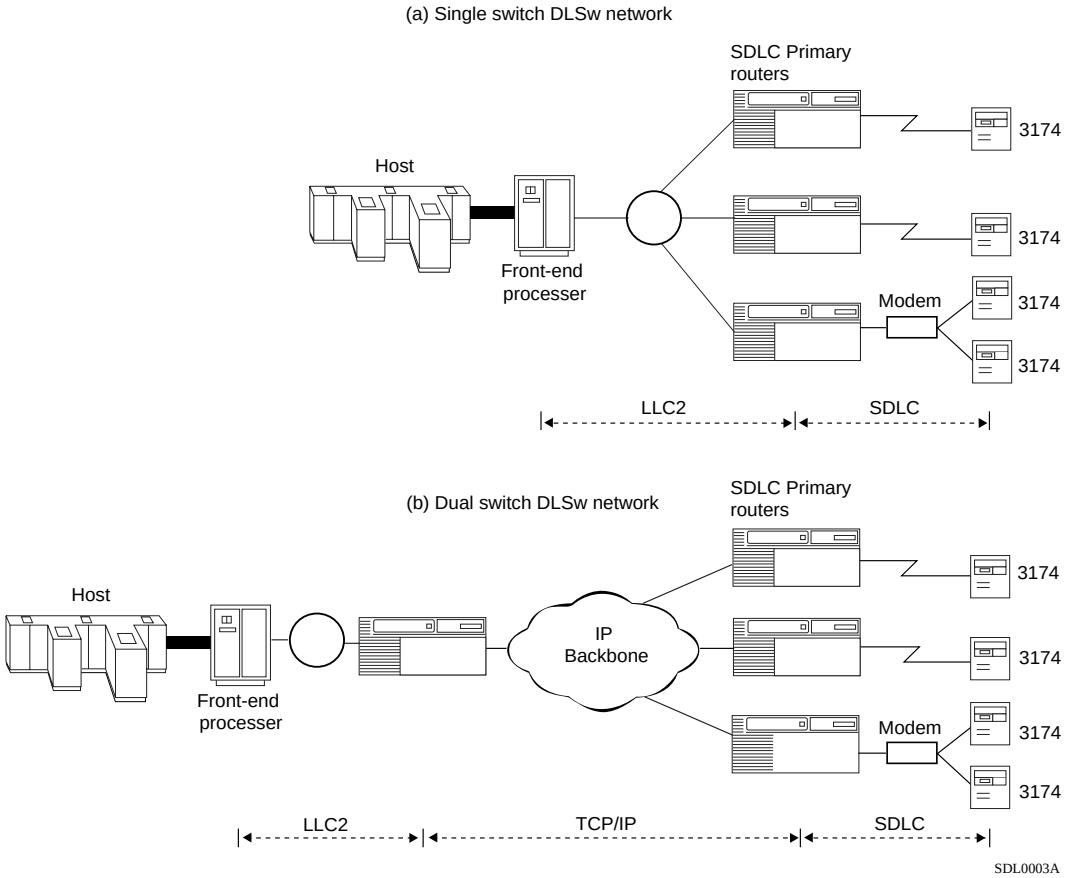

Figure 1-1. Primary SDLC Routers in (a) Single- and (b) Dual-Switch DLSw Networks

Secondary SDLC Support

A Nortel Networks router acting as a secondary device on an SDLC link can:

- Support a single SDLC link communicating to an FEP or similar SNA device.
- Serve as a secondary PU 1.0, PU 2.0, PU 2.1, and PU 4.0 device on that link.
- Coexist with other secondary SDLC devices on the same SDLC link.
- Allow SNA devices attached to multiple remote routers to share a single SDLC link to the FEP.
- Attach to the FEP directly using a null modem cable or via a leased line.

Figure 1-2 illustrates DLSw single- and dual-switch networks where Nortel Networks routers serve as secondary SDLC nodes.

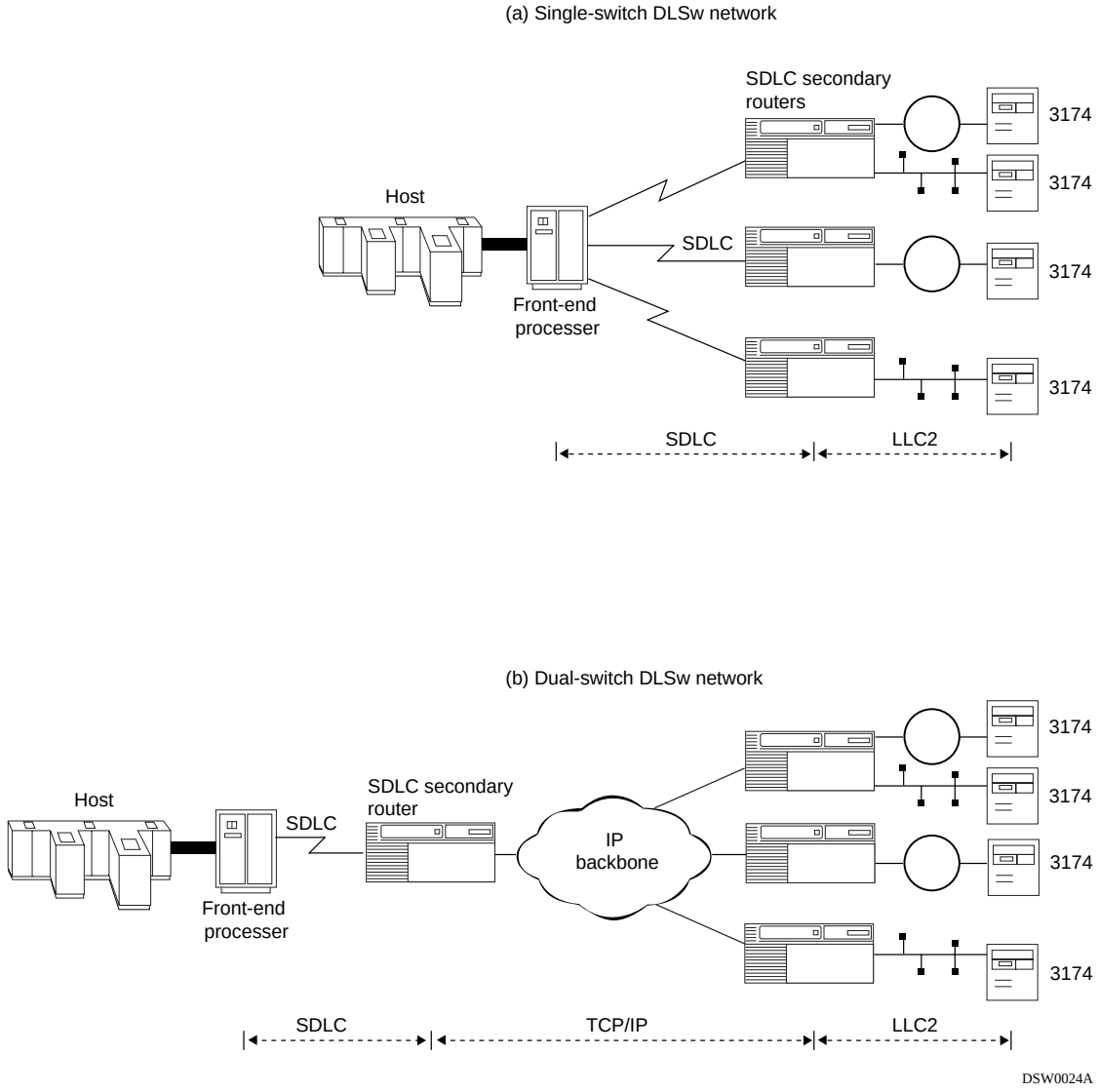

Figure 1-2. Secondary SDLC Routers in (a) Single- and (b) Dual-Switch DLSw Networks

Secondary SDLC Configuration

The DLSw Mode parameter allows you to configure primary or secondary operations on DLSw interfaces and SDLC local devices. Refer to *Configuring DLSw Services* for information about the DLSw Mode parameter.

Enhanced Synchronous Pass-Through

Using primary and secondary SDLC services, a network can transport existing SDLC traffic over a router-based topology that:

- Enables existing SDLC traffic to use a high-speed multiprotocol backbone network
- Simplifies the migration to a router-based network by incorporating SDLC traffic into the multiprotocol backbone without converting the existing end stations
- Provides local acknowledgment of the SDLC protocol at each side of the router-based network, eliminating polling and acknowledgment traffic from the network backbone
- Allows high-speed links into the FEP, improving response time

Figure 1-3 illustrates locally acknowledged synchronous pass-through using dual-switch service.

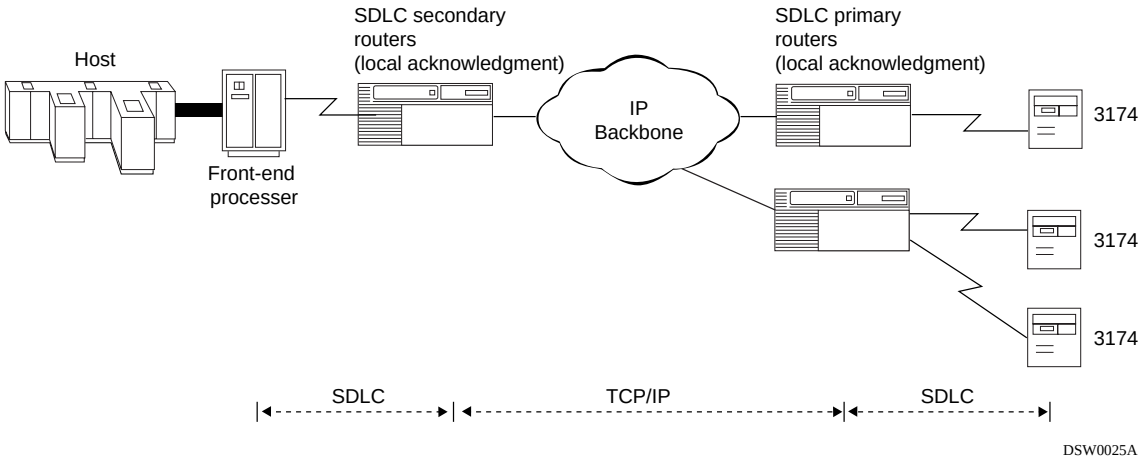

Figure 1-3. Locally Acknowledged Synchronous Pass-Through in a Dual-Switch DLSw Network

Transmission Capabilities

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

SDLC Support over MCT1 Links

Nortel Networks implementation of SDLC supports SDLC over Multichannel T1 (MCT1) links (connectors labeled MCT1) for SNA transmission over DLSw wide areas. The router must contain at least one MCT1 link module and you must select SDLC from the WAN Protocols window. For more information about configuring MCT1, refer to *Configuring WAN Line Services*.

Physical Connections

SDLC communicates with attached SNA/SDLC devices using V.24 (RS-232), V.35, and X.21 (nonswitched) connections. SDLC supports line speeds up to 2 Mb/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 2 Mb/s.

Frame Format

SDLC sends and receives three types of frames:

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

Figure 1-4 illustrates the format of SDLC frames.

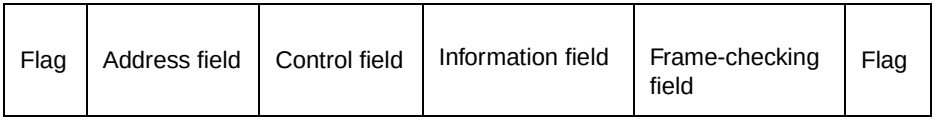

Figure 1-4. SDLC Frame Format

Each frame begins with a 1-byte flag that alerts the receiver to the frame's presence. (Additional flags may precede the frame but a minimum of one flag is needed.)

The address field is a 1-byte field that identifies the secondary link station that communicates with the primary link 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 one or two bytes long 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 eight 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 APPN Services with SDLC

You can configure any SDLC interface for APPN services. APPN nodes can communicate with adjacent nodes using SDLC links over point-to-point and multipoint configurations. For information about the APPN node types and how to configure APPN, see *Configuring APPN Services*.

