DLSw+ Commands

This chapter describes the function and displays the syntax of each DLSw+ configuration command. For more information about defaults and usage guidelines, see the corresponding chapter of the *Router Products Command Reference* publication.

[**no**] **dlsw bgroup-list** *list-number* **bgroups** *number*

Use the **dlsw bgroup-list** global configuration command to map traffic on the local Ethernet bridge group interface to remote peers.

list-number	The ring list number. This number is subsequently used in the **dlsw remote-peer** command to define the segment to which the bridge-group belongs.
bgroups	The transparent bridge group to which DLSw+ will be attached. The valid range is 1 through 63.
number	The transparent bridge group list number. The valid range is1 through 255.

[**no**] **dlsw bridge-group** *group-number*

Use the **dlsw bridge-group** global configuration command to link DLSw+ to the bridge group of the Ethernet LANs. Use the **no** form of this command to disable the link.

group-number	The transparent bridge group to which DLSw+ will be attached. The valid range is 1 through 63.

dlsw disable

Use the **dlsw disable** global configuration command to disable and reenable DLSw+ without altering the configuration.

[**no**] **dlsw duplicate-path-bias** [**load-balance**]

Use the **dlsw duplicate-path-bias** global configuration command to specify how DLSw+ handles duplicate paths to the same MAC address or NetBIOS name. Use the **no** form of the command to return to the default (fault-tolerance).

load-balance	(Optional) Specifies that sessions are load-balanced across duplicate paths.

[**no**] **dlsw explorerq-depth** *queue-max*

Use the **dlsw explorerq-depth** global configuration command to configure the depth of the DLSw explorer packet processing queue. Use the **no** form of this command to disable the explorer packet processing queue.

queue-max	Maximum queue size in packets. The valid range is 25 through 500 packets.

[**no**] **dlsw icannotreach saps** *sap* [*sap* ...]

Use the **dlsw icannotreach saps** global configuration command to configure a list of SAPs not locally reachable by the router. Use the **no** form of this command to remove the list.

sap sap ...	Array of SAPs.

[**no**] **dlsw icanreach** {**mac-exclusive** | **netbios-exclusive** | **mac-address** *mac-addr* [**mask** *mask*] | **netbios-name** *name*}

Use the **dlsw icanreach** global configuration command to configure a resource that is locally reachable by this router. Use the **no** form of this command to remove the resource.

mac-exclusive	Router can reach only the MAC addresses that are user configured.
netbios-exclusive	Router can reach only the NetBIOS names that are user configured.

mac-address *mac-addr*	Configure a MAC address that this router can locally reach.
mask *mask*	(Optional) MAC address mask in hexadecimal h.h.h.
netbios-name *name*	Configure a NetBIOS name that this router can locally reach. Wildcards are allowed.

[**no**] **dlsw local-peer** [**peer-id** *ip-address*] [**group** *group*] [**border**] [**cost** *cost*] [**lf** *size*] [**keepalive** *seconds*] [**passive**] [**promiscuous**]

Use the **dlsw local-peer** global configuration command to define the parameters of the DLSw+ local peer. Use the **no** form of this command to cancel the definitions.

peer-id *ip-address*	(Optional) Local peer IP address; required for FST and TCP.
group *group*	(Optional) Peer group number for this router. The valid range is 1 through 255.
border	(Optional) Enables as a border peer.
cost *cost*	(Optional) Peer cost advertised to remote peers. The valid range is 1 through 5.
lf *size*	(Optional) Largest frame size for this local peer. Valid sizes are the following: 11407-11407 byte maximum frame size 11454-11454 byte maximum frame size 1470-1470 byte maximum frame size 1500-1500 byte maximum frame size 17800-17800 byte maximum frame size 2052-2052 byte maximum frame size 4472-4472 byte maximum frame size 516-516 byte maximum frame size 8144-8144 byte maximum frame size
keepalive *seconds*	(Optional) Default remote peer keepalive interval in seconds. The valid range is 0 through 1200 seconds.
passive	(Optional) Specifies that the router will not initiate remote peer connections.
promiscuous	(Optional) Accepts connections from nonconfigured remote peers.

