



Junos[®] OS

Router Interfaces



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Junos® OS Router Interfaces

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Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

For the features described in this document, the following platforms are supported:

- ACX Series
- M Series
- MX Series
- T Series
- J Series
- PTX Series

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```


Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:





```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the *CLI User Guide*.

Documentation Conventions

[Table 1 on page xxv](#) defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.

[Table 2 on page xxvi](#) defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	stub <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Enclose a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

GUI Conventions

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>

- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Router Interfaces on page 3](#)

CHAPTER 1

Router Interfaces

- [Router Interfaces Overview on page 4](#)
- [Types of Interfaces Overview on page 4](#)
- [Permanent Interfaces Overview on page 5](#)
- [Understanding Management Ethernet Interfaces on page 5](#)
- [TX Matrix Plus and T1600 Router \(Routing Matrix\) Management Ethernet Interfaces on page 7](#)
- [Supported Routing Engines by Chassis on page 8](#)
- [Understanding Internal Ethernet Interfaces on page 18](#)
- [T1600 Routers \(Routing Matrix\) Internal Ethernet Interfaces on page 20](#)
- [Understanding Transient Interfaces on page 20](#)
- [Understanding Services Interfaces on page 21](#)
- [Container Interfaces Overview on page 22](#)
- [Interface Encapsulations Overview on page 24](#)
- [Interface Descriptors Overview on page 35](#)
- [Interface Naming Overview on page 36](#)
- [Displaying Interface Configurations Overview on page 50](#)

Router Interfaces Overview

Routers typically contain several different types of interfaces suited to various functions. For the interfaces on a router to function, you must configure them, specifying properties such as the interface location (that is, the slot in which the Flexible PIC Concentrator [FPC] or Dense Port Concentrator [DPC] is installed, and the location where the Physical Interface Card [PIC] is installed), the interface type (such as SONET/SDH, Asynchronous Transfer Mode [ATM], or Ethernet), encapsulation, and interface-specific properties. You can configure the interfaces that are currently present in the router, and you can also configure interfaces that are not currently present but that you might add in the future. When a configured interface appears, the Junos OS detects its presence and applies the appropriate configuration to it.

To determine which interfaces are currently installed in the router, issue the **show interfaces terse** operational mode command. If an interface is listed in the output, it is installed in the router. If an interface is not listed in the output, it is not installed in the router.

For information about which PICs are supported on your router, see your router's PIC guide.

You can configure Junos class-of-service (CoS) properties to provide a variety of classes of service for different applications, including multiple forwarding classes for managing packet transmission, congestion management, and CoS-based forwarding. For more information about configuring CoS properties, see the *Junos OS Class of Service Library for Routing Devices*.

Related Documentation

- [Router Interfaces](#)

Types of Interfaces Overview

Interfaces can be permanent or transient, and are used for networking or services:

- Permanent interfaces—Interfaces that are always present in the router.
- Transient interfaces—Interfaces that can be inserted into or removed from the router depending on your network configuration needs.
- Networking interfaces—Interfaces, such as Ethernet or SONET/SDH interfaces, that primarily provide traffic connectivity.
- Services interfaces—Interfaces that provide specific capabilities for manipulating traffic before it is delivered to its destination.
- Container interfaces—Interfaces that support automatic protection switching (APS) on physical SONET links using a virtual container infrastructure.

The Junos OS internally generates nonconfigurable interfaces which are described in *Interfaces Command Reference* and *Services Interfaces*.

Related Documentation

- [Permanent Interfaces Overview on page 5](#)
- [Understanding Transient Interfaces on page 20](#)
- [Understanding Services Interfaces on page 21](#) and *Junos OS Services Interfaces Library for Routing Devices*
- [Container Interfaces Overview on page 22](#)
- See also the following sections regarding specific networking interface technologies used in your routers:
 - *ATM Interfaces Overview*
 - *Channelized Interfaces Overview*
 - *Circuit Emulation Interfaces: Mobile Backhaul and Circuit Emulation Overview*
 - *E1 Interfaces Overview* and *E3 Interfaces Overview*
 - *Ethernet Interfaces Overview*
 - *Frame Relay Overview*
 - *ISDN Interfaces Overview*
 - *SONET/SDH Interfaces Overview*
 - *T1 Interfaces Overview* and *T3 Interfaces Overview*

Permanent Interfaces Overview

Permanent interfaces in the router consist of management Ethernet interfaces and internal Ethernet interfaces, which are described separately in the following topics:

- [Understanding Management Ethernet Interfaces on page 5](#)
- [Understanding Internal Ethernet Interfaces on page 18](#)

Understanding Management Ethernet Interfaces

The management Ethernet interface provides an out-of-band method for connecting to the router using utilities such as ssh and telnet to monitor or configure the router, or the Simple Network Management Protocol (SNMP) to gather statistics from the router. The Junos OS automatically configures the router's management Ethernet interface, as either **em0** or **fxp0**, and the internal Ethernet interface, **em1** or **fxp1**, which connects the Routing Engine with the router's packet-forwarding components.

You can use the **show chassis hardware** command to display hardware information about the router, including its Routing Engine model. The specific Routing Engine model installed in the routers determines which of the two management Ethernet interface types is supported, **em0** or **fxp0**. To determine which management interface type is supported on a router, locate the router and Routing Engine combination in "[Supported Routing Engines by Chassis](#)" on page 8 and note its management Ethernet interface type, either **em0** or **fxp0**.

To use a type **em0** management Ethernet interface as a management port, you must configure its logical port, **em0.0**, with a valid IP address.

To use a type **fxp0** management Ethernet interface as a management port, you must configure its logical port, **fxp0.0**, with a valid IP address.

For the J Series Services Routers, you can use any of the built-in Ethernet ports as a management interface. To use a built-in interface as a management Ethernet interface, configure it with a valid IP address. The factory configuration for the J4350 and J6350 Services Routers automatically enables the J-Web user interface on the **ge-0/0/0**, **ge-0/0/1**, **ge-0/0/2**, and **ge-0/0/3** interfaces. To manually configure J-Web access, include the **interface interface-name** statement at the **[edit system services web-management http]** hierarchy level.



NOTE: Routing Engine upgrade considerations—When upgrading to a Routing Engine that supports em0 from a Routing Engine that supports fxp0, you must convert existing management Ethernet interface references in the router configuration files from fxp0, fxp1, or fxp2 interfaces to em0 interfaces. Whether you use an automated script or edit the configuration files manually, you must revise any command lines that reference the fxp0 management Ethernet interface by replacing “fxp0” with “em0.”



NOTE: Reusing scripts for standalone T1600 routers on T1600 routers in a routing matrix—Automated scripts that you have developed for standalone T1600 routers (T1600 routers that are not in a routing matrix) might contain references to the fxp0 management Ethernet interface. Before reusing the scripts on T1600 routers in a routing matrix, edit the command lines that reference the fxp0 management Ethernet interface so that the commands reference the em0 management Ethernet interface instead.



NOTE: Restricted load-sharing next hops with fxp0—On M Series routers and T Series routers running Junos OS later than Release 7.0R2.7 or Release 7.1R2.2, the fxp0 interface does not support load-sharing next hops. This restriction only affects fxp0 routes.



NOTE: CoS not supported on fxp0—The fxp0 interface does not support CoS.

For information about configuring the speed of management Ethernet interfaces on M Series and T Series routers, see *Configuring the Interface Speed*

For information about establishing basic connectivity and configuring a management port, see the *Getting Started* guide for your router.

Related Documentation

- [PTX Series Packet Transport Router Management Ethernet Interfaces](#)
- [Supported Routing Engines by Chassis on page 8](#)
- [Types of Interfaces Overview on page 4](#)
- [Permanent Interfaces Overview on page 5](#)
- [Understanding Internal Ethernet Interfaces on page 18](#)
- [Understanding Transient Interfaces on page 20](#)
- [Understanding Services Interfaces on page 21](#)
- [Container Interfaces Overview on page 22](#)
- [Interface Encapsulations Overview on page 24](#)
- [Interface Descriptors Overview on page 35](#)
- [Interface Naming Overview on page 36](#)
- [Displaying Interface Configurations Overview on page 50](#)

TX Matrix Plus and T1600 Router (Routing Matrix) Management Ethernet Interfaces

For TX Matrix Plus Routers and for T1600 Core Routers with RE-C1800 configured in a routing matrix, the Junos OS automatically creates the router's management Ethernet interface, **em0**. To use **em0** as a management port, you must configure its logical port, **em0.0**, with a valid IP address.

When you enter the **show interfaces** command on a TX Matrix Plus router, the management Ethernet interfaces (and logical interfaces) are displayed:

