sap-priority

To define a priority list on an interface, use the **sap-priority** command in interface configuration mode. To remove a priority list on an interface, use the **no** form of this command.

sap-priority *list-number*

no sap-priority *list number*

Syntax Description

list-number	Priority list number you specified in the **sap-priority-list** command.

Defaults

No priority list is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example specifies priority list number 1:

```
sap-priority 1
```

Related Commands

Command	Description
sap-priority-list	Defines a priority list.
source-bridge	Configures an interface for source-route bridging (SRB).

sap-priority-list

To define a priority list, use the **sap-priority-list** command in global configuration mode. To remove a priority list, use the **no** form of this command.

sap-priority-list *list-number queue-keyword* [**dsap** *ds*] [**ssap** *ss*] [**dmac** *dm*] [**smac** *sm*]

no sap-priority-list *list-number queue-keyword* [**dsap** *ds*] [**ssap** *ss*] [**dmac** *dm*] [**smac** *sm*]

Syntax Description

list-number	Arbitrary integer from 1 to 10 that identifies the priority list.
queue-keyword	Priority queue name or a remote source-route bridge TCP port name.
dsap *ds*	(Optional) Destination service access point address. The *ds* argument is a hexadecimal number.
ssap *ss*	(Optional) Source service access point address. The *ss* argument is a hexadecimal number.
dmac *dm*	(Optional) Destination MAC address. The *dm* argument *dm* is written as a dotted triple of four-digit hexadecimal numbers.
smac *sm*	(Optional) Source MAC address. The *sm* argument *sm* is written as a dotted triple of four-digit hexadecimal numbers.

Defaults

No priority list is defined.

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

To give precedence to traffic on a particular Logical Link Control, type 2 (LLC2) session, you must specify all four keywords (**dsap**, **ssap**, **dmac**, and **smac**) to uniquely identify the LLC2 session.

Examples

The following example defines priority list 1 and specifies source service access point (SSAP) and destination service access point (DSAP) addresses:

```
sap-priority-list 1 high dsap 04 ssap 04
```

sdlc address

To assign a set of secondary stations attached to the serial link, use the **sdlc address** command in interface configuration mode. To remove an assigned secondary station use the **no** form of this command.

sdlc address *hexbyte* [**echo**] [**ack-mode**] [**xid-poll**] [**switched**] [**seconly**] [**xid-passthru**] [**passive**] [**K** *number*] [**vmac** *vmac-address*]

no sdlc address *hexbyte* [**echo**] [**ack-mode**] [**xid-poll**] [**switched**] [**seconly**] [**xid-passthru**] [**passive**] [**K** *number*] [**vmac** *vmac-address*]

Syntax Description

hexbyte	Hexadecimal number (base 16) that indicates the address of the serial link. The range is from 1 to ff. If ff is configured, the **ack-mode** option must be specified.
echo	(Optional) Treats non-echo and echo Synchronous Data Link Control (SDLC) addresses as the same address.
ack-mode	(Optional) Supports applications that require local termination of an SDLC connection with address FF. This option should be used only if you use the SDLC address ff as a regular (not a broadcast) address.
xid-poll	(Optional) Configures the router to send a null exchange identification (XID) to the Token Ring-attached host device. This tells the host device to start the session.
switched	(Optional) Configures the router to send an XID to an SDLC attached device. When the device answers, then a proxy XID is sent to the peer.
seconly	(Optional) Eliminates the need for counting PU4 lines on the Network Control Program (NCP) to determine the correct poll address. Because the router is always secondary, when **seconly** is coded, the polling address will be determined by the router.
xid-passthru	(Optional) Allows the router to pass the XID through the interface in both the host and end device's direction.
passive	(Optional) Causes the router to wait before sending a Set Normal Response (SNRM) until it receives an XID from the host. This keyword is valid only when the role is primary, and it requires the **sdlc partner** command with keyword **inbound** specified.
K number	(Optional) Specifies the maximum number of information frames (I-frames) that a router can send before it expects an acknowledgment from the end device. The minimum window-size is 1 and the maximum size is 7. The default is 7.
vmac *vmac-address*	(Optional) Assigns a virtual MAC address to a specific SDLC address on an SDLC interface.

Defaults

No secondary stations are assigned.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
11.0	The SDLC address **ack-mode** option was introduced.
11.3	The command was modified to include the **switched**, **passive**, **xid-poll**, and **xid-passthru** keywords.
11.3(T)	The command was modified to include the **seconly** keyword.
12.1(5)T	The **sdlc address** and **sdlc address ff ack-mode** commands were combined. The **K** keyword was added.
12.3(7)T	The **vmac** *vmac-address* keyword and argument were added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

To assign the IBM reserved address ff as a nonbroadcast valid local address, configure the **sdlc address** interface configuration command with a hexbyte value of *ff* and specify the **ack-mode** option. To deactivate, use the **no** form of the command.

Before you can use this command, you must specify the encapsulation on the interface on which you want to enable SDLC; then, establish the router link station role. Next, assign secondary station addresses using the **sdlc address** command. The addresses are given one per line in hexadecimal (base 16).

The **sdlc address ff ack-mode** command is used to support applications that require local termination on an SDLC connection with address ff. This command should be used only if you use the SDLC address ff as a regular (not a broadcast) address.

The optional **echo** keyword is valid only for TG interfaces. When you use the **echo** keyword, the *hexbyte* argument is the non-echo SDLC address.

The optional **passive** keyword is valid only when the role is primary. When you use the **passive** keyword, the **sdlc partner** command is required with keyword **inbound** specified.

