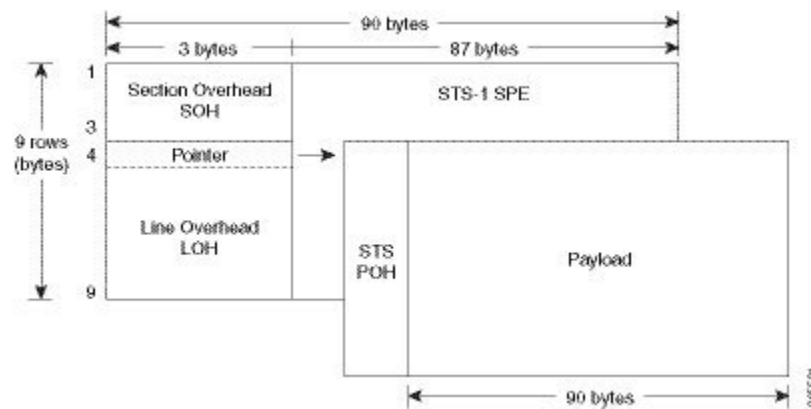# STS-1 Electricals

A standard STS-1 frame is nine rows by 90 bytes. The first three bytes of each row represent the Section and Line overhead. These overhead bits comprise framing bits and pointers to different parts of the STS-1 frame.

Figure 1: STS-1 Frame Structure

There is one column of bytes in the payload that represents the STS path overhead. This column frequently "floats" throughout the frame. Its location in the frame is determined by a pointer in the Section and Line overhead.

The combination of the Section and Line overhead comprises the transport overhead, and the remainder is the SPE.

Figure 2: STS-1 Overhead
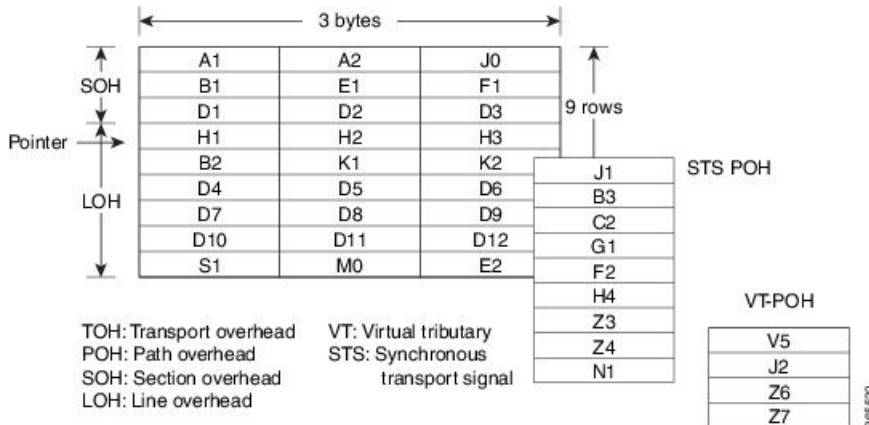
For STS-1, a single frame is transmitted in 125 microseconds, or 8000 frames per second. 8000 fps * 810 B/frame = 51.84 Mbs, of which the payload is roughly 49.5 Mbs, enough to encapsulate 28 DS-1s, a full DS-3, or 21 CEPT-1s.

STS-1electrical ports are also supported. Each port operates at 51.840 Mbps over a single 75-ohm, 728A or equivalent coaxial span. Ports range from 12 to 15 are supported.

Restrictions for STS-1e

- Only 16 BERT patterns can be configured at a time.

- PMON fields are not supported for VT1.5 VT and T3.

- PMON far-end parameters are not supported.

- APS and card-protection are not supported for STS-1e port.

- In the unframed mode, ACR and DCR are not supported.

- CESoPSN is not supported.

- Framed SAToP is not supported .

Restrictions for Clock Source Configuration

- Only 4 ports can be configured in STS-1e line for clock source configuration per chassis.

- You should configure the clock source line and network-clock sync together to receive the clock from a remote port that is connected to the STS-1e port.

Prerequisites for Configuring STS-1e

You must select the MediaType controller to configure and enter the controller configuration mode.

You must configure the controller as a STS-1e port.

Configuring MediaType Controller

To configure MediaType Controller, use the following commands:

```
enable
configure terminal
controller MediaType 0/0/16
mode STS-1e
end
```

Configuring STS-1e Modes

Configuring STS-1e Modes for Unframed SAToP

STS-1e supports unframed SAToP and you can configure STS-1e under VT-15, CT3, T3, and unframed modes. There is no default mode for STS-1e.

