

mdl

To configure the Maintenance Data Link (MDL) message defined in the ANSI T1.107a-1990 specification for the Channelized T3 Interface Processor (CT3IP) in Cisco 7500 series routers, use the **mdl** interface configuration command. Use the **no** form of this command to remove the message.

```
mdl {transmit {path | idle-signal | test-signal} | string {eic | lic | fic | unit | pfi | port |
generator} string}
no mdl {transmit {path | idle-signal | test-signal} | string {eic | lic | fic | unit | pfi | port |
generator} string}
```

Syntax Description

transmit path	Enables transmission of the MDL Path message.
transmit idle-signal	Enables transmission of the MDL Idle Signal message.
transmit test-signal	Enables transmission of the MDL Test Signal message.
string eic <i>string</i>	Specifies the Equipment Identification Code; can be up to 10 characters.
string lic <i>string</i>	Specifies the Location Identification Code; can be up to 11 characters.
string fic <i>string</i>	Specifies the Frame Identification Code; can be up to 10 characters.
string unit <i>string</i>	Specifies the Unit Identification Code; can be up to 6 characters.
string pfi <i>string</i>	Specifies the Facility Identification Code sent in the MDL Path message; can be up to 38 characters.
string port <i>string</i>	Specifies the Port number string sent in the MDL Idle Signal message; can be up to 38 characters.
string generator <i>string</i>	Specifies the Generator number string sent in the MDL Test Signal message; can be up to 38 characters.

Defaults

No MDL message is configured

Command Modes

Interface configuration

Command History

Release	Modification
11.3	This command was introduced.

Usage Guidelines

Use the **show controllers t3** command to display MDL information (received strings). MDL information is displayed only when framing is set to C-bit.



Note

MDL is supported only when the DS3 framing is C-bit parity.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**Examples**

The following examples show several of the **mdl** commands for the CT3IP in slot 9:

```
controller t3 9/0/0
mdl string eic Router A
mdl string lic Test Network
mdl string fic Building B
mdl string unit ABC
```

Related Commands

Command	Description
show controllers t3	Displays information about the CT3IP on Cisco 7500 series routers.

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media-type

To specify the physical connection on an interface, use the **media type** interface configuration command. Use the **no** form of this command to restore the default value.

```
media-type { aui | 10baset | 100baset | mii }
no media-type { aui | 10baset | 100baset | mii }
```

Syntax Description

aui Selects a 15-pin physical connection.
10baset Selects an R-J45 10BaseT physical connection.
100baset Specifies an RJ-45 100BaseT physical connection.
mii Specifies a media-independent interface.

Defaults

AUI 15-pin physical connection is the default setting on the Cisco 4000 series.
 100BaseT physical connection is the default setting on the Cisco 7000 series and 7200 series.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

To specify the physical connection on an interface, use the following interface configuration:

- Ethernet network interface module configuration on the Cisco 4000 series
- Fast Ethernet Interface Processor (FEIP) on the Cisco 7000 series, 7200 series, and 7500 series
- Full-duplex or half-duplex mode on a serial interface

Examples

The following example selects an RJ-45 10BaseT physical connection on Ethernet interface 1:

```
interface ethernet 1
media-type 10baset
```

The following example specifies a media-independent interface physical connection to Fast Ethernet slot 0, port 1 on the Cisco 7000 or 7200 series:

```
interface fastethernet 0/1
media-type mii
```

The following example specifies a media-independent interface physical connection to Fast Ethernet slot 0, port adapter 1, port 1 on the Cisco 7500 series:

```
interface fastethernet 0/1/1
media-type mii
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**mop enabled**

Use the **mop enabled** interface configuration command to enable an interface to support the Maintenance Operation Protocol (MOP). To disable MOP on an interface, use the **no** form of this command.

mop enabled
no mop enabled

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled on Ethernet interfaces and disabled on all other interfaces.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following example enables MOP for serial interface 0:

```
interface serial 0
  mop enabled
```

Related Commands

Command	Description
mop retransmit-timer	Configures the length of time that the Cisco IOS software waits before retransmitting boot requests to a MOP server
mop retries	Configures the number of times the Cisco IOS software will retransmit boot requests to a MOP server,
mop sysid	Enables an interface to send out periodic MOP system identification messages.

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mop sysid

To enable an interface to send out periodic Maintenance Operation Protocol (MOP) system identification messages, use the **mop sysid** interface configuration command. To disable MOP message support on an interface, use the **no** form of this command.

mop sysid
no mop sysid

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Interface configuration

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines You can still run MOP without having the background system ID messages sent. This lets you use the MOP remote console, but does not generate messages used by the configurator.

Examples The following example enables serial interface 0 to send MOP system identification messages:

```
interface serial 0  
  mop sysid
```

Related Commands	Command	Description
	mop device-code	Identify the type of device sending MOP sysid messages and request program messages.
	mop enabled	Enables an interface to support the MOP.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**mtu**

To adjust the maximum packet size or maximum transmission unit (MTU) size, use the **mtu** interface configuration command. Use the **no** form of this command to restore the MTU value to its original default value.

mtu *bytes*
no mtu

Syntax Description

bytes Desired size in bytes.

Defaults

Table 1 lists default MTU values according to media type.

Table 1 *Default Media MTU Values*

Media Type	Default MTU
Ethernet	1500
Serial	1500
Token Ring	4464
ATM	4470
FDDI	4470
HSSI (HSA)	4470

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

Each interface has a default maximum packet size or maximum transmission unit (MTU) size. This number generally defaults to the largest size possible for that type interface. On serial interfaces, the MTU size varies, but cannot be set smaller than 64 bytes.

**Caution**

Changing an MTU size on a Cisco 7500 series router results in recarving of buffers and resetting of all interfaces. The following message is displayed:

```
%RSP-3-Restart:cbus complex.
```

**Note**

Changing the MTU value with the **mtu** interface configuration command can affect values for the protocol-specific versions of the command (**ip mtu** for example). If the values specified with the **ip mtu** interface configuration command is the same as the value specified with the **mtu** interface configuration command, and you change the value for the **mtu** interface configuration command, the **ip mtu** value automatically matches the new **mtu** interface configuration command value. However, changing the values for the **ip mtu** configuration commands has no effect on the value for the **mtu** interface configuration command.

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Examples

The following example specifies an MTU of 1000 bytes:

```
interface serial 1
mtu 1000
```

Related Commands

Command	Description
encapsulation smds	Enables SMDS service on the desired interface.
ip mtu	Sets the MTU size of IP packets sent on an interface.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**national bit**

To set the E3 national bit in the G.751 frame used by the PA-E3 port adapter, use the **national bit** interface configuration command. To return to the default E3 national bit, use the **no** form of this command.

```
national bit {0 | 1}
no national bit
```

Syntax Description

0 | 1 Specifies the E3 national bit in the G.751 frame. The default is 0.

Defaults

0 national bit

Command Modes

Interface configuration

Command History

Release	Modification
11.1 CA	This command was introduced.

Usage Guidelines

The **national bit** command sets bit 12 in the E3 frame.

To verify the national bit configured on the interface, use the **show controller serial EXEC** command.

Examples

The following example sets the national bit to 1 on the PA-E3 port adapter in slot 1, port adapter slot 0, interface 0:

```
interface serial 1/0/0
national bit 1
```

Related Commands

Command	Description
international bit	Sets the E3 international bit in the G.751 frame used by the PA-E3 port adapter.
show controllers serial	Displays information that is specific to the interface hardware.

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nrzi-encoding

Use the **nrzi-encoding** interface configuration command to enable nonreturn-to-zero inverted (NRZI) line-coding format. Use the **no** form of this command to disable this capability.

nrzi-encoding [mark]
no nrzi-encoding

Syntax Description	mark	(Optional) Specifies that NRZI mark encoding is required on the PA-8T and PA-4T+ synchronous serial port adapters on Cisco 7200 and 7500 series routers. If mark is not specified, NRZI space encoding is used.
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Defaults	Disabled
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Command Modes	Interface configuration
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Command History	Release	Modification
	10.0	This command was introduced.
	11.3	The mark keyword was added for the Cisco 7200 series routers and Cisco 7500 series routers.

Usage Guidelines	All FSIP, PA-8T, and PA-4T+ interface types support nonreturn-to-zero (NRZ) and nonreturn-to-zero inverted (NRZI) format. This is a line-coding format that is required for serial connections in some environments. NRZ encoding is most common. NRZI encoding is used primarily with EIA/TIA-232 connections in IBM environments.
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Examples	<p>The following example configures serial interface 1 for NRZI encoding:</p> <pre>interface serial 1 nrzi-encoding</pre> <p>The following example configures serial interface 3/1/0 for NRZI mark encoding:</p> <pre>interface serial 3/1/0 nrzi-encoding mark</pre>
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(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**physical-layer**

To specify the mode of a slow-speed serial interface on a router as either synchronous or asynchronous, use the **physical-layer** interface configuration command. To return the interface to the default mode of synchronous, use the **no** form of this command.

```
physical-layer {sync | async}
no physical-layer
```

Syntax Description

sync	Places the interface in synchronous mode.
async	Places the interface in asynchronous mode.

Defaults

Synchronous mode

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.

Usage Guidelines

This command applies only to low-speed serial interfaces available on Cisco 2520 through 2523 routers.

If you specify the **no physical-layer** command, you return the interface to its default mode (synchronous).

In synchronous mode, low-speed serial interfaces support all interface configuration commands available for high-speed serial interfaces, except the following two commands:

- **sdlc cts-delay**
- **sdlc rts-timeout**

When placed in asynchronous mode, low-speed serial interfaces support all commands available for standard asynchronous interfaces.

When you enter this command, it does not appear in the output of **more system:running-config** and **more nvram:startup-config** commands because the command is a physical layer command.

Examples

This example changes a low-speed serial interface from synchronous to asynchronous mode:

```
interface serial 2
physical-layer async
```

Related Commands

Command	Description
more system:running-config	Displays the running configuration.
more nvram:startup-config	Displays the startup configuration file contained in NVRAM or specified by the CONFIG_FILE environment variable.

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port

To enable an interface on a PA-4R-DTR port adapter to operate as a concentrator port, use the **port** interface configuration command. Use the **no** form of this command to restore the default station mode.

port
no port

Syntax Description This command has no arguments or keywords.

Defaults Station mode

Command Modes Interface configuration

Command History	Release	Modification
	11.3(3)T	This command was introduced.

Usage Guidelines By default, the interfaces of the PA-4R-DTR operate as Token Ring stations. Station mode is the typical operating mode. Use this command to enable an interface to operate as a concentrator port.

Examples The following example configures the PA-4R-DTR ports to operate in concentrator mode on a Cisco 7000 series router:

```
router# configure terminal
router(config)# interface tokenring 3/0/0
router(config-if)# port
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**pos flag**

To set the SONET overhead bytes in the frame header to meet a specific standards requirement or to ensure interoperability with another vendor's equipment, use the **pos flag** interface configuration command. To remove the setting of the SONET overhead bytes, use the **no** form of this command.

```
pos flag {c2 | j0 | s1s0} value
no pos flag {c2 | j0 | s1s0} value
```

Syntax Description

c2 <i>value</i>	Path signal identifier used to identify the payload content type.
j0 <i>value</i>	Section trace byte (formerly the C1 byte). For interoperability with SDH equipment in Japan, use the value 0x1. The byte value can be 0 to 255.
s1s0 <i>value</i>	S1 and S0 bits (bits 5 and 6 of the H1 #1 payload pointer byte). Use the following values to tell the SONET transmission equipment the SS bit: <ul style="list-style-type: none"> For OC-3c, use 0 (this is the default). For AU-4 container in SDH, use 2. <p>The S1 and S0 bits can be 0 to 3. Values 1 and 3 are undefined.</p>

Defaults

The default **c2** value is 0xCF, and the default **s1s0** value is 0.