```
user@host> show interfaces ?
...
em0
em0.0
...
```



NOTE: The Routing Engines in the TX Matrix Plus router and in the T1600 routers with RE-C1800 configured in a routing matrix do not support the management Ethernet interface **fxp0**, or the internal Ethernet interfaces **fxp1** or **fxp2**.

Related Documentation

- [Understanding Internal Ethernet Interfaces on page 18](#)
- [T1600 Routers \(Routing Matrix\) Internal Ethernet Interfaces on page 20](#)
- [Displaying Internal Ethernet Interfaces for a Routing Matrix with a TX Matrix Plus Router](#)
- [show interfaces \(M Series and T Series Routers, and PTX Series Packet Transport Routers Management and Internal Ethernet\)](#)

Supported Routing Engines by Chassis

The following tables list the Routing Engines that each chassis supports, the first supported release for the Routing Engine in the specified chassis, the management Ethernet interface, and the internal Ethernet interfaces for each Routing Engine.

- [M Series Supported Routing Engines on page 8](#)
- [MX Series Supported Routing Engines on page 10](#)
- [PTX Series Supported Routing Engines on page 13](#)
- [T Series Supported Routing Engines on page 14](#)

M Series Supported Routing Engines

[Table 3 on page 8](#) lists the Routing Engines supported by M Series routers.

Table 3: Supported Routing Engines by M Series Chassis

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
M7I The M7I router supports 32-bit Junos OS only.	RE-400-768	RE-5.0	9.0	fxp0	fxp1
	RE-850-1536	RE-850	7.2	fxp0	fxp1
	RE-B-1800X1-4G	RE-B-1800x1	11.4R4 12.1R2	fxp0	em0
M10I The M10I router supports 32-bit Junos OS only.	RE-400-768	RE-5.0	9.0	fxp0	fxp1 fxp2
	RE-850-1536	RE-850	7.2	fxp0	fxp1 fxp2
	RE-B-1800X1-4G	RE-B-1800x1	11.4R4 12.1R2	fxp0	em0
M40e	RE-600-2048 (EOL details: PSN-2008-02-018)	RE-3.0 or RE-3.0 (RE-600)	5.3	fxp0	fxp1 fxp2
	RE-A-1000-2048	RE-A-1000	8.1	fxp0	fxp1 fxp2

Table 3: Supported Routing Engines by M Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
M120	RE-A-1000-2048	RE-A-1000	8.0R2	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.0R2	fxp0	em0 bcm0
	RE-A-1800x2-8G	RE-A-1800x2	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	fxp1 fxp2
	RE-A-1800x2-16G	RE-A-1800x2	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	fxp1 fxp2

Table 3: Supported Routing Engines by M Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
M320	RE-1600-2048 (EOL details: PSN-2008-02-019)	RE-4.0	6.2	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.1	fxp0	em0 bcm0
	RE-A-1800x2-8G	RE-A-1800x2	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 bcm0
	RE-A-1800x2-16G	RE-A-1800x2	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 bcm0
	RE-A-1800x4-8G	RE-A-1800x4	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-A-1800x4-16G	RE-A-1800x4	32-bit Junos OS: <ul style="list-style-type: none"> • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1

MX Series Supported Routing Engines

Table 4 on page 11 lists the Routing Engines supported by MX Series routers.

Table 4: Supported Routing Engines by MX Series Chassis

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
MX240	RE-S-1300-2048	RE-S-1300	9.0	fxp0	fxp1 fxp2
	RE-S-2000-4096	RE-S-2000	9.0	fxp0	fxp1 fxp2
	RE-S-1800x2-8G	RE-S-1800x2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x2-16G	RE-S-1800X2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-8G	RE-S-1800X4	32-bit Junos OS: • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-16G	RE-S-1800x4	32-bit Junos OS: • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-32G	RE-S-1800X4	32-bit and 64-bit Junos OS: • 12.3R4 • 13.2R1	fxp0	em0, em1

Table 4: Supported Routing Engines by MX Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
MX480	RE-S-1300-2048	RE-S-1300	8.4	fxp0	fxp1 fxp2
	RE-S-2000-4096	RE-S-2000	8.4	fxp0	fxp1 fxp2
	RE-S-1800x2-8G	RE-S-1800x2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x2-16G	RE-S-1800X2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-8G	RE-S-1800X4	32-bit Junos OS: • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-16G	RE-S-1800x4	32-bit Junos OS: • 11.4R5 • 12.1R3 • 12.2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-32G	RE-S-1800X4	32-bit and 64-bit Junos OS: • 12.3R4 • 13.2R1	fxp0	em0, em1

Table 4: Supported Routing Engines by MX Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
MX960	RE-S-1300-2048	RE-S-1300	8.2	fxp0	fxp1 fxp2
	RE-S-2000-4096	RE-S-2000	8.2	fxp0	fxp1 fxp2
	RE-S-1800x2-8G	RE-S-1800x2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x2-16G	RE-S-1800X2	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-8G	RE-S-1800X4	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-16G	RE-S-1800x4	32-bit Junos OS: 12.1R2 64-bit Junos OS: 10.4	fxp0	em0 em1
	RE-S-1800x4-32G	RE-S-1800X4	32-bit and 64-bit Junos OS: • 12.3R4 • 13.2R1	fxp0	em0, em1
MX2010	MX2000-RE-1800x4	RE-S-1800x4	64-bit Junos OS: 12.3R2	fxp0	em0 em1
MX2020	MX2000-RE-1800x4	RE-S-1800x4	64-bit Junos OS: 12.3R2	fxp0	em0 em1

PTX Series Supported Routing Engines

Table 5 on page 14 lists the Routing Engines supported by PTX Series Packet Transport Routers.

Table 5: Supported Routing Engines by PTX Series Chassis

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
PTX5000	RE-DUO-C2600-16G	RE-DUO-2600	64-bit Junos OS: 12.1x48	em0	ixgbe0 ixgbe1
<p>NOTE: The PTX5000 Packet Transport Router supports 64-bit Junos OS only.</p>					

T Series Supported Routing Engines

Table 6 on page 14 lists the Routing Engines supported by T Series routers.

Table 6: Supported Routing Engines by T Series Chassis

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
T320	RE-600-2048 (EOL details: PSN-2008-02-018)	RE-3.0 or RE-3.0 (RE-600)	5.3	fxp0	fxp1 fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-019)	RE-4.0	6.2	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.1	fxp0	fxp1 fxp2

Table 6: Supported Routing Engines by T Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
T640	RE-600-2048 (EOL details: PSN-2008-02-018)	RE-3.0 or RE-3.0 (RE-600)	5.3	fxp0	fxp1 fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-019)	RE-4.0	6.2	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.1	fxp0	em0 bcm0
	RE-DUO-C1800-8G	RE-DUO-1800	32-bit Junos OS on a standalone T640 router: 11.2 64-bit Junos OS on a standalone T640 router: 11.3	em0	bcm0 em1
	RE-DUO-C1800-16G	RE-DUO-1800	32-bit Junos OS on a standalone T640 router: 11.4R2 64-bit Junos OS on a standalone T640 router: 11.4R2	em0	bcm0 em1

Table 6: Supported Routing Engines by T Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
T1600 NOTE: (Two RE-DUO-C1800-8G or two RE-DUO-C1800-16G are required to connect to a Routing Matrix)	RE-600-2048 (EOL details: PSN-2008-02-018)	RE-3.0 or RE-3.0 (RE-600)	8.5	fxp0	fxp1 fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-019)	RE-4.0 (RE-1600)	8.5	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.5	fxp0	em0 bcm0
	RE-DUO-C1800-8G	RE-TXP-LCC or RE-DUO-1800	32-bit Junos OS on a T1600 router in a routing matrix: 9.6 32-bit Junos OS on a standalone T1600 router: 11.1 64-bit Junos OS on a T1600 router in a routing matrix: 9.6 64-bit Junos OS on a standalone T1600 router: 11.1 NOTE: Junos OS Releases 9.6 through 10.4 support RE-DUO-C1800-8G only during upgrade to a line-card chassis (LCC) in a routing matrix.	em0	bcm0 em1
	RE-DUO-C1800-16G	RE-DUO-1800	32-bit Junos OS on a standalone T1600 router: 11.4R2 64-bit Junos OS on a standalone T1600 router: 11.4R2 32-bit Junos OS on a T1600 router in a routing matrix: 11.4R2 64-bit Junos OS on a T1600 router in a routing matrix: 11.4R2	em0	bcm0 em1

Table 6: Supported Routing Engines by T Series Chassis (*continued*)

Chassis	Supported Routing Engines Model Number	Name in CLI Output	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
T4000 <i>NOTE:</i> The T4000 router supports 64-bit Junos OS only.	RE-DUO-C1800-8G	RE-DUO-1800	64-bit Junos OS on a standalone T4000 router: 12.1	em0	bcm0 em1
	RE-DUO-C1800-16G	RE-DUO-1800	64-bit Junos OS on a standalone T4000 router: 12.1R2	em0	bcm0 em1
TX Matrix	RE-600-2048 (EOL details: PSN-2008-02-018)	RE-3.0 or RE-3.0 (RE-600)	7.0	fxp0	fxp1 fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-019)	RE-4.0 (RE-1600)	7.0	fxp0	fxp1 fxp2
	RE-A-2000-4096	RE-A-2000	8.5	fxp0	em0 bcm0
TX Matrix Plus	RE-DUO-C2600-16G	RE-TXP-SFC or	32-bit Junos OS: 9.6	em0	ixgbe0
		RE-DUO-2600	64-bit Junos OS: 11.4		ixgbe1

Related Documentation

- *Routing Engine Specifications*
- [Understanding Internal Ethernet Interfaces on page 18](#)
- [Understanding Management Ethernet Interfaces on page 5](#)

Understanding Internal Ethernet Interfaces

Within a router or packet transport router, internal Ethernet interfaces provide communication between the Routing Engine and the Packet Forwarding Engines. The Junos OS automatically configures internal Ethernet interfaces when the Junos OS boots. The Junos OS boots the packet-forwarding component hardware. When these components are running, the Control Board uses the internal Ethernet interface to transmit hardware status information to the Routing Engine. Information transmitted includes the internal router temperature, the condition of the fans, whether an FPC has been removed or inserted, and information from the LCD on the craft interface.

To determine the supported internal Ethernet interfaces for your router, see [“Supported Routing Engines by Chassis” on page 8](#).



NOTE: Do not modify or remove the configuration for the internal Ethernet interface that the Junos OS automatically configures. If you do, the router or packet transport router will stop functioning.

- J Series, M Series, and MX Series routers and T Series routers—The Junos OS creates the internal Ethernet interface. The internal Ethernet interface connects the Routing Engine **re0** to the Packet Forwarding Engines.

If the router has redundant Routing Engines, another internal Ethernet interface is created on each Routing Engine (**re0** and **re1**) in order to support fault tolerance, two physical links between **re0** and **re1** connect the independent control planes. If one of the links fails, both Routing Engines can use the other link for IP communication.

- TX Matrix Plus routers—On a TX Matrix Plus router, the Routing Engine and Control Board function as a unit, or host subsystem. For each host subsystem in the router, the Junos OS automatically creates two internal Ethernet interfaces, **ixgbe0** and **ixgbe1**.

The **ixgbe0** and **ixgbe1** interfaces connect the TX Matrix Plus Routing Engine to the Routing Engines of every line-card chassis (LCC) configured in the routing matrix.

The TX Matrix Plus Routing Engine connects to a high-speed switch through a 10-Gbps link within the host subsystem. The switch provides a 1-Gbps link to each T1600 Routing Engine. The 1-Gbps links are provided through the UTP Category 5 Ethernet cable connections between the TXP-CBs and the LCC-CBs in the LCCs.

- The TX Matrix Plus Routing Engine connects to a high-speed switch in the local Control Board through a 10-Gbps link within the host subsystem.
- The Gigabit Ethernet switch connects the Control Board to the remote Routing Engines of every LCC configured in the routing matrix.

If a TX Matrix Plus router contains redundant host subsystems, the independent control planes are connected by two physical links between the two 10-Gigabit Ethernet ports on their respective Routing Engines.

- The primary link to the remote Routing Engine is at the **ixgbe0** interface; the 10-Gigabit Ethernet switch on the local Control Board also connects the Routing Engine to the 10-Gigabit Ethernet port accessed by the **ixgbe1** interface on the remote Routing Engine.
- The alternate link to the remote Routing Engine is the 10-Gigabit Ethernet port at the **ixgbe1** interface. This second port connects the Routing Engine to the 10-Gigabit Ethernet switch on the remote Control Board, which connects to the 10-Gigabit Ethernet port at the **ixgbe0** interface on the remote Routing Engine.

If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.

- LCC in a routing matrix—On an LCC configured in a routing matrix, the Routing Engine and Control Board function as a unit, or host subsystem. For each host subsystem in the LCC, the Junos OS automatically creates two internal Ethernet interfaces, **bcm0** and **em1**, for the two Gigabit Ethernet ports on the Routing Engine.

The **bcm0** interface connects the Routing Engine in each LCC to the Routing Engines of every other LCC configured in the routing matrix.

- The Routing Engine connects to a Gigabit Ethernet switch on the local Control Board through a.
- The switch connects the Control Board to the remote Routing Engines of every other LCC configured in the routing matrix.

If an LCC in a routing matrix contains redundant host subsystems, the independent control planes are connected by two physical links between the Gigabit Ethernet ports on their respective Routing Engines.

- The primary link to the remote Routing Engine is at the **bcm0** interface; the Gigabit Ethernet switch on the local Control Board also connects the Routing Engine to the Gigabit Ethernet port accessed by the **em1** interface on the remote Routing Engine.
- The alternate link to the remote Routing Engine is at the **em1** interface. This second port connects the Routing Engine to the Gigabit Ethernet switch on the remote Control Board, which connects to the Gigabit Ethernet port at the **bcm0** interface on the remote Routing Engine.

If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.

Each router also has two serial ports, labeled *console* and *auxiliary*, for connecting tty type terminals to the router using standard PC-type tty cables. Although these ports are not network interfaces, they do provide access to the router.

Related Documentation

- [Permanent Interfaces Overview on page 5](#)
- [Supported Routing Engines by Chassis on page 8](#)

- [TX Matrix Plus and T1600 Router \(Routing Matrix\) Management Ethernet Interfaces on page 7](#)
- [T1600 Routers \(Routing Matrix\) Internal Ethernet Interfaces on page 20](#)
- *Displaying Internal Ethernet Interfaces for a Routing Matrix with a TX Matrix Plus Router*
- *show interfaces (M Series and T Series Routers, and PTX Series Packet Transport Routers Management and Internal Ethernet)*

T1600 Routers (Routing Matrix) Internal Ethernet Interfaces

On a T1600 router configured in a routing matrix, the Routing Engine (RE-TXP-LCC) and Control Board (LCC-CB) function as a unit, or host subsystem. For each host subsystem in the router, the Junos OS automatically creates two internal Ethernet interfaces, **bcm0** and **em1**, for the two Gigabit Ethernet ports on the Routing Engine.

Related Documentation

- [Understanding Internal Ethernet Interfaces on page 18](#)
- *Displaying Internal Ethernet Interfaces for a Routing Matrix with a TX Matrix Plus Router*
- *show interfaces (M Series and T Series Routers, and PTX Series Packet Transport Routers Management and Internal Ethernet)*

Understanding Transient Interfaces

The M Series, MX Series, and T Series routers contain slots for installing FPCs. PICs can be installed in FPCs. The number of PICs that can be installed varies by router and type of FPC. The PICs provide the actual physical interfaces to the network. The MX Series routers contain slots for installing either DPC boards that provide the physical interfaces to the network or for installing FPCs in which PICs can be installed. These physical interfaces are transient interfaces of the router. They are referred to as transient because you can hot-swap a DPC or FPC and its PICs at any time.

You can insert any DPC or FPC into any slot that supports them in the appropriate router. Typically, you can place any combination of PICs, compatible with your router, in any location on an FPC. (You are limited by the total FPC bandwidth, and by the fact that some PICs physically require two or four of the PIC locations on the FPC. In some cases, power limitations or microcode limitations may also apply.) To determine DPC and PIC compatibility, see the *Hardware Guide*, *DPC Guide*, and *PIC Guide* for your router.

You must configure each transient interface based on the slot in which the FPC is installed, the location in which the PIC is installed, and for multiple port PICs, the port to which you are connecting.

You can configure the interfaces on PICs that are already installed in the router as well as interfaces on PICs that you plan to install later. The Junos OS detects which interfaces are actually present, so when the software activates its configuration, it activates only the present interfaces and retains the configuration information for the interfaces that are not present. When the Junos OS detects that an FPC containing PICs has been inserted into the router, the software activates the configuration for those interfaces.

- Related Documentation**
- [Types of Interfaces Overview on page 4](#)
 - [Permanent Interfaces Overview on page 5](#)
 - [Understanding Management Ethernet Interfaces on page 5](#)
 - [Understanding Internal Ethernet Interfaces on page 18](#)
 - [Supported Routing Engines by Chassis on page 8](#)
 - [Understanding Services Interfaces on page 21](#)
 - [Container Interfaces Overview on page 22](#)
 - [Interface Encapsulations Overview on page 24](#)
 - [Interface Descriptors Overview on page 35](#)
 - [Interface Naming Overview on page 36](#)
 - [Displaying Interface Configurations Overview on page 50](#)

Understanding Services Interfaces

Services interfaces enable you to incrementally add services to your network. The Junos OS supports the following services PICs:

- **Adaptive Services (AS) PICs**—Allow you to provide multiple services on a single PIC by configuring a set of services and applications. The AS PICs offer a special range of services you configure in one or more service sets.
- **ES PIC**—Provides a security suite for the IP version 4 (IPv4) and IP version 6 (IPv6) network layers. The suite provides functionality such as authentication of origin, data integrity, confidentiality, replay protection, and nonrepudiation of source. It also defines mechanisms for key generation and exchange, management of security associations, and support for digital certificates.
- **Monitoring Services PICs**—Enable you to monitor traffic flow and export the monitored traffic. Monitoring traffic allows you to gather and export detailed information about IPv4 traffic flows between source and destination nodes in your network; sample all incoming IPv4 traffic on the monitoring interface and present the data in cflowd record format; perform discard accounting on an incoming traffic flow; encrypt or tunnel outgoing cflowd records, intercepted IPv4 traffic, or both; and direct filtered traffic to different packet analyzers and present the data in its original format. On a Monitoring Services II PIC, you can configure either monitoring interfaces or collector interfaces. A collector interface allows you to combine multiple cflowd records into a compressed ASCII data file and export the file to an FTP server.
- **Multilink Services, MultiServices, Link Services, and Voice Services PICs**—Enable you to split, recombine, and sequence datagrams across multiple logical data links. The goal of multilink operation is to coordinate multiple independent links between a fixed pair of systems, providing a virtual link with greater bandwidth than any of the members.
- **Tunnel Services PIC**—By encapsulating arbitrary packets inside a transport protocol, tunneling provides a private, secure path through an otherwise public network. Tunnels

connect discontinuous subnetworks and enable encryption interfaces, virtual private networks (VPNs), and Multiprotocol Label Switching (MPLS).

- On M Series and T Series routers, logical tunnel interfaces allow you to connect logical systems, virtual routers, or VPN instances. For more information about VPNs, see the *Junos OS VPNs Library for Routing Devices*. For more information about configuring tunnels, see the *Junos OS Services Interfaces Library for Routing Devices*.
- Services (J Series)—On J Series Services Routers, the *lt* interface is an internal interface only and is not associated with a physical medium or PIM. You can configure the logical tunnel interface to provide class-of-service (CoS) support for real-time performance monitoring (RPM) probe packets. For more information, see the *Junos OS Interfaces and Routing Configuration Guide*.



NOTE: The *lt* interface on the J Series router does not support logical systems.

**Related
Documentation**

- [Types of Interfaces Overview on page 4](#)

Container Interfaces Overview

Container interfaces provide the following features:

- Automatic protection switching (APS) on SONET/SDH and ATM links are supported using the container infrastructure.
- Container physical interfaces and logical interfaces remain up on switchover.
- APS parameters are auto-copied from the container interface to the member links.



NOTE: Paired groups and true unidirectional APS are not currently supported.

For more information on SONET/SDH configuration, see *Configuring Container Interfaces for APS on SONET Links*.

Container interfaces features are described in the following sections:

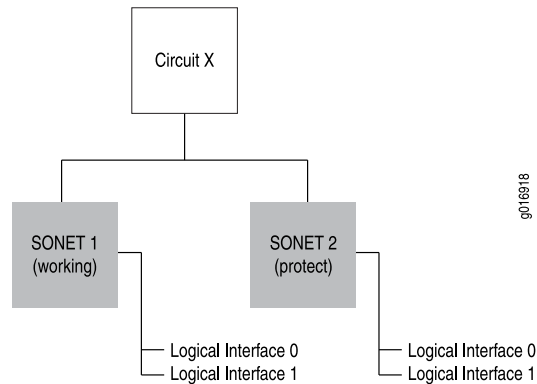
- [Understanding Traditional APS Concept on page 22](#)
- [Container Interfaces Concept on page 23](#)
- [APS Support for Container-Based Interfaces on page 24](#)
- [Autocopy of APS Parameters on page 24](#)

Understanding Traditional APS Concept

Traditional APS is configured on two independent physical SONET/SDH interfaces: one configured as the working circuit and the other as the protect circuit (see

[Figure 1 on page 23](#)). The circuit, named Circuit X in the figure, is the link between the two SONET interfaces.

Figure 1: APS Interface

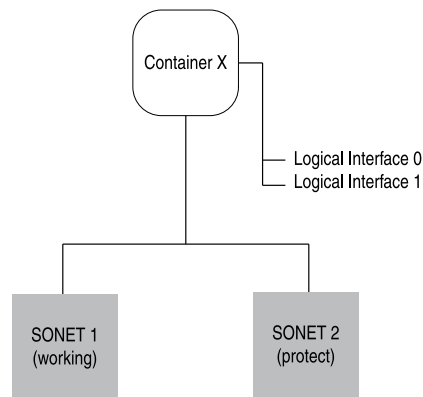


Traditional APS uses routing protocols that run on each individual SONET/SDH interface (since circuit is an abstract construct, instead of being an actual interface). When the working link goes down, the APS infrastructure brings up the protect link and its underlying logical interfaces, and brings down the working link and its underlying logical interfaces, causing the routing protocols to reconverge. This consumes time and leads to traffic loss even though the APS infrastructure has performed the switch quickly.

Container Interfaces Concept

To solve this problem, the Junos OS provides a soft interface construct called a container interface (see [Figure 2 on page 23](#)).

Figure 2: Container Interface



The container interface allows routing protocols to run on the logical interfaces associated with a virtual *container interface* instead of on the physical SONET/SDH and ATM interfaces. When APS switches the underlying physical link based on a fault condition, the container interface remains up, and the logical interface on the container interface does not flap. The routing protocols remain unaware of the APS switching.

APS Support for Container-Based Interfaces

With the container interface, APS is configured on the container interface itself. Individual member SONET/SDH and ATM links are either marked as primary (corresponding to the working circuit) or standby (corresponding to the protect circuit) in the configuration. No circuit or group name is specified in the container interface model; physical SONET/SDH and ATM links are put in an APS group by linking them to a single container interface. APS parameters are specified at the container interface level, and are propagated to the individual SONET/SDH and ATM links by the APS daemon.

Autocopy of APS Parameters

Typical applications require copying APS parameters from the working circuit to the protect circuit, since most of the parameters must be the same for both circuits. This is automatically done in the container interface. APS parameters are specified only once under the container physical interface configuration, and are internally copied over to the individual physical SONET/SDH and ATM links.

- Related Documentation**
- *Configuring Container Interfaces for APS on SONET Links*
 - *Displaying APS Using a Container Interface with ATM Encapsulation*

Interface Encapsulations Overview

Table 7 on page 24 lists encapsulation support by interface type.

Table 7: Encapsulation Support by Interface Type

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
ae —Aggregated Ethernet interface	ethernet-ccc —Ethernet cross-connect extended-vlan-ccc —Nonstandard TPID tagging for a cross-connect extended-vlan-vpls —Extended VLAN virtual private LAN service flexible-ethernet-services —Allows per-unit Ethernet encapsulation configuration vlan-ccc —802.1Q tagging for a cross-connect ethernet-vpls —Ethernet virtual private LAN service vlan-vpls —VLAN virtual private LAN service	dix —Ethernet DIXv2 (RFC 894) vlan-ccc —802.1Q tagging for a cross-connect
as —Aggregated SONET/SDH interface	cisco-hdlc —Cisco-compatible HDLC framing ppp —Serial PPP device	NA

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
at —ATM1 interface	atm-ccc-cell-relay —ATM cell relay encapsulation for a cross-connect atm-pvc —ATM permanent virtual circuits ethernet-over-atm —Ethernet over ATM encapsulation	atm-ccc-cell-relay —ATM cell relay for CCC atm-ccc-vc-mux —ATM VC for CCC atm-cisco-nlpid —Cisco-compatible ATM NLPID encapsulation atm-nlpid —ATM NLPID encapsulation atm-snap —ATM LLC/SNAP encapsulation atm-tcc-snap —ATM LLC/SNAP for a translational cross-connect atm-tcc-vc-mux —ATM VC for a translational cross-connect atm-vc-mux —ATM VC multiplexing ether-over-atm-llc —Ethernet over ATM (LLC/SNAP) encapsulation
at —ATM2 intelligent queuing (IQ) interface	atm-ccc-cell-relay —ATM cell relay encapsulation for a cross-connect atm-pvc —ATM permanent virtual circuits ethernet-over-atm —Ethernet over ATM encapsulation	atm-ccc-cell-relay —ATM cell relay for CCC atm-ccc-vc-mux —ATM VC for CCC atm-cisco-nlpid —Cisco-compatible ATM NLPID encapsulation atm-mlppp-llc —ATM MLPPP over AAL5/LLC atm-nlpid —ATM NLPID encapsulation atm-ppp-llc —ATM PPP over AAL5/LLC atm-ppp-vc-mux —ATM PPP over raw AAL5 atm-snap —ATM LLC/SNAP encapsulation atm-tcc-snap —ATM LLC/SNAP for a translational cross-connect atm-tcc-vc-mux —ATM VC for a translational cross-connect atm-vc-mux —ATM VC multiplexing ether-over-atm-llc —Ethernet over ATM (LLC/SNAP) encapsulation ether-vpls-over-atm-llc —Ethernet VPLS over ATM (bridging) encapsulation
bcm —Gigabit Ethernet internal interfaces	NA	NA

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
br —Integrated Services Digital Network (ISDN) interface	NA	NA
ci —Container interface	cisco-hdlc —Cisco-compatible HDLC framing ppp —Serial PPP device	aps —SONET interface required for APS configuration.
ds —DS0 interface	cisco-hdlc —Cisco-compatible HDLC framing cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect flexible-frame-relay —Multiple Frame Relay encapsulations frame-relay —Frame Relay encapsulation frame-relay-ccc —Frame Relay for a cross-connect frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect frame-relay-tcc —Frame Relay for a translational cross-connect multilink-frame-relay-uni-nni —Multilink Frame Relay UNI NNI (FRF.16) encapsulation ppp —Serial PPP device ppp-ccc —Serial PPP device for a cross-connect ppp-tcc —Serial PPP device for a translational cross-connect	frame-relay-ccc —Frame Relay DLCI for CCC frame-relay-ppp —PPP over Frame Relay frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
dsc —Discard interface	NA	NA

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
e1—E1 interface (including channelized STM1-to-E1 interfaces)	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect	
	extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect	
	flexible-frame-relay —Multiple Frame Relay encapsulations	
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
	multilink-frame-relay-uni-nni —Multilink Frame Relay UNI NNI (FRF.16) encapsulation	
	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
e3 —E3 interface (including E3 IQ and IQE interfaces)	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect	
	extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect	
	flexible-frame-relay —Multiple Frame Relay encapsulations	
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	
em —Management and internal Ethernet interfaces	NA	NA

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
fe —Fast Ethernet interface	ethernet-ccc —Ethernet cross-connect ethernet-tcc —Ethernet translational cross-connect ethernet-vpls —Ethernet virtual private LAN service extended-vlan-ccc —Nonstandard TPID tagging for a cross-connect extended-vlan-tcc —802.1Q tagging for a translational cross-connect extended-vlan-vpls —Extended VLAN virtual private LAN service vlan-ccc —802.1Q tagging for a cross-connect vlan-vpls —VLAN virtual private LAN service	dix —Ethernet DIXv2 (RFC 894) vlan-ccc —802.1Q tagging for a cross-connect vlan-vpls —VLAN virtual private LAN service
fxp —Management and internal Ethernet interfaces	NA	NA
ge —Gigabit Ethernet interface (including Gigabit Ethernet IQ interfaces)	ethernet-ccc —Ethernet cross-connect ethernet-tcc —Ethernet translational cross-connect ethernet-vpls —Ethernet virtual private LAN service extended-vlan-ccc —Nonstandard TPID tagging for a cross-connect extended-vlan-tcc —802.1Q tagging for a translational cross-connect extended-vlan-vpls —Extended VLAN virtual private LAN service flexible-ethernet-services —Allows per-unit Ethernet encapsulation configuration vlan-ccc —802.1Q tagging for a cross-connect vlan-vpls —VLAN virtual private LAN service	dix —Ethernet DIXv2 (RFC 894) vlan-ccc —802.1Q tagging for a cross-connect vlan-tcc —802.1Q tagging for a translational cross-connect vlan-vpls —VLAN virtual private LAN service
ixgbe —10-Gigabit Ethernet internal interfaces	NA	NA
lo —Loopback interface; the Junos OS automatically configures one loopback interface (lo0)	NA	NA

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
ls —Link services interface	multilink-frame-relay-uni-nni —Multilink Frame Relay UNI NNI (FRF.16) encapsulation	multilink-frame-relay-end-to-end —Multilink Frame Relay end-to-end (FRF.15) multilink-ppp —Multilink PPP
lsq —Link services IQ interface	multilink-frame-relay-uni-nni —Multilink Frame Relay UNI NNI (FRF.16) encapsulation	multilink-frame-relay-end-to-end —Multilink Frame Relay end-to-end (FRF.15) multilink-ppp —Multilink PPP
lt —Logical tunnel interface	NA	ethernet —Ethernet service ethernet-vpls —Ethernet virtual private LAN service ethernet-ccc —Ethernet cross-connect frame-relay —Frame Relay encapsulation frame-relay-ccc —Frame Relay for a cross-connect vlan —VLAN service vlan-ccc —802.1Q tagging for a cross-connect vlan-vpls —VLAN virtual private LAN service
ml —Multilink interface (including Multilink Frame Relay and MLPPP)	NA	multilink-frame-relay-end-to-end —Multilink Frame Relay end-to-end (FRF.15) multilink-ppp —Multilink PPP

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
se —Serial interface (including EIA-530, V.35, and X.21 interfaces)	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
so—SONET/SDH interface	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect	multilink-frame-relay-end-to-end —IQE SONET PICs support Multilink Frame Relay end-to-end (FRF.15)
	extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect	multilink-ppp —IQE SONET PICs support Multilink PPP
	flexible-frame-relay —Multiple Frame Relay encapsulations	
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
t1—T1 interface (including channelized DS3-to-DS1 interfaces)	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect	
	extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect	
	flexible-frame-relay —Multiple Frame Relay encapsulations	
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
	multilink-frame-relay-uni-nni —Multilink Frame Relay UNI NNI (FRF.16) encapsulation	
	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	

Table 7: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
t3 —T3 interface (including channelized OC12-to-DS3 interfaces)	cisco-hdlc —Cisco-compatible HDLC framing	frame-relay-ccc —Frame Relay DLCI for CCC
	cisco-hdlc-ccc —Cisco-compatible HDLC framing for a cross-connect	frame-relay-ppp —PPP over Frame Relay
	cisco-hdlc-tcc —Cisco-compatible HDLC framing for a translational cross-connect	frame-relay-tcc —Frame Relay DLCI for a translational cross-connect
	extended-frame-relay-ccc —Any Frame Relay DLCI for a cross-connect	
	extended-frame-relay-tcc —Any Frame Relay DLCI for a translational cross-connect	
	flexible-frame-relay —Multiple Frame Relay encapsulations	
	frame-relay —Frame Relay encapsulation	
	frame-relay-ccc —Frame Relay for a cross-connect	
	frame-relay-port-ccc —Frame Relay port encapsulation for a cross-connect	
	frame-relay-tcc —Frame Relay for a translational cross-connect	
Controller-level channelized IQ interfaces (cau4 , coc1 , coc3 , coc12 , cstm1 , ct1 , ct3 , ce1)	ppp —Serial PPP device	
	ppp-ccc —Serial PPP device for a cross-connect	
	ppp-tcc —Serial PPP device for a translational cross-connect	
Services interfaces (cp , gr , ip , mo , vt , es , mo , rsp , sp)	NA	NA
Unconfigurable, internally generated interfaces (gre , ipip , learning-chip (lc), lsi , tap , mt , mtun , pd , pe , pimd , pime)	NA	NA



NOTE: You can configure GRE interfaces (**gre-x/y/z**) only for GMPLS control channels. GRE interfaces are not supported or configurable for other applications. For more information about GMPLS, see the *Junos OS MPLS Applications Library for Routing Devices* and the *Junos OS Feature Guides*.

- Related Documentation**
- [Understanding Transient Interfaces on page 20](#)
 - [Router Interfaces Overview on page 4](#)
 - [Types of Interfaces Overview on page 4](#)

Interface Descriptors Overview

When you configure an interface, you are effectively specifying the properties for a physical interface descriptor. In most cases, the physical interface descriptor corresponds to a single physical device and consists of the following parts:

- The interface name, which defines the media type
- The slot in which the FPC or DPC is located
- The location on the FPC in which the PIC is installed
- The PIC or DPC port
- The interface's channel and logical unit numbers (optional)

Each physical interface descriptor can contain one or more logical interface descriptors. These allow you to map one or more logical (or virtual) interfaces to a single physical device. Creating multiple logical interfaces is useful for ATM, Frame Relay, and Gigabit Ethernet networks, in which you can associate multiple virtual circuits, data-link connections, or virtual LANs (VLANs) with a single interface device.

Each logical interface descriptor can have one or more family descriptors to define the protocol family that is associated with and allowed to run over the logical interface.

The following protocol families are supported:

- Internet Protocol version 4 (IPv4) suite (inet)
- Internet Protocol version 6 (IPv6) suite (inet6)
- Circuit cross-connect (CCC)
- Translational cross-connect (TCC)
- International Organization for Standardization (ISO)
- Multilink Frame Relay end-to-end (MLFR end-to-end)
- Multilink Frame Relay user-to-network interface network-to-network interface (MLFR UNI NNI)
- Multilink Point-to-Point Protocol (MLPPP)
- Multiprotocol Label Switching (MPLS)
- Trivial Network Protocol (TNP)
- (M Series, T Series, and MX Series routers only) Virtual private LAN service (VPLS)

Finally, each family descriptor can have one or more address entries, which associate a network address with a logical interface and hence with the physical interface.

You configure the various interface descriptors as follows:

- You configure the physical interface descriptor by including the **interfaces** *interface-name* statement.
- You configure the logical interface descriptor by including the **unit** statement within the **interfaces** *interface-name* statement or by including the **.logical** descriptor at the end of the interface name, as in **t3-0/0/0.1**, where the logical unit number is 1, as shown in the following examples:

```
[edit]
user@host# set interfaces t3-0/0/0 unit 1
[edit]
user@host# edit interfaces t3-0/0/0.1
[edit interfaces t3-0/0/0]
user@host# set unit 1
```

- You configure the family descriptor by including the **family** statement within the **unit** statement.
- You configure address entries by including the **address** statement within the **family** statement.
- You configure tunnels by including the **tunnel** statement within the **unit** statement.



NOTE: The address of a logical interface cannot be the same as a tunnel interface's source or destination address. If you try to configure a logical interface with a tunnel interface's address or vice versa, a commit failure will occur.

Related Documentation

- [Router Interfaces Overview on page 4](#)

Interface Naming Overview

Each interface has an interface name, which specifies the media type, the slot in which the FPC or DPC is located, the location on the FPC where the PIC is installed, and the PIC or DPC port. The interface name uniquely identifies an individual network connector in the system. You use the interface name when configuring interfaces and when enabling various functions and properties, such as routing protocols, on individual interfaces. The system uses the interface name when displaying information about the interface, for example, in the **show interfaces** command.

The interface name is represented by a physical part, a channel part, and a logical part in the following format:

physical<:channel>.logical

The channel part of the name is optional for all interfaces except channelized DS3, E1, OC12, and STM1 interfaces.

The following sections provide interface naming configuration guidelines:

- [Physical Part of an Interface Name on page 37](#)
- [Logical Part of an Interface Name on page 42](#)
- [Separators in an Interface Name on page 43](#)
- [Channel Part of an Interface Name on page 43](#)
- [Interface Naming for a Routing Matrix Based on a TX Matrix Router on page 44](#)
- [Interface Naming for a Routing Matrix Based on a TX Matrix Plus Router on page 46](#)
- [Chassis Interface Naming on page 48](#)
- [Examples: Interface Naming on page 48](#)

Physical Part of an Interface Name

The physical part of an interface name identifies the physical device, which corresponds to a single physical network connector.



NOTE:

The internal interface is dependent on Routing Engine. To identify if the Routing Engine is using this type of interface, use the following command:

```
user@host> show interfaces terse
```

Interface	Admin	Link	Proto	Local	Remote
pfe-1/0/0	up	up			
pfe-1/0/0.16383	up	up	inet		
			inet6		
pfh-1/0/0	up	up			
pfh-1/0/0.16383	up	up	inet		
[.....]					
bcm0	up	up	<-----		
bcm0.0	up	up	inet	10.0.0.1/8	
[.....]					
lsi	up	up			
mtun	up	up			
pimd	up	up			
pime	up	up			
tap	up	up			

For more information on the Routing Engines that each chassis supports, the first supported release for the Routing Engine in the specified chassis, the management Ethernet interface, and the internal Ethernet interfaces for each Routing Engine, please refer the link titled *Supported Routing Engines by Chassis* under Related Documentation section.

This part of the interface name has the following format:

type-fpc/pic/port

type is the media type, which identifies the network device that can be one of the following:

- **ae**—Aggregated Ethernet interface. This is a virtual aggregated link and has a different naming format from most PICs; for more information, see *Aggregated Ethernet Interfaces Overview*.
- **as**—Aggregated SONET/SDH interface. This is a virtual aggregated link and has a different naming format from most PICs; for more information, see *Configuring Aggregated SONET/SDH Interfaces*.
- **at**—ATM1 or ATM2 intelligent queuing (IQ) interface or a virtual ATM interface on a circuit emulation (CE) interface.
- **bcm**—The bcm0 internal Ethernet process is supported on specific Routing engines for various M series and T series routers. For more information please refer the link titled *Supported Routing Engines by Chassis* under Related Documentation section.
- **br**—Integrated Services Digital Network (ISDN) interface (configured on a 1-port or 4-port ISDN Basic Rate Interface (BRI) card). This interface has a different naming format from most PICs: **br-pim/0/port**. The second number is always 0. For more information, see *Configuring ISDN Physical Interface Properties*.
- **cau4**—Channelized AU-4 IQ interface (configured on the Channelized STM1 IQ or IQE PIC or Channelized OC12 IQ and IQE PICs).
- **ce1**—Channelized E1 IQ interface (configured on the Channelized E1 IQ PIC or Channelized STM1 IQ or IQE PIC).
- **ci**—Container interface.
- **coc1**—Channelized OC1 IQ interface (configured on the Channelized OC12 IQ and IQE or Channelized OC3 IQ and IQE PICs).
- **coc3**—Channelized OC3 IQ interface (configured on the Channelized OC3 IQ and IQE PICs).
- **coc12**—Channelized OC12 IQ interface (configured on the Channelized OC12 IQ and IQE PICs).
- **coc48**—Channelized OC48 interface (configured on the Channelized OC48 and Channelized OC48 IQE PICs).
- **cp**—Collector interface (configured on the Monitoring Services II PIC).
- **cstm1**—Channelized STM1 IQ interface (configured on the Channelized STM1 IQ or IQE PIC).
- **cstm4**—Channelized STM4 IQ interface (configured on the Channelized OC12 IQ and IQE PICs).
- **cstm16**—Channelized STM16 IQ interface (configured on the Channelized OC48/STM16 and Channelized OC48/STM16 IQE PICs).
- **ct1**—Channelized T1 IQ interface (configured on the Channelized DS3 IQ and IQE PICs, Channelized OC3 IQ and IQE PICs, Channelized OC12 IQ and IQE PICs, or Channelized T1 IQ PIC).

- **ct3**—Channelized T3 IQ interface (configured on the Channelized DS3 IQ and IQE PICs, Channelized OC3 IQ and IQE PICs, or Channelized OC12 IQ and IQE PICs).
- **demux**—Interface that supports logical IP interfaces that use the IP source or destination address to demultiplex received packets. Only one demux interface (**demux0**) exists per chassis. All demux logical interfaces must be associated with an underlying logical interface.
- **dfc**—Interface that supports dynamic flow capture processing on T Series or M320 routers containing one or more Monitoring Services III PICs. Dynamic flow capture enables you to capture packet flows on the basis of dynamic filtering criteria. Specifically, you can use this feature to forward passively monitored packet flows that match a particular filter list to one or more destinations using an on-demand control protocol.
- **ds**—DS0 interface (configured on the Multichannel DS3 PIC, Channelized E1 PIC, Channelized OC3 IQ and IQE PICs, Channelized OC12 IQ and IQE PICs, Channelized DS3 IQ and IQE PICs, Channelized E1 IQ PIC, Channelized STM1 IQ or IQE PIC, or Channelized T1 IQ).
- **dsc**—Discard interface.
- **e1**—E1 interface (including channelized STM1-to-E1 interfaces).
- **e3**—E3 interface (including E3 IQ interfaces).
- **em**—Management and internal Ethernet interfaces. For M Series routers, MX Series routers, T Series routers, and TX Series routers, you can use the **show chassis hardware** command to display hardware information about the router, including its Routing Engine model. To determine which management interface is supported on your router and Routing Engine combination, see [“Understanding Management Ethernet Interfaces” on page 5](#) and [“Supported Routing Engines by Chassis” on page 8](#).
- **es**—Encryption interface.
- **et**—100-Gigabit Ethernet interface.
- **fe**—Fast Ethernet interface.
- **fxp**—Management and internal Ethernet interfaces. For M Series routers, MX Series routers, T Series routers, and TX Series routers, you can use the **show chassis hardware** command to display hardware information about the router, including its Routing Engine model. To determine which management interface is supported on your router and Routing Engine combination, see [“Understanding Management Ethernet Interfaces” on page 5](#) and [“Supported Routing Engines by Chassis” on page 8](#).
- **ge**—Gigabit Ethernet interface. Some older 10-Gigabit Ethernet interfaces use the **ge** media type to identify the physical part of the network device, but newer 10-Gigabit Ethernet interfaces use the **xe** media type.



NOTE: For configuration, the `ge` interface name should be used instead of the `xe` interface name in XENPAK 10-Gigabit Ethernet interface PICs. Refer the following show commands for more information:

```
user@host> show chassis hardware
..
FPC 4          REV 02   710-015839   CZ1853          M120 FPC Type
3
  PIC 0          REV 09   750-009567   NH1857          1x
10GE(LAN),XENPAK
  Xcvr 0         REV 01   740-012045   535TFZX6        XENPAK-SR

user@host> show configuration interfaces ge-4/0/0
unit 0 {
  family inet {
    address 100.0.0.1/24;
  }
}
```

- **gr**—Generic routing encapsulation (GRE) tunnel interface.
- **gre**—Internally generated interface that is configurable only as the control channel for Generalized MPLS (GMPLS). For more information about GMPLS, see the *Junos OS MPLS Applications Library for Routing Devices* and the *Junos OS Feature Guides*.



NOTE: You can configure GRE interfaces (`gre-x/y/z`) only for GMPLS control channels. GRE interfaces are not supported or configurable for other applications..

- **ip**—IP-over-IP encapsulation tunnel interface.
- **ipip**—Internally generated interface that is not configurable.
- **ixgbe**—The internal Ethernet process `ixgbe0` and `ixgbe1` are used by the RE-DUO-C2600-16G Routing Engine, which is supported on TX Matrix Plus and PTX5000.
- **iw**—Logical interfaces associated with the endpoints of Layer 2 circuit and Layer 2 VPN connections (pseudowire stitching Layer 2 VPNs). For more information about VPNs, see the *Junos OS VPNs Library for Routing Devices*.
- **lc**—Internally generated interface that is not configurable.
- **lo**—Loopback interface. The Junos OS automatically configures one loopback interface (`lo0`). The logical interface **lo0.16383** is a nonconfigurable interface for router control traffic.
- **ls**—Link services interface.
- **lsi**—Internally generated interface that is not configurable.
- **ml**—Multilink interface (including Multilink Frame Relay and MLPPP).

- **mo**—Monitoring services interface (including monitoring services and monitoring services II). The logical interface **mo-fpc/pic/port.16383** is an internally generated, nonconfigurable interface for router control traffic.
- **ms**—Multiservices interface.
- **mt**—Multicast tunnel interface (internal router interface for VPNs). If your router has a Tunnel PIC, the Junos OS automatically configures one multicast tunnel interface (**mt**) for each virtual private network (VPN) you configure. Although it is not necessary to configure multicast interfaces, you can use the **multicast-only** statement to configure the unit and family so that the tunnel can transmit and receive multicast traffic only. For more information, see [multicast-only](#).
- **mtun**—Internally generated interface that is not configurable.
- **oc3**—OC3 IQ interface (configured on the Channelized OC12 IQ and IQE PICs or Channelized OC3 IQ and IQE PICs).
- **pd**—Interface on the rendezvous point (RP) that de-encapsulates packets.
- **pe**—Interface on the first-hop RP that encapsulates packets destined for the RP router.
- **pimd**—Internally generated interface that is not configurable.
- **pime**—Internally generated interface that is not configurable.
- **rlsq**—Container interface, numbered from 0 through 127, used to tie the primary and secondary LSQ PICs together in high availability configurations. Any failure of the primary PIC results in a switch to the secondary PIC and vice versa.
- **rms**—Redundant interface for two multiservices interfaces.
- **rsp**—Redundant virtual interface for the adaptive services interface.
- **se**—Serial interface (including EIA-530, V.35, and X.21 interfaces).
- **si**—Services-inline interface, which is hosted on a Trio-based line card.
- **so**—SONET/SDH interface.
- **sp**—Adaptive services interface. The logical interface **sp-fpc/pic/port.16383** is an internally generated, nonconfigurable interface for router control traffic.
- **stm1**—STM1 interface (configured on the OC3/STM1 interfaces).
- **stm4**—STM4 interface (configured on the OC12/STM4 interfaces).
- **stm16**—STM16 interface (configured on the OC48/STM16 interfaces).
- **t1**—T1 interface (including channelized DS3-to-DS1 interfaces).
- **t3**—T3 interface (including channelized OC12-to-DS3 interfaces).
- **tap**—Internally generated interface that is not configurable.
- **umd**—USB modem interface.
- **vsp**—Voice services interface.
- **vc4**—Virtually concatenated interface.
- **vt**—Virtual loopback tunnel interface.

- **xe**—10-Gigabit Ethernet interface. Some older 10-Gigabit Ethernet interfaces use the **ge** media type (rather than **xe**) to identify the physical part of the network device.
- **xt**—Logical interface for Protected System Domains to establish a Layer 2 tunnel connection.

fpc identifies the number of the FPC or DPC card on which the physical interface is located. Specifically, it is the number of the slot in which the card is installed.

M40, M40e, M160, M320, M120, T320, T640, and T1600 routers each have eight FPC slots that are numbered 0 through 7, from left to right as you are facing the front of the chassis. For information about compatible FPCs and PICs, see the hardware guide for your router.

The M20 router has four FPC slots that are numbered 0 through 3, from top to bottom as you are facing the front of the chassis. The slot number is printed adjacent to each slot.

MX Series routers support DPCs, FPCs, and Modular Interface Cards (MICs). For information about compatible DPCs, FPCs, PICs, and MICs, see the [MX Series Interface Module Reference](#).

For M5, M7i, M10, and M10i routers, the FPCs are built into the chassis; you install the PICs into the chassis.

The M5 and M7i routers have space for up to four PICs. The M7i router also comes with an integrated Tunnel PIC, or an optional integrated AS PIC, or an optional integrated MS PIC.

The M10 and M10i routers have space for up to eight PICs.

A routing matrix can have up to 32 FPCs (numbered 0 through 31).

For more information about interface naming for a routing matrix, see [“Interface Naming for a Routing Matrix Based on a TX Matrix Router” on page 44](#).

pic identifies the number of the PIC on which the physical interface is located. Specifically, it is the number of the PIC location on the FPC. FPCs with four PIC slots are numbered 0 through 3. FPCs with three PIC slots are numbered 0 through 2. The PIC location is printed on the FPC carrier board. For PICs that occupy more than one PIC slot, the lower PIC slot number identifies the PIC location.

port identifies a specific port on a PIC or DPC. The number of ports varies depending on the PIC. The port numbers are printed on the PIC.

Logical Part of an Interface Name

The logical unit part of the interface name corresponds to the logical unit number, which can be a number from 0 through 16,385 for all interface types except demux and PPPoE. For these two interface types only, the range is 0 through 65,535.

Separators in an Interface Name

There is a separator between each element of an interface name.

In the physical part of the name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the FPC, PIC, and port numbers.

In the virtual part of the name, a period (.) separates the channel and logical unit numbers.

A colon (:) separates the physical and virtual parts of the interface name.

Channel Part of an Interface Name

The channel identifier part of the interface name is required only on channelized interfaces. For channelized interfaces, channel 0 identifies the first channelized interface. For channelized IQ and channelized IQE interfaces, channel 1 identifies the first channelized interface. A nonconcatenated (that is, channelized) SONET/SDH OC48 interface has four OC12 channels, numbered 0 through 3.

To determine which types of channelized PICs are currently installed in the router, use the **show chassis hardware** command from the top level of the command-line interface (CLI). Channelized IQ and IQE PICs are listed in the output with “intelligent queuing IQ” or “enhanced intelligent queuing IQE” in the description. For more information, see *Channelized Interfaces Overview*.

For ISDN interfaces, you specify the B-channel in the form **bc-pim/0/port:n**. *n* is the B-channel ID and can be 1 or 2. You specify the D-channel in the form **dc-pim/0/port:0**.



NOTE: For ISDN, the B-channel and D-channel interfaces do not have any configurable parameters. However, when interface statistics are displayed, B-channel and D-channel interfaces have statistical values.



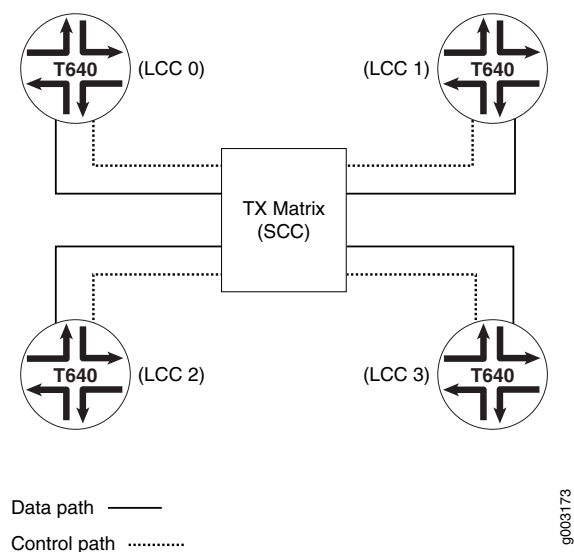
NOTE: In the Junos OS implementation, the term *logical interfaces* generally refers to interfaces you configure by including the unit statement at the [edit interfaces *interface-name*] hierarchy level. Logical interfaces have the *.logical* descriptor at the end of the interface name, as in **ge-0/0/0.1** or **t1-0/0/0.0.1**, where the logical unit number is 1.

Although channelized interfaces are generally thought of as logical or virtual, the Junos OS sees T3, T1, and NxDS0 interfaces within a channelized IQ or IQE PIC as physical interfaces. For example, both **t3-0/0/0** and **t3-0/0/0.1** are treated as physical interfaces by the Junos OS. In contrast, **t3-0/0/0.2** and **t3-0/0/0.1.2** are considered logical interfaces because they have the *.2* at the end of the interface names.

Interface Naming for a Routing Matrix Based on a TX Matrix Router

A routing matrix based on a Juniper Networks TX Matrix router is a multichassis architecture composed of one TX Matrix router and from one to four interconnected T640 routers. From the perspective of the user interface, the routing matrix appears as a single router. The TX Matrix router controls all the T640 routers, as shown in [Figure 3 on page 44](#).

Figure 3: Routing Matrix



A TX Matrix router is also referred to as a *switch-card chassis* (SCC). The CLI uses **scc** to refer to the TX Matrix router. A T640 router in a routing matrix is also referred to as a *line-card chassis* (LCC). The CLI uses **lcc** as a prefix to refer to a specific T640 router.

LCCs are assigned numbers 0 through 3, depending on the hardware setup and connectivity to the TX Matrix router. For more information, see the [TX Matrix Router Hardware Guide](#). A routing matrix can have up to four T640 routers, and each T640 router has up to eight FPCs. Therefore, the routing matrix as a whole can have up to 32 FPCs (0 through 31).

In the Junos OS CLI, an interface name has the following format:

type-fpc/pic/port

When you specify the **fpc** number for a T640 router in a routing matrix, the Junos OS determines which T640 router contains the specified FPC based on the following assignment:

- On LCC 0, FPC hardware slots 0 through 7 are configured as 0 through 7.
- On LCC 1, FPC hardware slots 0 through 7 are configured as 8 through 15.
- On LCC 2, FPC hardware slots 0 through 7 are configured as 16 through 23.
- On LCC 3, FPC hardware slots 0 through 7 are configured as 24 through 31.

For example, the 1 in **se-1/0/0** refers to FPC hardware slot 1 on the T640 router labeled **lcc0**. The 11 in **t1-11/2/0** refers to FPC hardware slot 3 on the T640 router labeled **lcc1**. The 20 in **so-20/0/1** refers to FPC hardware slot 4 on the T640 router labeled **lcc2**. The 31 in **t3-31/1/0** refers to FPC hardware slot 7 on the T640 router labeled **lcc3**.

[Table 8 on page 45](#) summarizes the FPC numbering for a T640 router in a routing matrix.

Table 8: FPC Numbering for T640 Routers in a Routing Matrix

LCC Numbers Assigned to the T640 Router	Configuration Numbers
0	0 through 7
1	8 through 15
2	16 through 23
3	24 through 31

[Table 9 on page 45](#) lists each FPC hardware slot and the corresponding configuration numbers for LCCs 0 through 3.

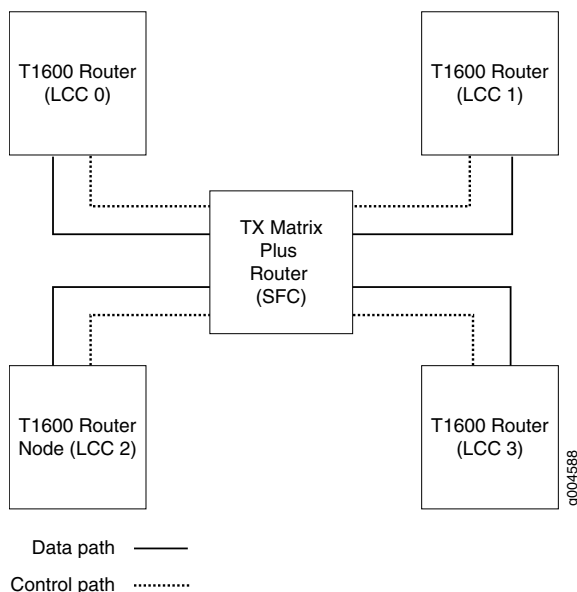
Table 9: One-to-One FPC Numbering for T640 Routers in a Routing Matrix

FPC Numbering	T640 Routers							
LCC 0								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	0	1	2	3	4	5	6	7
LCC 1								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	8	9	10	11	12	13	14	15
LCC 2								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	16	17	18	19	20	21	22	23
LCC 3								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	24	25	26	27	28	29	30	31

Interface Naming for a Routing Matrix Based on a TX Matrix Plus Router

A routing matrix based on a Juniper Networks TX Matrix Plus Router is a multichassis architecture composed of one TX Matrix Plus router and from one to four interconnected T1600 routers. From the perspective of the user interface, the routing matrix appears as a single router. The TX Matrix Plus router controls all the T1600 routers, as shown in [Figure 4 on page 46](#).

Figure 4: Routing Matrix Based on a TX Matrix Plus Router



A TX Matrix Plus router is also referred to as a *switch-fabric chassis* (SFC). The CLI uses **sfc** to refer to the TX Matrix Plus router. A T1600 router in a routing matrix is also referred to as a *line-card chassis* (LCC). The CLI uses **lcc** as a prefix to refer to a specific T1600 router.

LCCs are assigned numbers, 0 through 3, depending on the hardware setup and connectivity to the TX Matrix Plus router. For more information, see the *TX Matrix Plus Router Hardware Guide*. A routing matrix based on a TX Matrix Plus router can have up to four T1600 routers, and each T1600 router has up to eight FPCs. Therefore, the routing matrix as a whole can have up to 32 FPCs (0 through 31).

In the Junos OS CLI, an interface name has the following format:

type-fpc/pic/port

When you specify the **fpc** number for a T1600 router in a routing matrix, the Junos OS determines which T1600 router contains the specified FPC based on the following assignment:

- On LCC 0, FPC hardware slots 0 through 7 are configured as 0 through 7.
- On LCC 1, FPC hardware slots 0 through 7 are configured as 8 through 15.

- On LCC 2, FPC hardware slots 0 through 7 are configured as 16 through 23.
- On LCC 3, FPC hardware slots 0 through 7 are configured as 24 through 31.

For example, the 1 in **se-1/0/0** refers to FPC hardware slot 1 on the T1600 router labeled **lcc0**. The 11 in **t1-11/2/0** refers to FPC hardware slot 3 on the T1600 router labeled **lcc1**. The 20 in **so-20/0/1** refers to FPC hardware slot 4 on the T1600 router labeled **lcc2**. The 31 in **t3-31/1/0** refers to FPC hardware slot 7 on the T1600 router labeled **lcc3**.

[Table 10 on page 47](#) summarizes the FPC numbering for a routing matrix based on a TX Matrix Plus router.

Table 10: FPC Numbering for T1600 Routers in a Routing Matrix

LCC Numbers Assigned to the T1600 Router	Configuration Numbers
0	0 through 7
1	8 through 15
2	16 through 23
3	24 through 31

[Table 11 on page 47](#) lists each FPC hardware slot and the corresponding configuration numbers for LCCs 0 through 3.

Table 11: One-to-One FPC Numbering for T1600 Routers in a Routing Matrix

FPC Numbering	T1600 Routers							
LCC 0								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	0	1	2	3	4	5	6	7
LCC 1								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	8	9	10	11	12	13	14	15
LCC 2								
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	16	17	18	19	20	21	22	23
LCC 3								

Table 11: One-to-One FPC Numbering for T1600 Routers in a Routing Matrix (*continued*)

FPC Numbering	T1600 Routers							
Hardware Slots	0	1	2	3	4	5	6	7
Configuration Numbers	24	25	26	27	28	29	30	31

Chassis Interface Naming

You configure some PIC properties, such as framing, at the **[edit chassis]** hierarchy level. Chassis interface naming varies depending on the routing hardware.

- To configure PIC properties for a standalone router, you must specify the FPC and PIC numbers, as follows:

```
[edit chassis]
fpc slot-number {
  pic pic-number {
    ...
  }
}
```

- To configure PIC properties for a T640 or T1600 router configured in a routing matrix, you must specify the LCC, FPC, and PIC numbers, as follows:

```
[edit chassis]
lcc lcc-number {
  fpc slot-number { # Use the hardware FPC slot number
    pic pic-number {
      ...
    }
  }
}
```

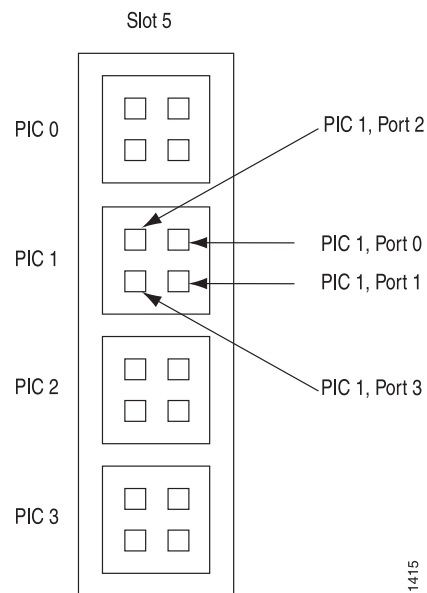
For the FPC slot in a T640 router in a routing matrix, specify the actual hardware slot number, as labeled on the T640 router chassis. Do not use the corresponding software FPC configuration numbers shown in [Table 9 on page 45](#).

For the FPC slot in a T1600 router in a routing matrix, specify the actual hardware slot number, as labeled on the T1600 router chassis. Do not use the corresponding software FPC configuration numbers shown in [Table 10 on page 47](#).

For more information about the **[edit chassis]** hierarchy, see the *Junos OS Administration Library for Routing Devices*.

Examples: Interface Naming

This section provides examples of naming interfaces. For an illustration of where slots, PICs, and ports are located, see [Figure 5 on page 49](#).

Figure 5: Interface Slot, PIC, and Port Locations

For an FPC in slot 1 with two OC3 SONET/SDH PICs in PIC positions 0 and 1, each PIC with two ports uses the following names:

```
so-1/0/0.0
so-1/0/1.0
so-1/1/0.0
so-1/1/1.0
```

An OC48 SONET/SDH PIC in slot 1 and in concatenated mode appears as a single FPC with a single PIC, which has a single port. If this interface has a single logical unit, it has the following name:

```
so-1/0/0.0
```

An OC48 SONET/SDH PIC in slot 1 and in channelized mode has a number for each channel. For example:

```
so-1/0/0:0
so-1/0/0:1
```

For an FPC in slot 1 with a Channelized OC12 PIC in PIC position 2, the DS3 channels have the following names:

```
t3-1/2/0:0
t3-1/2/0:1
t3-1/2/0:2
...
t3-1/2/0:11
```

For an FPC in slot 1 with four OC12 ATM PICs (the FPC is fully populated), the four PICs, each with a single port and a single logical unit, have the following names:

```
at-1/0/0.0
at-1/1/0.0
at-1/2/0.0
```

at-1/3/0.0

In a routing matrix on the T640 router labeled **lcc1**, for an FPC in slot 5 with four SONET OC192 PICs, the four PICs, each with a single port and a single logical unit, have the following names:

so-13/0/0.0
so-13/1/0.0
so-13/2/0.0
so-13/3/0.0

For an FPC in slot 1 with one 4-port ISDN BRI interface card, port 4 has the following name:

br-1/0/4

The first B-channel, the second B-channel, and the control channel have the following names:

bc-1/0/4:1
bc-1/0/4:2
dc-1/0/4:0

- Related Documentation**
- [Router Interfaces Overview on page 4](#)
 - [Supported Routing Engines by Chassis](#)

Displaying Interface Configurations Overview

To display a configuration, use either the **show** command in configuration mode or the **show configuration** top-level command. Interfaces are listed in numerical order, from lowest to highest slot number, then from lowest to highest PIC number, and finally from lowest to highest port number.

- Related Documentation**
- [Router Interfaces Overview on page 4](#)

PART 2

Configuration

- [See: Network Interface Technologies on page 53](#)
- [Network Interfaces Configuration Guide - All Related Configuration Hierarchies on page 55](#)
- [Network Interfaces Configuration Guide - All Related Configuration Statements on page 85](#)

CHAPTER 2

See: Network Interface Technologies

CHAPTER 3

Network Interfaces Configuration Guide – All Related Configuration Hierarchies

- [\[edit chassis\] Hierarchy Level on page 55](#)
- [\[edit interfaces\] Hierarchy Level on page 56](#)
- [\[edit logical-systems\] Hierarchy Level on page 73](#)
- [\[edit protocols connections\] Hierarchy Level on page 77](#)
- [\[edit protocols dot1x\] Hierarchy Level on page 79](#)
- [\[edit protocols iccp\] Hierarchy Level on page 79](#)
- [\[edit protocols lacp\] Hierarchy Level on page 79](#)
- [\[edit protocols oam\] Hierarchy Level on page 80](#)
- [\[edit protocols ppp\] Hierarchy Level on page 82](#)
- [\[edit protocols pppoe\] Hierarchy Level on page 82](#)
- [\[edit protocols protection-group\] Hierarchy Level on page 83](#)
- [\[edit protocols vrrp\] Hierarchy Level on page 84](#)
- [\[edit system processes\] Hierarchy Level on page 84](#)

[\[edit chassis\] Hierarchy Level](#)

```
chassis {
  aggregated-devices {
    ethernet {
      device-count number;
    }
    sonet {
      device-count number;
    }
  }
  maximum-links {
  }
  channel-group number {
    ethernet {
      device-count number;
    }
    fpc slot-number {
      pic pic-number {
```

```
adaptive-services{
  service-package (layer-2 | layer-3);
}
aggregate-ports;
atm-cell-relay-accumulation;
atm-l2circuit-mode (aal5 | cell | trunk trunk);
cel {
  el link-number {
    channel-group group-number;
    timeslots time-slot-range;
  }
}
channelization;
ctl {
  tl link-number {
    channel-group group-number;
    timeslots time-slot-range;
  }
}
ct3 {
  port port-number {
    tl link-number {
      channel-group group-number;
      timeslots time-slot-range;
    }
  }
  framing sdh;
}
max-queues-per-interface number;
mlfr-uni-nni-bundles num-intf;
no-concatenate;
shdsl {
  pic-mode (1-port-atm | 2-port-atm);
}
vtmapping (klm | itu-t);
}
}
fpc slot-number{
pic pic-number{
  account-layer2-overhead
  egress-policer-overhead bytes;
  ingress-policer-overhead bytes;
}
}
}
```

[edit interfaces] Hierarchy Level

The statements at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level can also be configured at the [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*] hierarchy level.



NOTE: The `accounting-profile` statement is an exception to this rule. The `accounting-profile` statement can be configured at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level, but it cannot be configured at the [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*] hierarchy level.

```

interfaces {
  traceoptions {
    file filename <files number> <match regular-expression> <size size> <world-readable |
      no-world-readable> ;
    flag flag <disable>;
  }
  interface-name {
    account-layer2-overhead (Interface Level) {
      value;
      egress bytes;
      ingress bytes;
    }
    accounting-profile name;
    aggregated-ether-options {
      (flow-control | no-flow-control);
      lacp {
        (active | passive);
        link-protection {
          disable;
          (revertive | non-revertive);
          periodic interval;
          system-priority priority;
        }
        link-protection;
        link-speed speed;
        (loopback | no-loopback);
        mc-ae {
          chassis-id chassis-id;
          mc-ae-id mc-ae-id;
          mode (active-active | active-standby);
          redundancy-group group-id;
          status-control (active | standby);
        }
        minimum-links number;
        source-address-filter {
          mac-address;
        }
        (source-filtering | no-source-filtering);
      }
    }
    shared-scheduler;
    aggregated-sonet-options {
      link-speed speed | mixed;
      minimum-links number;
    }
    atm-options {
      cell-bundle-size cells;
      ilmi;
    }
  }
}

```

```

linear-red-profiles profile-name {
    high-plp-max-threshold percent;
    low-plp-max-threshold percent;
    queue-depth cells high-plp-threshold percent low-plp-threshold percent;
}
mpls {
    pop-all-labels {
        required-depth number;
    }
}
pic-type (atm1 | atm2);
plp-to-clp;
promiscuous-mode {
    vpi vpi-identifier;
}
scheduler-maps map-name {
    forwarding-class class-name {
        epd-threshold cells plp1 cells;
        linear-red-profile profile-name;
        priority (high | low);
        transmit-weight (cells number | percent number);
    }
    vc-cos-mode (alternate | strict);
}
use-null-cw;
vpi vpi-identifier {
    maximum-vcs maximum-vcs;
    oam-liveness {
        down-count cells;
        up-count cells;
    }
    oam-period (seconds | disable);
    shaping {
        (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate
        burst length);
        queue-length number;
    }
}
}
clocking clock-source;
data-input (system | interface interface-name);
dce;
serial-options {
    clock-rate rate;
    clocking-mode (dce | internal | loop);
    control-polarity (negative | positive);
    cts-polarity (negative | positive);
    dcd-polarity (negative | positive);
    dce-options {
        control-signal (assert | de-assert | normal);
        cts (ignore | normal | require);
        dcd (ignore | normal | require);
        dsr (ignore | normal | require);
        dtr signal-handling-option;
        ignore-all;
        indication (ignore | normal | require);
    }
}

```

```

    rts (assert | de-assert | normal);
    tm (ignore | normal | require);
}
dsr-polarity (negative | positive);
dte-options {
    control-signal (assert | de-assert | normal);
    cts (ignore | normal | require);
    dcd (ignore | normal | require);
    dsr (ignore | normal | require);
    dtr signal-handling-option;
    ignore-all;
    indication (ignore | normal | require);
    rts (assert | de-assert | normal);
    tm (ignore | normal | require);
}
dtr-circuit (balanced | unbalanced);
dtr-polarity (negative | positive);
encoding (nrz | nrzi);
indication-polarity (negative | positive);
line-protocol protocol;
loopback mode;
rts-polarity (negative | positive);
tm-polarity (negative | positive);
transmit-clock invert;
}
description text;
dialer-options {
    pool pool-name <priority priority>;
}
disable;
ds0-options {
    bert-algorithm algorithm;
    bert-error-rate rate;
    bert-period seconds;
    byte-encoding (nx56 | nx64);
    fcs (16 | 32);
    idle-cycle-flag (flags | ones);
    invert-data;
    loopback payload;
    start-end-flag (filler | shared);
}
e1-options {
    bert-error-rate rate;
    bert-period seconds;
    fcs (16 | 32);
    framing (g704 | g704-no-crc4 | unframed);
    idle-cycle-flag (flags | ones);
    invert-data;
    loopback (local | remote);
    start-end-flag (filler | shared);
    timeslots time-slot-range;
}
e3-options {
    atm-encapsulation (direct | plcp);
    bert-algorithm algorithm;
    bert-error-rate rate;

```

```
bert-period seconds;  
framing feet;  
compatibility-mode (digital-link | kentrox | larscom) <subrate value>;  
fcs (16 | 32);  
framing (g.751 | g.832);  
idle-cycle-flag (filler | shared);  
invert-data;  
loopback (local | remote);  
(payload-scrambler | no-payload-scrambler);  
start-end-flag (filler | shared);  
(unframed | no-unframed);  
}  
encapsulation type;  
es-options {  
    backup-interface es-fpc/pic/port;  
}  
fastether-options {  
    802.3ad aex;  
    (flow-control | no-flow-control);  
    ignore-l3-incompletes;  
    ingress-rate-limit rate;  
    (loopback | no-loopback);  
    mpls {  
        pop-all-labels {  
            required-depth number;  
        }  
    }  
    source-address-filter {  
        mac-address;  
    }  
    (source-filtering | no-source-filtering);  
}  
flexible-vlan-tagging;  
gigether-options {  
    802.3ad aex;  
    (asynchronous-notification | no-asynchronous-notification);  
    (auto-negotiation | no-auto-negotiation) remote-fault <local-interface-online |  
        local-interface-offline>;  
    auto-reconnect seconds;  
    (flow-control | no-flow-control);  
    ignore-l3-incompletes;  
    (loopback | no-loopback);  
    mpls {  
        pop-all-labels {  
            required-depth number;  
        }  
    }  
    no-auto-mdix;  
    source-address-filter {  
        mac-address;  
    }  
    (source-filtering | no-source-filtering);  
    ethernet-switch-profile {  
        (mac-learn-enable | no-mac-learn-enable);  
        tag-protocol-id [ tpids ];  
        ethernet-policer-profile {
```


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```
}
isdn-options {
    bchannel-allocation (ascending | descending);
    calling-number number;
    pool pool-name <priority priority>;
    spid1 spid-string;
    spid2 spid-string;
    static-tei-val value;
    switch-type (att5e | etsi | nil | ntdms100 | ntt);
    t310 seconds;
    tei-option (first-call | power-up);
}
keepalives <down-count number> <interval seconds> <up-count number>;
link-mode mode;
lmi {
    lmi-type (ansi | itu | c-lmi);
    n391dte number;
    n392dce number;
    n392dte number;
    n393dce number;
    n393dte number;
    t391dte seconds;
    t392dce seconds;
}
lsq-failure-options {
    no-termination-request;
    [ trigger-link-failure interface-name ];
}
mac mac-address;
mlfr-uni-nni-bundle-options {
    acknowledge-retries number;
    acknowledge-timer milliseconds;
    action-red-differential-delay (disable-tx | remove-link);
    drop-timeout milliseconds;
    fragment-threshold bytes;
    cisco-interoperability send-lip-remove-link-for-link-reject;
    hello-timer milliseconds;
    link-layer-overhead percent;
    lmi-type (ansi | itu | c-lmi);
    minimum-links number;
    mrru bytes;
    n391 number;
    n392 number;
    n393 number;
    red-differential-delay milliseconds;
    t391 seconds;
    t392 seconds;
    yellow-differential-delay milliseconds;
}
modem-options {
    dialin (console | routable);
    init-command-string initialization-command-string;
}
mtu bytes;
multi-chassis-protection {
    peer a.b.c.d {
```

```

    interface interface-name;
  }
}
multiservice-options {
  (core-dump | no-core-dump);
  (syslog | no-syslog);
}
native-vlan-id number;
no-gratuitous-arp-request;
no-keepalives;
no-partition {
  interface-type type;
}
no-vpivci-swapping;
optics-options {
  alarm low-light-alarm {
    (link-down | syslog);
  }
  tx-power dbm;
  warning low-light-warning {
    (link-down | syslog);
  }
  wavelength nm;
}
otn-options {
  bytes transmit-payload-type value;
  fec (efec | gfec | gfec-sdfec | none);
  (is-ma | no-is-ma);
  (laser-enable | no-laser-enable);
  (line-loopback | no-line-loopback);
  (local-loopback | no-local-loopback);
  (odu-ttim-action-enable | no-odu-ttim-action-enable);
  (otu-ttim-action-enable | no-otu-ttim-action-enable);
  odu-delay-management {
    (bypass | no-bypass);
    (monitor-end-point | no-monitor-end-point);
    (number-of-frames | no-number-of-frames);
    (start-measurement | no-start-measurement);
  }
  (prbs | no-prbs);
  preemptive-fast-reroute {
    (backward-frr-enable | no-backward-frr-enable);
    (signal-degrade-monitor-enable | no-signal-degrade-monitor-enable);
  }
  rate {
    (fixed-stuff-bytes | no-fixed-stuff-bytes);
    otu4;
    (pass-through | no-pass-through);
  }
  signal-degrade {
    ber-threshold-clear value;
    ber-threshold-signal-degrade value;
    interval value;
  }
  trigger trigger-identifier;
  tti tti-identifier;
}

