Troubleshooting the T3 or E3 Interface Module

To troubleshoot T3 or E3, you must configure the following:

- Bit Error Rate Testing (BERT)

- Loopback

Overview of BERT

Bit Error Rate Testing (BERT) is used to test the integrity of the physical line.

The interface contains on board BERT circuitry. With this circuitry, the interface software can send and detect a programmable pattern that is compliant with CCITT/ITU O.151, O.152, O.153 pseudo-random, and repetitive test patterns. BERTs allow you to test cables and signal problems in the field.

The bit error rate (BER) is determined by comparing the erroneous bits received with the total number of bits received. You can display and analyze the total number of error bits transmitted and the total number of bits received on the link. You can retrieve error statistics anytime during the BERT.

Both the total number of bits and the error bits received are available for analysis. You can select the testing period from 1 minute to 24 hours and you can also retrieve the error statistics anytime during the BERT test.

Running a BERT Test

When running a BERT test, the system expects to receive the same pattern that it transmits. To help ensure this, two common options are available:

- Use a loopback somewhere in the link or network

- Configure remote testing equipment to transmit the same BERT test pattern at the same time.

The BERT runtime engine can be kept running until the interval completes or can be stopped by unconfiguring it anytime.

Types of BERT

BERT is supported in two directions:

- Line - supports BERT in TDM direction

• System - supports BERT in PSN direction

BERT engines uses different BERT patterns for transmission for each mode. The supported BERT patterns on each card is described.

BERT Restrictions

• BERT is not supported on the following modes:

  • T3—Framing M-13, non-channelized

  • E3—Framing G832, channelized

• When the BERT is initiated with pattern 0s and 1s from the local end and the loopback local is applied from the far end, then the BERT syncing does not happen. Since the BERT process is asserted as LOS alarms for all 0s and AIS alarms for all 1s BERT patterns. Whereas the BERT syncing behaves properly when the BERT is initiated from both the local and the far end.

  For all 1s on T3 or E3, the BERT behaviour is not asserted as AIS and the BERT syncing happens as usual.

• In the unframed mode, BERT sync is not stable and may generate alarms until Cisco IOS XE Fuji 16.9.4.

Note   Framing type should be similar in all routers end to end.

• System BERT is not supported for any pattern in framed SATOP.

• System BERT is not configurable, without cem-group configuration.

• Path modes, unframed modes, and concatenation modes are not supported.

BERT Restrictions for Cisco IOS XE Bengaluru 17.4.1 release

• When the BERT is initiated from the local end and the loopback local is applied from the far end, then BERT syncing does not happen. Since the BERT process is asserted as LOS alarms for all 0s and AIS alarms for all 1s BERT patterns. Whereas the BERT syncing behaves properly when the BERT is initiated from both the local and the far end.

BERT Patterns on T3/E3 Interface Module

Bit error rate testing (BERT) is supported on T3/E3 interfaces.

• You can run 16 BERTs at a time.

• The test can be either of the T1/E1 or the T3/E3 interface.

Table 1: Feature History

Feature Name	Release Information	Description
Support for all 0s and 1s BERT Patterns	Cisco IOS XE Bengaluru 17.4.1	Support for all 0s and 1s BERT patterns on T3 or E3 interfaces.
Support for 3-in-24 BERT Patterns	Cisco IOS XE Dublin 17.11.1	Support for 3-in-24 BERT patterns on T3 or E3 interfaces.