Using DLSw Services with SDLC

You can configure any SDLC interface for DLSw services. For information about DLSw, see *Configuring DLSw 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*
- *Data Link Switching: Switch-to-Switch Protocol RFC 1795*
- *Data Link Switching: Switch-to-Switch Protocol RFC 2166*

Chapter 2
SDLC Implementation Notes

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

Link Stations

With DLSw, for PU 1.0, 2.0, and 2.1 nodes, you can configure SDLC as only a primary or secondary link station. For PU 4.0 nodes, you can also configure SDLC as a negotiable link station on point-to-point links. With APPN, you can configure primary, secondary, and negotiable link stations.

You set up SDLC link stations as follows:

- Primary link stations -- configure the adjacent link station's parameters.
- Secondary link stations -- configure the station's own link station parameters.
- Negotiable link stations -- configure the station's own link station, as well as a potential adjacent link station.

Refer to Chapter 4 for information about configuring SDLC link stations.

Synchronous Line Parameters

When you add SDLC to a synchronous line, Site Manager opens the SDLC Line Parameters window, and you can edit the following parameters:

- Clock Source
- Internal Clock Speed
- Sync Line Coding

- Cable Type
- RTS Enable
- Inter Frame Time Fill

Chapter 3 describes how to set these SDLC Line Parameters. For information about editing other synchronous line parameters, refer to *Configuring WAN Line Services*.

Note: The BOFL (Breath of Life) parameter enables proprietary BofL messages to travel over a point-to-point connection between the local router and a remote peer. If this parameter is enabled, set it to Disable so that these messages do not interfere with SDLC frames.

Configurable Window Size

In SDLC, a window controls how many frames a link station sends before receiving an acknowledgment. Window size depends on which modulo your network's implementation of SDLC uses. Modulo 8 operation allows a maximum window size of 7; modulo 128, a maximum of 127.

For example, with a window size of 7, a link station can transmit frames 0 through 6 before requiring acknowledgment from the receiving station. The sending station will not send more frames until it receives an acknowledgment.

You edit this window size with the MAXOUT parameter, described in Chapter 4.

Chapter 3
Starting SDLC Services

This chapter describes how to create a basic SDLC configuration.

Before starting or configuring SDLC, refer to the following user guides for instructions on how to start and use the Nortel Networks configuration tool of your choice.

Configuration Tool	User Guide
Bay Command Console (BCC)	*Using the Bay Command Console (BCC)*
Site Manager	*Configuring and Managing Routers with Site Manager*

BCC Configuration Hierarchy

Figure 3-1 shows the hierarchy of SDLC objects you can configure using the BCC.

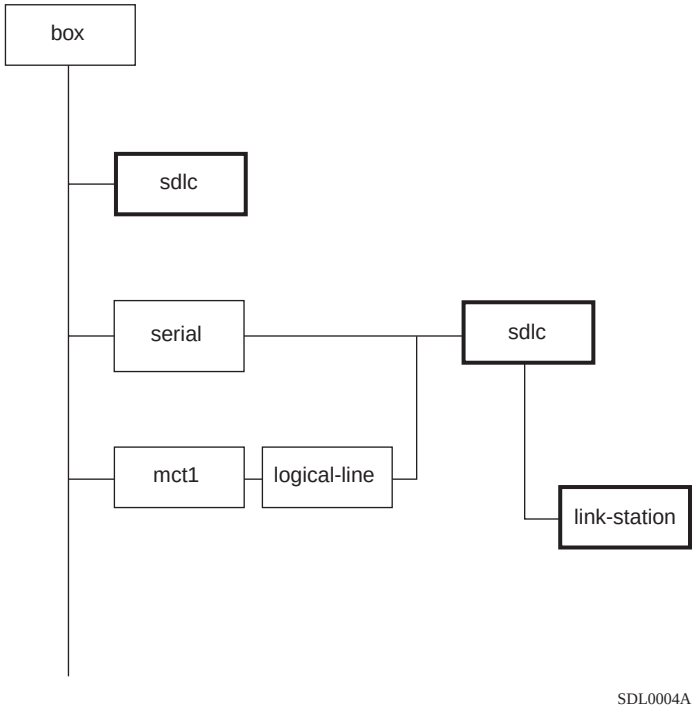

Figure 3-1. SDLC BCC Hierarchy

Starting SDLC on an Interface Using the BCC

To start SDLC on an interface using the BCC:

1. **Configure a serial interface on an available slot or connector.**
2. **Configure SDLC on the serial interface.**
3. **Set the SDLC line parameters, if necessary.**
4. **Configure DLSw.**

Step 1: Configuring a Serial Interface

To configure a serial interface on a slot and connector, navigate to the top-level box prompt and enter:

serial slot <*slot_number*> **connector** <*connector_number*>

slot_number is the number of the slot on which the serial interface is located.

connector_number is the number of a connector on the serial interface.

For example, the following command configures a serial interface on slot 3, connector 1:

```
box# serial slot 3 connector 1
serial/3/1#
```

Step 2: Configuring SDLC on an Interface

To configure SDLC on an interface, navigate to the prompt for the interface and enter:

sdlc

For example, the following command configures SDLC on the serial interface on slot 3, connector 1:

```
serial/3/1# sdlc
sdlc/serial/3/1#
```

SDLC is now started on the interface. After you configure SDLC on at least one interface, the system also starts SDLC globally on the router.

Step 3: Configuring SDLC Line Parameters

When you start SDLC on an interface, the system configures the line parameters as shown in Table 3-1.

If you want to change the settings of these parameters, refer to *Configuring WAN Line Services*.

Table 3-1. Line Parameter Settings for SDLC

Parameter	Setting
Clock source	Internal on COM1, COM2, and so on; External on MCT1
Internal clock speed	19200 Kb/s
Enabling or disabling of RTS signals	Disabled
Line code setting	NRZ
Interframe time fill	Default
Cable type	RS232

Step 4: Configuring DLSw

You can configure either APPN or DLSw to run with SDLC. To configure APPN, use Site Manager. Refer to *Configuring APPN Services* for instructions.

To configure DLSw, you can use either Site Manager or the BCC. Refer to *Configuring DLSw Services* for complete instructions. The following example shows the sequence of commands you can use to start DLSw, add a DLSw local device with address 23, and then add an SDLC link station with address 23:

```
sdlc/serial/3/1# dlsw
dlsw/serial/3/1# local-device link-station-address 0x23 source-mac
0x111111111111 destination-mac 0x222222222222 pu-name test
local-device/23# back
dlsw/serial/3/1# back
sdlc/serial/3/1# link-station 0x23
link-station/23#
```

Starting SDLC on an Interface Using Site Manager

To start SDLC on an interface using Site Manager, you must first complete the following steps, described in *Configuring and Managing Routers with Site Manager*:

1. **Open a configuration file.**
2. **Specify router hardware if this is a local-mode configuration file.**
3. **Select the connector on which you are starting SDLC, for example, COM1 or MCT1.**

After you complete these steps, the WAN Protocols window opens. To start SDLC on the interface, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the WAN Protocols window, select SDLC.	The SDLC Line Parameters window opens.
2. Set the following parameters, if necessary: • **Clock Source** • **Internal Clock Speed** • **Sync Line Coding** • **Cable Type** • **RTS Enable** • **Inter Frame Time Fill** Click on **Help** or see the parameter descriptions starting on page A-2.	
3. Click on **OK**.	The Select Protocols window opens.
4. Select either **DLSw** or **APPN** to run on the SDLC circuit.	Site Manager displays the appropriate windows from which you enable DLSw or APPN. For information about enabling these protocols, refer to *Configuring DLSw Services* and *Configuring APPN Services*.

Chapter 4
Customizing SDLC

When you start SDLC on an interface, default values are in effect for most parameters. Depending on the requirements of your network, you may want to change some of these values. This chapter includes the following information:

To edit SDLC parameters, you must configure at least one SDLC interface. If you have not yet configured an SDLC interface, refer to Chapter 3.

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

For descriptions of all SDLC Site Manager parameters, see Appendix A, “Site Manager Parameters.”

Configuring SDLC Using the BCC or Site Manager

Table 4-1 lists the SDLC configuration tasks described in this chapter and indicates whether you can use the BCC or Site Manager to perform each task.

Note: To configure SDLC with DLSw, you can use either Site Manager or the BCC. To configure SDLC with APPN, use Site Manager only. The BCC has not been fully tested in an SDLC/APPN configuration.

Table 4-1. SDLC Configuration Tasks

Task	BCC	Site Manager	Page
Disabling and Enabling SDLC Globally on the Router	✔	✔	4-6
Disabling and Reenabling an SDLC Interface	✔	✔	4-7
Assigning the Port Name	✔	✔	4-8
Assigning the Port Number for the SDLC Interface	✔		4-9
Specifying the Link Station Role	✔		4-10
Specifying the Link Station Role	✔	✔	4-10
Specifying the Link Station Address	✔	✔	4-11
Specifying Support for Negotiable Connections	✔	✔	4-12
Specifying the Maximum Retransmissions for Frames	✔	✔	4-13
Specifying the Time Allowed for Receipt of a Valid Frame	✔	✔	4-14
Specifying the Time a Line Can Be Idle	✔	✔	4-16
Specifying the Time Allowed to Transmit a Frame	✔	✔	4-18
Specifying the Time Before Port Activation Fails	✔	✔	4-19
Specifying Full-Duplex Data Transmission for Link Stations	✔	✔	4-21
Disabling and Reenabling REJ Commands	✔	✔	4-22
Specifying the Maximum XID Size	✔	✔	4-23
Specifying the Maximum Frame Size	✔	✔	4-25
Specifying the Number of Link Stations Reserved for Activation	✔	✔	4-26
Specifying the Memory Allocated for Receiving Frames	✔	✔	4-27

(continued)

Table 4-1. SDLC Configuration Tasks *(continued)*

Task	BCC	Site Manager	Page
Regulating the Flow of Data to SDLC	✔	✔	4-29
Disabling or Reenabling the Collection of Port Statistics	✔	✔	4-30
Specifying the Control Point Type	✔		4-31
Specifying Whether the System Logs Debug Messages	✔		4-32
Deleting an SDLC Interface	✔	✔	4-33
Adding an SDLC Link Station	✔	✔	4-34
Disabling and Reenabling a Link Station	✔	✔	4-35
Specifying the Physical Unit (PU) Name of the Adjacent Link Station	✔	✔	4-37
Specifying the Group Address for the Link Station	✔	✔	4-38
Specifying the Maximum Frame Size	✔	✔	4-39
Specifying the Maximum Number of Consecutive Frames	✔	✔	4-40
Specifying the Maximum Number of Unacknowledged Frames	✔	✔	4-41
Setting the Response Timer	✔	✔	4-42
Specifying When an Adjacent Station is Inoperative	✔	✔	4-43
Specifying How Long a Link Station Waits for a Response	✔	✔	4-45
Specifying When SDLC Switches an Unresponsive Link Station to the Slow Poll Timer List	✔	✔	4-46
Specifying How Long a Station Stays on the Slow Poll Timer List Before SDLC Declares an Outage	✔	✔	4-48
Specifying the Preactivation Polling Frame	✔	✔	4-50
Specifying When SDLC Retransmits an Unacknowledged Contact Frame	✔	✔	4-52
Specifying the Number of Times SDLC Retransmits an Unacknowledged Contact Frame	✔	✔	4-53
Specifying When SDLC Retransmits an Unacknowledged Disconnect (DISC) Command	✔	✔	4-55
Specifying Whether the Link Station Sends the Poll Bit on an Information Frame	✔	✔	4-57

(continued)

Table 4-1. SDLC Configuration Tasks *(continued)*

Task	BCC	Site Manager	Page
Specifying the Role of the Link Station	✔		4-58
Specifying the Size of the Rotating Acknowledgment Window	✔		4-59
Specifying the Adjacent Node Type	✔		4-59
Specifying the Adjacent Node Type	✔		4-59
Deleting SDLC from the Router	✔	✔	4-60

BCC Configuration Hierarchy

Figure 4-1 shows the hierarchy of objects you can configure using the BCC.