[**no**] **dlsw mac-addr** *macaddr* {**rif** *rif-entry* | **ring-group** *ring* | **remote-peer** {**interface serial** *number* | **ip-address** *ip-address*} | **group** *group*}

Use the **dlsw mac-addr** global configuration command to configure a

static MAC address. Use the **no** form of this command to cancel the configuration.

macaddr	Specifies the MAC address.
ring-group *ring*	Maps the MAC address to a ring number or ring group number. The valid range is 1 through 4095.
remote-peer	Maps the MAC address to a specific remote peer.
interface serial *number*	Specifies the remote peer by direct serial interface.
ip-address *ip-address*	Specifies the remote peer by IP address.
group *group*	Maps the MAC address to a specified peer group. Valid numbers are in the range 1 through 255.

[**no**] **dlsw netbios-name** *netbios-name* {**ring-group** *ring* | **remote-peer** {**interface serial** *number* | **ip-address** *ip-address*} | **group** *group*}

Use the **dlsw netbios-name** global configuration command to configure a static NetBIOS name. Use the **no** form of this command to cancel the configuration.

netbios-name	Specifies the NetBIOS name. Wildcards are allowed.
ring-group *ring*	Maps the NetBIOS name to a ring number or ring group number.
remote-peer	Maps the NetBIOS name to a specific remote peer.
interface serial *number*	Specifies the remote peer by direct interface.
ip-address *ip-address*	Specifies the remote peer by IP address.
group *group*	Maps the NetBIOS name to a specified peer group. Valid numbers are in the range 1 through 255.

[**no**] **dlsw peer-on-demand-defaults fst** [**bytes-netbios-out** *bytes-list-name* | **cost** *cost* | **host-netbios-out** *host-list-name* | **keepalive** *keepalive* | **lsap-output-list** *access-list-number* | **port-list** *port-list-number*]

Use the **dlsw peer-on-demand-defaults fst** global configuration command to configure FST for peer-on-demand transport. Use the **no** form of this command to disable the previous assignment.

bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for peer-on-demand peers. The *bytes-list-name* is the name of the previously defined netbios bytes access list filter.
cost *cost*	(Optional) Specifies the cost to reach peer-on-demand peers. The valid range is 1 through 5. The default cost is 3.
host-netbios-out *host-list-name*	(Optional) Configures NetBIOS host output filtering for peer-on-demand peers. The *host-list-name* is the name of the previously defined NetBIOS host access list filter.
keepalive *keepalive*	(Optional) Configures the peer-on-demand keepalive interval. The valid range is 0 through 1200 seconds. The default is 30 seconds.
lsap-output-list *access-list-number*	(Optional) Configures LSAP output filtering for peer-on-demand peers. Valid numbers are in the range 200 through 299.
port-list *port-list-number*	(Optional) Configures a port list for peer-on-demand peers. Valid numbers are in the range 0 through 4095.

[**no**] **dlsw peer-on-demand-defaults tcp** [**bytes-netbios-out** *bytes-list-name* | **cost** *cost* | **host-netbios-out** *host-list-name* | **keepalive** *seconds* | **local-ack** | **lsap-output-list** *access-list-number* | **port-list** *port-list-number* | **priority**]

Use the **dlsw peer-on-demand-defaults tcp** global configuration command to configure TCP for peer-on-demand transport. Use the **no** form of this command to disable the previous assignment.

bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for peer-on-demand peers. The bytes-list-name is the name of the previously defined netbios bytes access list filter.
cost *cost*	(Optional) Specifies the cost to reach peer-on-demand peers. The valid range is 1 through 5. The default cost is 3.
host-netbios-out *host-list-name*	(Optional) Configures netbios host output filtering for peer-on-demand peers. Host-list-name is the name of the previously defined netbios host access list filter.
keepalive *seconds*	(Optional) Configures the peer-on-demand keepalive interval. The valid range is 0 through 1200 seconds. The default is 30 seconds.
local-ack	(Optional) Configures local acknowledgment for peer-on-demand sessions.
lsap-output-list *access-list-number*	(Optional) Configures local SAP (LSAP) output filtering for peer-on-demand peers. Valid numbers are in the range 200 through 299.
port-list *port-list-number*	(Optional) Configures a port-list for peer-on-demand peers. Valid numbers are in the range 0 through 4095.

priority	(Optional) Configures prioritization for peer-on-demand peers. The default state is off.