```

```
}
partition partition-number oc-slice oc-slice-range interface-type type;
timeslots time-slot-range;
passive-monitor-mode;
per-unit-scheduler;
ppp-options {
    chap {
        access-profile name;
        default-chap-secret name;
        local-name name;
        passive;
    }
    compression {
        acfc;
        pfc;
    }
    dynamic-profile profile-name;
    no-termination-request;
    pap {
        access-profile name;
        local-name name;
        local-password password;
        compression;
    }
}
psn-vcip psn-vci-identifier;
psn-vpip psn-vpi-identifier;
receive-bucket {
    overflow (discard | tag);
    rate percentage;
    threshold bytes;
}
redundancy-options {
    priority sp-fpc/pic/port;
    secondary sp-fpc/pic/port;
    hot-standby;
}
satop-options {
    payload-size n;
}
schedulers number;
serial-options {
    clock-rate rate;
    clocking-mode (dce | internal | loop);
    control-polarity (negative | positive);
    cts-polarity (negative | positive);
    dcd-polarity (negative | positive);
    dce-options {
        control-signal (assert | de-assert | normal);
        cts (ignore | normal | require);
        dcd (ignore | normal | require);
        dsr (ignore | normal | require);
        dtr signal-handling-option;
        ignore-all;
        indication (ignore | normal | require);
        rts (assert | de-assert | normal);
    }
}
```

```

    tm (ignore | normal | require);
}
dsr-polarity (negative | positive);
dte-options {
    control-signal (assert | de-assert | normal);
    cts (ignore | normal | require);
    dcd (ignore | normal | require);
    dsr (ignore | normal | require);
    dtr signal-handling-option;
    ignore-all;
    indication (ignore | normal | require);
    rts (assert | de-assert | normal);
    tm (ignore | normal | require);
}
dtr-circuit (balanced | unbalanced);
dtr-polarity (negative | positive);
encoding (nrz | nrzi);
indication-polarity (negative | positive);
line-protocol protocol;
loopback mode;
rts-polarity (negative | positive);
tm-polarity (negative | positive);
transmit-clock invert;
}
services-options {
    inactivity-timeout seconds;
    open-timeout seconds;
    session-limit {
        maximum number;
        rate new-sessions-per-second;
    }
    syslog {
        host hostname {
            facility-override facility-name;
            log-prefix prefix-number;
            services priority-level;
        }
    }
}
}
shdsl-options {
    annex (annex-a | annex-b);
    line-rate line-rate;
    loopback (local | remote);
    snr-margin {
        current margin;
        snext margin;
    }
}
sonet-options {
    aggregate asx;
    aps {
        advertise-interval milliseconds;
        annex-b;
        authentication-key key;
        fast-aps-switch;
        force;
    }
}

```

```

    hold-time milliseconds;
    lockout;
    neighbor address;
    paired-group group-name;
    preserve-interface;
    protect-circuit group-name;
    request;
    revert-time seconds;
    switching-mode (bidirectional | unidirectional);
    working-circuit group-name;
}
bytes {
    c2 value;
    e1-quiet value;
    f1 value;
    f2 value;
    s1 value;
    z3 value;
    z4 value;
}
fcs (16 | 32);
loopback (local | remote);
mpls {
    pop-all-labels {
        required-depth number;
    }
}
path-trace trace-string;
(payload-scrambler | no-payload-scrambler);
rfc-2615;
trigger {
    defect ignore;
    hold-time up milliseconds down milliseconds;
}
vtmapping (itu-t | klm);
(z0-increment | no-z0-increment);
}
speed (10m | 100m | 1g | oc3 | oc12 | oc48);
stacked-vlan-tagging;
switch-options {
    switch-port port-number {
        (auto-negotiation | no-auto-negotiation);
        speed (10m | 100m | 1g);
        link-mode (full-duplex | half-duplex);
    }
}
t1-options {
    bert-algorithm algorithm;
    bert-error-rate rate;
    bert-period seconds;
    buildout value;
    byte-encoding (nx56 | nx64);
    crc-major-alarm-threshold (1e-3 | 5e-4 | 1e-4 | 5e-5 | 1e-5);
    crc-minor-alarm-threshold (1e-3 | 5e-4 | 1e-4 | 5e-5 | 1e-5 | 5e-6 | 1e-6);
    fcs (16 | 32);
    framing (esf | sf);

```

```

idle-cycle-flag (flags | ones);
invert-data;
line-encoding (ami | b8zs);
loopback (local | payload | remote);
remote-loopback-respond;
start-end-flag (filler | shared);
timeslots time-slot-range;
}
t3-options {
  atm-encapsulation (direct | plcp);
  bert-algorithm algorithm;
  bert-error-rate rate;
  bert-period seconds;
  buildout feet;
  (cbit-parity | no-cbit-parity);
  compatibility-mode (adtran | digital-link | kentrox | larscom | verilink) <subrate
    value>;
  fcs (16 | 32);
  (feac-loop-respond | no-feac-loop-respond);
  idle-cycle-flag value;
  (long-buildout | no-long-buildout);
  (loop-timing | no-loop-timing);
  loopback (local | payload | remote);
  (mac | no-mac);
  (payload-scrambler | no-payload-scrambler);
  start-end-flag (filler | shared);
}
traceoptions {
  flag flag <flag-modifier> <disable>;
}
transmit-bucket {
  overflow discard;
  rate percentage;
  threshold bytes;
}
(traps | no-traps);
unidirectional;
vlan-tagging;
vlan-vci-tagging;
unit logical-unit-number {
  accept-source-mac {
    mac-address mac-address {
      policer {
        input cos-policer-name;
        output cos-policer-name;
      }
    }
  }
}
account-layer2-overhead {
  value;
  egress bytes;
  ingress bytes;
}
accounting-profile name;
advisory-options {
  downstream-rate rate;
}

```

```
    upstream-rate rate;
}
allow-any-vci;
atm-scheduler-map (map-name | default);
backup-options {
    interface interface-name;
}
bandwidth rate;
cell-bundle-size cells;
clear-dont-fragment-bit;
compression {
    rtp {
        f-max-period number;
        maximum-contexts number <force>;
        queues [ queue-numbers ];
        port {
            minimum port-number;
            maximum port-number;
        }
    }
}
compression-device interface-name;
copy-tos-to-outer-ip-header;
demux-destination family;
demux-source family;
demux-options {
    underlying-interface interface-name;
}
description text;
interface {
    l2tp-interface-id name;
    (dedicated | shared);
}
dialer-options {
    activation-delay seconds;
    callback;
    callback-wait-period time;
    deactivation-delay seconds;
    dial-string [ dial-string-numbers ];
    idle-timeout seconds;
    incoming-map {
        caller (caller-id | accept-all);
        initial-route-check seconds;
        load-interval seconds;
        load-threshold percent;
        pool pool-name;
        redial-delay time;
        watch-list {
            [ routes ];
        }
    }
}
}
disable;
disable-mlppp-inner-ppp-pfc;
dlci dlci-identifier;
drop-timeout milliseconds;
```



```
dynamic-call-admission-control {
  activation-priority priority;
  bearer-bandwidth-limit kilobits-per-second;
}
encapsulation type;
epd-threshold cells plp1 cells;
fragment-threshold bytes;
inner-vlan-id-range start start-id end end-id;
input-vlan-map {
  (pop | pop-pop | pop-swap | push | push-push | swap | swap-push | swap-swap);
  inner-tag-protocol-id tpid;
  inner-vlan-id number;
  tag-protocol-id tpid;
  vlan-id number;
}
interleave-fragments;
inverse-arp;
layer2-policer {
  input-policer policer-name;
  input-three-color policer-name;
  output-policer policer-name;
  output-three-color policer-name;
}
link-layer-overhead percent;
minimum-links number;
mrru bytes;
multicast-dlci dlci-identifier;
multicast-vci vpi-identifier.vci-identifier;
multilink-max-classes number;
multipoint;
oam-liveness {
  down-count cells;
  up-count cells;
}
oam-period (seconds | disable);
output-vlan-map {
  (pop | pop-pop | pop-swap | push | push-push | swap | swap-push | swap-swap);
  inner-tag-protocol-id tpid;
  inner-vlan-id number;
  tag-protocol-id tpid;
  vlan-id number;
}
passive-monitor-mode;
peer-unit unit-number;
plp-to-clp;
point-to-point;
ppp-options {
  chap {
    access-profile name;
    default-chap-secret name;
    local-name name;
    passive;
  }
  compression {
    acfc;
    pfc;
  }
}
```

```
pap;  
  default-pap-password password;  
  local-name name;  
  local-password password;  
  passive;  
}  
dynamic-profile profile-name;  
lcp-max-conf-req number;  
lcp-restart-timer milliseconds;  
loopback-clear-timer seconds;  
ncp-max-conf-req number;  
ncp-restart-timer milliseconds;  
}  
pppoe-options {  
  access-concentrator name;  
  auto-reconnect seconds;  
  (client | server);  
  service-name name;  
  underlying-interface interface-name;  
}  
proxy-arp;  
service-domain (inside | outside);  
shaping {  
  (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate  
   burst length);  
  queue-length number;  
}  
short-sequence;  
transmit-weight number;  
(traps | no-traps);  
trunk-bandwidth rate;  
trunk-id number;  
tunnel {  
  backup-destination address;  
  destination address;  
  key number;  
  routing-instance {  
    destination routing-instance-name;  
  }  
  source source-address;  
  ttl number;  
}  
vci vpi-identifier.vci-identifier;  
vci-range start start-vci end end-vci;  
vpi vpi-identifier;  
vlan-id number;  
vlan-id-list [vlan-id vlan-id-vlan-id];  
vlan-id-range number-number;  
vlan-tags inner tpid.vlan-id outer tpid.vlan-id;  
vlan-tags-outer tpid.vlan-id inner-list [vlan-id vlan-id-vlan-id];  
family family {  
  accounting {  
    destination-class-usage;  
    source-class-usage {  
      direction;  
    }  
  }  
}
```

```

}
access-concentrator name;
address address {
    destination address;
}
bundle ml-fpc/pic/port | ls-fpc/pic/port);
duplicate-protection;
dynamic-profile profile-name;
filter {
    group filter-group-number;
    input filter-name;
    input-list {
        [ filter-names ];
        output filter-name;
    }
    output-list {
        [ filter-names ];
    }
}
ipsec-sa sa-name;
keep-address-and-control;
max-sessions number;
max-sessions-vs-a-ignore;
mtu bytes;
multicast-only;
negotiate-address;
no-redirects;
policer {
    arp policer-template-name;
    input policer-template-name;
    output policer-template-name;
}
primary;
proxy inet-address address;
receive-options-packets;
receive-ttl-exceeded;
remote (inet-address address | mac-address address);
rpf-check {
    fail-filter filter-name;
    mode loose;
}
sampling {
    direction;
}
service {
    input {
        service-set service-set-name <service-filter filter-name>;
        post-service-filter filter-name;
    }
    output {
        service-set service-set-names <service-filter filter-name>;
    }
}
service-name-table table-name;
short-cycle-protection <lockout-time-min minimum-seconds lockout-time-max
    maximum-seconds>;

```

```

targeted-broadcast {
    forward-and-send-to-re;
    forward-only;
}
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
translate-plp-control-word-de;
unnumbered-address interface-name <destination address destination-profile
    profile-name | preferred-source-address address>;
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
    broadcast address;
    destination address;
    destination-profile name;
    eui-64;
    multipoint-destination address (dlci dlcid-identifier | vci vcid-identifier);
    multipoint-destination address {
        epd-threshold cells plp1 cells;
        inverse-arp;
        oam-liveness {
            up-count cells;
            down-count cells;
        }
        oam-period (seconds | disable);
        shaping {
            (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained
                rate burst length);
            queue-length number;
        }
        vci vpi-identifier.vcid-identifier;
    }
    preferred;
    primary;
    (vrrp-group | vrrp-inet6-group) group-number {
        (accept-data | no-accept-data);
        advertise-interval seconds;
        authentication-type authentication;
        authentication-key key;
        fast-interval milliseconds;
        (preempt | no-preempt) {
            hold-time seconds;
        }
        priority-number number;
        track {
            priority-cost seconds;
            priority-hold-time interface-name {
                bandwidth-threshold bits-per-second {
                    priority;
                }
                interface priority;
            }
            route ip-address/mask routing-instance instance-name priority-cost cost;
        }
        virtual-address [ addresses ];
    }
}

```

```

    }
  }
}

```

- Related Documentation**
- *Junos OS Hierarchy and RFC Reference*
 - *Ethernet Interfaces*
 - *Junos OS Network Interfaces Library for Routing Devices*

[\[edit logical-systems\] Hierarchy Level](#)

The following lists the statements that can be configured at the **[edit logical-systems]** hierarchy level that are also documented in this manual. For more information about logical systems, see the *Logical Systems Feature Guide for Routing Devices*.

```

logical-systems logical-system-name {
  interfaces interface-name {
    unit logical-unit-number {
      accept-source-mac {
        mac-address mac-address {
          policer {
            input cos-policer-name;
            output cos-policer-name;
          }
        }
      }
    }
    allow-any-vci;
    atm-scheduler-map (map-name | default);
    bandwidth rate;
    backup-options {
      interface interface-name;
    }
    cell-bundle-size cells;
    clear-dont-fragment-bit;
    compression {
      rtp {
        f-max-period number;
        port {
          minimum port-number;
          maximum port-number;
        }
      }
      queues [ queue-numbers ];
    }
  }
  compression-device interface-name;
  description text;
  interface {
    l2tp-interface-id name;
    (dedicated | shared);
  }
  dialer-options {
    activation-delay seconds;
    deactivation-delay seconds;
  }
}

```

```
dial-string [ dial-string-numbers ];
idle-timeout seconds;
initial-route-check seconds;
load-threshold number;
pool pool;
remote-name remote-callers;
watch-list {
    [ routes ];
}
}
disable;
dlci dlci-identifier;
drop-timeout milliseconds;
dynamic-call-admission-control {
    activation-priority priority;
    bearer-bandwidth-limit kilobits-per-second;
}
encapsulation type;
epd-threshold cells plp1 cells;
fragment-threshold bytes;
input-vlan-map {
    inner-tag-protocol-id;
    inner-vlan-id;
    (pop | pop-pop | pop-swap | push | push-push | swap | swap-push | swap-swap);
    tag-protocol-id tpid;
    vlan-id number;
}
interleave-fragments;
inverse-arp;
layer2-policer {
    input-policer policer-name;
    input-three-color policer-name;
    output-policer policer-name;
    output-three-color policer-name;
}
link-layer-overhead percent;
minimum-links number;
mrru bytes;
multicast-dlci dlci-identifier;
multicast-vci vpi-identifier.vci-identifier;
multilink-max-classes number;
multipoint;
oam-liveness {
    up-count cells;
    down-count cells;
}
}
oam-period (seconds | disable);
output-vlan-map {
    inner-tag-protocol-id;
    inner-vlan-id;
    (pop | pop-pop | pop-swap | push | push-push | swap | swap-swap);
    tag-protocol-id tpid;
    vlan-id number;
}
}
passive-monitor-mode;
peer-unit unit-number;
```

```
plp-to-clp;
point-to-point;
ppp-options {
  chap {
    access-profile name;
    default-chap-secret name;
    local-name name;
    passive;
  }
  compression {
    acfc;
    pfc;
  }
}
dynamic-profile profile-name;
pap {
  default-pap-password password;
  local-name name;
  local-password password;
  passive;
}
}
proxy-arp;
service-domain (inside | outside);
shaping {
  (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst length);
  queue-length number;
}
short-sequence;
transmit-weight number;
(traps | no-traps);
trunk-bandwidth rate;
trunk-id number;
tunnel {
  backup-destination address;
  destination address;
  key number;
  routing-instance {
    destination routing-instance-name;
  }
  source source-address;
  ttl number;
}
vci vpi-identifier.vci-identifier;
vlan-id number;
vlan-id-list [vlan-id vlan-id-vlan-id]
vlan-tags inner tpid.vlan-id outer tpid.vlan-id;
vlan-tags outer tpid.vlan-id inner-list [vlan-id vlan-id-vlan-id]
vpi vpi-identifier;
family family {
  accounting {
    destination-class-usage;
    source-class-usage {
      direction;
    }
  }
}
```

```
}
bundle interface-name;
filter {
    group filter-group-number;
    input filter-name;
    input-list {
        [ filter-names ];
    }
    output filter-name;
    output-list {
        [ filter-names ];
    }
}
ipsec-sa sa-name;
keep-address-and-control;
mtu bytes;
multicast-only;
no-redirects;
policer {
    arp policer-template-name;
    input policer-template-name;
    output policer-template-name;
}
primary;
proxy inet-address address;
receive-options-packets;
receive-ttl-exceeded;
remote (inet-address address | mac-address address);
rpf-check <fail-filter filter-name> {
    <mode loose>;
}
sampling {
    direction;
}
service {
    input {
        service-set service-set-name <service-filter filter-name>;
        post-service-filter filter-name;
    }
    output {
        service-set service-set-name <service-filter filter-name>;
    }
}
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
unnumbered-address interface-name destination address destination-profile
profile-name;
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
    broadcast address;
    destination address;
    destination-profile name;
    eui-64;
    multipoint-destination address (dlci dlci-identifier | vci vci-identifier);
    multipoint-destination address {
        epd-threshold cells plp cells;
    }
}
```



```

inverse-arp;
oam-liveness {
    up-count cells;
    down-count cells;
}
oam-period (seconds | disable);
shaping {
    (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained
    rate burst length);
    queue-length number;
}
vci vpi-identifier.vci-identifier;
}
preferred;
primary;
(vrrp-group | vrrp-inet6-group) group-number {
    (accept-data | no-accept-data);
    advertise-interval seconds;
    authentication-type authentication;
    authentication-key key;
    fast-interval milliseconds;
    (preempt | no-preempt) {
        hold-time seconds;
    }
    priority-number number;
    track {
        priority-cost seconds;
        priority-hold-time interface-name {
            interface priority;
            bandwidth-threshold bits-per-second {
                priority;
            }
        }
        route ip-address/mask routing-instance instance-name priority-cost cost;
    }
}
virtual-address [ addresses ];
}
}
}
}
}

```

Related Documentation

- [Junos OS Hierarchy and RFC Reference](#)
- [Ethernet Interfaces](#)
- [Junos OS Network Interfaces Library for Routing Devices](#)

[edit protocols connections] Hierarchy Level

The following statements can also be configured at the [edit logical-systems *logical-system-name* protocols connections] hierarchy level.

```

interface-switch connection-name {

```

```
interface interface-name.unit-number;  
interface interface-name.unit-number;  
}
```

- Related Documentation**
- [Junos OS Hierarchy and RFC Reference](#)
 - [Ethernet Interfaces](#)
 - [Junos OS Network Interfaces Library for Routing Devices](#)

[edit protocols dot1x] Hierarchy Level

```
dot1x {
  authenticator
    authentication-profile-name access-profile-name;
    interface interface-ids {
      maximum-requests integer;
      retries integer;
      quiet-period seconds;
      transmit-period seconds;
      reauthentication (disable | interval seconds);
      server-timeout seconds;
      supplicant (single);
      supplicant-timeout seconds;
    }
  }
}
```

- Related Documentation**
- [Junos OS Hierarchy and RFC Reference](#)
 - [Ethernet Interfaces](#)
 - [Junos OS Network Interfaces Library for Routing Devices](#)

[edit protocols iccp] Hierarchy Level

```
iccp {
  traceoptions;
  local-ip-address ip address;
  session-establishment-hold-time value;
  authentication-key string;
  peer ip-address {
    local-ip-address ip address;
    session-establishment-hold-time value;
    authentication-key string;
    redundancy-group-id-list redundancy-group-id-list;
    liveness-detection;
  }
}
```

- Related Documentation**
- [traceoptions on page 557](#)
 - [Configuring ICCP for MC-LAG](#)

[edit protocols lacp] Hierarchy Level

```
traceoptions {
```

```

file filename <files number> <size size> <world-readable | no-world-readable>;
flag flag <disable>;
}

```

Related Documentation

- *Junos OS Hierarchy and RFC Reference*
- *Ethernet Interfaces*
- *Junos OS Network Interfaces Library for Routing Devices*

[edit protocols oam] Hierarchy Level

```

ethernet {
  connectivity-fault-management {
    action-profile profile-name {
      default-actions {
        interface-down;
      }
      event {
        adjacency-loss;
        interface-status-tlv (down | lower-layer-down);
        port-status-tlv blocked;
        rdi;
      }
    }
  }
  linktrace {
    age (30m | 10m | 1m | 30s | 10s);
    path-database-size path-database-size;
  }
  maintenance-domain domain-name {
    bridge-domain name;
    routing-instance rl {
      bridge-domain name;
      instance vpls-instance;
      interface (ge | xe) fpc/pic/port.domain;
      level number;
      maintenance-association name{
        mep identifier {
          direction (up | down)
          interface (ge | xe) fpc/pic/port.domain (working | protect );
          auto-discovery;
          lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
            rem-err-xcon | xcon);
          priority number;
        }
      }
    }
    mip-half-function (none | default | explicit);
    name-format (character-string | none | dns | mac+2oct);
    short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
    protect-maintenance-association protect-ma-name;
    remote-maintenance-association remote-ma-name;
    continuity-check {
      hold-interval minutes;
      interval (10m | 10s | 1m | 1s | 100ms);
      loss-threshold number;
    }
  }
}

```

```

    }
    maintenance-association ma-name {
        mip-half-function (none | default | explicit);
        mep mep-id {
            auto-discovery;
            direction (up | down);
            interface interface-name (working | protect);
            priority number;
            remote-mep mep-id {
                action-profile profile-name;
                sla-iterator-profile profile-name {
                    data-tlv-size bytes;
                    iteration-count frames;
                    priority priority-value;
                }
            }
        }
    }
}
performance-monitoring {
    hardware-assisted-timestamping;
    sla-iterator-profiles {
        profile-name {
            disable;
            calculation-weight {
                delay delay-weight;
                delay-variation delay-variation-weight;
            }
            cycle-time milliseconds;
            iteration-period connections;
            measurement-type (loss | statistical-frame-loss | two-way-delay);
        }
    }
}
link-fault-management {
    action-profile profile-name {
        action {
            syslog;
            link-down;
            send-critical-event;
        }
        event {
            link-adjacency-loss;
            link-event-rate {
                frame-error count;
                frame-period count;
                frame-period-summary count;
                symbol-period count;
            }
            protocol-down;
        }
    }
}
interface interface-name {
    apply-action-profile profile-name;
    event-thresholds {

