Chapter 12

Locate ATM Alarms and Errors

This chapter describes the most common Asynchronous Transfer Mode (ATM) alarms and errors on both ATM1 and ATM2 intelligent queuing (IQ) interfaces that you can encounter on a Juniper Networks router. (See Table 23.)

Table 23: List of Common ATM Alarms and Errors

ATM Alarms and Errors Task	Command or Action
Display ATM1 and ATM2 Alarms and Errors on page 120	show interfaces at-*fpc*/*pic*/*port* extensive See “Locate SONET Alarms and Errors” on page 151. See “Locate T3 Alarms and Errors” on page 71.

Display ATM1 and ATM2 Alarms and Errors

Purpose The alarms and errors that appear on an ATM1 or an ATM2 IQ interface are identical. ATM alarms and errors are dependent on the ATM interface media. If the ATM interface is an OC-3 or OC-12 interface media, the media statistics are SONET statistics. If the ATM interface is a T3 interface media, the media statistics are T3 statistics.

For information on determining the type of ATM interface on your router, see "Determine ATM Interface Type" on page 79.

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

user@host> **show interfaces at-***fpc*/*pic*/*port* **extensive**

Sample Output 1

```
user@host> show interfaces at-2/0/0 extensive
Physical interface: at-2/0/0, Enabled, Physical link is Up
  Interface index: 22, SNMP ifIndex: 42, Generation: 21
  Link-level type: ATM-PVC, MTU: 4482, Clocking: Internal, SONET mode, Speed: OC3, Loopback: None, Payload
scrambler: Enabled
  Device flags   : Present Running
  Link flags     : None
  Hold-times     : Up 0 ms, Down 0 ms
  Statistics last cleared: 2002-07-29 14:28:14 EDT (00:00:26 ago)
  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, Invalid VCs: 0, Framing errors: 0, Policed discards: 0, L3 incompletes: 0, L2 channel errors: 0,
    L2 mismatch timeouts: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0
  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                   0           0  OK
    LOS                   0           0  OK
    LOF                   0           0  OK
    ES-S                  0
    SES-S                 0
    SEFS-S                0
  SONET line:
    BIP-B2                0           0
    REI-L                 0           0
    RDI-L                 0           0  OK
    AIS-L                 0           0  OK
    BERR-SF               0           0  OK
    BERR-SD               0           0  OK
    ES-L                  0
    SES-L                 0
    UAS-L                 0
    ES-LFE                0
    SES-LFE               0
```

```
  UAS-LFE                 0
SONET path:
  BIP-B3                  0          0
  REI-P                   0          0
  LOP-P                   0          0  OK
  AIS-P                   0          0  OK
  RDI-P                   0          0  OK
  UNEQ-P                  0          0  OK
  PLM-P                   0          0  OK
  ES-P                    0
  SES-P                   0
  UAS-P                   0
  ES-PFE                  0
  SES-PFE                 0
  UAS-PFE                 0
Received SONET overhead:
  F1     : 0x00, J0     : 0x00, K1     : 0x00, K2     : 0x00
  S1     : 0x00, C2     : 0x13, C2(cmp) : 0x13, F2     : 0x00
  Z3     : 0x00, Z4     : 0x00, S1(cmp) : 0x00, V5     : 0x00
  V5(cmp) : 0x00
Transmitted SONET overhead:
  F1     : 0x00, J0     : 0x01, K1     : 0x00, K2     : 0x00
  S1     : 0x00, C2     : 0x13, F2     : 0x00, Z3     : 0x00
  Z4     : 0x00, V5     : 0x00
ATM status:
  HCS state:     Sync
  LOC     :      OK
ATM Statistics:
  Uncorrectable HCS errors: 0, Correctable HCS errors: 0, Tx cell FIFO overruns: 0, Rx cell FIFO overruns: 0,
  Rx cell FIFO underruns: 0, Input cell count: 0, Output cell count: 8830024, Output idle cell count: 8830026,
  Output VC queue drops: 0, Input no buffers: 0, Input length errors: 0, Input timeouts: 0, Input invalid VCs: 0,
  Input bad CRCs: 0, Input OAM cell no buffers: 0
PFE configuration:
  Destination slot: 2
  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 at-2/0/0.0 (Index 29) (SNMP ifIndex 49) (Generation 28)
  Flags: Point-To-Point SNMP-Traps Encapsulation: ATM-SNAP
  Traffic statistics:
   Input  bytes  :                0
   Output bytes  :                0
   Input  packets:                0
   Output packets:                0
  Local statistics:
   Input  bytes  :                0
   Output bytes  :                0
   Input  packets:                0
   Output packets:                0
  Transit statistics:
   Input  bytes  :                0                0 bps
   Output bytes  :                0                0 bps
   Input  packets:                0                0 pps
   Output packets:                0                0 pps
  Protocol inet, MTU: 4470, Flags: None, Generation: 31 Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: 192.168.1.0/30, Local: 192.168.1.1, Broadcast: Unspecified, Generation: 59
  VCI 1.100
    Flags: Active
```

```
  Total down time: 0 sec, Last down: Never
  ATM per-VC transmit statistics:
   Tail queue packet drops: 0
  Traffic statistics:
   Input  bytes :                0
   Output bytes :                0
   Input  packets:               0
   Output packets:               0
```

