



**Bay Networks**

The Merged Company of SynOptics and Wellfleet

## Customizing DLSw Services

Part No. 110052 A

# Customizing DLSw Services

Router Software Version 8.10  
Site Manager Software Version 2.10

Part No. 110052 Rev. A  
February 1995



**Bay Networks**

The Merged Company of SynOptics and Wellfleet

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# About This Guide

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

This guide describes how to customize Wellfleet router software for Data Link Switching (DLSw) services.

This guide provides

- ❑ An overview of DLSw services on the router (Chapter 1, “Data Link Switching”)
- ❑ Implementation notes that may affect how you configure DLSw services on the network (Chapter 2, “DLSw Implementation Notes”)
- ❑ Instructions for editing DLSw global and interface parameters, and for configuring DLSw Local Devices, Peer, Slot, and SAP tables (Chapter 3, “Editing DLSw Parameters”)

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

- ❑ Initially configuring DLSw services on the router
- ❑ Retrieving a configuration file
- ❑ Rebooting the router with a configuration file
- ❑ Configuring DLSw traffic filters

## Before You Begin

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

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

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

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

## Conventions

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

---

<b>command text</b>	Denotes command names in text. Example: Use the <b>xmodem</b> command.
<i>italic text</i>	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
screen text	Indicates data that appears on the screen. Example: Set Trap Monitor Filters
ellipsis points	Horizontal ( . . . ) and vertical ( : ) ellipsis points indicate omitted information.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.
vertical line ( )	Indicates that you enter only one of the parts of the command. The vertical line separates choices. Do not type the vertical line when entering the command.  Example: If the command syntax is <b>show at routes   nets</b> , you enter either <b>show at routes</b> or <b>show at nets</b> , but not both.

## Acronyms

DLSw	Data Link Switch
FEP	front-end processor
IP	Internet Protocol
LLC	logical link control
MAC	media access control
MTU	Maximum Transmission Unit
SAP	service access point
SRB	source routing bridge
SSP	Switch-to-Switch Protocol
TCP/IP	Transmission Control Protocol/ Internet Protocol
XID	exchange identification



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# Chapter 1

## Data Link Switching

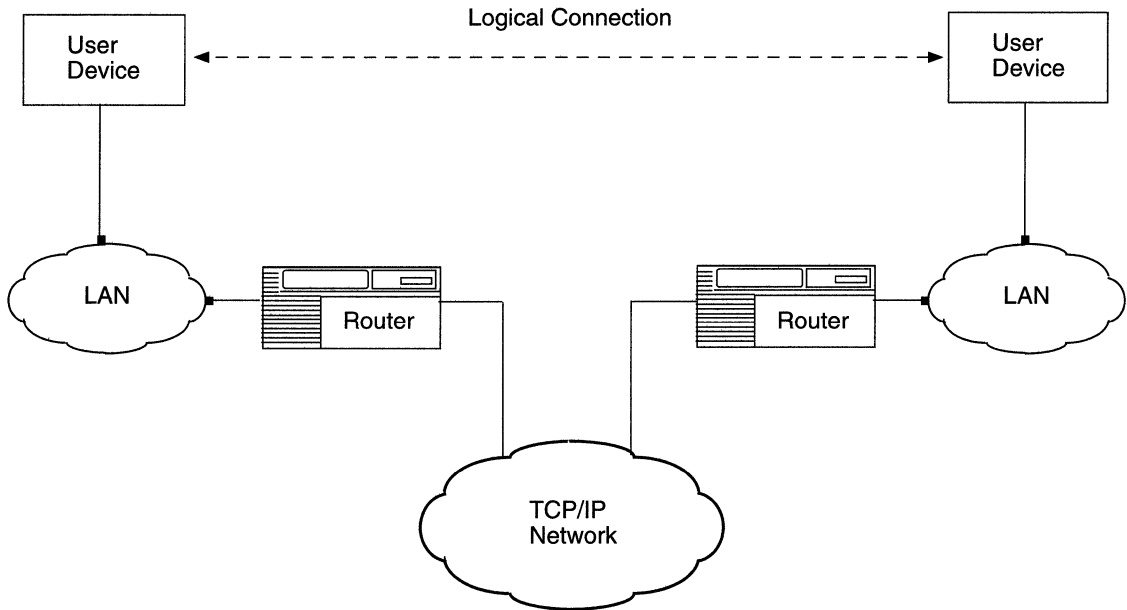
This chapter provides the following information:

- ❑ An overview of Data Link Switching (DLSw)
- ❑ An overview of our implementation of DLSw services
- ❑ Additional technical reference information relevant to the topics in this chapter

### Connection Services

Wellfleet routers that you configure to support DLSw services provide connections between local and remote systems through an intervening TCP/IP network. Figure 1-1 shows how SNA devices use DLSw services to communicate over TCP/IP.





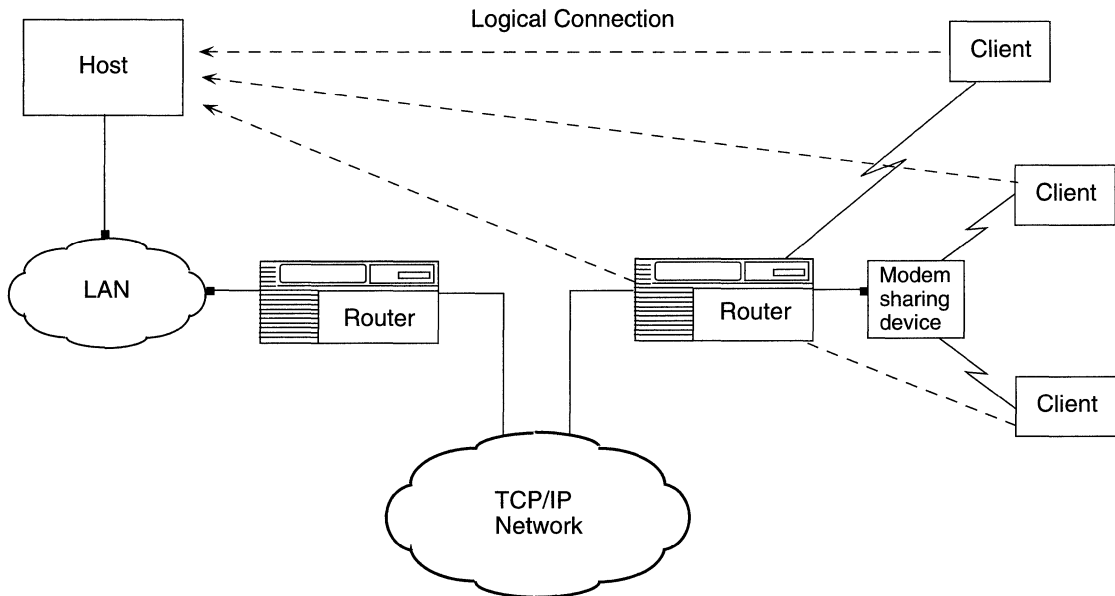
**Figure 1-1. DLSw Services for SNA Devices on LANs**

Two systems connected via DLSw services must both be configured with an SNA protocol (such as with front-end processors (FEPs) and cluster controllers), or they must both be configured with the NetBIOS™ protocol (such as with client and server PCs).

User systems attached to a LAN can access DLSw connection services on a Wellfleet router.

**Note:** In this manual, the term LAN refers to all source-route-bridged types of LANs and transparently bridged Ethernet/802.3 LANs. source-route-bridged LANs include, but are not limited to, Token Ring/802.5, FDDI, Ethernet/802.3, and Frame Relay, and other synchronous media protocols. See *Customizing Bridging Services* for more information on the media that source route bridging supports.

Figure 1-2 shows how a synchronous data link control (SDLC) client uses DLSw services to communicate over TCP/IP with a host attached to a LAN.



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

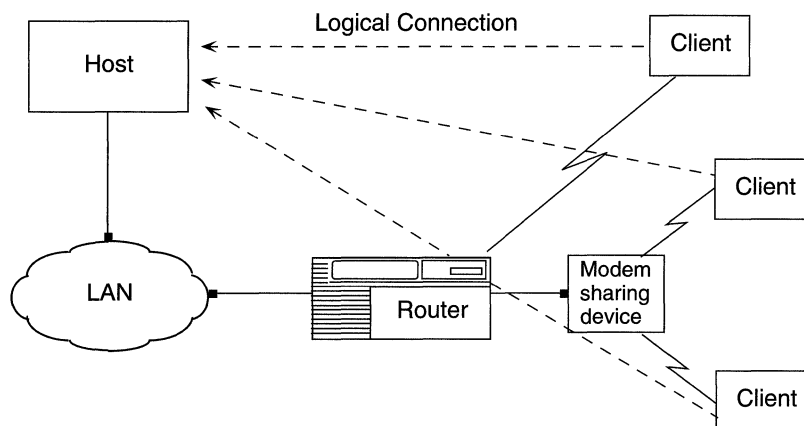
The scenario in Figure 1-2 depicts the SDLC conversion feature of DLSw. The SDLC session runs between the SDLC devices (clients) and the router. The remote router does the following:

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

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

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

Figure 1-3 shows how an SDLC client uses single-switch DLSw services to communicate with a host attached to a LAN.



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

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

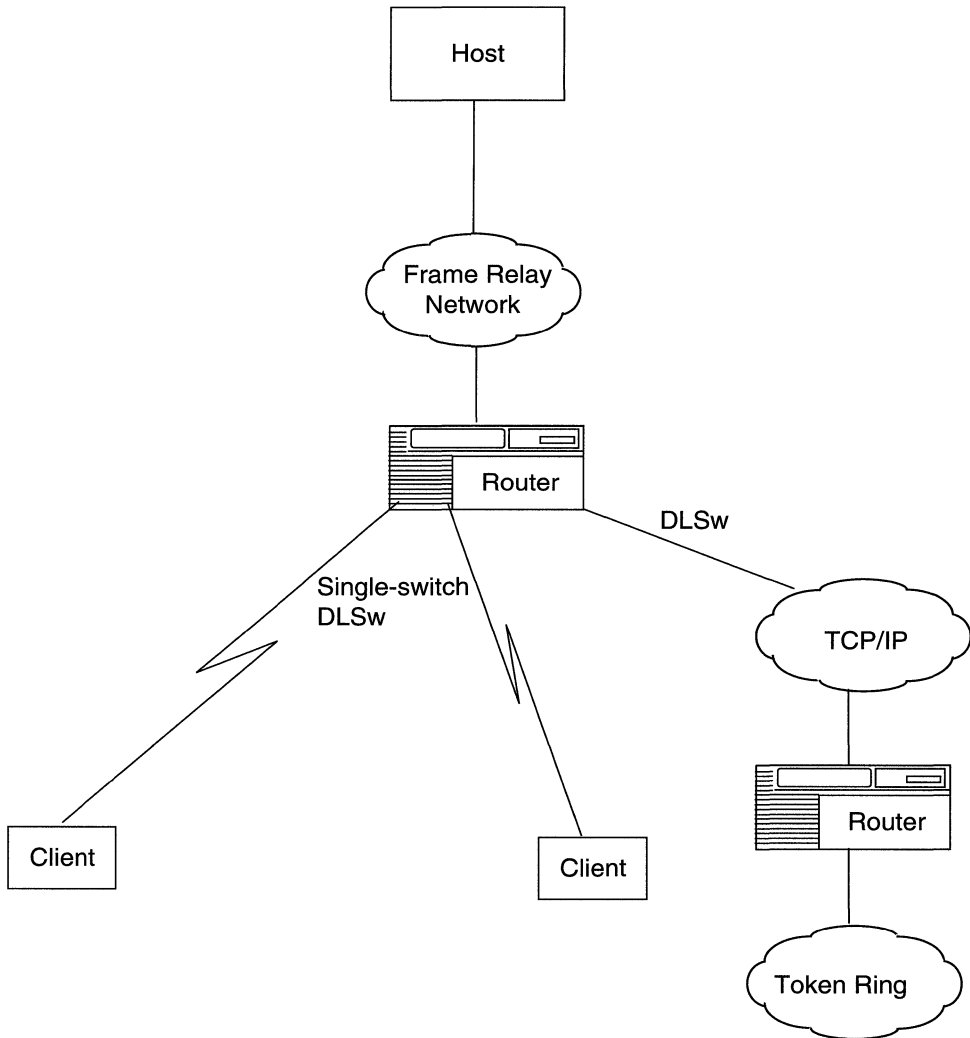
In Figure 1-2 you must configure SDLC services on the remote router; while in Figure 1-3 you must configure SDLC services on the local router. See *Customizing Wellfleet Routers* for information on configuring SDLC services on a router. In both scenarios, you must map the addresses of the SDLC devices to Token Ring/802.5 addresses. By mapping the addresses, you configure the SDLC devices as local devices, enabling them to appear to the network as natively attached LAN devices. Chapter 3 describes how to configure local devices.

## LLC2 Over Frame Relay

Adding DLSw to a router automatically adds Logical Link Control 2 (LLC2). LLC2 in a Wellfleet router supports LLC2 routed over frame relay, also known as native SNA over frame relay, based on RFC 1490. RFC 1490 describes an encapsulation method for carrying internetworking traffic over a frame relay backbone. Our LLC also complies with the Frame Relay Forum "Protocol Encapsulation over Frame Relay Implementation Agreements," which defines how routed SNA traffic traverses a frame relay network and adds RFC 1490 support for frame relay to DLSw and APPN.

This feature allows native SNA traffic originating from SDLC, LAN-, or WAN-attached devices to communicate over public or private frame relay networks directly with IBM 3745 or 3746 communications controllers. It operates on all Wellfleet routers that include a frame relay interface. Devices can communicate with intermediate routing nodes or in a single-switch configuration similar to a stand-alone frame relay access device (FRAD).

Figure 1-4 illustrates the connection of a host through a frame relay network in a configuration with multiprotocol traffic to other locations.

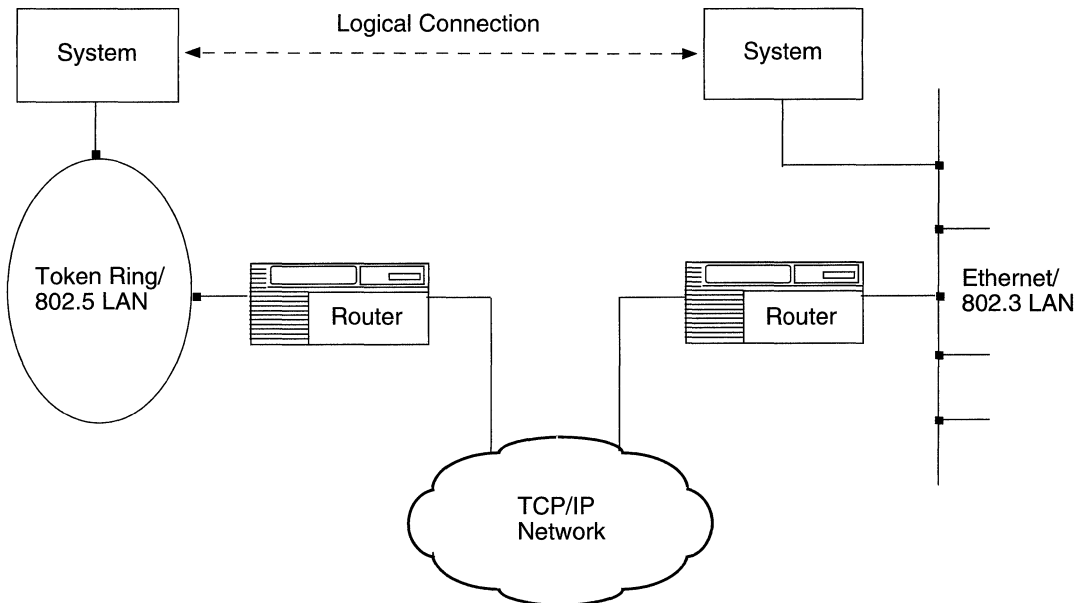


**Figure 1-4. Sample Frame Relay Network Using LLC2**

For more information on LLC2 over Frame Relay, refer to *Customizing LLC Services*.

## Mixed Topologies

You can use DLSw services to support connections between SNA or NetBIOS systems on one LAN (such as Token Ring/802.5) to systems on a different type of LAN (such as Ethernet/802.3) (Figure 1-5).



**Figure 1-5. DLSw Connections Between Systems on Different Types of LANs**

The router software automatically selects the right frame format for the type of LAN locally attached to a router circuit.

## Extending Source Route Bridge Topologies

DLSw services on the router allow connection paths that can include more than 8 source-route-bridged rings between a local- and a remote-user system.

## Connections between Local and Remote Programs

Application programs on a user system (such as a PC) share the same subsystem for communication over a network. For example, application programs on client and server PCs use the NetBIOS subsystem for communication over a LAN.

NetBIOS and other shared communication subsystems each have a unique LLC-layer service access point (SAP) address by which they are known. You make these subsystems known to a Wellfleet router by defining their SAP addresses in the router's DLSw configuration.

DLSw services on the router respond only to connection requests that contain a SAP address defined in the local DLSw configuration.