Command Modes

Interface configuration

Command History

Release	Modification
11.2 GS	This command was introduced to support the Cisco 120000 series Gigabit Switch Routers.

Usage Guidelines

Use the following values to tell the SONET transmission equipment the payload type:

- For PPP (or HDLC when required), use 0xCF (this is the default).
- For ATM, use 0x13.
- For other equipment, use any non-zero value.
- The byte value can be 0 to 255.

Examples

The following example sets the path signal identifier used to identify the payload content type to ATM on the **pos** interface in slot 9:

```
Router(config)# interface pos 9/0
Router(config-if)# pos flag c2 0x13
Router(config-if)# end
Router#
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**pos framing**

To specify the framing used on the POS (Packet-over-SONET) interface, use the **pos framing** interface configuration command. To return to the default SONET STS-3c framing mode, use the **no** form of this command.

```
pos framing {sdh | sonet}
no pos framing
```

Syntax Description

sdh	Selects SDH STM-1 framing. This framing mode is typically used in Europe.
sonet	Selects SONET STS-3c framing. This is the default.

Defaults

SONET STS-3c framing

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
11.3	This command was modified to change the posi framing-sdh command to pos framing-sdh .
11.2 GS	The command syntax was changed from pos framing-sdh to pos framing . The sonet keyword was added.

Examples

The following example configures the interface for SDH STM-1 framing:

```
interface pos 3/0
 pos framing-sdh
 no shutdown
```

Related Commands

Command	Description
interface	The pos keyword configures a POS interface type and enters interface configuration mode.
pos internal-clock	The clock source (interface) command replaces this command.
clock source (interface)	Controls the clock used by a G.703-E1 interface.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**pos internal-clock**

The **clock source (interface)** command replaces this command. Refer to the description of **clock source** for information on transmit clock source.

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pos report

To permit selected SONET alarms to be logged to the console for a POS interface, use the **pos report** interface configuration command. To disable logging of select SONET alarms, use the **no** form of this command.

```
pos report {b1-tca | b2-tca | b3-tca | lais | lrdi | pais | plop | prdi | rdool | sd-ber | sf-ber | slof | slos}
no pos report {b1-tca | b2-tca | b3-tca | lais | lrdi | pais | plop | prdi | rdool | sd-ber | sf-ber | slof | slos}
```

Syntax Description		
b1-tca	Reports B1 bit error rate (BER) threshold crossing alarm errors. Reported by default.	
b2-tca	Reports B2 BER threshold crossing alarm errors. Reported by default.	
b3-tca	Reports B3 BER threshold crossing alarm errors. Reported by default.	
lais	Reports line alarm indication signal errors.	
lrdi	Reports line remote defect indication errors.	
pais	Reports path alarm indication signal errors.	
plop	Reports path loss of pointer errors. Reported by default.	
prdi	Reports path remote defect indication errors.	
rdool	Reports receive data out of lock errors.	
sd-ber	Reports signal degradation BER errors.	
sf-ber	Reports signal failure BER errors. Reported by default.	
slof	Reports section loss of frame errors. Reported by default.	
slos	Reports section los of signal errors. Reported by default.	

Defaults **b1-tca, b2-tca, b3-tca, plop, sf-ber, slof, and slos** are reported by default.

Command Modes Interface configuration

Command History	Release	Modification
	11.1 CC	This command was introduced.

Usage Guidelines Reporting an alarm means that the alarm can be logged to the console. Just because an alarm is permitted to be logged does not guarantee that it is logged. SONET alarm hierarchy rules dictate that only the most severe alarm of an alarm group is reported. Whether an alarm is reported or not, you can view the current state of a defect by checking the “Active Defects” line from the **show controllers pos** command output. A defect is a problem indication that is a candidate for an alarm.

For B1, the bit interleaved parity error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B1 byte of the following frame. Differences indicate that section level bit errors have occurred.

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For B2, the bit interleaved parity error report is calculated by comparing the BIP-8/24 code with the BIP-8 code extracted from the B2 byte of the following frame. Differences indicate that line level bit errors have occurred.

For B3, the bit interleaved parity error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B3 byte of the following frame. Differences indicate that path level bit errors have occurred.

PAIS is sent by line terminating equipment (LTE) to alert the downstream path terminating equipment (PTE) that it has detected a defect on its incoming line signal.

PLOP is reported as a result of an invalid pointer (H1, H2) or an excess number of new data flag (NDF) enabled indications.

SLOF is detected when a severely error framing (SEF) defect on the incoming SONET signal persists for 3 milliseconds.

SLOS is detected when an all-zeros pattern on the incoming SONET signal lasts 19(+3) microseconds or longer. This defect might also be reported if the received signal level drops below the specified threshold.

To determine the alarms that are reported on the interface, use the **show controllers pos** command.

Examples

The following example enables reporting of SD-BER and LAIS alarms on the interface:

```
Router(config)# interface pos 3/0/0
Router(config-if)# pos report sd-ber
Router(config-if)# pos report lais
Router(config-if)# end
Router#
```

Related Commands

Command	Description
interface	The pos keyword configures a POS interface type and enters interface configuration mode.
show controllers pos	Displays information about the POS controllers.

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pos scramble-atm

To enable SONET payload scrambling on a POS interface, use the **pos scramble-atm** interface configuration command. To disable scrambling, use the **no** form of this command.

