

## Chapter 24

# Monitor Multichannel DS-3 Interfaces

This chapter describes how to monitor Multichannel DS-3 interfaces and begin the process of isolating Multichannel DS-3 interface problems when they occur. (See Table 51.)

**Table 51: Checklist for Monitoring Multichannel DS-3 Interfaces**

<b>Monitor Multichannel DS-3 Interface Tasks</b>	<b>Command or Action</b>
<b>Monitor Multichannel DS-3 Interfaces on page 248</b>	
1. Display the Status of Channelized Interfaces on page 248	show interfaces terse ds* show interfaces terse t1*
2. Display the Status of a Specific Channelized Interface on page 249	show interfaces ds- <i>fpc/pic/port:channel:channel</i> show interfaces t1- <i>fpc/pic/port:channel</i>
3. Display Extensive Status Information for a Specific T3 Interface on page 250	show interfaces ds- <i>fpc/pic/port:channel:channel</i> extensive show interfaces t1- <i>fpc/pic/port:channel</i> extensive
4. Monitor Statistics for a Channelized Interface on page 253	monitor interfaces ds- <i>fpc/pic/port:channel:channel</i> monitor interfaces t1- <i>fpc/pic/port:channel</i>

## Monitor Multichannel DS-3 Interfaces

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**Purpose** Channelized interfaces enable you to configure a number of individual channels that subdivide the bandwidth of a larger interface and minimize the number of Physical Interface Cards (PICs) that an installation requires. By monitoring channelized DS-3 to DS-0 interfaces or channelized DS-3 to DS-1 interfaces, you can begin to isolate Multichannel DS-3 problems when they occur.

**Steps To Take** To monitor Multichannel DS-3 interfaces, follow these steps:

1. Display the Status of Channelized Interfaces on page 248
2. Display the Status of a Specific Channelized Interface on page 249
3. Display Extensive Status Information for a Specific T3 Interface on page 250
4. Monitor Statistics for a Channelized Interface on page 253

### Step 1: Display the Status of Channelized Interfaces

**Action** To display the status of channelized DS-3 to DS-0 interfaces or channelized DS-3 to DS-1 interfaces, use one of the following JUNOS command-line interface (CLI) operational mode commands:

```
user@host> show interfaces terse ds*
user@host> show interfaces terse t1*
```

**Sample Output** The following sample output is for a channelized DS-3 to DS-0 interface:

```
user@host> show interfaces terse ds*
Interface  Admin Link Proto Local          Remote
ds-2/1/0:5:1  up  up
ds-2/1/0:5:1.0 up  up  inet 192.168.140.197/30
```

The following sample output is for a channelized DS-3 to DS-1 interface:

```
user@host> show interfaces terse t1*
[...Output truncated...]
t1-2/1/0:16  up  down
t1-2/1/0:16.0 up  down inet 192.168.118.61/30
t1-2/1/0:17  up  up
t1-2/1/0:17.0 up  up  inet 192.168.118.49/30
t1-2/1/0:18  up  up
t1-2/1/0:18.0 up  up  inet 192.168.36.21/30
t1-2/1/0:19  up  up
t1-2/1/0:19.0 up  up  inet 192.168.118.97/30
```

**What It Means** The sample output shows the status of both the physical and logical interfaces. In both sample outputs, all links are up except for the first interface in the T1 sample output. The first interface, t1-2/1/0:16, has both the physical and logical links down.

## Step 2: Display the Status of a Specific Channelized Interface

**Action** To display the status of a specific channelized DS-3 to DS-0 interface or channelized DS-3 to DS-1 interface, use one of the following CLI operational mode commands:

```
user@host> show interfaces ds-fpc/pic/port:channel:channel
user@host> show interfaces t1-fpc/pic/port:channel
```

**Sample Output** The following sample output is for a channelized DS-3 to DS-0 interface:

```
user@host> show interfaces ds-2/1/0:5:1
Physical interface: ds-2/1/0:5:1, Enabled, Physical link is Up
  Interface index: 36, SNMP ifIndex: 133
  Description: Customer
  Link-level type: Cisco-HDLC, MTU: 1504, Clocking: Internal, Speed: 64kbps, FCS: 16, Mode: M23,
  Framing: ESF
  Device flags   : Present Running
  Interface flags: Point-To-Point SNMP-Traps
  Link flags     : Keepalives
  Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
  Keepalive: Input: 1 (00:00:06 ago), Output: 1 (00:00:06 ago)
  Input rate    : 0 bps (0 pps)
  Output rate   : 0 bps (0 pps)
  DS1 alarms   : None
  DS3 alarms   : None
  DS1 defects  : None
  DS3 defects  : None

Logical interface ds-2/1/0:5:1.0 (Index 14) (SNMP ifIndex 134)
  Flags: Point-To-Point SNMP-Traps Encapsulation: Cisco-HDLC
  Protocol inet, MTU: 1500, Flags: None
  Addresses, Flags: Is-Preferred Is-Primary
  Destination: 192.168.140.196/30, Local: 192.168.140.197
```