The BERT patterns on the 48-port T3/E3 interface module are:

Table 2: BERT Pattern Descriptions

Keyword	Description
All 1s [1]	Pseudo-random binary test pattern consisting of all 1's that is used to test alternating line volt and repeaters.
All 0s	Pseudo-random binary test pattern consisting of all 0's that is used for test line coding.
2^15-1 O.151	Pseudo-random O.151 test pattern consisting of a maximum of 14 consecutive zeros and 15 consecutive ones. The length of this pattern is 32,768 bits.
2^20-O.151	Pseudo-random O.151 test pattern consisting of a maximum of 19 consecutive zeros and 20 consecutive ones. The length of this pattern is 1,048,575 bits.
2^20-O.153	Pseudo-random O.153 test pattern consisting of a maximum of 19 consecutive zeros and 20 consecutive ones. The length of this pattern is 1,048,575 bits.
2^23-1 O.151	Pseudo-random 0.151 test pattern consisting of a maximum of 22 consecutive zeros and 23 consecutive ones. The length of this pattern is 8,388,607 bits.
2^9 [2]	Pseudo-random binary test pattern consisting of a maximum of eight consecutive zeros and nine consecutive ones. The length of this pattern is 511 bits.
2^11 [3]	Pseudo-random binary test pattern consisting of a maximum of ten consecutive zeros and eleven consecutive ones. The length of this pattern is 2048 bits.
3-in-24 [4]	Pseudo-random binary test pattern consisting of repeating 24-bit sequence that contains three ones, fifteen consecutive zeros, and 12.5 percent average one's density.

1 Starting with Cisco IOS XE Bengaluru 17.4.1, All Is are supported on all modes.
2 Starting with Cisco IOS XE Gibraltar 16.12.1, 2^9 is supported on both T3 and T1 modes.
3 Starting with Cisco IOS XE Fuji 16.9.5, 2^11 is supported on both T3 and T1 modes.
4 Starting with Cisco IOS XE Dublin 17.11.1, 3-in-24 pattern is supported on the T1, T3, E1, and E3 modes.

Note If All 1's BERT pattern is tested on the system side, then ensure that you need to start all 1's pattern from both sides of the end points.

Configuring BERT on one side and loopback on other side of the end points is not supported. The router treats all 1's pattern as AIS alarm and BERT will not come in sync with the other side configuration of the end point.

BERT for CESoPSN

BERT is supported at the TDM side and pseudowire side. BERT can be used either at NxDS0 or DS1 but not together.

BERT is supported on following controllers:

- T1—NxDS0, DS1

- T3—NxDS0, DS1 (channelised), clear channel DS3.

- OCX—NxDS0, DS1 (channelised),DS3(channelised), clear channel DS3,STS1,STS-nc,VT-1.5,VT1.5 T1

Configuring BERT - T3 or E3 Interfaces for SAToP

Before You Begin

Before you configure BERT for clear channel T3 or E3 interfaces, ensure that controller and CEM are configured.

To run a BERT on clear channel T3 or E3 interface, perform the following tasks in global configuration mode.

```
enable
configure terminal
controller t3 0/0/1
no channelized
bert pattern 0s interval 30 direction line
exit
```

To run a BERT on channelized T3 interface or channelized E3 interface, perform the following tasks in global configuration mode.

```
enable
configure terminal
controller t3 0/0/1
channelized
t1 1 bert pattern 0s interval 30 direction line
exit
```

✎

Note To terminate a BERT test during the specified test period, use the **no bert** command.

You can view the results of a BERT test at the following points of time:

- After you terminate the test using the **no bert** command

- After the test runs completely

- Anytime during the test (in real time)

Verifying the BERT for T3/E3 Interfaces

Use the **show controller** command to verify the BERT configuration for clear channel T3/E3 interfaces:

```
Router#  show controllers t3 0/4/40 | sec BERT
BERT test result (running)
    Test Pattern : 2^15, Status : Not Sync, Sync Detected : 0
    DSX3 BERT direction   : Line
    Interval : 5 minute(s), Time Remain : 3 minute(s)
    Bit Errors (since BERT started): 0 bits,
    Bits Received (since BERT started): 0 Kbits
    Bit Errors (since last sync): 0 bits
    Bits Received (since last sync): 0 Kbits
```