## Configuration Requirements

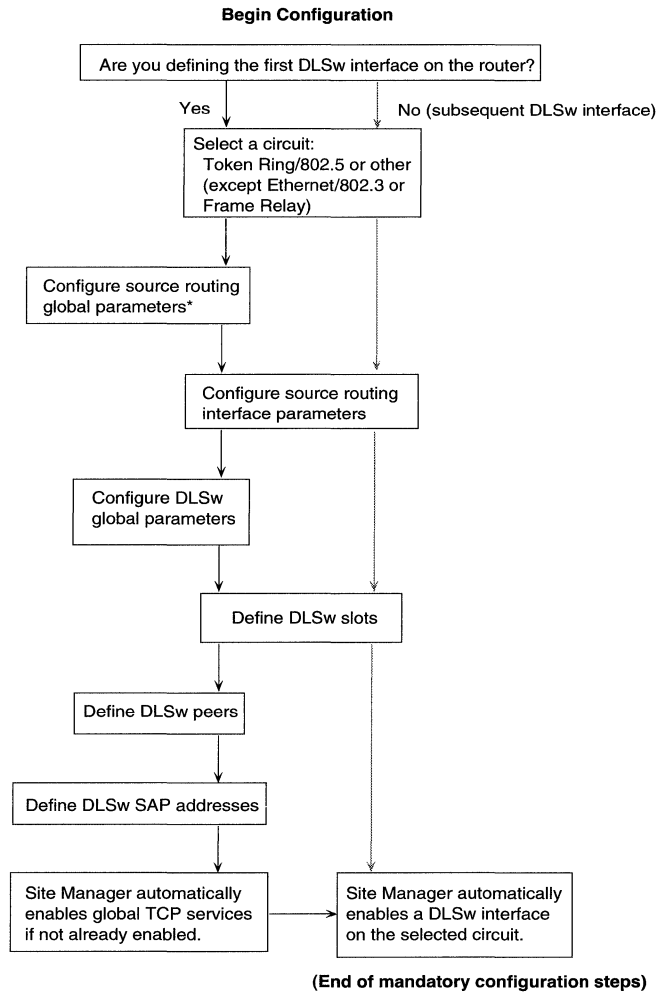
The next sections explain configuration requirements for a Wellfleet router that supports DLSw services. The following section describes the basic DLSw configuration requirements. The section "Configuration Requirements for Integrated SDLC" describe prerequisites for using the DLSw integrated SDLC services.

### Configuration Requirements for DLSw

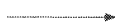
In order to enable a DLSw interface on a circuit, Site Manager requires you to set various parameter values. If you are enabling DLSw on a Token Ring/802.5 circuit (or any circuit other than Ethernet/802.3 or Frame Relay), follow the sequence shown in Figure 1-6. If you are enabling DLSw on an Ethernet/802.3 or Frame Relay circuit, follow the sequence shown in Figure 1-7.

The configuration sequences assume that you have already added to the router configuration

- The appropriate link modules
- A number of IP interfaces equal to the number of slots you intend to configure with DLSw services

**Key:**

Configuration path for the first DLSw interface on the router.

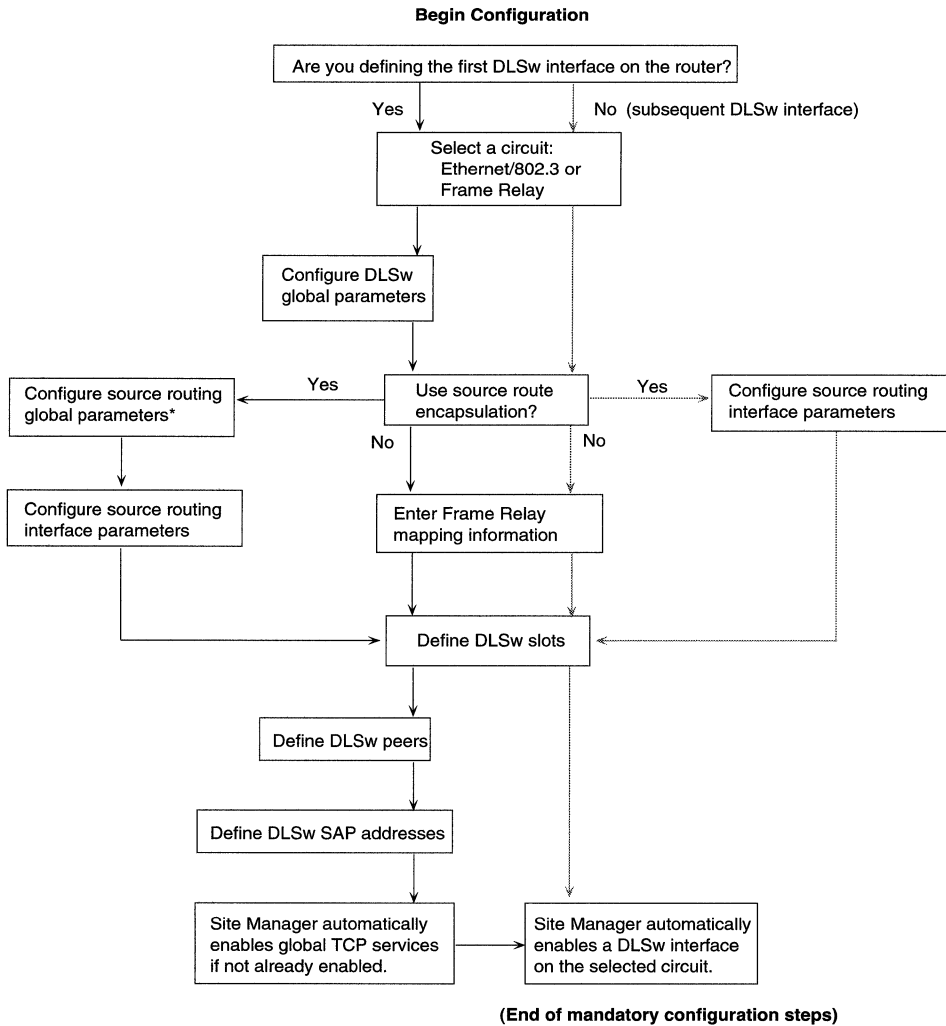


Configuration path for the second and subsequent DLSw interface on the router.

\* If you already configured source routing on your router, Site Manager does not prompt you to configure source routing global parameters during the DLSw configuration sequence.

**Figure 1-6. DLSw Configuration Sequence for Token Ring/802.5 or Other (Except Ethernet and Frame Relay)**





**Key:**

- Configuration path for the first DLSw interface on the router.
- .-> Configuration path for the second and subsequent DLSw interface on the router.

\* If you already configured source routing on your router, Site Manager does not prompt you to configure source routing global parameters during the DLSw configuration sequence.

**Figure 1-7. DLSw Configuration Sequence for Ethernet/802.3 or Frame Relay**

If you attempt to add DLSw to any circuit except Ethernet/802.3 or Frame Relay, Site Manager enables the following protocol interfaces on that circuit at the end of the mandatory configuration sequence:

- ❑ logical link control (LLC1 and LLC2)
- ❑ Data Link Switching (uses LLC2)
- ❑ source routing bridge (uses LLC1)

If you attempt to add DLSw to an Ethernet/802.3 or Frame Relay circuit, Site Manager enables the following protocol interfaces on that circuit at the end of the mandatory configuration sequence:

- ❑ logical link control (LLC1 and LLC2)
- ❑ Data Link Switching (uses LLC2)
- ❑ source routing bridge (uses LLC1), only if you choose to enable source route encapsulation during the DLSw configuration sequence.

## Configuration Requirements for DLSw with SDLC Services

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

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

When you add the circuit, specify that you want to run the DLSw protocol over the circuit.

2. Configure the DLSw local devices.

You must add local devices when you configure SDLC on the circuit. You can reconfigure those devices later, if necessary, when you change DLSw parameters. Chapter 3 describes how to reconfigure local devices.

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

## Configuring DLSw Objects

The remainder of this chapter describes the objects you define when you configure DLSw services on the router; namely,

- ❑ DLSw Peers (mandatory, except in single-switch configurations)
- ❑ DLSw Slots (mandatory)
- ❑ DLSw SAPs (mandatory)
- ❑ DLSw NetBIOS Peers (optional)
- ❑ DLSw MAC Peers (optional)
- ❑ Local Devices (mandatory for integrated SDLC only)

**Note:** You can define “optional” configuration objects – DLSw NetBIOS Peers and DLSw MAC Peers – when you finish the mandatory steps. Refer to Figure 1-6.

For information on how to enable DLSw services on the router, refer to *Configuring Wellfleet Routers*.

### DLSw Peers

Routers that you configure with equivalent DLSw capabilities and connect to the same TCP/IP network act as *DLSw peers* on that network, as described by Internet RFC 1434.

On Wellfleet routers, each slot that you configure with DLSw services functions as an independent DLSw peer on your TCP/IP network. Other vendors may offer RFC 1434-compliant products that support either single or multiple DLSw peers internally. For example, each IBM® 6611 processor in your network serves as a single DLSw peer that you must define on the router.

You can establish DLSw peer configurations that include only Wellfleet routers or a mix of Wellfleet routers, IBM 6611s, and other RFC 1434-compliant devices.

## Configured Peers

Configured peers are any *remote*, RFC 1434-compliant, DLSw peers that you define in the DLSw Peer IP Table of a local router.

A configured peer can

- ❑ Exist in a remote Wellfleet router, IBM 6611 network processor, or any other RFC 1434-compliant node in your TCP/IP network
- ❑ Support a connection to a remote SNA or NetBIOS system or application requested by a local SNA or NetBIOS system
- ❑ Receive broadcast frames directly from DLSw peers in a local router

The local router issues broadcast frames triggered by client demand for connection services. Responses to these broadcasts provide information that enables the local router to

- ❑ Identify the DLSw peer(s) that can reach the requested remote NetBIOS or SNA system
- ❑ Manage (open, restart, and close) TCP connections to the DLSw peer that can reach the requested SNA or NetBIOS system

Once a router knows about a DLSw peer that can reach a specific remote NetBIOS or SNA system, the router can address frames directly to that peer and avoid unnecessary broadcast traffic on the TCP/IP network.

You initially define as configured peers

- ❑ One slot in each DLSw-capable, remote Wellfleet router in your TCP/IP network
- ❑ Any other RFC 1434-compliant peer in your TCP/IP network

You define each configured peer by its unique IP address on the TCP/IP network.

Once you initialize DLSw services, the local router establishes two TCP connections (one for transmitting, one for receiving) between each local DLSw-capable slot and every configured peer in the TCP/IP

network. (Remote DLSw peers on the network follow the same procedure.)

## Connectivity between Peers

The desirable goal is total connectivity between DLSw peers on your network. With total connectivity, any DLSw peer can open connections to any other DLSw peer on the same network. Users of SNA and NetBIOS systems locally attached to routers configured as DLSw peers benefit directly from this capability.

DLSw service connectivity increases on your TCP/IP network through two mechanisms:

- ❑ Static definition/configuration (you define the configured peers for each router)
- ❑ Dynamic learning (each router learns about the locations of unconfigured peers defined on other Wellfleet routers)

## Unconfigured Peers

Unconfigured peers are any *remote*, RFC 1434-compliant, DLSw peers unknown to the local router. (The router has no entries for these peers in its Peer IP Table.)

Unconfigured peers normally do not receive broadcast frames from another router. However, unconfigured peers in a remote Wellfleet router can both receive and respond to broadcast frames that the configured peer in that router forwards internally.

When a local DLSw peer (Wellfleet or non-Wellfleet) receives a broadcast response from an unconfigured peer in a Wellfleet router, the local peer opens two new TCP connections for communication with the unconfigured peer. (One TCP connection supports transmission; the other supports reception.) It is by this mechanism that

- ❑ Configured peers in your TCP/IP network learn the locations of unconfigured peers in Wellfleet routers.

- DLSw service connectivity dynamically increases or improves on your TCP/IP network.

## DLSw Slots

Site Manager requires you to allocate one Internet Protocol (IP) interface for each DLSw-capable slot in the router configuration. The router uses this IP interface to establish the TCP sessions between peers in a DLSw network. You can add an IP to a circuit on the same slot with DLSw or to a circuit on another slot. Site Manager further requires you to identify the IP address uniquely associated with each DLSw slot. You enter this information in the DLSw Slot IP Table during the initial configuration procedure. Each entry in the table consists of a DLSw slot number plus the address of the IP interface you allocate for that slot.

**Note:** You can use the circuitless IP interface address for a DLSw-capable slot. Using the circuitless IP interface allows TCP connections for DLSw services on that slot to be less dependent on the availability of specific physical circuits or datalinks. (For more information on the circuitless IP interface, refer to *Customizing IP Services*.)

You can use IP multinet to add more IP interfaces to single physical interfaces for configurations that do not have as many physical IP interfaces as DLSw slots. For example, you might want to do this in large SDLC configurations since IP over SDLC does not exist. For more information on IP multinet, see *Customizing IP Services*.

Refer to Chapter 3 for more information about accessing and editing the DLSw Slot IP Table.

## DLSw SAPs

DLSw services locally terminate LLC2 sessions associated with SAP addresses that you explicitly identify to the router. Each router maintains an independent list of DLSw SAP addresses in a global DLSw SAP Table. Use the Wellfleet Configuration Manager tool to access and edit the DLSw SAP Table.

Each DLSw SAP address entry has a unique hexadecimal value. For example, some typical SAP address values for programs that run on SNA devices are 04, 08, and 0C (hexadecimal). NetBIOS always uses a SAP value of F0.

**Note:** You must specify a SAP when you configure SDLC local devices. You must configure the SAP in your DLSw SAP Table.

Refer to Chapter 3 for more information about accessing and editing the DLSw SAP Table.

## Remote NetBIOS/SNA Systems and Applications

Following the initial configuration procedure for a router, you can define the locations (DLSw peer IP addresses) of NetBIOS and SNA systems attached to remote LANs.

Wellfleet routers in your TCP/IP network also learn dynamically about the locations of remote NetBIOS and SNA systems that are accessible through DLSw services.

### Dynamically Learned Remote Systems

Wellfleet routers cache (dynamically learn) the MAC and NetBIOS addresses of remote DLSw systems and applications.

Local Wellfleet routers receive frames that contain information about the location (that is, the DLSw peer IP address) of each remote system and application that uses DLSw services. The router stores this information in separate NetBIOS and MAC address caches.

The router uses the learned IP address to locally specify the TCP/IP port of a DLSw peer that can reach the desired NetBIOS or SNA end-station or application.

You can set a timer value that determines when NetBIOS or MAC cache entries in the router disappear. (The timers are NetBIOS Cache Age and MAC Cache Age, respectively.)

The router refreshes a cache entry when DLSw services establish a connection to the NetBIOS or SNA system associated with that entry. (The router resets the appropriate Cache Age timer to its maximum wait interval.)

## **User-Defined Remote Systems**

You can define the IP addresses of DLSw peers that can reach remote systems or applications associated with specific NetBIOS names or MAC addresses. This information augments any information that the router's MAC and NetBIOS caching mechanisms learn dynamically.

You enter in the local router's Default NetBIOS Peer IP Table the peer IP address associated with any remote NetBIOS system or application you need to reach through DLSw services. Each entry in this table associates the name of a NetBIOS client with the IP address of the DLSw peer that can reach that client.

You enter in the router's Default MAC Peer IP Table the peer IP address associated with any remote SNA system or application that you need to reach through DLSw services. Each entry in this table associates the MAC address for an SNA system with the IP address of the DLSw peer that can reach that system.

A significant difference between learned and user-defined address entries is that user-defined entries remain unless you delete them manually from the Default NetBIOS Peer IP Table or the Default MAC Peer IP Table.



Refer to Chapter 3 for more information on how to

- ❑ Access the Default NetBIOS Peer IP Table and the Default MAC Peer IP Table
- ❑ Edit or delete entries stored in these tables

## Local Devices

To take advantage of integrated SDLC services in DLSw, you must define the SDLC devices that you want to appear as natively attached to the LAN. When you define such devices, you map the devices to LAN MAC and SAP addresses.

You can add local devices at the following times:

- ❑ When you add SDLC to a synchronous circuit and add the DLSw protocol to that circuit. For information on how to do this, see *Configuring Wellfleet Routers*.
- ❑ When you edit a synchronous circuit that already has SDLC and DLSw on it.
- ❑ When you edit DLSw Interface parameters. In this case, the interface whose parameters you choose to edit must already have at least one local device defined on it. For information on editing DLSw Interface parameters, see Chapter 3.

For each local device you add, Site Manager creates a corresponding SDLC link station, which is how SDLC sees the local device. Site Manager assigns several default parameter values to the link station. For information on how to access and change the link station parameters, see *Customizing SDLC Services*.

Once you add local devices, you can access and change the local device parameters, as described in Chapter 3.

## DLSw Traffic Filters

DLSw supports inbound traffic filtering. You can establish filters associated with any remote DLSw TCP port. The filters allow the router to

- ❑ Drop a packet
- ❑ Log a packet
- ❑ Forward a packet to a specific address (outbound to TCP)

For DLSw services:

- ❑ Actions other than LOG apply only to CANUREACH and all NetBIOS BLAST frames sent over the TCP/IP network.
- ❑ You can use the protocol prioritization to instruct the router to transmit DLSw traffic before other traffic on an individual synchronous-line interface.

For more information on how to access and configure traffic filters for DLSw services, refer to *Configuring Wellfleet Routers*.

## Protocol Support Functions

Table 1-1 summarizes how protocols that support DLSw services each help to provide connections between NetBIOS end-stations and between SNA systems on your network.

**Table 1-1. DLSw Protocol Components**

<b>Protocol/ Interface</b>	<b>Configured Circuit Type</b>	<b>DLSw Uses This Protocol/Interface Mainly to:</b>
Source route bridge (SRB)	Any media supporting source route bridge	<ul style="list-style-type: none"> <li>– Discover any possible bridged path for locally received SRB frames to follow to another local destination, without the need for DLSw services</li> </ul>
Logical link control (LLC)	Ethernet 802.3/8802.3  Token Ring/ 802.5  Source Route Bridge  Frame Relay	<ul style="list-style-type: none"> <li>– Terminate sessions initiated by local systems that request connection to systems on another, remote LAN</li> <li>– Initiate sessions to local systems requested by systems on another, remote LAN</li> </ul>
SDLC	Synchronous	<ul style="list-style-type: none"> <li>– Convert SNA/SDLC traffic into DLSw SSP format</li> <li>– Send SNA/SDLC traffic across a multiprotocol backbone to a remote FEP</li> <li>– Provide local SDLC termination</li> </ul>

*continued on the next page*

Table 1-1. DLSw Protocol Components *(continued)*

Protocol/ Interface	Configured Circuit Type	DLSw Uses This Protocol/Interface Mainly to:
DLSw Switch-to- Switch protocol (SSP)	Any IP cloud	<ul style="list-style-type: none"> <li>– Discover any remote Data Link Switch capable of reaching any remote NetBIOS or SNA system requested by a local NetBIOS or SNA system</li> <li>– Open and close TCP connections between a local Data Link Switch and a remote Data Link Switch</li> <li>– Prevent broadcasts issued by local end-stations from traversing the TCP/IP network</li> <li>– Cache destination IP addresses found while establishing a connection</li> </ul>
Trans- mission Control Protocol (TCP)	N/A  TCP is a router-wide (global) service	<ul style="list-style-type: none"> <li>– Map information between logically associated LLC2 and TCP session connections</li> <li>– Supervise and monitor TCP connections between local and remote Data Link Switches</li> <li>– Guarantee delivery of data and connection management messages across the TCP/IP network</li> </ul>
Internet Protocol (IP)	Any circuit, any slot	<ul style="list-style-type: none"> <li>– Carry data and message frames between local and remote Data Link Switches attached to the same TCP/IP network</li> <li>– Discover and recover routes between local and remote Data Link Switches</li> </ul>

The DLSw interface implements switch-to-switch protocol (SSP) functionality, as described in Internet RFC 1434.

