

SDLLC Commands

Use the commands in this chapter to configure and monitor SDLLC connections. For SDLLC parameter configuration information and examples, refer to Chapter 24 of the *Router Products Configuration Guide*.

sdllc partner

Use the **sdllc partner** interface configuration command to enable device-initiated connections for SDLLC. This command must be specified for the serial interface that links to the serial line device. Use the **no** form of this command to cancel the original instruction.

```
sdllc partner mac-address sdlc-address  
no sdllc partner mac-address sdlc-address
```

Syntax Description

<i>mac-address</i>	48-bit MAC address of the Token Ring host.
<i>sdlc-address</i>	SDLC address of the serial device that will communicate with the Token Ring host.

Default

None

Command Mode

Interface configuration

Usage Guidelines

Both the MAC address of the Token Ring host and the SDLC serial line address are required to initiate connections with the Token Ring host.

The Token Ring host and the serial device communicate with each other through the router. Although the device is said to initiate connections, the router actually initiates connections with the Token Ring host on behalf of the serial device. As part of Cisco's SDLLC implementation, the serial device "thinks" that it is communicating with a host also on a serial line. It is actually the router that does all the frame and protocol conversions between serial and Token Ring devices.

There are two conditions under which a router will attempt to initiate a connection to a host on behalf of a serial device:

- When the serial device attached to the router is powered on. In this case, the router attached to the serial line detects a change in interface signals and initiates a connection with the Token Ring hosts by exchanging explorer and eXchange ID (XID) packets.
- When a previously shut down serial interface is brought back on-line. When the **no shutdown** command is issued, the router will detect a change in the serial line state from down to up and initiate a session with the Token Ring host by exchanging explorer and XID packets.

The router will continue trying once a minute to initiate a connection whenever one of these two conditions is met, until the host responds to its requests. When you no longer want the router to initiate connections with a host, use the **no sdllc partner** command.

Note For device-initiated sessions, the host will check the IDBLK and IDNUM parameters of the serial device it receives in the XID packet against the information configured on the host. If the information in the XID packet does not match with what is configured on the host, the host will drop the session. Therefore, for device-initiated connections, always specify the correct IDBLK and IDNUM parameters on the router serial interfaces with the **sdllc xid** command.

Example

In the following example, a serial device at sdlc address c2 wants to initiate a connection with a Token Ring host at MAC address 4000.0122.0001. The router initiates the connection on behalf of a serial device:

```
! sample global command
source-bridge ring-group 100
!
interface serial 0
! router initiates connections with Token Ring host at MAC address
! 4000.0122.0001 on behalf of serial device c2
sdllc partner 4000.0122.0001 c2
```

Related Command

sdllc xid

sdllc ring-largest-frame

Use the **sdllc ring-largest-frame** interface configuration command to indicate the largest I-frame size that can be sent to or received from the LLC2 primary station. Use the **no** form of this command to return to the default.

sdllc ring-largest-frame *value*
no sdllc ring-largest-frame *value*

Syntax Description

value Frame size in bytes.

Default

516 bytes

Command Mode

Interface configuration

Usage Guidelines

Possible values for the *value* argument match those that are possible for the **If size** of the various **source-bridge remote-peer** commands. You must ensure that your remote peer connection can support this largest frame size. Possible values for the *value* argument include 516, 1500, 2052, 4472, 8144, 11407, and 17800.

Faster screen updates to 3278-style terminals often can be obtained by allowing the Token Ring FEP to send as large a frame as possible and by allowing the router to segment the frame into multiple SDLC I-frames.

Example

In the following example, the router can send or receive a frame as large as 11407 bytes from the LLC2 primary station. Any frames larger will be fragmented by the router:

```
! sample global command
source-bridge ring-group 100
!
interface serial 3
! largest frame sent or received on serial 3 is 11407 bytes
sdllc ring largest frame 11407
```

Related Command

A dagger (†) indicates that the command is documented in another chapter.

source-bridge remote-peer fst †
source-bridge remote-peer interface †
source-bridge remote-peer tcp †

sdllc sap

Use the **sdllc sap** interface configuration command to associate a service access point (SAP) value other than the default SAP value with a serial interface configured for SDLLC. Use the **no** form of this command to return this SAP value to its default state.

```
sdllc sap sdllc-addr ssap dsap  
no sdllc sap sdllc-addr ssap dsap
```

Syntax

<i>sdllc-addr</i>	Virtual MAC address associated with the remote SDLC device.
<i>ssap</i>	Source SAP value. It must be in the range 1 through 254.
<i>dsap</i>	Destination SAP value. It must be in the range 1 through 254.