```

```
    frame-error count;  
    frame-period count;  
    frame-period-summary count;  
    symbol-period count;  
  }  
  link-discovery (active | passive);  
  negotiation-options {  
    allow-remote-loopback;  
    no-allow-link-events;  
  }  
  pdu-interval interval;  
  pdu-threshold threshold-value;  
  remote-loopback;  
}  
}  
fnp {  
  interval <100ms | 1s | 10s | 1m | 10m>;  
  loss-threshold number  
  interface interface name {  
    domain-id domain-id  
  }  
}  
}
```

- Related Documentation**
- *Junos OS Hierarchy and RFC Reference*
 - *Ethernet Interfaces*
 - *Junos OS Network Interfaces Library for Routing Devices*

[edit protocols ppp] Hierarchy Level

```
monitor-session (interface-name | all);  
tracoptions {  
  file filename <files number> <match regular-expression> <size size> <world-readable |  
    no-world-readable> ;  
  flag flag <disable>;  
}
```

- Related Documentation**
- *Junos OS Hierarchy and RFC Reference*
 - *Ethernet Interfaces*
 - *Junos OS Network Interfaces Library for Routing Devices*

[edit protocols pppoe] Hierarchy Level

```
pppoe {  
  no-send-pads-error;  
  no-send-pads-ac-info  
  pado-advertise;  
  service-name-tables table-name {  
    service service-name {  
      drop;  
    }  
  }  
}
```

[edit protocols protection-group] Hierarchy Level

Related Documentation

- *Junos OS Hierarchy and RFC Reference*
- *Ethernet Interfaces*
- *Junos OS Network Interfaces Library for Routing Devices*

[edit protocols vrrp] Hierarchy Level

The following statement hierarchy can also be included at the **[edit logical-systems *logical-system-name*]** hierarchy level.

```
protocols {
  vrrp {
    asymmetric-hold-time;
    delegate-processing;
    failover-delay milliseconds;
    global-advertisements-threshold advertisement-value;
    skew-timer-disable;
    startup-silent-period seconds;
    traceoptions {
      file <filename> <files number> <match regular-expression> <microsecond-stamp>
        <size maximum-file-size> <world-readable | no-world-readable>;
      flag flag;
      no-remote-trace;
    }
    version-3;
  }
}
```

Related Documentation

- *Notational Conventions Used in Junos OS Configuration Hierarchies*
- *[edit protocols] Hierarchy Level*
- *Junos OS Hierarchy and RFC Reference*
- *Ethernet Interfaces*
- *Junos OS Network Interfaces Library for Routing Devices*

[edit system processes] Hierarchy Level

```
dialer-services {
  disable;
}
isdn-signaling {
  disable;
  reject-incoming;
}
```

Related Documentation



- *ISDN Configuration Overview*
- *Disabling ISDN Processes*

Network Interfaces Configuration Guide – All Related Configuration Statements

802.3ad

Syntax	<pre>802.3ad { ae <i>interface-number</i> (primary backup); lacp { port-priority; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. primary and backup options added in Junos OS Release 8.3.
Description	Specify aggregated Ethernet logical interface number.
Options	<p>ae <i>interface-number</i>—Aggregated Ethernet logical interface number.</p> <p>Range: 0 through 15</p> <p>primary—For link protection configurations, specify the primary link for egress traffic.</p> <p>backup—For link protection configurations, specify the backup link for egress traffic.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring an Aggregated Ethernet Interface</i> <i>Configuring Aggregated Ethernet Link Protection</i>

accept

Syntax	accept (any dhcp-v4 dhcp-v6 inet inet6 pppoe);
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges dynamic-profile <i>profile-name</i>], [edit interfaces <i>interface-name</i> auto-configure vlan-ranges dynamic-profile <i>profile-name</i>]
Release Information	Statement introduced in Junos OS Release 9.5. dhcp-v4 option added in Junos OS Release 10.0. dhcp-v6 , inet6 and pppoe options added in Junos OS Release 10.2. any option added in Junos OS Release 10.4.
Description	Specify the type of VLAN Ethernet packet accepted by an interface that is associated with a VLAN dynamic profile or stacked VLAN dynamic profile.
Options	<p>any—Any packet type. Specifies that any incoming packets trigger the dynamic creation of a VLAN with properties determined by the auto-configure interface configuration stanza and associated profile attributes. This option is used when configuring wholesaling in a Layer 2 network.</p> <p>dhcp-v4—IPv4 DHCP packet type. Specifies that incoming IPv4 DHCP discover packets trigger the dynamic creation of a VLAN with properties determined by the auto-configure interface configuration stanza and associated profile attributes</p> <p>dhcp-v6—IPv6 DHCP packet type. Specifies that incoming IPv6 DHCP discover packets trigger the dynamic creation of a VLAN with properties determined by the auto-configure interface configuration stanza and associated profile attributes.</p> <p>inet—IPv4 Ethernet and ARP packet type.</p> <p>inet6—IPv6 Ethernet packet type.</p> <p>pppoe—Point-to-Point Protocol over Ethernet packet type.</p>
	<p> NOTE: The DHCP-specific mac-address and option-82 options are rejected if the accept statement is not set to dhcp-v4.</p> <p> NOTE: The pppoe VLAN Ethernet packet type option is supported only for Trio MPC/MIC interfaces on MX Series Routers.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring the VLAN Ethernet Packet Type for Single-Tag VLAN Dynamic Profiles*
 - *Configuring the VLAN Ethernet Packet Type for Stacked VLAN Dynamic Profiles*
 - *Configuring VLAN Interfaces for the Layer 2 Wholesale Solution*

accept-source-mac

Syntax

```
accept-source-mac {
  mac-address mac-address {
    policer {
      input cos-policer-name;
      output cos-policer-name;
    }
  }
}
```

Hierarchy Level [edit interfaces *interface-name* **unit** *logical-unit-number*],
[edit logical-systems *logical-system-name* interfaces *interface-name* **unit** *logical-unit-number*]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.

Description For Gigabit Ethernet intelligent queuing (IQ) interfaces only, accept traffic from and to the specified remote media access control (MAC) address.

The **accept-source-mac** statement is equivalent to the **source-address-filter** statement, which is valid for aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only.

On untagged Gigabit Ethernet interfaces, you should not configure the **source-address-filter** statement and the **accept-source-mac** statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the **source-address-filter** statement and the **accept-source-mac** statement with an identical MAC address specified in both filters.

The statements are explained separately.




NOTE: The **policer** statement is not supported on PTX Series Packet Transport Routers.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring MAC Address Filtering*
 - *Configuring MAC Filtering on PTX Series Packet Transport Routers*
 - [source-filtering on page 405](#)

access-concentrator

Syntax	<code>access-concentrator <i>name</i>;</code>
Hierarchy Level	<p>[edit dynamic-profiles <i>profile-name</i> interfaces demux0 unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit dynamic-profiles <i>profile-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-options],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Support at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options] and [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options] hierarchy levels introduced in Junos OS Release 10.1.</p> <p>Support at the [edit ... family pppoe] hierarchies introduced in Junos OS Release 11.2.</p>
Description	<p>(J Series Services Routers with Point-to-Point Protocol over Ethernet (PPPoE) interfaces)</p> <p>Configure the name of the access concentrator. If you configure a specific access concentrator name on the client and the same access concentrator name server is available, then a PPPoE session is established. If there is a mismatch between the access concentrator names of the client and the server, the PPPoE session gets closed.</p> <p>If you do not configure the access concentrator name, the PPPoE session starts using any available server in the network.</p> <p>(Intelligent Queuing 2 (IQ2) PICs on M120 and M320 routers; MPCs on MX Series routers)</p> <p>Configure an alternative access concentrator name in the AC-NAME tag in a PPPoE control packet for use with a dynamic PPPoE subscriber interface. If you do not configure the access concentrator name, the AC-NAME tag contains the system name.</p>
	<div>  <p>NOTE: The [edit ... family pppoe] hierarchies are supported only on MX Series routers with MPCs.</p> </div>
Options	<i>name</i> —Name of the access concentrator.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

- Related Documentation**
- *Identifying the Access Concentrator*
 - *Configuring the PPPoE Family for an Underlying Interface*
 - *Configuring Dynamic PPPoE Subscriber Interfaces Using Dynamic Profiles*
 - *Junos OS Interfaces and Routing Configuration Guide*

access-profile

Syntax	<code>access-profile name;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> auto-configure vlan-ranges],</p> <p>[edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges],</p> <p>[edit interfaces <i>interface-name</i> ppp-options chap],</p> <p>[edit interfaces <i>interface-name</i> ppp-options pap],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Support for PAP added in Junos OS Release 8.3.</p> <p>Support for VLAN and stacked VLAN ranges added in Junos OS Release 10.0.</p>
Description	<p>For CHAP authentication, the mapping between peer names (or “clients”) and the secrets associated with their respective links. For PAP authentication, the peer's username and password.</p> <p>For Asynchronous Transfer Mode 2 (ATM2) IQ interfaces only, you can configure a Challenge Handshake Authentication Protocol (CHAP) access profile on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 logical link control (LLC) encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation. <p>For VLAN and stacked VLAN authentication, the access profile containing the RADIUS accounting and authentication information for the VLAN or stacked VLAN ranges.</p>
Options	name —Name of the access profile.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPP Challenge Handshake Authentication Protocol</i> • <i>Configuring the PPP Password Authentication Protocol</i> • default-chap-secret on page 177 • <i>Junos OS Administration Library for Routing Devices</i>

accounting

Syntax	<pre>accounting { destination-class-usage; source-class-usage { direction; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Enable IP packet counters on an interface. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling Source Class and Destination Class Usage</i>

accounting-profile

Syntax	accounting-profile <i>name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces interface-range <i>name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Enable collection of accounting data for the specified physical or logical interface or interface range.
Options	<i>name</i> —Name of the accounting profile.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Applying an Accounting Profile to the Physical Interface</i> • <i>Applying an Accounting Profile to the Logical Interface</i>

acfc

Syntax	acfc;
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options compression], [edit interfaces <i>interface-name</i> unit logical-unit-number ppp-options compression], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number ppp-options compression]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For interfaces with PPP encapsulation, configure compression of the Data Link Layer address and control fields. The acfc option is not supported with frame-relay-ppp encapsulation.</p> <p>On M320, M120, and T Series routers, address and control field compression (ACFC) is not supported for any ISO family protocols. Do not include the acfc statement at the [edit interfaces <i>interface-name</i> ppp-options compression] hierarchy level when you include the family iso statement at the [edit interfaces <i>interface-name</i> unit logical-unit-number] hierarchy level.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring PPP Address and Control Field Compression</i>

acknowledge-retries

Syntax	<code>acknowledge-retries <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, configure the number of retransmission attempts to be made for consecutive hello or remove link messages following the expiration of the acknowledgment timer.
Options	<p><i>number</i>—Number of retransmission attempts to be made following the expiration of the acknowledgment timer.</p> <p>Range: 1 through 5</p> <p>Default: 2</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• action-red-differential-delay on page 98• hello-timer on page 257

acknowledge-timer

Syntax	<code>acknowledge-timer <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, configure the maximum time, in milliseconds, to wait for an add link acknowledgment, hello acknowledgment, or remove link acknowledgment message.
Options	<p><code>milliseconds</code>—Time, in milliseconds, to wait for an add link acknowledgment, hello acknowledgment, or remove link acknowledgment message.</p> <p>Range: 1 through 10 milliseconds</p> <p>Default: 4 milliseconds</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• address on page 100, hello-timer on page 257• hello-timer on page 257

action (OAM)

Syntax	<pre>action { link-down; send-critical-event; syslog; }</pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Define the action or actions to be taken when the OAM fault event occurs.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Specifying the Actions to Be Taken for Link-Fault Management Events</i>

action (Policer)

Syntax	<pre>action { loss-priority high then discard; }</pre>
Hierarchy Level	[edit firewall three-color-policer <i>policer-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	This statement discards high loss priority traffic as part of a configuration using tricolor marking on a logical interface.
Required Privilege Level	firewall—To view this statement in the configuration. firewall-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Class of Service Library for Routing Devices</i>• logical-interface-policer on page 339

action-profile (Applying to CFM)

Syntax	<pre>action-profile <i>profile-name</i>;</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> mep <i>mep-id</i> remote-mep <i>mep-id</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Identify the action profile to use.
Options	<i>profile-name</i> —Name of the action profile to use.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Maintenance Endpoint</i>

action-profile (Defining for CFM)

Syntax `action-profile profile-name {
 event {
 adjacency-loss;
 interface-status-tlv (down | lower-layer-down);
 port-status-tlv blocked;
 rdi;
 }
 action {
 interface-down;
 }
 default-actions {
 interface-down;
 }
 }`

Hierarchy Level [edit protocols oam ethernet [connectivity-fault-management](#)]

Release Information Statement introduced in Junos OS Release 8.4.

Description Configure a name and default action for an action profile.

Options *profile-name*—Name of the action profile.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring a Connectivity Fault Management Action Profile*
- [default-actions on page 176](#)
- *event (CFM)*
- [interface-down on page 293](#)

action-profile (Defining for LFM)

Syntax	<pre>action-profile <i>profile-name</i> { action { link-down; send-critical-event; syslog; } event { link-adjacency-loss; link-event-rate { frame-error <i>count</i>; frame-period <i>count</i>; frame-period-summary <i>count</i>; symbol-period <i>count</i>; } protocol-down; } }</pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure a name, one or more actions, and the events that trigger the action for an action profile.
Options	<p><i>profile-name</i>—Name of the action profile.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an OAM Action Profile</i>

action-red-differential-delay

Syntax	<code>action-red-differential-delay (disable-tx remove-link);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, configure the action to be taken when the differential delay exceeds the red limit.
Options	disable-tx —Disable transmission on the bundle link. remove-link —Remove bundle link from service. Default: disable-tx
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• remote on page 486• yellow-differential-delay on page 619

activation-delay

Syntax	<code>activation-delay <i>seconds</i>;</code>
Hierarchy Level	[edit interfaces <i>dlIn</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	(J Series Services Routers) For ISDN interfaces, configure the ISDN dialer activation delay. Used only for dialer backup and dialer watch cases.
Options	seconds —Interval before the backup interface is activated after the primary interface has gone down. Range: 1 through 4,294,967,295 seconds
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Dialer Interface</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

activation-priority

Syntax	<code>activation-priority <i>priority</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> dynamic-call-admission-control], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> dynamic-call-admission-control]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	(J4350 and J6350 Services Routers supporting voice over IP with the TGM550 media gateway module) For Fast Ethernet and Gigabit Ethernet interfaces, ISDN BRI interfaces, and serial interfaces with PPP or Frame Relay encapsulation, configure the dynamic call admission control (dynamic CAC) activation priority value.
Options	<p><i>priority</i>—The activation priority in which the interface is used for providing call bandwidth. The interface with the highest activation priority value is used as the primary link for providing call bandwidth. If the primary link becomes unavailable, the TGM550 switches over to the next active interface with the highest activation priority value, and so on.</p> <p>Range: 0 through 255</p> <p>Default: 50</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Dynamic Call Admission Control</i> <i>Junos OS Services Interfaces Library for Routing Devices</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

address

```
Syntax  address address {
        arp ip-address (mac | multicast-mac) mac-address <publish>;
        broadcast address;
        destination address;
        destination-profile name;
        eui-64;
        master-only;
        multipoint-destination address dlci dlci-identifier;
        multipoint-destination address {
            epd-threshold cells;
            inverse-arp;
            oam-liveness {
                up-count cells;
                down-count cells;
            }
            oam-period (disable | seconds);
            shaping {
                (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst
                 length);
                queue-length number;
            }
            vci vpi-identifier.vci-identifier;
        }
        primary;
        preferred;
        (vrrp-group | vrrp-inet6-group) group-number {
            (accept-data | no-accept-data);
            advertise-interval seconds;
            authentication-type authentication;
            authentication-key key;
            fast-interval milliseconds;
            (preempt | no-preempt) {
                hold-time seconds;
            }
            priority-number number;
            track {
                priority-cost seconds;
                priority-hold-time interface-name {
                    interface priority;
                    bandwidth-threshold bits-per-second {
                        priority;
                    }
                }
            }
            route ip-address/mask routing-instance instance-name priority-cost cost;
        }
        virtual-address [ addresses ];
    }
}
```

Hierarchy Level [edit interfaces *interface-name* unit *logical-unit-number* family *family*],
 [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*
 family *family*]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 11.1 for the QFX Series.

Description Configure the interface address.

Options *address*—Address of the interface.

The remaining statements are explained separately.



NOTE: The `edit logical-systems` hierarchy is not available on QFabric systems.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring the Protocol Family*
- [negotiate-address on page 384](#)
- [unnumbered-address \(Ethernet\) on page 588](#)
- *Junos OS Administration Library for Routing Devices*
- *family*

advertise-interval

Syntax `advertise-interval milliseconds;`

Hierarchy Level [edit interfaces *interface-name* sonet-options [aps](#)]

Release Information Statement introduced before Junos OS Release 7.4.

Description Modify the Automatic Protection Switching (APS) interval at which the protect and working routers send packets to their neighbors to advertise that they are operational. A router considers its neighbor to be operational for a period, called the hold time, that is, by default, three times the advertisement interval.

Options *milliseconds*—Interval between advertisement packets.
Range: 1 through 65,534 milliseconds
Default: 1000 milliseconds

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring APS Timers*

age

Syntax	age (30m 10m 1m 30s 10s);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management linktrace]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Time to wait (in minutes or seconds) for a response. If no response is received, the request and response entry is deleted from the linktrace database.
Default	10 minutes
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Linktrace Protocol in CFM</i>

agent-specifier

Syntax	<pre>agent-specifier { aci <i>circuit-id-string</i> ari <i>remote-id-string</i> { drop; delay <i>seconds</i>; terminate; dynamic-profile <i>profile-name</i>; routing-instance <i>routing-instance-name</i>; static-interface <i>interface-name</i>; } }</pre>
Hierarchy Level	[edit protocols pppoe service-name-tables <i>table-name</i> service <i>service-name</i>]
Release Information	<p>Statement introduced in Junos OS Release 10.0.</p> <p>drop, delay, terminate, dynamic-profile, routing-instance, and static-interface options introduced in Junos OS Release 10.2.</p>
Description	<p>Specify the action taken by the interface for the specified agent circuit identifier/agent remote identifier (ACI/ARI) pair when the interface receives a PPPoE Active Discovery Initiation (PADI) control packet that includes the vendor-specific tag with ACI/ARI pair information. You can configure an ACI/ARI pair for a named service, empty service, or any service in a PPPoE service name table. A maximum of 8000 ACI/ARI pairs are supported per PPPoE service name table. You can distribute the ACI/ARI pairs in any combination among the named, empty, and any service entries in the service name table.</p> <p>You can use an asterisk (*) as a wildcard character to match ACI/ARI pairs, the ACI alone, or the ARI alone. The asterisk can be placed only at the beginning, the end, or both the beginning and end of the identifier string. You can also specify an asterisk alone for either the ACI or the ARI. You cannot specify only an asterisk for both the ACI and the ARI. When you specify a single asterisk as the identifier, that identifier is ignored in the PADI packet.</p> <p>For example, suppose you care about matching only the ACI and do not care what value the ARI has in the PADI packet, or even whether the packet contains an ARI value. In this case you can set the remote-id-string to a single asterisk. Then the interface ignores the ARI received in the packet and the interface takes action based only on matching the specified ACI.</p>
Default	The default action is terminate.
Options	<p>aci <i>circuit-id-string</i>—Identifier for the agent circuit ID that corresponds to the DSLAM interface that initiated the service request. This is a string of up to 63 characters.</p> <p>ari <i>remote-id-string</i>—Identifier for the subscriber associated with the DSLAM interface that initiated the service request. This is a string of up to 63 characters.</p> <p>The remaining statements are explained separately.</p>

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring PPPoE Service Name Tables</i>• <i>Assigning an ACI/ARI Pair to a Service Name and Configuring the Action Taken When the Client Request Includes ACI/ARI Information</i>

aggregate (Gigabit Ethernet CoS Policer)

Syntax	<pre>aggregate { bandwidth-limit <i>bps</i>; burst-size-limit <i>bytes</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile policer cos-policer-name]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define a policer to apply to nonpremium traffic. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Gigabit Ethernet Policers</i>• premium (Hierarchical Policer) on page 463• ieee802.1p on page 267

aggregate (Hierarchical Policer)

Syntax	<pre> aggregate { if-exceeding { bandwidth-limit <i>bandwidth</i>; burst-size-limit <i>burst</i>; } then { discard; } } </pre>
Hierarchy Level	[edit firewall hierarchical-policer]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	On M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, T4000 routers with Type 5 FPC and Enhanced Scaling Type 4 FPC, configure an aggregate hierarchical policer.
Options	Options are described separately.
Required Privilege Level	firewall—To view this statement in the configuration. firewall-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Applying Policers</i> <i>Junos OS Class of Service Library for Routing Devices</i>

aggregate (SONET/SDH)

