Chapter 30
Router Chassis Configuration Guidelines

You can configure properties of the router chassis, including the clock source, conditions that activate the red and yellow alarm LEDs on the router's craft interface, and SONET/SDH framing and concatenation properties for individual PICs.

To configure router chassis properties, you include statements at the [edit chassis] hierarchy level of the configuration. This section discusses the following tasks:

```
chassis {
    alarm {
        interface-type {
            alarm-name (red | yellow | ignore);
        }
    }
    filter-check days;
    fpc slot-number {
        pic pic-number {
            framing (sdh | sonet);
            no-concatenate;
        }
    }
    (source-route | no-source-route);
    redundancy {
        routing-engine slot-number (master | backup | disabled);
        ssb slot-number (always | preferred);
    }
}
```

This chapter describes the following tasks for configuring the router chassis:

Minimum Chassis Configuration

All the statements at the [edit chassis] hierarchy level of the configuration are optional.

Configure Conditions That Trigger Alarms

For the different types of Physical Interface Connectors (PICs), you can configure which conditions trigger alarms and whether they trigger a red or yellow alarm, or are ignored. Red alarm conditions light the RED ALARM LED on the router's craft interface and trigger an audible alarm if one is connected to the contacts on the craft interface. Yellow alarm conditions light the YELLOW ALARM LED on the router's craft interface and trigger an audible alarm if one is connected to the craft interface.

To configure conditions that trigger alarms and that can occur on any interface of the specified type, include the alarm statement at the [edit chassis] hierarchy level:

```
[edit chassis]
alarm {
    interface-type {
        alarm-name (red | yellow | ignore);
    }
}
```

alarm-name is the name of an alarm. Table 16 lists the system-wide alarms and the alarms for each interface type.

Table 16: Configurable PIC Alarm Conditions

Interface / System	Alarm Condition	Configuration Option
SDH / SONET and ATM	Link alarm indication signal	ais-l
	Path alarm indication signal	ais-p
	Signal degrade (SD)	ber-sd
	Signal fail (SF)	ber-sf
	Loss of cell delineation (ATM only)	locd
	Loss of framing	lof
	Loss of light	lol
	Loss of pointer	lop-p
	Loss of signal	los
	Phase locked loop out of lock	pll
	STS payload label (C2) mismatch	plm-p
	Line remote failure indication	rfi-l
	Path remote failure indication	rfi-p
	STS path (C2) unequipped	uneq-p

Interface / System	Alarm Condition	Configuration Option
T3	Alarm indicator signal	ais
	Excessive numbers of zeros	exz
	Failure of the far end	ferf
	Idle alarm	idle
	Line code violation	lcv
	Loss of frame	lof
	Loss of signal	los
	Phase locked loop out of lock	pll
	Yellow alarm	ylw
Ethernet	Management Ethernet disconnected	link-down

Chassis Conditions That Trigger Alarms

Various conditions related to the chassis components trigger yellow and red alarms. You cannot configure these conditions. Table 17 lists the alarms that the chassis components can generate.

Table 17: Chassis Component Alarm Conditions

Chassis Component	Alarm Condition	Alarm Severity
Air filter	It is time to perform a periodic check of the air filters.	Yellow
Fans	One fan has been removed from the chassis.	Yellow
	Two or more fans have been removed from the chassis.	Red
	One fan in the chassis is installed but not spinning.	Red
Power supplies	A power supply has been removed from the chassis.	Yellow
	A power supply has failed. If both power supplies fail, the router shuts down and the software might report the failures in the syslog file.	Red
Temperature	Chassis temperature has exceeded 54 degrees Centigrade and the fans have been turned on to full speed.	Yellow
	Chassis temperature has exceeded 75 degrees Centigrade and the router has been shut down.	Red
	The temperature sensor has failed.	Red
SCB / SSB / FEB / SFM	The control board (SCB, SSB, FEB, or SFM, depending on model) has failed. If this occurs, the board attempts to reboot.	Red
FPC	An FPC has failed. If this occurs, the FPC attempts to reboot. If the SCB sees that an FPC is rebooting too often, it shuts down the FPC.	Red
Craft interface	The craft interface has failed.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Red

Silence External Devices

You can manually silence external devices connected to the alarm relay contacts by pressing the alarm cutoff button located on the craft interface front panel. Silencing the device does not remove the alarm messages from the display (if present on the router) or extinguish the alarm LEDs. In addition, new alarms that occur after an external device is silenced reactivate the external device.

Configure the Air Filter Alarm

We recommend that you replace the router's air filter every six months. When it is time to replace the air filter, the router activates an alarm. By default, the alarm is activated 183 days (about 6 months) after you last changed the filter. If your machine room is dirtier or dustier than normal, you might want to be reminded to change the air filters more often.

To configure the time at which the air filter alarm is activated, include the filter-check statement at the [edit chassis] hierarchy level:

```
[edit chassis]
filter-check days;
```

The time can range from 1 through 365 days.

To reset the alarm timer after you have changed the filter, issue the clear chassis alarms air-filter command.