```
pos scramble-atm
no pos scramble-atm
```

Syntax Description This command has no keywords or arguments.

Defaults Scrambling is disabled

Command Modes Interface configuration

Command History	Release	Modification
	11.1 CA	This command was introduced.
	11.2 P	This command was added.

Usage Guidelines SONET payload scrambling applies a self-synchronous scrambler ($x^{43}+1$) to the Synchronous Payload Envelope (SPE) of the interface to ensure sufficient bit transition density. Both ends of the connection must use the same scrambling algorithm. When enabling POS scrambling on a VIP2 POSIP on the Cisco 7500 series that has a hardware revision of 1.5 or higher, you can specify CRC 16 only (that is, CRC 32 is currently not supported).

To determine the hardware revision of the POSIP, use the **show diag** command.

The POS interface on the Cisco 12000 series has no restrictions.

To determine whether scrambling is enabled on the interface, use the **show interface pos** command or **more nvram:startup-config** command.



SONET payload scrambling is enabled with the **pos scramble-atm** command. SONET payload scrambling applies a self-synchronous scrambler ($x^{43}+1$) to the Synchronous Payload Envelope (SPE) of the interface to ensure sufficient bit transition density. Both sides of the connection must be configured using the **pos scramble-atm** command. Currently, when connecting to a Cisco 7500 series router and using the **pos scramble-atm** command, you must specify the **crc 16** command rather than the **crc 32** command.

Examples The following example enables scrambling on the interface:

```
Router(config)# interface pos 3/0
Router(config-if)# pos scramble-atm
Router(config-if)# no shutdown
Router(config-if)# end
Router#
```

Related Commands	Command	Description
	crc	Sets the length of the CRC on an FSIP or HIP of the Cisco 7500 series routers or on a 4-port serial adapter of the Cisco 7200 series routers.
	interface	The pos keyword configures a POS interface type and enters interface configuration mode.

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Command	Description
more nvram:startup-config	Displays the startup configuration file contained in NVRAM or specified by the CONFIG_FILE environment variable.
show diag	Displays hardware information including DRAM, SRAM, and the revision-level information on the line card.
show interfaces pos	Displays information about the Packet OC-3 interface in Cisco 7500 series routers.

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pos threshold

To set the BER threshold values of the specified alarms for a POS interface, use the **pos threshold** interface configuration command. To return to the default setting, use the **no** form of this command.

```
pos threshold {b1-tca | b2-tca | b3-tca | sd-ber | sf-ber} rate
no pos threshold {b1-tca | b2-tca | b3-tca | sd-ber | sf-ber} rate
```

Syntax Description

b1-tca	B1 bit error rate (BER) threshold crossing alarm.
b2-tca	B2 BER threshold crossing alarm.
b3-tca	B3 BER threshold crossing alarm.
sd-ber	Signal degrade BER threshold.
sf-ber	Signal failure BER threshold.
<i>rate</i>	Bit error rate from 3 to 9 (10-n).

Defaults

The default *rate* is 6 for **b1-tca**, **b2-tca**, **b3-tca**, and **sd-ber**. The default is 3 (10e-3) for **sf-ber**.

Command Modes

Interface configuration

Command History

Release	Modification
11.1 CC	This command was introduced.

Usage Guidelines

For B1, the bit interleaved parity error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B1 byte of the following frame. Differences indicate that section level bit errors have occurred.

For B2, the bit interleaved parity error report is calculated by comparing the BIP-8/24 code with the BIP-8 code extracted from the B2 byte of the following frame. Differences indicate that line level bit errors have occurred.

For B3, the bit interleaved parity error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B3 byte of the following frame. Differences indicate that path level bit errors have occurred.

SF-BER and SD-BER are sourced from B2 BIP-8 error counts (as is B2-TCA). However, SF-BER and SD-BER feed into the APS machine and can lead to a protection switch (if APS is configured).

B1-TCA, B2-TCA, and B3-TCA do nothing more than print a log message to the console (if reports for them are enabled).

To determine the BER thresholds configured on the interface, use the **show controllers pos** command.

Examples

The following example configures thresholds on the interface:

```
Router(config)# interface pos 3/0/0
Router(config-if)# pos threshold sd-ber 8
Router(config-if)# pos threshold sf-ber 4
Router(config-if)# pos threshold b1_tca 4
Router(config-if)# end
Router#
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**Related Commands**

Command	Description
interfaces pos	Displays information about the Packet OC-3 interface in Cisco 7500 series routers.
pos report	Enables reporting of selected SONET alarms.
show controllers pos	Displays information about the POS controllers.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**pri-group**

To specify ISDN Primary Rate Interface (PRI) on a channelized E1 or T1 card on Cisco 7500 series router, use the **pri-group** controller configuration command. Use the **no** form of this command to remove the ISDN PRI.

```
pri-group [timeslots range]
no pri-group
```

Syntax Description

timeslots *range* (Optional) Specifies a single range of values from 1 to 23.

Defaults

Disabled

Command Modes

Controller configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

When you configure ISDN PRI, you must first specify an ISDN switch type for PRI and an E1 or T1 controller.