To configure STS-1e modes for unframed SAToP, use the following commands:

```
enable
configure terminal
controller sts-1e 0/0/16
sts-1 1
mode {vt-15 | ct3 | t3 | unframed}
end
```

Note   To restore the system to its default condition, use the **no** form of the command.

Configuring VT-15 Mode of STS-1e

Configuring VT-15 Mode of STS-1e for Unframed SAToP

To configure VT-15 mode of STS-1e for unframed SAToP, enter the following commands:

```
enable
configure terminal
```

```
controller STS1E 0/3/14
no ais-shut
alarm-report all
clock source internal
!
sts-1 1
clock source internal
mode vt-15
vtg 1 t1 1 framing unframed
vtg 1 t1 1 cem-group 0 unframed
```

Configuring T1 CT3 mode of STS-1e

Configuring T1 CT3 mode of STS-1e for Unframed SAToP

To configure T1 CT3 mode of STS-1, you can configure the T1 link using the following steps:

```
enable
configure terminal
controller sts-1e 0/0/16
sts-1 1
mode ct3
t1 1 clock source internal
t1 1 framing unframed
end
```

Note To restore the system to its default condition, use the **no** form of the command.

Configuring T3 mode of STS-1e

Configuring T3 mode of STS-1e for Unframed SAToP

```
controller STS1E 0/3/14
no ais-shut
alarm-report all
clock source internal
!
sts-1 1
clock source internal
mode t3
cem-group 0 unframed
t3 clock source internal
```

Configuring Unframed Mode of STS-1e

```
controller STS1E 0/3/14
no ais-shut
alarm-report all
clock source internal
!
sts-1 1
clock source internal
mode unframed
cem-group 0 cep
```

Configuring Line and Section Overhead

To configure line and section overhead, use the following commands:

```
enable
configure terminal
controller MediaType 0/0/16
mode sts-1e
controller sts-1e 0/0/16
overhead s1s0 2
overhead j0 tx length 1-byte
end
```

Note   To restore the system to its default condition, use the **no** form of the command.

Configuring Line Loopback

To configure loopback, use the following commands:

```
enable
configure terminal
controller sts-1e 0/0/16
loopback local
end
```

Note   To restore the system to its default condition, use the **no** form of the command.

Configuring AIS Shut

Alarm Indication Signal (AIS) shut when enabled on the STS-1e controller results in sending AIS alarm to peer node.

To configure AIS-Shut, use the following commands:

```
enable
configure terminal
controller sts-1e 0/0/16
ais-shut
end
```

Note   The **no ais-shut** command will not send AIS.

Configuring Shut

To configure Shut, use the following commands:

```
enable
configure terminal
controller sts-1e 0/0/16
shutdown
end
```

Note Use the **no shutdown** command to disable the interface.

Configuring Clock

To configure clock, use the following commands:

```
enable
configure terminal
controller MediaType 0/0/16
mode sts-1e
controller sts-1e 0/0/16
clock source line
end
```

Note The default mode is internal.

Note ACR and DCR clock recovery are also supported.

Configuring Network-Clock STS-1e

To configure network-clock STS-1e, use the following commands:

```
enable
configure terminal
network-clock input-source 1 controller STS-1e 0/0/16
end
```