[**no**] **dlsw port-list** *list-number* {**serial** | **tokenring**} *number*

Use the **dlsw port-list** global configuration command to configure a peer post list. Use the **no** form of this command to disable the previous assignment.

list-number	Port list number. The valid range is 1 through 255.
serial | **tokenring**	The interface type, indicated by the keyword **ethernet**, **serial**, or **tokenring**.
number	The interface number.

[**no**] **dlsw remote-peer** *list-number* **frame-relay interface serial** *number dlci-number* [**pass-thru**] [**cost** *cost*] [**lf** *size*] [**keepalive** *seconds*] [**lsap-output-list** *list*] [**host-netbios-out** *host-list-name*] [**bytes-netbios-out** *bytes-list-name*]

Use the **dlsw remote-peer frame relay** global configuration command to specify with which the router will connect. Use the **no** form of this command to disable the previous assignments.

list-number	Ring list number. The valid range is 1 through 255. The default is 0, which means that DLSw+ forwards explorers over all ports or bridge groups on which DLSw+ is enabled.
interface serial *number*	Serial interface number of the remote peer with which the router is to communicate.
dlci-number	DLCI number of the remote peer.
cost *cost*	(Optional) Cost to reach this remote peer. The valid range is 1 through 5.

lf *size*	(Optional) Sets the largest frame size for this remote peer. Valid sizes are the following: 516-516 byte maximum frame size 1470-1470 byte maximum frame size 1500-1500 byte maximum frame size 2052-2052 byte maximum frame size 4472-4472 byte maximum frame size 8144-8144 byte maximum frame size 11407-11407 byte maximum frame size 11454-11454 byte maximum frame size 17800-17800 byte maximum frame size
keepalive *seconds*	(Optional) Sets the keepalive interval for this remote peer. The range is 0 through 1200 seconds.
lsap-output-list *list*	(Optional) Filters output IEEE 802.5 encapsulated packets. Valid access list numbers are in the range 200 through 299.
host-netbios-out *host-list-name*	(Optional) Configures NetBIOS host output filtering for this peer. The *host-list-name* is the name of the previously defined NetBIOS host access list filter.
bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for this peer. The bytes-list-name is the name of the previously defined NetBIOS bytes access list filter.
backup-peer *ip-address*	(Optional) Configures as a backup to an existing TCP/FST peer.

[**no**] **dlsw remote-peer** *list-number* **fst** *ip-address* [**cost** *cost*] [**lf** *size*] [**keepalive** *seconds*] [**lsap-output-list** *list*] [**host-netbios-out** *host-list-name*] [**bytes-netbios-out** *bytes-list-name*] [**backup-peer** *ip-address*]

Use the **dlsw remote-peer fst** global configuration command to specify a Fast-Sequenced Transport (FST) encapsulation connection for remote peer transport. Use the **no** form of this command to disable the previous assignments.

list-number	Ring group list number. The valid range is 1 through 255. The default is 0, which means that DLSw+ forwards explorers over all ports or bridge groups on which DLSw+ is enabled.
ip-address	IP address of the remote peer with which the router is to communicate.
cost *cost*	(Optional) Cost to reach this remote peer. The valid range is 1 through 5.
lf *size*	(Optional) Sets the largest frame size for this remote peer. Valid sizes are the following: 516-516 byte maximum frame size 1470-1470 byte maximum frame size 1500-1500 byte maximum frame size 2052-2052 byte maximum frame size 4472-4472 byte maximum frame size 8144-8144 byte maximum frame size 11407-11407 byte maximum frame size 11454-11454 byte maximum frame size 17800-17800 byte maximum frame size
keepalive *seconds*	(Optional) Sets the keepalive interval for this remote peer. The range is 0 through 1200 seconds.
lsap-output-list *list*	(Optional) Filters output IEEE 802.5 encapsulated packets. Valid access list numbers are in the range 200 through 299.

