

Chapter 10

Verify Physical Interfaces on the Router

This chapter describes how to check the physical interfaces on a Juniper Networks router. (See Table 28.)

Table 28: Checklist for Verifying Physical Interfaces on a Router

Verify Physical Interfaces Tasks	Command or Action
Check Physical Interfaces on a Router on page 102	
1. Display Summary Interface Information on page 102	show interfaces terse show interfaces terse <i>interface-name</i>
2. Display Detailed Interface Information on page 103	show interfaces <i>interface-name</i> extensive
Display Real-Time Statistics about a Physical Interface on page 107	monitor interface <i>interface-name</i>
Check System Logging on page 109	show log messages match <i>interface-name</i>

Check Physical Interfaces on a Router

Purpose When you check the physical interfaces on a router, you gather information to quickly diagnose problems.

Steps To Take To check the physical interfaces on a router, follow these steps:

1. Display Summary Interface Information on page 102
2. Display Detailed Interface Information on page 103

Step 1: Display Summary Interface Information

Purpose By displaying a summary of the interfaces on a router, you begin the process of isolating problems when they occur.

Action To display a summary of all interfaces on a router or a specific group of interfaces, use one of the following JUNOS command-line interface (CLI) operational mode commands:

```
user@host> show interfaces terse
user@host> show interfaces terse interface-name
```

Sample Output The following sample output shows all interfaces on a router:

```
user@host> show interfaces terse
Interface           Admin Link Proto Local                               Remote
so-5/0/0            up    down
t3-6/0/0            up    down
t3-6/0/1            up    down
t3-6/0/2            up    down
t3-6/0/3            up    down
at-6/1/0            up    down
fe-7/0/0            up    up
fe-7/0/0.0          up    up    vpls
fe-7/0/1            up    up
fe-7/0/2            up    up
fe-7/0/3            up    up
t3-7/1/0            up    down
t3-7/1/1            up    down
t3-7/1/2            up    down
t3-7/1/3            up    down
dsc                 up    up
fxp0                up    up
fxp0.0              up    up    inet  10.168.4.32/24
fxp1                up    up
fxp1.0              up    up    tnp   4
gre                 up    up
ipip                up    up
lo0                 up    up
lo0.0               up    up    inet  127.0.0.1          --> 0/0
lsi                 up    up
mtun                up    up
pimd                up    up
ptime               up    up
tap                 up    up
```

The following sample output is for a specific group of SONET interfaces on a router:

```
user@host> show interfaces terse so*
so-0/0/0      up    up
so-0/0/0.1    up    down inet 10.1.13.2/30
              iso
so-0/0/0.2    up    down inet 10.1.23.2/30
              iso
so-0/0/0.4    up    down inet 10.1.34.1/30
              iso
so-0/0/0.5    up    up    inet 10.1.35.1/30
              iso
so-0/0/1      up    up
so-0/0/2      up    up
so-0/0/3      up    up
              iso
              iso
              iso
              iso
              iso
              iso
47.0005.80ff.f800.0000.0108.0001.0102.5524.5219.00
```

What It Means The sample output shows summary information about the interfaces on the router listed in order of type of interface. The information includes the name of the interface, whether it is turned on (up) or off (down), whether the state of the link is up or down, the protocol configured on the interface, the local address of the interface, and the address of the remote side of the connection if the interface is a point-to-point interface.

Step 2: Display Detailed Interface Information

Purpose Detailed interface information is useful when you need to further investigate the status of an interface after you have determined that there might be a problem.

Action To display detailed information about the status of an interface, use the following JUNOS CLI operational mode command:

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

Sample Output The sample output is for an ATM interface. The fields vary depending on the type of interface.

```
user@host> show interfaces at-7/0/0 extensive
Physical interface: at-7/0/0, Enabled, Physical link is Up
  Interface index: 101, SNMP ifIndex: 106, Generation: 100
  Description: bangkok51 at-1/1/0
  Link-level type: ATM-PVC, MTU: 4482, Clocking: Internal, SONET mode,
  Speed: OC12, Loopback: None,
  Payload scrambler: Enabled
  Device flags   : Present Running
  Link flags     : None
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 00:90:69:10:c7:72
  Last flapped   : 2002-05-23 12:12:18 PDT (1d 03:20 ago)
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes   :          9526697          744 bps
    Output bytes  :         10458384          496 bps
```

```

Input packets:          129969          0 pps
Output packets:         126940          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       1      9
  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      183
  REI-L        1      323
  RDI-L        0      0 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       1
  SES-LFE      0
  UAS-LFE      0
SONET path:
  BIP-B3       1      31
  REI-P        1      216
  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         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      : 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: 77, Correctable HCS errors: 5, Tx cell
FIFO overruns: 0,