Verifying STS-1e Configuration

The following sample output shows the verification of STS-1e configuration in unframed mode:

```
router#show controllers sts1e 0/3/14
STS1E 0/3/14 is up.                        ======> this is the controller/port status.

  Hardware is A900-IMA3G-IMSG
```

```
 Port configured rate: OC3                        =======> this is the rate the port is
configured on it.
 Applique type is Channelized STS1E
 Clock Source is Internal                         ===> the clocking config
Medium info:
  Type: STS1E, Line Coding: NRZ,
 Alarm Throttling: OFF
 SECTION:
  LOS = 0          LOF = 0                 BIP(B1) = 0      =======> the section level
 alarm counter (from last clear counters)


STS1E Section Tables
   INTERVAL        CV    ES    SES   SEFS
   05:26-05:28     0     49    49    49


LINE:
  AIS = 0          RDI = 0           REI = 0        BIP(B2) = 0        =======> the line
 level alarm counter (from last clear counters)
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None                                 =========> present active
 alarms on the port.
Alarm reporting enabled for: SLOS SLOF LAIS SF SD LRDI B1-TCA B2-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6                     ====> ber thresholds
TCA thresholds:  B1 = 10e-6  B2 = 10e-6
Rx: S1S0 = 00
    J0 = 00


    RX S1 = 00


Tx: S1S0 = 00
    J0 = 04


Tx J0 Length : 64
Tx J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                    ..


Expected J0 Length : 64
Expected J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                    ..


Rx J0 Length : 16
Rx J0 Trace :
  CRC-7: 0xD8 ERROR

  BC 4B 69 CC 79 24 1B 01 E8 EB 9C 36 FC 29 A9 00     .Ki.y$.....6.)..


STS1E Line Tables
   INTERVAL        CV    ES    SES   UAS   CVFE   ESFE   SESFE   UASFE
   05:26-05:28     0     0     0     50    0      0      0       0


High Order Path:


PATH 1:
Clock Source is internal
```

```
      AIS = 0           RDI = 0          REI = 0           BIP(B3) = 0
      LOP = 0           PSE = 0          NSE = 0           NEWPTR = 0
      LOM = 0           PLM = 0          UNEQ = 0

Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PAIS PRDI PUNEQ PLOP PPLM LOM B3-TCA

TCA threshold:  B3 = 10e-6
Rx: C2 = 04
Tx: C2 = 01

Tx J1 Length : 64
Tx J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00     RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

Expected J1 Length : 64
Expected J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00     RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

PATH TRACE BUFFER : UNSTABLE

Rx J1 Length : 64
Rx J1 Trace

  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

SONET Path Tables
  INTERVAL        CV    ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
  05:26-05:28      0     0      0     48      0      0       0       0


STS1E 0/3/14.1 PATH  mode UNFRAMED is up
  cep is configured: TRUE cem_id  :0
  clock source internal
```

The following sample output shows the verification of STS-1e configuration in VT-15 mode:

```
router#show controllers sts1e 0/3/14
STS1E 0/3/14 is up.
  Hardware is A900-IMA3G-IMSG

 Port configured rate: OC1
 Applique type is Channelized STS1E
 Clock Source is Internal
Medium info:
  Type: STS1E, Line Coding: NRZ,
 Alarm Throttling: OFF
 SECTION:
  LOS = 0           LOF = 0                         BIP(B1) = 0

STS1E Section Tables
```

```
    INTERVAL        CV    ES    SES   SEFS
    05:33-05:33      0     0     0      0


LINE:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: SLOS SLOF LAIS SF SD LRDI B1-TCA B2-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6
TCA thresholds:  B1 = 10e-6  B2 = 10e-6
Rx: S1S0 = 00
    J0 = 00


    RX S1 = 00


Tx: S1S0 = 00
    J0 = 04

Tx J0 Length : 64
Tx J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                      ..

Expected J0 Length : 64
Expected J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                      ..

Rx J0 Length : 16
Rx J0 Trace :
  CRC-7: 0xD8 ERROR

  BC 4B 69 CC 79 24 1B 01 E8 EB 9C 36 FC 29 A9 00     .Ki.y$.....6.)..

STS1E Line Tables
  INTERVAL        CV    ES    SES   UAS   CVFE  ESFE  SESFE  UASFE
  05:33-05:33      0     0     0     0     0     0      0      0


High Order Path:

PATH 1:
Clock Source is internal

  AIS = 0          RDI = 0          REI = 0          BIP(B3) = 0
  LOP = 0          PSE = 0          NSE = 0          NEWPTR = 0
  LOM = 0          PLM = 0          UNEQ = 0

Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PAIS PRDI PUNEQ PLOP PPLM LOM B3-TCA

TCA threshold:  B3 = 10e-6
Rx: C2 = 02
Tx: C2 = 02
```

```
Tx J1 Length : 64
Tx J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00    RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

Expected J1 Length : 64
Expected J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00    RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

PATH TRACE BUFFER : UNSTABLE

Rx J1 Length : 64
Rx J1 Trace

  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

SONET Path Tables
  INTERVAL         CV     ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
  05:33-05:33       0      0      0      0      0      0       0       0


STS1E 0/3/14.1 PATH  is up.
  Hardware is A900-IMA3G-IMSG

 Applique type is VT1.5

 STS-1 1, VTG 1, VT 1 (STS1E 0/3/14.1/1/1 VT) is up
 No VT alarms detected.
  cep is configured: FALSE cem_id  (0)
  fwd_alarm_ais :0     fwd_alarm_rai :0
  Framing is unframed, Clock Source is Internal
  BIP2-tca:6, BIP2-sf:3, BIP2-sd:6
  Tx V5:1
  Rx V5:2
  Tx J2 Length=64
  TX J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

  Expected J2 Length=64
  Expected J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

  Rx J2 Length=16
  RX J2 Trace Buffer:
  CRC-7: 0x80 OK

  4A 44 53 55 00 00 00 00 00 00 00 00 00 00 00 00    JDSU............
```

```
  Data in curerent interval (1 seconds elapsed)
    Near End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs
    Far End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs

 STS-1 1, VTG 1, T1 1 (STS1E 0/3/14.1/1/1 T1) is up
  No alarms detected.
  Framing is unframed, Clock Source is Internal
  Data in current interval (0 seconds elapsed):
   Near End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
```