Default

4

Command Mode

Interface configuration

Usage Guidelines

You use the **sdllc sap** command in conjunction with the **sdllc traddr** interface configuration commands. A SAP can be viewed as a port through which a higher-layer application can communicate with its counterpart (peer) operating on another system. While the standard SAP value for IBM SNA devices is 4, and NetBIOS devices is xF0, other values are allowed.

Example

In the following example, source SAP and destination SAP values of 2 are specified for the remote SDLC device at the SDLC address C1 02 02:

```
!  
interface Serial0  
sdllc sap C1 02 02  
!
```

Related Command

sdllc traddr

sdllc sdlc-largest-frame

Use the **sdllc sdlc-largest-frame** interface configuration command to indicate the largest information frame (I-frame) size that can be sent or received by the designated SDLC station. Use the **no** form of this command to return to the default value.

```
sdllc sdlc-largest-frame address value  
no sdllc sdlc-largest-frame address value
```

Syntax Description

<i>address</i>	Address of the SDLC station that will communicate with the Token Ring host.
<i>value</i>	Largest frame size that can be sent or received by this SDLC station.

Default

265 bytes

Command Mode

Interface configuration

Usage Guidelines

Most SDLC devices are limited to frames of 265 bytes. I-frames received from the Token Ring station that are larger than this size will be properly fragmented.

Example

In the following example, the router can send or receive a frame as large as 265 bytes (the default) from the SDLC station at address c6. Any frames larger will be fragmented by the router.

```
! sample global command  
source-bridge ring-group 100  
!  
interface serial 4  
! largest frame sent or received on serial 4 is 265 bytes  
sdllc ring largest frame c6 265
```

sdllc traddr

Use the **sdllc traddr** interface configuration command to enable the use of SDLLC Media Translation on a serial interface. The address specified is a MAC address to be assigned to the serial station. Use the **no** form of this command to disable SDLLC Media Translation on the interface.

```
sdllc traddr xxxx.xxxx.xx00 lr bn tr
no sdllc traddr xxxx.xxxx.xx00 lr bn tr
```

Syntax Description

<i>xxxx.xxxx.xx00</i>	MAC address to be assigned to the serial interface.
<i>lr</i>	SDLLC virtual ring number.
<i>bn</i>	SDLLC bridge number.
<i>tr</i>	SDLLC target ring number.

Default

Disabled

Command Mode

Interface configuration

Usage Guidelines

Every control unit hooked off the serial line requires a virtual Token Ring MAC address (VTRA). This usually is assigned by the system administrator as a locally administered address (unique across the network).

When you enable SDLLC Media Translation by specifying the **sdllc traddr** command on a serial interface, you must specify a virtual Token Ring address (VTRA) for each serial station attached to the serial line. The last two hexadecimal digits. (that is, the last byte) of the VTRA *must* be 00. The router uses this byte to represent the SDLC address of a station on the serial link. That is, addresses in the range *xxxx.xxxx.xx00* to *xxxx.xxxx.xxFF* are reserved for use by the router. It is very important that you adhere to this addressing requirement. If you do not, there may be a conflict between the VTRA and the addresses reserved by the router for the SDLC link.

The variables *lr*, *bn*, and *tr* represent the SDLLC virtual ring number, bridge number, and target ring number, respectively, that you assign to the interface. In design, the serial interface appears to be a ring, *lr*, on a source-route bridged network, and ties in through the bridge, *bn*, to the virtual ring-group, *tr*. This provides access to other, real rings through remote source-route bridging **source-bridge remote-peer** commands. Note that SDLLC can be configured on a router containing no Token Ring interface cards.

The **sdllc traddr** command automatically turns on the LLC2 process with default values. To change any of the LLC2 parameters, specify their values on the serial interface that is being enabled for SDLLC. This is done on the serial interface, even though LLC2 does not technically run on the serial interface, but on the SDLLC virtual ring associated with the serial interface. LLC2 commands can be configured after specifying the **sdllc traddr** command.

