

Chapter 29

Locate Channelized OC-12 Alarms and Errors

This chapter describes the most common Channelized OC-12 alarms and errors encountered when investigating line problems on a Juniper Networks router. (See Table 59.)

Table 59: Checklist for Channelized OC-12 Alarms and Errors

Channelized OC-12 Alarms and Errors	Command or Action
Display Channelized OC-12 Alarms and Errors on page 318	show interfaces <i>t3-fpc/pic/port:channel</i> extensive
Display Channelized OC-12 IQ Alarms and Errors on page 322	show interfaces <i>interface-type-interface-name</i> extensive

Display Channelized OC-12 Alarms and Errors

Action To display Channelized OC-12 interface alarms and errors, use the following JUNOS command-line interface (CLI) operational mode command:

```
user@host> show interfaces t3-fpc/pic/port:channel extensive
```

Sample Output 1

```
user@host> show interfaces t3-0/3/0:0 extensive
Physical interface: t3-0/3/0:0, Enabled, Physical link is Up
Interface index: 193, SNMP ifIndex: 118, Generation: 122
Link-level type: PPP, MTU: 4474, Clocking: Internal, SONET mode, Speed: T3,
Loopback: Local, SONET Loopback: None, FCS: 16, Mode: C/Bit parity
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Link flags : Keepalives
Hold-times : Up 0 ms, Down 0 ms
CoS queues : 4 supported
Last flapped : 2004-05-21 15:23:34 UTC (01:59:02 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          0          0 bps
Output bytes :          0          0 bps
Input packets:          0          0 pps
Output packets:         0          0 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Bucket drops: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
HS link CRC errors: 0, SRAM errors: 0
Output errors:
Carrier transitions: 1, Errors: 0, Drops: 0, Aged packets: 0
DS3 alarms : None
SONET alarms : None
DS3 defects : None
SONET defects : None
DS3 media:      Seconds      Count State
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
CCV             0          0
LES             0
PES             0
PSES            0
CES             0
CSES            0
SEFS            0
UAS             0
HDLC configuration:
Policing bucket: Disabled
Shaping bucket : Disabled
Giant threshold: 4484, Runt threshold: 3
Idle cycle flag: flags, Start end flag: shared
DSU configuration:
Compatibility mode: None, Scrambling: Disabled, Subrate: Disabled
FEAC loopback: Inactive, Response: Disabled, Count: 0
DS-3 BERT configuration:
```

BERT time period: 10 seconds, Elapsed: 0 seconds
 Algorithm: $2^3 - 1$, Pseudorandom (1), Induced error rate: 10e-0

Interface transmit queues:

	B/W	WRR	Packets	Bytes
Queue0	0	0		
Transmitted:			0	0
Drops:			0	0
Errors:			0	
Queue1	0	0		
Transmitted:			0	0
Drops:			0	0
Errors:			0	
Queue2	0	0		
Transmitted:			0	0
Drops:			0	0
Errors:			0	
Queue3	0	0		
Transmitted:			0	0
Drops:			0	0
Errors:			0	

SONET PHY:	Seconds	Count	State
PLL Lock	0	0	OK
PHY Light	0	0	OK

SONET section:

BIP-B1	1	22
SEF	0	0 OK
LOS	0	0 OK
LOF	0	0 OK
ES-S	1	
SES-S	0	
SEFS-S	0	

SONET line:

BIP-B2	1	307
REI-L	0	0
RDI-L	3	1 OK
AIS-L	0	0 OK
BERR-SF	0	0 OK
BERR-SD	0	0 OK
ES-L	1	
SES-L	0	
UAS-L	0	
ES-LFE	3	
SES-LFE	3	
UAS-LFE	0	

SONET path:

BIP-B3	1	35
REI-P	1	7
LOP-P	0	0 OK
AIS-P	0	0 OK
RDI-P	0	0 OK
UNEQ-P	0	0 OK
PLM-P	1	1 OK
ES-P	1	
SES-P	0	
UAS-P	0	
ES-PFE	1	
SES-PFE	0	
UAS-PFE	0	

Received SONET overhead:

F1 : 0x00, J0 : 0x00, K1 : 0x00, K2 : 0x00
 S1 : 0x00, C2 : 0x04, C2(cmp) : 0x04, F2 : 0x00
 Z3 : 0x00, Z4 : 0x00, S1(cmp) : 0x00