The following sample output shows the verification of STS-1e configuration in T3 mode:

```
router#show controllers sts1e 0/3/14
STS1E 0/3/14 is up.
  Hardware is A900-IMA3G-IMSG

 Port configured rate: OC1
 Applique type is Channelized STS1E
 Clock Source is Internal
Medium info:
  Type: STS1E, Line Coding: NRZ,
 Alarm Throttling: OFF
 SECTION:
  LOS = 0          LOF = 0                          BIP(B1) = 0

STS1E Section Tables
  INTERVAL      CV    ES   SES  SEFS
  05:35-05:35    0     0    0     0


LINE:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: SLOS SLOF LAIS SF SD LRDI B1-TCA B2-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6
TCA thresholds:  B1 = 10e-6  B2 = 10e-6
Rx: S1S0 = 00
    J0 = 00


    RX S1 = 00

Tx: S1S0 = 00
    J0 = 04

Tx J0 Length : 64
Tx J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                       ..

Expected J0 Length : 64
```

```
Expected J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20    RSP2
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
  20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                    ..

Rx J0 Length : 16
Rx J0 Trace :
  CRC-7: 0xD8 ERROR

  BC 4B 69 CC 79 24 1B 01 E8 EB 9C 36 FC 29 A9 00    .Ki.y$.....6.)..

STS1E Line Tables
  INTERVAL        CV     ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
  05:35-05:35      0      0      0     73      0      0       0       0


High Order Path:

PATH 1:
Clock Source is internal

  AIS = 0          RDI = 0          REI = 0          BIP(B3) = 0
  LOP = 0          PSE = 0          NSE = 0          NEWPTR = 0
  LOM = 0          PLM = 0          UNEQ = 0

Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PAIS PRDI PUNEQ PLOP PPLM LOM B3-TCA

TCA threshold:  B3 = 10e-6
Rx: C2 = 04
Tx: C2 = 04

Tx J1 Length : 64
Tx J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00    RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

Expected J1 Length : 64
Expected J1 Trace

  52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00    RSP2 0/3/14.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

PATH TRACE BUFFER : UNSTABLE

Rx J1 Length : 64
Rx J1 Trace

  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................

SONET Path Tables
  INTERVAL        CV     ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
```

```
      05:26-05:36     0     0     0     12     0     0     0     0


STS1E 0/3/14.1 T3 is up.
  Hardware is A900-IMA3G-IMSG

  Applique type is T3
  No alarms detected.
  Framing is Unframed, Cablelength is 224
  BER thresholds:  SF = 10e-3  SD = 10e-6
  Clock Source is internal
  Equipment customer loopback
  Data in current interval (560 seconds elapsed):
   Near End
      0 Line Code Violations, 0 P-bit Coding Violation
      0 C-bit Coding Violation, 0 P-bit Err Secs
      0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
      275 Unavailable Secs, 0 Line Errored Secs
      0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
      0 Severely Errored Line Secs, 3 Path Failures
      0 AIS Defect Secs, 0 LOS Defect Secs
   Far End
      0 Errored Secs, 0 Severely Errored Secs
      0 C-bit Unavailable Secs, 0 Path Failures
      0 Code Violations, 0 Service Affecting Secs
```

