E1-G.703/G.704 Serial Port Adapter

Description

The E1-G.703/G.704 serial port adapters (PA-4E1G-120 and PA-4E1G-75) are available on Cisco 7500 series routers, Cisco 7200 series routers, and Cisco 7000 series routers with the 7000 Series Route Switch Processor (RSP7000) and 7000 Series Chassis Interface (RSP7000CI).

These port adapters provide up to four E1 synchronous serial interfaces, which are compatible with and specified by G.703/G.704. The PA-4E1G-120 supports balanced operation and the PA-4E1G-75 supports unbalanced operation with 15-pin, D-shell (DB-15) receptacles on the port adapters. Both port adapters operate in full-duplex mode at the E1 speed of 2.048-Mbps. These port adapters provide the following additional features and capabilities:

- Provide a means of connecting standard serial interfaces such as V.35 to telephone lines or Postal Telephone and Telegraph (PTT) networks.
- Provide framed (G.704) and unframed (G.703) service access.
- Operate over E1 leased-line services and provide ITU-T G.703 with high-density bipolar of order 3 (HDB3) line encoding.
- Operate with either an external or internal clock signal and run at wire speed.
- Provide for local and remote loopback testing services.
- Allow you to fractionalize a data stream into a single channel from 64 kbps to 1,984 kbps.
- Provide G.704 framing for N x 64-kbps service support (where N = 1 to 31).
- Support a 4-bit cyclic redundancy check (CRC-4) to provide and ensure data integrity.
- Support point-to-point connections to Cisco 7000 series, Cisco 7200 series, and Cisco 7500 series routers from E1 leased-line services.
- Eliminate the need for a separate, external data termination unit that is typically used to convert standard serial interfaces, such as V.35 to E1-G.703/G.704.

Platforms

This feature is supported on these platforms:

- Cisco 7500
- Cisco 7200
- Cisco 7000 series routers with the RSP7000 and RSP7000CI

Configuration Tasks

For information on how to configure the E1-G.703/G.704 serial port adapter, refer to the "Configure a Synchronous Serial Interface" section in the "Configuring Interfaces" chapter of the *Configuration Fundamentals Configuration Guide*.

For information on other commands that can be used by the E1-G.703/G.704 serial port adapter, refer to the Cisco IOS Release 11.1 configuration guides.

Configuration Example

The following example shows a configuration for serial interface 9/1/3 on a E1-G.703/G.704 serial port adapter in a Cisco 7500 series router. In this example, the interface is configured for framed (G.704) operation, and timeslot 16 is used for data.

```
router# configure terminal
router(config)# interface serial 9/1/3
router(config-if)# ip address 1.1.1.10 255.255.255.0
router(config-if)# no keepalive
router(config-if)# no fair-queue
router(config-if)# timeslot 1-31
router(config-if)# crc4
router(config-if)# ts16
router(config-if)# exit
router(config)# exit
router#
```

Command Reference

This section documents modified commands. All other commands used with this feature are documented in the Cisco IOS Release 11.1 command references.

- **clock source (interface)**
- **crc4**
- **timeslot**
- **ts16**

clock source (interface)

To control which clock a G.703 E1 interface or an E1-G.703/G.704 serial port adapter will use to clock its transmitted data from, use the **clock source** interface configuration command. The **no** form of this command restores the default value.

clock source {**line** | **internal**}
no clock source

Syntax Description

line	Specifies that the interface will clock its transmitted data from a clock recovered from the line's receive data stream (default).
internal	Specifies that the interface will clock its transmitted data from its internal clock.

Default

By default, the applique uses the line's receive data stream.

Command Mode

Interface configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command was modified in Cisco IOS Release 11.1 CA to include the Cisco 7200 series router.

This command applies to a Cisco 4000 router or Cisco 7000 series, Cisco 7200 series, and Cisco 7500 series router. A G.703-E1 interface or E1-G.703/G.704 serial port adapter can clock its transmitted data from either its internal clock or from a clock recovered from the line's receive data stream.