The following sample output is for a channelized DS-3 to DS-1 interface:

```
user@host> show interfaces t1-2/1/0:19
Physical interface: t1-2/1/0:19, Enabled, Physical link is Up
  Interface index: 50, SNMP ifIndex: 59
  Description: Customer
  Link-level type: Cisco-HDLC, MTU: 1504, Clocking: Internal, Speed: T1, Loopback: None, FCS: 16,
  Mode: M23, Framing: ESF
  Device flags   : Present Running
  Interface flags: Point-To-Point SNMP-Traps
  Link flags     : Keepalives
  Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
  Keepalive: Input: 11 (00:00:06 ago), Output: 13 (00:00:04 ago)
  Input rate    : 741512 bps (224 pps)
  Output rate   : 1266528 bps (224 pps)
  DS1 alarms   : None
  DS3 alarms   : None
  DS1 defects  : None
  DS3 defects  : None

Logical interface t1-2/1/0:19.0 (Index 27) (SNMP ifIndex 125)
  Flags: Point-To-Point SNMP-Traps Encapsulation: Cisco-HDLC
  Protocol inet, MTU: 1500, Flags: None
  Addresses, Flags: Is-Preferred Is-Primary
  Destination: 192.168.118.96/30, Local: 192.168.118.97
```

**What It Means** The first line of the sample output shows the status of the link. If this line shows that the physical link is up, the physical link is healthy and can pass packets. If this line shows that the physical link is down, the physical link is unhealthy and cannot pass packets.

### Step 3: Display Extensive Status Information for a Specific T3 Interface

**Action** To display extensive status information about a specific channelized DS-3 to DS-0 interface or channelized DS-3 to DS-1 interface, use one of the following CLI operational mode commands:

```
user@host> show interfaces ds-fpc/pic/port:channel:channel extensive
user@host> show interfaces t1-fpc/pic/port:channel extensive
```

**Sample Output** The following sample output is for a channelized DS-3 to DS-0 interface:

```
user@host> show interfaces ds-2/1/0:5:1 extensive
Physical interface: ds-2/1/0:5:1, Enabled, Physical link is Up
Interface index: 36, SNMP ifIndex: 133, Generation: 35
Description: Customer
Link-level type: Cisco-HDLC, MTU: 1504, Clocking: Internal, Speed: 64kbps, FCS: 16, Mode: M23,
Framing: ESF
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Link flags : Keepalives
Hold-times : Up 0 ms, Down 0 ms
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Keepalive statistics:
Input : 2 (last seen 00:00:05 ago)
Output: 2 (last sent 00:00:05 ago)
Statistics last cleared: 2002-08-01 10:14:45 UTC (00:00:16 ago)
Traffic statistics:
Input bytes :          524          304 bps
Output bytes :          528          304 bps
Input packets:           8           0 pps
Output packets:         8           0 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Policed discards: 10, L3 incompletes: 0,
L2 channel errors: 0, L2 mismatch timeouts: 0, HS link CRC errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0
DS1 alarms : None
DS3 alarms : None
DS1 defects : None
DS3 defects : None
T1 media:      Seconds      Count State
SEF            0            0 OK
BEE            0            0 OK
AIS            0            0 OK
LOF            0            0 OK
LOS            0            0 OK
YELLOW        0            0 OK
BPV            0            0
EXZ            0            0
LCV            0            0
PCV            0            0
CS             0            0
LES            0
ES             0
SES            0
```

```

SEFS          0
BES           0
UAS           0
DS3 media:    Seconds    Count State
PLL Lock      0          0 OK
Reframing     0          0 OK
AIS           0          0 OK
LOF           0          0 OK
LOS           0          0 OK
IDLE          0          0 OK
YELLOW        0          0 OK
BPV           0          0
EXZ           0          0
LCV           0          0
PCV           0          0
LES           0
PES           0
PSES          0
SEFS          0
UAS           0
Interface transmit queues:
      B/W WRR   Packets   Bytes   Drops   Errors
Queue0 95 95     4       336     0       0
Queue1  5  5     1        22     0       0
HDLC configuration:
Giant threshold: 1514, Runt threshold: 3
Timeslots      : 1
Byte encoding: Nx64K, Data inversion: Disabled
DS3 BERT configuration:
BERT time period: 0 seconds, Elapsed: 0 seconds
Algorithm: Unknown (0), Induced Error rate: 10e-0
DS1 BERT configuration:
BERT time period: 0 seconds, Elapsed: 0 seconds
Induced Error rate: 10e-0, Algorithm: 2^15 - 1, O.151, Pseudorandom (9)
PFE configuration:
Destination slot: 2, PLP byte: 2 (0x2f)
CoS transmit queue      Bandwidth      Buffer  Priority Limit
      %      bps %      bytes
0 best-effort           0      0 0      0  low  none
1 expedited-forwarding  0      0 0      0  low  none
2 assured-forwarding   0      0 0      0  low  none
3 network-control      0      0 0      0  low  none

Logical interface ds-2/1/0:5:1.0 (Index 14) (SNMP ifIndex 134) (Generation 13)
Flags: Point-To-Point SNMP-Traps Encapsulation: Cisco-HDLC
Protocol inet, MTU: 1500, Flags: None, Generation: 20 Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 192.168.140.196/30, Local: 192.168.140.197,
  Broadcast: Unspecified,
  Generation: 22