Transmitted SONET overhead:

```

F1   : 0x00, J0   : 0x01, K1   : 0x00, K2   : 0x00
S1   : 0x00, C2   : 0x04, F2   : 0x00, Z3   : 0x00
Z4   : 0x00
Received path trace: t3-0/1/0:0
74 33 2d 30 2f 31 2f 30 3a 30 00 00 00 00 0d 0a  t3-0/1/0:0.....
Transmitted path trace: t3-0/3/0:0
74 33 2d 30 2f 33 2f 30 3a 30 00 00 00 00 00 00  t3-0/3/0:0.....
Packet Forwarding Engine configuration:
Destination slot: 0, PLP byte: 1 (0x00)
CoS transmit queue      Bandwidth      Buffer Priority Limit
                        %      bps %      bytes
0 best-effort           95    42499200 95      0    low  none
3 network-control       5     2236800  5      0    low  none

```

What It Means The sample output shows that there are no active alarms or active defects, either with the T3 media or the SONET layer. If alarms or errors occur, you must troubleshoot the T3 media or the SONET layer. For more information on diagnosing a T3 media problem, see “Investigate T3 Interfaces” on page 49. For more information about diagnosing a SONET layer problem, see “Investigate SONET Interfaces” on page 127.

When a major error (such as an alarm indication signal [AIS]) is seen for a few consecutive frames, a defect is declared within 1 second from detection. At the defect level, the interface is taken down and routing protocols are immediately notified (this is the default). In most cases, when a defect persists for 2.5 seconds plus or minus 0.5 seconds, an alarm is declared.

Notification messages are logged at the alarm level. Depending on the type of T3 alarm, you can configure the craft panel to display the red or yellow alarm LED and simultaneously have the alarm relay activate a physically connected device (such as a bell).



NOTE: T3 is a general term used to refer to the transmission of 44.736-Mbps digital circuits over any media. T3 can be transported over copper, fiber, or radio. DS-3 is the term for the electrical signal found at the metallic interface for this circuit where most of the testing is performed.

Table 60 shows T3 media-specific alarms or errors that can render the interface unable to pass packets.

Table 60: T3 Interface Error Counter Definitions

T3 Alarm or Error	Definition
AIS	Alarm indication signal
EXZ	Excessive zeros
FERF	Far-end failures
IDLE	Idle code detected
LCV	Line code violation
LOS	Loss of signal
LOF	Loss of frame
YLW	Remote defect indication (yellow alarm)
PLL	Phase locked loop

See “Locate T3 Alarms and Errors” on page 71 for more details on T3 alarms and statistics.

Display Channelized OC-12 IQ Alarms and Errors

Action To display Channelized OC-12 IQ interface alarms and errors, use the following JUNOS CLI operational mode command:

```
user@host> show interfaces interface-type-interface-name extensive
```

Sample Output 1 The following sample output is for a controller interface:

```
user@host> show interfaces coc12-0/0/0 extensive
Physical interface: coc12-0/0/0, Enabled, Physical link is Up
Interface index: 138, SNMP ifIndex: 82, Generation: 21
Link-level type: Controller, Clocking: Internal, SONET mode, Speed: OC12,
Loopback: None, Parent: None
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Link flags   : None
Hold-times   : Up 0 ms, Down 0 ms
CoS queues   : 4 supported
Last flapped : 2004-05-18 21:25:45 UTC (2d 00:04 ago)
Statistics last cleared: Never
SONET alarms : None
SONET defects : None
SONET PHY:      Seconds      Count State
PLL Lock        0           0 OK
PHY Light       0           0 OK
SONET section:
BIP-B1          0           0
SEF             77          1 OK
LOS             77          1 OK
LOF             77          1 OK
ES-S           77
SES-S           77
SEFS-S          77
SONET line:
BIP-B2          0           0
REI-L          82584      1274876
RDI-L           5           1 OK
AIS-L           0           0 OK
BERR-SF         77          1 OK
BERR-SD         2           1 OK
ES-L            77
SES-L           77
UAS-L           67
ES-LFE          82589
SES-LFE         5
UAS-LFE         0
Received SONET overhead:
F1   : 0x00, J0   : 0x00, K1   : 0x00, K2   : 0x00
S1   : 0x00
Transmitted SONET overhead:
F1   : 0x00, J0   : 0x01, K1   : 0x00, K2   : 0x00
S1   : 0x00
```