Examples

The following example specifies ISDN PRI on T1 slot 1, port 0:

```
isdn switch-type primary-4ess
controllers t1 1/0
framing esf
linecode b8zs
pri-group timeslots 2-6
```

Related Commands

Command	Description
controller	Configures a T1 or E1 controller and enters controller configuration mode.
interface serial	Specifies a serial interface created on a channelized E1 or channelized T1 controller (for ISDN PRI, CAS, or robbed bit signalling).
isdn switch-type (PRI)	Specifies the central office switch type on the ISDN PRI interface.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**pulse-time**

To enable pulsing DTR signal intervals on the serial interfaces, use the **pulse-time** interface configuration command. Use the **no** form of this command to restore the default interval.

pulse-time *seconds*
no pulse-time

Syntax Description	<i>seconds</i>	Integer that specifies the DTR signal interval in seconds.
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Defaults	0 seconds
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Command Modes	Interface configuration
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Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines	When the serial line protocol goes down (for example, because of loss of synchronization) the interface hardware is reset and the DTR signal is held inactive for at least the specified interval. This function is useful for handling encrypting or other similar devices that use the toggling of the DTR signal to resynchronize.
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Examples	The following example enables DTR pulse signals for three seconds on serial interface 2:
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```
interface serial 2
pulse-time 3
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**ring-speed**

To set the ring speed for the CSC-1R and CSC-2R Token Ring interfaces, use the **ring-speed** interface configuration command.

ring-speed *speed*

Syntax Description *speed* Integer that specifies the ring speed, either 4 for 4-Mbps or 16 for 16-Mbps operation.

Defaults 16-Mbps operation

**Caution**

Configuring a ring speed that is wrong or incompatible with the connected Token Ring causes the ring to beacon, which effectively takes the ring down and makes it nonoperational.

Command Modes Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following example sets a Token Ring interface ring speed to 4 Mbps:

```
interface tokenring 0
 ring-speed 4
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**scramble**

To enable scrambling of the payload on the PA-E3 port adapter and the PA-T3 port adapter, use the **scramble** interface configuration command. To disable scrambling, use the **no** form of this command.

scramble

no scramble

Syntax Description

This command has no arguments or keywords.

Defaults

Scrambling is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1 CA	This command was introduced.

Usage Guidelines

E3/T3 scrambling is used to assist clock recovery on the receiving end.

Scrambling can prevent some bit patterns from being mistakenly interpreted as alarms by switches placed between the DSUs.

The local interface configuration must match the remote interface configuration. For example, if you enable scrambling on the local port, you must also do the same on the remote port.

To verify that scramble is configured on the interface, use the **show controllers serial EXEC** command.

Examples

The following example enables scrambling on the PA-E3 port adapter in slot 1, port adapter slot 0, interface 0:

```
interface serial 1/0/0
  scramble
```

Related Commands

Command	Description
show controllers serial	Displays information that is specific to the interface hardware.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module 56k clock rate**

To configure the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module 56k clock rate** interface configuration command. Use the **no** form of this command to enable a network line speed of 56 kbps, which is the default.

service-module 56k clock rate *speed*

no service-module 56k clock rate *speed*

Syntax Description	<i>speed</i>	Network line speed in kbps. The default speed is 56 kbps. Choose from one of the following optional speeds: <ul style="list-style-type: none"> • 2.4—2400 kbps • 4.8—4800 kbps • 9.6—9600 kbps • 19.2—19200 kbps • 38.4—38400 kbps • 56—56000 kbps • 64—64000 kbps • auto—Automatic line speed mode. Configure this option if your line speed is constantly changing.
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Defaults	56 kbps
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Command Modes	Interface configuration
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Command History	<table border="1"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Release</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">11.2</td> <td style="border-bottom: 1px solid black;">This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.2	This command was introduced.
Release	Modification				
11.2	This command was introduced.				

Usage Guidelines	<p>The 56-kbps line speed is available in switched mode, which is enabled using the service-module 56k network-type interface configuration command on the 4-wire CSU/DSU. If you have a 2-wire CSU/DSU module, the default is automatically set to switched mode.</p> <p>The 64-kbps line speed cannot be used with back-to-back digital data service (DDS) lines. The subrate line speeds are determined by the service provider.</p> <p>The keyword auto enables the CSU/DSU to decipher current line speed from the signaling current running on the network. Use auto only when transmitting over telco DDS lines and the clocking source is taken from the line.</p>
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(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**Examples**

The following example displays two routers connected in back-to-back DDS mode. However, notice that at first the configuration fails because the **auto** option is used. Later in the example the correct matching configuration is issued, which is **38.4** kbps.

```
Router1(config)# interface serial 0
Router1(config-if)#service-module 56k clock source internal
Router1(config-if)#service-module 56k clock rate 38.4

Router2(config-if)#service-module 56k clock rate auto

a1#ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

Router2(config-if)#service-module 56k clock rate 38.4

Router1#ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 52/54/56 ms
```

When transferring from DDS mode to switched mode, you must set the correct clock rate, as shown in the following example:

```
Router2(config-if)#service-module 56k network-type dds
Router2(config-if)#service-module 56k clock rate 38.4
Router2(config-if)#service-module 56k network-type switched
% Have to use 56k or auto clock rate for switched mode
% Service module configuration command failed: WRONG FORMAT.

Router2(config-if)#service-module 56k clock rate auto
% WARNING - auto rate will not work in back-to-back DDS.
Router2(config-if)#service-module 56k network-type switched
```

Related Commands

Command	Description
service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.
service-module 56k network-type	Sends packets in switched dial-up mode or DDS mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL

service-module 56k clock source

To set up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module 56k clock source** interface configuration command. Use the **no** form of this command to specify the clocking come from line.

```
service-module 56k clock source {line | internal}
no service-module 56k clock source {line | internal}
```

Syntax Description

line Uses the clocking provided by the active line coming in to the router.
internal Uses the internal clocking provided by the hardware module.

Defaults

Line clock

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

In most applications, the CSU/DSU should be configured with the **clock source line** command. For back-to-back configurations, configure one CSU/DSU with the **clock source internal** command and the other with **clock source line** command.

Examples

The following example configures internal clocking and transmission speed at 38.4 kbps.