## For More Information about DLSw

The following publications provide more detailed technical information related to DLSw services:

Dixon, Roy C.; Kushi, David M.; *Data Link Switching; Switch-to-Switch Protocol, RFC 1434*, March, 1993.

Wellfleet Communications; *Integrating SNA & Multiprotocol LAN Networks, A Complete Guide*, March, 1993.

IBM Corporation; *NetBIOS Frames Protocol, IBM Local Area Technical Reference, SC30-3383-03*, December 1990.

International Standards Organization; *ISO 8802-2/IEEE Std 802.2 International Standard, Information Processing Systems, Local Area Networks, Part 2: Logical Link Control*, December 31, 1989.

International Standards Organization; *ISO/IEC DIS 10038 DAM 2, MAC Bridging, Source Routing Supplement*, December 1991.

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# Chapter 2

## DLSw Implementation Notes

This chapter provides implementation notes and background information on DLSw configurations, support protocols, and performance. Use this information as an aid when you configure and customize DLSw services on your network.

### Topology Considerations

This section describes topology factors you need to consider when you configure DLSw services on LANs locally attached to the router.

### Source Route Bridge Topologies

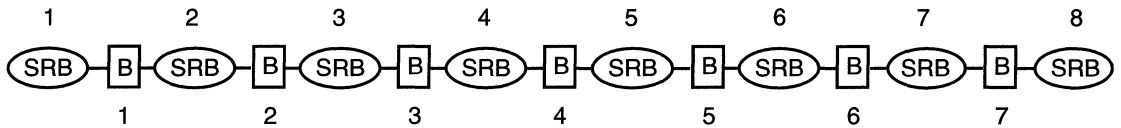
This section explains how to count LAN and bridge elements along any DLSw connection path that passes through source-route-bridged (SRB) LANs (such as Token Ring/802.5) on either side of the TCP/IP network.

The physical elements in this path are the SRB LANs and the bridges between LANs. The logical elements (implemented in router software) are the IP Virtual Ring, the internal LANs, and the DLSw bridges. You must count all LAN and bridge elements in a path to avoid exceeding

- ❑ The number of SRB LAN and bridge elements allowed in a source routing network
- ❑ The number of SRB LAN and bridge elements allowed along a DLSw connection path that includes SRB segments

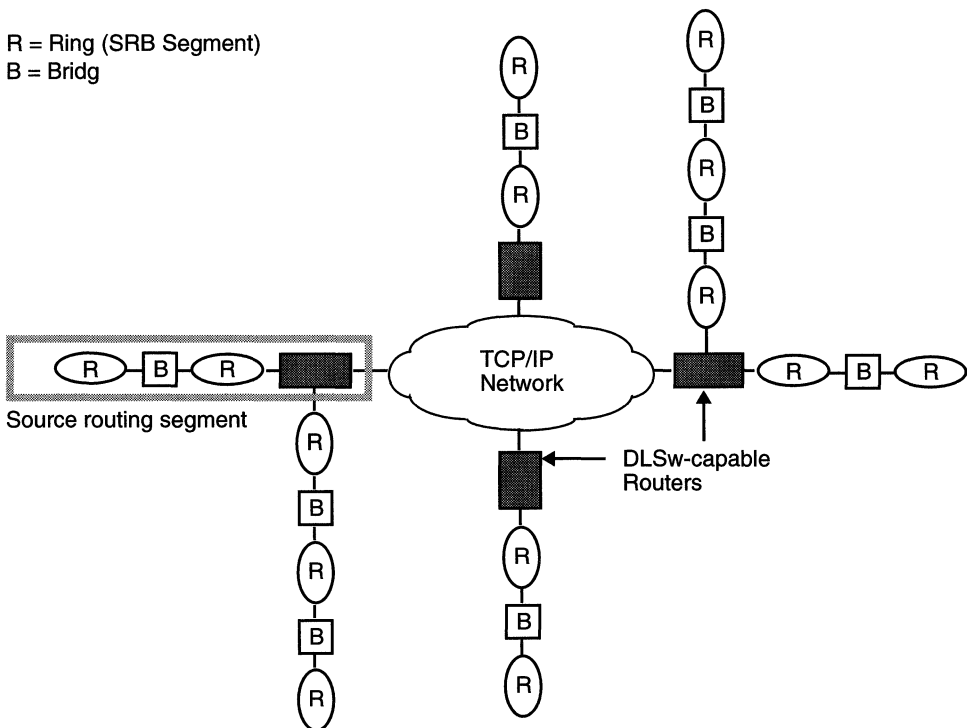
## Counting SRB LANs and Bridges

A standard source routing network can include up to 8 SRB LANs linked by 7 bridges (Figure 2-1).



**Figure 2-1. Maximum Ring and Bridge Hop Counts in a Source Routing Network**

**Note:** The term *source routing segment* refers to a linked series of rings and bridges attached to your TCP/IP network (Figure 2-2).



**Figure 2-2. DLSw-Capable Routers on an IP Backbone**

## The IP Virtual Ring

The DLSw peers at the periphery of a TCP/IP network collectively implement an *IP Virtual Ring*, which provides compatibility with LAN requirements (Figure 2-3).

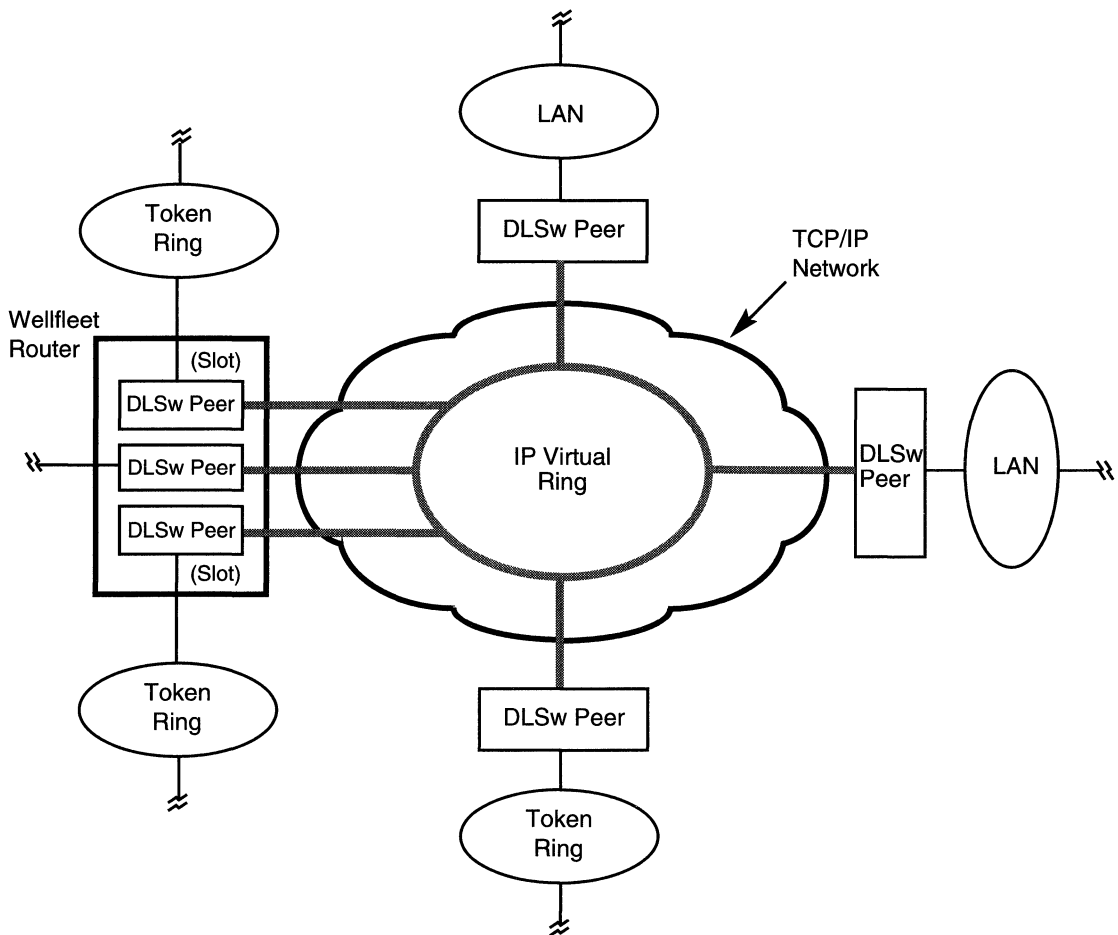


Figure 2-3. DLSw Peers Implementing an IP Virtual Ring



NetBIOS and SNA systems on a LAN attached to a DLSw peer perceive the IP Virtual Ring only as a physical boundary (the last ring) on that LAN or source-routing segment.

You must count the IP Virtual Ring when you determine the number of ring and bridge elements in each source routing segment connected to a DLSw peer.

Just as each physical Token Ring in a source routing network has an associated Ring ID, the Virtual Ring also has a *Virtual Ring ID*. You enter the Virtual Ring ID when you configure the DLSw global parameters.

The virtual ring also has an associated Maximum Transmission Unit (MTU) size. The Virtual Ring MTU parameter specifies a maximum size for frames sent from local user systems to systems on remote, source routing networks. Use as a value for the MTU the *smallest* frame size supported on any remote source routing segment in your network.

You can access and edit the Virtual Ring ID and Virtual Ring MTU parameters through the DLSw Global Parameters window.

**Note:** Site Manager requires you to enter values for the Virtual Ring ID and Virtual Ring MTU parameters, even if your network includes Ethernet/802.3 circuits configured for access to DLSw services.

## Counting the IP Virtual Ring

Count the IP Virtual Ring as one ring in each source routing segment attached to your TCP/IP network. You count the IP Virtual Ring first rather than last, to avoid configuring source-routing segments that already contain more than eight ring elements (Figure 2-4).

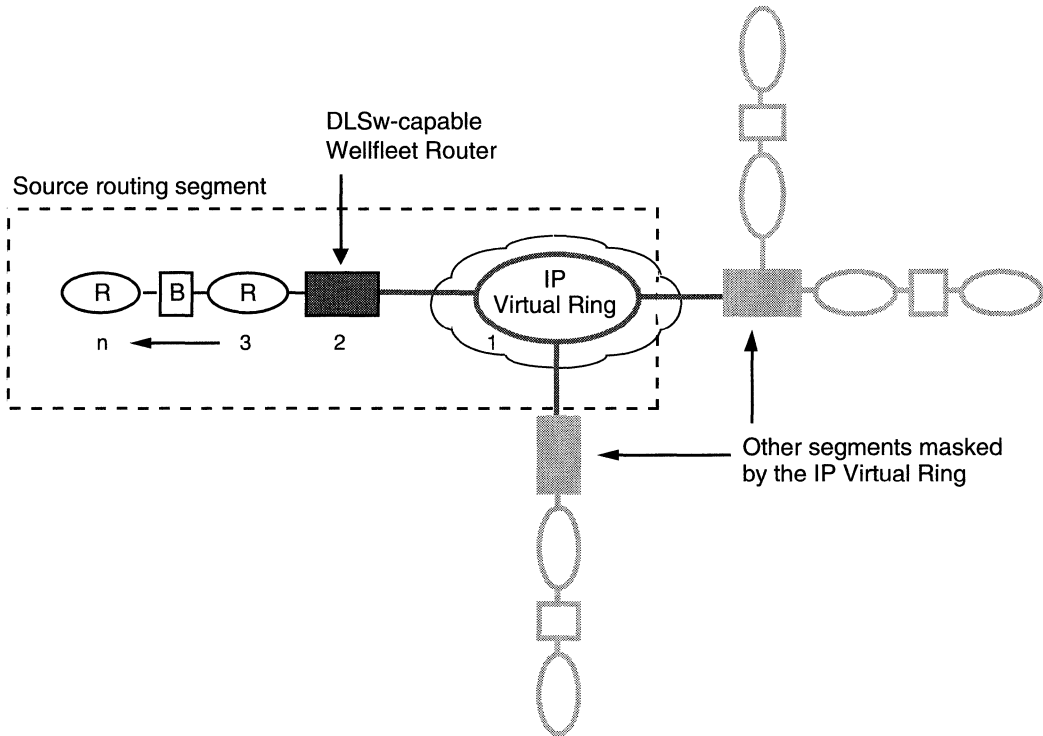
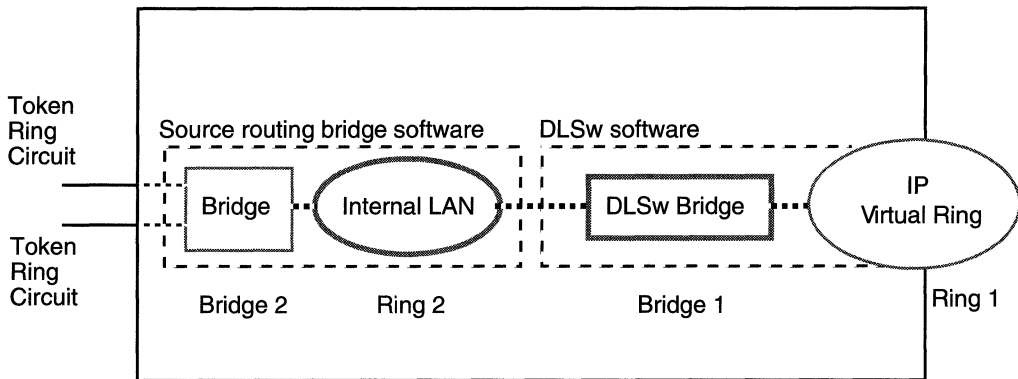


Figure 2-4. Counting the IP Virtual Ring

### The Internal LAN

Each DLSw-capable Wellfleet router between an SRB LAN and the TCP/IP network implements an internal LAN in the source routing bridge software (Figure 2-5).



**Figure 2-5. Wellfleet Router Logical Considerations for DLSw Support**

The internal LAN is not an actual network, but you must account for it in topology calculations for SRB environments. The internal LAN also has an associated ID that you enter when you configure the source routing bridge global parameters for DLSw operation.

Refer to *Configuring Wellfleet Routers or Customizing Bridging Services* for more information on the source routing bridge internal LAN ID parameter.

### Counting the Internal LAN

Count the internal LAN only once per source-routing segment. (Ensure that the Group LAN ID is the same for all Wellfleet routers in the same source-routing segment.)

### Counting the DLSw Bridge

Each DLSw peer in your network implements a DLSw bridge between the internal LAN and the IP Virtual Ring. (Refer to Figure 2-5.) The DLSw bridge is part of the router software, not an actual bridge. You must, however, *count this as one bridge in a source routing segment*.

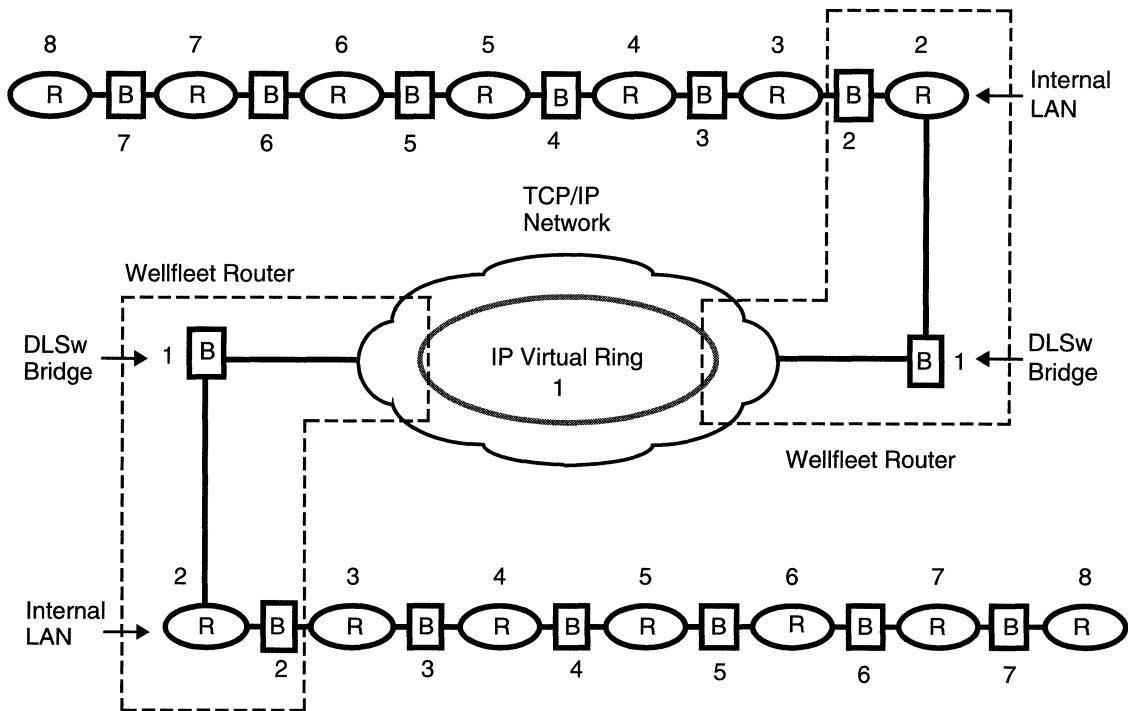
The DLSw bridge has no associated bridge identification number to enter in Site Manager; it uses the ID configured for the bridge.