The following sample output shows the verification of STS-1e configuration in CT3 mode:

```
router#show controllers sts1e 0/3/14
STS1E 0/3/14 is up.
  Hardware is A900-IMA3G-IMSG

 Port configured rate: OC1
 Applique type is Channelized STS1E
 Clock Source is Internal
Medium info:
  Type: STS1E, Line Coding: NRZ,
 Alarm Throttling: OFF
 SECTION:
  LOS = 0          LOF = 0                        BIP(B1) = 0


STS1E Section Tables
  INTERVAL       CV    ES   SES   SEFS
  05:41-05:42    0     10    10    10


LINE:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: SLOS SLOF LAIS SF SD LRDI B1-TCA B2-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6
TCA thresholds:  B1 = 10e-6  B2 = 10e-6
Rx: S1S0 = 00
    J0 = 00

    RX S1 = 00

Tx: S1S0 = 00
    J0 = 04

Tx J0 Length : 64
Tx J0 Trace :

  52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20     RSP2
```

```
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                      ..

Expected J0 Length : 64
Expected J0 Trace :

    52 53 50 32 20 20 20 20 20 20 20 20 20 20 20 20      RSP2
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
    20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00                       ..

Rx J0 Length : 16
Rx J0 Trace :
  CRC-7: 0xD8 ERROR

    BC 4B 69 CC 79 24 1B 01 E8 EB 9C 36 FC 29 A9 00      .Ki.y$.....6.)..

STS1E Line Tables
    INTERVAL        CV     ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
    05:41-05:42      0      0      0     10      0      0       0       0


High Order Path:

PATH 1:
Clock Source is internal

  AIS = 0           RDI = 0         REI = 0         BIP(B3) = 0
  LOP = 0           PSE = 0         NSE = 0         NEWPTR = 0
  LOM = 0           PLM = 0         UNEQ = 0

Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PAIS PRDI PUNEQ PLOP PPLM LOM B3-TCA

TCA threshold:  B3 = 10e-6
Rx: C2 = 04
Tx: C2 = 04

Tx J1 Length : 64
Tx J1 Trace

    52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00      RSP2 0/3/14.1...
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................

Expected J1 Length : 64
Expected J1 Trace

    52 53 50 32 20 30 2F 33 2F 31 34 2E 31 00 00 00      RSP2 0/3/14.1...
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................

PATH TRACE BUFFER : UNSTABLE

Rx J1 Length : 64
Rx J1 Trace

    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
```

```
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00      ................

SONET Path Tables
  INTERVAL      CV    ES   SES   UAS   CVFE   ESFE   SESFE   UASFE
  05:42-05:42    0     0     0     0      0      0       0       0

STS1E 0/3/14.1 T3 is up.
  Hardware is A900-IMA3G-IMSG

  Applique type is Channelized T3 to T1
  No alarms detected.
  MDL transmission is disabled

  FEAC code received: No code is being received
  Framing is C-BIT Parity, Cablelength is 224
  BER thresholds:  SF = 10e-3  SD = 10e-6
  Clock Source is internal
  Equipment customer loopback
  Data in current interval (60 seconds elapsed):
   Near End
      0 Line Code Violations, 0 P-bit Coding Violation
      0 C-bit Coding Violation, 0 P-bit Err Secs
      0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
      25 Unavailable Secs, 0 Line Errored Secs
      0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
      0 Severely Errored Line Secs, 0 Path Failures
      0 AIS Defect Secs, 0 LOS Defect Secs
   Far End
      0 Errored Secs, 0 Severely Errored Secs
      0 C-bit Unavailable Secs, 0 Path Failures
      0 Code Violations, 0 Service Affecting Secs

 STS-1 1, T1 1 (STS1E 0/3/14.1/1 T1) is up
  No alarms detected.
  Framing is unframed, Clock Source is Internal
  Data in current interval (60 seconds elapsed):
   Near End
      0 Line Code Violations, 0 Path Code Violations
      0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
      0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
      25 Unavail Secs, 0 Stuffed Secs
   Far End
      0 Line Code Violations, 0 Path Code Violations
      0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
      0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
      0 Unavail Secs

 STS-1 1, T1 2 (STS1E 0/3/14.1/2 T1) is up
  timeslots:
  FDL per AT&T 54016 spec.
  No alarms detected.
  Framing is ESF, Clock Source is Internal
  Data in current interval (60 seconds elapsed):
   Near End
      0 Line Code Violations, 0 Path Code Violations
      0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
      0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
      26 Unavail Secs, 0 Stuffed Secs
   Far End
      0 Line Code Violations, 0 Path Code Violations
      0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
      0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
      0 Unavail Secs
```

Starting with Cisco IOS XE 17.11.1, you can view the previous day performance monitoring details using the following **show controller** commands for the STS-1e controllers.