host-netbios-out *host-list-name*	(Optional) Configures NetBIOS host output filtering for this peer. The *host-list-name* is the name of the previously defined NetBIOS host access list filter.
bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for this peer. The bytes-list-name is the name of the previously defined NetBIOS bytes access list filter.
backup-peer *ip-address*	(Optional) Configures as a backup to an existing TCP/FST peer.

[**no**] **dlsw remote-peer** *list-number* **interface serial** *number* [**cost** *cost*] [**lf** *size*] [**keepalive** *seconds*] [**lsap-output-list** *list*] [**host-netbios-out** *host-list-name*] [**bytes-netbios-out** *bytes-list-name*] [**backup-peer** *ip-address*]

Use the **dlsw remote-peer interface** global configuration command when specifying a point-to-point direct encapsulation connection. Use the **no** form of this command to disable previous interface assignments.

list-number	Ring list number. The valid range is 1 through 255. The default is 0.
serial *number*	Specifies the remote peer by direct serial interface.
cost *cost*	(Optional) Cost to reach this remote peer. The valid range is 1 through 5.

lf *size*	(Optional) Sets the largest frame size for this remote peer. Valid sizes are the following: 516-516 byte maximum frame size 1470-1470 byte maximum frame size 1500-1500 byte maximum frame size 2052-2052 byte maximum frame size 4472-4472 byte maximum frame size 8144-8144 byte maximum frame size 11407-11407 byte maximum frame size 11454-11454 byte maximum frame size 17800-17800 byte maximum frame size
keepalive *seconds*	(Optional) Sets the keepalive interval for this remote peer. The range is 0 through 1200 seconds.
lsap-output-list *list*	(Optional) Filters output IEEE 802.5 encapsulated packets. Valid access list numbers are in the range 200 through 299.
host-netbios-out *host-list-name*	(Optional) Configures NetBIOS host output filtering for this peer. The *host-list-name* is the name of the previously defined NetBIOS host access list filter.
bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for this peer. The bytes-list-name is the name of the previously defined NetBIOS bytes access list filter.

[**no**] **dlsw remote-peer** *list-number* **tcp** *ip-address* [**priority**] **[cost** *cost*] [**lf** *size*] [**keepalive** *seconds*] [**tcp-queue-max** *size*] [**lsap-output-list** *list*] [**host-netbios-out** *host-list-name*] [**bytes-netbios-out** *bytes-list-name*] [**backup-peer** *ip-address*]

Use th**e dlsw remote-peer tcp** global configuration command to identify the IP address of a peer with which to exchange traffic using TCP. Use the **no** form of this command to remove a remote peer.

list-number	Remote peer ring group list number. This ring group list number default is 0. Otherwise, this value must match the number you specify with the **dlsw ring-list**, **dlsw port list**, or **dlsw bgroup-list** command. The valid range is 1 through 4095.
tcp *ip-address*	IP address of the remote peer with which the router is to communicate.
priority	(Optional) Enables prioritization features for this remote peer.
cost *cost*	(Optional) The cost to reach this remote peer. The valid range is 1 through 5.
lf *size*	(Optional) Sets the largest frame size for this remote peer. Valid sizes are the following: 516-516 byte maximum frame size 1470-1470 byte maximum frame size 1500-1500 byte maximum frame size 2052-2052 byte maximum frame size 4472-4472 byte maximum frame size 8144-8144 byte maximum frame size 11407-11407 byte maximum frame size 11454-11454 byte maximum frame size 17800-17800 byte maximum frame size
keepalive *seconds*	(Optional) Sets the keepalive interval for this remote peer. The range is 0 through 1200 seconds.

tcp-queue-max *size*	(Optional) Maximum output TCP queue size for this remote peer. The valid maximum TCP queue size is a number in the range 10 through 2000.
lsap-output-list *list*	(Optional) Filters output IEEE 802.5 encapsulated packets. Valid access list numbers are in the range 200 through 299.
host-netbios-out *host-list-name*	(Optional) Configures NetBIOS host output filtering for this peer. The host-list-name is the name of the previously defined NetBIOS host access list filter.
bytes-netbios-out *bytes-list-name*	(Optional) Configures NetBIOS bytes output filtering for this peer. The bytes-list-name is the name of the previously defined NetBIOS bytes access list filter.
backup-peer *ip-address*	(Optional) Configures a backup to an existing TCP/FST peer.