## Computing a DLSw Connection Path

For SRB LAN environments, the longest DLSw connection path can include up to 15 SRB LANs and 14 bridge elements. Some of these elements are physical, others are logical (implemented in software).

For information on SRB LAN and bridge elements to count in non-Wellfleet DLSw-capable nodes, see the appropriate manufacturer's user documentation.

Figure 2-6 shows an end-to-end path that traverses two Token Ring LANs and an intervening TCP/IP network. A DLSw-capable Wellfleet router connects each Token Ring LAN to the periphery of the TCP/IP network. The path shown in Figure 2-6 contains the maximum of 15 ring elements and 14 bridge elements. (Note that although the figure shows Token Ring LANs, DLSw supports all other SRB LANs.)



**Figure 2-6. End-to-End Path in a DLSw-Capable Token Ring/802.5 Network**

For mixed topologies (SRB and non-SRB LANs on either side of the TCP/IP network), an end-to-end connection path includes an SRB and a non-SRB LAN. In such cases, do not exceed the maximum number of SRB LAN and bridge elements allowed on the SRB LAN side of the connection path.

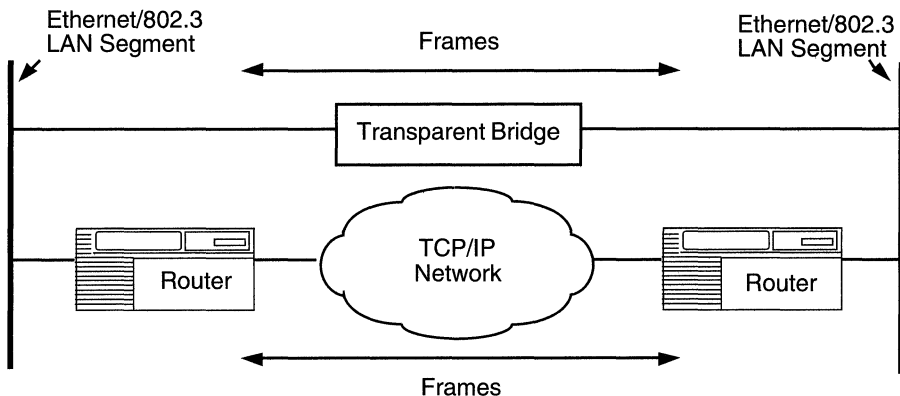
## Ethernet Topologies

When you configure DLSw services on Ethernet/802.3 circuits, adhere to industry-standard Ethernet/802.3 topology guidelines and restrictions.

**Note:** The Virtual Ring ID and Virtual Ring MTU parameters that appear in the DLSw Global Parameters window are primarily for compatibility with SRB networks locally attached to the router. However, Site Manager requires you to enter a value for the Virtual Ring ID, even if you are configuring DLSw services on non-SRB segments locally attached to the same router.

## Parallel Data Paths

If a valid bridging path already exists between two LANs, *do not* configure a parallel DLSw connection path between the same two LANs (Figures 2-7 and 2-8). Parallel data paths allow frames to traverse the LANs twice, which, in turn, may confuse systems on the associated LAN segments.



**Figure 2-7. DLSw Services in Parallel with a Transparent Bridge**

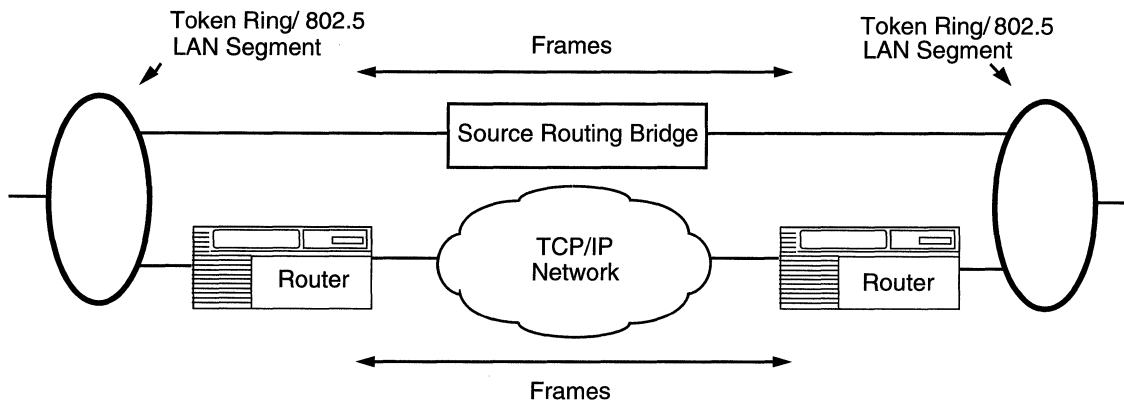


Figure 2-8. DLSw Services in Parallel with a Source Routing Bridge

## Multiple DLSw Peers on a LAN

You can configure two or more data link switches on the same SRB LAN. With this configuration, each DLSw peer reaches a different set of remote NetBIOS and SNA systems. In this case,

- Do *not* define a TCP connection between these Data Link Switches.
- Assign the same Virtual Ring number to each peer.

Taking these precautions prevents frames sent by one Data Link Switch from propagating through the other Data Link Switches on the same SRB LAN.

**Note:** Do not configure multiple Data Link Switches on an Ethernet/802.3 LAN. Ethernet/802.3 LANs do not support loop prevention through source routing.

## DLSw and Bridging Services

This section presents the different types of bridging services that coexist on a circuit with DLSw, and explains any differences in TEST or explorer frame handling on these circuits. This information is useful when you examine traffic on LANs locally attached to the router.

### DLSw with Source Routing Bridge

DLSw services on an SRB circuit require the presence of a source routing bridge interface on the same circuit.

Upon receiving an explorer frame from a locally attached LAN, the DLSw interface and its associated source routing bridge interface attempt concurrently to discover the location of a program identified in that frame.

DLSw searches the TCP/IP network for a route to a user system configured to run the program. The source routing bridge interface looks for a local, source route bridged path to a user system configured to run the program (Figure 2-9).

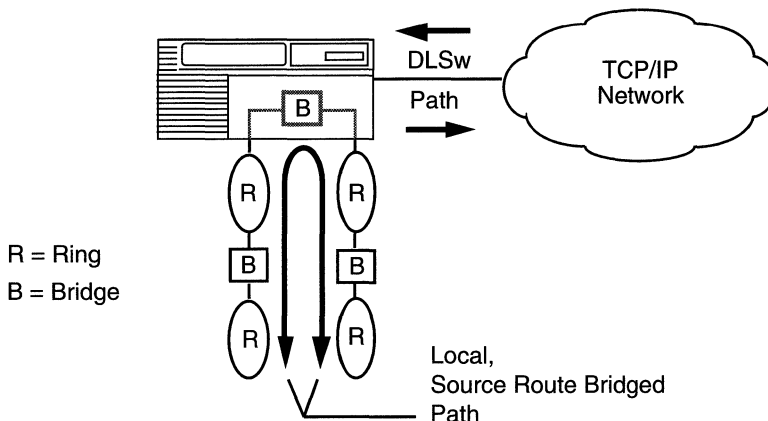


Figure 2-9. DLSw and Source Route Bridging on SRB Circuits



The interface (DLSw or the source routing bridge) that is first able to support a connection to the desired program or logical entity takes precedence on the SRB circuit. The slower interface ceases any further activity to support a connection to the target program.

## DLSw with Transparent Bridge

The router supports DLSw and transparent bridge interfaces configured on an Ethernet/802.3 circuit. The Transparent Bridge software provides bridging services between Ethernet/802.3 LAN segments locally attached to the same router.

The DLSw interface takes precedence over the transparent bridge interface whenever the destination SAP address identified in a TEST frame received from the local circuit already exists in the router's DLSw configuration. In this case, only the DLSw interface

- Captures the locally received TEST frame
- Attempts to discover the location of the destination SAP address specified in that frame

The transparent bridge interface on the same circuit with DLSw never sees TEST frames that contain destination SAP addresses intended for DLSw (Figure 2-10).

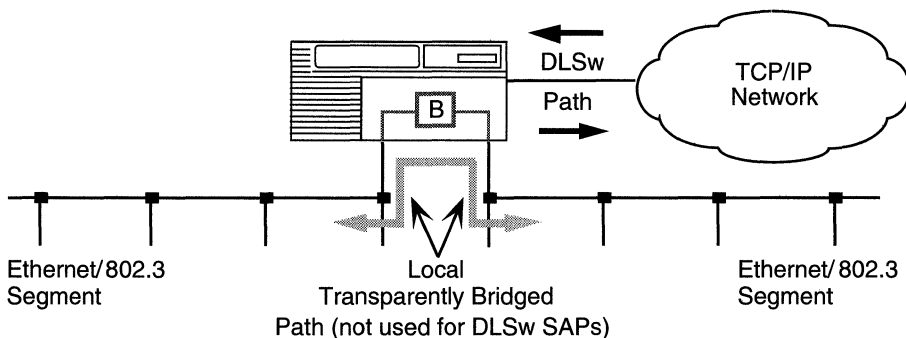


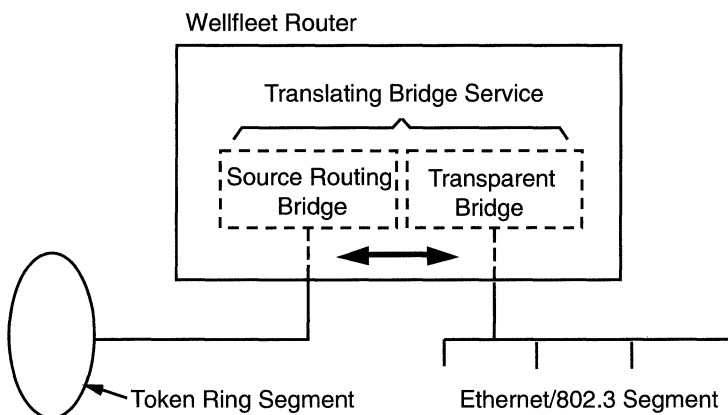
Figure 2-10. DLSw and Transparent Bridging on Ethernet/802.3 Circuits

You configure transparent bridge services independent of DLSw services on the router, as appropriate for the topology of your network.

## DLSw with Translating Bridge

The router supports DLSw and translating bridge services on an SRB or Ethernet/802.3 circuit. (You configure translating bridge services independent of DLSw services on the router, as appropriate for the topology of your network.)

To an end-user system on an SRB circuit, the translating bridge looks like a source routing bridge. To an end-user system on an Ethernet/802.3 circuit, the translating bridge looks like a transparent bridge (Figure 2-11).



**Figure 2-11. Translating Bridge Services**

The Translating Bridge service

- ❑ Supports communication between systems on SRB and Ethernet/802.3 segments locally attached to the same router
- ❑ Maps between SRB and Ethernet/802.3 framing requirements

The next two sections describe how DLSw services operate differently on SRB and Ethernet/802.3 circuits configured for translating bridge services.

## DLSw and Translating Bridge on an SRB Circuit

On an SRB circuit with translating bridge services enabled, the following rules apply:

- ❑ Upon receiving an explorer frame that contains a DLSw-specific destination SAP address, the DLSw interface and its associated source routing bridge interface attempt concurrently to discover the location of the requested program entity.
- ❑ DLSw searches the TCP/IP network for a route to a system that can run the requested program. The source routing bridge interface looks for a local, bridged path to a system that can run the program.
- ❑ The interface (DLSw or the source routing bridge) first able to support a connection to the program takes precedence on the Token Ring circuit. The slower interface ceases any further attempts to support a connection to the target program.

## DLSw and Translating Bridge on an Ethernet/802.3 Circuit

On an Ethernet/802.3 circuit with translating bridge services enabled, the following rules apply:

- ❑ The DLSw interface takes precedence over a transparent bridge interface whenever the destination SAP address identified in a TEST frame received from the associated circuit already exists in the router's DLSw configuration.
- ❑ DLSw services on the router open TCP connections to another router that can reach the requested remote system or application program.

## DLSw over Frame Relay

DLSw supports the IETF RFC 1490, which allows Wellfleet routers configured with DLSw to transport native SNA traffic over Frame Relay networks. This feature enables SNA traffic from devices attached to SDLC, SRB LANs, and

Ethernet/802.3 to travel over public or private Frame Relay networks directly to IBM 3745 or 3746 Communications Controllers. Wellfleet routers that you configure with DLSw can implement RFC 1490 in single-switch configurations or using intermediate routing nodes. For configuration information that relates to DLSw over Frame Relay, refer to *Customizing LLC Services*.

## LLC Sessions and Memory Requirements

Specifying more LLC2 sessions per slot dedicates more of the router's total memory and processing resources to DLSw. This action somewhat reduces memory and processing resources available to other protocols configured on the router. If possible, you should estimate the number of LLC2 sessions likely to be supported by each DLSw-capable slot.

You can set the number of LLC2 sessions supported by DLSw-capable slots in the router through the Max Slot Sessions parameter in the Edit DLSw Global Parameters window.

Refer to Chapter 3 for instructions on accessing and editing the Max Slot Sessions (DLSw global) parameter.

## TCP Memory Requirements

Using the value of the TCP Window Size parameter, you can approximate the amount of memory required by TCP for DLSw services as follows:

**Router Memory Required (kB) =**

(No. Peers) x (2 Connections Per Peer) x (TCP Window Size, in kB)

Refer to Chapter 3 for instructions on how to access the DLSw global parameters.

## Flow Control

The LLC2 protocol interface provides a bidirectional window mechanism and a SAP credit allocation mechanism that together manage flow control on individual LLC2 connections between the router and LAN-attached SNA or NetBIOS systems.

Each pair of TCP connections between DLSw peers carries data from many LLC sessions. When congestion occurs in the TCP/IP network between DLSw peers, TCP

- ❑ Reduces or closes its transmit window
- ❑ Signals the local and remote LLC interfaces to assert flow control on any LLC2 connections associated with the congested TCP connections

TCP and LLC continue to assert flow control until congestion recedes on a given TCP connection.

The default settings for system parameters relevant to LLC and TCP flow control are suitable for the majority of your DLSw service requirements.

## Integrated SDLC

The DLSw integrated SDLC feature supports PU Type 2.0 and 2.1 devices configured as secondary to the router.

Integrated SDLC supports the following interfaces:

- ❑ V.24 (RS-232)
- ❑ V.35
- ❑ X.21

The synchronous line speed (between the SDLC device and the Wellfleet router) can be up to 64 Kbps.

You can use integrated SDLC in a point-to-point or multipoint topology. With point-to-point, one SDLC device is connected to the SDLC port. With multipoint topologies, several SDLC devices are connected to the SDLC port via a modem-sharing device. You specify the topology when you configure SDLC on the synchronous circuit (see *Configuring Wellfleet Routers*).

## Performance

In a DLSw configuration that includes a single IP Virtual Ring, the operation of three connection-oriented protocol components (two LLC2 and one TCP) in the data path between end-stations may affect end-to-end performance somewhat. Performance delays increase for DLSw configurations that include more than one IP Virtual Ring in any end-to-end connection path. (For more information on DLSw configurations that include multiple IP Virtual Rings in an end-to-end connection path, contact your local Bay Networks Help Desk.)

You can make determinations of DLSw latency, based on your experience with specific SNA and NetBIOS applications. Consider also the inherent latency of the physical datalinks that interconnect each pair of DLSw peers.

For details on these and other performance-related considerations, refer to the appropriate Bay Networks publication for the protocols supporting DLSw operation (that is, LLC, SRB, TCP, and IP).



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# Chapter 3

## Editing DLSw Parameters

This chapter describes how to edit DLSw global and interface parameters, and how to add, edit, or delete the following configuration objects:

- ❑ Configured peers
- ❑ Slots
- ❑ Service access points (SAPs)
- ❑ Default NetBIOS peers
- ❑ Default MAC peers
- ❑ Local devices

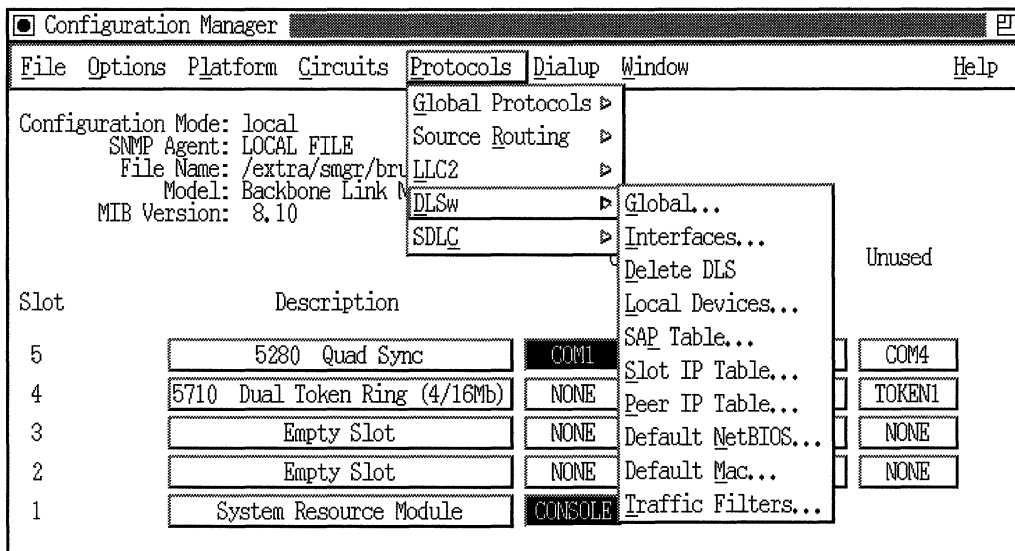
The chapter also describes how to delete DLSw services from all circuits simultaneously.