```
router(config)# interface serial 0
router(config-if)# service-module 56k clock source internal
router(config-if)# service-module 56k clock rate 38.4
```

Related Commands

Command	Description
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.
clock source (interface)	Controls the clock used by a G.703-E1 interface.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module 56k data-coding**

To prevent application data from replicating loopback codes when operating at 64 kbps on a 4-wire CSU/DSU, use the **service-module 56k data-coding** interface configuration command. Use the **no** form of this command to enable normal transmission.

service-module 56k data-coding {normal | scrambled}

no service-module 56k data-coding {normal | scrambled}

Syntax Description

normal	Specifies normal transmission of data.
scrambled	Scrambles bit codes or user data before transmission. All control codes such as out of service and out of frame are avoided.

Defaults

Normal data transmission

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.

Usage Guidelines

Enable the scrambled configuration only in 64-kbps digital data service (DDS) mode. If the network type is set to switched, the configuration is refused.

If you transmit scrambled bit codes, both CSU/DSUs must have this command configured for successful communication.

Examples

The following example scrambles bit codes or user data before transmission:

```
router(config)# interface serial 0
router(config-if)# service-module 56k clock rate 64
router(config-if)# service-module 56k data-coding scrambled
```

Related Commands

Command	Description
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL

service-module 56k network-type

To transmit packets in switched dial-up mode or digital data service (DDS) mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module, use the **service-module 56k network-type** interface configuration command. Use the **no** form of this command to transmit from a dedicated leased line in DDS mode.

```
service-module 56k network-type {dds | switched}
no service-module 56k network-type {dds | switched}
```

Syntax Description

dds Transmits packets in DDS mode or through a dedicated leased line.

switched Transmits packets in switched dial-up mode. On a 2-wire, switched 56-kbps CSU/DSU module this is the default and only setting.

Defaults

DDS is enabled for the 4-wire CSU/DSU.
Switched is enabled for the 2-wire CSU/DSU.

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

In switched mode, you need additional dialer configuration commands to configure dial-out numbers. Before you enable the **service-module 56k network-type switched** command, both CSU/DSUs must use a clock source coming from the line and the clock rate configured to **auto** or **56** kbps. If the clock rate is not set correctly, this command will not be accepted.

The 2-wire and 4-wire, 56/64-kbps CSU/DSU modules use *V.25 bis* dial commands to interface with the router. Therefore, the interface must be configured using the **dialer in-band** command. DTR dial is not supported.



Note

Any loopbacks in progress are terminated when switching between modes.

Examples

The following example configures transmission in switched dial-up mode:

```
router(config)# interface serial 0
router(config-if)#service-module 56k clock rate auto
router(config-if)#service-module 56k network-type switched
router(config-if)#dialer in-band
router(config-if)#dialer string 2576666
router(config-if)#dialer-group 1
```

Related Commands

Command	Description
dialer in-band	Specifies that DDR is to be supported.
service-module 56k clock rate	Configures the network line speed for a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL

Command	Description
service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.
service-module 56k switched-carrier	Selects a service provider to use with a 2- or 4-wire, 56/64 kbps dial-up serial line.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module 56k remote-loopback**

To enable the acceptance of a remote loopback request on a serial interface on a 2- or 4-wire, 56/64-kbps CSU/DSU module, use the **service-module 56k remote-loopback** interface configuration command. Use the **no** form of this command to disable the module from entering loopback.

service-module 56k remote-loopback
no service-module 56k remote-loopback

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

The **no service-module 56k remote-loopback** command prevents the local CSU/DSU from being placed into loopback by remote devices on the line. The line provider is still able to put the module into loopback by reversing sealing current. Unlike the T1 module, the 2- or 4-wire, 56/64-kbps CSU/DSU module can still initiate remote loopbacks with the **no** form of this command configured.

Examples

The following example enables transmitting and receiving remote loopbacks:

```
router(config)# interface serial 0
router(config-if)# service-module 56k remote-loopback
```

Related Commands

Command	Description
loopback remote (interface)	Loops packets through a CSU/DSU, over a DS3 link or a channelized T1 link, to the remote CSU/DSU and back.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module 56k switched-carrier**

To select a service provider to use with a 2- or 4-wire, 56/64 kbps dial-up serial line, use the **service-module 56k switched-carrier** interface configuration command. Use the **no** form of this command to enable the default service provider.

```
service-module 56k switched-carrier {att | sprint | other}
no service-module 56k switched-carrier {att | sprint | other}
```

Syntax Description

att AT&T or other digital network service provider.

sprint Sprint or other service provider whose network requires echo cancelers.

other Any other service provider.

Defaults

ATT is enabled on the 4-wire, 56/64-kbps CSU/DSU module.

Sprint is enabled on the 2-wire, switched 56-kbps CSU/DSU module.

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

On a Sprint network, echo-canceler tones are sent during call setup to prevent the echo cancelers from damaging digital data. The transmission of echo-canceler tones may increase call setup times by 8 seconds on the 4-wire module. Having echo cancellation enabled does not affect data traffic.

This configuration command is ignored if the network type is DDS.

Examples

The following example configures AT&T as a service provider:

```
router(config)# interface serial 0
router(config-if)# service-module 56k network-type switched
router(config-if)# service-module 56k switched-carrier att
```

Related Commands

Command	Description
service-module 56k network-type	Sends packets in switched dial-up mode or DDS mode using a serial interface on a 4-wire, 56/64-kbps CSU/DSU module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL

service-module t1 clock source

To specify the clock source for the fractional T1/T1 CSU/DSU module, use the **service-module t1 clock source** interface configuration command. Use the **no** form of this command to return to the default line clock.