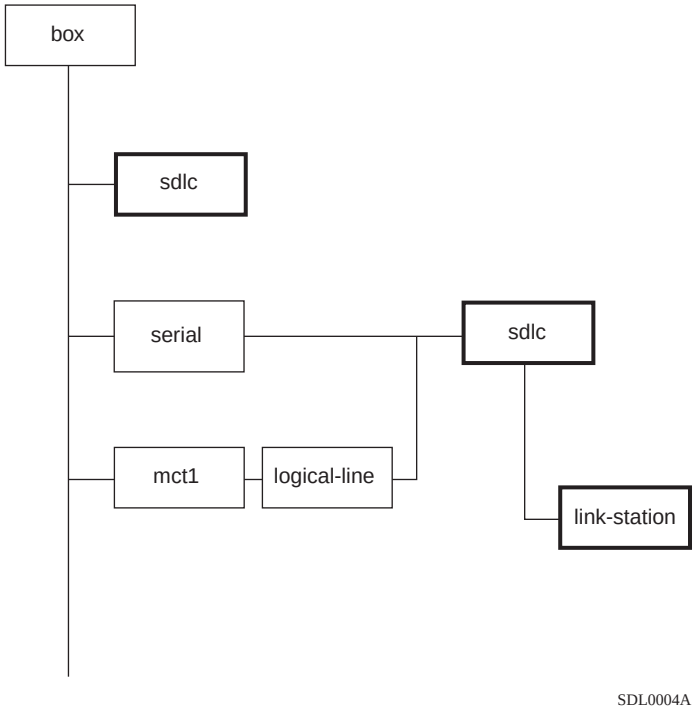

Figure 4-1. SDLC BCC Hierarchy

Disabling and Enabling SDLC Globally on the Router

SDLC has only one configurable parameter at the global level. Using this parameter, you can disable and reenable every SDLC interface on the router.

Using the BCC

To disable or reenable SDLC globally on the router, navigate to the box-level sdlc prompt and enter:

state <state>

state is one of the following:

enabled (default)
disabled

If you set this parameter to disabled, the system switches every SDLC interface enabled on the router to the disabled (inactive) state. If you set the parameter back to enabled, the system reinitializes every SDLC interface on the router, based on:

- The current setting of the associated interface state parameter
- The current state of the associated circuit

Using Site Manager

To disable or reenable SDLC globally using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Global**.	The Edit SDLC Global Parameters window opens.
4. Set the **Enable** parameter. Click on **Help** or see the parameter description on page A-7.	

Configuring SDLC Interface Parameters

This section describes how to configure parameters that affect the performance of a specific SDLC interface.

Disabling and Reenabling an SDLC Interface

You can switch an SDLC interface to the disabled (inactive) state or reenable an SDLC interface that you previously disabled.

Using the BCC

To disable or reenable an SDLC interface, navigate to the interface sdlc prompt and enter:

state *<state>*

state is one of the following:

enabled (default)
disabled

For example, the following command disables the SDLC serial interface on slot 3, connector 1:

```
sdlc/serial/3/1# disabled
sdlc/serial/3/1#
```

Using Site Manager

To disable or reenable an SDLC interface, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Enable** parameter. Click on Help or see the parameter description on page A-10.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Configuring the SDLC Port

You can assign the SDLC interface a port name and port number, as described in the following sections.

Assigning the Port Name

You can specify the name of the port you want to assign to an SDLC interface.

Using the BCC

To assign the port name, navigate to the interface sdlc prompt and enter:

port-name *<name>*

name is any combination of alphanumeric characters. By default, the port name is the APPN port name or DLSw circuit name. Nortel Networks recommends that you use the same name assigned to the circuit on which you added SDLC, for example, S31.

For example, the following command sets the port name for the serial interface on slot 3, connector 1, to S31:

```
sdlc/serial/3/1# port-name S31
```

Using Site Manager

To assign the port name using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Port Name** parameter. Click on Help or see the parameter description on page A-10.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Assigning the Port Number for the SDLC Interface

You can use the BCC to assign the port number for the SDLC interface. By default, this value is set to 1.

To set the port number, navigate to the interface sdlc prompt and enter:

port-number *<port_number>*

port_number is an integer from 1 to 2,048.

For example, the following command sets the port number to 100:

```
sdlc/serial/3/1# port-number 100
```

Specifying the Link Station Role

As a link station in a network, an SDLC interface can serve in a primary, secondary, or negotiable role. If you are running DLSw for PU 1.0, 2.0, or 2.1, you can configure only primary and secondary SDLC link stations. If you are running APPN or DLSw PU 4.0, you can configure all three roles.

Note: Negotiable link stations are supported only on point-to-point links.

Set the link station role to primary or secondary if you want to assign a specific role to the link station. Set the role to negotiate if you want the link station to exchange XIDs with another negotiable link station to determine which will be primary and which secondary.

By default, the link station role is set to primary for DLSw networks and negotiable for APPN networks.

Using the BCC

To configure the link station role, navigate to the interface sdlc prompt and enter:

linkstation-role *<setting>*

setting is one of the following:

primary
secondary
negotiable

For example, the following command sets the link station role to negotiate:

```
sdlc/serial/3/1# linkstation-role negotiable
```

Using Site Manager

To set the link station role using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Link Station Role** parameter. Click on Help or see the parameter description on page A-11.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Link Station Address

If the link station role is secondary or negotiable, you can specify the poll address that the system should use.

Using the BCC

To set the link station address, navigate to the interface sdlc prompt and enter:

linkstation-address *<address>*

address is any value from 1 to 254.

For example, the following command sets the link station address to 10:

```
sdlc/serial/3/1# linkstation-address 10
```

Using Site Manager

To set the link station address using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Link Station Address** parameter. Click on Help or see the parameter description on page A-11.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying Support for Negotiable Connections

You can specify whether or not the SDLC link station supports negotiable connections. By default, negotiable connection support is enabled for APPN networks and disabled for DLSw networks.

Using the BCC

To configure negotiable connections, navigate to the interface sdlc prompt and enter:

negotiable-linkstation-support *<state>*

state is one of the following:

no
yes

For example, the following command disables negotiable connections:

```
sdlc/serial/3/1# negotiable-linkstation-support no
```

Using Site Manager

To configure negotiable connections using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Support Negotiable Connection** parameter. Click on Help or see the parameter description on page A-11.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum Retransmissions for Frames

You can specify the maximum number of times that SDLC should retransmit a frame or group of frames. By default, this value is set to 5.

Using the BCC

To set the maximum retransmission count, navigate to the interface sdlc prompt and enter:

max-retry-count *<count>*

count is any integer from 1 to 7.

For example, the following command sets the maximum number of retransmissions to 7:

```
sdlc/serial/3/1# max-retry-count 7
```

Using Site Manager

To set the maximum number of retransmissions using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Max Frame Retransmit Count** parameter. Click on Help or see the parameter description on page A-12.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Time Allowed for Receipt of a Valid Frame

You can specify the time allowed for receipt of a valid frame from the primary link station. This setting is intended for secondary SDLC routers.

SDLC uses this timer to detect an outage when a secondary station produces continuous frames without setting the F-bit (final bit). In large configurations with many SDLC connections, you should increase this value to allow more time for the primary link station to respond.

Two parameters determine the time allowed for receipt of a valid frame. The nonproductive timer specifies how long the secondary link station waits to receive a valid frame before a timeout occurs. The nonproductive retry limit specifies how many timeouts are allowed before the secondary link station generates an outage message.

By default, the nonproductive timer is 2,000 milliseconds. The nonproductive retry limit is 15. At these default values, if the secondary link station does not receive a valid frame from the primary link station within 2,000 milliseconds, for a total of 15 times, the secondary link station sends an outage message.

Using the BCC

To set the nonproductive timer, navigate to the interface sdlc prompt and enter:

non-productive-receive-timer *<milliseconds>*

milliseconds is the number of milliseconds, from 1 to 65,535.

To set the nonproductive retry limit, navigate to the interface sdlc prompt and enter:

non-productive-receive-retry *<count>*

count is the number of retries, from 1 to 65,535, where 1 causes SDLC to generate an outage after the first nonproductive timer expires and 65,535 allows an infinite number of retries.

For example, the following commands set the nonproductive timer to 3,000 milliseconds and the nonproductive retry limit to 30:

```
sdlc/serial/3/1# non-productive-receive-timer 3000
sdlc/serial/3/1# non-productive-receive-retry 30
```

Using Site Manager

To set the nonproductive timer and nonproductive retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Non-productive Timer** and **Non-productive Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-12.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Time a Line Can Be Idle

You can specify the length of time that a line can be idle before SDLC declares that the line is inactive. You specify this time by setting two parameters. The idle line timer specifies the time that the line can be idle before a timeout occurs. The idle line retry limit specifies how many timeouts are allowed before SDLC declares that the line is inactive. These parameters are intended for primary SDLC routers.

By default, the idle line timer is 6,000 milliseconds and the idle line retry limit is 20. At these default values, a line must be idle for 6,000 milliseconds, for a total of 20 times, before SDLC sends an outage message.

Using the BCC

To set the idle line timer, navigate to the interface sdlc prompt and enter:

idle-line-timer *<milliseconds>*

milliseconds is the number of milliseconds, from 1 to 65,535.

To set the idle line retry limit, navigate to the interface sdlc prompt and enter:

idle-line-retry *<count>*

count is an integer from 1 to 65535, where 1 causes SDLC to generate an outage after the first idle line timer expires and 65,535 allows an infinite number of timeouts.

For example, the following commands set the idle line timer to 2,000 and the idle line retry to 50:

```
sdlc/serial/3/1# idle-line-timer 2000
sdlc/serial/3/1# idle-line-retry 50
```

Using Site Manager

To set the idle line timer and idle line retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Idle Line Timer** and **Idle Line Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-13.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Time Allowed to Transmit a Frame

You can specify the maximum time allowed to transmit a complete frame. To do so, you set two parameters. The port write timer specifies the time allowed to transmit the frame before a timeout occurs. The port write retry limit specifies how many timeouts can occur before SDLC sends an outage message.

By default, the port write timer is 3,000 milliseconds and the port write retry limit is 10. At these default values, if SDLC cannot transmit a complete frame within 3,000 milliseconds, for a total of 10 times, SDLC sends an outage message.

Using the BCC

To set the port write timer, navigate to the interface sdlc prompt and enter:

port-write-timer *<milliseconds>*

milliseconds is the number of milliseconds, from 1 to 65535.

To set the port write retry limit, navigate to the interface sdlc prompt and enter:

port-write-retry *<count>*

count is an integer from 1 to 65,535, where 1 causes SDLC to generate an outage after the first port write timer expires and 65,535 allows an infinite number of timeouts.

For example, the following commands set the port write timer to 3,000 milliseconds and the port write retry limit to 50:

```
sdlc/serial/3/1# port-write-timer 3000
sdlc/serial/3/1# port-write-retry 50
```

Using Site Manager

To set the port write timer and the port write retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Port Write Timer** and P**ort Write Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-14.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Time Before Port Activation Fails

You can control how frequently and how many times SDLC attempts to activate a port from which it receives no response. Using the link connection timer, you specify the time interval after which SDLC tries to resend a contact frame (for example, an SNRM--Set Normal Response Mode--frame) from which it receives no response. Using the link connection retry limit, you specify how many times SDLC resends the contact frame.

By default, the link connection timer is 3,000 milliseconds and the link connection retry limit is 10. At these default values, SDLC tries to activate a port a total of 10 times, with 3,000 milliseconds between attempts. If SDLC does not get a response after it makes these 10 attempts, it fails to activate the port.