```

The following sample output is for a channelized DS-3 to DS-1 interface:

```

user@host> show interfaces t1-2/1/0:19 extensive
Physical interface: t1-2/1/0:19, Enabled, Physical link is Up
Interface index: 50, SNMP ifIndex: 59, Generation: 49
Description: Customer
Link-level type: Cisco-HDLC, MTU: 1504, Clocking: Internal, Speed: T1, Loopback: None, FCS: 16,
Mode: M23, Framing: ESF
Device flags   : Present Running
Interface flags: Point-To-Point SNMP-Traps
Link flags    : Keepalives
Hold-times    : Up 0 ms, Down 0 ms

```

```

Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Keepalive statistics:
  Input : 117 (last seen 00:00:08 ago)
  Output: 121 (last sent 00:00:01 ago)
Statistics last cleared: 2002-08-01 10:14:45 UTC (00:19:38 ago)
Traffic statistics:
  Input bytes :      22459734      236888 bps
  Output bytes :    162288645     1322208 bps
  Input packets:    201233        214 pps
  Output packets:  236341         227 pps
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Policed discards: 377, L3 incompletes: 0,
  L2 channel errors: 0, L2 mismatch timeouts: 0, HS link CRC errors: 0, SRAM errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0
DS1 alarms : None
DS3 alarms : None
DS1 defects : None
DS3 defects : None
T1 media:
  Seconds      Count State
SEF            0      0 OK
BEE            0      0 OK
AIS            0      0 OK
LOF            0      0 OK
LOS            0      0 OK
YELLOW        0      0 OK
BPV            0      0
EXZ            0      0
LCV            0      0
PCV            0      0
CS             0      0
LES            0
ES             0
SES            0
SEFS           0
BES            0
UAS            0
DS3 media:
  Seconds      Count State
PLL Lock       0      0 OK
Reframing      0      0 OK
AIS            0      0 OK
LOF            0      0 OK
LOS            0      0 OK
IDLE           0      0 OK
YELLOW        0      0 OK
BPV            0      0
EXZ            0      0
LCV            0      0
PCV            0      0
LES            0
PES            0
PSES           0
SEFS           0
UAS            0
Interface transmit queues:
  B/W WRR   Packets  Bytes  Drops  Errors
Queue0  95 95    234494 162020375  0  0
Queue1   5 5      164    5808    0  0
HDLC configuration:
  Giant threshold: 1514, Runt threshold: 3
  Timeslots : All active
  Line encoding: B8ZS, Byte encoding: Nx64K, Data inversion: Disabled
DS3 BERT configuration:

```

```

BERT time period: 0 seconds, Elapsed: 0 seconds
Algorithm: Unknown (0), Induced Error rate: 10e-0
DS1 BERT configuration:
BERT time period: 10 seconds, Elapsed: 0 seconds
Induced Error rate: 10e-0, Algorithm: 2^15 - 1, O.151, Pseudorandom (9)
PFE configuration:
Destination slot: 2, PLP byte: 2 (0xab)
CoS transmit queue      Bandwidth      Buffer  Priority Limit
      %      bps %      bytes
0 best-effort           0      0 0      0    low none
1 expedited-forwarding 0      0 0      0    low none
2 assured-forwarding   0      0 0      0    low none
3 network-control      0      0 0      0    low none

Logical interface t1-2/1/0:19.0 (Index 27) (SNMP ifIndex 125) (Generation 26)
Flags: Point-To-Point SNMP-Traps Encapsulation: Cisco-HDLC
Protocol inet, MTU: 1500, Flags: None, Generation: 34 Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.118.96/30, Local: 192.168.118.97,
Broadcast: Unspecified, Generation: 44