- show controller sts1e

- show controller sts1e tabular

- show controller sts1e remote performance

- show controller sts1e remote performance tabular

```
router#show controllers sts1e 0/3/0

sts1e 0/3/0 is down.
  Hardware is

 Port configured rate: OC3
 Applique type is Channelized Sonet
 Clock Source is Internal
Medium info:
  Type: sts1e, Line Coding: NRZ,
 Alarm Throttling: OFF
 SECTION:
  LOS = 1          LOF = 0                          BIP(B1) = 0

sts1e Section Tables
  INTERVAL        CV     ES    SES    SEFS
  06:14-06:24      0     611    611    611
  05:59-06:14      0     901    901    901
.............
  06:29-06:44      0     901    901    901
  06:14-06:29      0     901    901    901
Total of Data in Current and Previous Intervals
  06:14-06:24      0 87107 87107 87107
Total (Previous Day)
  05:29-05:29      0 86494 86494 86494

LINE:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Detected Alarms: SLOS SLOF LAIS
Asserted/Active Alarms: SLOS
............
sts1e Line Tables
  INTERVAL        CV     ES    SES    UAS   CVFE  ESFE  SESFE  UASFE
  06:14-06:24      0      0      0    611     0     0      0      0
  05:59-06:14      0      0      0    901     0     0      0      0
  05:44-05:59      0      0      0    901     0     0      0      0
  05:29-05:44      0      0      0    901     0     0      0      0
.............
  06:14-06:29      0      0      0    901     0     0      0      0
Total of Data in Current and Previous Intervals
  06:14-06:24      0      0      0 87107     0     0      0      0
Total (Previous Day)
  05:29-05:29      0      0      0 86494     0     0      0      0


PATH 1:
Clock Source is internal

  AIS = 0          RDI = 0          REI = 0          BIP(B3) = 8
  LOM = 0          PLM = 0          UNEQ = 0          LOP = 0
.............
```

```
SONET Path Tables
  INTERVAL        CV     ES    SES    UAS   CVFE   ESFE   SESFE   UASFE
  06:14-06:24      0      0      0    609      0      0      0      0
  05:59-06:14      0      0      0    901      0      0      0      0
  05:44-05:59      0      0      0    900      0      0      0      0
  05:29-05:44      0      0      0    901      0      0      0      0
...............
  06:29-06:44      0      0      0    900      0      0      0      0
  06:14-06:29      0      0      0    900      0      0      0      0
Total of Data in Current and Previous Intervals
  06:14-06:24      0      0      0 87045      0      0      0      0
Total (Previous Day)
  05:29-05:29      0      0      0 86435      0      0      0      0


PATH 2:
Clock Source is internal
................

sts1e 0/3/0.1 PATH  is down.
  Hardware is A900-IMA1Z8S-CX

 Applique type is VT1.5

 STS-1 1, VTG 1, VT 1 (sts1e 0/3/0.1/1/1 VT) is down
 VT Receiver has LP_AIS.
  cep is configured: FALSE cem_id  (0)
  fwd_alarm_ais :0     fwd_alarm_rai :0, Clock Source is Internal
  BIP2-tca:6, BIP2-sf:3, BIP2-sd:6
  Tx V5:2
  Rx V5:0
  Tx J2 Length=64
  TX J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

  Expected J2 Length=64
  Expected J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

  Rx J2 Length=16
  RX J2 Trace Buffer:
  CRC-7: 0x60 ERROR

  C9 79 F7 0F 5F D8 5D D2 D2 7C F6 0E 53 B2 0E 00     .y.._.]..|..S...

 Data in curerent interval (610 seconds elapsed)
   Near End
    0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 609 Unavailable Secs
   Far End
    0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs
 Data in Interval 1:
   Near End
    0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 901 Unavailable Secs
   Far End
    0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs
................
 Data in Interval 96:
   Near End
```

```
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 900 Unavailable Secs
   Far End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs
 Total Data (last 96 fifteen minute intervals):
   Near End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 86436 Unavailable Secs
   Far End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs
 Total (Previous Day):
   Near End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 86435 Unavailable Secs
   Far End
     0 CodeViolations, 0 ErrorSecs, 0 Severly Err Secs, 0 Unavailable Secs


 STS-1 1, VTG 1, T1 1 (sts1e 0/3/0.1/1/1 T1) is down
  timeslots: 1-4
  FDL per AT&T 54016 spec.
  Receiver is getting AIS.
  Framing is ESF, Clock Source is Internal
  Data in current interval (610 seconds elapsed):
   Near End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     609 Unavail Secs, 0 Stuffed Secs
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Data in Interval 1:
   Near End
     0 Line Code Violations, 0 Path Code Violations
...................
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Data in Interval 96:
   Near End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     900 Unavail Secs, 0 Stuffed Secs
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Total Data (last 24 hours)
   Near End
     0 Line Code Violations,0 Path Code Violations,
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     86436 Unavail Secs, 0 Stuffed Secs
   Far End
     0 Line Code Violations,0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavailable Secs
  Total (Previous Day)
   Near End
```

```
        0 Line Code Violations,0 Path Code Violations,
        0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
        0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
        86435 Unavail Secs, 0 Stuffed Secs
      Far End
        0 Line Code Violations,0 Path Code Violations
        0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
        0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
        0 Unavailable Secs

 STS-1 1, VTG 1, VT 2 (SONET 0/3/0.1/1/2 VT) is down
 VT Receiver has LP_AIS.


router#show controllers sts1e 0/3/0 tabular

Section/Line/Path same as previous.

sts1e 0/3/0.1 PATH  is down.
  Hardware is

 Applique type is VT1.5

 STS-1 1, VTG 1, VT 1 (SONET 0/3/0.1/1/1 VT) is down
 VT Receiver has LP_AIS.
  cep is configured: FALSE cem_id  (0)
  fwd_alarm_ais :0    fwd_alarm_rai :0, Clock Source is Internal
  BIP2-tca:6, BIP2-sf:3, BIP2-sd:6
  Tx V5:2
  Rx V5:0
  Tx J2 Length=64
  TX J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

  Expected J2 Length=64
  Expected J2 Trace Buffer:
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

  Rx J2 Length=16
  RX J2 Trace Buffer:
  CRC-7: 0x60 ERROR

  C9 79 F7 0F 5F D8 5D D2 D2 7C F6 0E 53 B2 0E 00     .y.._.]..|..S...
```