Using the BCC

To set the link connection timer, navigate to the interface sdlc prompt and enter:

link-connection-timer *<milliseconds>*

milliseconds is the time, in milliseconds, from 1 to 65,535.

To set the link connection retry limit, navigate to the interface sdlc prompt and enter:

link-connection-retry *<count>*

count is the number of retries, from 1 to 65,535.

For example, the following commands set the link connection timer to 6,000 milliseconds and the number of retries to 5:

```
sdlc/serial/3/1# link-connection-timer 6000
sdlc/serial/3/1# link-connection-retry 5
```

Using Site Manager

To set the link connection timer and link connection retry values using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Link Connection Timer** and **Link Connection Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-15.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying Full-Duplex Data Transmission for Link Stations

You can specify whether the SDLC primary and secondary link stations support full-duplex data transmission.

By default, the primary and secondary link stations do not support full-duplex transmission.

Note: Do not confuse this full-duplex setting with the AS/400's full duplex setting, which specifies constant carrier. In most cases, you should leave the full-duplex setting at no when you are interoperating with an AS/400.

Using the BCC

To configure full-duplex transmission on the primary link station, navigate to the interface sdlc prompt and enter:

primary-full-duplex *<state>*

state is one of the following:

yes
no

To configure full-duplex transmission on the secondary link station, navigate to the interface sdlc prompt and enter:

secondary-full-duplex *<state>*

state is one of the following:

yes
no

For example, the following commands specify that both the primary and secondary link stations should support full-duplex data transmission:

```
sdlc/serial/3/1# primary-full-duplex yes
sdlc/serial/3/1# secondary-full-duplex yes
```

Using Site Manager

To specify the primary and secondary full-duplex settings using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Primary Full Duplex** and **Secondary Full Duplex** parameters. Click on Help or see the parameter descriptions starting on page A-16.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Disabling and Reenabling REJ Commands

You can specify whether SDLC can send a reject (REJ) command upon receiving an out-of-sequence information frame. If SDLC does not send the REJ command, SDLC requests transmission of frames through receiver ready (RR), receiver not ready (RNR), or information frames. The REJ command is useful only with full-duplex transmission.

By default, SDLC sends the REJ command.

Using the BCC

To specify the setting for sending the REJ command, navigate to the interface sdlc prompt and enter:

reject-frame-allowed *<state>*

state is one of the following:

yes
no

For example, the following command specifies that SDLC not send the REJ command:

```
sdlc/serial/3/1# reject-frame-allowed no
```

Using Site Manager

To specify the setting for sending the REJ command using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Enable Reject Frame** parameter. Click on Help or see the parameter description on page A-17.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum XID Size

You can specify the maximum XID (exchange identification) size that SDLC will send or receive on this link.

By default, the maximum XID size is 256.

Using the BCC

To set the maximum XID size, navigate to the interface sdlc prompt and enter:

max-xid-size *<size>*

size is an integer from 2 to 256.

For example, the following command sets the maximum XID size to 100:

`sdlc/serial/3/1#` **max-xid-size 100**

Using Site Manager

To set the maximum XID size using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Max XID Size** parameter. Click on Help or see the parameter description on page A-17.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum Frame Size

You can specify the maximum frame size that SDLC supports. This value includes the transmission header (TH) and request header (RH).

By default, the maximum frame size is 1033. Other frame sizes supported are 265, 521, 2057, and 4105. The Nortel Networks AN® and ARN™ routers with Ethernet connections support a maximum size of 1033 unless you increase the kernel buffer size.

Using the BCC

To set the maximum frame size, navigate to the interface sdlc prompt and enter:

max-pdu-size *<size>*

size is one of the following:

265
521
1033
2057
4105

For example, the following command sets the maximum frame size to 265:

`sdlc/serial/3/1#` **max-pdu-size 265**

Using Site Manager

To set the maximum frame size using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.

(continued)

4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.

Site Manager Procedure *(continued)*	
You do this	**System responds**
5. Set the **Max Frame Size** parameter. Click on Help or see the parameter description on page A-18.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Number of Link Stations Reserved for Activation

You can specify the total number of link stations reserved for activation, the number of inbound link stations reserved for activation, and the number of outbound link stations reserved for activation. By default, SDLC reserves 16 link stations for activation, with eight reserved for inbound activation and eight reserved for outbound activation.

Using the BCC

To set the total link-station limit, navigate to the interface sdlc prompt and enter:

total-linkstation-activation-limit *<limit>*

limit is an integer from 1 to 254.

To set the inbound link-station activation limit, navigate to the interface sdlc prompt and enter:

inbound-linkstation-activation-limit *<limit>*

limit is an integer from 1 to 254.

To set the outbound link-station activation limit, navigate to the interface sdlc prompt and enter:

outbound-linkstation-activation-limit *<limit>*

limit is an integer from 1 to 254.

For example, the following commands set the link-station activation limit to 100, the inbound link-station activation limit to 50, and the outbound link-station activation limit to 50:

```
sdlc/serial/3/1# total-linkstation-activation-limit 100
sdlc/serial/3/1# inbound-linkstation-activation-limit 50
sdlc/serial/3/1# outbound-linkstation-activation limit 50
```

Using Site Manager

To set the total link-station, inbound link-station, and outbound link-station activation limits using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Total Link Station Limit, Inbound Link Station Limit,** and O**utbound Link Station Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-18.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Memory Allocated for Receiving Frames

You can specify the size of the receive buffer pool; that is, the number of buffers you want to allocate for receiving frames from the line.

By default, the receive buffer pool size is 7. Nortel Networks recommends that you accept this default, since increasing the receive buffer pool size uses up more memory.

Using the BCC

To set the size of the receive buffer pool, navigate to the interface sdlc prompt and enter:

receive-buffer-pool-size *<number_of_buffers>*

number_of_buffers is an integer from 1 to 255.

For example, the following command sets the receive buffer pool size to 25:

```
sdlc/serial/3/1# receive-buffer-pool-size 25
```

Using Site Manager

To set the receive buffer pool size using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Receive Buffer Pool Size** parameter. Click on Help or see the parameter description on page A-19.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Regulating the Flow of Data to SDLC

You can regulate the flow of data to an SDLC interface by setting the initial flow control credit. This value specifies how many frames the SDLC interface may be waiting to receive.

By default, this value is set to 7. Nortel Networks recommends that you leave the setting at its default.

Using the BCC

To set the initial flow control credit, navigate to the interface sdlc prompt and enter:

initial-flow-control-credit *<number_of_frames>*

number_of_frames is any value from 1 to 50.

For example, the following command sets the initial flow control credit to 50:

`sdlc/serial/3/1#` **initial-flow-control-credit 50**

Using Site Manager

To set the initial flow control credit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Initial Flow Control Credit** parameter. Click on Help or see the parameter description on page A-19.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Disabling or Reenabling the Collection of Port Statistics

You can specify whether you want statistics collection turned on or off for a port.

By default, statistics collection is enabled.

Using the BCC

To configure statistics collection, navigate to the interface sdlc prompt and enter:

enable-stats-collection *<state>*

state is one of the following:

true
false

For example, the following command specifies that statistics not be collected:

```
sdlc/serial/3/1# enable-stats-collection false
```

Using Site Manager

To collect statistics on a port using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
4. Select the interface you want to customize.	The parameter values for that interface appear in the parameter value fields.
5. Set the **Enable Stats Collection** parameter. Click on Help or see the parameter description on page A-20.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Control Point Type

You can use the BCC to specify the APPN control point type. For information about APPN control points, refer to *Configuring APPN Services.* By default, the control point type is set to network, indicating that the control point is a network node. Table 4-2 lists the possible adjacent node types.

Note: APPN control point type is not applicable in DLSw configurations. Using the BCC to configure SDLC with APPN is not fully tested.

Table 4-2. Control Point Types

Type Name	Adjacent Node Type
Network	Network node
Learn	APPN automatically learns the type of the adjacent node.
LEN	Low-entry networking end node
End	End node
VRN	Virtual routing node

To set the APPN control point type, navigate to the sdlc interface prompt and enter:

appn-control-point-type *<cp_type>*

cp_type is one of the following:

learn
len
network
end
vrn

For example, the following command sets the APPN control point type to learn:

```
sdlc/serial/3/1# appn-control-point-type learn
```

Specifying Whether the System Logs Debug Messages

You can specify that the router should log debug messages for an SDLC interface. By default, this function is disabled. You can enable and disable this function only from the BCC.

To specify whether the system logs debug messages for an SDLC interface, navigate to the sdlc interface prompt and enter:

debug-flag *<state>*

state is one of the following:

enabled
disabled

For example, the following command specifies that the router should log debug messages for this SDLC interface:

```
sdlc/serial/3/1# debug-flag enabled
```

Deleting an SDLC Interface

You can delete SDLC from an interface.

Using the BCC

To delete SDLC from an interface, navigate to the SDLC interface prompt and enter:

delete

For example, the following command deletes SDLC from the serial interface on slot 3, connector 1:

```
sdlc/serial/3/1# delete
```

Using Site Manager

To delete an SDLC interface using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Select the interface you want to delete.	
5. Click on **Delete**.	The SDLC interface is deleted.

Adding an SDLC Link Station

You can add SDLC link stations to an interface. Each link station has an associated address that must match the address of the local device configured in DLSw. A single interface can have more than one link station.

Using the BCC

To add a link station, complete the following steps:

1. **Add a DLSw local device.**

   For information, see *Configuring DLSw Services*.

2. **Navigate to the interface sdlc prompt and enter:**

   link-station *<address>*

   address is the address for this link station. This address must be same as the address of the DLSw local device that you added.

Example

The following commands add a DLSw local device with address 23 and then add an SDLC link station with the address 23:

```
dlsw/serial/3/1# local-device link-station-address 0x23 source-mac
0x111111111111 destination-mac 0x222222222222 pu-name test
local-device/23# back
dlsw/serial/3/1# back
sdlc/serial/3/1# link-station 0x23
link-station/23#
```

Using Site Manager

For APPN configurations, to add a link station using Site Manager, complete the following tasks.

Note: If you are using SDLC with DLSw, you must configure a local device for each SDLC link station you add. For information, see *Configuring DLSw Services*.

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Interfaces**.	The SDLC Interface Configuration window opens.
4. Click on **Link Station**.	The SDLC Link Station Configuration window opens.
5. Click on **Add**.	A window prompts you for the address of the link station.
6. Enter the link station address. Click on Help or see the parameter description on page A-11.	
7. Click on **OK** to save your changes.	You return to the SDLC Link Station Configuration window.

Configuring SDLC Link Station Parameters

This section describes how to change values that affect the operation of SDLC link stations.

Disabling and Reenabling a Link Station

You can disable and reenable an SDLC link station. By default, a link station is enabled.

Using the BCC

To disable or reenable a link station, navigate to the link station prompt and enter:

state *<state>*

state is one of the following:

enabled
disabled

For example, the following command disables the link station with address 0x23:

```
link-station/23# state disabled
```

Note: For DLSw configurations, if you set the **state** to **disable**, you will not disconnect an active link station, but you will prevent new connections.

Using Site Manager

To disable or reenable a link station using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to enable or disable.	
5. Set the **Enable** parameter. Click on Help or see the parameter description on page A-22.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Physical Unit (PU) Name of the Adjacent Link Station

You can specify the physical unit (PU) name of the adjacent link station. This name uniquely identifies the adjacent link station for statistics and alert messages.

By default, this name is set to the APPN link station name or the NAME portion of the NETID.NAME DLSw adjacent link station name. For DLSw, there is no default name; you must enter the name.

Using the BCC

To set the PU name of the adjacent link station, navigate to the link station prompt and enter:

pu-name *<name>*

name is any valid 8-byte ASCII name.