```

```

Rx cell FIFO overruns: 1, Rx cell FIFO underruns: 0, Input cell
count: 421980,
Output cell count: 139110927341, Output idle cell count: 1671702365,
Output VC queue drops: 0,
Input no buffers: 0, Input length errors: 0, Input timeouts: 0,
Input invalid VCs: 143301,
Input bad CRCs: 0, Input OAM cell no buffers: 0
Packet Forwarding Engine configuration:
Destination slot: 7
CoS transmit queue      Bandwidth      Buffer      Priority
Limit
    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-7/0/0.100 (Index 49) (SNMP ifIndex 143) (Generation 76)
Flags: Point-To-Point Inverse-ARP SNMP-Traps Encapsulation: ATM-SNAP
Traffic statistics:
Input bytes :          9993
Output bytes :         16246
Input packets:         151
Output packets:        136
Local statistics:
Input bytes :          9993
Output bytes :         16246
Input packets:         151
Output packets:        136
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: 200 Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 10.9.140.1, Local: 10.9.140.2, Broadcast:
Unspecified, Generation: 106
Protocol iso, MTU: 4470, Flags: None, Generation: 201 Route table: 0
Protocol mpls, MTU: 4458, Flags: None, Generation: 202 Route table: 0
VCI 0.200
Flags: Active, Inverse-ARP, OAM, Shaping
VBR, Peak: 12mbps, Sustained: 10mbps, Burst size: 24, Queue length: 0
OAM, Period 10 sec, Up count: 5, Down count: 4
Total down time: 0 sec, Last down: Never
ATM per-VC transmit statistics:
Tail queue packet drops: 0
OAM F5 cell statistics:
Total received: 49, Total sent: 49
Loopback received: 49, Loopback sent: 49
Last received: 00:00:08, Last sent: 00:00:08
RDI received: 0, RDI sent: 0
AIS received: 0
Traffic statistics:
Input bytes :          9993
Output bytes :         16246
Input packets:         151
Output packets:        136

```

What It Means The sample output shows static status information about this particular ATM interface. For examples of sample output for supported interfaces, see the *JUNOS Network Interfaces Configuration Guide*.

Table 29 lists the interface types supported by the JUNOS software and shows the interface name as it appears in the output.

Table 29: Interface Types Supported by the JUNOS Software

Interface Group	Interface Type	Format of <i>interface-name</i>
ATM	ATM	<i>at-fpc/pic/port</i>
Channelized	Channelized DS-3 to DS-0	<i>ds-fpc/pic/port:T1channel:DS-0 channel t1</i>
	Channelized DS-3 to DS-1	<i>t1-fpc/pic/port:channel t1</i>
	Channelized E1	<i>ds-fpc/pic/port:ds-0 channel e1</i>
	Channelized OC-3 to T1	
	Channelized OC-12 to DS-3	<i>t3-fpc/pic/port:channel</i>
T1, T3, E1, E3	Channelized STM-1 to E1	<i>e1-fpc/pic/port:channel</i>
	E1	<i>e1-fpc/pic/port</i>
	E3	<i>e3-fpc/pic/port</i>
	T1	<i>t1-fpc/pic/port</i>
Ethernet	T3	<i>t3-fpc/pic/port</i>
	Aggregated Ethernet	<i>ae-fpc/pic/port</i>
	Fast Ethernet	<i>fe-fpc/pic/port</i>
	Gigabit Ethernet	<i>ge-fpc/pic/port</i>
	10-Gigabit Ethernet	<i>ge-fpc/pic/port</i>
Multilink	Internal Ethernet	<i>fxp</i>
	Management Ethernet	<i>fxp</i>
SONET/SDH	Frame Relay	<i>ml-fpc/pic/port</i>
	PPP	<i>ml-fpc/pic/port</i>
Other	Aggregated SONET/SDH	<i>as-fpc/pic/port</i>
	SONET/SDH	<i>so-fpc/pic/port</i>
Other	Encryption	<i>es-fpc/pic/port:es</i>
	GRE tunnel	<i>gr-fpc/pic/port</i>
	IP-IP tunnel	<i>ip-fpc/pic/port</i>
	Loopback	<i>lo</i>

Display Real-Time Statistics about a Physical Interface

Purpose Displaying real-time statistics about a physical interface is useful when you need to narrow down possible causes of an interface problem. The **monitor** command checks for and displays common interface failures, indicates whether loopback is detected, and shows any increases in framing errors.



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.