Sample Output 2 The following sample output is for a T1 channel on a Channelized OC-12 IQ interface:

```

user@host> show interfaces t1-0/0/0:2:1 extensive
Physical interface: t1-0/0/0:2:1, Enabled, Physical link is Up
  Interface index: 186, SNMP ifIndex: 133, Generation: 69
  Link-level type: PPP, MTU: 1504, Clocking: Internal, Speed: T1,
  Loopback: None, FCS: 16, Framing: ESF,
  Parent: coc1-0/0/0:2 Interface index 185
  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 : 444 (last seen 00:00:05 ago)
    Output: 442 (last sent 00:00:09 ago)
  LCP state: Opened
  NCP state: inet: Opened, inet6: Not-configured, iso: Not-configured, mpls:
  Not-configured
  CHAP state: Not-configured
  CoS queues   : 4 supported
  Last flapped : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes :      10948      0 bps
    Output bytes :      11792      0 bps
    Input packets:       892      0 pps
    Output packets:       940      0 pps
  Input errors:
    Errors: 2, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
    Policed discards: 2, L3 incompletes: 0, L2 channel errors: 0,
    L2 mismatch timeouts: 0, HS link CRC errors: 0, SRAM errors: 0
  Output errors:
    Carrier transitions: 1, Errors: 0, Drops: 0, Aged packets: 0
  Queue counters:
    Queued packets  Transmitted packets  Dropped packets
  0 best-effort      3           3           0
  1 expedited-fo     0           0           0
  2 assured-forw     0           0           0
  3 network-cont     937          937          0
DS1 alarms : None
DS1 defects : None
T1 media:
  Seconds  Count  State
  SEF      1      1 OK
  BEE      2      2 OK
  AIS      0      0 OK
  LOF     108      1 OK
  LOS      0      0 OK
  YELLOW    0      0 OK
  BPV      0      0
  EXZ      0      0
  LCV      1      1
  PCV      0      0
  CS        0      0
  LES     108
  ES      108
  SES      108
  SEFS     108
  BES      0
  UAS     116
  HDLC configuration:
    Policing bucket: Disabled

```

```

Shaping bucket : Disabled
Giant threshold: 1514, Runt threshold: 0
Timeslots      : All active
Line encoding: B8ZS, Byte encoding: Nx64K
Buildout       : 0 to 132 feet
Data inversion: Disabled, Idle cycle flag: flags, Start end flag: shared
DS1 BERT configuration:
  BERT time period: 10 seconds, Elapsed: 0 seconds
  Induced Error rate: 10e-0, Algorithm: 2^15 - 1, O.151, Pseudorandom (9)
SONET alarms : None
SONET defects : None
SONET vt:
  BIP-BIP2      0      0
  REI-V         25     25
  LOP-V         93     1 OK
  AIS-V         0      0 OK
  RDI-V         0      0 OK
  UNEQ-V        0      0 OK
  PLM-V         93     1 OK
  ES-V          93
  SES-V         93
  UAS-V         83
  ES-VFE        25
  SES-VFE       25
  UAS-VFE       0
Received SONET overhead:
  V5 : 0x02, V5(cmp) : 0x02
Transmitted SONET overhead:
  V5 : 0x02
Packet Forwarding Engine configuration:
  Destination slot: 0, PLP byte: 4 (0x00)

Logical interface t1-0/0/0:2:1.0 (Index 70) (SNMP ifIndex 134)
(Generation 15)
Flags: Point-To-Point SNMP-Traps Encapsulation: PPP
Protocol inet, MTU: 1500, Generation: 24, Route table: 0
Flags: None
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 20.20.20.4/30, Local: 20.20.20.5, Broadcast: 20.20.20.7,
  Generation: 29

```

What It Means The sample output shows that there are no active alarms or active defects. If alarms or errors occur, you must troubleshoot the channel media or the SONET layer. For more information, see the sections of this guide that correspond to the media with which you are working. For example, see “Investigate T1 Interfaces” on page 21, “Investigate T3 Interfaces” on page 49, or “Investigate SONET Interfaces” on page 127.

When a major error (such as an AIS) is seen for a few consecutive frames, a defect is declared within 1 second from detection. At the defect level, the interface is taken down and routing protocols are immediately notified (this is the default). In most cases, when a defect persists for 2.5 seconds plus or minus 0.5 seconds, an alarm is declared.