Configuring J1 Bytes and Troubleshooting HP−TIM Alarms on POS Line Cards

Document ID: 27043

Contents

Introduction

This document describes how to configure the J1 byte from SDH, High Order Path Overhead (HO−POH) on Packet over SONET/SDH (POS) line cards. This document also explains how to clear HO Path Trace Identifier Mismatch (HP−TIM) alarms.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

The J1 Byte

The Bellcore GR−253 standard defines Synchronous Optical Networks (SONET). SONET uses a layered architecture of Path Overhead (POH), Line Overhead (LOH), and Section Overhead (SOH). The POH column includes the J1 byte, also known as the Path Trace Buffer (PTB).

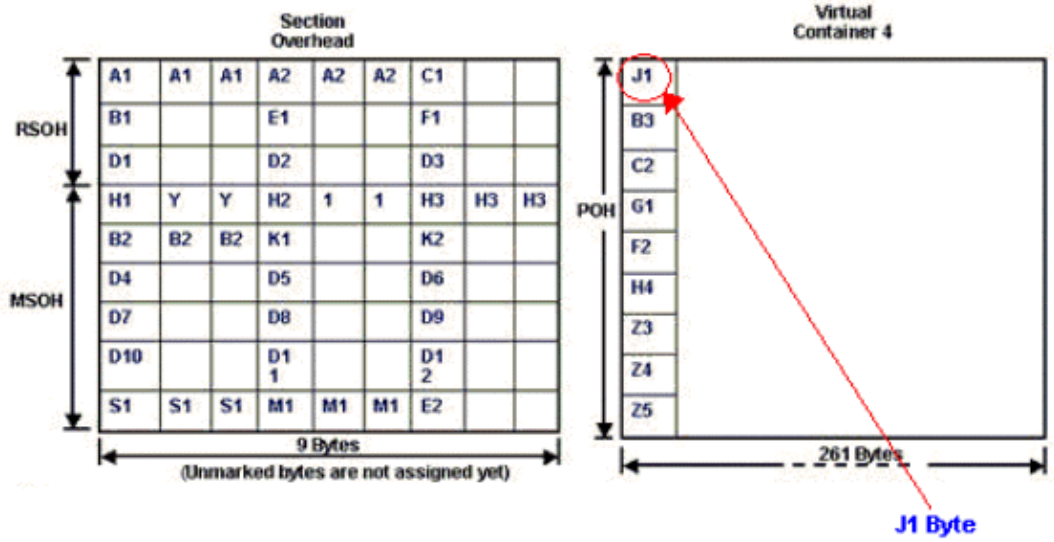
				Path Overhead
Section Overhead	A1 Framing	A2 Framing	A3 Framing	J1 Trace
	B1 BIP-8	E1 Orderwire	E1 User	B3 BIP-8
	D1 Data Com	D2 Data Com	D3 Data Com	C2 Signal Label
Line Overhead	H1 Pointer	H2 Pointer	H3 Pointer Action	G1 Path Status
	B2 BIP-8	K1	K2	F2 User Channel
	D4 Data Com	D5 Data Com	D5 Data Com	H4 Indicator
	D7 Data Com	D8 Data Com	D9 Data Com	Z3 Growth
	D10 Data Com	D11 Data Com	D12 Data Com	Z4 Growth
	S1/Z1 Sync Status/Growth	M0 or M1/Z2 REI-L Growth	E2 Orderwire	Z5 Tandem Connection

The G.707 standard of the ITU−T defines the Synchronous Digital Hierarchy (SDH), which is more widely deployed in Europe. G.707 defines the J1 byte as the first byte in the Virtual Container. The associated AU−n (n = 3, 4) or TU−3 pointer indicates the location of this byte. Here is how the standard defines the use of this byte:

"*This byte is used to transmit repetitively a Path Access Point Identifier so that a path receiving terminal can verify its continued connection to the intended transmitter. A 16−byte frame is defined for the transmission of an Access Point Identifier. This 16−byte frame is identical to the 16−byte frame defined in 9.2.2.2 for the description of the byte J0. At international boundaries, or at the boundaries between the networks of different operators, the format defined in clause 3/G.831 shall be used unless otherwise mutually agreed by the operators providing the transport. Within a national network or within the domain of a single operator, this Path Access Point Identifier may use a 64−byte frame.*"

Figure 1 illustrates the position of the J1 byte in the SDH structure:

Figure 1 The Position of the J1 Byte in the SDH Structure



Configure the J1 Byte

You can configure these values for the J1 byte:

```
OSIRS20(config−controller)#overhead j1 ?
   expected  Expected Message
   length    Message length
   transmit  Transmit Message
```

where:

- Expected = the string expected from the line. Any mismatch generates an HP−TIM alarm.
- Length = the length of the string. This could be 16 bytes (SDH) or 64 bytes (SONET).
- Transmit = the string value that is transmitted into the line.

Here is an example with two POS cards that are directly connected with a dark fibre. This example uses the SDH configuration:

```
OSIRS20(config−controller)#overhead j1 length 16
OSIRS20(config−controller)#overhead j1 expected expect123456789
OSIRS20(config−controller)#overhead j1 transmit transmit1234567
```

In this example, the incoming string expected from line is **expect123456789**, and you transmit the string **transmit1234567**.

Issue this command in order to see what comes from line:

```
OSIRS20#show controller sonet 9/1/0
```

Here is the output:

```
OSIRS20#show controller sonet 9/1/0
SONET 9/1/0 is up.
Channelized OC−3/STM−1 SMI PA
      H/W Version : 24.257.2.3, ROM Version : 1.2
      FREEDM version : 2, F/W Version : 1.18.1
      Applique type is Channelized Sonet/SDH
      Clock Source is Line, AUG mapping is AU4.

Medium info:
   Type: SDH, Line Coding: NRZ, Line Type: Short SM

Regenerator Section Status:
   No alarms detected.

Multiplex Section Status:
   No alarms detected.
   No BER failure/degrade detected
   BER_SF threshold power : 3
   BER_SD threshold power : 6

Higher Order Path Status:
   Path# 1 has defects HP−TIM
   Captured Trace for Path# 1 is (CRC − 4) transmit1234567
```

Alternatively, issue this command to capture the last line:

```
OSIRS20#show controller sonet 9/1/0 | i Captured Trace
```

As you can see, the HP−TIM alarm is present in the output, because the string expected does not match the string received from far end station. In order to clear the alarm, issue these commands:

```
OSIRS20(config−controller)#overhead j1 length 16
OSIRS20(config−controller)#overhead j1 expected transmit1234567
```

Here is the output of these commands:

```
OSIRS20#show controller sonet 9/1/0

SONET 9/1/0 is up.
Channelized OC−3/STM−1 SMI PA
   H/W Version : 24.257.2.3, ROM Version : 1.2
   FREEDM version : 2, F/W Version : 1.18.1
   Applique type is Channelized Sonet/SDH
   Clock Source is Line, AUG mapping is AU4.

Medium info:
  Type: SDH, Line Coding: NRZ, Line Type: Short SM
Regenerator Section Status:
  No alarms detected.
Multiplex Section Status:
  No alarms detected.
  No BER failure/degrade detected
  BER_SF threshold power : 3
  BER_SD threshold power : 6

Higher Order Path Status:
  Path# 1 has no defects
  Captured Trace for Path# 1 is (CRC − 4) transmit1234567
```

Additional Options

Another option to clear this alarm is to disable the J1 byte. When you do so, the board no longer reads the information from J1 byte. As a result, the HP−TIM alarm never occurs.

```
OSIRS20#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
OSIRS20(config)#controller sonet 9/1/0
OSIRS20(config−controller)#no over j1
OSIRS20(config−controller)#end
```

Related Information

- **Technical Support & Documentation − Cisco Systems**

Updated: Mar 21, 2005 Document ID: 27043