

Chapter 20

Locate the Fast Ethernet and Gigabit Ethernet LINK Alarm and Counters

This chapter describes the LINK alarm and major counters associated with Fast Ethernet and Gigabit Ethernet interfaces. (See Table 45.) The LINK alarm is the only Fast Ethernet or Gigabit Ethernet alarm encountered when isolating line problems on a Juniper Networks router.

Table 45: Checklist for Locating Fast Ethernet and Gigabit Ethernet Alarms and Counters

Fast Ethernet and Gigabit Ethernet Alarm and Counter Tasks	Command or Action
Display the Fast Ethernet or Gigabit Ethernet Interface LINK Alarm on page 206	show interfaces (fe-fpc/pic/port ge-fpc/pic/port) extensive
Fast Ethernet and Gigabit Ethernet Counters on page 208	

Display the Fast Ethernet or Gigabit Ethernet Interface LINK Alarm

Action To display the Fast Ethernet or Gigabit Ethernet LINK alarm, use the following JUNOS command-line interface (CLI) operational mode command:

```
user@host> show interfaces (fe-fpc/pic/port | ge-fpc/pic/port) extensive
```

Sample Output The following sample output is for a Fast Ethernet interface:

```
user@host> show interfaces fe-1/3/3 extensive
Physical interface: fe-1/3/3, Enabled, Physical link is Down
Interface index: 47, SNMP ifIndex: 38
Description: Test
Link-level type: Ethernet, MTU: 1514, Source filtering: Disabled
Speed: 100mbps, Loopback: Disabled, Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps
Link flags   : None
Current address: 00:90:69:8d:2c:de, Hardware address: 00:90:69:8d:2c:de
Statistics last cleared: 2002-01-11 23:03:09 UTC (1w2d 23:54 ago)
Traffic statistics:
Input bytes :      373012658          0 bps
Output bytes :      153026154        1392 bps
Input packets:      1362858          0 pps
Output packets:      1642918          3 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 503660
L3 incompletes: 1, L2 channel errors: 0, L2 mismatch timeouts: 0
FIFO errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Collisions: 0, Drops: 0, Aged packets: 0
HS link CRC errors: 0, FIFO errors: 0
Active alarms : LINK
Active defects : LINK
MAC statistics:
Total octets          Receive      Transmit
Total packets        439703575    177452093
Unicast packets      1866532      1642916
Broadcast packets     972137      1602563
Multicast packets     30          2980
CRC/Align errors     894365      37373
FIFO errors           0           0
MAC control frames    0           0
MAC pause frames      0           0
Oversized frames      0
Jabber frames         0
Fragment frames       0
VLAN tagged frames    0
Code violations       0
Filter statistics:
Input packet count    1866532
Input packet rejects  0
Input DA rejects      503674
Input SA rejects      0
Output packet count   1642916
Output packet pad count 0
Output packet error count 0
CAM destination filters: 5, CAM source filters: 0
Autonegotiation information:
Negotiation status: Complete, Link partner status: OK
Link partner: Full-duplex, Flow control: None
```

```

PFE configuration:
Destination slot: 1, Stream number: 15
CoS transmit queue bandwidth:
  Queue0: 95, Queue1: 0, Queue2: 0, Queue3: 5
CoS weighted round-robin:
  Queue0: 95, Queue1: 0, Queue2: 0, Queue3: 5
Logical interface fe-1/3/3.0 (Index 8) (SNMP ifIndex 69)
Description: Test
Flags: SNMP-Traps, Encapsulation: ENET2
Protocol inet, MTU: 1500, Flags: None
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 10.115.107.192/29, Local: 10.115.107.193
  Broadcast: 10.115.107.199

```

What It Means The sample output shows where the alarm and other errors might be occurring and any counters that are incrementing. The only alarm associated with Fast Ethernet or Gigabit Ethernet interfaces is the LINK alarm. A LINK alarm indicates a physical problem. To isolate where the physical problem might be occurring, conduct loopback testing. See “Use Loopback Testing for Fast Ethernet and Gigabit Ethernet Interfaces” on page 195 for information on conducting a loopback test.



NOTE: Since link status is polled once every second, some items that require fast link down detection, such as Multiprotocol Label Switching (MPLS) fast reroute, take longer to execute.

Fast Ethernet and Gigabit Ethernet Counters

Table 46 shows the major counters that appear in the output for the `show interfaces fe-fpc/pic/port extensive` and the `show interfaces ge-fpc/pic/port extensive` commands. These counters generally increment when there is a problem with a Fast Ethernet or Gigabit Ethernet interface. In the Counters column, the counters are listed in the order in which they are displayed in the output.

Table 46: Major Fast Ethernet and Gigabit Ethernet Counters

Counter	Description	Reason for Increment
Input Errors:		
Errors	The sum of the incoming frame aborts and frame check sequence (FCS) errors.	
Policed discards	The frames discarded by the incoming packet match code.	The frames were 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).
Drops	The number of packets dropped by the output queue of the I/O Manager application-specific integrated circuit (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.
L3 incompletes	The number of packets discarded due to the packets failing Layer 3 header checks.	This counter increments when the incoming packet fails Layer 3 (usually IPv4) 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	The errors that occur when the software could not find a valid logical interface (such as fe-1/2/3.0) for an incoming frame.	This error increments when, for example, a lookup for a virtual LAN (VLAN) fails.
L2 mismatch timeouts	The count of malformed or short packets.	The malformed or short packets cause the incoming packet handler to discard the frame and be unreadable.
FIFO errors	The number of first in, first out (FIFO) errors in the receive direction as reported by the ASIC on the Physical Interface Card (PIC).	The value in this field should always be 0. If this value is not zero, the PIC is probably broken.
Output Errors		
Errors	The sum of outgoing frame aborts and FCS errors.	
Collisions	The number of Ethernet collisions.	The Fast Ethernet PIC supports only full-duplex operation, so this number should always remain 0. If it is incrementing, there is a software bug.
Drops	The 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	The 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 increments, it is probably a software bug or broken hardware.

Counter	Description	Reason for Increment
HS link FCS errors, FIFO errors	The number of errors on the high-speed links between the ASICs responsible for handling the router interfaces.	The value in this field should always be 0. If it increments, either the FPC or the PIC is broken.
Miscellaneous Counters		
Input DA rejects	The number of packets that the filter rejected because the destination Media Access Control (MAC) address of the packet is not on the <i>accept</i> list.	It is normal for this value to increment. When it increments very quickly and no traffic is entering the router from the far-end system, either there is a bad Address Resolution Protocol (ARP) entry on the far-end system, or multicast routing is not on and the far-end system is sending many multicast packets to the local router (which the router is rejecting).
Output packet pad count	The number of packets that the filter padded to the minimum Ethernet size (60 bytes) before giving the packet to the MAC hardware.	Usually, padding is done only on small ARP packets, but some very small Internet Protocol (IP) packets can also require padding. If this value increments rapidly, either the system is trying to find an ARP entry for a far-end system that does not exist, or it is misconfigured.
Output packet error count	Number of packets with an indicated error that the filter was given to transmit.	These packets are usually aged packets or are the result of a bandwidth problem on the FPC hardware. On a normal system, the value of this field should not increment.
CAM destination filters, CAM source filters	The number of entries in the content-addressable memory (CAM) dedicated to destination and source MAC address filters.	There can be up to 64 source entries. If source filtering is disabled, which is the default, the value for these fields should be 0.