[**no**] **dlsw ring-list** *list-number* **rings** *ring-number*

Use the **dlsw ring-list** to configure a ring list, mapping traffic on a local interface to remote peers. Use the **no** form of this command to cancel the definition.

list-number	Ring list number. The valid range is 1 through 255.
rings	Specify one or more physical or virtual ring.
ring-number	Physical or virtual ring number. The valid range is 1-4095.

[**no**] **dlsw timer** {**icannotreach-block-time** | **netbios-cache-timeout** | **netbios-explorer-timeout** | **netbios-retry-interval** | **netbios-verify-interval** | **sna-cache-timeout** | **sna-explorer-timeout** | **sna-retry-interval** | **sna-verify-interval**} *time*

Use the **dlsw timer** global configuration command to tune an existing configuration parameter. Use the **no** form of this command to restore the default parameters.

icannotreach-block-time *time*	Cache life of unreachable resource, during which searches for that resource are blocked. The valid range is 1 through 86400 seconds. The default is 0 (disabled).
netbios-cache-timeout *time*	Cache life of NetBIOS name location for both local and remote reachability cache. The valid range is 1 through 86400 seconds. The default is 16 minutes.
netbios-explore-timeout *time*	Length of time that this router waits for an explorer response before marking a resource unreachable (LAN and WAN). The valid range is 1 through 86400 seconds. The default is 6 seconds.
netbios-retry-interval *time*	NetBIOS explorer retry interval (LAN only). The valid range is 1 through 86400 seconds. The default is 1 second.
netbios-verify-interval *time*	Interval between the creation of a cache entry and when the entry is marked as stale. If a search request comes in for a stale cache entry, a directed verify query is sent to assure that it still exists. The valid range is 1 through 86400 seconds. The default is 4 minutes.

sna-cache-timeout *time*	Length of time that an SNA MAC/SAP location cache entry exists before it is discarded (local and remote). The valid range is 1 through 86400 seconds. The default is 16 minutes.
sna-explorer-timeout *time*	Length of time that this router waits for an explorer response before marking a resource unreachable (LAN and WAN). The valid range is 1 through 86400 seconds. The default is 3 minutes.
sna-retry-interval *time*	Interval between SNA explorer retries (LAN). The valid range is 1 through 86400 seconds. The default is 30 seconds.
sna-verify-interval *time*	Interval between the creation of a cache entry and when the entry is marked as stale. If a search request comes in for a stale cache entry, a directed verify query is sent to assure that it still exists. The valid range is 1 through 86400 seconds. The default is 4 minutes.

[**no**] **qllc dlsw** {**subaddress** *subaddress* | **pvc** *pvc-low* [*pvc-high*]} [**vmac** *vmacaddr* [*poolsize*]] [**partner** *partner-mac-address*] [**sap** *ssap dsap*] [**xid** *xidstring*] [**npsi-poll**]

Use the **qllc dlsw** interface configuration command to enable DLSw+ over QLLC. Use the **no** form of this command to cancel the configuration.