Examples

The following example shows how to configure serial interface 0 with two SDLC secondary stations attached to it through a modem-sharing device with addresses C1 and C2:

```
interface serial 0
 encapsulation sdlc
 sdlc role primary
 sdlc address c1
       sdlc address c2
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.
encapsulation sdlc-primary	Configures the router as the primary SDLC station if you plan to configure the SDLLC media translation feature.
encapsulation sdlc-secondary	Configures the router as a secondary SDLC station if you plan to configure the SDLLC media translation feature.

Command	Description
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.
stun route address tcp	Specifies TCP encapsulation and optionally establishes SDLC local acknowledgment (SDLC transport) for serial tunnel (STUN).
sdlc role	Establishes a router to be either a primary or secondary SDLC station.

sdlc dlsw

To attach Synchronous Data Link Control (SDLC) addresses to data-link switching plus (DLSw+), use the **sdlc dlsw** command in interface configuration mode. To cancel the configuration, use the **no** form of this command.

sdlc dlsw {*sdlc-address* | **default** | **partner** *mac-address* [**inbound** | **outbound**]}

no sdlc dlsw {*sdlc-address* | **default** | **partner** *mac-address* [**inbound** | **outbound**]}

Syntax Description

sdlc-address	SDLC addresses are in hexadecimal. Multiple addresses can be assigned. The valid range is from 1 to FE.
default	Allows the user to configure an unlimited number of SDLC addresses to DLSw+.
partner *mac-address*	MAC address for default partner
inbound	(Optional) Partner will initiate connection.
outbound	(Optional) Initiate connection to partner.

Defaults

No correspondence is defined between SDLC addresses and DLSw+.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following command attaches SDLC address d2 to DLSw+:

```
sdlc dlsw d2
```

The following command attaches SDLC addresses d2, d5, e3, e4, e6, b1, c3, d4, a1 and a5:

```
sdlc dlsw d2 d5 e3 e4 e6 b1 c3 d4 a1 a5
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.
sdlc address	Assigns a set of secondary stations attached to the serial link.
sdlc role	Establishes the router to be either a primary or secondary SDLC station.

sdlc dte-timeout

To adjust the amount of time a DTE interface waits for the DCE to assert a Clear To Send (CTS) signal before dropping a Request To Send (RTS), use the **sdlc dte-timeout** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc dte-timeout *unit*

no sdlc dte-timeout *unit*

Syntax Description

unit	Timeout wait interval in microseconds. The valid range is from 10 to 64000. Each unit is approximately 5 microseconds. The default is 10 units (approximately 50 microseconds).

Defaults

10 units (approximately 50 microseconds)

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use this command on an interface that is in half-duplex mode and that has been configured for DTE.

Examples

The following example sets the amount of time that the DTE waits for the DCE to assert a CTS to 100 units (approximately 500 microseconds):

```
sdlc dte-timeout 100
```

Related Commands

Command	Description
half-duplex	Specifies half-duplex mode on an Synchronous Data Link Control (SDLC) interface or on the FDDI full-duplex, single-mode port adapter and FDDI full-duplex, multimode port adapter on the Cisco 7200 series and Cisco 7500 series routers.
half-duplex timer	Tunes half-duplex timers.

sdlc frmr-disable

To indicate that secondary stations on a particular serial link do not support Frame Rejects (FRMRs) or error indications, use the **sdlc frmr-disable** command in interface configuration mode. To specify that the secondary station does support FRMRs, use the **no** form of this command.

sdlc frmr-disable

no sdlc frmr-disable

Syntax Description

This command has no arguments or keywords.

Defaults

This command is disabled, which means that secondary stations support FRMRs or error indications.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

FRMRs are error indications that can be sent to a Synchronous Data Link Control (SDLC) station indicating that a protocol error has occurred. Not all SDLC stations support FRMRs. If this command is enabled, when the Cisco IOS software receives an error, it drops the line by sending a disconnect request to the remote station.

Examples

In the following example, the software is set to drop the serial line when it receives a protocol error:

```
interface serial 0
 sdlc frmr-disable
```

Related Commands

Command	Description
show llc2	Displays the LLC2 connections active in the router.

sdlc holdq

To control the maximum number of packets that can be held in a buffer before being sent to a remote Synchronous Data Link Control (SDLC) station, use the **sdlc holdq** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc holdq *address queue-size*

no sdlc holdq *address queue-size*

Syntax Description

address	SDLC address for which you are specifying a queue size.
queue-size	Local send window size. The minimum is 1 packet. No maximum value has been established. The default is 200 packets.

Defaults

200 packets

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is particularly useful with the SDLC Logical Link Control. Cisco (SDLLC) feature that allows a SDLC Logical Link Control. Cisco (SDLLC)-speaking Systems Network Architecture (SNA) station on a Token Ring to communicate with an SDLC-speaking SNA station on a serial link. Frame sizes and window sizes on Token Rings are often much larger than those acceptable for serial links. The fact that serial links are often much slower than Token Rings often makes this problem worse. Therefore, temporary backlogs can exist in periods of high data transfer from the Token Ring station to the serial station. A buffer creates a holding place for backlogged frames waiting to be sent on the serial link. This command is specified for each SDLC address, and therefore, for each SDLC secondary station on the serial link.

Examples

The following example shows how to change the output hold queue length to 30 frames on an SDLC station of address C1 off serial interface 0:

```
interface serial 0
 encapsulation sdlc-primary
 sdlc address c1
 sdlc holdq c1 30
```

Related Commands

Command	Description
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc k

To set the window size in order to control the maximum number of information frames the Cisco IOS software sends before it must stop sending and wait for an acknowledgment from the receiving router, use the **sdlc k** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc k *window-size*

no sdlc k *window-size*

Syntax Description

window-size	Local send window size. The minimum is one frame. The maximum is seven frames, which is the default.

Defaults

Seven frames

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When the Cisco IOS software is communicating with Synchronous Data Link Control (SDLC), it must have a parameter that controls the maximum number of information frames it will send before it must stop sending and wait for an acknowledgment. The **k** parameter keyword controls this window of acceptable frames. Use this command in conjunction with the **sdlc n1** command to create a balance between frame checking and network performance.