```
service-module t1 clock source {internal | line}
no service-module t1 clock source {internal | line}
```

Syntax Description		
internal		Specifies the CSU/DSU internal clock.
line		Specifies the line clock.

Defaults Line clock

Command Modes Interface configuration

Command History	Release	Modification

Usage Guidelines This command first appeared in Cisco IOS Release 11.2.

Examples The following example sets an internal clock source on serial line 0:

```
router(config)# interface serial 0
router(config-if)# service-module t1 clock source line
```

Related Commands	Command	Description
	service-module 56k clock source	Sets up the clock source on a serial interface for a 4-wire, 56/64-kbps CSU/DSU module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 data-coding**

To guarantee the ones density requirement on an AMI line using the fractional T1/T1 module, use the **service-module t1 data-coding inverted** interface configuration command. Use the **no** form of this command to enable normal data transmission.

```
service-module t1 data-coding {inverted | normal}
no service-module t1 data-coding {inverted | normal}
```

Syntax Description

inverted Inverts bit codes by changing all 1 bits into 0 bits and all 0 bits into 1 bits.

normal Requests that no bit codes be inverted before transmission.

Defaults

Normal transmission

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Data inversion is used to guarantee the ones density requirement on an AMI line when using bit-oriented protocols such as High-Level Data Link Control (HDLC), Point-to-Point Protocol (PPP), X.25, and Frame Relay. If the timeslot speed is set to 56 kbps, this command is rejected because line density is guaranteed when transmitting at 56 kbps. Use this command with the 64-kbps line speed.

If you transmit inverted bit codes, both CSU/DSUs must have this command configured for successful communication.

Examples

The following example inverts bit codes using a timeslot speed of 64 kbps:

```
router(config)# interface serial 0
router(config-if)# service-module t1 timeslots all speed 64
router(config-if)# service-module t1 data-coding inverted
```

Related Commands

Command	Description
service-module t1 linecode	Selects the linecode for the fractional T1/T1 module.
service-module t1 timeslots	Defines timeslots that constitute a fractional T1/T1 (FT1/T1) channel.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 fdl**

To set the fdl parameter to either att or ansi, use the **service-module t1 fdl** interface configuration command. Use the **no** form of this command to ignore the fdl parameter.

```
service-module t1 fdl {ansi | att}
no service-module t1 fdl
```

Syntax Description	ansi	Sets the fdl parameter to ansi.
	att	Sets the fdl parameter to att.

Defaults Determined by the telephone company.

Command Modes Interface configuration mode

Command History	Release	Modification

Usage Guidelines This command first appeared in Cisco IOS Release 11.2 P.

The default is **no service-module t1 fdl**. The **ansi** or **att** options are determined by your service provider or telephone company.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 framing**

To select the frame type for a line using the fractional T1/T1 (FT1/T1) module, use the **service-module t1 framing** interface configuration command. Use the **no** form of this command to revert to the default, which is Extended Superframe.

```
service-module t1 framing {esf | sf}
no service-module t1 framing {esf | sf}
```

Syntax Description

esf Specifies Extended Super Frame as the T1 frame type.
sf Specifies D4 Super Frame as the T1 frame type.

Defaults

Extended Superframe (ESF)

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Use this command in configurations where the router communicates with FT1/T1 data lines. The service provider determines which framing type, either **esf** or **sf**, is required for your circuit.

Examples

The following example enables Super Frame as the FT1/T1 frame type:

```
service-module t1 framing sf
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 lbo**

To configure the CSU line build out (LBO) on a fractional T1/T1 CSU/DSU module, use the **service-module t1 lbo** interface configuration command. Use the **no** form of this command to disable line build out.

```
service-module t1 lbo {-15 db | -7.5 db | none}
no service-module t1 lbo {-15 db | -7.5 db | none}
```

Syntax Description

-15 db	Decreases outgoing signal strength by 15 dB.
-7.5 db	Decreases outgoing signal strength by 7.5 dB.
none	Transmits packets without decreasing outgoing signal strength.

Defaults

No line build out

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Use this command to decrease the outgoing signal strength to an optimum value for a fractional T1 line receiver. The ideal signal strength should be -15 dB to -22 dB, which is calculated by adding the phone company loss + cable length loss + line build out.

You may use this command in back-to-back configurations, but it is not needed on most actual T1 lines.

Examples

The following example sets the LBO to -7.5 dB:

```
router(config)# interface serial 0
router(config-if)# service-module t1 lbo -7.5db
```

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 linecode**

To select the line code for the fractional T1/T1 module, use the **service-module t1 linecode** interface configuration command. Use the **no** form of this command to select the default, which is the B8ZS line code.

```
service-module t1 linecode {ami | b8zs}
no service-module t1 linecode {ami | b8zs}
```

Syntax Description

ami	Specifies alternate mark inversion (AMI) as the line code.
b8zs	Specifies binary 8 zero substitution (B8ZS) as the line code.

Defaults

b8zs

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Configuring B8ZS is a method of ensuring the ones density requirement on a T1 line by substituting intentional bipolar violations in bit positions four and seven for a sequence of eight zero bits. When the CSU/DSU is configured for AMI, you must guarantee the ones density requirement in your router configuration using the **service-module t1 data-coding inverted** command or the **service-module t1 timeslots speed 56** command.

Your T1 service provider determines which line code, either **ami** or **b8zs**, is required for your T1 circuit.

Examples

The following example specifies AMI as the line code:

```
router(config)# interface serial 0
router(config-if)# service-module t1 linecode ami
```

Related Commands

Command	Description
service-module t1 data-coding	Guarantees the ones density requirement on an AMI line using the fractional T1/T1 module.
service-module t1 timeslots	Defines timeslots that constitute a fractional T1/T1 (FT1/T1) channel.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 remote-alarm-enable**

To generate remote alarms (yellow alarms) at the local CSU/DSU or detect remote alarms sent from the remote CSU/DSU, use the **service-module t1 remote-alarm-enable** interface configuration command. Use the **no** form of this command to disable remote alarms.

```
service-module t1 remote-alarm-enable
no service-module t1 remote-alarm-enable
```

Syntax Description

This command has no arguments or keywords.

