

# SONET圖形概述

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## 簡介

本檔案將簡要介紹以映像表示的同步光纖網路(SONET)。

附註： 表格和圖表由JDS Uniphase Corporation提供

## 必要條件

### 需求

本文件沒有特定需求。

### 採用元件

本文件所述內容不限於特定軟體和硬體版本。

### 慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

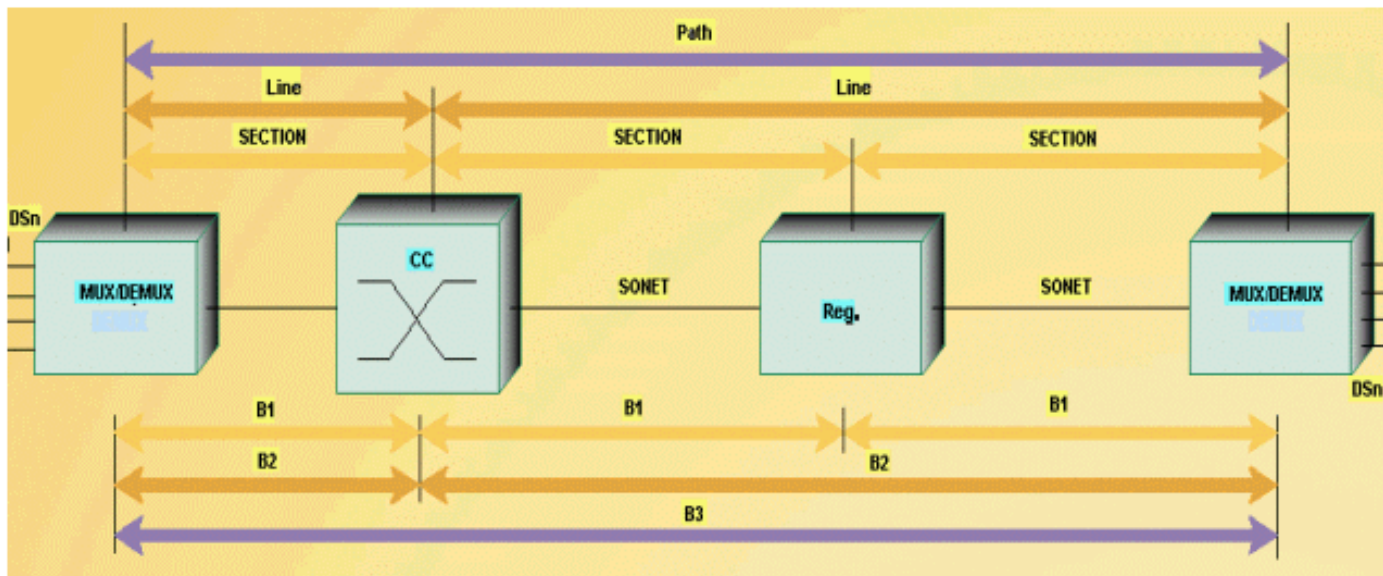
## SONET概述

本節以圖形格式概述SONET。

## SONET鏈路

圖1顯示SONET鏈路的外觀。

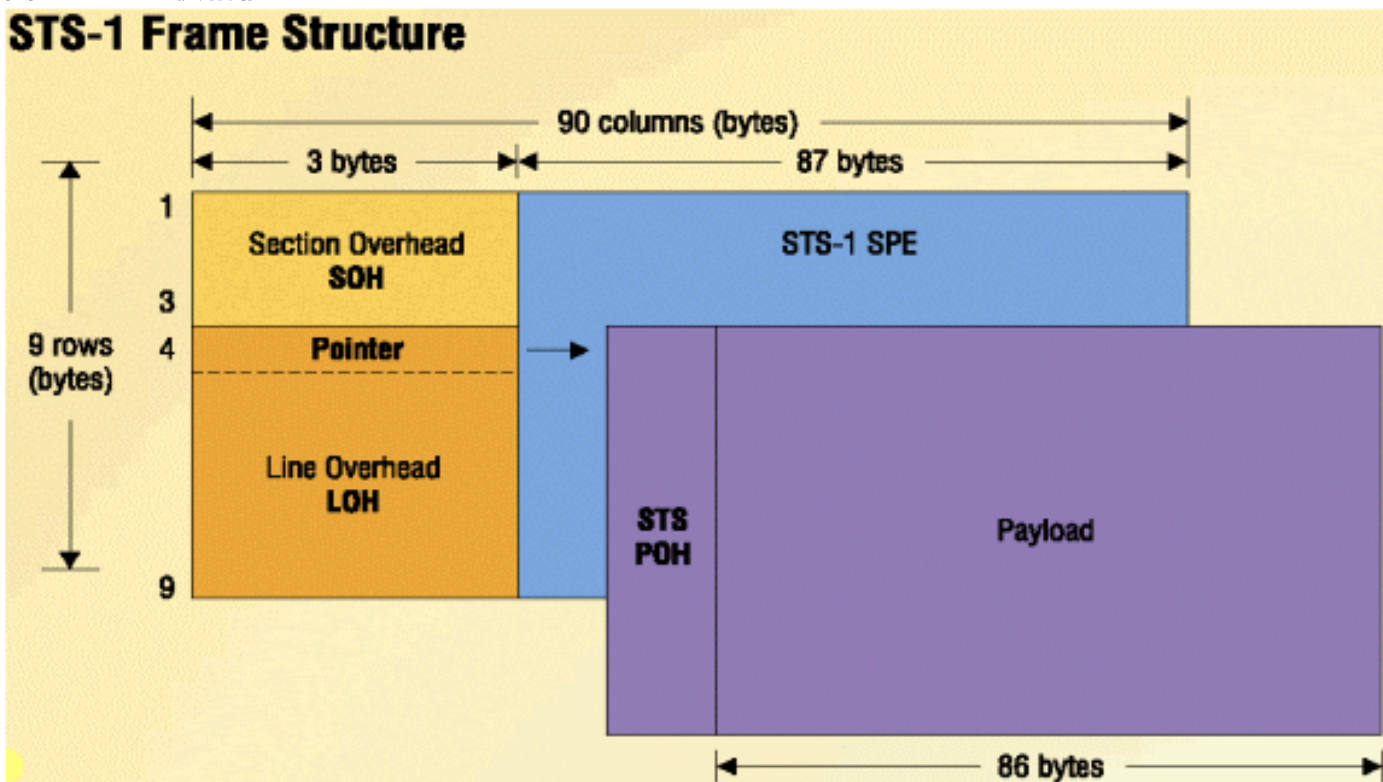
圖1 - SONET鏈路



## STS-1幀

圖2顯示了同步傳輸訊號級別1(STS-1)幀結構。

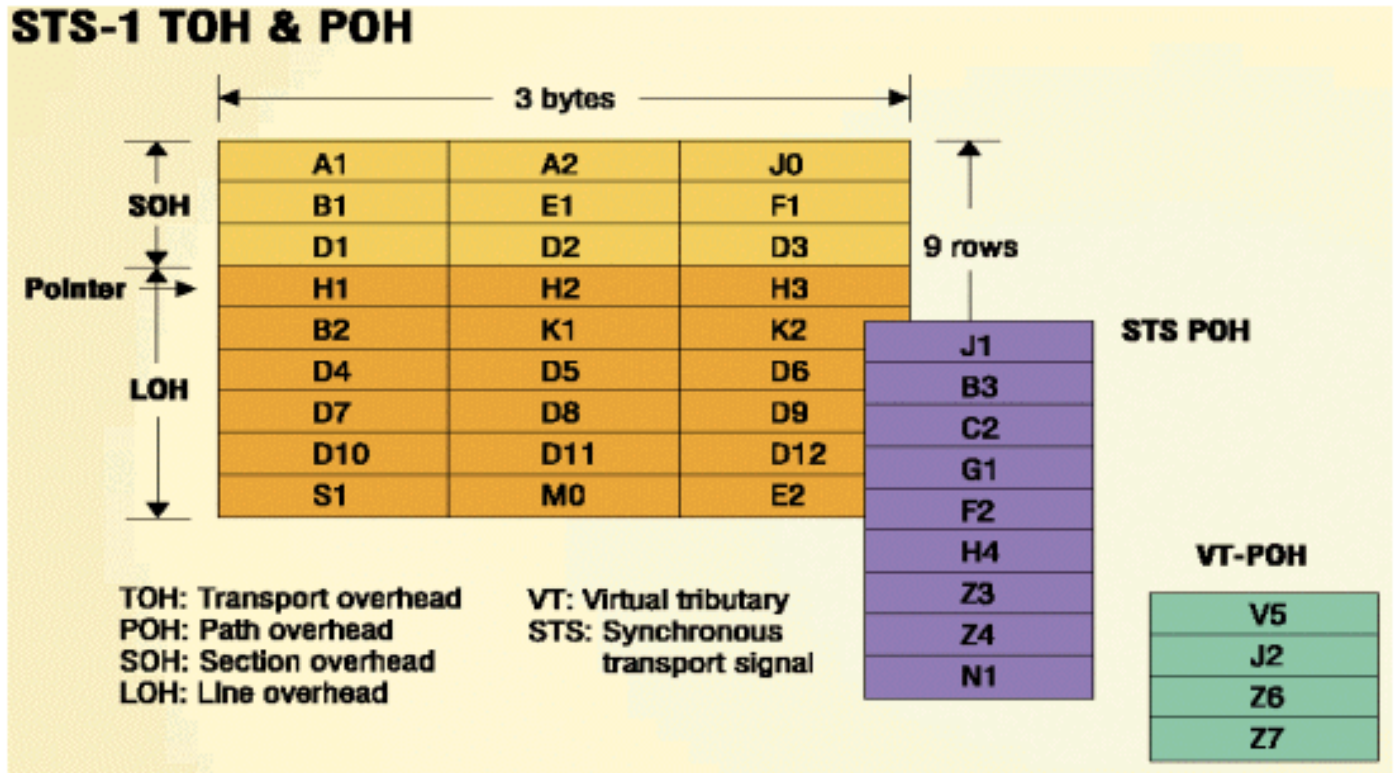
圖2 - STS-1幀結構



## STS-1 SONET開銷

圖3顯示STS-1傳輸和路徑開銷 (SONET開銷)。

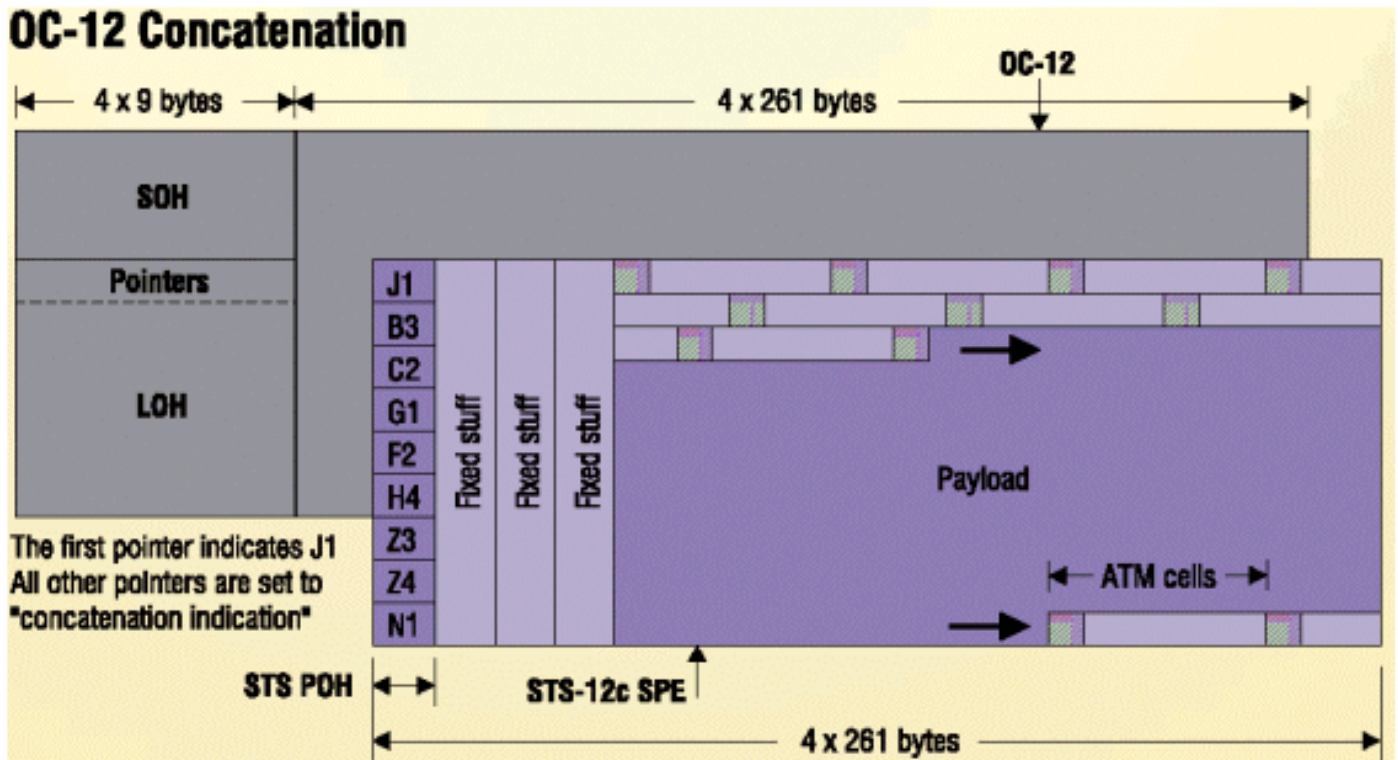
圖3 - STS-1傳輸和路徑開銷



## OC-12串聯

圖4檢視OC-12串聯。

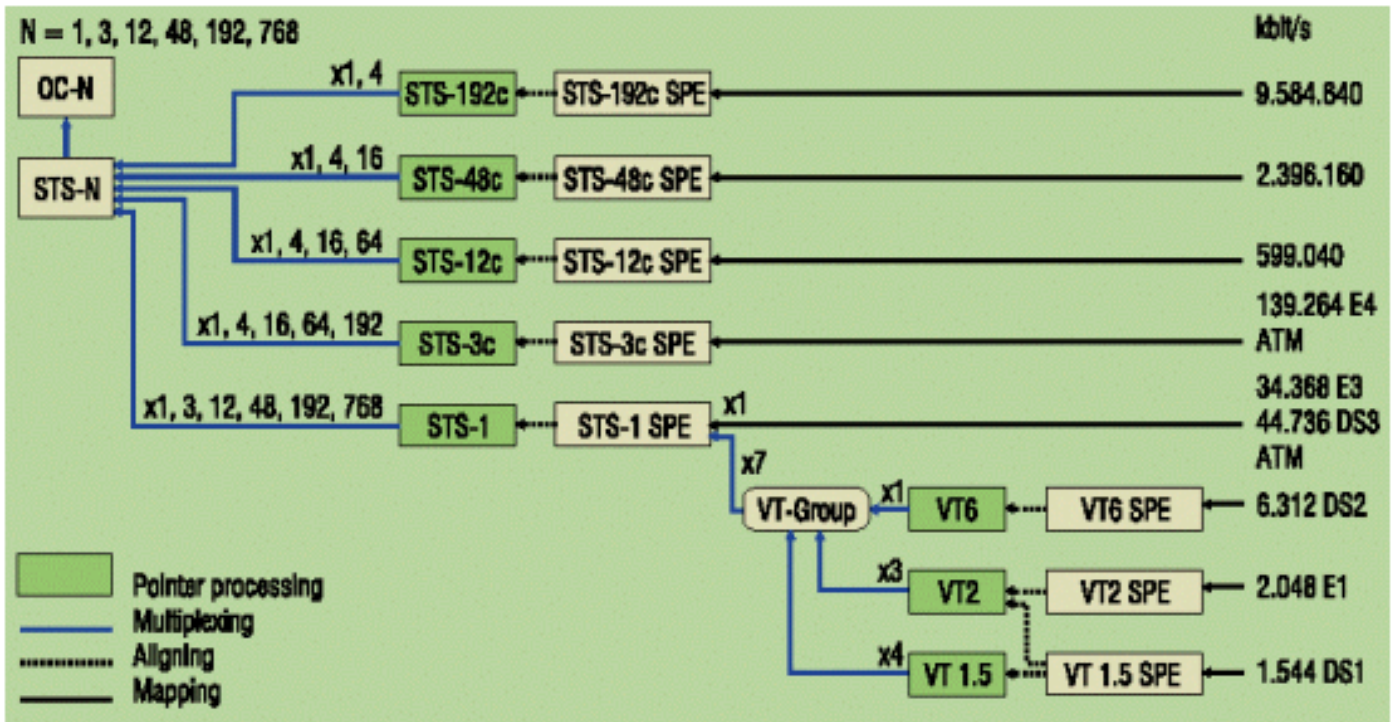
圖4 - OC-12串聯



## SONET層次結構

圖5顯示SONET層次結構。