For example, the following command sets the PU name of the adjacent link station to station3:

```
link-station/23# pu-name station3
```

Using Site Manager

To set the PU name of the adjacent link station using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **PU Name** parameter. Click on Help or see the parameter description on page A-23.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Group Address for the Link Station

For secondary link stations only, you can specify the address of the group to which this link station belongs. By default, this value is set to 0 for APPN, with no default for DLSw. If the link station is not part of a group (as is the case in a point-to-point topology), accept the default. If the link station is part of a group, enter its group poll address.

Using the BCC

To set the group address, navigate to the link station prompt and enter:

group-address *<address>*

address is an integer from 1 to 245.

For example, the following command sets the group address at 5:

```
link-station/23# group-address 5
```

Using Site Manager

To set the group address using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
4. Select the address of the link station you want to configure.	
5. Set the **Group Address** parameter. Click on Help or see the parameter description on page A-23.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum Frame Size

You can specify the maximum frame size that SDLC supports for this link station. This value includes the transmission header (TH) and request header (RH). Specify a maximum frame size equal to or larger than the largest frame size that the station will receive. By default, this value is set to 1,033. Nortel Networks AN and ARN routers with Ethernet interfaces support a maximum frame size of 1,033 unless you increase the kernel buffer size.

Using the BCC

To specify the maximum frame size, navigate to the link station prompt and enter:

maxdata <*size*>

size is one of the following:

265
521
1033
2057
4105

For example, the following command sets the maximum frame size to 4105:

```
link-station/23# maxdata 4105
```

Using Site Manager

To set the maximum frame size using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **MAXDATA** parameter. Click on Help or see the parameter description on page A-23.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum Number of Consecutive Frames

You can specify the maximum number of consecutive frames that an SDLC link station can send without acknowledgment. By default, this value is 7.

Using the BCC

To specify the maximum number of consecutive frames, navigate to the link station prompt and enter:

maxout <*number_of_frames*>

number_of_frames is any value from 1 to 127.

For example, the following command sets the maximum number of consecutive frames to 50:

```
link-station/23# maxout 50
```

Using Site Manager

To set the maximum number of consecutive frames using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **MAXOUT** parameter. Click on Help or see the parameter description on page A-24.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Maximum Number of Unacknowledged Frames

You can specify the maximum number of unacknowledged frames that an SDLC link station can receive. By default, this value is 7.

Using the BCC

To set the maximum number of unacknowledged frames, navigate to the link station prompt and enter:

maxin *<number_of_frames>*

number_of_frames is any integer from 1 to 127.

For example, the following command sets the maximum number of unacknowledged frames to 50:

```
link-station/23# maxin 50
```

Using Site Manager

To specify the maximum number of unacknowledged frames using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **MAXIN** parameter. Click on Help or see the parameter description on page A-24.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Setting the Response Timer

You can specify the length of time, in milliseconds, that SDLC waits before turning the poll bit around (the response timer) when it has no work to do for a link station. By default, this timer is 400 milliseconds.

Using the BCC

To specify the response timer, navigate to the link station prompt and enter:

response-timer *<milliseconds>*

milliseconds is any value from 100 to 6,400 milliseconds.

For example, the following command sets the response timer to 300 milliseconds:

```
link-station/23# response-timer 300
```

Using Site Manager

To set the response timer using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Response Timer** parameter. Click on Help or see the parameter description on page A-24.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying When an Adjacent Station is Inoperative

You can specify how long an SDLC link station allows its adjacent link station to remain in a busy (RNR) state before declaring it inoperative. To specify this value, you set two parameters: the RNR timer, which controls the length of time that the link station allows the adjacent station to remain in a busy (RNR) state before the timer expires, and the RNR retry limit, which specifies how many RNR timers must expire before the SDLC link station sends an outage message.

By default, the RNR timer is 3 minutes and the RNR retry limit is four, so that the adjacent station must be in the busy state for 3 minutes a total of four times before the link station declares it to be inoperative.

Using the BCC

To specify the RNR timer, navigate to the link station prompt and enter:

rnr-timer *<setting>*

setting is any value from 1 to 90 minutes.

To specify the RNR retry limit, navigate to the link station prompt and enter:

remote-busy-retry-limit *<setting>*

setting is any value from 1 to 64,000 minutes, where 1 causes SDLC to generate an outage after the first RNR timer expires, and 64,000 specifies an infinite number of retries.

For example, the following commands set the RNR timer to 10 and the RNR retry limit to 40:

```
link-station/23# rnr-timer 10
link-station/23# remote-busy-retry-limit 40
```

Using Site Manager

To set the RNR timer and RNR retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **RNR Timer** and **RNR Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-25.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying How Long a Link Station Waits for a Response

You can specify the maximum length of time that a primary link station waits for a response frame (after sending a frame with a poll bit) before trying to poll another station. This REPLYTO timer starts when SDLC receives a frame without the F-bit and stops only when SDLC receives a frame with an F-bit.

You should adjust the REPLYTO timer value whenever you adjust baud rate with the internal clock speed or the external modem baud rate.

Set the REPLYTO timer to be no less than the result of the following formula:

(2 + MAXOUT) x (MAXDATA x 8) x (10^3 x line speed in bits/s)

You also must set the REPLYTO retry limit. This value controls the number of times the REPLYTO timer must expire before the primary link station sends an outage message.

By default, the REPLYTO timer is 30 tenths of a second and the REPLYTO retry limit is 10. Thus, the primary station waits for a response frame for 30 tenths of a second for a total of 10 times before trying to poll another station.

Using the BCC

To set the REPLYTO timer, navigate to the link station prompt and enter:

replyto-timer <*tenths_of_a_second*>

tenths_of_a_second is an integer from 1 to 600 tenths of a second.

To specify the REPLYTO retry limit, navigate to the link station prompt and enter:

replyto-retry-limit <*count*>

count is any value from 1 to 6,400, where 1 causes the SDLC to generate an outage after the first REPLYTO timer expires, and 64,000 specifies an infinite number of retries.

For example, the following commands set the REPLYTO timer to 100 and the REPLYTO retry limit to 15:

```
link-station/23# replyto-timer 100
link-station/23# replyto-retry-limit 15
```

Using Site Manager

To set the REPLYTO timer and the REPLYTO retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **REPLYTO Timer** and **REPLYTO Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-26.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying When SDLC Switches an Unresponsive Link Station to the Slow Poll Timer List

SDLC polls SDLC link stations to see if the stations are up and responsive. Normal polling of stations, called *fast poll*, is intended for stations that are known to be up and reachable. Once a station fails, SDLC moves it to the *slow poll* list and polls it less frequently, thereby minimizing the impact of failed polls on performance.

You can specify the length of time before SDLC switches an unresponsive secondary link station from the fast poll timer list to the slow poll timer list. This timer has a direct impact on terminal response time.

The fast poll timer specifies the interval, in milliseconds, at which SDLC polls a link station. The default is 400 milliseconds and a practical minimum is 100 milliseconds.

The fast poll count limit specifies the number of consecutive times that the router polls the link station and does not receive a response before SDLC moves the link station to the slow poll list.

While a link station is on the fast poll list, you can expect a terminal response time as follows:

(1/2 x fast poll timer) + data transfer time + host delay

By default, the fast poll timer is 400 milliseconds. The fast poll count limit is 16. At these default values, SDLC polls a link station on the fast poll timer list at 400 millisecond intervals. If the link station does not respond after 16 consecutive polls, SDLC moves the link station to the slow poll timer list.

Using the BCC

To set the fast poll timer, navigate to the link station prompt and enter:

fast-poll-timer *<setting>*

setting is any value from 1 to 64,000.

To specify the fast poll count limit, navigate to the link station prompt and enter:

fast-poll-count-limit *<setting>*

setting is any value from 1 to 65535, where 1 causes SDLC to switch to the slow poll timer after the first fast poll timer expires and 65,535 specifies an infinite number of retries.

For example, the following commands set the fast poll timer to 800 milliseconds and the fast poll count limit to 100:

```
link-station/23# fast-poll-timer 800
link-station/23# fast-poll-count-limit 100
```

Using Site Manager

To set the fast poll timer and fast poll count limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Fast Poll Timer** and **Fast Poll Count Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-27.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying How Long a Station Stays on the Slow Poll Timer List Before SDLC Declares an Outage

You can specify how long a link station stays on the slow poll timer list before SLDC declares an outage.

You specify this value using two parameters. The slow poll timer specifies the interval at which SDLC polls link stations on the slow poll timer list.

The slow poll count limit specifies the number of consecutive times that SDLC polls the link station without receiving a response before SDLC declares an outage.

By default, the slow poll timer is 1,000 milliseconds, indicating that SDLC polls link stations on the slow poll timer list at 1,000 millisecond intervals. The slow poll count limit is 65,535, indicating that SDLC repeats the poll an infinite number of times and never declares an outage.

At any time, if SDLC receives a response from the link station, it puts the link station back on the fast poll timer list.

When a station is on the slow poll timer list, you can expect a terminal response time as follows:

(1/2 x fast poll timer) + data transfer time + host delay

Using BCC

To set the slow poll timer, navigate to the link station prompt and enter:

slow-poll-timer *<setting>*

setting is any value from 1,000 to 64,000 milliseconds.

To specify the slow poll count limit, navigate to the link station prompt and enter:

slow-poll-count-limit *<setting>*

setting is any value from 1 to 65,535, where 1 causes SDLC to generate an outage after the first slow poll timer expires, and 65,535 specifies an infinite number of retries.

For example, the following commands set the slow poll timer to 3,000 milliseconds and the slow poll count limit to 10:

```
link-station/23# slow-poll-timer 3000
link-station/23# slow-poll-count-limit 10
```

Using Site Manager

To set the slow poll timer and the slow poll count limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Slow Poll Timer** and **Slow Poll Count Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-28.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Preactivation Polling Frame

You can specify the frame that SDLC should use for preactivation polling. Preactivation polling sets up the router connection table so that DLSw connects to the host before connecting to the SDLC station, or the reverse. The frames include:

XID -- Exchange identification (default)
DISC -- Disconnect
SNRM -- Set normal response mode
SNRME -- Set normal response mode extended
TEST -- Test

The XID default setting specifies that DLSw should perform preactivation polling, not SDLC. When the line is activated, the router sends the SNRM frame to the SDLC station, which passes control of preactivation to DLSw. Selecting a value other than XID causes the router to send that value to the SDLC station.

Accept the XID default setting to let DLSw control preactivation.

Use DISC, SNRME, and TEST *only* if your network requires one of these options. For example, some SDLC stations must be preactivated with a DISC. The router must receive a response to the DISC before it sends an SNRM.

Using the BCC

To set the frame type for preactivation polling, navigate to the link station prompt and enter:

pre-activation-contact-frame *<frame_type>*

frame_type is one of the following:

xid
disc
snrm
snrme
test

For example, the following command sets the preactivation polling frame type to DISC:

```
link-station/23# pre-activation-contact-frame disc
```

Using Site Manager

To set the preactivation polling frame type using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Pre-Activation Contact Frame** parameter. Click on Help or see the parameter description on page A-29.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying When SDLC Retransmits an Unacknowledged Contact Frame

You can specify the number of times that SDLC retransmits an unacknowledged contact frame before switching the link station from the fast contact timer list to the slow contact timer list.

You specify this value using two parameters. The fast contact timer specifies the time that must pass before SDLC retransmits an unacknowledged contact frame. After SDLC retransmits the frame, it again waits for the period of time specified by the fast contact timer, and retransmits the frame again if it receives no acknowledgment.

SDLC keeps retransmitting the frame until the fast contact retry limit count is reached. The fast contact retry limit specifies the number of times that SDLC should retransmit the unacknowledge frame before switching the frame to the slow contact timer list.

By default, the fast contact timer is 4,000 milliseconds. The fast contact retry limit is 4. At these default values, when a link station does not receive an acknowledgment for a contact frame within 4,000 milliseconds of transmission, the link station retransmits the contact frame. SDLC performs this retransmission a total of four times before moving the frame to the slow contact timer list.