What It Means Sample output 1 shows the error statistics for an OC-3 ATM interface. SONET alarms and errors fall into three different areas of the output: section, line, and path. See “Locate SONET Alarms and Errors” on page 151 for information on SONET alarms.

Sample Output 2

```
user@host> show interfaces at-3/1/0 extensive
Physical interface: at-3/1/0, Enabled, Physical link is Up
  Interface index: 57, SNMP ifIndex: 66, Generation: 56
  Description: customer
  Link-level type: ATM-PVC, MTU: 4482, Clocking: Internal, Speed: T3, Loopback: None,
  Payload scrambler: Disabled, Mode: C/Bit parity, Line build-out: 10, ATM Encapsulation: PLCP
  Device flags   : Present Running
  Link flags     : None
  Hold-times     : Up 0 ms, Down 0 ms
  Statistics last cleared: 2002-07-30 15:36:58 UTC (00:00:02 ago)
  Traffic statistics:
   Input  bytes :            270798            1067704 bps
   Output bytes :           2260295            8911952 bps
   Input  packets:             2001                986 pps
   Output packets:             2506               1235 pps
  Input errors:
    Errors: 0, Drops: 0, Invalid VCs: 0, Framing errors: 0, Policed discards: 0, L3 incompletes: 0,
    L2 channel errors: 0, L2 mismatch timeouts: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0
  Active alarms  : None
  Active defects : None
  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
    YELLOW                0           0  OK
    EXZ                   0           0
    LCV                   0           0
    PCV                   0           0
    FERR                  0           0
    LES                   0
    PES                   0
    PSES                  0
    SEFS                  0
    UAS                   0
  PLCP defects:       Seconds       Count  State
    LOF                   0           0
    YELLOW                0           0
  ATM defects:        Seconds       Count  State
    LCD                   0           0
  ATM status:
    HCS state:     Hunt
    LOC     :      OK
  PLCP statistics (errored seconds):
    Framing errors             : 0(0)
    Bit interleaved parity errors: 0(0)
```

```
  Far end block errors        : 0(0)
ATM Statistics:
  Uncorrectable HCS errors: 0, Correctable HCS errors: 0, Tx cell FIFO overruns: 0,
  Rx cell FIFO overruns: 0, Rx cell FIFO underruns: 0, Input cell count: 7716,
  Output cell count: 191980, Output idle cell count: 144302, Output VC queue drops: 0,
  Input no buffers: 0, Input length errors: 0, Input timeouts: 0, Input invalid VCs: 0,
  Input bad CRCs: 0, Input OAM cell no buffers: 0
PFE configuration:
  Destination slot: 3
  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 at-3/1/0.0 (Index 25) (SNMP ifIndex 85) (Generation 44)
  Flags: Point-To-Point Inverse-ARP SNMP-Traps Encapsulation: ATM-SNAP
  Traffic statistics:
   Input  bytes  :             270798
   Output bytes  :            2260295
   Input  packets:               2001
   Output packets:               2506
  Local statistics:
   Input  bytes  :                  0
   Output bytes  :                  0
   Input  packets:                  0
   Output packets:                  0
  Transit statistics:
   Input  bytes  :             270798             1067704 bps
   Output bytes  :            2260295             8911952 bps
   Input  packets:               2001                986 pps
   Output packets:               2506               1235 pps
  Protocol inet, MTU: 4470, Flags: None, Generation: 51 Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: 10.10.65.176/30, Local: 10.10.65.177, Broadcast: Unspecified, Generation: 88
  VCI 0.5
    Flags: Active, Inverse-ARP
    Total down time: 0 sec, Last down: Never
    ATM per-VC transmit statistics:
     Tail queue packet drops: 0
    Traffic statistics:
     Input  bytes  :             270798
     Output bytes  :            2260295
     Input  packets:               2001
     Output packets:               2506
```