INTERVAL	CV-V	ES-V	SES-V	UAS-V	CV-VFE	ES-VFE	SES-VFE	UAS-VFE
06:14-06:24	0	0	0	619	0	0	0	0
05:59-06:14	0	0	0	901	0	0	0	0
05:44-05:59	0	0	0	900	0	0	0	0
05:29-05:44	0	0	0	901	0	0	0	0
05:14-05:29	0	0	0	900	0	0	0	0
04:59-05:14	0	0	0	900	0	0	0	0
....								
06:44-06:59	0	0	0	901	0	0	0	0
06:29-06:44	0	0	0	900	0	0	0	0
06:14-06:29	0	0	0	900	0	0	0	0
Total	0	0	0	86436	0	0	0	0
Total (Previous Day):								
05:29-05:29	0	0	0	86435	0	0	0	0

```
STS-1 1, VTG 1, T1 1 (SONET 0/3/0.1/1/1 T1) is down
 timeslots: 1-4
 FDL per AT&T 54016 spec.
 Receiver is getting AIS.
 Framing is ESF, Clock Source is Internal
 Near End Data
 INTERVAL      CV-L    ES-L    CV-P    ES-P   SES-P   CSS-P   SAS-P   UAS-P   FC-P
 06:14-06:24    0       0       0       0       0       0       0      619      0
 05:59-06:14    0       0       0       0       0       0       0      901      0
.............
 06:44-06:59    0       0       0       0       0       0       0      901      0
 06:29-06:44    0       0       0       0       0       0       0      900      0
 06:14-06:29    0       0       0       0       0       0       0      900      0
 Total          0       0       0       0       0       0       0    86436      0
 Total (Previous Day):
 05:29-05:29    0       0       0       0       0       0       0    86435      0
 Far End Data
 INTERVAL     ES-LFE   ES-PFE  SES-PFE SEFS-PFE CSS-PFE  UAS-PFE  FC-PFE
 06:14-06:24    0        0        0        0        0        0        0
 05:59-06:14    0        0        0        0        0        0        0
...................
 06:29-06:44    0        0        0        0        0        0        0
 06:14-06:29    0        0        0        0        0        0        0
 Total          0        0        0        0        0        0        0
 Total (Previous Day):
 05:29-05:29    0        0        0        0        0        0        0

 STS-1 1, VTG 1, VT 2 (SONET 0/3/0.1/1/2 VT) is down
 VT Receiver has LP_AIS.
  cep is configured: FALSE cem_id  (0)
  fwd_alarm_ais :0    fwd_alarm_rai :0, Clock Source is Internal


router#show controllers sts1e 0/3/0 remote performance

Section/Line/Path same as previous.

sts1e 0/3/0.1 PATH  is down.
  Hardware is


 STS-1 1, VTG 1, VT 1 (VT1.5 1/1/1) - Remote Performance Data
 Far end MIB Data:
 Data in curerent interval (630 seconds elapsed)
 0 CodeViolations , 0 ErrorSecs,0 Severly Err Secs, 0 Unavail Secs
 FarEnd VT Interval data:
 Total Data (last 96 15 minute intervals):
 0 CodeViolations, 0 ErrorSec,  0 Severly Err Secs, 0 Unavail Secs

 Total (Previous Day):
 0 CodeViolations, 0 ErrorSec,  0 Severly Err Secs, 0 Unavail Secs


 STS-1 1, VTG 1, T1 1 (SONET 0/3/0.1/1/1 T1) - Remote Performance Data
  Data in current interval (630 seconds elapsed):
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Data in Interval 1:
................
  Data in Interval 96:
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
```

```
       0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
       0 Unavail Secs
    Total Data (last 24 hours)
       0 Path Code Violations
       0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
       0 Unavail Secs
    Total (Previous Day)
       0 Path Code Violations
       0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
       0 Unavail Secs

 STS-1 1, VTG 1, VT 2 (VT1.5 1/1/2) - Remote Performance Data
 Far end MIB Data:
 Data in cuererut interval (630 seconds elapsed)
 0 CodeViolations , 0 ErrorSecs,0 Severly Err Secs, 0 Unavail Secs
 FarEnd VT Interval data:
 Total Data (last 96 15 minute intervals):
 0 CodeViolations, 0 ErrorSec,  0 Severly Err Secs, 0 Unavail Secs

 Total (Previous Day):
 0 CodeViolations, 0 ErrorSec,  0 Severly Err Secs, 0 Unavail Secs


router#show controllers sts1e 0/3/0 remote performance tabular

Section/Line/Path same as previous.


sts1e 0/3/0.1 PATH  is down.
  Hardware is


 STS-1 1, VTG 1, VT 1 (VT1.5 1/1/1) - Remote Performance Data
 Far end MIB Data:
 INTERVAL        CV      ES     SES    UAS
 06:14-06:24     0       0       0      0
 FarEnd VT Interval data:
 INTERVAL        CV      ES     SES    UAS
  05:59-06:14     0       0       0      0

  05:44-05:59     0       0       0      0

  05:29-05:44     0       0       0      0

  05:14-05:29     0       0       0      0
.................
  06:29-06:44     0       0       0      0

  06:14-06:29     0       0       0      0

 Total
  CV    ES   SES   UAS    0      0      0      0

 Total (Previous Day)
  CV    ES   SES   UAS    0      0      0      0


 STS-1 1, VTG 1, T1 1 (SONET 0/3/0.1/1/1 T1) - Remote Performance Data
  INTERVAL       LCV    PCV   CSS   SELS   LES    DM    ES   BES   SES   UAS
  06:14-06:24     0      0     0      0     0     0     0     0     0     0
  05:59-06:14     0      0     0      0     0     0     0     0     0     0
  05:44-05:59     0      0     0      0     0     0     0     0     0     0
...................
```

```
06:44-06:59     0       0       0       0       0       0       0       0       0       0
06:29-06:44     0       0       0       0       0       0       0       0       0       0
06:14-06:29     0       0       0       0       0       0       0       0       0       0
Total           0       0       0       0       0       0       0       0       0       0
Total (Previous Day)
05:29-05:29     0       0       0       0       0       0       0       0       0       0

STS-1 1, VTG 1, VT 2 (VT1.5 1/1/2) - Remote Performance Data
Far end MIB Data:
INTERVAL        CV      ES      SES     UAS
06:14-06:24     0       0       0       0
FarEnd VT Interval data:
INTERVAL        CV      ES      SES     UAS
 05:59-06:14    0       0       0       0
```

