Configuring DLSw

Gather required information:

Configuring DLSw requires that you have the following pieces of information.

* The internal IP Address of both DLSw routers, and the IP address of each port used to maintain the TCP connection between them. You only need this information if you are defining DLSw neighbors statically, rather than using the group functionality.
* The interface numbers assigned to the Token-ring and SDLC devices, and that are used for the TCP connection.
* The MAC addresses of the Token-ring and representative SDLC devices.
* The segment number of the Source Route Bridge device.

1. Configure Adaptive Source Route Bridging:

Enter the **protocol asrt** command at the `Config>` prompt to enter the ASRT configuration module.

Enter the **enable bridge** command to enable bridging on the router. Each bridge connecting two segments must have a unique bridge address.

Enter the **add port** command to add a bridge port. The display prompts you for an interface number and a port number.

For token-ring interfaces:

Enter the **disable transparent** command to disable transparent bridging. Then, enter the **enable source routing** command to turn on source routing for the bridge port.

For Ethernet or FDDI interfaces:

Enter the **enable transparent** command to enable transparent bridging on the bridge port.

To configure the router for parallel bridging and DLSw:

Create a protocol filter against the Service Access Point (SAP) you intend DLSw to use.
To create a SAP filter, issue this command at the `ASRT config>` prompt:

```
ASRT config>add protocol-filter dsap 4
```

(A)

Configuring DLSw

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2. Configure IP:

Enter the IP configuration process by issuing the **protocol ip** command at the `Config>` prompt.

Use the **add address** command to assign the IP addresses to the interfaces. The router uses these interfaces to connect to DLSw neighbors.

Enter either the **enable rip** or **enable ospf** command if you want to enable dynamic routing. If you use RIP, set the IP address equal to the physical address of the IP port. If you use OSPF, make these addresses be different.

You must enable multicast OSPF to set up DLSw groups.

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3. Configure SDLC interfaces:

Add a device, if necessary.

At the `Config>` prompt, use the **set data-link SDLC** command to configure the data-link type for the serial interface. You will be prompted for an interface number.

Use the **network** command at the `Config>` prompt to enter the SDLC configuration process. The display prompts you for an interface number.

If you are using internal clocking, use the **set link speed** command to choose the clock speed for this line.

Set the encoding (NRZ/NRZI), and duplex (full/half) to match the attached device's configuration.

(B)

(**B**)

4. Configure DLSw:

At the `Config>` prompt, enter the **protocol dls** command. This brings you to the `DLSw config>` prompt.

Enable DLSw to run in the router using the **enable dls** command.

Use the **set srb** command to designate an SRB (Source Route Bridging) segment number for the DLS router. This segment must be unique within the bridging cloud.

The **SRB** segment number should be the same for all DLSw routers, and unique in the source route bridge domain.

Enter an **Open SAP** command for each of the DLC interfaces to the router that switches DLSw traffic.

Enter the **add tcp** command to add the internal IP address of the DLSw neighbor. This is the address to which the router connects via TCP.

To use the DLSw group functionality, enter the **join-group** and specify membership in a group. Group functionality enables DLSw routers to locate and establish TCP connections with one another dynamically . A DLSw router can only participate in a group if its neighbor router is a Digital platform running DLSw. If one DLSw router is configured for a group, OSPF and MOSPF must be enabled on all DLSw routers in the group.

Enter the **set mac** command to set the MAC address used as the default source MAC address when adding SDLC link stations.

If you configure more than one SDLC link station using the default source MAC address, you must configure each station with different source SAPs to uniquely identify them.

If no MAC address has been configured when you configure the first SDLC link station, the source MAC address configured at that time becomes the default source MAC address used for all subsequently configured SDLC link stations.

When you are finished configuring the router, restart it as described on the back of this card to load the new configuration.

DLSw Configuration Commands

This section summarizes the DLSw configuration commands. Enter these commands at the DLSw `config>` prompt. The back of this card tells you how to display this prompt. Enter ? to list available commands or their options.