Example

The following example specifies the G.703-E1 interface to clock its transmitted data from its internal clock:

```
interface serial 0/1
clock source internal
```

crc4

To enable generation of CRC4 (per ITU Recommendation G.704 and G.703) to improve data integrity, use the **crc4** interface configuration command. To disable this feature, use the **no** form of this command.

crc4
no crc4

Syntax Description

This command has no arguments or keywords.

Default

Disabled

Command Mode

Interface configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command was modified in Cisco IOS Release 11.1 CA to include the Cisco 7200 series router and the E1-G.703/G.704 serial port adapter.

This command applies to a Cisco 4000 router, Cisco 7200 series, Cisco 7000 series, and Cisco 7500 series router. This command is supported on the FSIP and the E1-G.703/G.704 serial port adapter.

This command is useful for checking data integrity while operating in framed mode. CRC4 provides additional protection for a frame alignment signal under noisy conditions. For data transmission at E1 (2.048 Mbps), the G.704 standard suggests 4 bits CRC. Refer to CCITT Recommendation G.704 for a definition of CRC4.

You can also use the **crc** command to set the CRC size for the HDLC controllers.

Example

The following example enables CRC4 generation on the E1-G.703/G.704 serial port adapter and also sets the CRC size to 32 bits:

```
interface Serial 0/0
 crc 32
 crc4
```

timeslot

To enable framed mode serial interface on a G.703 E1 port adapter on an FSIP or on an E1-G.703/G.704 serial port adapter, use the **timeslot** interface configuration command. To restore the default, use the **no** form of this command or set the start slot to 0.

timeslot *start-slot* **–** *stop-slot*
no timeslot

Syntax Description

start-slot	The first subframe in the major frame. Range is 1 to 31 and must be less than or equal to *stop-slot*.
stop-slot	The last subframe in the major frame. Range is 1 to 31 and must be greater than or equal to *start-slot*.

Default

A G.703 E1 interface is configured for unframed mode.

Command Mode

Interface configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command was modified in Cisco IOS Release 11.1 CA to include the E1-G.703/G.704 serial port adapter and Cisco 7200 series routers.

This command applies to a Cisco 4000 router or Cisco 7000 series, Cisco 7200 series, and Cisco 7500 series router. G.703 E1 interfaces have two modes of operation, framed and unframed. When in framed mode, the range from *start-slot* to *stop-slot* gives the number of 64-kbps slots in use. There are 32 64-kbps slots available.

In framed mode, timeslot 16 is not used for data. To use timeslot 16 for data, use the **ts16** interface command.

Example

The following example enables framed mode on a serial interface on a G.703 E1 port adapter:

```
interface serial 3/0
timeslot 1-3
```

Related Command

ts16

ts16

To control the use of time slot 16 for data on a G.703 E1 interface or on a E1-G.703/G.704 serial port adapter, use the **ts16** interface configuration command. To restore the default, use the **no** form of this command.

ts16
no ts16

Syntax Description

This command has no arguments or keywords.

Default

Time slot 16 is used for signaling.

Command Mode

Interface configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command was modified in Cisco IOS Release 11.1 CA to include the Cisco 7200 series router.

This command applies to a Cisco 4000 router or Cisco 7000 series, Cisco 7200 series, and Cisco 7500 series router. By default, time slot 16 is used for signaling. Use this command to configure time slot 16 to be used for data. When in framed mode, in order to get all possible subframes or timeslots, you must use the **ts16** command.

Example

The following example configures time slot 16 to be used for data on a G.703 E1 interface:

```
ts16
```

Related Command

timeslot

What to Do Next

For more information on the E1-G.703/G.704 serial port adapter, refer to the *E1-G.703/G.704 Serial Port Adapter (PA-4E1G-120 and PA-4E1G-75) Installation and Configuration* publication.