Note: When SDLC tries to contact a device that's down, it must wait for these timers to time out before resuming its regular polling. Therefore, if a device is frequently powered off, you might want to set these timers so that they time out quickly and minimize disruption to other devices on the network.

Using the BCC

To specify the fast contact timer, navigate to the link station prompt and enter:

fast-contact-timer *<milliseconds>*

milliseconds is any value from 1 to 64,000 milliseconds.

To specify the fast contact retry limit, navigate to the link station prompt and enter:

fast-contact-retry *<count>*

count is any value from 1 to 64,000, where 1 causes SDLC to switch to the slow contact timer after the first time the fast contact timer expires, and 64,000 allows for an infinite number of retransmissions.

For example, the following commands set the fast contact timer to 6,000 milliseconds and the fast contact retry limit to 100:

```
link-station/23# fast-contact-timer 6000
link-station/23# fast-contact-retry 100
```

Using Site Manager

To set the fast contact timer and the fast contact retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Fast Contact Timer** and **Fast Contact Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-30.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Number of Times SDLC Retransmits an Unacknowledged Contact Frame

You can specify the number of times that SDLC retransmits an unacknowledged contact frame on the slow contact timer list before SDLC sends an outage message to a device.

You specify this value using two parameters. The slow contact timer specifies the time that must pass before SDLC retransmits a contact frame for which it has received no acknowledgment. SDLC keeps retransmitting the frame until the slow contact retry limit is reached.

The slow contact retry limit specifies the number of times that SDLC should retransmit the unacknowledged contact frame before sending an outage message.

By default, the slow contact timer is 4,000 milliseconds. The slow contact retry limit is 8. At these default values, when a link station does not receive an unacknowledgment of a contact frame within 4,000 milliseconds of transmission, it retransmits the frame. SDLC will retransmit a total of 8 times before sending an outage message.

Using the BCC

To specify the slow contact timer, navigate to the link station prompt and enter:

slow-contact-timer *<milliseconds>*

milliseconds is any value from 1 to 64,000 milliseconds.

To specify the slow contact retry limit, navigate to the link station prompt and enter:

slow-contact-retry-limit *<count>*

count is any value from 1 to 65535, where 1 causes SDLC to send an outage message after the first time that the slow contact timer expires and 65,535 allows an unlimited number of retransmissions.

For example, the following commands set the slow contact timer to 6,000 milliseconds and the slow contact retry limit to 100:

```
link-station/23# slow-contact-timer 6000
link-station/23# slow-contact-retry-limit 100
```

Using Site Manager

To set the slow contact timer and the slow contact retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Slow Contact Timer** and **Slow Contact Retry Limit** parameters. Click on Help or see the parameter descriptions beginning on page A-31.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying When SDLC Retransmits an Unacknowledged Disconnect (DISC) Command

You can specify the amount of time that passes before SDLC retransmits an unacknowledged disconnect (DISC) command. To specify this value, you set two parameters. The DISC retransmit timer specifies the actual amount of time before SDLC should retransmit the unacknowledged DISC command. The DISC retransmit retry limit specifies the number of times that SDLC should repeat the retransmission before sending an outage message.

By default, the DISC retransmit timer is 4,000 milliseconds. The DISC retransmit retry limit is 4. At these default values, if SDLC does not receive an acknowledgment of a DISC command within 4,000 milliseconds, it will retransmit the DISC command. SDLC will retransmit the DISC command a total of four times before sending an outage message.

Using the BCC

To specify the DISC retransmit timer, navigate to the link station prompt and enter:

disc-retransmit-timer *<milliseconds>*

milliseconds is any value from 1 to 64,000 milliseconds.

To specify the DISC retransmit retry limit, navigate to the link station prompt and enter:

disc-retransmit-retry *<count>*

count is any value from 1 to 65,535, where 1 causes SDLC to send an outage message after the first time that the DISC retransmit timer expires and 65,535 allows an infinite number of retransmissions.

For example, the following commands set the DISC retransmit timer to 6,000 milliseconds and the DISC retransmit retry limit to 50:

```
link-station/23# disc-retransmit-timer 6000
link-station/23# disc-retransmit-retry 50
```

Using Site Manager

To specify the DISC retransmit timer or DISC retransmit retry limit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
5. Set the **DISC Retransmit Timer** and **DISC Retransmit Retry** parameters. Click on Help or see the parameter descriptions beginning on page A-32.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying Whether the Link Station Sends the Poll Bit on an Information Frame

You can specify whether a link station sends the poll bit on an information frame. Certain implementations of SDLC do not handle receipt of information frames carrying the poll bit. By default, the link station does send the poll bit.

Using the BCC

To specify whether a link station sends the poll bit on information frames, navigate to the link station prompt and enter:

poll-bit-set-in-frame *<state>*

state is one of the following:

yes
no

For example, the following command specifies that a link station should not send the poll bit on information frames:

```
link-station/23# poll-bit-set-in-frame no
```

Using Site Manager

To specify whether a link station sends the poll bit using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Link Stations**.	The SDLC Link Station Configuration window opens.
4. Select the address of the link station you want to configure.	
5. Set the **Poll Bit Set In I-Frame** parameter. Click on Help or see the parameter description on page A-32.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	You return to the Configuration Manager window.

Specifying the Role of the Link Station

You can specify the role of the link station. By default the link station role is primary. You can set the role only using BCC.

To specify the role of the link station, navigate to the link station prompt and enter:

role *<setting>*

setting is one of the following:

negotiable
primary
secondary
multi-point-secondary

For example, the following command sets the link station role to secondary:

```
link-station/23# role secondary
```

Specifying the Size of the Rotating Acknowledgment Window

You can specify the modulo value, which determines the size of the rotating acknowledgment window that the SDLC pair uses. By default, this value is 8, which allows a window of 0 to 7 data frames. You can also set it to 128, which allows a window of 0 to 127 data frames. You can set this value only from the BCC.

To set the modulo value, navigate to the link station prompt and enter:

modulo *<setting>*

setting is one of the following:

8
128

For example, the following command sets the modulo to 128:

```
link-station/23# modulo 128
```

Specifying the Adjacent Node Type

You can specify the adjacent node type. For information about adjacent node types, refer to *Configuring APPN Services*. By default, the adjacent node type is network, indicating that the adjacent node is a network node. Table 4-3 lists the possible adjacent node types. You can specify the adjacent node type only from the BCC.

Table 4-3. Adjacent Node Types

Type Name	Adjacent Node Type
Network	Network node
Learn	APPN automatically learns type of adjacent node.
LEN	Low-entry networking end node
End	End node
VRN	Virtual routing node

Note: The adjacent node type does not apply to DLSw configurations. Using the BCC to configure SDLC with APPN is not fully tested.

To specify the adjacent node type, navigate to the link station prompt and enter:

adjacent-node-type *<type>*

type can be one of the following:

learn
len
network
end
vrn

For example, the following command sets the adjacent node type to learn:

```
link-station/23# adjacent-node-type learn
```

Deleting SDLC from the Router

You can delete all SDLC interfaces from the router.

Using BCC

To delete all SDLC interfaces from the router, navigate to the box level prompt and enter:

delete sdlc

For example, the following command deletes all SDLC interfaces from the router:

```
box# delete sdlc
```

Using Site Manager

To delete all SDLC interfaces from the router using Site Manager, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **SDLC**.	The SDLC menu opens.
3. Choose **Delete SDLC**.	Site Manager deletes all SDLC interfaces from the router.

Appendix A
Site Manager Parameters

This appendix contains the Site Manager parameter descriptions for SDLC services. You can display the same information using Site Manager online Help.

This appendix contains the following information:

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

- Parameter name
- Configuration Manager menu path
- Default setting (parameter value that the system software sets; APPN and DLSw configurations may affect some SDLC default settings during operation)
- Valid parameter options
- Parameter function
- Instructions for setting the parameter
- Management information base (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*.

Caution: The Technician Interface does not verify that the value you enter for a parameter is valid. Entering an invalid value can corrupt your configuration.

SDLC Line Parameters

The SDLC Line Parameters window (Figure A-1) lets you configure the synchronous line parameters.

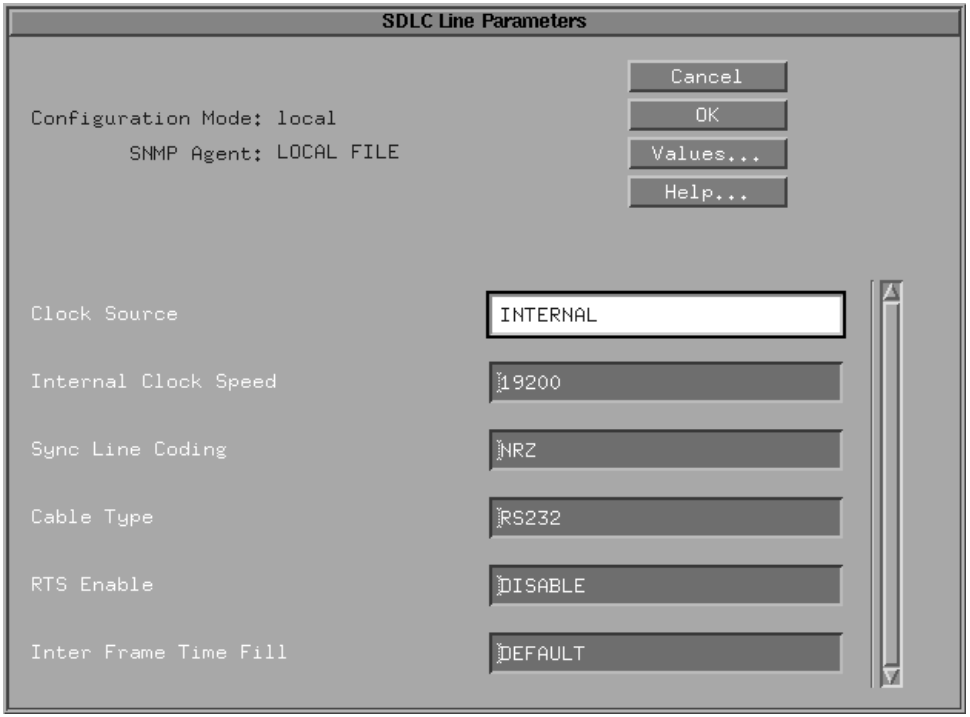

Figure A-1. SDLC Line Parameters Window

The parameter descriptions follow.

Parameter:	**Clock Source**
Path:	**COM** Connector > **Edit Line** > Edit Sync Parameters
Default:	Internal on COM1, COM2, and so on; External on MCT1
Options:	External | Internal
Function:	Identifies whether the router provides clocking (internal) or receives clocking (external) from the other device. The parameter specifies the origin of the synchronous timing signals. If you set this parameter to Internal, this router supplies the required timing signals. If you set this parameter to External, an external network device supplies the required timing signals. Use this parameter when connecting the SNA equipment directly to the router. Either the router or the SNA equipment can define the speed of the SDLC link. You must configure one device to internal clocking and the other device to external clocking.
Instructions:	For direct connection to a control unit, such as an IBM 3174, set to Internal. For connection to a modem, set to External. For direct connection to an IBM 3745, either the router or the IBM 3745 can provide the clock source. If the IBM 3745 does not provide clocking, set to Internal.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.13

Parameter:	**Internal Clock Speed**
Path:	**COM** Connector > **Edit Line** > Edit Sync Parameters
Default:	19200 KB
Options:	1200 B | 2400 B | 4800 B | 7200 B | 9600 B | 19200 B | 32000 B | 38400 B | 56 KB | 64 KB | 125 KB | 230 KB | 420 KB | 625 KB | 833 KB | 1.25 MB | 2.5 MB | 5 MB
Function:	Sets the clock speed of an internally supplied clock when the Clock Source parameter is set to Internal. Attached devices must be capable of operating at the specified speed. Some of the more common allowed speeds for IBM products are as follows: • An IBM 3274 with an V.24/RS-232 interface supports up to 9,600 b/s. Some support speeds up to 19,200 b/s. • An IBM 3274 with a V.35 interface supports up to 64 Kb/s. • An IBM 3174 with a V.24/RS-232 interface supports up to 19,200 b/s. • An IBM 3174 with a V.35 interface and running Licensed Internal Code-C supports up to 256 Kb/s.
Instructions:	Click on Values and set the clock speed for the internal clock to the desired data transmission rate across the synchronous line. This parameter is unavailable when the Clock Source parameter is set to External.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.14

Parameter: **Sync Line Coding**

Path: **COM** Connector > **Edit Line** > Edit Sync Parameters

Default: NRZ

Options: NRZ | NRZI | NRZI Mark

Function: Sets the same line coding value for all devices attached to the same SDLC link. You can change the value of this parameter to match the line coding of a device at the other end of the line.