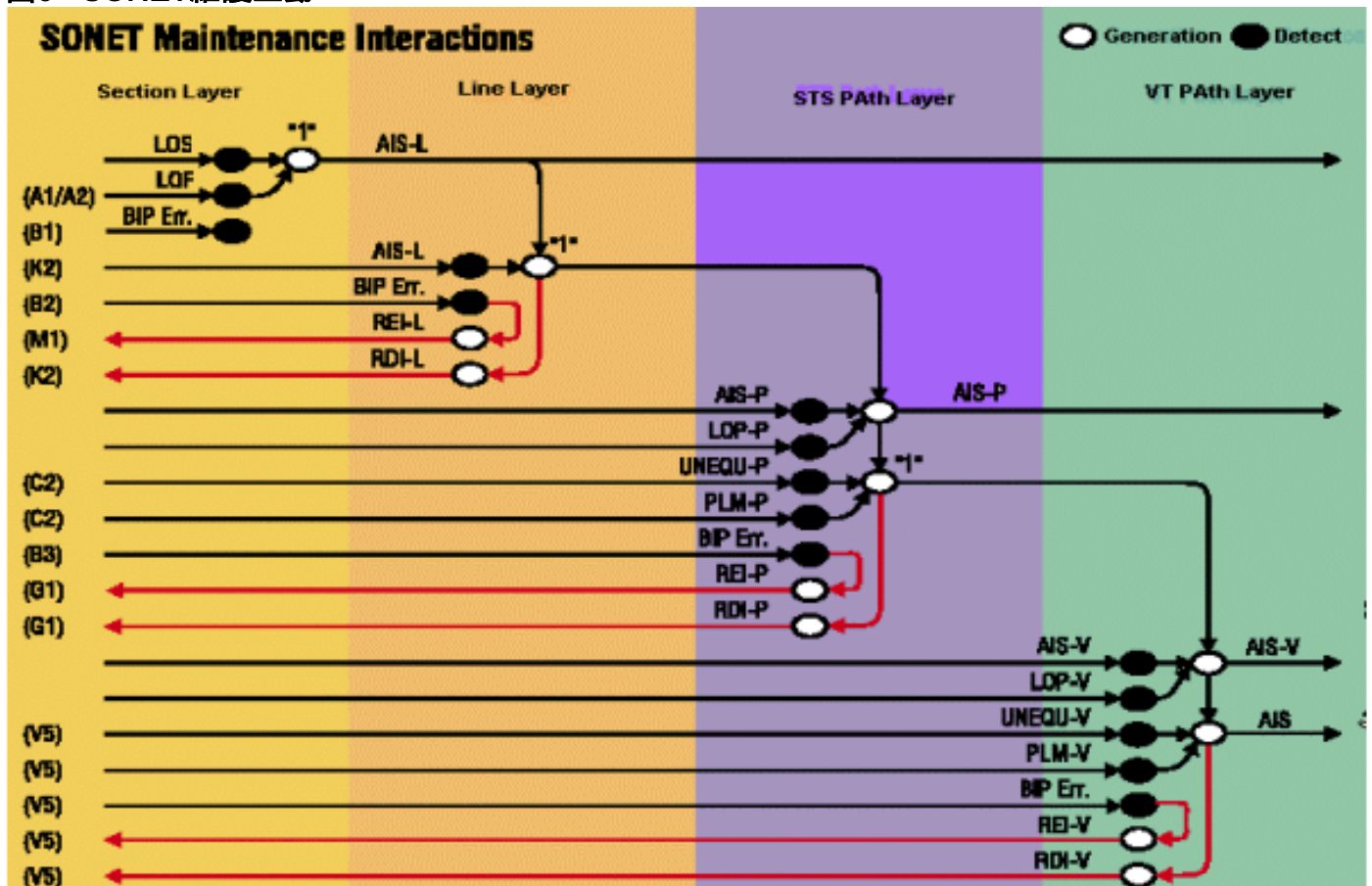
圖5 - SONET層次結構



## SONET維護互動

圖6顯示SONET維護互動的顯示方式。

圖6 - SONET維護互動



## 警報和檢測標準

表1列出了警報的含義及其檢測標準。

表1 — 警報的含義及其檢測標準

	Anomalies / Defects	Detection criteria	Bellcore ANSI
LOS	Loss of Signal	All-zero pattern for $2.3 \mu s \leq T \leq 100 \mu s$	GR-253 T1.231
SEF	Severely Error Framing	A1, A2 errored for $\geq 625 \mu s$	GR-253 T1.231
LOF	Loss of Frame	If SEF persists for $\geq 3$ ms	GR-253 T1.231
S-BIP Error	Section BIP Error (B1)	Mismatch of the recovered and computed BIP-8 covers the whole STS-N frame	GR-253 T1.105
L-BIP Error	Line BIP Error (B2)	Mismatch of the recovered and computed N x BIP-8 covers the whole frame, except section overhead	GR-253 T1.105