Example

In the following example, SDLLC media translation is enabled off the serial 0 interface to a serial station at MAC address 0110.2222.3300. The SDLLC virtual ring number is 8, the bridge number is 1, and the target ring number is 100:

```
! global command to apply commands to the ring group
source-bridge ring-group 100
! remote peer at IP address 131.108.1.1 belongs to ring group 100 and uses
! tcp as the transport
source-bridge remote-peer 100 tcp 131.108.1.1
source-bridge remote-peer 100 tcp 131.108.2.2
!
interface serial 0
encapsulation sdllc-primary
! establish address of SDLC station off serial-0 as c1
sdllc address c1
! enable SDLLC media translation to serial station 0110.2222.3300
! on virtual ring 8, bridge 1, to target ring 100
sdllc traddr 0110.2222.3300 8 1 100
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

sdllc sap

source-bridge remote-peer fst †

source-bridge remote-peer interface †

source-bridge remote-peer tcp †

sdllc xid

Use the **sdllc xid** interface configuration command to specify an eXchanged ID (XID) value appropriate for the designated SDLC station associated with this serial interface. Use the **no** form of this command to disable XID processing for this address.

```
sdllc xid address xxxxxxxx  
no sdllc xid address xxxxxxxx
```

Syntax Description

<i>address</i>	Address of the SDLC station associated with this interface.
<i>xxxxxxx</i>	XID the router will use to respond to XID requests the router receives on the Token Ring (LLC2) side of the connection. This value must be 4 bytes (8 digits) in length and is specified with hexadecimal digits.

Default

Disabled

Command Mode

Interface configuration

Usage Guidelines

XID requests and responses are usually exchanged before sessions are started. Be sure that the XID value configured on the router matches the IDBLK and IDNUM parameters configured on the host. The XID response to an XID request from the Token Ring host will contain the information you configured in the **sdllc xid** command. The host will check the XID response it receives with the IDBLK and IDNUM parameters (that are configured in the VTAM). If they match, the Token Ring host will initiate a session with the router. If they do not match, the host will not initiate a session with the router.

Example

The following example specifies an XID value of 01720002 at address c2:

```
! sample global command  
source-bridge ring-group 100  
!  
interface serial 0  
! sdllc exchange identification value of 01720002 at address c2  
sdllc xid c2 01720002
```

Related Command

sdllc partner

show interfaces

Use the **show interfaces EXEC** command to display the SDLC information for a given SDLC interface.

show interfaces

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Sample Display with SDLC Connections

The following is sample output from the **show interfaces** command for an SDLC primary interface supporting the SDLLC function:

```
router# show interfaces

Serial 0 is up, line protocol is up
Hardware is MCI Serial
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation SDLC-PRIMARY, loopback not set
  Timers (msec): poll pause 100 fair poll 500. Poll limit 1
  [T1 3000, N1 12016, N2 20, K 7] timer: 56608 Last polled device: none
  SDLLC [ma: 0000.0C01.14--, ring: 7 bridge: 1, target ring: 10
    largest token ring frame 2052]
SDLC addr C1 state is CONNECT
  VS 6, VR 3, RCNT 0, Remote VR 6, Current retransmit count 0
  Hold queue: 0/12 IFRAMEs 77/22 RNRs 0/0 SNRMs 1/0 DISCs 0/0
  Poll: clear, Poll count: 0, chain: p: C1 n: C1
  SDLLC [largest SDLC frame: 265, XID: disabled]
Last input 00:00:02, output 00:00:01, output hang never
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
Five minute input rate 517 bits/sec, 30 packets/sec
Five minute output rate 672 bits/sec, 20 packets/sec
  357 packets input, 28382 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  926 packets output, 77274 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets, 0 restarts
  2 carrier transitions
```

Table 24-1 shows the fields relevant to all SDLC connections.

Table 24-1 Show Interfaces Serial Fields and Descriptions when SDLC is Enabled

Field	Description
Timers (msec)	List of timers in milliseconds.
poll pause, fair poll, Poll limit	Current values of these timers, as described in the individual commands in this chapter.
T1, N1, N2, K	Current values for these variables, as described in the individual commands in this chapter.

Table 24-2 shows other data given for each SDLC secondary configured to be attached to this interface.

Table 24-2 SDLC Field Descriptions

Field	Description
addr	Address of this secondary.
State	Current state of this connection. The possible values are: <ul style="list-style-type: none"> • DISCONNECT—No communication is being attempted to this secondary. • CONNECT—A normal connect state exists between this router and this secondary. • DISCSENT—This router has sent a disconnect request to this secondary and is awaiting its response. • SNRMSENT—This router has sent a connect request (SNRM) to this secondary and is awaiting its response. • THEMBUSY—This secondary has told this router that it is temporarily unable to receive any more information frames. • USBUSY—This router has told this secondary that it is temporarily unable to receive any more information frames. • BOTHBUSY—Both sides have told each other that they are temporarily unable to receive any more information frames. • ERROR—This router has detected an error, and is waiting for a response from the secondary acknowledging this.
VS	Sequence number of the next information frame this station sends.
VR	Sequence number of the next information frame from this secondary that this station expects to receive.
RCNT	Number of correctly sequenced I-frames received when the router was in a state in which it is acceptable to receive I-frames.
Remote VR	Last frame transmitted by this station that has been acknowledged by the other station.
Current retransmit count	Number of times the current I-frame or sequence of I-frames has been retransmitted.
Hold queue:	Number of frames in hold queue/Maximum size of hold queue.
IFRAMEs, RNRs, SNRMs, DISCs	Sent/received count for these frames.

Field	Description
Poll:	“Set” if this router has a poll outstanding to the secondary; “clear” if it does not.
Poll count:	Number of polls, in a row, given to this secondary at this time.
chain:	Shows the previous (p) and next (n) secondary address on this interface in the round robin loop of polled devices.

show sdllc local-ack

Use the **show sdllc local-ack** EXEC command to display the current state of any current Local Acknowledgment connections, as well as any configured Passthrough Rings.

show sdllc local-ack

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Sample Display

The following is sample output from the **show sdllc local-ack** command:

```
router# show sdllc local-ack

local 1000.5a59.04f9, lsap 04, remote 4000.2222.4444, dsap 04
llc2 = 1798136, local act state = connected
Passthrough Rings: 4 7
```

In the display, the first two lines of the **show sdllc local-ack** command show that there is a Local Acknowledgment session between two Token Ring devices. The device on the local ring has a MAC address of 1000.5a59.04f9 with a SAP of 04. The remote device has a MAC address of 4000.2222.4444 with a SAP of 04. The state of the Local Acknowledgment session is connected.

The Passthrough Rings display is independent of the rest of the **show sdllc local-ack** command. The Passthrough Rings display indicates that there are two rings, 4 and 7, configured for Passthrough. This means that stations on these rings will not have their sessions locally acknowledged but will instead have their acknowledgments end-to-end.

Table 24-3 describes significant fields shown in the display.

Table 24-3 Show Local-Ack Field Descriptions

Field	Description
local	MAC address of the local Token Ring station with which the router has the LLC2 session.
lsap	Local SAP value of the Token Ring station with which the router has the LLC2 session.
remote	MAC address of the remote Token Ring station on whose behalf the router is providing acknowledgments. The remote Token Ring station is separated from the router via the TCP backbone.
dsap	Destination SAP value of the remote Token Ring station on whose behalf the router is providing acknowledgments.

Field	Description
llc2	Pointer to an internal data structure used by technical support staff for debugging.
local-ack state:	The current state. Possible values are as follows: <ul style="list-style-type: none">• disconnected—No session between the two end hosts.• connected—Full data transfer possible between the two end hosts.• awaiting connect—This router is waiting for the other end to confirm a session establishment with the remote host.
Passthrough Rings	Ring number of the start ring and destination ring for the two IBM machines when you do not have Local Acknowledgment for LLC2 configured for your routers using RSRB.

source-bridge sdllc-local-ack

Use the **source-bridge sdllc-local-ack** global configuration command to activate Local Acknowledgment for SDLLC sessions on a particular interface. Use the **no** form of this command to deactivate Local Acknowledgment for SDLLC sessions.

source-bridge sdllc-local-ack
no source-bridge sdllc-local-ack

Syntax Description

This command has no keywords or arguments.

Default

Disabled

Command Mode

Global configuration

Usage Guidelines

This command must be issued only on the router with the serial interface(s). Once the command is issued, *all* SDLLC sessions between the two routers will be locally acknowledged. You cannot selectively choose which SDLLC sessions are to be locally acknowledged and which are not. Also, Local Acknowledgment is not supported when the LLC2 station is attached to Ethernet rather than to Token Ring.

Note You must use the TCP encapsulation option if you use Local Acknowledgment for SDLLC.

Example

The following example activates Local Acknowledgment for SDLLC sessions:

```
source-bridge ring-group 100
source-bridge remote-peer 100 tcp 131.108.1.1 local-ack
source-bridge remote-peer 100 tcp 131.108.2.2

source-bridge sdllc-local-ack
!
```