The Site Manager sequence for adding the first DLSw interface to your router configuration first requires you to define an initial set of DLSw configured peers, DLSw slots, and DLSw SAPs.



## Accessing DLSw Parameters

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



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

For each DLSw parameter, the following information is shown:

- ❑ Default setting
- ❑ All valid setting options
- ❑ Function or purpose
- ❑ Instructions for setting
- ❑ 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

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using the Technician Interface to access the MIB, refer to *Using Technician Interface Software*.

You may want to customize the LLC2, TCP, IP, or source routing bridge parameters as well, since these support DLSw services on the router. If so, refer to one of the publications listed in Table 3-1. Otherwise, you can access parameters of the DLSw support protocols from the Protocols menu of the Wellfleet Configuration Manager window or Circuit Definition window.

**Table 3-1. Customizing the DLSw Support Protocols**

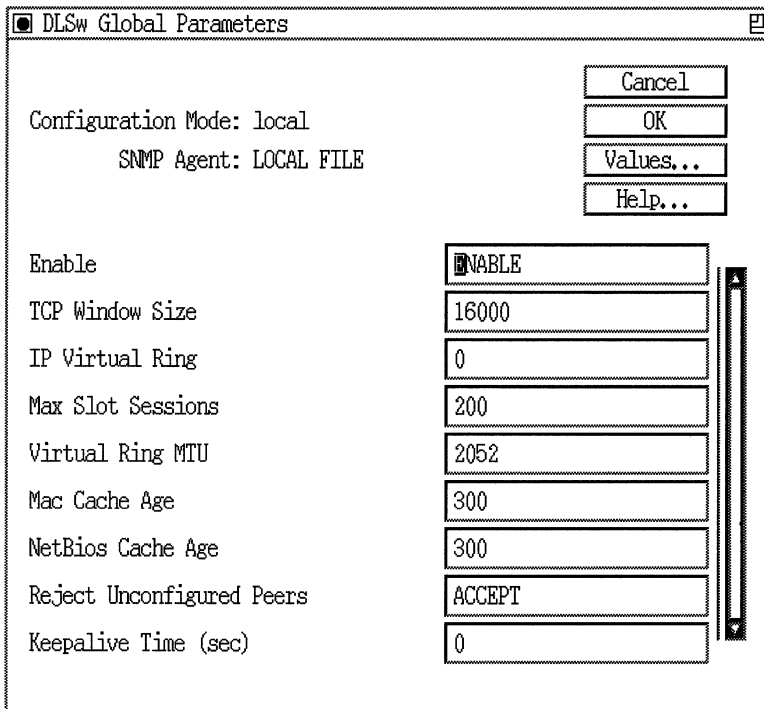
<b>Protocol:</b>	<b>Refer To:</b>
TCP	<i>Customizing TCP Services</i>
IP and IP RIP	<i>Customizing IP Services</i>
Source routing bridge	<i>Customizing Bridging Services</i>
LLC2	<i>Customizing LLC Services</i>

## Editing DLSw Global Parameters

To edit DLSw global parameters, begin at the Wellfleet Configuration Manager window and proceed as follows:

1. Select Protocols→DLSw→Global.

The Edit DLSw Global Parameters window opens (Figure 3-2).



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

2. Edit the parameters you want to change.
3. When you finish, click on OK to save your changes and return to the Wellfleet Configuration Manager window.

## DLSw Global Parameter Descriptions

This section describes the DLSw global parameters that have settings you can customize from the Edit DLSw Global Parameters window.

<b>Parameter:</b>	<b>Enable</b>
Default:	Enable
Options:	Enable   Disable
Function:	<p>Globally enables or disables the system software mechanisms that allow (or do not allow) you to add DLSw interfaces to the node configuration.</p> <p><i>Disable</i> – Switches every DLSw interface enabled on the router to the disabled (inactive) state.</p> <p><i>Enable</i> – Reinitializes every DLSw interface on the router, based on</p> <ul style="list-style-type: none"><li><input type="checkbox"/> The current setting of the associated Interface Enable/Disable parameter</li><li><input type="checkbox"/> The current state of the associated circuit</li></ul>
Instructions:	<p>Select Disable to switch every DLSw interface existing on the node into the inactive state.</p> <p>Select Enable to globally reinitialize all DLSw interfaces configured on the node.</p>
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.1.2

**Parameter: TCP Window Size**

**Default:** 16000 (octets)

**Range:** 5000 to 64000 (octets)

**Function:** Specifies (in octets) the maximum amount of DLSw data that the local and remote TCP entities can send before requiring an acknowledgment, or can receive before acknowledging.

**Instructions:** Enter any valid number of octets.

If the TCP Window Size for DLSw services is less than the global TCP Max Window, DLSw uses its own TCP Window Size.

If the TCP Window Size for DLSw services is more than the global TCP Max Window size, Site Manager prompts you to make one of the following choices:

- Increase the global TCP Max Window size to the TCP Window Size set for DLSw services.
- Accept the global TCP Max Window size as the TCP Window Size for DLSw services on the router.

**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.5.1.4

**Parameter: IP Virtual Ring**

Default: None

Range: Any valid, unassigned ring number:  
1 to 4095<sup>10</sup> (0x0001 to 0x0FFF)

Function: Specifies a Virtual Ring number for the TCP/IP network.

Instructions: Enter any valid ring number. The number must be

- Unique among any other ring IDs, group LAN IDs, or internal LAN IDs assigned in the network
- The same as the Virtual Ring number used by all other DLSw peers on the same TCP/IP network

Entering a value for this mandatory parameter prepares the router for DLSw services on Token Ring/802.5 circuits. (Complete the entry even if you are presently configuring DLSw services on Ethernet/802.3 circuits only.)

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.1.5

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**Parameter: Max Slot Sessions**

Default: 200 (sessions per slot)

Range: 1 to 10000

Function: Specifies the maximum number of LLC2 sessions that a given slot in the router can support for DLSw requirements. Specifying more sessions per slot has the effect of dedicating more memory and processing resources to DLSw interfaces running on the router.

Instructions: If possible, estimate the maximum number of LLC2 sessions that each DLSw peer slot may need to support concurrently. Enter a number that

- Meets session support requirements for DLSw services provided on any slot of the router
- Allows a balance between the number of sessions supported for DLSw services on a slot and the amount of resources remaining for other protocols configured on the same slot

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.1.8

**Parameter: Virtual Ring MTU**

Default: 2052 (bytes)

Range: Any number of bytes greater than 1

Function: Specifies a maximum transmission unit (MTU) size for frames sent from local, LAN-attached, systems to systems on remote LANs. The smallest MTU size supported among all remote LANs in your configuration determines the maximum value of the Virtual Ring MTU parameter for the local router.

Instructions: Enter any number of bytes greater than 1.  
Entering a new value or accepting the default value for this mandatory parameter helps to prepare end-stations for the MTUs of remote LANs.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.1.10

**Parameter: MAC Cache Age**

Default: 300 (seconds)

Range: Any number of seconds greater than 20

Function: Specifies the maximum number of seconds that inactive MAC addresses can exist in the MAC-to-DLSw Peer (mapping) cache.

Instructions: Enter an interval to limit the amount of memory that inactive MAC cache entries consume for DLSw services on the router.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.1.11



**Parameter:** **NetBIOS Cache Age**  
**Default:** 300 (seconds)  
**Range:** Any number of seconds greater than 20  
**Function:** Specifies the maximum number of seconds that inactive NetBIOS names can exist in the NetBIOS-to-DLSw Peer (mapping) cache.  
**Instructions:** Enter an interval to limit the amount of memory that inactive NetBIOS cache entries consume for DLSw services on the router.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.5.1.12

**Parameter:** **Reject Unconfirmed Peers**  
**Default:** Accept  
**Options:** Accept | Reject  
**Function:** Specifies whether DLSw peers in this router should allow (Accept) or disallow (Reject) TCP sessions with other DLSw peers not defined in the DLSw Peer Table.  
**Instructions:** Select Accept if you want to allow TCP sessions with other Wellfleet or non-Wellfleet DLSw peers not in the Peer Table.  
Select Reject if you want to disallow TCP sessions with other Wellfleet or non-Wellfleet DLSw peers not defined in the Peer Table. Disallowing TCP sessions prevents the router from learning the IP address of other peers in the network.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.5.1.13

<b>Parameter:</b>	<b>Keepalive Time</b>
Default:	0 seconds
Range:	0 to 4294967295
Function:	Specifies the time interval after which the router sends a DLSw keepalive message to inactive, established TCP connections to verify that the connection is still available.
Instructions:	Enter the number of seconds you want for the keepalive time interval, or enter 0 to disable the keepalive feature.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.1.16

## Editing DLSw Interface Parameters

You can use the Configuration Manager to enable or disable a DLSw interface on a specific circuit. To access the DLSw Interface parameters from the Wellfleet Configuration Manager window, proceed as follows:

1. Select Protocols→DLSw→Interfaces.

The DLSw Interface Configuration window appears (Figure 3-3).

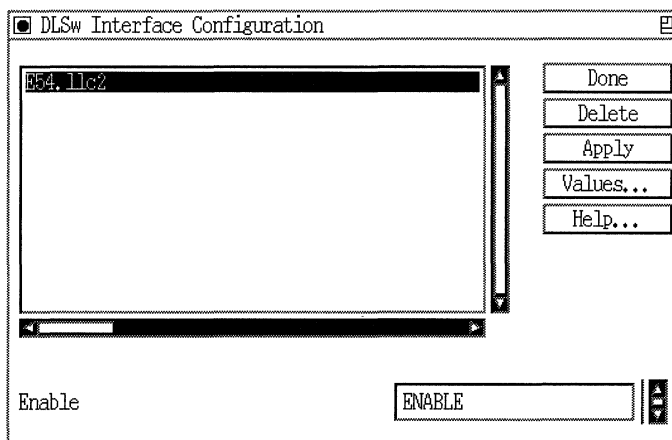


Figure 3-3. DLSw Interface Configuration Window

2. Select an interface from the list in the window.  
The interfaces appear in the form: `<circuit_name>.llc2`
3. Change the setting of the Enable parameter if necessary. (Refer to the description of the parameter that follows this procedure.)
4. Click on Apply to save your change.
5. Click on Done. The Wellfleet Configuration Manager window reappears.

Following is a description of the Enable parameter in the DLSw Interface Configuration window (Figure 3-3):

**Parameter: Enable**

Default: Enable

Options: Enable | Disable

Function: Enables or disables Data Link Switching over this interface.

*Enable* – Initializes the DLSw interface you added to a physical circuit. Also use the Enable setting to reinitialize an existing DLSw interface earlier disabled. The state of the interface depends on the up/down state of the associated circuit and slot.

*Disable* – Switches a DLSw interface from the enabled (up) state to the disabled (down) state.

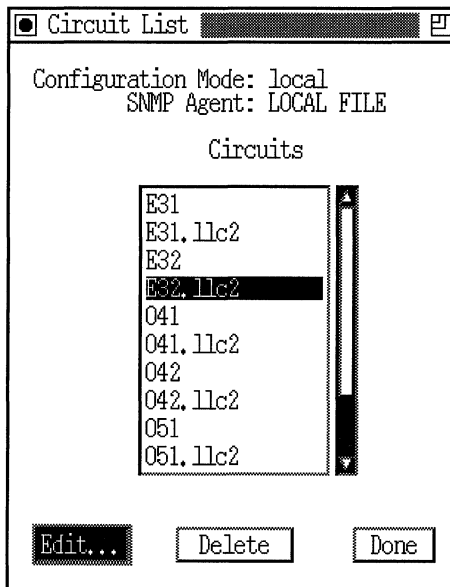
Instructions: Select Enable if you previously set this parameter to Disable and now want to re-enable Data Link Switching over this interface.

Select Disable only if you want to disable Data Link Switching over this interface. This cancels all active LLC2 sessions currently supported by the interface.

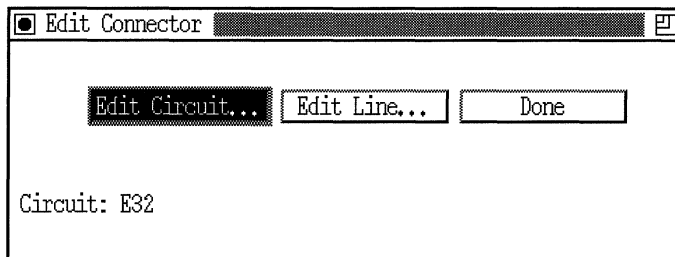
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.2.1.2

You can also access the Enable parameter of a DLSw interface through the Edit Circuits function. To do so, begin at the Wellfleet Configuration Manager window, and do either of the following:

- ❑ Select Circuits→Edit Circuits to bring up the Circuit List window (Figure 3-4); then select a circuit and click on Edit.
- ❑ Select a connector in the Wellfleet Configuration Manager window to invoke the Edit Connector window (Figure 3-5); then click on Edit Circuit.



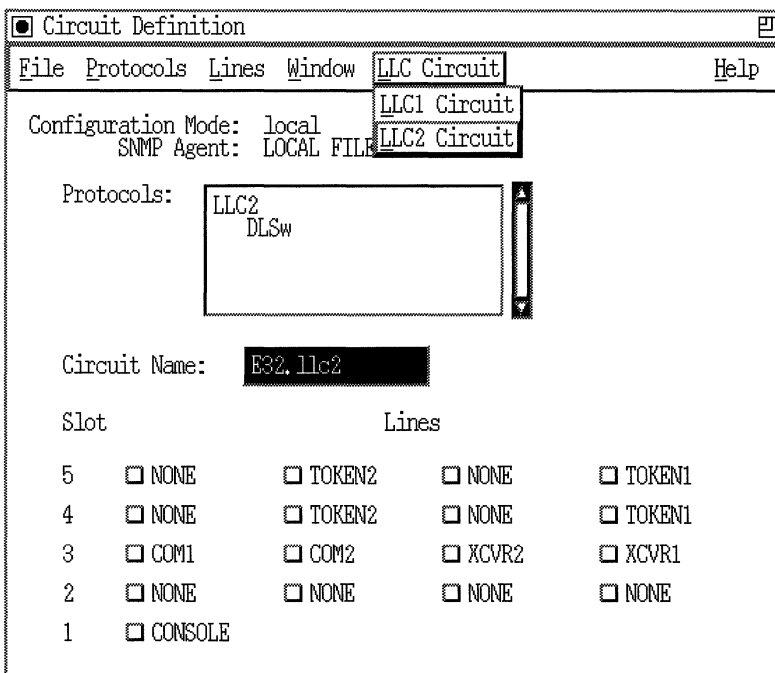
**Figure 3-4. Circuit List Window**



**Figure 3-5. Edit Connector Window**

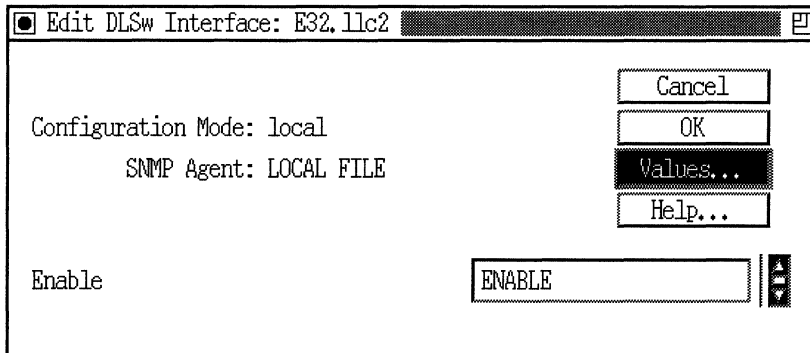
After the Circuit Definition window appears, follow these steps:

1. Select LLC Circuit→LLC2 from the Circuit Definition window (Figure 3-6).



**Figure 3-6. Selecting the LLC2 Logical Circuit**

2. Select Protocols→Edit DLSw→Interface. The Edit DLSw Interface window appears (Figure 3-7).



**Figure 3-7. Edit DLSw Interface Window**

3. Enter Enable or Disable in the parameter box.
4. Click on OK to exit from the Edit DLSw Interface window.  
The Circuit Definition window reappears (Figure 3-6).
5. Select File→Exit in the Circuit Definition window.

The result of Step 5 depends on how you originally accessed the DLSw Interface Enable parameter:

- If you selected the Circuits→Edit Circuits from the Wellfleet Configuration Manager window, the Circuit List window appears. Refer to Figure 3-4. Clicking on Done in the Circuit List window completes the procedure and returns you to the Wellfleet Configuration Manager window.
- If you selected a connector to invoke the Edit Connector window (Figure 3-5), the Wellfleet Configuration Manager window appears, indicating that you completed the procedure.

Following is a description of the Enable parameter in the Edit DLSw Interface window (Figure 3-7):

<b>Parameter:</b>	<b>Enable</b>
Default:	Enable
Options:	Enable   Disable
Function:	Enables or disables Data Link Switching over this interface.  <i>Enable</i> – Initializes the DLSw interface you added to a physical circuit. Also use the Enable setting to reinitialize an existing DLSw interface earlier disabled. The state of the interface depends on the up/down state of the associated circuit and slot.  <i>Disable</i> – Switches a DLSw interface from the enabled (up) state to the disabled (down) state.
Instructions:	Select Enable if you previously set this parameter to Disable and now want to re-enable Data Link Switching over this interface.  Select Disable only if you want to disable Data Link Switching over this interface. This cancels all active LLC2 sessions currently supported by the interface.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.2.1.2

## Editing DLSw Peer IP Table Parameters

The DLSw Peer IP Table contains the list of all configured (remote) peers known to the local router. This section describes how to add, edit, and delete configured peers. (Refer to Chapter 1 for more information on configured and unconfigured peers.)

To access the DLSw Peer IP Table, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→Peer IP Table. The

DLSw Peer Configuration window appears, listing all DLSw configured peers known to the local router (Figure 3-8).