AIS-L	Line-AIS	K2 (bits 6, 7, 8) = 111 for $\geq 5$ frames	GR-253 T1.231
REI-L	Line Remote Error Indication	Number of detected B2 errors in the sink side encoded in byte M0 or M1 of the source side	GR-253 T1.105
RDI-L	Line Remote Defect Indication	K2 (bits 6, 7, 8) = 110 for $\geq z$ frames ( $z = 5 - 10$ )	GR-253 T1.231
AIS-P	STS Path AIS	All "1" in the STS pointer bytes H1, H2 for $\geq 3$ frames	GR-253 T1.231
LOP-P	STS Path Loss of Pointer	8 - 10 NDF enable 8 - 10 invalid pointers	GR-253 T1.231
P-BIP Error	STS Path BIP Error (B3)	Mismatch of the recovered and computed BIP-8 covers entire STS-SPE	GR-253 T1.105
UNEQ-P	STS Path Unequipped	G2 = "0" for $\geq 5$ ( $\geq 3$ as per T1.231) frames	GR-253 T1.231
TIM-P	STS Path Trace Identifier Mismatch	Mismatch of the accepted and expected Trace Identifier in byte J1 (64 bytes sequence)	GR-253 T1.105
REI-P	STS Path Remote Error Indication	Number of detected B3 errors in the sink side encoded in byte G1 (bits 1, 2, 3, 4) of the source side	GR-253 T1.105
RDI-P	STS Path Remote Defect Indication	G1 (bit 5) = 1 for $\geq 10$ frames	GR-253 T1.231
PLM-P	STS Path Payload Label Mismatch	Mismatch of the accepted and expected Payload Label in byte C2 for $\geq 5$ ( $\geq 3$ as per T1.231) frames	GR-253 T1.231
LOM	Loss of Multiframe	Loss of synchronization on H4 (bits 7, 8) superframe sequence	GR-253 T1.105
AIS-V	VT Path AIS	All "1" in the VT pointer bytes V1, V2 for $\geq 3$ superframes	GR-253 T1.231