Defaults

Remote alarms disabled

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Remote alarms are transmitted by the CSU/DSU when it detects an alarm condition, such as a red alarm (loss of frame) or blue alarm (unframed ones). The receiving CSU/DSU then knows there is an error condition on the line.

With D4 Super Frame configured, a remote alarm condition is transmitted by setting the bit 2 of each time slot to zero. For received user data that has the bit 2 of each time slot set to zero, the CSU/DSU interprets the data as a remote alarm and interrupts data transmission, which explains why remote alarms are disabled by default. With Extended Super Frame configured, the remote alarm condition is signalled out of band in the facilities data link.

You can see if the FT1/T1 CSU/DSU is receiving a remote alarm (yellow alarm) by issuing the **show service-module** command.

Examples

The following example enables remote alarm generation and detection:

```
router(config)# interface serial 0
router(config-if)# service-module t1 remote-alarm-enable
```

Related Commands

Command	Description
service-module t1 framing	Selects the frame type for a line using the fractional T1/T1 (FT1/T1) module.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 remote-loopback**

To specify if the fractional T1/T1 CSU/DSU module enters loopback mode when it receives a loopback code on the line, use the **service-module t1 remote-loopback** interface configuration command. Use the **no** form of this command to disable remote loopbacks.

```
service-module t1 remote-loopback {full | payload} [alternate | v54]
no service-module t1 remote-loopback {full | payload}
```

Syntax Description

full	Configures the remote loopback code used to transmit or accept CSU loopback requests.
payload	Configures the loopback code used by the local CSU/DSU to generate or detect payload-loopback commands.
alternate	(Optional) Transmits a remote CSU/DSU loopback request using a 4-in-5 pattern for loopup and 2-in-3 pattern for loopdown. This is an inverted version of the standard loopcode request.
v54	(Optional) Industry standard loopback code. Use this configuration for CSU/DSUs that may not support the Accunet loopup standards. This keyword is used only with a payload request, not a full request.

**Note**

By entering the **service-module t1 remote-loopback** command without specifying any keywords, you enable the standard-loopup codes, which use a 1-in-5 pattern for loopup and a 1-in-3 pattern for loopdown.

Defaults

Full and payload loopbacks with standard-loopup codes

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

You can simultaneously configure the **full** and **payload** loopback points. However, only one loopback code can be configured at a time. For example, if you configure the **service-module t1 remote-loopback payload alternate** command, a **payload v54** request cannot be transmitted or accepted.

The **no** form of this command disables loopback requests. For example, the **no service-module t1 remote-loopback full** command ignores all full-bandwidth loopback transmissions and requests. Configuring the **no** form of the command may not prevent telco line providers from looping your router in esf mode, because fractional T1/T1 lines use facilities data link messages to initiate loopbacks.

If you enable the **service-module t1 remote-loopback** command, the **loopback remote** commands on the FT1/T1 CSU/DSU module will not be successful.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**Examples**

The following example displays two routers connected back-to-back through a fractional T1/T1 line:

```
Router# no service-module t1 remote-loopback full
Router# service-module t1 remote-loopback payload alternate

Router# loopback remote full
%SERVICE_MODULE-5-LOOPUPFAILED: Unit 0 - Loopup of remote unit failed

Router# service-module t1 remote-loopback payload v54
Router# loopback remote payload
%SERVICE_MODULE-5-LOOPUPFAILED: Unit 0 - Loopup of remote unit failed

Router# service-module t1 remote-loopback payload alternate
Router# loopback remote payload
%SERVICE_MODULE-5-LOOPUPREMOTE: Unit 0 - Remote unit placed in loopback
```

Related Commands

Command	Description
loopback remote (interface)	Loops packets through a CSU/DSU, over a DS3 link or a channelized T1 link, to the remote CSU/DSU and back.

(DRAFT LABEL) ALPHA DRAFT - CISCO CONFIDENTIAL**service-module t1 timeslots**

To define timeslots that constitute a fractional T1/T1 (FT1/T1) channel, use the **service-module t1 timeslots** interface configuration command. Use the **no** form of this command to resume the default setting (all FT1/T1 timeslots transmit at 64 kbps).

```
service-module t1 timeslots {range | all} [speed {56 | 64}]
no service-module t1 timeslots {range | all}
```

Syntax Description

<i>range</i>	The DS0 timeslots that constitute the FT1/T1 channel. The range is from 1 to 24, where the first timeslot is numbered 1 and the last timeslot is numbered 24. Specify this field by using a series of subranges separated by commas.
all	Selects all FT1/T1 timeslots.
speed	(Optional) Specifies the timeslot speed.
56	56 kbps.
64	64 kbps. This is the default for all timeslots.

Defaults

64 kbps

Command Modes

Interface configuration

Command History

Release	Modification

Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

This command specifies which timeslots are used in fractional T1 operation and determines the amount of bandwidth available to the router in each FT1/T1 channel.

The timeslot range must match the timeslots assigned to the channel group. Your service provider defines the timeslots that comprise a channel group.

To use the entire T1 line, enable the **service-module t1 timeslots all** command.

Examples

The following example displays a series of timeslot ranges and a speed of 64 kbps:

```
service-module t1 timeslots 1-10,15-20,22 speed 64
```

Related Commands

Command	Description
service-module t1 data-coding	Guarantees the ones density requirement on an AMI line using the fractional T1/T1 module.
service-module t1 linecode	Selects the linecode for the fractional T1/T1 module.