Use the **show controller** command to verify the BERT configuration of channelized T3/T1 interfaces or channelized E3/E1 interfaces:

```
Router# sh controller t3 0/3/0 | be T1 1
T1 1 is up
  timeslots:
  FDL per AT&T 54016 spec.
  Receiver is getting AIS.
  Framing is ESF, Clock Source is Internal
  BERT test result (running)
    Test Pattern : 2^23, Status : Not Sync, Sync Detected : 0
    Interval : 5 minute(s), Time Remain : 00:01:44
    Bit Errors (since BERT started): 299 Mbits,
    Bits Received (since BERT started): 299 Mbits
    Bit Errors (since last sync): 0 bits
    Bits Received (since last sync): 0 Kbits
    Direction   : Line
Data in current interval (250 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 Unavailable Secs, 0 Stuffed Secs
    0 Path Failures, 0 SEF/AIS 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 0 Path Failures
  Data in Interval 1:
  Near End
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
```

```
       2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
       0 Unavailable Secs, 0 Stuffed Secs
       1 Path Failures, 2 SEF/AIS Secs
     Far End
       0 Line Code Violations, 0 Path Code Violations
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
       3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
       0 Unavailable Secs 0 Path Failures
  Total Data (last 1 15 minute intervals):
   Near End
       0 Line Code Violations,0 Path Code Violations,
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
       0 Unavailable Secs, 0 Stuffed Secs
       1 Path Failures, 2 SEF/AIS Secs
   Far End
       0 Line Code Violations,0 Path Code Violations
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
       0 Unavailable Secs, 0 Path Failures
```

Configuring BERT - T3 or E3 Interfaces for CESoPSN

Before You Begin

Before you configure BERT for clear channel T3 or E3 interfaces, ensure that the controller and CEM are configured.

To run a BERT on the T3 interface, use the following commands:

```
configure terminal
controller t3 0/5/0
t1 1 bert timeslots 1 pattern 2^15 interval 1
```

To run a BERT on the E3 interface, use the following commands:

```
config terminal
controller e3 0/5/0
e1 1 bert timeslots 1 pattern 2^15 interval 1
```

Note   To terminate a BERT test during the specified test period, use the **no bert** command.

You can view the results of a BERT test at the following points of time:

- After you terminate the test using the **no bert** command

- After the test runs completely

- Anytime during the test (in real time)

Verifying BERT for CESoPSN on T3 or E3 Interface

Use the following command to verify the BERT configuration for CESoPSN on T3 interfaces:

```
Router# show controllers t3 0/5/0
T3 0/5/0 is up.
  Hardware is ASR903-48T3E3-CE

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

  FEAC code received: No code is being received
  Framing is C-BIT Parity, Line Code is B3ZS, Cablelength Short less than 225ft
  BER thresholds:  SF = 10e-3  SD = 10e-6
  Clock Source is internal
  Equipment customer loopback
  Data in current interval (240 seconds elapsed):
   Near End
      0 Line Code Violations, 0 P-bit Coding Violations
      0 C-bit Coding Violations, 0 P-bit Err Secs
      0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
      0 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
  Data in Interval 1:
   Near End
      0 Line Code Violations, 0 P-bit Coding Violations
      0 C-bit Coding Violations, 0 P-bit Err Secs
      0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
      20 Unavailable Secs, 20 Line Errored Secs
      0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
      20 Severely Errored Line Secs, 1 Path Failures
      0 AIS Defect Secs, 20 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
  Total Data (last 1 15 minute intervals):
   Near End
      0 Line Code Violations, 0 P-bit Coding Violations,
      0 C-bit Coding Violations, 0 P-bit Err Secs,
      0 P-bit Severely Err Secs, 0 Severely Err Framing Secs,
      20 Unavailable Secs, 20 Line Errored Secs,
      0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
      20 Severely Errored Line Secs, 1 path failures
      0 AIS Defect Secs, 20 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

  T1 1 is down
  timeslots: 1-24
  FDL per AT&T 54016 spec.
  Receiver has remote alarm.
  Framing is ESF, Clock Source is Recovered 1
  BERT running on timeslots 1,
  BERT test result (running)
      Test Pattern : 2^15, Status : Sync, Sync Detected : 0
      Interval : 0 minute(s), Time Remain : 00:00:37
      Bit Errors (since BERT started): 0 bits,
```

```
        Bits Received (since BERT started): 137 Kbits
        Bit Errors (since last sync): 0 bits
        Bits Received (since last sync): 137 Kbits
        Direction   : Line
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 Unavailable Secs, 0 Stuffed Secs
    0 Path Failures, 0 SEF/AIS 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 0 Path Failures
 Data in Interval 1:
 Near End
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
    0 Unavailable Secs, 0 Stuffed Secs
    1 Path Failures, 2 SEF/AIS Secs
 Far End
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
    0 Unavailable Secs 0 Path Failures
 Total Data (last 1 15 minute intervals):
 Near End
    0 Line Code Violations,0 Path Code Violations,
    0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
    2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
    0 Unavailable Secs, 0 Stuffed Secs
    1 Path Failures, 2 SEF/AIS Secs
 Far End
    0 Line Code Violations,0 Path Code Violations
    0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
    3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
    0 Unavailable Secs, 0 Path Failures
```

