

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

Monitor Multichannel DS-3 Interface Tasks	Command or Action
Monitor Multichannel DS-3 Interfaces on page 248	
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-fpc/pic/port:channel:channel show interfaces t1-fpc/pic/port:channel
3. Display Extensive Status Information for a Specific T3 Interface on page 250	show interfaces ds-fpc/pic/port:channel:channel extensive show interfaces t1-fpc/pic/port:channel extensive
4. Monitor Statistics for a Channelized Interface on page 253	monitor interfaces ds-fpc/pic/port:channel:channel monitor interfaces t1-fpc/pic/port:channel

Monitor Multichannel DS-3 Interfaces

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 runs:          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 subrate 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.