What It Means Sample output 2 shows the error statistics for a T3 ATM interface. See “Locate T3 Alarms and Errors” on page 71 for information on T3 alarms.

Table 24 describes the input and output errors that appear in the extensive output for an ATM interface.

Table 24: ATM Interface Input and Output Errors

Error	Description	Reason for Error
Input Errors		
Errors	Sum of the incoming frame aborts and frame check sequence (FCS) errors.	

Drops	Number of packets dropped by the output queue of the I/O Manager ASIC.	If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's random early detection (RED) mechanism.
Invalid VCs	Number of cells that arrived for a nonexistent virtual circuit (VC).	
Framing errors	Sum of ATM Adaptation Layer (AAL5) packets that have FCS errors, AAL5 packets that have reassembly timeout errors, and AAL5 packets that have length errors.	
Policed discards	Frames that the incoming packet match code discarded because they were not recognized or of interest.	Usually, this field reports protocols that the JUNOS software does not handle, such as the Cisco Discovery Protocol (CDP).
L3 incompletes	Number of packets discarded due to the packets failing Layer 3 header checks.	Increments when the incoming packet fails Layer 3 (usually IPv4) sanity checks of the header. For example, a frame with less than 20 bytes of available IP header would be discarded and this counter would increment.
L2 channel errors	Errors that occurred when the software could not find a valid logical interface for an incoming frame.	This counter increments when the software cannot find a valid logical interface for an incoming frame.
L2 mismatch timeouts	Count of malformed or short packets.	Count of malformed or short packets that cause the incoming packet handler to discard the frame as unreadable.
Output Errors		
Carrier transitions	Number of times the interface went from down to up.	This number should not increment quickly and should increase only when the cable is unplugged, the far-end system is powered down and up, or a similar problem occurs. If it increments quickly (perhaps once every 10 seconds), then the cable, the far-end system, or the Physical Interface Card (PIC) is broken.
Errors	Sum of the outgoing frame aborts and FCS errors.	
Drops	Number of packets dropped by the output queue of the I/O Manager ASIC.	If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.
Aged packets	Number of packets that remained in shared packet SDRAM for so long that the system automatically purged them.	The value in this field should never increment. If it does, it is most likely a software bug or possibly broken hardware.

Table 25 lists ATM media-specific alarms and defects that can render the interface unable to pass packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the router configuration, an alarm can ring the red or yellow alarm bell on the router or trigger the red or yellow alarm LED on the craft interface. For complete explanations of most of these alarms and defects, see Chapter 6 in *GR-253, Synchr onous Optical Netw ork (SONET) T ransport Sy stems: Common Generic Criteria* .

Table 25: ATM Active Alarms and Defects

Alarm	Description
AIS	Alarm indication signal
- AIS-L	Alarm indication signal (line)

- AIS-P	Alarm indication signal (path)
BERR	Bit error rate
- BERR-SD	Bit error rate defect–signal degrade
- BERR-SF	Bit error rate fault–signal fail
EXZ	Excessive zeros
FERF	Far end receive failures
IDLE	Idle code detected
LCD	Loss of cell delineation
LCV	Line code violation
LOC	Loss of cell delineation
LOF	Loss of frame
LOL	Loss of light
LOP	Loss of pointer
LOS	Loss of signal
PLL	Phase-locked loop out of lock
PLCP_LOF	Loss of PLCP frame alarm
PLCP_YLW PLCP	Alarm at the remote end
PLM-P	Payload label mismatch
RDI	Remote defect indication
- RDI-L	Remote defect indication (line)
- RDI-P	Remote defect indication (path)
REI	Remote error indication
SEF	Severely errored frame
UNEQ	Unequipped
YLW	Remote defect indication (yellow alarm)