You can view the results of a BERT test at the following times:

- After you terminate the test using the **no bert** command

- After the test runs completely

- Anytime during the test (in real time)

Loopback on T3 or E3 Interfaces

Loopback Description

You can use the following loopback on the clear and channelized T3 or E3 interfaces.

Loopback	Description
loopback local	Loops the transmitting signal back to the receiver.

Loopback	Description
loopback network line	Loops the incoming signal back to the interface using the line loopback mode of the framer. The framer does not reclock or reframe the incoming data. All incoming data is received by the interface driver.

Restrictions for Loopback Remote

- E1 and E3 loopback remote are not supported until Cisco IOS XE Fuji 16.9.4 release. Starting from Cisco IOS XE Fuji 16.9.5 release, E1 and E3 loopback remote are supported.

- IBOC loopcode configuration is not supported when CESoP or SATOP (framed or unframed) is configured.

- ESF loopcode configuration is not supported when SAToP is configured.

Loopback Remote on T1 and T3 Interfaces

The remote loopback configuration attempts to put the far-end T1 or T3 into a loopback.

The remote loopback setting loops back the far-end at line or payload, using IBOC (inband bit-orientated CDE) or the ESF loopback codes to communicate the request to the far-end.

Configuring Loopback for T3 or E3 Interfaces

To set a loopback local on the clear channel T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
loopback local
exit
```

To set a loopback network on the clear channel T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
loopback network line
exit
```

To set a loopback local on the channelized channel T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
channelized
t1 1 loopback local
exit
```

To set a loopback network on the channelized channel T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
channelized
t1 1 loopback network line
exit
```

Note To remove a loopback, use the **no loopback** command.

Note Network payload configuration is not supported on the port configured with SAToP. To configure loopback network payload when SAToP is configured, you need to remove the CEM configuration and then configure the loopback.

Configuring Loopback Remote on T1 and T3 Interface

To set T3 loopback remote line or payload for T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
loopback remote {line | payload}
exit
```

To set T1 loopback remote iboc fac1/fac2/csu for T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
t1 1 loopback remote iboc {fac1 | fac2 | csu}
exit
```

To set T1 loopback remote iboc esf line csu/esf payload for T3 or E3 interface, perform the following tasks in global configuration mode:

```
enable
configure terminal
controller t3 0/0/1
t1 1 loopback remote iboc esf {line csu | payload}
```

Verifying the Loopback Remote Configuration on T1 or T3 Interfaces

Use the following command to check the loopback remote configuration on a T3 interface module:

```
router# show running-config | sec 0/0/1
controller MediaType 0/0/1
mode t3
controller T3 0/0/1
```

```
threshold sd-ber 6
threshold sf-ber 3
no channelized
framing c-bit
cablelength short
loopback remote line
```