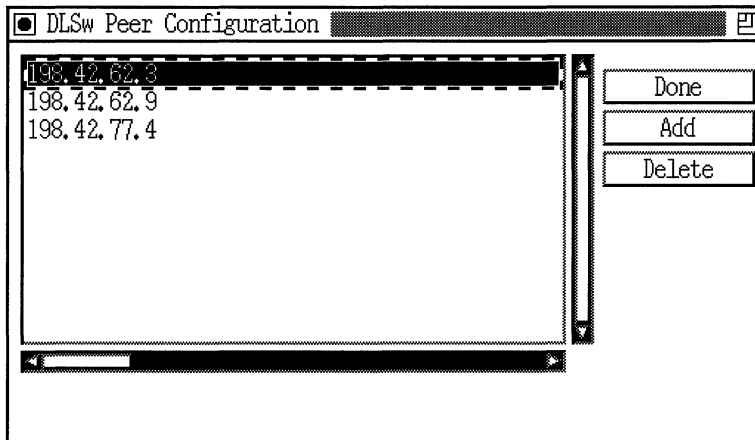


Figure 3-8. Configured Peers in DLSw Peer Configuration Window

## Adding a DLSw Peer IP Table Entry

To add a new DLSw Peer (IP) Table entry, begin at the DLSw Peer Configuration window (Figure 3-8) and proceed as follows:

1. Click on Add.

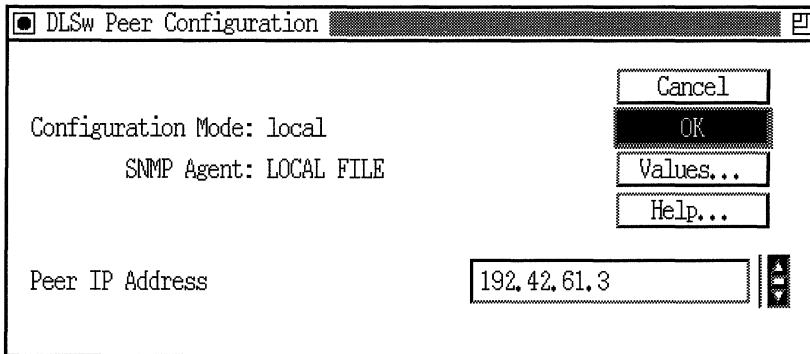
The DLSw Peer Configuration window appears (Figure 3-9).

2. Enter a value for the Peer IP Address parameter.

**Note:** Do not enter the IP address of any DLSw peer (slot) that resides in the local router.

3. Click on OK in the DLSw Peer Configuration window (Figure 3-9) to save the new entry. The DLSw Peer Configuration window reappears (Figure 3-8) with the new entry in the list of existing peers.
4. Click on Done to return to the Configuration Manager window.





**Figure 3-9. IP Address in DLSw Peer Configuration Window**

Following is an explanation of the Peer IP Address parameter:

**Parameter: Peer IP Address**

Default: None

Options: Any valid 32-bit IP address of the form *network.host* (using dotted decimal notation)

Function: Specifies the IP address of a remote DLSw peer. Adding this address to the DLSw Peer Table defines a configured peer on the local router. Configured peers receive all DLSw-related broadcast frames from the local router.

Instructions: Enter the IP address at which the configured peer should receive all DLSw-related broadcast frames.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.5.1.3

## Editing a DLSw Peer IP Table Entry

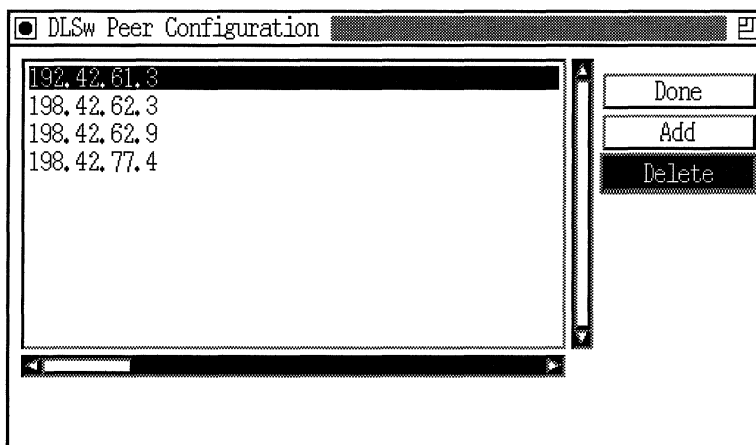
You cannot edit the Peer IP Address parameter associated with an existing DLSw Peer IP Table entry. To change the IP address of an entry, proceed as follows:

1. Delete the existing entry from the DLSw Peer IP Table. (Refer to “Deleting a DLSw Peer IP Table Entry.”)
2. Using the appropriate IP address, add a new configured peer entry to the DLSw Peer IP Table. (Refer to the preceding section, “Adding a DLSw Peer IP Table Entry.”)

## Deleting a DLSw Peer IP Table Entry

To delete a DLSw Peer IP Table entry:

1. Select from the DLSw Peer Configuration window (Figure 3-10) the DLSw Peer Entry you want to delete from the router configuration.
2. Click on Delete.



**Figure 3-10. Deleting a DLSw Peer IP Table Entry**

The system software deletes the entry, and the entry disappears from the list of configured peers.

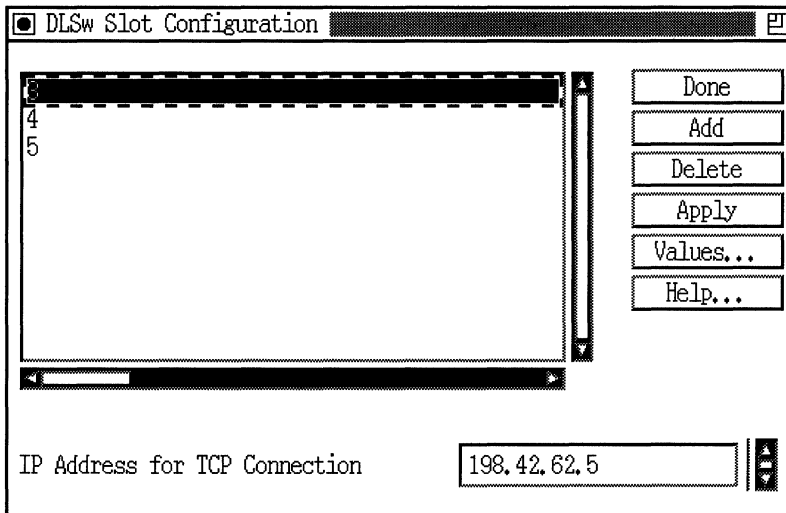
3. Click on Done to return to the Wellfleet Configuration Manager window.

## Editing the DLSw Slot IP Table

The DLSw Slot Configuration Table contains a list of all DLSw-capable slots in your Wellfleet router. Each table entry establishes a slot in the router as a DLSw peer on your TCP/IP network. You identify a slot by its number in the router chassis, and a DLSw peer by its IP interface address on the TCP/IP network. DLSw Slot Table entries associate the number of a DLSw-capable slot with the IP network address of that (peer) slot. This section describes how to add, edit, and delete DLSw Slot IP Table entries.

**Note:** Before you add any entries to the slot table, you must add/allocate one IP interface for each DLSw-capable slot in the router configuration. You need not configure the associated IP and DLSw interfaces on the same slot. You can also use the circuitless IP interface address for a DLSw-capable slot. Using the circuitless IP interface allows TCP connections for DLSw services on that slot to be less dependent on the availability of specific physical circuits or datalinks. (For more information on the nature and use of the circuitless IP interface, refer to *Customizing IP Services*.)

To access the DLSw Slot IP Table, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→Slot IP Table. The DLSw Slot Configuration window appears, showing a list of all slots serving as DLSw peers on your TCP/IP network (Figure 3-11).



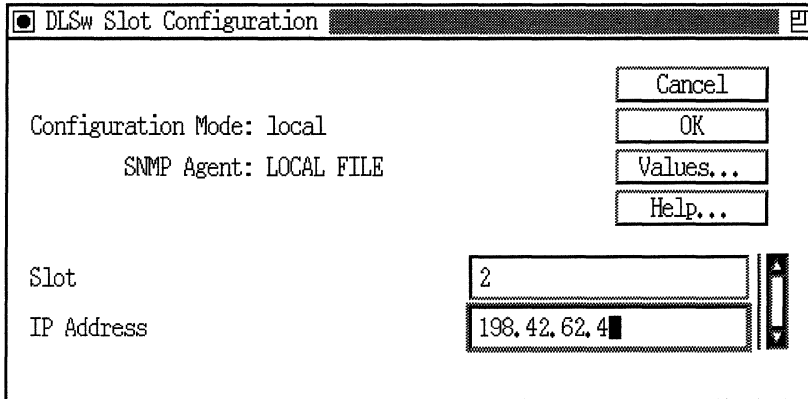
**Figure 3-11. DLSw Slot Configuration Window**

## Adding a DLSw Slot Table Entry

To add a new DLSw Slot Table entry, begin at the DLSw Slot Configuration window and proceed as follows:

1. Click on Add.

The DLSw Slot Configuration window appears (Figure 3-12).



**Figure 3-12. IP Address in DLSw Slot Configuration Window**

2. Enter a value for the Slot parameter.
3. Enter the address of an IP interface configured earlier on the router. (Each DLSw-capable slot requires its own IP interface in the router configuration.) Do not specify the same IP interface address for two or more different DLSw-capable slots in the same router configuration.
4. Click on OK to save your entry to the configuration file.

The DLSw Slot Configuration window reappears (Figure 3-11) with the new entry added to the list of existing DLSw-capable slots.

Following is an explanation of the DLSw Slot Table parameters:

<b>Parameter:</b>	<b>Slot</b>
Default:	None
Range:	1 to 13
Function:	Specifies the slot number you want to associate with the IP interface address you reserved for that slot.
Instructions:	Enter any slot number that is valid, depending on <ul style="list-style-type: none"><li><input type="checkbox"/> Type of node/chassis</li><li><input type="checkbox"/> Slots that link modules can occupy</li></ul>
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.3.1.2

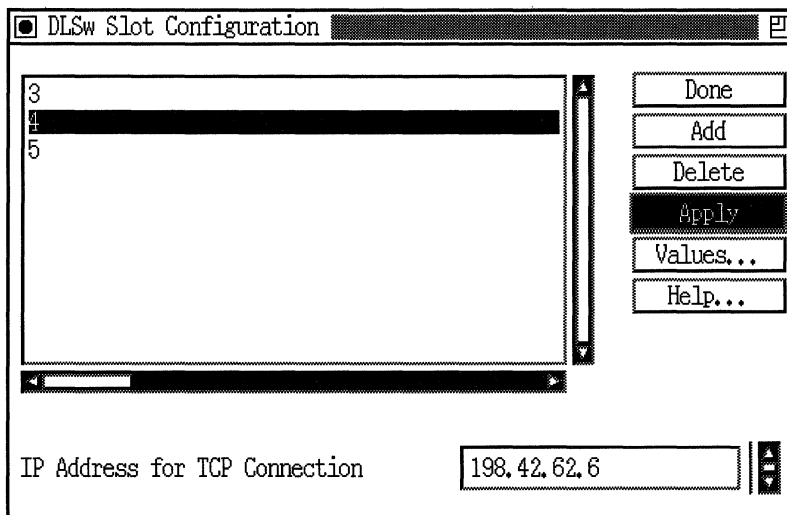
<b>Parameter:</b>	<b>IP Address</b>
Default:	None
Options:	Any valid, 32-bit IP address of the form <i>network.host</i> in dotted decimal notation
Function:	Specifies an IP address associated with a specific DLSw peer (slot) in the router. TCP uses this IP address for connections associated with that slot.
Instructions:	Enter a valid IP address for each slot. The IP interface need not reside on the DLSw-capable slot. Do <i>not</i> enter a value for every active slot in the router.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.3.1.3

---

## Editing a DLSw Slot IP Table Entry

You can edit only the IP Address for TCP Connection parameter in an existing DLSw Slot IP Table entry. To edit the IP Address associated with a particular slot, begin at the Configuration Manager window and select Protocols→DLSw→Slot Table. The DLSw Slot Configuration window appears (Figure 3-11). From this window, proceed as follows:

1. Select the DLSw Slot Table entry you want to edit.
2. Click on the IP Address for TCP Connection parameter box, and enter a new IP address.
3. Click on Apply to save your changes to the router configuration file (Figure 3-13).



**Figure 3-13. Saving an Edited DLSw Slot IP Address**

4. Click on Done to return to the Configuration Manager window.

Following is a description of the IP Address for TCP Connection parameter:

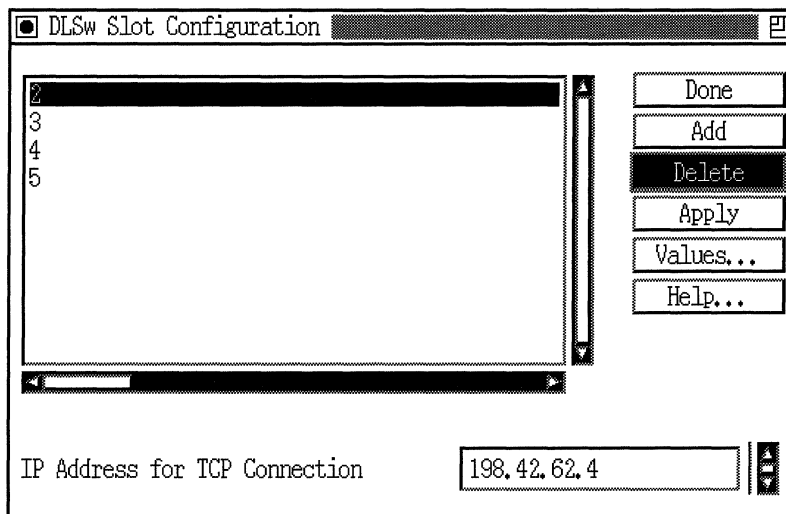
<b>Parameter:</b>	<b>IP Address for TCP Connection</b>
Default:	None
Options:	Any valid, 32-bit IP address of the form <i>network.host</i> in dotted decimal notation
Function:	Specifies an IP address associated with a specific DLSw peer (slot) in the router. TCP uses this IP address for connections associated with that slot.
Instructions:	Enter a valid IP address for each slot. The IP interface need not reside on the DLSw-capable slot. Do <i>not</i> enter a value for every active slot in the router.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.3.1.3

## Deleting a DLSw Slot Table Entry

To delete a DLSw Slot Table entry, you must

1. Select from the DLSw Slot Configuration window the Slot IP Table entry you want to delete from the router configuration.
2. Click on Delete in the DLSw Slot Configuration window (Figure 3-14).





**Figure 3-14. Deleting a DLSw Slot Table Entry**

The system software deletes the entry you selected, and the entry disappears from the list of DLSw Slot Table entries in the DLSw Slot Configuration window.

3. Click on Done to return to the Wellfleet Configuration Manager window.

## Editing DLSw SAP Table Parameters

The DLSw SAP Table contains a list of the service access point (SAP) addresses associated with communication subsystems on PCs, hosts, FEPs, cluster controllers, and other user systems in your network. This section describes how to add, edit, and delete DLSw SAPs from the router configuration.

Each SAP Table entry establishes a DLSw SAP address and a SAP window (flow control parameter) value for that SAP. (Refer to Chapter 1 for more information on DLSw SAPs.)

DLSw SAP Table entries appear in the DLSw SAP Configuration window. To access the DLSw SAP Configuration window, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→SAP Table. The DLSw SAP Configuration window appears, listing all SAP addresses that are accessible by means of DLSw services on the router (Figure 3-15).

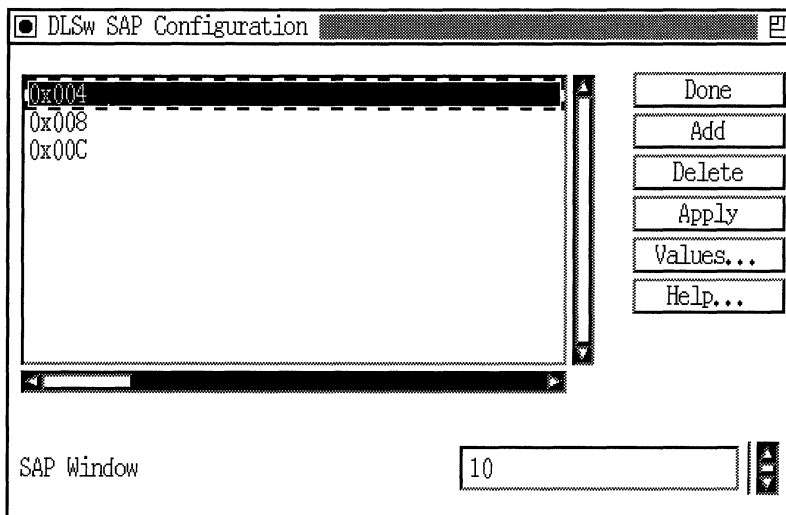


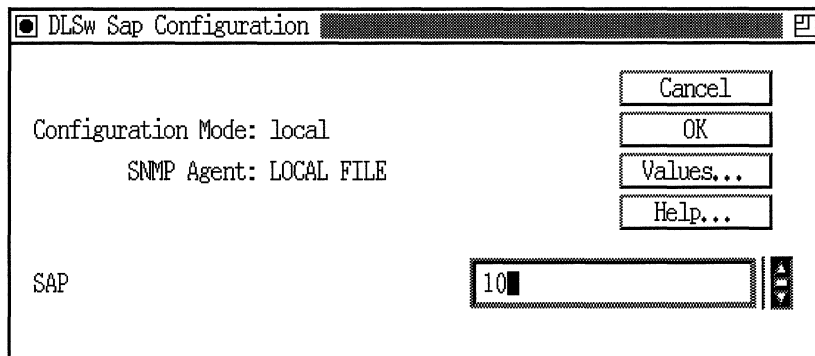
Figure 3-15. SAP Addresses in DLSw SAP Configuration Window

## Adding a DLSw SAP Table Entry

To add a new SAP Table entry, begin at the DLSw SAP Configuration window and proceed as follows:

1. Click on Add.

The DLSw SAP Configuration window appears (Figure 3-16).