Examples

In the following example, the software can send up to five frames before it must receive an acknowledgment:

```
! enter a global command, if you have not already
interface tokenring 0
!send up to 5 frames, then wait for acknowledgment
 sdlc k 5
```

Related Commands

Command	Description
sdlc n1	Controls the maximum size of an incoming frame.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc line-speed

To enable adaptive Synchronous Data Link Control (SDLC) T1, use the **sdlc line-speed** command in interface configuration mode. To deactivate the command, use the **no** form of this command.

sdlc line-speed *rate*

no sdlc line-speed *rate*

Syntax Description

rate	Clock rate in bits per second.

Defaults

No default rate

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used to calculate the adjusted SDLC T1 value. The adjusted T1 is used to compensate for the delay between the time the system software passes a packet to the microcode, and the time the packet is actually sent out on the line. For a DCE device, this should be equal to the clock rate on the interface. For a DTE device, it should be equal to the clock rate on the DCE device to which the DTE is connected.

Examples

In the following example, the SDLC line-speed rate is set to rate:

```
sdlc line-speed rate
```

Related Commands

Command	Description
sdlc n2	Determines the number of times that the Cisco IOS software resends a frame before terminating the SDLC session.
sdlc t1	Controls the amount of time the Cisco IOS software waits for an acknowledgment to a frame or sequence of frames.

sdlc n1

To control the maximum size of an incoming frame, use the **sdlc n1** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc n1 *bit-count*

no sdlc n1 *bit-count*

Syntax Description

bit-count	Number indicating bit size. Frames that exceed this size are rejected. The minimum is 1 bit. The maximum value depends on the configured maximum maximum transmission unit (MTU) value for the interface. The default is 12000 bits.

Defaults

12000 bits

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use with the **sdlc k** command to reduce network overhead while continuing to check the sending of frames.

The formula for determining the maximum allowed value for the *bit-count* argument is the maximum MTU value of the interface + 2 bytes (for the Synchronous Data Link Control [SDLC] header) multiplied by 8 (to convert from bytes to bits). For example, if the maximum MTU of the interface is 1500 bytes, then the largest value for the *bit-count* argument is (1500 + 2) * 8 = 12016 bits. Usually, the default maximum MTU size is 1500 bytes, but it can be configured as high as 18,000 bytes.

Examples

In the following example, the Cisco IOS software rejects frames larger than 10,000 bits:

```
interface serial 0
 sdlc n1 10000
```

Related Commands

Command	Description
sdlc k	Sets the window size in order to control the maximum number of information frames the Cisco IOS software sends before it must stop sending and wait for an acknowledgment from the receiving router
show llc2	Displays the LLC2 connections active in the router.

sdlc n2

To determine the number of times that the Cisco IOS software resends a frame before terminating the Synchronous Data Link Control (SDLC) session, use the **sdlc n2** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc n2 *retry-count*

no sdlc n2 *retry-count*

Syntax Description

retry-count	Number of retry attempts. When this number is exceeded, the SDLC station terminates its session with the other station. The minimum is 1 and the maximum is 255. The default is 20 retries.

Defaults

20 retries

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **sdlc n2** command with the **sdlc t1** command to reduce network overhead while continuing to check the sending of data.

Examples

In the following example, the software is set to drop an SDLC station after five unsuccessful attempts to receive an acknowledgment for a frame:

```
interface serial 0
 sdlc n2 5
```

Related Commands

Command	Description
sdlc t1	Controls the amount of time the Cisco IOS software waits for an acknowledgment to a frame or sequence of frames.
show llc2	Displays the LLC2 connections active in the router.

sdlc partner

To specify the destination address with which a Logical Link Control (LLC) session is established for the Synchronous Data Link Control (SDLC) station, use the **sdlc partner** command in interface configuration mode. To cancel the configuration, use the **no** form of this command.

sdlc partner *mac-address sdlc-address* {**inbound** | **outbound**}

no sdlc partner *mac-address sdlc-address* {**inbound** | **outbound**}

Syntax Description

mac-address	The 48-bit MAC address of the Token Ring host.
sdlc-address	SDLC address of the serial device that will communicate with the Token Ring host. The valid range is from 1 to FE.
inbound	Prevents the router from sending proxy exchange identification (XID)s to the remote end station on behalf of the station specified. The remote end station must initiate the connection. When the router is configured for SDLC role secondary, the default is inbound (the router does not send proxy XIDs until it is polled). The **inbound** keyword is required if you want the router to wait before sending an SNRM until it receives an XID from the host. See the **passive** keyword on the **sdlc address** command for more details.
outbound	Causes the router to send proxy XIDs to the partner end station. If the remote end station responds, then (for physical unit [PU] 2.1 local devices) a NULL XID is sent on the SDLC line. The default behavior for SDLC role primary is outbound, and for SDLC role secondary is inbound.

Defaults

No partner is defined.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.2	The following keywords were added: • **inbound** • **outbound**
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The **inbound** keyword prevents unwanted messages on the host operator console from inbound XIDs to inactive virtual telecommunications access method (VTAM) Switched Major Nodes. It directs SDLC to not send Test or XID frames to the host, front-end processor (FEP), or 3172 even after the connection to a downstream PU2 is complete. The **inbound** keyword is required for System88 support.

Examples

The following example establishes the correspondence between an SDLC and Qualified Logical Link Control (QLLC) connection:

```
sdlc partner 1000.5aed.1f53 d2 inbound
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.
sdlc address	Assigns a set of secondary stations attached to the serial link.
sdlc dlsw	Attaches SDLC addresses to data-link switching plus (DLSw+).
sdlc vmac	Configures a MAC address for the serial interface.

sdlc poll-limit-value

To control how many times a single secondary station can be polled for input before the next station must be polled, use the **sdlc poll-limit-value** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc poll-limit-value *count*

no sdlc poll-limit-value *count*

Syntax Description

count	Number of times the Cisco IOS software can poll one secondary station before proceeding to the next station. The valid range is from 1 through 10. The default is 1.

Defaults

1 time

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

As is typical for the primary station of an Synchronous Data Link Control (SDLC) connection, if a secondary station sends its full possible window of input to the primary router or access server, the Cisco IOS software immediately will re-poll the same secondary for more data in an attempt to capture the complete transaction at one time. The **sdlc poll-limit-value** command indicates how many times this can happen before the next station in the poll loop must be polled.

Increasing the value allows for smoother transaction processing but can delay polling of other stations or giving output to other stations.

Examples

The following example specifies that the router can be polled two times before the next station in the poll list must be polled:

```
! enter a global command, if you have not already
interface serial 4
 no ip address
! use stun encapsulation
encapsulation stun
! establish stun group 4 on interface serial 4
 stun group 4
 stun sdlc-role primary
```

```
! poll the router up to two times before polling the next station
 sdlc poll-limit-value 2
```

Related Commands

Command	Description
sdlc poll-pause-timer	Controls how long the Cisco IOS software pauses between sending each poll frame to secondary stations on a single serial interface.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc poll-pause-timer

To control how long the Cisco IOS software pauses between sending each poll frame to secondary stations on a single serial interface, use the **sdlc poll-pause-timer** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc poll-pause-timer *milliseconds*

no sdlc poll-pause-timer *milliseconds*

Syntax Description

milliseconds	Number of milliseconds (ms) that the software waits before sending the poll frame to a single serial interface. This is a number in the range from 1 to 10000. The default is 10 ms.

Defaults

10 ms

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

As is typical for the primary station of a Synchronous Data Link Control (SDLC) connection, the software generates polls periodically to each of the secondary stations to solicit their input. After polling each station on a single serial interface, the software will pause before beginning to poll the next station.

Because the secondaries cannot send data until they are polled, increasing this timer value can increase response time to the users. However, making this value too small can flood the serial link with unneeded polls and require the secondary stations to spend wasted CPU time processing them.

Examples

In the following example, the software pauses 2000 ms before sending a series of poll frames through serial interface 4:

```
! enter a global command, if you have not already
interface serial 4
no ip address
! use STUN encapsulation
 encapsulation stun
! establish stun group 4 on interface serial 4
 stun group 4
!
 stun sdlc-role primary
```

```
! wait 2000 milliseconds before sending each series of poll frames
 sdlc poll-pause-timer 2000
```

Related Commands

Command	Description
sdlc poll-limit-value	Controls how many times a single secondary station can be polled for input before the next station must be polled.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc poll-wait-timeout

To specify the interval the Cisco IOS software will wait for polls from a primary node before timing out that connection when the router has been configured for local acknowledgment and some form of Synchronous Data Link Control (SDLC) communication (SDLLC or serial tunnel [STUN], for example), use the **sdlc poll-wait-timeout** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc poll-wait-timeout *milliseconds*

no sdlc poll-wait-timeout *milliseconds*

Syntax Description

milliseconds	Number of milliseconds the software will wait for a poll from the primary station before timing out the connection to the primary station. The minimum is 10 ms and the maximum is 64000 ms. The default is 10000 ms.

Defaults

10000 ms

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command can be used on an interface that has been configured as a secondary node, but is not to be used on an interface that has been configured as a primary node.

In a locally acknowledged multidrop environment, the polls the primary node sends to the router can be delayed because the primary node is busy polling other secondary nodes. In such situations, this command can be used to extend the timeout, thus reducing the likelihood the Cisco IOS software times out the connection to the primary node.

Examples

The following example specifies that the local software will wait an interval of 63,000 ms for a poll from a primary station before timing out:

```
! sample stun peer-name global command
stun peer-name 10.136.134.86
! sample protocol-group command
stun protocol-group 4 sdlc
!
interface serial 0
! sample ip address command
```

```
 no ip address
! sample encapsulation stun command
 encapsulation stun
! place interface serial0 in previously defined STUN group 4
 stun group 4
! must enter the next command to use the sdlc poll-wait-timeout command
 stun sdlc-role secondary
! set timeout period for polls from primary station to 63000 milliseconds.
 sdlc poll-wait-timeout 63000
! list the addresses of the sdlc stations on the link
 sdlc address C1
 sdlc address C2
! provide stun route command
 stun route address C2 tcp 10.136.134.58
 stun route address C1 tcp 10.136.134.58
```

Related Commands

Command	Description
sdlc poll-limit-value	Controls how many times a single secondary station can be polled for input before the next station must be polled.
sdlc poll-pause-timer	Controls how long the Cisco IOS software pauses between sending each poll frame to secondary stations on a single serial interface.

sdlc qllc-prtnr

To establish correspondence between a Synchronous Data Link Control (SDLC) and Qualified Logical Link Control (QLLC) connection, use the **sdlc qllc-prtnr** command in interface configuration mode. To deactivate the command, use the **no** form of this command.

sdlc qllc-prtnr *virtual-mac-address sdlc-address*

no sdlc qllc-prtnr *virtual-mac-address sdlc-address*

Syntax Description

virtual-mac-address	The virtual MAC address in the form *h.h.h.*
sdlc-address	SDLC address in hexadecimal. The valid range is from 1 to FE.

Defaults

No correspondence is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example establishes the correspondence between an SDLC and QLLC connection:

```
sdlc qllc-prtnr 4000.0122.0001 c1
```

Related Commands

Command	Description
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc role

To establish the router to be either a primary or secondary Synchronous Data Link Control (SDLC) station, use the **sdlc role** command in interface configuration mode. To cancel the designation, use the **no** form of this command.

sdlc role {**none** | **primary** | **secondary** | **prim-xid-poll**}

no sdlc role {**none** | **primary** | **secondary** | **prim-xid-poll**}

Syntax Description

none	Establishes the router as either a primary or secondary station, depending on the end stations.
primary	Establishes the router as a primary station.
secondary	Establishes the router as a secondary station.
prim-xid-poll	Establishes the router as a primary station when the end station is configured as a secondary NT2.1.

Defaults

No default role is assigned.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If the role is **none**, the router can be either primary or secondary, depending on the end stations. The SDLC end station must be configured as negotiable or primary NT2.1. When the end stations are configured as physical unit type 2 (physical unit [PU] 2), you can set the role of the interface to **primary** or **secondary**. When the end station is configured as secondary NT2.1, you must set the role of the interface to **prim-xid-poll**.

To configure an SDLC multidrop line (downstream), configure the SDLC role as follows:

- **primary** if all SDLC devices are type PU 2.0 or mixed PU 2.0 and 2.1
- **prim-xid-poll** if all devices are type PU 2.1

Examples

The following example configures the router as a primary SDLC station:

```
interface serial 2/6
 no ip address
 encapsulation sdlc
 fras map sdlc c1 serial 2/0 frame-relay 32 4 4
 sdlc role primary
 sdlc address c1
 sdlc xid c1 01700001
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.

sdlc saps

To configure Synchronous Data Link Control (SDLC)-to-Logical Link Control (LLC) sessions with respect to the source service access point (SSAP) and destination service access point (DSAP) on the LLC, use the **sdlc saps** command in interface configuration mode. To return to the default setting, use the **no** form of this command.

sdlc saps *address ssap dsap*

no sdlc saps *address ssap dsap*

Syntax Description

address	Address of the SDLC station that will communicate with the router. Valid range is from 1 to FF.
ssap	SSAP of the partner. Valid range is from 1 to FF. The default is 04.
dsap	DSAP of the partner. Valid range is from 1 to FF. The default is 04.

Defaults

The default value for both the *ssap* and *dsap* arguments is 04.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example configures SDLC address 01, SSAP 08, and DSAP 08.

```
sdlc saps 01 08 08
```

sdlc sdlc-largest-frame

To indicate the largest information frame (I-frame) size that can be sent or received by the designated Synchronous Data Link Control (SDLC) station, use the **sdlc sdlc-largest-frame** command in interface configuration mode. To return to the default value, use the **no** form of this command.

sdlc sdlc-largest-frame *address size*

no sdlc sdlc-largest-frame *address size*

Syntax Description

address	Address of the SDLC station that will communicate with the router.
size	Largest frame size that can be sent or received. The default is 265 bytes.

Defaults

The default size for the largest I-frame is 265 bytes.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

In the following example, the Cisco IOS software 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 software.

```
interface serial 4
 sdlc sdlc-largest-frame c6 265
```

sdlc simultaneous

To enable an interface configured as a primary Synchronous Data Link Control (SDLC) station to operate in two-way simultaneous mode, use the **sdlc simultaneous** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc simultaneous [**full-datamode | half-datamode**]

no sdlc simultaneous [**full-datamode | half-datamode**]

Syntax Description

full-datamode	(Optional) Enables the primary station to send data to and receive data from the polled secondary station.
half-datamode	(Optional) Prohibits the primary station from sending data to the polled secondary station.

Defaults

Two-way simultaneous mode is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

By default, the SDLC driver supports alternative mode. This means that in a multidrop environment, the primary station cannot send data to another secondary station until it receives a response (F bit) from the secondary station with which it is communicating.

In contrast, two-way simultaneous mode enables the interface configured as a primary SDLC station to send data to a second secondary station, even when it is receiving data from another secondary station. This capability improves utilization of a full-duplex serial line.

Examples

The following example enables all primary stations to send and receive data at the same time:

```
sdlc simultaneous full-datamode
```

The following example enables all secondary stations to send or receive data at the same time:

```
sdlc simultaneous half-datamode
```

Related Commands

Command	Description
encapsulation sdlc-primary	Configures the router as the primary SDLC station if you plan to configure the SDLLC media translation feature.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc slow-poll

To enable the slow-poll capability of the router as a primary Synchronous Data Link Control (SDLC) station, use the **sdlc slow-poll** command in interface configuration mode. To disable slow-poll capability, use the **no** form of this command.

sdlc slow-poll *seconds*

no sdlc slow-poll

Syntax Description

seconds	Amount of time in seconds. The default is 10 seconds.

Defaults

10 seconds

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

You can use this command to improve the performance of a multidropped SDLC configuration when one or more of the secondary stations are inactive.

When slow-poll is enabled, if the router acting as a primary station detects that a secondary SDLC station is not responding, it polls that secondary SDLC station less frequently. The router spends less time waiting for the inactive secondary station to respond, thereby minimizing the performance degradation on the active secondary SDLC stations on the multidropped line.

Examples

The following example enables the slow-poll capability:

```
interface serial 0
 sdlc slow-poll
```

Related Commands

Command	Description
sdlc poll-limit-value	Controls how many times a single secondary station can be polled for input before the next station must be polled.

Command	Description
sdlc poll-pause-timer	Controls how long the Cisco IOS software pauses between sending each poll frame to secondary stations on a single serial interface.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc snrm-timer

To specify a Set Normal Response (SNRM) timer that is different from the T1 response time, set the Synchronous Data Link Control (SDLC) SNRM timer using the **sdlc snrm-timer** command in interface configuration mode. To deactivate, use the **no** form of this command.

sdlc snrm-timer *number*

no sdlc snrm-timer *number*

Syntax Description

number	Specifies the time to wait for a reply to a SNRM frame in milliseconds, and is enabled only if the station role is primary. range is from 1 to 64000 ms, and default is the **no** form of the command.

Defaults

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the SNRM timer only if you want to have a unique timeout period to wait for a reply to an SNRM.

The **sdlc snrm-timer** command is used to specify the time to wait for a reply to an SNRM frame in milliseconds. This command is enabled only if the station role is primary.