LOP-V	VT Loss of Pointer	8 - 10 NDF enable 8 - 10 invalid pointers	GR-253 T1.231
V-BIP Error	VT Path BIP Error (BIP-2)	Mismatch of the recovered and computed BIP-2 (V5 bits 1, 2) covers entire VT	GR-253 T1.105
UNEQ-P	VT Path Unequipped	V5 (bits 5, 6, 7) = 000 for $\geq 5$ ( $\geq 3$ as per T1.231) superframes	GR-253 T1.231
TIM-V	VT Path Trace Identifier Mismatch	Mismatch of the accepted and expected Trace Identifier in byte J2	for further study
REI-V	VT Path Remote Error Indication	If one or more BIP-2 errors detected in the sink side, byte V5 (bits 3) = 1 on the source side	GR-253 T1.105
RDI-V	VT Path Remote Defect Indication	V5 (bit 8) = 1 for $\geq 10$ superframes	GR-253 T1.231
PLM-V	VT Path Payload Label Mismatch	Mismatch of the accepted and expected Payload Label in byte V5 (bits 5, 6, 7) for $\geq 5$ ( $\geq 3$ as per T1.231) superframes	GR-253 T1.231

## [STS-1 SOH、LOH、POH和VT POH位元組](#)

圖7和圖8提供了來自STS-1 SOH、Line OverHead(LOH)、Path OverHead(POH)和Virtual Tributary Path OverHead(VT POH)的所有位元組的說明。

圖7 - SOH部分開銷

### **SOH Section Overhead**

**A1, A2:** Indicates the beginning of each STS-1 within a STS-n frame. The pattern is Hex F628.

**J0:** Section trace. It is defined only for STS-1 number 1 of an STS-N signal. Used to transmit a one byte fixed length string or a 16 byte message so that a receiving terminal in a section can verify its continued connection to the intended transmitter.

**Z0:** Section growth. It is defined in each STS-1 for future growth except for STS-1 number 1 (which is defined as J0).

**B1:** Section error monitoring. The BIP-8 is calculated over all bits of the previous STS-N frame after scrambling and is placed in the B1 byte of STS-1 number 1 before scrambling. Defined only for STS-1 number 1 of an STS-N signal.

**E1:** Allocated to be used as local orderwire channels for voice communication between section terminating equipments, hubs and remote terminal locations.

**F1:** Reserved for user purposes (e.g. temporary data/voice channel connections for special maintenance purposes).

**D1 - D3:** Data communication channels (DCC). A 192 kbit/s message based channel for alarms, maintenance, control, monitoring, administration and other communication needs.

圖8 - LOH線路開銷