**Figure 3-16. SAP Parameter in DLSw SAP Configuration Window**

2. Enter a value for the SAP parameter.
3. Click on OK to save your entry to the router configuration file. The DLSw SAP Configuration window reappears (Figure 3-15) with the new entry added to the list of existing DLSw SAPs.
4. Repeat Steps 1, 2, and 3 for each SAP you want to add, then click on Done when you want to return to the Wellfleet Configuration Manager window.

Following is an explanation of the DLSw SAP parameter:

<b>Parameter:</b>	<b>SAP</b>
Default:	None
Options:	Any valid SAP address (in hexadecimal format)
Function:	Specifies the destination service access point address associated with a communication subsystem on a remote device (for example, on a PC or host).
Instructions:	Enter the SAP address associated with a specific communication subsystem (for example, the SAP associated with NetBIOS is F0 [hex]).
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.4.1.2

## Editing a DLSw SAP Table Entry

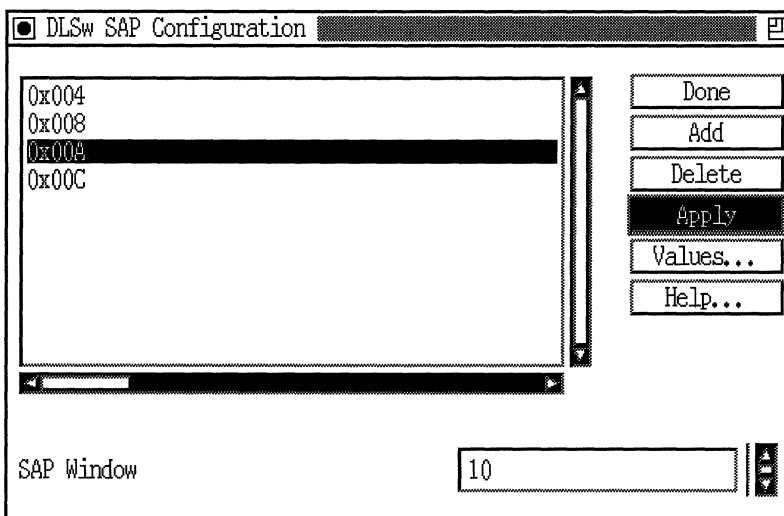
You can edit only the SAP Window (flow control) parameter associated with an existing DLSw SAP Table entry.

**Note:** After you add an entry to the DLSw SAP Table, Site Manager disallows any attempt to edit the SAP address associated with that entry. To change the address of an existing DLSw SAP, you delete the entry from the DLSw SAP Table in the DLSw SAP Configuration window, then add a new SAP with the desired address. (Refer to the preceding section for information on how to add a new DLSw SAP.)

To edit the SAP Window parameter associated with a particular DLSw SAP, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→SAP Table. The DLSw SAP Configuration window appears (Figure 3-17).

From the DLSw SAP Configuration window, proceed as follows:

1. Select the DLSw SAP Table entry you want to edit.
2. Click on the SAP Window parameter box and enter a new value.
3. Click on Apply in the DLSw SAP Configuration window to save your changes (Figure 3-17).



**Figure 3-17. Saving the Edited SAP Window Setting**

4. Click on Done to exit the DLSw SAP Configuration window and return to the Configuration Manager window.

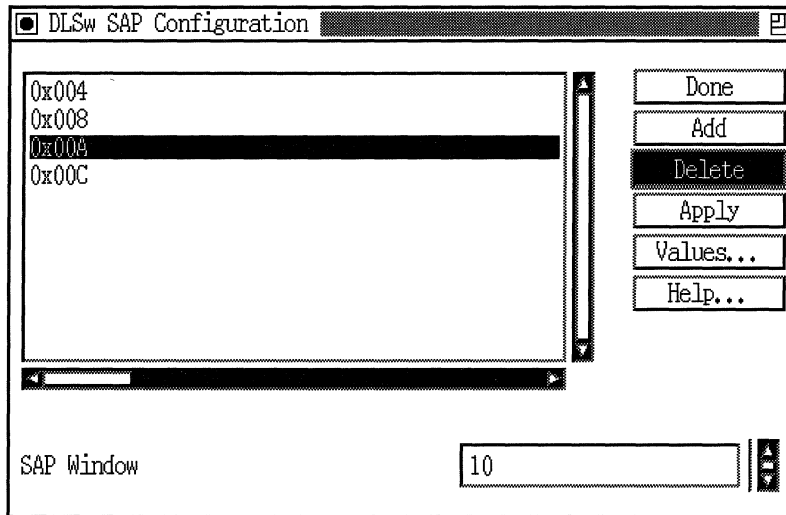
Following is a description of the SAP Window parameter:

<b>Parameter:</b>	<b>SAP Window</b>
Default:	10 (frames)
Range:	6 to 50 frames
Function:	Specifies the maximum number of LLC2 frames that can be sent or received at the SAP address indicated in the same table entry.
Instructions:	Enter a SAP window size that is appropriate for your network configuration and requirements. Specifying a larger size dedicates more buffer space to a particular SAP, thereby improving performance on that SAP. Specifying a smaller window size reduces buffer size and decreases performance on that SAP.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.4.1.3

## Deleting a DLSw SAP Table Entry

From the Wellfleet Configuration Manager window, select Protocols→Edit DLSw→SAP Table to invoke the DLSw SAP Configuration window (Figure 3-18). From this window, proceed as follows to delete a SAP Table entry:

1. Select from the DLSw SAP Configuration window the SAP Table entry you want to delete from the router configuration.
2. Click on Delete (Figure 3-18).



**Figure 3-18. Deleting a SAP Table Entry**

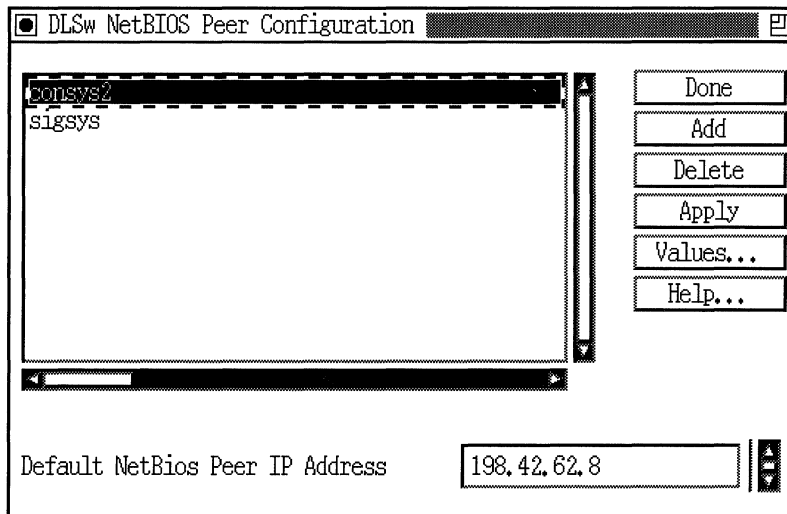
3. The system software deletes the entry you selected, and the entry disappears from the list of entries in the DLSw SAP Configuration window.
4. Click on Done to complete the deletion procedure and return to the Wellfleet Configuration Manager window.

## Editing DLSw Default NetBIOS Peer IP Table Parameters

The Default NetBIOS Peer IP Table contains the list of all remote NetBIOS systems and applications you can access via DLSw connection services on the local router. Each entry you define in the NetBIOS Peer IP Table associates the name of a NetBIOS client or server with the IP address of the remote DLSw peer that can reach that client or server. You add, edit, and delete NetBIOS Peer IP Table entries in the DLSw NetBIOS Peer Configuration window.

To access the DLSw NetBIOS Peer Configuration window, begin at the Wellfleet Configuration Manager window and select

Protocols→DLSw→Default NetBIOS. The DLSw Default NetBIOS Peer Configuration window appears, showing a list of NetBIOS client and server names (Figure 3-19).



**Figure 3-19. Client and Server Names in DLSw NetBIOS Peer Configuration Window**

Clicking on a name in the list window causes the DLSw Peer IP address associated with that name to appear in the Default NetBIOS Peer IP Address parameter window (Figure 3-19).

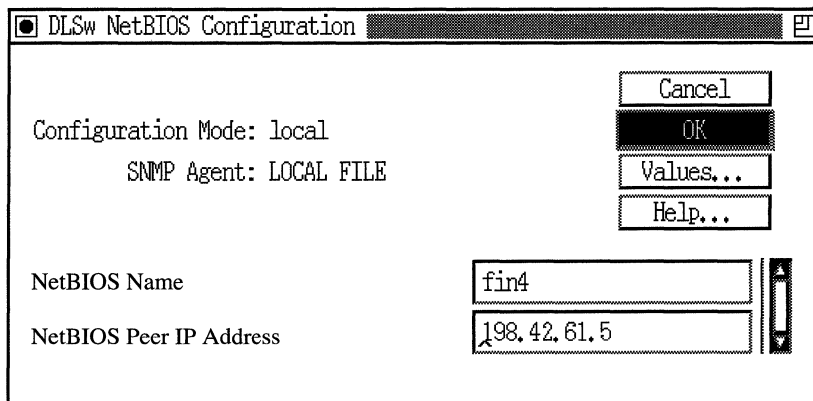
## Adding a DLSw Default NetBIOS Peer IP Table Entry

To add a new DLSw Default NetBIOS Peer IP Table entry, begin at the DLSw NetBIOS Peer Configuration window (Figure 3-19) and proceed as follows:

1. Click on Add.

The DLSw NetBIOS Configuration window appears (Figure 3-20).





**Figure 3-20. Name and Peer IP Address in DLSw NetBIOS Configuration Window**

2. Enter the name of the remote NetBIOS client or server you want to reach via DLSw connection services.
3. Enter the IP address of the remote DLSw peer that can reach the NetBIOS client or server you identified in the NetBIOS Name parameter box.
4. Click on OK to save your entry to the router configuration file.

The DLSw Default NetBIOS Peer Configuration window reappears with the new entry in the list of existing NetBIOS peers.

---

Following is an explanation of the NetBIOS Name and NetBIOS Peer IP Address parameters:

**Parameter: NetBIOS Name**

Default: None

Options: Any valid NetBIOS name

Function: Specifies the name of the remote NetBIOS client or server station or application you want to reach via DLSw connection services

Instructions: Enter the name of the remote NetBIOS client or server station or application you want to reach via DLSw connection services.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.11.1.2

**Parameter: NetBIOS Peer IP Address**

Default: None

Options: Any valid, 32-bit IP address of the form *network.host* (using dotted decimal notation)

Function: Specifies the IP address of the DLSw peer that can reach the remote NetBIOS client or server station or application named in the same DLSw Default NetBIOS Peer IP Table entry.

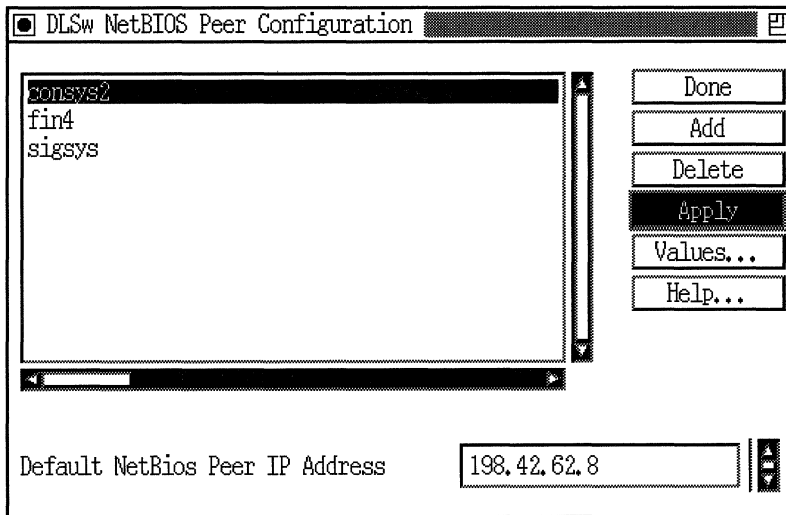
Instructions: Enter the IP address of the DLSw peer that can reach the remote client or server station or application named in the same DLSw Default NetBIOS Peer IP Table entry. The router adds this IP address to the list of configured peers in the local DLSw Peer IP Table.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.11.1.3

## Editing a DLSw Default NetBIOS Peer IP Table Entry

You can edit only the Default NetBIOS Peer IP Address parameter in any Default NetBIOS Peer IP Table entry. To edit the IP Address parameter, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→Default NetBIOS. The DLSw NetBIOS Peer Configuration window appears (Figure 3-21). From this window, proceed as follows:

1. Select the DLSw Default NetBIOS Peer IP Table entry you want to edit.
2. Click on the Default NetBIOS Peer IP Address parameter window, and enter a new address.
3. Click on Apply to save your change to the router configuration file (Figure 3-21).



**Figure 3-21. Saving a DLSw Default NetBIOS Peer IP Table Entry**

4. Click on Done to return to the Wellfleet Configuration Manager window.

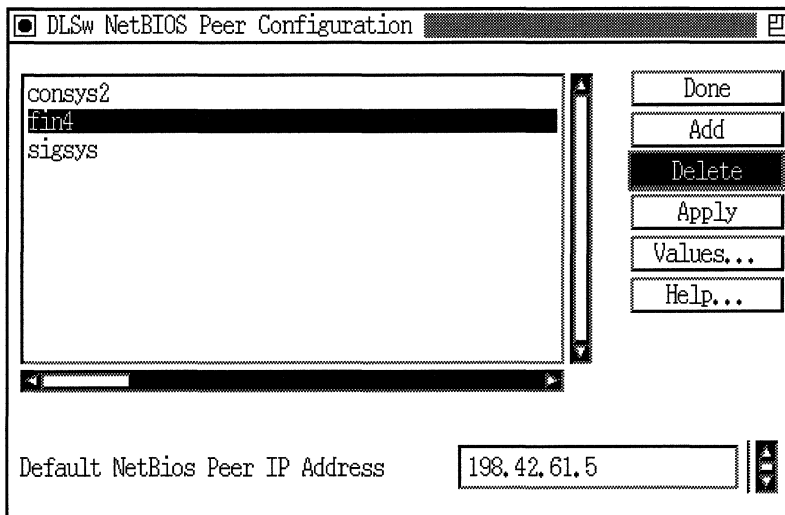
Following is a description of the Default NetBIOS Peer IP Address parameter:

<b>Parameter:</b>	<b>Default NetBIOS Peer IP Address</b>
Default:	None
Options:	Any valid, 32-bit IP address of the form <i>network.host</i> (using dotted decimal notation)
Function:	Specifies the IP address of the remote DLSw peer that can reach the NetBIOS client/server system or application named and currently selected in the DLSw NetBIOS Peer Configuration window.
Instructions:	Enter the IP address of the DLSw peer that can reach the remote client or server station or application named and currently selected in the DLSw NetBIOS Peer Configuration window. The router adds this IP address to the list of configured peers in the local DLSw Peer IP Table.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.11.1.3

## Deleting a DLSw Default NetBIOS Peer IP Table Entry

To delete a DLSw Peer NetBIOS Table entry:

1. Select from the DLSw NetBIOS Peer Configuration window (Figure 3-22) the table entry you want to delete from the router configuration.



**Figure 3-22. Deleting a DLSw NetBIOS Peer IP Table Entry**

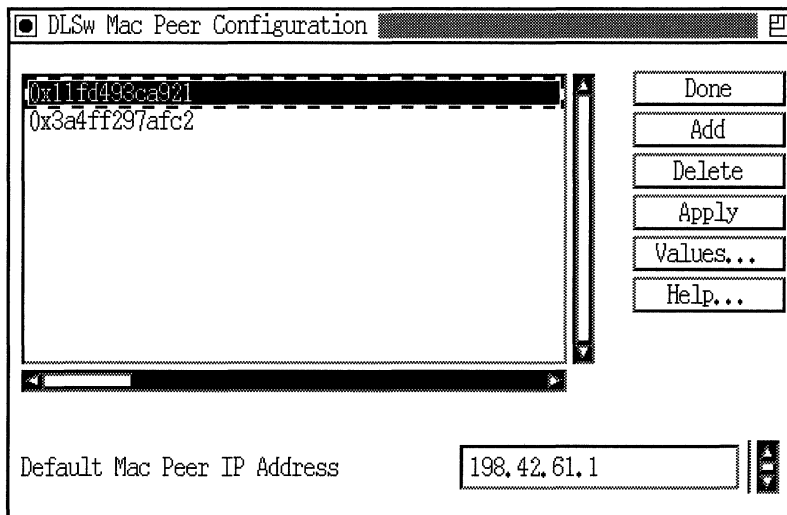
2. Click on Delete. The system deletes the entry you selected, and the entry disappears from the list of DLSw NetBIOS Name Table entries.
3. Click on Done to return to the Wellfleet Configuration Manager window.

## Editing DLSw Default MAC Peer IP Table Parameters

The DLSw Default MAC Peer IP Table contains the list of all remote SNA systems and applications you can access via DLSw connection services on the local router. Each entry you define in the MAC Peer IP Table contains the IP address of a remote DLSw peer that can reach a desired, target SNA system or application. The target system or application has an associated Token Ring/802.5 MAC address, which you also specify in the DLSw MAC Peer IP Table entry. You add, edit, and delete DLSw MAC Peer IP Table entries in the DLSw MAC Peer Configuration window.

To access the DLSw Default MAC Peer Configuration window, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→Default MAC.

The DLSw MAC Peer Configuration window appears, showing a list of Token Ring/802.5 MAC addresses associated with frequently accessed, remote SNA systems and applications (Figure 3-23).