Configure SDH/SONET Framing

By default, SDH/SONET PICs use SONET framing. To configure a PIC to use SDH framing, include the framing statement at the [edit chassis fpc *slot-number* pic *pic-number*] hierarchy level, specifying the sdh option:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number framing sdh
[edit chassis]
user@host# show
fpc slot-number {
    pic pic-number {
        framing sdh;
    }
}
```

To explicitly configure a PIC to use SONET framing, include the framing statement at the [edit chassis fpc *slot-number* pic *pic-number*] hierarchy level, specifying the sonet option:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number framing sonet
[edit chassis]
user@host# show
fpc slot-number {
    pic pic-number
        framing sonet;
    }
}
```

Configure Channelized PIC Operation

By default, packet-over-SONET PICs (interfaces with names so-*fpc*/*pic*/*port*) operate in concatenated mode, a mode in which the bandwidth of the interface is in a single channel. To configure a PIC to operate in channelized (multiplexed) mode, include the no-concatenate statement at the [edit chassis fpc *slot-number* pic *pic-number*] hierarchy level:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number no-concatenate
[edit chassis]
user@host# show
fpc slot-number {
    pic pic-number
        no-concatenate;
    }
}
```

When configuring and displaying information about interfaces that are operating in channelized mode, you must specify the channel number in the interface name (*physical:channel*); for example, so-2/2/0:0 and so-2/2/0:1. For more information about interface names, see “Configure the Interface Name” on page 28.

On SONET OC-48 interfaces that are configured for channelized (multiplexed) mode, the bytes e1-quiet and bytes f1 options in the sonet-options statement have no effect. The bytes f2, bytes z3, bytes z4, and path-trace options work correctly on channel 0 and work in the transmit direction only on channels 1, 2, and 3.

The M160 four-port channelized OC-12 PIC can run each of the OC-12 links in concatenated mode only, and requires a Type 2 M160 FPC. The links cannot be configured in non-concatenated mode. Similarly, the four-port OC-3 PIC cannot run in non-concatenated mode on any platform.

Configure the Drop Policy for Traffic with Source-Route Constraints

By default, the router forwards IP traffic that has either loose or strict source-route constraints. However, you might want the router to use only the IP destination address on transit traffic for forwarding decisions. You can configure the router to discard IP traffic with source-route constraints by including the no-source-route statement at the [edit chassis] hierarchy level:

```
[edit chassis]
no-source-route;
```

Configure Redundancy

For routers that have multiple Routing Engines or multiple System and Switch Boards (SSBs), you can configure redundancy properties. This section describes the following tasks for configuring redundancy:

Configure Routing Engine Redundancy on page 358

Configure SSB Redundancy on page 359

Configure Routing Engine Redundancy

For routers with two Routing Engines, you can configure which Routing Engine is the master and which is the backup. By default, the Routing Engine in slot 0 is the master and the one in slot 1 is the backup. To modify the default configuration, include the routing-engine statement at the [edit chassis redundancy] hierarchy level:

```
[edit chassis redundancy]
routing-engine slot-number (master | backup | disabled);
```

slot-number can be 0 or 1. To configure the Routing Engine to be the master, specify the master option. To configure it to be the backup, specify the backup option. To switch between the master and the backup Routing Engines, you must modify the configuration and then activate the configuration by issuing the commit command.

For routers that have two Routing Engines, both Routing Engines must be running JUNOS Release 4.0 or later. Do not run JUNOS Release 3.4 on one of the Routing Engines and Release 4.0 on the other. (Note that JUNOS Release 3.4 does not support Routing Engine redundancy, so if you are using this release of the software, only one Routing Engine can be installed in the router. It can be installed in either slot.)

If you have JUNOS Release 3.4 installed on one of the Routing Engines and Release 4.0 or later on the other, either remove the backup Routing Engine from the router or install Release 4.0 or later on that Routing Engine.

You must also ensure that both Routing Engines have the same configuration file. You can use either the console port or the management Ethernet (fxp0) port to establish connectivity between the two Routing Engines. You can then copy or ftp the configuration from the master to the backup, and load the file and commit it in the normal way. For further information, see the *JUNOS 4.1 Internet Software Configuration Guide: Installation and System Management* .

Copy a Configuration File from one Routing Engine to the Other

To copy a configuration file from one Routing Engine to the other, you use the existing file copy command:

```
user@host > file copy source destination
```

In this case, *source* is the name of the configuration file. These files are stored in the directory /config. The active configuration is /config/juniper.conf, and older configurations are in /config/juniper.conf { 1...9 }. *destination* is a file on the other Routing Engine.

The following is an example of copying a configuration file from Routing Engine 0 to Routing Engine 1:

```
user@host> file copy /config/juniper.conf re1:/var/tmp/copied-juniper.conf
```

To load the file into configuration mode, use the load replace configuration mode command:

```
user@host% load replace /var/tmp/copied-juniper.conf
```

Make sure you change any IP addresses specified in fxp0 on Routing Engine 0 to addresses appropriate for Routing Engine 1.

Load a Package from the Other Routing Engine

You can load a package from the other Routing Engine onto the local Routing Engine using the existing request system software add *package-name* command:

```
user@host > request system software add re(0|1):/filename
```

In the re portion of the URL, specify the number of the other Routing Engine. In the *filename* portion of the URL, specify the path to the package. Packages are typically in the directory /var/sw/pkg.

Configure SSB Redundancy

For routers with two System and Switch Boards, you can configure which SSB is the master and which is the backup. By default, the SSB in slot 0 is the master and the one in slot 1 is the backup. To modify the default configuration, include the ssb statement at the [edit chassis redundancy] hierarchy level:

```
[edit chassis redundancy]
ssb slot-number (always | preferred);
```

slot-number can be 0 or 1.

always defines the ssb as the sole device.

preferred defines the ssb as the preferred device of at least two.