Syntax	aggregate <i>asx</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify aggregated SONET/SDH logical interface number.
Options	asx —Aggregated SONET/SDH logical interface number. Range: 0 through 15
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Aggregated SONET/SDH Interfaces</i>

aggregate-ports

Syntax	aggregate-ports;
Hierarchy Level	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i>]
Release Information	Statement introduced in Junos OS Release 8.1.
Description	For T Series routers only, specify OC768-over-OC192 mode on the 4-port OC192C PIC. Four OC192 links are aggregated into one OC768 link with one logical interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring 4-Port OC192 PIC to Operate in OC768-over-OC192 Mode</i>

aggregated-ether-options

```
Syntax  aggregated-ether-options {
        ethernet-switch-profile {
            ethernet-policer-profile {
                input-priority-map {
                    ieee802.1p premium [ values ];
                }
                output-priority-map {
                    classifier {
                        premium {
                            forwarding-class class-name {
                                loss-priority (high | low);
                            }
                        }
                    }
                }
            }
            policer cos-policer-name {
                aggregate {
                    bandwidth-limit bps;
                    burst-size-limit bytes;
                }
                premium {
                    bandwidth-limit bps;
                    burst-size-limit bytes;
                }
            }
        }
        (mac-learn-enable | no-mac-learn-enable);
    }
    (flow-control | no-flow-control);
    lacp {
        (active | passive);
        link-protection {
            disable;
            (revertive | non-revertive);
            periodic interval;
            system-priority priority;
            system-id system-id;
        }
        link-protection;
        link-speed speed;
        logical-interface-chassis-redundancy;
        logical-interface-fpc-redundancy;
        (loopback | no-loopback);
        minimum-links number;
        rebalance-periodic time hour:minute <interval hours>;
        source-address-filter {
            mac-address;
            (source-filtering | no-source-filtering);
        }
    }
}
```

Hierarchy Level [edit interfaces aex]

Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure aggregated Ethernet-specific interface properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Interfaces Overview</i>

aggregated-sonet-options

Syntax	<pre>aggregated-sonet-options { link-speed <i>speed</i>; minimum-links <i>number</i>; }</pre>
Hierarchy Level	[edit interfaces asx]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure aggregated SONET/SDH-specific interface properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Aggregated SONET/SDH Interfaces</i>

alarm (optics-options)

Syntax	alarm low-light-alarm { (link-down syslog); }
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Specify the action to take if the receiving optics signal is below the optics low-light alarm threshold.
Options	link-down —Drop the 10-Gigabit Ethernet link and marks link as down. syslog —Write the optics information to the system log.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring 10-Gigabit Ethernet Link Down Notification for Optics Options Alarm or Warning</i> • <i>100-Gigabit Ethernet OTN Options Configuration Overview</i>

allow-any-vci

Syntax	allow-any-vci;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit 0], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit 0]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access routers.
Description	Dedicate entire ATM device to ATM cell relay circuit.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring an ATM1 Cell-Relay Circuit</i>

allow-fragmentation

Syntax	allow-fragmentation;
Hierarchy Level	[edit interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i> tunnel], [edit logical-systems <i>logical-system-name</i> interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i> tunnel]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Enable fragmentation of generic routing encapsulation (GRE) encapsulated packets regardless of maximum transmission unit (MTU) value.
Default	By default, the GRE encapsulated packets are dropped if the packet size exceeds the MTU setting of the egress interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• reassemble-packets on page 481

allow-remote-loopback

Syntax	allow-remote-loopback;
Hierarchy Level	[edit protocols oam link-fault-management interface <i>interface-name</i> negotiation-options]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Enable the remote loopback on IQ2 and IQ2-E Gigabit Ethernet interfaces, and Ethernet interfaces on the MX Series routers and EX Series switches.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Enabling Remote Loopback Support on the Local Interface</i>

annex

Syntax	<code>annex (annex-a annex-b);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> shdsl-options], [edit interfaces <i>interface-name</i> sonet-options aps], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For J Series Services Routers only, configure the type of SHDSL annex. For M320 and M120 routers only, for Multiplex Section Protection (MSP) switching on SDH interfaces, set annex-b . You must also configure the working protection circuit under the [edit interfaces <i>so-fpc/pic/port</i> sonet-options aps] hierarchy level.
Default	annex-b
Options	annex-a —Use for North American SHDSL network implementations. annex-b —Use for European SHDSL network implementations.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>ATM-over-SHDSL Overview</i>

apply-action-profile

Syntax	<code>apply-action-profile <i>profile-name</i>;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management interface]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Apply the specified action profile to the interface for link-fault management.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Applying an Action Profile</i>

aps

Syntax `aps {`
 `advertise-interval milliseconds;`
 `annex-b`
 `authentication-key key;`
 `(break-before-make | no-break-before-make);`
 `fast-aps-switch;`
 `force;`
 `hold-time milliseconds;`
 `lockout;`
 `neighbor address;`
 `paired-group group-name;`
 `preserve-interface;`
 `protect-circuit group-name;`
 `request;`
 `revert-time seconds;`
 `switching-mode (bidirectional | unidirectional);`
 `working-circuit group-name;`
 `}`

Hierarchy Level `[edit interfaces interface-name sonet-options]`

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure Automatic Protection Switching (APS) on the router.


For DS3 channels on a channelized OC12 interface, configure APS on channel 0 only. If you configure APS on channels 1 through 11, it is ignored.

The statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation • *Automatic Protection Switching and Multiplex Section Protection Overview*

arp (Interfaces)

Syntax	<code>arp ip-address (mac multicast-mac) mac-address publish;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inetaddress <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inetaddress <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	For Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only, configure Address Resolution Protocol (ARP) table entries, mapping IP addresses to MAC addresses.
Options	<p>ip-address—IP address to map to the MAC address. The IP address specified must be part of the subnet defined in the enclosing address statement.</p> <p>mac mac-address—MAC address to map to the IP address. Specify the MAC address as six hexadecimal bytes in one of the following formats: <i>nnnn.nnnn.nnnn</i> or <i>nn:nn:nn:nn:nn:nn</i>. For example, 0011.2233.4455 or 00:11:22:33:44:55.</p> <p>multicast-mac mac-address—Multicast MAC address to map to the IP address. Specify the multicast MAC address as six hexadecimal bytes in one of the following formats: <i>nnnn.nnnn.nnnn</i> or <i>nn:nn:nn:nn:nn:nn</i>. For example, 0011.2233.4455 or 00:11:22:33:44:55.</p> <p>publish—(Optional) Have the router or switch reply to ARP requests for the specified IP address. If you omit this option, the router or switch uses the entry to reach the destination but does not reply to ARP requests.</p>
<div>  <p>NOTE: The <code>edit logical-systems</code> hierarchy is not available on QFabric systems.</p> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Static ARP Table Entries</i> • <i>Configuring Static ARP Entries</i>

asynchronous-notification

Syntax	(asynchronous-notification no-asynchronous-notification);
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i> gigether-options]
Release Information	Statement introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For all 10-Gigabit Ethernet interfaces, M120, M320, and T Series routers, configure support for notification of link down alarm generation and transfer. <ul style="list-style-type: none"> • asynchronous-notification—Support notification of link down alarm generation and transfer. • no-asynchronous-notification—Prohibit notification of link down alarm generation and transfer.
Default	Support for notification of link down alarm generation and transfer is not enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>10-Gigabit Ethernet Notification of Link Down Alarm Overview</i>

atm-encapsulation

Syntax	atm-encapsulation (direct plcp);
Hierarchy Level	[edit interfaces <i>at-fpc/pic/port</i> e3-options], [edit interfaces <i>at-fpc/pic/port</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure encapsulation for E3 and T3 traffic over ATM interfaces.
Default	Physical Layer Convergence Protocol (PLCP) encapsulation is the default for T3 traffic and for E3 traffic using G.751 framing.
Options	direct —Use direct encapsulation. G.832 framing on E3 interfaces requires direct encapsulation. plcp —Use PLCP encapsulation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E3 and T3 Parameters on ATM Interfaces</i> • encapsulation (Physical Interface) on page 217

atm-options

```
Syntax  atm-options {
        cell-bundle-size cells;
        ilmi;
        linear-red-profiles profile-name {
            high-plp-max-threshold percent;
            low-plp-max-threshold percent;
            queue-depth cells high-plp-threshold percent low-plp-threshold percent;
        }
        mpls {
            pop-all-labels {
                required-depth number;
            }
        }
        pic-type (atm1 | atm2);
        plp-to-clp;
        promiscuous-mode {
            vpi vpi-identifier;
        }
        scheduler-maps map-name {
            forwarding-class class-name {
                epd-threshold cells plp1 cells;
                linear-red-profile profile-name;
                priority (high | low);
                transmit-weight (cells number | percent number);
            }
            vc-cos-mode (alternate | strict);
        }
        use-null-cw;
        vpi vpi-identifier {
            maximum-vcs maximum-vcs;
            oam-liveness {
                up-count cells;
                down-count cells;
            }
            oam-period (disable | seconds);
            shaping {
                (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst
                length);
                queue-length number;
            }
        }
    }
```

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.

Description Configure ATM-specific physical interface properties.

The statements are explained separately.



NOTE: Certain options apply only to specific platforms.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Interface Encapsulations Overview on page 24](#)
- [multipoint-destination on page 375](#)
- [shaping on page 516](#)
- [vci on page 595](#)

atm-scheduler-map

Syntax atm-scheduler-map (*map-name* | default);

Hierarchy Level [edit interfaces *interface-name* [unit](#) *logical-unit-number*],
[edit logical-systems *logical-system-name* interfaces *interface-name* [unit](#) *logical-unit-number*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Associate a scheduler map with a virtual circuit on a logical interface.

Options *map-name*—Name of scheduler map that you define at the [edit interfaces *interface-name* [atm-options scheduler-maps](#)] hierarchy level.

default—The default scheduler mapping.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Configuring ATM2 IQ VC Tunnel CoS Components](#)
- [scheduler-maps on page 502](#)

authentication

Syntax	<pre> authentication { password <i>password-string</i>; username-include { <i>circuit-type</i>; <i>delimiter</i> <i>delimiter-character</i>; domain-name <i>domain-name-string</i>; <i>interface-name</i>; <i>mac-address</i>; <i>option-82</i> <<i>circuit-id</i>> <<i>remote-id</i>>; <i>radius-realm</i> <i>radius-realm-string</i>; <i>user-prefix</i> <i>user-prefix-string</i>; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	<p>Specify the authentication parameters that trigger the Access-Request message to AAA for the interface.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Subscribers over Static Interfaces</i> <i>Configuring the Static Subscriber Global Authentication Password</i>

authentication-key

Syntax	authentication-key <i>key</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the Automatic Protection Switching (APS) authentication key (password).
Options	key —Authentication password. It can be 1 through 8 characters long. Configure the same key for both the working and protect routers.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Basic Automatic Protect Switching</i>• For information about the authentication-key statement at the [edit interfaces <i>interface-name</i> unit <i>unit-number</i> family inet address <i>address</i> (vrrp-group vrrp-inet6-group) <i>group-number</i>] or [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>unit-number</i> family (inet inet6) address <i>address</i> (vrrp-group vrrp-inet6-group) <i>group-number</i>] hierarchy level, see the <i>Junos OS High Availability Library for Routing Devices</i>.

authentication-profile-name

Syntax	authentication-profile-name <i>access-profile-name</i> ;
Hierarchy Level	[edit protocols dot1x authenticator]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Specify the RADIUS authentication profile to use for user authentication when establishing an IEEE 802.1x Port-Based Network Access Control (dot1x) connection.
Required Privilege Level	interface—To view this statement in the configuration. interface control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• authenticator on page 119• dot1x on page 197

authenticator

Syntax	<pre> authenticator { authentication-profile-name <i>access-profile-name</i>; interface <i>interface-id</i> { maximum-requests <i>integer</i>; quiet-period <i>seconds</i>; reauthentication (disable interval <i>seconds</i>); retries <i>integer</i>; server-timeout <i>seconds</i>; supplicant (<i>single</i>); supplicant-timeout <i>seconds</i>; transmit-period <i>seconds</i>; } }</pre>
Hierarchy Level	[edit protocols dot1x]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Specify an authentication profile for user or client authentication and configure the Ethernet interface for 802.1x protocol operation.
Options	<p>authentication-profile-name <i>access-profile-name</i>—Specifies the RADIUS authentication profile for user or client authentication.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>protocols—To view this statement in the configuration.</p> <p>protocols-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>IEEE 802.1x Port-Based Network Access Control Overview</i> • authentication-profile-name on page 118 • dot1x on page 197

auto-configure

```

Syntax  auto-configure {
        vlan-ranges {
            access-profile profile-name;
            authentication {
                password password-string;
                username-include {
                    circuit-type;
                    delimiter delimiter-character;
                    domain-name domain-name-string;
                    interface-name;
                    mac-address;
                    option-18;
                    option-37;
                    option-82 <circuit-id> <remote-id>;
                    radius-realm radius-realm-string;
                    user-prefix user-prefix-string;
                }
            }
        }
        dynamic-profile profile-name {
            accept (any | dhcp-v4 | dhcp-v6 | inet | inet6 | pppoe);
            ranges (any | low-tag)–(any | high-tag);
        }
        override;
    }
    stacked-vlan-ranges {
        access-profile profile-name;
        authentication {
            password password-string;
            username-include {
                circuit-type;
                delimiter delimiter-character;
                domain-name domain-name-string;
                interface-name;
                mac-address;
                option-18;
                option-37;
                option-82 <circuit-id> <remote-id>;
                radius-realm radius-realm-string;
                user-prefix user-prefix-string;
            }
        }
        dynamic-profile profile-name {
            accept (any | dhcp-v4 | dhcp-v6 | inet | inet6 | pppoe);
            ranges (any | low-tag-high-tag), (any | low-tag-high-tag);
        }
        override;
    }
    remove-when-no-subscribers;
}

```

Hierarchy Level [edit [interfaces](#) *interface-name*]

Release Information	Statement introduced in Junos OS Release 9.5.
Description	Enable the configuration of dynamic, auto-sensed VLANs. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring VLAN Interfaces to Use Dynamic Profiles</i>

auto-discovery

Syntax	auto-discovery;
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> mep <i>mep-id</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Enable the MEP to accept continuity check messages from all remote MEPs.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Maintenance Endpoint</i>• <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>

auto-negotiation

Syntax	(auto-negotiation no-auto-negotiation) <remote-fault (local-interface-online local-interface-offline)>;
Hierarchy Level	[edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces <i>ge-pim</i> /0/0 switch-options switch-port <i>port-number</i>]
Release Information	Statement introduced in Junos OS Release 7.6. Statement introduced in Junos OS Release 8.4 for J Series Services Routers. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Gigabit Ethernet interfaces on M Series, MX Series, T Series, TX Matrix routers, and ACX Series routers explicitly enable autonegotiation and remote fault. For EX Series switches and J Series Services Routers, explicitly enable autonegotiation only.

- **auto-negotiation**—Enables autonegotiation. This is the default.
- **no-auto-negotiation**—Disable autonegotiation. When autonegotiation is disabled, you must explicitly configure the link mode and speed.

When you configure Tri-Rate Ethernet copper interfaces to operate at 1 Gbps, autonegotiation must be enabled.



NOTE: On EX Series switches, an interface configuration that disables autonegotiation and manually sets the link speed to 1 Gbps is accepted when you commit the configuration; however, if the interface you are configuring is a Tri-Rate Ethernet copper interface, the configuration is ignored as invalid and autonegotiation is enabled by default.

To correct the invalid configuration and disable autonegotiation:

1. Delete the **no-auto-negotiation** statement and commit the configuration.
2. Set the link speed to 10 or 100 Mbps, set **no-auto-negotiation**, and commit the configuration.

On J Series Services Routers with universal Physical Interface Modules (uPIMs) and on EX Series switches, if the link speed and duplex mode are also configured, the interfaces use the values configured as the desired values in the negotiation. If autonegotiation is disabled, the link speed and link mode must be configured.



NOTE: On T4000 routers, the **auto-negotiation** command is ignored for interfaces other than Gigabit Ethernet.

Default	Autonegotiation is automatically enabled. No explicit action is taken after the autonegotiation is complete or if the negotiation fails.
Options	remote-fault (local-interface-online local-interface-offline) —(Optional) For M Series, MX Series, T Series, TX Matrix routers, and ACX Series routers only, manually configure remote fault on an interface. Default: local-interface-online
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Gigabit Ethernet Autonegotiation Overview</i> • <i>Configuring J Series Services Router Switching Interfaces</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i>

auto-negotiation (J Series uPIM)

Syntax	(auto-negotiation no-auto-negotiation);
Hierarchy Level	[edit interfaces ge-pim/0/0 switch-options switch-port port-number]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>For universal Physical Interface Modules (uPIMs) on J Series Services Routers only, explicitly enable autonegotiation. If the link speed and duplex are also configured, the interfaces use the values configured as the desired values in the negotiation. Include the no-auto-negotiation statement to disable autonegotiation.</p> <p>If autonegotiation is disabled, the link speed and link mode must be configured.</p>
Default	Autonegotiation is enabled by default.
Options	auto-negotiation —Enables autonegotiation. no-auto-negotiation —Disables autonegotiation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring J Series Services Router Switching Interfaces</i>

auto-reconnect

Syntax	<code>auto-reconnect seconds;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For J Series Services Routers with PPP over Ethernet interfaces, configure the amount of time to wait before reconnecting after a session has terminated.
Options	seconds —Time to wait before reconnecting after a session has terminated. Range: 0 through 4,294,967,295 seconds Default: 0 (immediately)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the PPPoE Automatic Reconnect Wait Timer</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

backup-destination

Syntax	<code>backup-destination address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For tunnel interfaces, specify the remote address of the backup tunnel.
Options	address —Address of the remote side of the connection.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• destination (Tunnels) on page 185

backup-interface

Syntax	<code>backup-interface es-fpc/pic/port;</code>
Hierarchy Level	[edit interfaces es-fpc/pic/port es-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a backup ES Physical Interface Card (PIC). If the primary ES PIC fails, the backup becomes active, inherits all the tunnels and security associations (SAs), and acts as the new next hop for IP Security (IPsec) traffic.
Options	es-fpc/pic/port —Name of ES interface to serve as the backup.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

backup-options

Syntax	<pre>backup-options { interface <i>interface-name</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure an interface to be used as a backup interface if the primary interface goes down. This is used to support ISDN dial backup operation. The remaining statement is explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an ISDN Dialer Interface as a Backup Interface</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

bandwidth (Interfaces)

Syntax	<code>bandwidth rate;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure an informational-only bandwidth value for an interface. This statement is valid for all logical interface types except multilink and aggregated interfaces.



NOTE: We recommend that you be careful when setting this value. Any interface bandwidth value that you configure using the **bandwidth** statement affects how the interface cost is calculated for a dynamic routing protocol, such as OSPF. By default, the interface cost for a dynamic routing protocol is calculated using the following formula:

$$\text{cost} = \text{reference-bandwidth} / \text{bandwidth},$$

where bandwidth is the physical interface speed. However, if you specify a value for bandwidth using the **bandwidth** statement, that value is used to calculate the interface cost, rather than the actual physical interface bandwidth.