<u>add</u>

<u>s</u>dlc *link station*

Adds SDLC information specifically for adding an SDLC link station to the configuration. *Link* and *station* are values.

<u>t</u>cp neighbor *ip address*

Adds the IP address of the DLSw neighbor to which the TCP is connected. The two ways are: a manual configuration of the IP neighboring addresses or a multicast DLSw that uses multicast OSPF.

<u>c</u>lose-sap

<u>c</u>lose-sap

Disables switching for the specified SAP by the DLSw protocol.

<u>del</u>ete

<u>s</u>dlc *link station*

Removes the specified SDLC link station from the list of stations that DLSw connects to when the router restarts.

<u>t</u>cp neighbor *ip address*

Removes the IP address of the DLSw neighbor.

<u>dis</u>able

auto-tcp-reconnect

Disables automatic TCP station reestablishment. This means TCP sessions are not established until DLSw needs them.

<u>dl</u>sw

Disables DLSw switching in the router.

<u>ll</u>c disconnect on tcp connection loss

Prevents the router from terminating an LLC connection upon the loss of the TCP connection.

<u>sdl</u>c *link station*

Disables DLSw connections to the specified SDLC link station. This terminates all existing connections.

DLSw Configuration Commands *(continued)*

<u>en</u>able

    auto-tcp-reconnect

        Causes DLSw to attempt to reestablish TCP sessions in the event of session failure.

    <u>dl</u>sw

        Enables DLSw switching in the router.

    <u>ll</u>c disconnect on tcp connection loss

        Enables the router to terminate an LLC connection upon the loss of the TCP connection.

    <u>sdl</u>c *link station*

        Enables DLSw connections to the specified SDLC link station that was previously configured with the **add sdlc link station** command.

<u>jo</u>in-group

    <u>jo</u>in-group

        Enables DLSw neighbors to dynamically locate each other. The three types of group are: Client, Server, and Peer-to-peer.   Used only when the multicast OSPF partner discovery scheme is used.

<u>le</u>ave-group

    <u>le</u>ave-group *group#*

        Removes the router from any specified (group#) DLSw groups that were configured with the **join group** command. Used only when the multicast OSPF partner discovery scheme is used.

<u>li</u>st

    <u>dls</u> global information

        Displays the configuration information that was configured with the **enable** and **set** commands.

    <u>gr</u>oups

        Displays the DLSw groups to which the router belongs.

    <u>llc</u>2 sap parameters

        Displays the LLC2 parameters.

    <u>op</u>en llc2 saps

        Displays all open SAPs and their associated interfaces.

    <u>tcp</u> neighbors

        Displays all DLSw neighbors with which the router has an active TCP connection.

    <u>sdlc</u> *link stations*

        Displays the SDLC link station information that was configured with the **add sdlc link station** command.

DLSw Configuration Commands *(continued)*

<u>o</u>pen-sap

Enables the DLSw protocol to switch data for the specified SAP.

<u>se</u>t

<u>ca</u>che

Specifies the size of the MAC address-to-IP address mapping cache.

<u>llc2</u> tunable parameters

Configures specific LLC2 attributes for a specific SAP.

<u>mac</u> address

Sets the global DLSw Media Access Control (MAC) address used as the link station source MAC default.

<u>max</u>imum dlsw *sessions*

Sets the maximum number of DLSw sessions (DLSw circuits) that the DLSw protocol can support. The actual maximum is limited by available memory.

<u>mem</u>ory

Specifies the total amount of memory allocated to DLSw, and the total amount of memory to be allotted to each DLSw session.

<u>sr</u>b segment

Sets the Source Routing Bridge (SRB) segment number in the Routing Information Field (RIF).

<u>ti</u>mers

Sets the DLSw protocol timers.

tcp receive buffer size

Sets the TCP receive buffer size for the router. The minimum and maximum values are 1024 and 32768, respectively.

<u>e</u>xit

Returns to the previous prompt level.