subaddress *subaddress*	An X.121 subaddress. Any incoming call whose X.121 destination address matches the router's X.121 address and this subaddress will be dispatched to DLSw+ (with an ID.STN IND). If a router is providing several QLLC services different subaddresses must be used to discriminate between them. Subaddresses can be used even if a remote X.25 device is not explicitly mapped to a specific virtual MAC address. This is most useful when PU2.1 devices are connecting to a host because the X.25 device's control point name and network name are used to validate the connection, rather than some virtual MAC address. The subaddress is optional. If no subaddress is provided, any incoming call that matches the router's X.121 address will be dispatched to DLSw+. On outgoing calls the subaddress is concatenated to the interface's X.121 address.
pvc	Map one or more Permanent Virtual Circuits to a particular QLLC service (in this case DLSw+). QLLC will attempt to reach the partner by sending and ID.STN.IND to DLSw+.
pvc-low	Lowest logical channel number (LCN) for a range of X.25 Permanent Virtual Circuits (PVCs). Acceptable values for PVCs are decimal numbers between 1 and 4095. There is no default value.
pvc-high	(Optional) Highest LCN. If not specified the range of PVCs consists of just one PVC.

vmac *vmacaddr*	(Optional) Define either the only virtual MAC address used for DLSw+, or else the lowest virtual MAC address in a pool of virtual MAC addresses. When DLSw+ receives a CUR (cs) to a virtual MAC address in the pool, the QLLC code will attempt to set up a virtual circuit to the X.121 address that maps to the virtual MAC address specified. If an Incoming Call is received, QLLC sends an ID.STN.IND with a virtual MAC address from the pool to DLSw+. If there is no virtual MAC address, then the *x25 map qllc* or *x25 pvc qllc* command must provide a virtual MAC address.
poolsize	(Optional) Specify the number of contiguous virtual MAC addresses that have been reserved for DLSw+. If the parameter is not present, then just one virtual MAC address is available.
partner *partner mac address*	Specify the virtual MAC address to which an Incoming Call wishes to connect. The **qllc dlsw** command must be repeated for each different partner. Each partner is identified by a unique subaddress.
sap *ssap dsap*	Override the default SAP values (04) for a Token Ring connection. *dsap* refers to the partner's sap address; *ssap* applies to the virtual MAC address that corresponds to the X.121 device.
xid *xidstring*	XID Format 0 Type 2 string.

npsi-poll	Inhibits forwarding a null XID on the X.25 link. Instead the router will send a null XID Response back to the device that sent the null XID Command. This parameter is needed to support PU2.0 on the partner side that wishes to connect to a FEP on the X.25 side. In a Token Ring or DLSw+ environment the PU2.0 will send a null XID to the FEP. If the router forwards this null XID to an X.25 attached FEP the FEP will assume that it is connecting to PU2.1, and will break off the connection when the PU2.0 next send an XID Format 0 Type 2.

[**no**] **sdlc dlsw** *sdlc-address*

Use the **sdlc dlsw** interface configuration command to attach SDLC addresses to DLSw+. Use the **no** form of this command to cancel the configuration.

sdlc-address	SDLC address in hexadecimal. The valid range is 1 through FE.

show dlsw capabilities [**interface** {*type number*} | **ip-address** *ip-address* | **local**]

Use the **show dlsw capabilities** privileged EXEC command to display the configuration of the peer specified or of all peers.

interface *type*	(Optional) The interface type is indicated by the keyword **ethernet**, **null**, **serial**, or **tokenring**.
number	(Optional) The interface number.
ip-address *ip-address*	(Optional) Specifies a remote peer by its IP address.
local	(Optional) Specifies the local DLSw peer.

show dlsw circuits

Use the **show dlsw circuit** privileged EXEC command to display the state of all circuits involving this MAC address as a source and destination.

show dlsw fastcache

Use the **show dlsw fastcache** privileged EXEC command to display the fast cache for FST and direct-encapsulated peers.

show dlsw peers [**interface** {**ethernet** *number* | **null** *number* | **serial** *number* | **tokenring** *number*} | **ip-address** *ip-address*]

Use the **show dlsw peers** privileged EXEC command to display DLSw peer information.

interface {**ethernet** *number* | **null** *number* | **serial** *number* | **tokenring** *number*}	(Optional) Specifies a remote peer by a direct interface.
ip-address *ip-address*	(Optional) Specifies a remote peer by its IP address.

show dlsw reachability

Use the **show dlsw reachability** privileged EXEC command to display DLSw reachability information.