Chapter 2

Investigate Interface Steps and Commands

This chapter describes, in a general way, the operational and configuration mode commands you use when investigating interface problems on the following interfaces:

- T1
- T3
- Asynchronous Transfer Mode (ATM) 1 and ATM 2 intelligent queuing (IQ)
- SONET
- Fast Ethernet and Gigabit Ethernet
- Channelized DS-3
- Multichannel DS-3
- Channelized OC-12
- Channelized OC-12 IQ

In operational mode, you monitor and troubleshoot the software, network connectivity, and the router by entering command-line interface (CLI) commands. For additional information about operational mode commands, see the *JUNOS Internet Softw are: Oper ational Mode Command R eference*.

In configuration mode, you configure the interfaces by entering configuration mode and creating a hierarchy of configuration statements. For additional information about configuring the router, see the *JUNOS Sy stem Basics Configur ation Guide*.

Investigate Interface Steps

The investigation process for each interface is described in three chapters which cover a different aspect of the process.

Monitor the interface

Perform a loopback test on the interface

Locate alarms and errors

The monitor interfaces chapter helps you determine the nature of the interface problem. The loopback test chapter provides information to help you isolate the source of the problem. The locate alarms and errors chapter explains some of the alarms and errors for the media.

Monitor Interfaces

The following steps are a general outline of how you monitor interfaces to determine the nature of interface problems. For more detailed information on a specific interface, see the corresponding monitor interfaces chapter.

Steps To Take To monitor interfaces, follow these steps:

1. Display the status of an interface.
2. Display the status of a specific interface.
3. Display extensive status information for a specific interface.
4. Monitor statistics for an interface.

Table 4 lists and describes the operational mode commands you use to monitor interfaces.

Table 4: Commands Used To Monitor Interfaces

CLI Command	Description
show interfaces terse *interface-name* For example: show interfaces terse t1*	Displays summary information about the named interfaces.
show interfaces *interface-name* For example: show interfaces t1-*x*/*x*/*x*	Displays static status information about a specific interface.
show interfaces *interface-name* extensive For example: show interfaces t1-*x*/*x*/*x* extensive	Displays very detailed interface information about a specific interface.
monitor interface *interface-name* For example: monitor interface t1-*x*/*x*/*x*	Displays real-time statistics about a physical interface, updated every second.

Perform a Loopback Test on an Interface

Purpose The following steps are a general outline of how you use loopback testing to isolate the source of the interface problem. For more detailed information on a specific interface, see the corresponding loopback chapter.

Steps To Take To use loopback testing for interfaces, follow these steps:

1. Diagnose a suspected hardware problem.
    a. Create a loopback.
    b. Set clocking to internal. (Not for Fast Ethernet/Gigabit Ethernet or Multichannel DS-3 interfaces)
    c. Verify that the status of the interface is up.
    d. Configure a static address resolution protocol table entry. (Fast Ethernet/Gigabit Ethernet interfaces only)
    e. Clear the interface statistics.
    f. Force the link layer to stay up.
    g. Verify the status of the logical interface.
    h. Ping the interface.
    i. Check for interface error statistics.
2. Diagnose a suspected connection problem.
    a. Create a loop from the router to the network.
    b. Create a loop to the router from various points in the network.

Table 5 lists and describes the operational and configuration mode commands you use to perform loopback testing on interfaces (the commands are shown in the order in which you perform them).

Table 5: Commands Used To Perform Loopback Testing on Interfaces

CLI Statement or Command	Interface Type	Description
[edit interfaces *interface-name interface*-options] set loopback (local | remote)	All interfaces	The loopback statement at the hierarchy level configures a loopback on the interface. Packets can be looped on either the local router or the remote channel service unit (CSU). To turn off loopback, remove the loopback statement from the configuration.
show	All interfaces	Verify the configuration before you commit it.
commit	All interfaces	Save the set of changes to the database and cause the changes to take operational effect. Use after you have verified a configuration in all configuration steps.

CLI Statement or Command	Interface Type	Description
[edit interfaces *interface-name*] set clocking internal	T1, T3, ATM, and SONET interfaces	The clocking statement at this hierarchy level configures the clock source of the interface to internal.
show interfaces *interface-name*	Used for all interfaces	Display static status information about a specific interface.
[edit interfaces *interface-name* unit *logical-unit-number* family inet *address* address] arp *ip-address* mac *mac-address*	Fast Ethernet and Gigabit Ethernet interfaces	The arp statement at this hierarchy level defines mappings between IP and Media Access Control (MAC) addresses.
show arp no-resolve	Fast Ethernet and Gigabit Ethernet interfaces	Display the entries in the ARP table without attempting to determine the hostname that corresponds to the IP address (the no-resolve option).
clear interfaces statistics *interface-name*	All interfaces	Reset the statistics for an interface to zero.
[edit interfaces *interface-name*] set encapsulation cisco-hdlc	T1, T3, SONET, and Multichannel DS-3 interfaces	The encapsulation statement at this hierarchy level sets the encapsulation to the Cisco High-level Data-Link Control (HDLC) transport protocol on the physical interface.
[edit interfaces *interface-name*] set no-keepalives	T1, T3, SONET, and Multichannel DS-3 interfaces	The no-keepalives statement at this level disables the sending of keepalives on the physical interface.
show interfaces *interface-name* terse	T1, T3, and SONET interfaces	Display summary information about interfaces. (Use to display the status of the logical interfaces for these interfaces.)
ping interface t1-*x*/*x*/*x* *local-IP-address* bypass-routing count 1000 rapid	All interfaces	Check the reachability of network hosts by sending ICMP ECHO_REQUEST messages to elicit ICMP ECHO_RESPONSE messages from the specified host. Use the bypass-routing option to ping a local system through an interface that has no route through it. The count option sends 1000 ping requests through the system. Type Ctrl-C to interrupt a ping command.
show interfaces *interface-name* extensive	All interfaces	Display very detailed interface information about a specific interface.

Locate Interface Alarms

Action To locate interface alarms and errors, use the show interfaces *interface-name* extensive command and examine the output for active alarms and defects.