controller sts-1e

To configure a STS-1e controller and enter controller configuration mode, use the **controller sts-1e** command in global configuration mode.

controller sts-1e *slot/subslot/port*

slot	Physical slot number. The slot is always 0.
/subslot	Physical sub-slot number. The range for sub-slot is 0-5.
/port	STS-1e port number. The range of port number for 3GMS is 12-15 and for 48 T3E3 CE is 0-47.

Command Default

port : 0

Command Modes

Global configuration

Command History

Release	Modification
XE Fuji 16.9.1	This command was integrated into the Cisco ASR 900 Series, Cisco ASR 920 Sesries, and Cisco NCS 4200 Series Routers.

Usage Guidelines

This command can be enabled only after configuring the **mode sts1e** command under **controller mediatype** *slot/subslot/port*command, as shown below:

```
Router(config)#controller mediaType 0/3/13
Router(config-controller)#mode
Router(config-controller)#mode sts1e
```

Example

```
enable
configure terminal
controller sts-1e 0/0/16
sts-1 1
mode sts-1e
t1 1 clock source internal
t1 1 framing unframed
end
```

mode sts-1e

Use this command to configure the sts-1e mode.

None.

Command Default   None.

Command Modes   Controller configuration.

Command History

Release	Modification
IOS XE Fuji 16.9.1	This command was integrated into the Cisco ASR 900 Series, Cisco ASR 920 Series, and the Cisco NCS 4200 Series.

Usage Guidelines   You can change the mode of a controller only when there are no subinterfaces defined for the controller.

Example

```
enable
configure terminal
controller MediaType 0/0/16
mode STS-1e
end
```