DLSw Monitoring Commands

Enter these commands after the `DLSw>` prompt under GWCON. The last page of this card explains how to display this prompt. To list the DLSw console commands and their options, enter a **?** after the `DLSw>` prompt. Changes you make with the monitoring commands do not affect the DLSw SRAM configuration.

<u>add</u>

sdlc *link station*

> Adds an SDLC link station.

tcp neighbor *ip address*

> Adds the IP address of the DLSw neighbor.

<u>c</u>lose-sap

Disables switching for the specified SAP by the DLSw protocol without affecting the DLSw configuration stored in static configuration memory.

<u>del</u>ete

dlsw *session*

> Removes a currently active session.

sdlc *link station*

> Closes the currently active SDLC link without affecting the SDLC link station configuration information.

tcp neighbor *ip address*

> Removes the IP address of the DLSw neighbor.

<u>dis</u>able

auto-TCP-reconnect

> Disables automatic TCP station reestablishment. This means TCP sessions are not established until DLSw needs them.

<u>dl</u>sw

> Disables DLSw switching in the router.

<u>sdl</u>c *link station*

> Prevents DLSw connections to the specified SDLC link station.

<u>ll</u>c disconnect on tcp connection loss

> Prevents the router from terminating an LLC connection upon the loss of the TCP connection.

DLSw Monitoring Commands *(continued)*

enable

auto-TCP-reconnect

>   Causes DLSw to attempt to reestablish TCP sessions in the event of session failure.

dlsw

>   Disables DLSw switching in the router.

llc disconnect on tcp connection loss

>   Allows the router to terminate an LLC connection upon the loss of the TCP connection.

sdlc *link station*

>   Dynamically enables DLSw connections to the specified SDLC link station.

join-group

Allows DLSw neighbors to dynamically locate each other. The three types of group are: Client, Server, and Peer-to-peer.

leave-group

Removes the router from the specified DLSw group.

list

dlsw global, sessions, cache

>   Displays information that pertains to the protocol.

groups

>   Displays the DLSw groups to which the router belongs.

llc2 open SAPs, SAP parameters, sessions

>   Displays information that pertains to LLC2.

sdlc sessions, link config

>   Displays SDLC information for sessions and link configuration.

tcp session, config

>   Displays TCP information for sessions and configuration.

open-sap

Dynamically enables the DLSw protocol to switch data for the specified SAP.

DLSw Monitoring Commands *(continued)*

<u>**set**</u>

    <u>llc2</u> parameters

        Dynamically configures specific LLC2 attributes for a specific SAP.

    <u>max</u>imum dlsw sessions

        Dynamically sets the maximum number of DLSw sessions that the DLSw protocol can support. The actual maximum is limited by available memory.

    <u>mem</u>ory

        Dynamically specifies the total amount of memory allocated to DLSw, and the total amount of memory to be allotted to each DLSw session.

    <u>ti</u>mers

        Dynamically sets the DLSw protocol timers.

<u>**e**</u>**xit**

    Returns to the previous prompt level.

Configuring the Router

Enter configuration commands at the `Config>` prompt. To enter DLSw configuration commands, display the `DLSw config>` prompt as shown:

```
*talk 6
Gateway user configuration
Config>protocol dls
DLSw config>
```

If the `Config>` prompt does not appear, press [←] again.

To return to the * prompt, press [Ctrl] [p].

Restarting the Router

When you are done configuring the router, restart it to load the new configuration. Enter **restart** at the * prompt and respond yes to the following prompt:

```
Are you sure you want to restart the gateway? (Yes or No): yes
```

When the new configuration is finished loading, the terminal displays the * prompt.

Monitoring the Router

Enter monitoring commands at the GWCON prompt (+). To enter DLSw monitoring commands, display the `DLSW>` prompt as shown:

```
*talk 5

CGW Operator Console
+protocol dls
DLSw>
```

To return to the * prompt, press [Ctrl] [p] .

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