Use the following command to verify the loopback remote configuration on a T3 interface module:

```
router(config-controller)# do show controller t3 0/0/1
T3 0/0/1 is up. (Configured for Remotely Looped)
  Currently in Remotely Line Looped
  Hardware is  A900-48T3E3-CE
  Applique type is Subrate T3
  Receiver has no alarms.
  MDL transmission is disabled
  FEAC code received: No code is being received
  Framing is C-BIT Parity, Line Code is B3ZS, Cablelength Short less than 225ft
  BER thresholds:  SF = 10e-10  SD = 10e-10
  Clock Source is internal
  Equipment customer loopback
  Data in current interval (240 seconds elapsed):
   Near End
     0 Line Code Violations, 0 P-bit Coding Violations
     0 C-bit Coding Violations, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 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
  Data in Interval 1:
   Near End
     0 Line Code Violations, 0 P-bit Coding Violations
     0 C-bit Coding Violations, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     20 Unavailable Secs, 20 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     20 Severely Errored Line Secs, 1 Path Failures
     0 AIS Defect Secs, 20 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
  Total Data (last 1 15 minute intervals):
   Near End
     0 Line Code Violations, 0 P-bit Coding Violations,
     0 C-bit Coding Violations, 0 P-bit Err Secs,
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs,
     20 Unavailable Secs, 20 Line Errored Secs,
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     20 Severely Errored Line Secs, 1 path failures
     0 AIS Defect Secs, 20 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

T1 1 is up
  timeslots:
  FDL per AT&T 54016 spec.
```

```
      No alarms detected.
      Framing is ESF, Clock Source is Internal
      Data in current interval (250 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 Unavailable Secs, 0 Stuffed Secs
          0 Path Failures, 0 SEF/AIS 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 0 Path Failures
      Data in Interval 1:
       Near End
          0 Line Code Violations, 0 Path Code Violations
          0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
          2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
          0 Unavailable Secs, 0 Stuffed Secs
          1 Path Failures, 2 SEF/AIS Secs
       Far End
          0 Line Code Violations, 0 Path Code Violations
          0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
          3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
          0 Unavailable Secs 0 Path Failures
      Total Data (last 1 15 minute intervals):
       Near End
          0 Line Code Violations,0 Path Code Violations,
          0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
          2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
          0 Unavailable Secs, 0 Stuffed Secs
          1 Path Failures, 2 SEF/AIS Secs
       Far End
          0 Line Code Violations,0 Path Code Violations
          0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
          3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
          0 Unavailable Secs, 0 Path Failures
```

Use the following command to check the loopback remote configuration on a T1 interface module:

```
Router#show run | sec 0/4/15
controller MediaType 0/4/15
mode t3
controller T3 0/4/15
threshold sd-ber 6
threshold sf-ber 3
framing c-bit
cablelength short
t1 1 Loopback remote iboc fac1
```

Use the following command to verify the loopback remote configuration on a T1 interface module:

```
Router#show controller t3 0/4/15 | be T1 1
  T1 1 is up
  timeslots:
  FDL per AT&T 54016 spec.
  Configured for NIU FAC1 Line Loopback with IBOC
  Currently in Inband Remotely Line Looped
  Receiver has no alarms.
  Framing is ESF, Clock Source is Internal
Data in current interval (250 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 Unavailable Secs, 0 Stuffed Secs
       0 Path Failures, 0 SEF/AIS 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 0 Path Failures
  Data in Interval 1:
    Near End
       0 Line Code Violations, 0 Path Code Violations
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
       2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
       0 Unavailable Secs, 0 Stuffed Secs
       1 Path Failures, 2 SEF/AIS Secs
    Far End
       0 Line Code Violations, 0 Path Code Violations
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
       3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
       0 Unavailable Secs 0 Path Failures
  Total Data (last 1 15 minute intervals):
    Near End
       0 Line Code Violations,0 Path Code Violations,
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
       0 Unavailable Secs, 0 Stuffed Secs
       1 Path Failures, 2 SEF/AIS Secs
    Far End
       0 Line Code Violations,0 Path Code Violations
       0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
       3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
       0 Unavailable Secs, 0 Path Failures
```