```

**What It Means** The sample output shows where the errors might be occurring. Look at the active alarms and active defects for the DS-1 or DS-3 interface and diagnose the media accordingly. See “Locate Multichannel DS-3 Alarms and Errors” on page 273 for an explanation of Multichannel DS-3 alarms.

#### Step 4: Monitor Statistics for a Channelized Interface

**Action** To monitor statistics for a channelized DS-3 to DS-0 interface or channelized DS-3 to DS-1 interface, use one of the following CLI operational mode commands:

```

user@host> monitor interfaces ds-fpc/pic/port:channel:channel
user@host> monitor interfaces t1-fpc/pic/port:channel

```

**Sample Output** The following sample output is for a channelized DS-3 to DS-0 interface:

```

user@host> monitor interface ds-2/1/0:5:1
host                Seconds: 9          Time: 10:36:11
                    Delay: 0/0/4
Interface: ds-2/1/0:5:1, Enabled, Link is Up
Encapsulation: Cisco-HDLC, Keepalives, Speed: 64kbps
Traffic statistics:                Current delta
Input bytes:           52502 (80 bps)      [262]
Output bytes:         52608 (88 bps)      [344]
Input packets:         714 (0 pps)        [4]
Output packets:       714 (0 pps)        [5]
Encapsulation statistics:
Input keepalives:     133                [1]
Output keepalives:   133                [1]
Error statistics:
Input errors:         0                  [0]
Input drops:         0                  [0]
Input framing errors: 0                  [0]
Input runs:          0                  [0]
Input giants:        0                  [0]
Policed discards:    410                [1]
L3 incompletes:      0                  [0]
L2 channel errors:   0                  [0]
L2 mismatch timeouts: 0                  [0]
Carrier transitions:  0                  [0]

```

```
Output errors:          0          [0]
Output drops:          0          [0]
Aged packets:         0Active alarms : N      [0]
```

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

The following sample output is for a channelized DS-3 to DS-1 interface:

```
user@host> monitor interface t1-2/1/0:19

host                Seconds: 4          Time: 10:37:53
                    Delay: 0/0/4
Interface: t1-2/1/0:19, Enabled, Link is Up
Encapsulation: Cisco-HDLC, Keepalives, Speed: T1
Traffic statistics:          Current delta
Input bytes:                27046020 (124752 bps)      [32358]
Output bytes:                186975710 (623840 bps)    [161809]
Input packets:               233498 (139 pps)          [289]
Output packets:              273161 (139 pps)          [290]
Encapsulation statistics:
Input keepalives:           138          [0]
Output keepalives:         141          [0]
Error statistics:
Input errors:               0          [0]
Input drops:                0          [0]
Input framing errors:      0          [0]
Input runts:                0          [0]
Input giants:               0          [0]
Policed discards:           439         [0]
L3 incompletes:             0          [0]
L2 channel errors:          0          [0]
L2 mismatch timeouts:      0          [0]
Carrier transitions:        0          [0]
Output errors:              0          [0]
Output drops:               0          [0]
Aged packets:              0Active alarms : N      [0]
```

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

**What It Means** This command checks for and displays common interface failures, indicates whether loopback is detected, and shows increases in framing errors. Use information from this command to help narrow down possible causes of an interface problem.



**NOTE:** If you are accessing the router from the console connection, make sure you set the CLI terminal type using the set cli terminal command.

Table 52 lists additional problem situations and actions to help you further understand an interface problem.

**Table 52: Problem Situations and Actions**

Problem Situation	Action
Framing errors are increasing.	Check the frame checksum sequence (FCS), scrambling, and substrate configuration.

Problem Situation	Action
Framing errors are increasing, and the configuration is correct.	Check the cabling to the router and have the carrier verify the integrity of the line.
Input errors are increasing.	Check the cabling to the router and have the carrier verify the integrity of the line.



**NOTE:** We recommend that you use this command only for diagnostic purposes. Do not leave it on during normal router operations because real-time monitoring of traffic consumes additional CPU and memory resources.

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