This parameter is relevant only for the AN and ASN routers, and the Octal Sync module. Other Nortel Networks router platforms use NRZ encoding.

- NRZ -- Indicates nonreturn to zero encoding
- NRZI -- Indicates nonreturn to zero-inverted encoding
- NRZI Mark -- Indicates nonreturn to zero-inverted mark encoding

Instructions: Select NRZ or NRZI. NRZI Mark is not generally used for SDLC

MIB Object ID: 1.3.6.1.4.1.18.3.4.5.1.88

Parameter: **Cable Type**

Path: **COM** Connector > **Edit Line** > Edit Sync Parameters

Default: RS232

Options: Null | RS232 | RS422 | V35 | X21

Function: Specifies the cable interface to the network.

Instructions: Click on Values and select the installed cable interface type.

MIB Object ID: 1.3.6.1.4.1.18.3.4.5.1.83

Parameter:	**RTS Enable**
Path:	**COM** Connector > **Edit Line** > Edit Sync Parameters
Default:	Disable
Options:	Enable | Disable
Function:	Controls the toggling of the request to send (RTS) signal on the interface.
Instructions:	Click on Values and select Enable or Disable. Set to Enable if you are configuring a secondary SDLC interface on a multiport line.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.16

Parameter:	**Inter Frame Time Fill**
Path:	**COM** Connector > **Edit Line** > Edit Sync Parameters
Default:	DEFAULT
Options:	DEFAULT | FORCEHDLCFLAGS | FORCEIDLES
Function:	The interframe time fill (IFTF) indicates the signal pattern that the router transmits when there is no data going across a channel. If you set this parameter to DEFAULT, the pattern that the router transmits depends on the setting of the synchronous line parameter, Sync Media Type. If the Sync Media Type parameter is set to ISDNLEASED, the IFTF will be an idle signal. For all other values of the Sync Media Type parameter, the IFTF will be HDLC flags. If you select FORCEHDLCFLAGS or FORCEIDLES for this parameter, then the IFTF will be HDLC flags or idle signals respectively, regardless of the value of Sync Media Type.
Instructions:	Select the IFTF pattern that the router should send when there is no data to transmit.
MIB Object ID:	1.3.6.1.4.1.18.3.4.5.1.96

SDLC Global Parameter

The Edit SDLC Global Parameters window (Figure A-2) contains one parameter that lets you enable or disable every SDLC interface on the router.

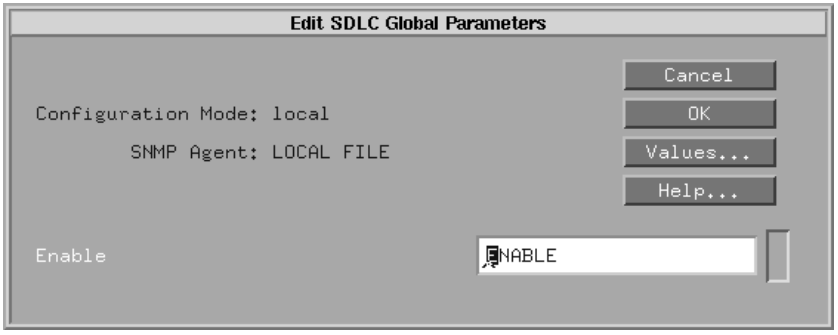

Figure A-2. Edit SDLC Global Parameters Window

The parameter description follows.

Parameter: **Enable**

Path: Configuration Manager > Protocols > SDLC > Global

Default: Enable

Options: Enable | Disable

Function: Enables or disables the system software mechanisms that use the SDLC interface on a synchronous circuit.

The system software also performs the following actions when you choose a setting:

- Disable -- Switches every SDLC interface enabled on the router to the disabled (inactive) state
- Enable -- Reinitializes every SDLC interface on the router, based on:
  - -- The current setting of the associated interface Enable parameter

-- The current state of the associated circuit

Instructions: Select Disable to switch every SDLC interface existing on the node to the inactive state.

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.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.1.2

SDLC Interface Parameters

The SDLC Interface Configuration window (Figure A-3) lets you configure SDLC parameters specific to an interface.

Figure A-3. SDLC Interface Configuration Window

The parameter descriptions follow.

Parameter:	**Enable**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables the SDLC interface to this WAN physical circuit.
Instructions:	Select Enable if you disabled this SDLC interface and now want to reenable it on its associated WAN physical circuit. Select Disable if you want 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	APPN port name or DLSw circuit name
Options:	Any valid port name
Function:	Defines the port name that you want to assign to this SDLC interface.
Instructions:	Enter the name of the port that you want to assign to this SDLC interface. You can use any combination of alphanumeric characters. We recommend that you use the same name assigned to the circuit on which you added SDLC, for example, S51.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.4

Parameter:	**Link Station Role**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	Primary for DLSw networks; Negotiate for APPN networks
Options:	Primary | Secondary | Negotiate
Function:	Defines the link station role.
Instructions:	Enter Primary or Secondary if you want to assign a specific role to the link station. Enter Negotiate if you want the link station to exchange XIDs with another negotiable link station to determine which will be primary and which secondary. Negotiate applies only to DLSw PU 4.0 devices and DLSw or APPN point-to-point links.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.27

Parameter:	**Link Station Address**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	4 for APPN networks, none for DLSw networks
Range:	1 to 254
Function:	Specifies the port address 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	True for APPN networks; False for DLSw networks
Options:	True | False
Function:	Specifies whether this SDLC link station supports negotiable connections over APPN networks.
Instructions:	Enter True if the SDLC link station 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	2000 milliseconds
Range:	1 to 65535
Function:	Specifies the time allowed for receipt of a valid frame from the primary link station. This parameter operates with the Non-productive Retry Limit parameter. It is intended for secondary SDLC routers. SDLC mainly uses this timer to produce an outage when a secondary station produces continuous frames without setting the F-bit (final bit). In large configurations with many SDLC connections, you should increase this value to allow more time for the primary link station to respond.
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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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 nonproductive timer expires, 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	6000 milliseconds
Range:	1 to 65535
Function:	Specifies the overall time used to determine whether a line is completely inactive. This parameter operates with the Idle Line Retry Limit parameter. It is intended for primary SDLC routers.
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, the timer expires when no activity occurs on the line for the specified number of milliseconds. In large configurations with many SDLC connections, you should increase this value to allow more time for data exchange.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.10

Parameter:	**Idle Line Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	20
Range:	1 to 65535
Function:	Specifies the number of times to run the idle line timer before failure. This parameter operates 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 expires, 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	3000 milliseconds
Range:	1 to 65535
Function:	Specifies the maximum amount of time allowed to transmit a complete frame. This parameter operates with the Port Write Retry Limit parameter.
Instructions:	Enter a value from 1 to 65535.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.14

Parameter:	**Port Write Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	10
Range:	1 to 65535
Function:	Used with the Port Write Timer parameter to provide the overall time allowed to transmit a complete frame 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 expires, 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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 to activate a port because it has not received a data set ready (DSR) response.
Instructions:	Enter a value from 1 to 65535 to specify the interval in milliseconds after which SDLC tries to resend a contact frame from which it receives no response.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.16

Parameter:	**Link Connection Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	10
Range:	1 to 65535
Function:	Specifies the number of times that 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 operates with the Link Connection Timer parameter.
Instructions:	Enter a value from 1 to 65535, where 1 causes SDLC to fail to activate the port after the first link connection timer interval and 65535 allows an unlimited number of timeouts.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.17

Parameter:	**Primary Full Duplex**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	False
Options:	True | False
Function:	Specifies whether the primary SDLC link station supports full-duplex data transmission.
Instructions:	Enter True if the primary SDLC station supports full-duplex data 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	False
Options:	True | False
Function:	Specifies whether the secondary SDLC link station supports full-duplex data transmission.
Instructions:	Enter True if the secondary SDLC station supports full-duplex data 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	True
Options:	True | False
Function:	Specifies whether SDLC can send a reject (REJ) command 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. 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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 from 2 to 256.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.22

Parameter:	**MAXDATA**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	PDU1033
Options:	PDU265 | PDU521 | PDU1033 | PDU2057 | PDU4105
Function:	Specifies the maximum frame size that 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	16
Range:	1 to 254
Function:	Specifies the total link station activation limit.
Instructions:	Enter the 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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
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**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	7
Range:	1 to 255
Function:	Sets the receive buffer pool size; that is, the number of buffers that you want to preallocate for receiving frames from the line.
Instructions:	Enter the number of buffers that you want for the receive buffer pool. You can enter a value from 1 to 255. However, Nortel Networks recommends that you accept the default, because increasing the receive buffer pool size uses more memory.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.34

Parameter:	**Initial Flow Control Credit**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	7
Range:	1 to 50
Function:	Regulates the flow of data from the SDLC device to the SDLC interface by specifying how many frames the SDLC interface may be waiting to receive.
Instructions:	Enter the number of frames that the SDLC interface can be waiting to receive.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.2.1.9

Parameter:	**Enable Stats Collection**
Path:	Configuration Manager > Protocols > SDLC > Interfaces
Default:	True
Options:	True | False
Function:	Turns statistics 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

SDLC Link Station Parameters

The SDLC Link Station Configuration window (Figure A-4) and the Link Station Configuration window (Figure A-5) contain parameters that let you configure SDLC link stations.

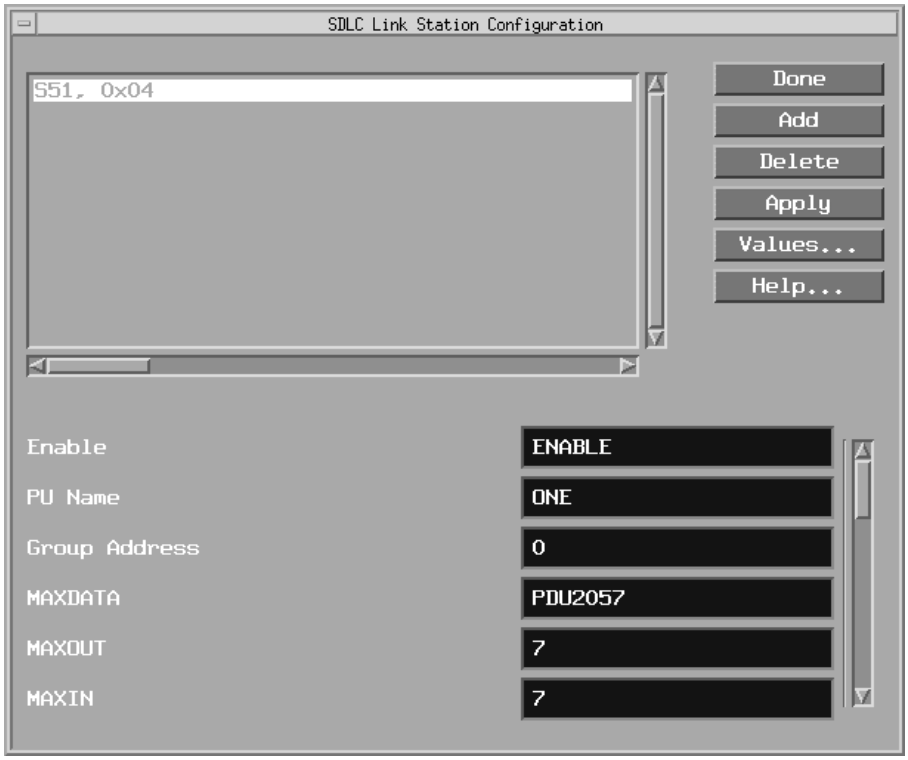

Figure A-4. SDLC Link Station Configuration Window

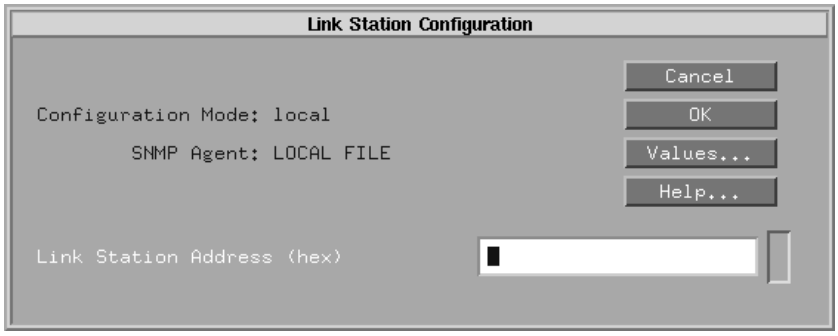

Figure A-5. Link Station Configuration Window

The parameter descriptions follow.