Examples

The following configuration defines serial interface 0 as the primary SDLC station with two SDLC secondary stations, C1 and C2, attached to it through a modem-sharing device. SDLC simultaneous half-datamode is enabled, and the time to wait for a reply to a SNRM frame is 2500 ms.

```
interface serial 0
 encapsulation sdlc
 sdlc role primary
 sdlc address c1
 sdlc address c2
 sdlc simultaneous half-datamode
 sdlc snrm-timer 2500
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.
sdlc n2	Sets the number of times the Cisco IOS software will retry an operation that has timed out.
sdlc role primary	Establishes the router as a primary SDLC station.
sdlc simultaneous	Enables an interface configured as a primary SDLC station to operate in two-way simultaneous mode.
sdlc t1	Controls the amount of time the Cisco IOS software waits for a reply.

sdlc t1

To control the amount of time the Cisco IOS software waits for an acknowledgment to a frame or sequence of frames, use the **sdlc t1** command in interface configuration mode. To revert to the default setting, use the **no** form of this command.

sdlc t1 *milliseconds*

no sdlc t1 *milliseconds*

Syntax Description

milliseconds	Number of milliseconds that the software waits. The minimum is 1 ms and the maximum is 64000 ms. The default is 3000 ms.

Defaults

3000 ms

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When an Synchronous Data Link Control (SDLC) station sends a frame, it waits for an acknowledgment from the receiver that the frame has been received. The sending station cannot wait indefinitely for a response. When the frame is sent, a timer is started. To be consistent with the original specification of SDLC, this timer is called the T1 timer and is controlled by this parameter. If this timer reaches its limit before the acknowledgment is received, the software will try again and resend the frame.

Examples

In the following example, the software waits up to 4000 ms for a reply to a frame or sequence of frames:

```
! enter a global command, if you have not already
interface tokenring 0
 sdlc t1 4000
```

Related Commands

Command	Description
sdlc n2	Determines the number of times that the Cisco IOS software resends a frame before terminating the SDLC session.
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc test serial

To determine the status of end stations, use the **sdlc test serial** command in user EXEC or privileged EXEC mode. To halt the sending of the test frames, use the **sdlc test serial** command with the **stop** keyword.

sdlc test serial *number address* [*iterations* | **continuous** | **stop** | **string** *string*]

Syntax Description

number	Serial interface on which the test frame is to be sent out.
address	Synchronous Data Link Control (SDLC) address (in hexadecimal) of the end station to receive the test frame.
iterations	(Optional) Number of test frames to be sent. The valid range is from 1 to 25 frames. The default is 10 frames.
continuous	(Optional) Sends frames continuously until the **sdlc test serial** command is issued with the **stop** keyword.
stop	(Optional) Halts the sending of test frames.
string *string*	(Optional) Specifies a string of characters as data within the test frame. If this option is not specified, the default test string is ABCDEFGHIJKLMNOPQRSTUVWXYZ.

Defaults

The **sdlc test serial** command is not active.
The default number of test frames sent is 10.
The default test string is ABCDEFGHIJKLMNOPQRSTUVWXYZ.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The command will precheck for correct interface and SDLC address. The results of the test frames sent can be displayed after the frames have been sent or an **sdlc test serial** command with the **stop** keyword has been issued.

There is not a **no** form for this command.

Examples

The following are variations of the **sdlc test serial** command, followed by the response for each:

```
Router# sdlc test serial 0 c1

SDLC Test for address C1 completed
Frames sent=10 Frames received=10

Router# sdlc test serial 0 c1 255

SDLC Test for address C1 completed
Frames sent=255 Frames received=255

Router# sdlc test serial 0 C1 stop

SDLC Test for address C1 completed
Frames sent=44 Frames received=44

Router# sdlc test serial 0 c1 string Thestuffofdreams

SDLC Test for address C1 completed
Frames sent=10 Frames received=10
```

Related Commands

Command	Description
show llc2	Displays the Logical Link Control, type 2 (LLC2) connections active in the router.

sdlc virtual-multidrop

To allow Synchronous Data Link Control (SDLC) broadcast address FF to be replicated for each of the serial tunnel (STUN) peers, so that each of the end stations receives the broadcast frame, use the **sdlc virtual-multidrop** command in interface configuration mode. To disable the SDLC broadcast feature, use the **no** form of this command.

sdlc virtual-multidrop

no sdlc virtual-multidrop

Syntax Description

This command has no arguments or keywords.

Defaults

SDLC broadcast is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example allows each STUN peer to receive a broadcast frame:

```
sdlc virtual-multidrop
```

Related Commands

Command	Description
stun route address tcp	Specifies TCP encapsulation and optionally establishes SDLC local acknowledgment (SDLC transport) for STUN.

sdlc vmac

To configure a MAC address for the serial interface, use the **sdlc vmac** command in interface configuration mode. To disable the configuration, use the **no** form of this command.

sdlc vmac *mac-address*

no sdlc vmac *mac-address*

Syntax Description

mac-address	48-bit MAC address of the Token Ring host.

Defaults

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command must be configured if you will configure data-link switching plus (DLSw+). The last byte of the address must be 00.

Examples

The following example specifies a MAC address for the serial interface:

```
sdlc vmac 1234.3174.0000
```

Related Commands

Command	Description
encapsulation sdlc	Configures an Synchronous Data Link Control (SDLC) interface.
sdlc dlsw	Attaches SDLC addresses to DLSw+.

sdlc xid

To specify an exchange identification (XID) value appropriate for the designated Synchronous Data Link Control (SDLC) station associated with this serial interface, use the **sdlc xid** command in interface configuration mode. To disable XID processing for this address, use the **no** form of this command.

sdlc xid *address xid*

no sdlc xid *address xid*

Syntax Description

address	Address of the SDLC station associated with this interface.
xid	XID the Cisco IOS software will use to respond to XID requests the router receives. This value must be 4 bytes (8 digits) in length and is specified with hexadecimal digits.

Defaults

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

XID requests and responses are usually exchanged before sessions are started. Be sure that the XID value configured in the Cisco IOS software matches the IDBLK and IDNUM parameters configured on the host. The XID response to an XID request will contain the information you configured in the **sdlc xid** command. The host will check the XID response it receives with the IDBLK and IDNUM parameters (that are configured in the virtual telecommunications access method [VTAM]). If they match, the host will initiate a session with the router. If they do not match, the host will not initiate a session.

Examples

The following example specifies an XID value of 01720002 at address C2:

```
interface serial 0
 sdlc xid c2 01720002
```

Related Commands

Command	Description
encapsulation sdlc	Configures an SDLC interface.

sdlc xid-pause-timer

To control the frequency of exchange identification (XID) retries between a router and an upstream virtual telecommunications access method (VTAM), use the **sdlc xid-pause-timer** command in interface configuration mode. To restore the default timer value, use the **no** form of this command.

sdlc xid-pause-timer *time*

no sdlc xid-pause-timer *time*

Syntax Description

time	Length of time the router is to wait, in seconds, before sending the next retry XID. The valid range is from 10 to 300 seconds. The default is 10 seconds.

Defaults

The default XID pause timer value is 10 seconds.

Command Modes

Interface configuration

Command History

Release	Modification
12.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When a router attempts to send an XID upstream to VTAM, and the switched major node is down, the router continues to send retry XIDs at 10-second intervals. If many other routers are also attempting to send retry XIDs to VTAM, the resulting XID flood can cause problems. The **sdlc xid-pause-timer** command enables you to control the interval between router XID retries.

Examples

The following example specifies an XID pause timer value of 60 seconds:

```
interface serial 0
 sdlc xid-pause-timer 60
```

sdllc partner

To enable device-initiated connections for SDLC Logical Link Control. Cisco (SDLLC), use the **sdllc partner** command in interface configuration mode. This command must be specified for the serial interface that links to the serial line device. To cancel the original instruction, use the **no** form of this command.

sdllc partner *mac-address sdlc-address*

no sdllc partner *mac-address sdlc-address*

Syntax Description

mac-address	MAC address of the Token Ring host.
sdlc-address	Synchronous Data Link Control (SDLC) address of the serial device that will communicate with the Token Ring host.

Defaults

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Both the MAC address of the Token Ring host and the SDLC serial line address must be configured to initiate connections with the Token Ring host.

The Token Ring host and the serial device communicate with each other through the Cisco IOS software. Although the device is said to initiate connections, the software 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 software that does all the frame and protocol conversions between serial and Token Ring devices.

There are two conditions under which the Cisco IOS software 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 identification (XID) packets.
- When a serial interface previously shut down is brought back online. When the **no shutdown** command is issued, the software 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 Cisco IOS software 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 software 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.

Examples

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 Commands

Command	Description
sdllc xid	Specifies an XID value appropriate for the designated SDLC station associated with this serial interface.

sdllc ring-largest-frame

To indicate the largest I-frame size that can be sent to or received from the Logical Link Control, type 2 (LLC2) primary station, use the **sdllc ring-largest-frame** command in interface configuration mode. To return to the default, use the **no** form of this command.

sdllc ring-largest-frame *bytes*

no sdllc ring-largest-frame *bytes*

Syntax Description

bytes	Frame size in bytes. Values are 516, 1500, 2052, 4472, 8144, 11407, and 17800. The default is 516 bytes.

Defaults

516 bytes

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

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

Faster screen updates to 3278-style terminals often can be obtained by allowing the Token Ring front-end processor (FEP) to send as large a frame as possible and by allowing the Cisco IOS software to segment the frame into multiple Synchronous Data Link Control (SDLC) I-frames.

Examples

In the following example, the software can send or receive a frame as large as 11407 bytes from the Logical Link Control, type 2 (LLC2) primary station. Any frames larger will be fragmented by the software.

```
! 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 Commands

Command	Description
source-bridge remote-peer interface	Specifies a point-to-point direct encapsulation connection.
source-bridge remote-peer tcp	Identifies the IP address of a peer in the ring group with which to exchange source-bridge traffic using TCP.

sdllc sap

To associate a service access point (SAP) value other than the default SAP value with a serial interface configured for SDLC Logical Link Control. Cisco (SDLLC), use the **sdllc sap** command in interface configuration mode. To return this SAP value to its default state, use the **no** form of this command.

sdllc sap *sdlc-address ssap dsap*

no sdllc sap *sdlc-address ssap dsap*

Syntax Description

sdlc-address	MAC address associated with the remote Synchronous Data Link Control (SDLC) device.
ssap	Source SAP value. It must be in the range from 1 to 254. The default is 4.
dsap	Destination SAP value. It must be in the range from 1 to 254. The default is 4.

Defaults

The default source SAP value for IBM Systems Network Architecture (SNA) devices is 4.
The default destination SAP value for IBM SNA devices is 4.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