Action To display real-time statistics about a physical interface, use the following JUNOS CLI operational mode command:

```
user@host> monitor interface interface-name
```

Sample Output

```
user@host> monitor interface so-0/0/0
router1                               Seconds: 19                               Time: 15:46:29

Interface: so-0/0/0, Enabled, Link is Up
Encapsulation: PPP, Keepalives, Speed: OC48
Traffic statistics:
    Input packets:                6045 (0 pps)                [11]
    Input bytes:                  6290065 (0 bps)              [13882]
    Output packets:               10376 (0 pps)                [10]
    Output bytes:                 10365540 (0 bps)             [9418]
Encapsulation statistics:
    Input keepalives:              1901                        [2]
    Output keepalives:             1901                        [2]
    NCP state: Opened
    LCP state: Opened
Error statistics:
    Input errors:                  0                          [0]
    Input drops:                   0                          [0]
    Input framing errors:          0                          [0]
    Policed discards:              0                          [0]
    L3 incompletes:                0                          [0]
    L2 channel errors:             0                          [0]
    L2 mismatch timeouts:          0                          [0]
    Carrier transitions:           1                          [0]
    Output errors:                 0                          [0]
    Output drops:                  0                          [0]
    Aged packets:                  0                          [0]
Active alarms : None
Active defects: None
SONET error counts/seconds:
    LOS count                      1                      [0]
    LOF count                      1                      [0]
    SEF count                      1                      [0]
    ES-S                          0                      [0]
    SES-S                          0                      [0]
SONET statistics:
    BIP-B1                        458871                 [0]
    BIP-B2                        460072                 [0]
    REI-L                         465610                 [0]
    BIP-B3                        458978                 [0]
    REI-P                         458773                 [0]
Received SONET overhead:
    F1      : 0x00  J0      : 0x00  K1      : 0x00
    K2      : 0x00  S1      : 0x00  C2      : 0x00
```

```

C2(cmp) : 0x00 F2      : 0x00 Z3      : 0x00
Z4      : 0x00 S1(cmp) : 0x00
Transmitted SONET overhead:
F1      : 0x00 J0      : 0x01 K1      : 0x00
K2      : 0x00 S1      : 0x00 C2      : 0xcf
F2      : 0x00 Z3      : 0x00 Z4      : 0x00

```

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

What It Means The sample output displays real-time statistics about the physical interface (updating them every second), the amount that each field has changed since you started the command or since you cleared the counters by using the **C** key. It also checks for and displays common interface failures, such as SONET/SDH and T3 alarms, detected loopbacks, and increases in framing errors.

To control the output of the command while it is running, use the keys shown in Table 30.

Table 30: Monitor Interface Output Control Keys

Key	Action
N	Display information about the next interface. The monitor interface command scrolls through the physical or logical interfaces in the same order that they are displayed by the show interfaces terse command.
I	Display information about a different interface. The command prompts you for the name of a specific interface.
F	Freeze the display, halting the display of updated statistics.
T	Thaw the display, resuming the display of updated statistics.
C	Clear (zero) the current delta counters since monitor interface was started. It does not clear the cumulative counter.
Q	Stop the monitor interface command.

Check System Logging

Purpose By looking through the messages file for any entries pertaining to the interface that you are interested in, you can further investigate a problem with an interface.

Action To check system logging, use the following JUNOS CLI operational mode command:

```
user@host> show log messages | match interface-name
```

Sample Output

```
user@host> show log messages | match so-0/3/1
May 2 12:10:58 router rpd[729]: RPD_ISIS_ADJDOWN: IS-IS lost L2 adjacency to ABC-CORE-RTR1 on
so-0/3/1.0, reason: Interface Down
May 2 12:11:27 router mib2d[575]: SNMP_TRAP_LINK_DOWN: ifIndex 25, ifAdminStatus up(1), ifOperStatus
down(2), ifName so-0/3/1
May 2 12:11:27 router rpd[729]: RPD_ISIS_ADJDOWN: IS-IS lost L2 adjacency to ABC-CORE-RTR1 on
so-0/3/1.0, reason: Interface Down
May 2 12:11:31 router rpd[729]: RPD_LDP_NBRDOWN: LDP neighbor 130.81.4.109 (so-0/3/1.0) is down
```

What It Means The sample output shows entries in the messages file pertaining to the SONET interface, **so-0/3/1**, and its Intermediate System-to-Intermediate System (IS-IS) adjacencies and Label Distribution Protocol (LDP) neighbors. The entries indicate that the interface went down on May 2 at 12:11:27, and that both the IS-IS adjacency and the LDP neighbor are down.