Parameter:	**Link Station Address (hex)**
Path:	Configuration Manager > Protocols > SDLC > Interfaces > Link Station > Add
Default:	None
Options:	Any valid hexadecimal link station address from 0x01 to 0xFE
Function:	Specifies the address of the link station.
Instructions:	Enter 0x followed by the link station address.
MIB Object ID:	None

Parameter:	**Enable**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	APPN link station name or the NAME portion of the NETID.NAME; DLSw adjacent link station name
Options:	Any valid 8-byte ASCII name
Function:	Specifies the physical unit (PU) name of the adjacent link station. This name uniquely identifies the adjacent link 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	0 for APPN; none for DLSw
Range:	0 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), accept the default. 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	PDU1033
Options:	PDU265 | PDU521 | PDU1033 | PDU2057 | PDU4105
Function:	Specifies the maximum frame size that SDLC supports. This value includes the transmission header (TH) and request header (RH).
Instructions:	Enter a maximum frame size equal to or larger than the largest frame size that the station will receive.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.7

Parameter:	**MAXOUT**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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

Parameter:	**MAXIN**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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

Parameter:	**Response Timer**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	400 milliseconds for APPN; none for DLSw
Range:	100 to 64000
Function:	Specifies the length of 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.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.28

Parameter:	**RNR Timer**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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 operates with the RNR Retry Limit parameter.
Instructions:	Enter a value from 1 to 90.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.15

Parameter:	**RNR Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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 1 causes SDLC to generate an outage after the first RNR timer expires, and 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	30 tenths of a second
Range:	1 to 600
Function:	Specifies the maximum length of time that a primary link station waits for a response frame (after sending a frame with a poll bit) before trying to poll another station. This timer starts when a frame without the F-bit is received and stops only when a frame with an F-bit is received.
Instructions:	Enter a value from one-tenth of a second to 600 tenths of a second. You should set the timeout value to be no less than the result of the following formula: (2 + MAXOUT) x (MAXDATA x 8) x 10 ÷ line speed in bits/s Edit the REPLYTO timer value whenever you adjust baud rate with the Internal Clock Speed parameter or the external modem baud rate. For example, if you are using a line with a 4800 baud rate, increase the REPLYTO Timer parameter to 60 tenths of a second.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.8

Parameter:	**REPLYTO Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	10
Range:	1 to 64000
Function:	Controls the number of times that an adjacent secondary link station fails to respond before the primary link station sends an outage message.
Instructions:	Enter a value from 1 to 64000, where 1 causes SDLC to generate an outage after the first REPLYTO timer expires, and 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	400 milliseconds
Range:	1 to 64000
Function:	Controls the timeout required before reinserting an adjacent secondary link station into the polling list after the adjacent secondary station has been removed for no response. This parameter operates with the Fast Poll Count Limit parameter.
Instructions:	Enter a value from 1 to 64000. Nortel Networks recommends that you specify a value of at least 100 milliseconds (1 second).
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.22

Parameter:	**Fast Poll Count Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	16
Range:	1 to 65535
Function:	Controls the number of times that a link station is removed from the polling list on the normal poll timer before SDLC switches to the slow poll timer. This parameter operates with the Fast Poll Timer parameter.
Instructions:	Enter a value from 1 to 65535, where 1 causes SDLC to switch to the slow poll timer after the first fast poll timer expires, and 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	1000 milliseconds
Range:	1 to 64000
Function:	Allows polling to continue (using this timer) when the fast poll count limit expires. This parameter operates with the Slow Poll Count Limit parameter.
Instructions:	Enter a value from 1 to 64000.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.24

Parameter:	**Slow Poll Count Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	65535
Range:	1 to 65535
Function:	Controls the number of times a link station is removed from the polling list before sending an outage message to a device. This parameter operates with the Slow Poll Timer parameter.
Instructions:	Enter a value from 1 to 65535, where 1 causes SDLC to generate an outage after the first slow poll timer expires, and 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**

Path: Configuration Manager > Protocols > SDLC > Link Stations

Default: XID

Options: XID | DISC | SNRM | SNRME | TEST

Function: Specifies the frame to use for preactivation polling. Preactivation sets up the router connection table so that DLSw connects to the host before connecting to the SDLC station, or the reverse. The frames include:

- XID -- Exchange identification
- DISC -- Disconnect
- SNRM -- Set normal response mode
- SNRME -- Set normal response mode extended
- TEST -- Test

The XID default setting specifies that DLSw should perform pre-activation polling, not SDLC. The line is activated and the router sends the SNRM frame to the SDLC station. Selecting a value other than XID causes the router to send that value to the SDLC station.

Instructions: Click on Values and select one of the parameter settings, as follows:

- Accept the XID default setting to let DLSw control preactivation.
- Select SNRM to establish a connection to the SDLC station first.
- Use DISC, SNRME, and TEST *only* if your network requires one of these options. For example, some SDLC stations must be preactivated with a DISC. The router must receive a response to the DISC before it sends an SNRM.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.30

Parameter:	**Fast Contact Timer**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	4000 milliseconds
Range:	1 to 64000
Function:	Controls the timeout required before retransmitting an unacknowledged contact frame (SNRM or XID). For primary SDLC link stations only, this parameter operates with the Fast Contact Retry Limit parameter and is also used for special preactivation polling.
Instructions:	Enter a value from 1 to 64000. The value you enter must be greater than the REPLYTO timer value.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.16

Parameter:	**Fast Contact Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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 operates with the Fast Contact Timer parameter.
Instructions:	Enter a value from 1 to 64000, where 1 causes the switch to use the slow contact timer after the first fast contact timer expires. 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**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
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 operates with the Slow Contact Retry Limit parameter.
Instructions:	Enter a value from 1 to 64000.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.18

Parameter:	**Slow Contact Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	8
Range:	1 to 65535
Function:	Controls the number of times to transmit a contact frame (for example, SNRM) before sending an outage message to the SDLC device. This parameter operates with the Slow Contact Timer parameter.
Instructions:	Enter a value from 1 to 65535, where 1 causes an outage after the first slow contact timer expires, and 65535 specifies an unlimited number of retries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.19

Parameter:	**DISC Retransmit Timer**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	4000 milliseconds
Range:	1 to 64000
Function:	Controls the length of time before retransmitting an unacknowledged disconnect (DISC) command. This parameter operates with the DISC Retransmit Retry Limit parameter for primary SDLC link stations only.
Instructions:	Enter a value from 1 to 64000.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.20

Parameter:	**DISC Retransmit Retry Limit**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	4
Range:	1 to 65535
Function:	Controls the number of times to transmit a Disconnect (DISC) command. This parameter operates with the DISC Retransmit Timer parameter.
Instructions:	Enter a value from 1 to 65535, where 1 causes an outage after the first DISC retransmit timer expires, and 65535 specifies an unlimited number of retries.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.7.5.1.21

Parameter:	**Poll Bit Set In I-Frame**
Path:	Configuration Manager > Protocols > SDLC > Link Stations
Default:	True
Options:	True | False
Function:	Specifies whether this link station sends the poll bit on an information frame. Certain SDLC implementations do not handle the 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

Appendix B
BCC show Commands

This appendix describes how to use BCC **show** commands to obtain statistical data from the management information base (MIB) for SDLC. The type and amount of data displayed depend on the specific settings you want to view. This appendix also describes the following **show** commands:

Online Help for show Commands

To display a list of command options, enter this command at any BCC prompt:

show sdlc ?

To learn more about any **show** command option and its syntax, use the question mark (**?**) command as follows:

```
box# show sdlc ?
all                 link-station-operation
interface-operation link-station-statistics
box# show sdlc all ?
show sdlc all [interface <arg>]
```

show sdlc all

The **show sdlc all** command displays all available information about SDLC, SDLC interfaces, and SDLC link stations.

The output for this command is a combination of the output for the following commands: **show sdlc interface-operation**, **show sdlc link-station operation**, and **show sdlc link-station statistics**. The following sections describe these commands and their output.

show sdlc interface-operation

The **show sdlc interface-operation** command displays information about the operation of SDLC interfaces.

This command allows for the following command filter (flag) and filter arguments:

-interface <*interface_name*> Displays information about the interface-operation table pertaining to the specified interface only.

The output includes the following information:

Circuit Name	Name of the circuit (interface).
Address	Address of the physical port to which this interface is attached.
Role	Role of the interface as link station: primary, secondary, or negotiable.
Type	Type of line (leased or switched) that the interface is currently operating as though attached to.
Topology	Type of topology in which this interface is currently operating: point-to-point or multipoint.

show sdlc link-station-operation

The **show sdlc link-station-operation** command displays information about the operation of SDLC on SDLC link stations.

This command allows for the following command filter (flag) and filter arguments:

-interface <*interface_name*> Displays information about link station operation only on the specified interface.

The output includes the following information:

Circuit Name	Name of the circuit (interface).
Address	Poll address of the secondary link station in this SDLC link. This address uniquely identifies the SDLC link station within a single SDLC port.
Role	Role of the link station: primary, secondary, or negotiable.
MAXDATA	Maximum PDU size allowed for the link. This value includes the transmission header (TH) and request header (RH). Possible values are pdu0265(265), pdu0521(521), pdu1033(1033), pdu2057(2057), and pdu4105(4105).
MAXIN	Maximum number of unacknowledged frames that an SDLC link station may receive.
MAXOUT	Maximum consecutive unacknowledged frames that an SDLC link station can send without an acknowledgment.
MODULO	Current modulus for an SDLC link station. This value determines the size of the rotating acknowledgment window used by an SDLC link station pair.

show sdlc link-station-statistics

The **show sdlc link-station-statistics** command displays statistics about SDLC link stations.

This command allows for the following command filter (flag) and filter arguments:

-interface <*interface_name*> Displays information about link station statistics only on the specified interface.

The output includes the following information:

Circuit	Name of the circuit (interface).
Address	Poll address of the secondary link station in this SDLC link. This address uniquely identifies the SDLC link station within a single SDLC port.
I Frames Ins	Total I-frames (Information frames) received from an adjacent SDLC link station since the last reset or system startup.
I Frames Outs	Total I-frames transmitted to an adjacent SDLC link station since the last reset or system startup.
Retransmits	Total frames retransmitted to an adjacent SDLC link station since the last reset or system startup.
REJs Ins	Total REJ (Rejected) frames received from an adjacent SDLC link station since the last reset or system startup.
REJs Outs	Total REJ frames transmitted to an adjacent SDLC link station since the last reset or system startup.

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