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

Examples

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 serial 0
 sdllc sap c1 02 02
```

Related Commands

Command	Description
sdllc traddr	Enables SDLLC media translation on a serial interface. The address specified is a MAC address to be assigned to the serial station.

sdllc sdlc-largest-frame

To indicate the largest information frame (I-frame) size that can be sent or received by the designated Synchronous Data Link Control (SDLC) station, use the **sdllc sdlc-largest-frame** command in interface configuration mode. To return to the default value, use the **no** form of this command.

sdllc sdlc-largest-frame *address value*

no sdllc sdlc-largest-frame *address value*

Syntax Description

address	Address of the SDLC station that will communicate with the Token Ring host.
value	Largest frame size that can be sent or received by this SDLC station. The default is 265 bytes.

Defaults

265 bytes

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

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.

Examples

In the following example, the Cisco IOS software 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 software.

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

sdllc traddr

To enable SDLC Logical Link Control. Cisco (SDLLC) media translation on a serial interface, use the **sdllc traddr** command in interface configuration mode. To disable SDLLC media translation on the interface, use the **no** form of this command.

sdllc traddr *mac-address vrn bn trn*

no sdllc traddr *mac-address vrn bn trn*

Syntax Description

mac-address	MAC address to be assigned to the serial interface.
vrn	SDLLC virtual ring number.
bn	SDLLC bridge number.
trn	SDLLC target ring number.

Defaults

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The address specified is a MAC address to be assigned to the serial station.

Every control unit hooked off the serial line requires a virtual Token Ring address (VTRA). This usually is assigned by the system administrator as a locally administered MAC 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 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 Cisco IOS software uses this byte to represent the Synchronous Data Link Control (SDLC) address of a station on the serial link.

Note Addresses in the range from *xxxx.xxxx.xx*00 to *xxxx.xxxx.xx*FF are reserved for use by the Cisco IOS software. You must adhere to this addressing requirement. If you do not follow this addressing requirement, there may be a conflict between the VTRA and the addresses reserved by the software for the Synchronous Data Link Control (SDLC) link.

The *vrn*, *bn*, and *trn* arguments 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, *vrn*, on a source-route bridged network, and ties in through the bridge, *bn*, to the virtual ring group, *trn*. 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 Logical Link Control, type 2 (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 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.

Examples

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 10.108.1.1 belongs to ring group 100 and uses
! tcp as the transport
source-bridge remote-peer 100 tcp 10.108.1.1
source-bridge remote-peer 100 tcp 10.108.2.2
!
interface serial 0
 encapsulation sdlc-primary
! establish address of SDLC station off serial-0 as c1
 sdlc 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

Command	Description
sdllc sap	Associates a SAP value other than the default SAP value with a serial interface configured for SDLLC.
source-bridge remote-peer interface	Specifies a point-to-point direct encapsulation connection.
source-bridge remote-peer tcp	Identifies the IP address of a peer in the ring group with which to exchange source-bridge traffic using TCP.

sdllc xid

To specify an exchange identification (XID) value appropriate for the designated Synchronous Data Link Control (SDLC) station associated with this serial interface, use the **sdllc xid** command in interface configuration mode. To disable XID processing for this address, use the **no** form of this command.

sdllc xid *address xid*

no sdllc xid *address xid*

Syntax Description

address	Address of the SDLC station associated with this interface.
xid	XID the Cisco IOS software will use to respond to XID requests received on the Token Ring Logical Link Control, type 2 (LLC2) side of the connection. This value must be 4 bytes (8 digits) in length and is specified with hexadecimal digits.

Defaults

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Exchange identification (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 virtual telecommunications access method (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.

Examples

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 Commands

Command	Description
sdllc partner	Enables device-initiated connections for SDLLC. Must be specified for the serial interface that links to the serial line device.

sec-profile

To specify a security profile to be associated with a listen point, use the **sec-profile** command in TN3270 listen-point configuration mode. To remove this specification, use the **no** form of this command.

sec-profile *profilename*

no sec-profile *profilename*

Syntax Description

profilename	Name originally specified in the **profile** command. It consists of a string of alphanumeric characters that specify the security profile name to be associated with a listen point. The valid character range is from 1 to 24.

Defaults

No default behavior or values

Command Modes

TN3270 listen-point configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If this command is not entered or if the **no** form of the command is entered, the security profile reverts to the profile configured in the **default-profile** command. If no default profile is specified, the listen point accepts only nonsecure connections

This command has no retroactive effect.

Examples

The following example specifies LAM as the security profile name for all new clients connecting to listen point 10.10.10.1 until the **sec-profile LAM1** command is configured. Once the **sec-profile LAM1** command is configured, all new client connections to 10.10.10.1 will use LAM1 as the profile name.

```
tn3270-server
 security
 profile LAM ssl
  keylen 128
  servercert slot0:lam
  certificate reload
 profile LAM1 ssl
  keylen 40
  servercert slot0:lam1
  certificate reload
 listen-point 10.10.10.1
 sec-profile LAM
```

```
 pu DIRECT 012ABCDE tok 0 04
Sec-profile LAM1
```

security (TN3270)

To enable security on the TN3270 server, use the **security** command in TN3270 server configuration mode. To turn off security on the TN3270 server, use the **no** form of this command.

security

no security

Syntax Description

This command has no arguments or keywords.

Defaults

The default is to have security enabled.

Command Modes

TN3270 server configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If the **no** form of this command is configured, any listen points that contain a security profile definition are reconfigured and are no longer secure. Sessions already established on the listen point will continue to run in the same mode (secure or nonsecure) as originally configured. If sessions are active on a listen point, a message will be sent to the console stating that the listen point has sessions running with an outdated security specification. A shutdown/restart sequence must be performed on the listen point if the user wants the sessions on the listen point to use the new specification.

Entering the **security** command moves the user into security configuration mode. Entering the **no** form of this command moves the user to a TN3270 server configuration mode.

This command has no retroactive effect.

Examples

In the following example, security is enabled on the TN3270 server:

```
tn3270-server
 security
  profile secure-1 ss1
```

servercert

To specify the location of the TN3270 server's security certificate in the router's Flash memory, use the **servercert** command in profile configuration mode.

servercert *location*

Syntax Description

location	Hexadecimal string of up to 63 characters specifying the location of the server's certificate in the Flash memory.

Defaults

No default behavior or values

Command Modes

Profile configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The certificate is in X.509 format, signed by a certification authority (CA). The certificate must be created offline. It cannot be created using the Cisco IOS software. Use third-party software or a Windows-based utility. The certificate should be in privacy enhanced mail (PEM) or Base 64 format. The output from the certificate generation contains two parts: the certificate and the private key. Concatenate these two files to create a single certificate file in PEM or Base 64 format.

Store the concatenated file in Flash memory using TFIP and the location entered using the **servercert** *location* command. If the file does not exist in the Flash memory when the command is entered, an error message is displayed indicating that the file does not exist. The first time this command is configured the certificate is automatically loaded from the specified location. Subsequent changes to the location file do not cause the certificate to be read automatically into system's memory. The **certificate reload** command must be entered to read the certificate into memory. If the user exits from the profile configuration mode without configuring the **servercert** command, a warning message is displayed. The warning message indicates that it is mandatory to configure a certificate using the **servercert** command.

Examples

The following example specifies that slot0:lam is the location of the security certificate:

```
tn3270-server
 security
 profile LAM ssl
  keylen 512
  servercert slot0:lam
  certificate reload
```

Related Commands

Command	Description
profile	Specifies a name and a security protocol for a security profile and enters profile configuration mode.