**Figure 3-23. Token Ring/802.5 MAC Addresses in DLSw MAC Peer Configuration Window**

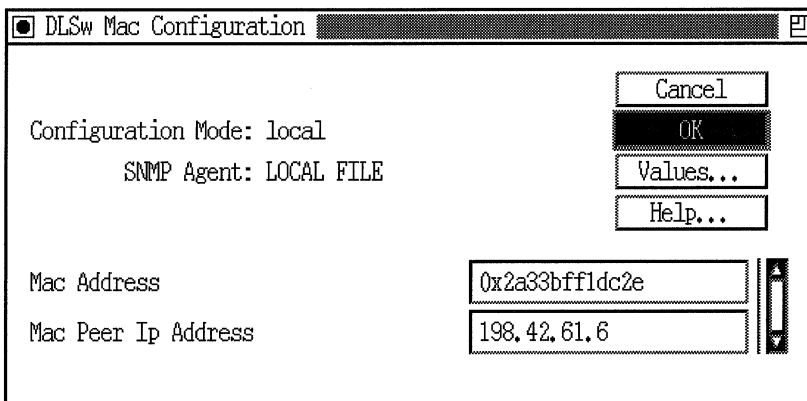
Each entry in the list also contains the IP address of the remote DLSw peer that can reach the MAC address associated with the target SNA system or application. The address of the currently selected table entry appears in the Default MAC Peer IP Address parameter box.

## Adding a DLSw Default MAC Peer IP Table Entry

To add a new DLSw Default MAC Peer IP Table entry, begin at the DLSw MAC Peer Configuration window (Figure 3-23) and proceed as follows:

1. Click on Add.

The DLSw MAC Configuration window appears (Figure 3-24).



**Figure 3-24. MAC Addresses in DLSw MAC Configuration Window**

2. Enter the Token Ring/802.5 MAC Address associated with the SNA system or application you want to reach via DLSw connection services.
3. Enter the IP address of the DLSw peer that can reach the SNA system or application you identified in the MAC Address parameter box.
4. Click on OK to save your entry to the configuration file.

The DLSw MAC Peer Configuration window reappears with the new entry in the list of existing DLSw MAC peers (Figure 3-23).

Following is an explanation of the MAC Address and MAC Peer IP Address parameters:

**Parameter: MAC Address**

Default: None

Options: Any valid 48-bit MAC address expressed in hexadecimal notation

Function: Specifies the MAC address associated with the SNA system or application you want to reach via DLSw connection services.

Instructions: Enter in hexadecimal format the MAC address associated with the desired, remote SNA system or application you want to reach via DLSw connection services.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.10.1.2

**Parameter: MAC Peer IP Address**

Default: None

Options: Any valid 32-bit IP address of the form *network.host* (using dotted decimal notation)

Function: Specifies the IP address of a remote DLSw peer that can reach the remote SNA system or application identified by MAC address in the same Default MAC IP Table entry. The router adds this IP address to the list of configured peers in the DLSw Peer IP Table.

Instructions: Enter the IP address of the remote DLSw peer that can reach the remote SNA system or application identified by MAC address in the same Default MAC Peer IP Table entry.

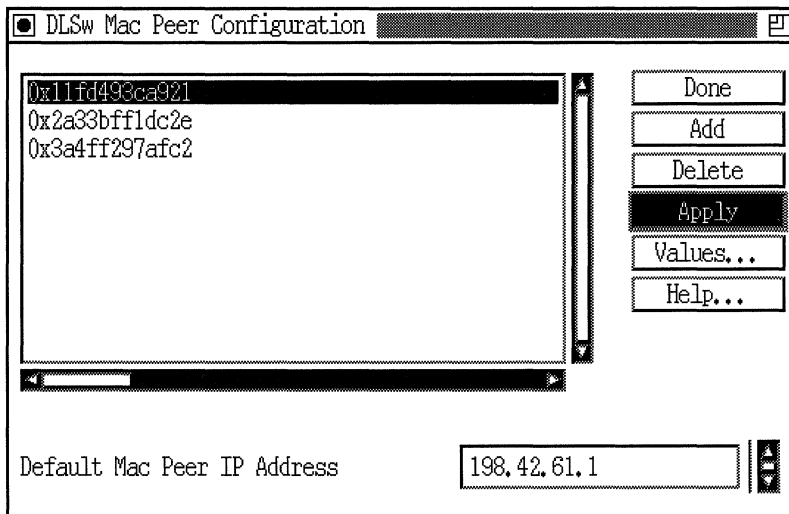
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.10.1.3



## Editing a DLSw Default MAC Peer IP Table Entry

You can edit only the Default MAC Peer IP Address parameter in the Default MAC Peer IP Table. To edit the DLSw Default MAC Peer IP Address, begin at the Wellfleet Configuration Manager window and select Protocols→DLSw→Default MAC. The DLSw Default MAC Peer Configuration window appears (Figure 3-25). From this window, proceed as follows:

1. Select from the list window the DLSw MAC Peer IP Table entry you want to edit.
2. Click on the Default MAC Peer IP Address parameter window, and enter a new address.
3. Click on Apply to save your change to the router configuration file (Figure 3-25).



**Figure 3-25. Saving a DLSw Default MAC Peer IP Table Entry**

4. Click on Done to return to the Wellfleet Configuration Manager window.

Following is a description of the Default MAC Peer IP Address parameter:

**Parameter: Default MAC Peer IP Address**

Default: None

Options: Any valid 32-bit IP address of the form *network.host* (using dotted decimal notation)

Function: Specifies the IP address of a remote DLSw peer that can reach the SNA system or application identified by MAC address and currently selected in the MAC IP Peer Configuration window. The router adds this IP address to the list of configured peers in the DLSw Peer IP Table.

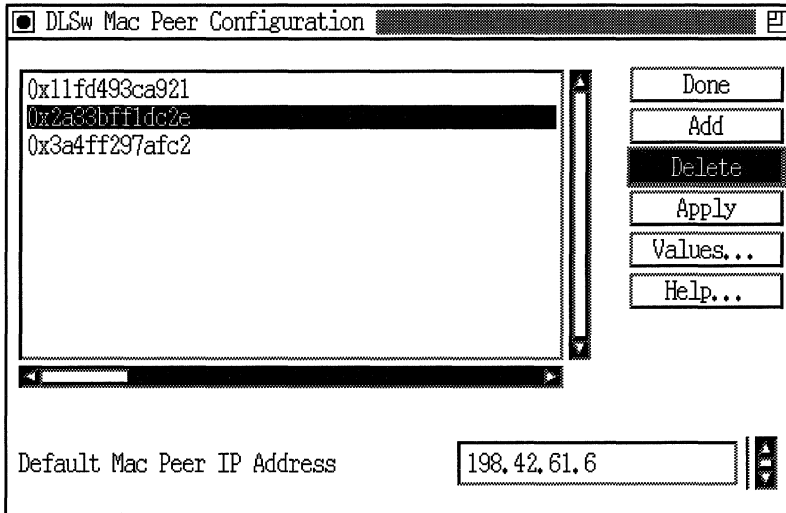
Instructions: Enter the IP address of the remote DLSw peer that can reach the remote SNA system or application identified by MAC address and currently selected in the MAC Peer IP Configuration window.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.10.1.3

## Deleting a DLSw Default MAC Peer IP Table Entry

To delete a DLSw Default MAC Peer IP Table entry, complete the following steps:

1. Select from the DLSw Default MAC Peer Configuration window the DLSw MAC Table Entry you want to delete from the router configuration.
2. Click on Delete in the DLSw Default MAC Peer Configuration window (Figure 3-26).



**Figure 3-26. Deleting a DLSw Default MAC Peer IP Table Entry**

The system software deletes the entry you select, and the entry disappears from the list of DLSw Default MAC Peer IP Table entries.

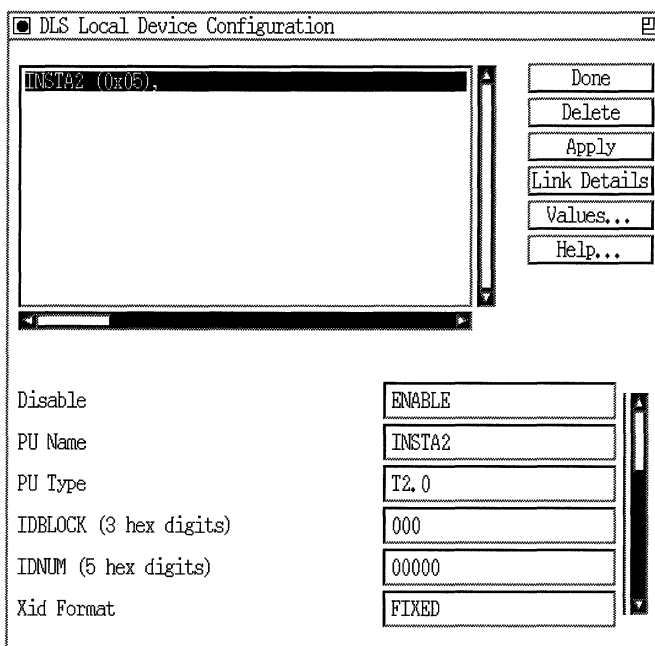
3. Click on Done to return to the Wellfleet Configuration Manager window.

## Editing DLSw Local Devices Parameters

DLSw Local Devices parameters let you map SDLC devices to LAN MAC and SAP addresses. This section assumes that you have already added local devices. Chapter 1 describes the different ways that you can add local devices. You should read this section if you want to edit the local device configurations.

To access DLSw Local Devices parameters, begin at the Wellfleet Configuration Manager window. Then follow these steps:

1. Select Protocols→DLSw→Local Devices. The DLS Local Device Configuration window appears (Figure 3-27).



**Figure 3-27. DLS Local Device Configuration Window**

2. In the display window, click on the local device whose parameters you want to change.

3. Edit the parameters you want to change. For information, see the next section, “DLSw Local Devices Parameter Descriptions.”
4. When you finish, click on Apply to save your changes.
5. Proceed as follows:
  - a. To edit the parameters of another local device, select that device and repeat steps 3 and 4.
  - b. To view or change the parameters of the link station associated with the local device, click on Link Details. For information on changing Link Station parameters, see *Customizing SDLC Services*.
  - c. If you are done working with local device parameters, click on Done to return to the Configuration Manager window.

## DLSw Local Devices Parameter Descriptions

This section describes the DLSw Local Devices parameters that have settings you can customize from the DLS Local Device Configuration window.

<b>Parameter:</b>	<b>Disable</b>
Default:	Enable
Options:	Enable   Disable
Function:	Enables or disables the DLSw local device.
Instructions:	Set to Disable if you want to temporarily disable the local device, rather than delete it. Set to Enable if you want to reinitialize the local device.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.12.1.2

**Parameter: PU Name**

Default: None

Options: Any valid 8-byte ASCII name.

Function: Specifies the name of the adjacent link station. This name uniquely identifies the station for statistics and Alert messages.

Instructions: Enter the 8-byte ASCII link station name.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.32

**Parameter: PU Type**

Default: None

Options: T2.0 | T2.1

Function: Specifies the type of the XID-sending node. This parameter is used with the IDBLK, IDNUM, and XID format parameters to determine the station exchange identification (XID) value.

Instructions: Choose either T2.0 or T2.1. Refer to the IBM/SNA formats for more information.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.9

**Parameter: IDBLOCK**

Default: None

Options: 017 | 061 | any other three-digit hexadecimal value

Function: Specifies the block number, which must match the host's IDBLOCK parameter value that identifies incoming connection requests. This parameter is used with the PU Type, IDNUM, and XID format parameters to determine the station exchange identification (XID) value.

Instructions: Enter 017 for a 3174 in T2.0 mode.

Enter 061 for a T2.0 node in fixed format.

If you enter any other three-digit hexadecimal value, in T2.1 nodes, the incoming XID overwrites this field.

Refer to the IBM/SNA formats for more information.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.9

**Parameter: IDNUM**

Default: None

Range: Any five digit hexadecimal value from 0 to F (for T.20 nodes)

Function: Specifies the ID number, which must match the host's IDNUM parameter value that identifies incoming connection requests. This parameter is used with the PU Type, IDBLOCK, and XID format parameters to determine the station exchange identification (XID) value.

Instructions: Enter a five-digit hexadecimal value from 0 to F for T2.0 nodes. For T2.1 nodes, the incoming XID overwrites this field. Refer to the IBM/SNA formats for more information.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.9

**Parameter: XID Format**

Default: None

Options: FIXED | VARIABLE1 (2.0 or 2.1) | VARIABLE2 (2.1 only)

Function: Specifies the format of the XID I-field.

Instructions: Enter one of the following values:

FIXED - fixed format

VARIABLE1 - variable format (for T1/T2.0/T2.1 to T4/T5 node exchanges)

VARIABLE2 - variable format (for T2.1 to T2.1/T4/T5 node exchanges)

Refer to the IBM/SNA formats for more information.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.9



**Parameter: Source (Virtual) MAC (hex)**

Default: None

Options: Any standard MSB Token Ring Media Access Control (MAC) address

Function: Specifies the source MAC address of an emulated Token Ring end-station for this device.

Instructions: Enter the 12-digit hexadecimal source MAC address you want to assign to the SDLC device. The address should be in MSB format, and it should be unique in the network (even among other source addresses on the router).

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.6

**Parameter: Source (Virtual) SAP (hex)**

Default: 0x4

Range: 0x01 to 0xFE

Function: Specifies the source service access point (SAP) of an emulated Token Ring or Ethernet end-station for this device.

Instructions: Enter a two-digit hexadecimal source SAP address associated with this device. Typical values are multiples of 4.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.7

**Parameter: Destination (Host) MAC (hex)**

Default: None

Options: Any standard MSB Token Ring MAC address

Function: Identifies (with the Destination SAP) the Token Ring or Ethernet host the local device will reach via SDLC services.

Instructions: Consult your host system manager for the host MAC address; then enter the 12-digit hexadecimal address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.8

**Parameter: Destination (Host) SAP (hex)**

Default: 0x4

Range: 0x01 to 0xFE

Function: Identifies (with the Destination MAC) the Token Ring or Ethernet host the local device will reach via SDLC services.

Instructions: Consult your host system manager for the host SAP address; then enter the 2-digit hexadecimal address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.9

**Parameter: MAXOUT**

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: MAXDATA**

Default: 2057

Options: 265 | 521 | 1033 | 2057

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

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

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.7.5.1.7

**Parameter: Canureach Timer**

Default: 30 seconds

Range: 0 to 3600

Function: Specifies the time interval (in seconds) that the router sends a canureach message to the remote DLSw peer to establish a session.

Instructions: Enter the number of seconds you want for the time interval. For example, you might enter 1 to transmit a canureach message once per second, or enter 3600 to transmit the command once per hour. Enter 0 if you do not want to transmit a canureach message.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.11

**Parameter: Canureach Retries**

Default: 4294967295

Range: 0 to 4294967295

Function: Specifies the number of times a canureach message is sent to the remote DLsw peer to establish a session.

Instructions: Enter the number of retries you want. Enter 0 if you do not want to transmit canureach messages. Leave the default value 4294967295 to send an infinite number of canureach messages for this connection.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.12

**Parameter: Link Station Timer**

Default: 30 seconds

Range: 0 to 3600

Function: Sets the time interval (in seconds) that the router sends a connect request to the local SDLC device to establish a session.

Instructions: Enter the time interval you want to use for sending connect requests. For example, enter 1 to send a connect request once a second, or enter 3600 to enter a connect request once an hour. Enter 0 if you do not want to send connect requests.

MIB Object ID: 1.3.6.1.4.1.18.3.5.1.5.12.1.13

---

**Parameter:** **Link Station Retries**  
**Default:** 4294967295  
**Range:** 0 to 4294967295  
**Function:** Specifies the maximum number of times that a connect request is sent to the local SDLC device to establish a session.  
**Instructions:** Enter the number of retries you want. Enter 0 if you do not want to send connect requests. Leave the default value 4294967295 to send an infinite number of connect requests for this connection.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.5.12.1.14

**Parameter:** **SDLC Receive Credit**  
**Default:** 10  
**Range:** 0 to 200  
**Function:** Specifies the maximum number of frames SDLC can send to DLSw. This is a flow control parameter.  
**Instructions:** Enter the maximum number of frames you want SDLC to send to DLSw. For example, enter 1 if you want DLSw to accept 1 frame from SDLC before it updates the SDLC credit. Enter 0 if you want DLSw to receive an infinite number of frames from SDLC without updating the SDLC credit.  
**MIB Object ID:** 1.3.6.1.4.1.18.3.5.1.5.12.1.15

<b>Parameter:</b>	<b>SDLC Transmit Credit</b>
Default:	10
Range:	0 to 200
Function:	Specifies the maximum number of frames DLSw can send to SDLC.
Instructions:	Enter the maximum number of frames you want DLSw to send to SDLC. For example, enter 1 if you want DLSw to send only one frame to SDLC until it receives credit update from SDLC. Enter 0 if you want DLSw to send an infinite number of frames to SDLC without updating the SDLC credit.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.5.12.1.16

## Editing DLSw Traffic Filters

DLSw supports inbound traffic filtering. You can establish filters associated with any remote DLSw TCP port. The filters allow the router to

- Drop a packet
- Log a packet
- Forward a packet to a specific address (outbound to TCP)

For DLSw services:

- Actions other than LOG apply only to CANUREACH and all NetBIOS BCAST frames sent over the TCP/IP network.
- You can use protocol prioritization to instruct the router to transmit DLSw traffic before other traffic on an individual synchronous-line interface.

To access DLSw traffic filters, begin at the Wellfleet Configuration Manager window, and select Protocols→DLSw→Traffic Filters. For more information on how to access and configure traffic filters for

DLSw services, refer to *Configuring Filter Options for Wellfleet Routers*.

## Deleting DLSw from the Node

You can delete DLSw from the node entirely, in two steps.

To delete DLSw, begin at the Wellfleet Configuration Manager window and complete the following steps:

1. Select Protocols→DLSw→Delete DLSw.

A confirmation window appears.

2. Click on OK.

The Wellfleet Configuration Manager window appears.

DLSw is no longer configured on the router.

---

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