Options	rate —Peak rate, in bits per second (bps) or cells per second (cps). You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify a value in cells per second by entering a decimal number followed by the abbreviation c ; values expressed in cells per second are converted to bits per second by means of the formula 1 cps = 384 bps. Range: Not limited.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring the Interface Bandwidth

bandwidth-limit (Hierarchical Policer)

Syntax	<code>bandwidth-limit <i>bps</i>;</code>
Hierarchy Level	[edit dynamic-profiles <i>profile-name</i> firewall hierarchical-policer aggregate if-exceeding], [editdynamic-profiles <i>profile-name</i> firewall hierarchical-policer premium if-exceeding], [edit firewall hierarchical-policer aggregate if-exceeding], [edit firewall hierarchical-policer premium if-exceeding]
Release Information	Statement introduced in Junos OS Release 9.5. Support at the [edit dynamic-profiles ... if-exceeding] hierarchy level introduced in Junos OS Release 11.4.
Description	For M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, T4000 routers with Type 5 FPC and Enhanced Scaling Type 4 FPC, configure the maximum average bandwidth for premium or aggregate traffic in a hierarchical policer.
Options	bps —You can specify the number of bits per second either as a decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). Range: 32,000 through 50,000,000,000
Required Privilege Level	firewall—To view this statement in the configuration. firewall-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Hierarchical Policer Configuration Overview</i> • <i>Policer Bandwidth and Burst-Size Limits</i> • <i>Policer Color-Marking and Actions</i> • <i>Single Token Bucket Algorithm</i> • <i>Determining Proper Burst Size for Traffic Policers</i> • <i>aggregate (Hierarchical Policer)</i> • burst-size-limit (Hierarchical Policer) on page 140 • premium (Hierarchical Policer) on page 463

bandwidth-limit (Policer for Gigabit Ethernet Interfaces)

Syntax	<code>bandwidth-limit <i>bps</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> <i>gigether-options</i> ethernet-switch-profile ethernet-policer-profile <i>policer cos-policer-name aggregate</i>], [edit interfaces <i>interface-name</i> <i>gigether-options</i> ethernet-switch-profile ethernet-policer-profile <i>policer cos-policer-name premium</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define a policer to apply to nonpremium traffic.
Options	<p><i>bps</i>—Bandwidth limit, in bits per second. Specify either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000).</p> <p>Range: 32 Kbps through 32 gigabits per second (Gbps). For IQ2 and IQ2-E interfaces 65,536 bps through 1 Gbps. For 10-Gigabit IQ2 and IQ2-E interfaces 65,536 bps through 10 Gbps.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Gigabit Ethernet Policers</i> burst-size-limit (Policer for Gigabit Ethernet Interfaces) on page 141

bchannel-allocation

Syntax	<code>bchannel-allocation (ascending descending);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> isdn-options]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	(J Series Services Routers equipped with a Dual-Port Channelized T1/E1 PIM) For Integrated Services Digital Network Primary Rate Interfaces (ISDN PRI), allocate PRI dialout B-channels in ascending or descending order.
Options	<p>(ascending descending)—Allocate the B-channels in ascending (from low to high) or descending (from high to low) order.</p> <p>Default: Descending order</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Allocating B-Channels for Dialout</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

bearer-bandwidth-limit

Syntax	<code>bearer-bandwidth-limit <i>kilobits-per-second</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> dynamic-call-admission-control], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> dynamic-call-admission-control]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	(J4350 and J6350 Services Routers supporting voice over IP with the TGM550 media gateway module) For Fast Ethernet and Gigabit Ethernet interfaces, ISDN BRI interfaces, and serial interfaces with PPP or Frame Relay encapsulation, configure the bearer bandwidth limit (BBL). BBL is used for dynamic call admission control (dynamic CAC) to provide enhanced control over WAN bandwidth.
Options	<p><i>kilobits-per-second</i>—The bearer bandwidth limit to be reported to a TGM550 media gateway module, in kilobits per second (kbps).</p> <p>Range: 0 through 9999 kbps</p> <p>Default: 1 (dynamic CAC is not enabled on the interface)</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Dynamic Call Admission Control</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

bert-algorithm

Syntax	<code>bert-algorithm <i>algorithm</i>;</code>
Hierarchy Level	<code>[edit interfaces ce1-fpc/pic/port],</code> <code>[edit interfaces ct1-fpc/pic/port],</code> <code>[edit interfaces interface-name ds0-options],</code> <code>[edit interfaces interface-name e1-options],</code> <code>[edit interfaces interface-name e3-options],</code> <code>[edit interfaces interface-name t1-options],</code> <code>[edit interfaces interface-name t3-options]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Configure the pattern to send in the bit stream during a bit error rate test (BERT). Applies to T1, E3, T3, and multichannel DS3 interfaces, the channelized interfaces (DS3, OC12, STM1), and channelized IQ and IQE interfaces (E1, E3 and DS3).



NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the `bert-algorithm` statement must be included at the `[edit interfaces ce1-fpc/pic/port]` or `[edit interfaces ct1-fpc/pic/port]` hierarchy level as appropriate.

Options	<p><i>algorithm</i>—Pattern to send in the bit stream. There are two categories of test patterns: pseudorandom and repetitive. Both patterns conform to CCITT/ITU O.151, O.152, O.153, and O.161 standards. The algorithm can be one of the following patterns:</p> <ul style="list-style-type: none"> • all-ones-repeating—Pattern is all ones. • all-zeros-repeating—Pattern is all zeros. • alternating-double-ones-zeros—Pattern is alternating pairs of ones and zeros. • alternating-ones-zeros—Pattern is alternating ones and zeros. • pseudo-2e3—Pattern is $2^3 - 1$. • pseudo-2e4—Pattern is $2^4 - 1$. • pseudo-2e5—Pattern is $2^5 - 1$. • pseudo-2e6—Pattern is $2^6 - 1$. • pseudo-2e7—Pattern is $2^7 - 1$. • pseudo-2e9-o153—Pattern is $2^9 - 1$, as defined in the O153 standard. • pseudo-2e10—Pattern is $2^{10} - 1$. • pseudo-2e11-o152—Pattern is $2^{11} - 1$, as defined in the O152 standard.
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- **pseudo-2e15-o151**—Pattern is $2^{15} - 1$, as defined in the O151 standard.
- **pseudo-2e17**—Pattern is $2^{17} - 1$.
- **pseudo-2e18**—Pattern is $2^{18} - 1$.
- **pseudo-2e20-o151**—Pattern is $2^{20} - 1$, as defined in the O151 standard.
- **pseudo-2e20-o153**—Pattern is $2^{20} - 1$, as defined in the O153 standard.
- **pseudo-2e21**—Pattern is $2^{21} - 1$.
- **pseudo-2e22**—Pattern is $2^{22} - 1$.
- **pseudo-2e23-o151**—Pattern is $2^{23} - 1$, as defined in the O151 standard.
- **pseudo-2e25**—Pattern is $2^{25} - 1$.
- **pseudo-2e28**—Pattern is $2^{28} - 1$.
- **pseudo-2e29**—Pattern is $2^{29} - 1$.
- **pseudo-2e31**—Pattern is $2^{31} - 1$.
- **pseudo-2e32**—Pattern is $2^{32} - 1$.
- **repeating-1-in-4**—One bit in four is set to 1; the others are set to 0.
- **repeating-1-in-8**—One bit in eight is set to 1; the others are set to 0.
- **repeating-3-in-24**—Three bits in twenty four are set to 1; the others are set to 0.

Default: pseudo-2e3

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

Related Documentation

- [Interface Diagnostics on page 639](#)
- *Configuring E1 BERT Properties*
- *Configuring E3 BERT Properties*
- *Configuring T1 BERT Properties*
- *Configuring T3 BERT Properties*
- *Examples: Configuring T3 Interfaces*
- [bert-error-rate on page 132](#)
- [bert-period on page 134](#)

bert-error-rate

Syntax	<code>bert-error-rate rate;</code>
Hierarchy Level	<code>[edit interfaces ce1-fpc/pic/port],</code> <code>[edit interfaces ct1-fpc/pic/port],</code> <code>[edit interfaces interface-name ds0-options],</code> <code>[edit interfaces interface-name e1-options],</code> <code>[edit interfaces interface-name e3-options],</code> <code>[edit interfaces interface-name t1-options],</code> <code>[edit interfaces interface-name t3-options]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Configure the bit error rate to use in a BERT procedure. Applies to E1, E3, T1, or T3 interfaces, and to the channelized interfaces (DS3, OC3, OC12, and STM1).




NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the `bert-error-rate` statement must be included at the `[edit interfaces ce1-fpc/pic/port]` or `[edit interfaces ct1-fpc/pic/port]` hierarchy level as appropriate.

When configuring `t3-options bert-error-rate` on J Series routers, only 0 and 3 through 7 are valid values. If you enter 1 or 2, Junos OS will return the error message `configuration check-out failed`.

Options	<p>rate—Bit error rate.</p> <p>Range: 0 through 7, which corresponds to 10^{-1} (1 error per bit) to 10^{-7} (1 error per 10 million bits)</p> <p>Default: 0</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • bert-algorithm on page 130 • bert-period on page 134 • ds0-options on page 199 • e1-options on page 208 • e3-options on page 209 • t1-options on page 547 • t3-options on page 550

- [Interface Diagnostics on page 639](#)
- *Configuring E1 BERT Properties*
- *Configuring E3 BERT Properties*
- *Configuring T1 BERT Properties*
- *Configuring T3 BERT Properties*
- *Examples: Configuring T3 Interfaces*

bert-period


Syntax	<code>bert-period <i>seconds</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>ce1-fpc/pic/port</i>], [edit interfaces <i>ct1-fpc/pic/port</i>], [edit interfaces <i>interface-name ds0-options</i>], [edit interfaces <i>interface-name e1-options</i>], [edit interfaces <i>interface-name e3-options</i>], [edit interfaces <i>interface-name t1-options</i>], [edit interfaces <i>interface-name t3-options</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	<p>Configure the duration of a BERT test. Applies to E1, E3, T1, and T3 interfaces, and to E1, E3, T1, and T3 partitions on the channelized interfaces (CE1, CT1, DS3, OC3, OC12, OC48, STM1, STM4, and STM16).</p> <p>E1 and T1 IQ, IQE, and standard interfaces support an extended BERT period range, up to 86,400 seconds (24 hours).</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p> NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the <code>bert-period</code> statement must be included at the [edit interfaces <i>ce1-fpc/pic/port</i>] or [edit interfaces <i>ct1-fpc/pic/port</i>] hierarchy level as appropriate.</p> </div>
Options	<p><i>seconds</i>—Test duration. Range and default values vary by interface type.</p> <p>Range:</p> <ul style="list-style-type: none"> PIC-dependent—Normal BERT period: either 1 through 239 seconds or 1 through 240 seconds PIC-dependent—Extended BERT period: from 1 through 86,400 seconds <p>Default:</p> <ul style="list-style-type: none"> Normal BERT period: 10 seconds Extended BERT period (on supported E1 interfaces): 10 seconds Extended BERT period (on supported T1 interfaces): 240 seconds
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Interface Diagnostics on page 639 Configuring E1 BERT Properties

- *Configuring E3 BERT Properties*
- *Configuring T1 BERT Properties*
- *Configuring T3 BERT Properties*
- [bert-algorithm on page 130](#)
- [bert-error-rate on page 132](#)

bridge-domain

Syntax	<code>bridge-domain <i>name</i>;</code> <code> vlan-id [<i>vlan-identifiers</i>];</code> <code>}</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>maintenance-domain-name</i>], [edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>maintenance-domain-name</i> virtual-switch <i>virtual-switch-name</i>]
Release Information	Statement introduced in Junos OS Release 9.4.
Description	(MX Series routers only) Specify the OAM Ethernet CFM maintenance domain bridge domain.
Options	<i>name</i> —Specify the name of the bridge domain. <i>vlan-identifiers</i> —Specify one or more VLAN identifiers.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Maintenance Intermediate Points</i>• <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>• maintenance-domain on page 355

broadcast

Syntax	<code>broadcast address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Set the broadcast address on the network or subnet. On a subnet you cannot specify a host address of 0, nor can you specify a broadcast address.
Default	The default broadcast address has a host portion of all ones.
Options	address —Broadcast address. The address must have a host portion of either all ones or all zeros. You cannot specify the addresses 0.0.0.0 or 255.255.255.255 .
<div>  <p>NOTE: The edit logical-systems hierarchy is not available on QFabric systems.</p> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Interface Address</i>


buildout (E3 or T3 over ATM Interfaces)

Syntax	<code>buildout <i>feet</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> e3-options], [edit interfaces at- <i>fpc/pic/port</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For E3 and T3 traffic over ATM interfaces, set the buildout value.
Options	<i>feet</i> —The buildout value in feet. Range: 0 through 450 feet (137 meters) Default: 10 feet (3 meters)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring E3 and T3 Parameters on ATM Interfaces</i>

buildout (T1 Interfaces)

Syntax	<code>buildout value;</code>
Hierarchy Level	[edit interfaces <i>ct1-fpc/pic/port</i>] [edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	For T1 interfaces, set the buildout value.
	<div>  <p>NOTE: When configuring CT1 interfaces on 10-port Channelized E1/T1 IQE PICs and 16-Port Channelized E1/T1 Circuit Emulation MICs, the buildout statement must be included at the hierarchy level.</p> </div>
Default	The default buildout value is 0 through 132 feet.
Options	<p>You can set the buildout value to one of the following:</p> <ul style="list-style-type: none"> • 0-132—0 through 132 feet (0 through 40 meters) • 133-265—133 through 265 feet (40 through 81 meters) • 266-398—266 through 398 feet (81 through 121 meters) • 399-531—399 through 531 feet (121 through 162 meters) • 532-655—532 through 655 feet (162 through 200 meters) • long-0db—For J Series routers only, long buildout with 0 decibel (dB) transmit attenuation • long-7.5db—For MX Series and J Series routers only, long buildout with 7.5 dB transmit attenuation • long-15db—For MX Series and J Series routers only, long buildout with 15 dB transmit attenuation • long-22.5db—For MX Series and J Series routers only, long buildout with 22.5 dB transmit attenuation
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the T1 Buildout</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

bundle

Syntax	<code>bundle (ml-<i>fpc/pic/port</i> ls-<i>fpc/pic/port</i>);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Associate the multilink interface with the logical interface it is joining. You can include this statement for the mlfr-end-to-end and mlfr-uni-nni protocol families only.
<div>  <p>NOTE:</p> <p>For M Series routers and T Series routers, the following caveats apply:</p> <ul style="list-style-type: none"> Maximum supported throughput on the bundle interfaces is 45 Mbps. Bundling of the logical interfaces under a T3 physical interface into the same or different bundles is not supported. </div>	
Options	<p>ml-<i>fpc/pic/port</i>—Name of the multilink interface you are linking.</p> <p>ls-<i>fpc/pic/port</i>—Name of the link services interface you are linking.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Junos OS Services Interfaces Library for Routing Devices</i>


burst-size-limit (Hierarchical Policer)

Syntax	<code>burst-size-limit bytes;</code>
Hierarchy Level	[edit dynamic-profiles <i>profile-name</i> firewall hierarchical-policer aggregate if-exceeding], [edit dynamic-profiles <i>profile-name</i> firewall hierarchical-policer premium if-exceeding], [edit firewall hierarchical-policer aggregate if-exceeding], [edit firewall hierarchical-policer premium if-exceeding]
Release Information	Statement introduced in Junos OS Release 9.5. Support at the [edit dynamic-profiles ... if exceeding] hierarchy level introduced in Junos OS Release 11.4.
Description	For M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, T4000 routers with Type 5 FPC and Enhanced Scaling Type 4 FPC, configure the burst-size limit for premium or aggregate traffic in a hierarchical policer.
Options	bytes —Burst-size limit in bytes. The minimum recommended value is the maximum transmission unit (MTU) of the IP packets being policed. You can specify the value either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). Range: 1500 through 2,147,450,880
Required Privilege Level	firewall —To view this statement in the configuration. firewall-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Hierarchical Policer Configuration Overview</i> • <i>Policer Bandwidth and Burst-Size Limits</i> • <i>Policer Color-Marking and Actions</i> • <i>Single Token Bucket Algorithm</i> • <i>Determining Proper Burst Size for Traffic Policers</i> • <i>Hierarchical Policers</i> • <i>aggregate (Hierarchical Policer)</i> • bandwidth-limit (Hierarchical Policer) on page 127 • premium (Hierarchical Policer) on page 463

burst-size-limit (Policer for Gigabit Ethernet Interfaces)

Syntax	<code>burst-size-limit bytes;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile policer <i>cos-policer-name</i> aggregate], [edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile policer <i>cos-policer-name</i> premium]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define a policer to apply to nonpremium traffic.
Options	bytes —Burst length. Range: 1500 through 100,000,000 bytes
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Gigabit Ethernet Policers• bandwidth-limit (Policer for Gigabit Ethernet Interfaces) on page 128


byte-encoding

Syntax	byte-encoding (nx56 nx64);
Hierarchy Level	[edit interfaces t1- <i>fpc/pic/port</i>], [edit interfaces <i>interface-name</i> ds0-options], [edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Set the byte encoding on a DS0 or T1 interface to use 7 bits per byte or 8 bits per byte.
	<div><p>NOTE: When configuring T1 interfaces on the 10-port Channelized E1/T1 IQE PIC, the byte-encoding statement must be included at the [edit interfaces t1-<i>fpc/pic/port</i>] hierarchy level.</p></div>
Default	The default byte encoding is 8 bits per byte (nx64).
Options	nx56—Use 7 bits per byte. nx64—Use 8 bits per byte.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring T1 Byte Encoding</i>

bytes

Syntax	<pre>bytes { c2 <i>value</i>; e1-quiet <i>value</i>; f1 <i>value</i>; f2 <i>value</i>; s1 <i>value</i>; z3 <i>value</i>; z4 <i>value</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set values in some SONET/SDH header bytes.
Options	<p>c2 <i>value</i>—Path signal label SONET/SDH overhead byte. SONET/SDH frames use the C2 byte to indicate the contents of the payload inside the frame. SONET/SDH interfaces use the C2 byte to indicate whether the payload is scrambled.</p> <p>Range: 0 through 255</p> <p>Default: 0xCF</p> <p>e1-quiet <i>value</i>—Default idle byte sent on the orderwire SONET/SDH overhead bytes. The router does not support the orderwire channel, and hence sends this byte continuously.</p> <p>Range: 0 through 255</p> <p>Default: 0x7F</p> <p>f1 <i>value</i>, f2 <i>value</i>, z3 <i>value</i>, z4 <i>value</i>—SONET/SDH overhead bytes.</p> <p>Range: 0 through 255</p> <p>Default: 0x00</p> <p>s1 <i>value</i>—Synchronization message SONET overhead byte. This byte is normally controlled as a side effect of the system reference clock configuration and the state of the external clock coming from an interface if the system reference clocks have been configured to use an external reference.</p> <p>Range: 0 through 255</p> <p>Default: 0xCC</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring SONET/SDH Header Byte Values</i> <i>no-concatenate</i>

callback

Syntax	callback;
Hierarchy Level	[edit interfaces <i>dl n unit logical-unit-number</i> dialer-options incoming-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl n unit logical-unit-number</i> dialer-options incoming-map]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	On J Series Services Routers with interfaces configured for ISDN, configure the dialer to terminate the incoming call and call back the originator after the callback wait period. The default wait time is 5 seconds. To configure the wait time, include the callback-wait-period statement at the [edit interfaces <i>dl n unit logical-unit-number</i> dialer-options] hierarchy level.
	<div>  <p>NOTE: The incoming-map statement is mandatory for the router to accept any incoming ISDN calls.</p> </div> <p>If the callback statement is configured, you cannot use the caller caller-id statement at the [edit interfaces <i>dl n unit logical-unit-number</i> dialer-options] hierarchy level.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Dial-In and Callback</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i> • callback-wait-period on page 145

callback-wait-period

Syntax	<code>callback-wait-period <i>time</i>;</code>
Hierarchy Level	[edit interfaces <i>dl</i> n unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl</i> n unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	<p>On J Series Services Routers with interfaces configured for ISDN with callback, specify the amount of time the dialer waits before calling back the caller. The default wait time is 5 seconds. The wait time is necessary because, when a call is rejected, the switch waits for up to 4 seconds on point-to-multipoint connections to ensure no other device accepts the call before sending the DISCONNECT message to the originator of the call. However, the default time of 5 seconds may not be sufficient for different switches or may not be needed on point-to-point connections.</p> <p>To configure callback mode, include the callback statement at the [edit interfaces <i>dl</i>n unit <i>logical-unit-number</i> dialer-options] hierarchy level.</p> <p>If the callback statement is configured, you cannot use the caller <i>caller-id</i> statement at the [edit interfaces <i>dl</i>n unit <i>logical-unit-number</i> dialer-options] hierarchy level.</p>
Options	<i>time</i> —Time the dialer waits before calling back the caller.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Dial-In and Callback</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

caller

Syntax	<code>caller (caller-id accept-all);</code>
Hierarchy Level	[edit interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options incoming-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options incoming-map]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	On J Series Services Routers with interfaces configured for ISDN, specify the dialer to accept a specified caller number or accept all incoming calls.
Options	<p>caller-id—Incoming caller number. You can configure multiple caller IDs on a dialer. The caller ID of the incoming call is matched against all caller IDs configured on all dialers. The dialer matching the caller ID is looked at for further processing. Only a precise match is a valid match. For example, the configured caller ID 1-222-333-4444 or 222-333-4444 will match the incoming caller ID 1-222-333-4444.</p> <p>If the incoming caller ID has fewer digits than the number configured, it is not a valid match. Duplicate caller IDs are not allowed on different dialers; however, for example, the numbers 1-408-532-1091, 408-532-1091, and 532-1091 can still be configured on different dialers.</p> <p>Only one B-channel can map to one dialer. If one dialer is already mapped, any other call mapping to the same dialer is rejected (except in the case of a multilink dialer). If no dialer caller is configured on a dialer, that dialer will not accept any calls.</p> <p>accept-all—Any incoming call in an associated interface is accepted.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>ISDN Interfaces Overview</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

calling-number

Syntax	<code>calling-number <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>br-pim</i> /0/ <i>port</i> isdn-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, configure the calling number to include in outgoing calls.
Options	<i>number</i> —Calling number.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring ISDN Physical Interface Properties</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

cbit-parity

Syntax	<code>(cbit-parity no-cbit-parity);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For T3 interfaces only, enable or disable C-bit parity mode, which controls the type of framing that is present on the transmitted T3 signal. When C-bit parity mode is enabled, the C-bit positions are used for the far-end block error (FEBE), far-end alarm and control (FEAC), terminal data link, path parity, and mode indicator bits, as defined in ANSI T1.107a-1989. For ATM and ATM2 IQ2 and IQ2-E interfaces, M23 framing is used when the no-cbit-parity statement is included. For all other interfaces, M13 framing is used when the no-cbit-parity statement is included.
Default	C-bit parity mode is enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring E3 and T3 Parameters on ATM Interfaces</i> <i>Disabling T3 C-Bit Parity Mode</i>


cbr

Syntax	<code>cbr rate;</code>
Hierarchy Level	<p>[edit interfaces at-<i>fpc/pic/port</i> atm-options vpi <i>vpi-identifier</i> shaping],</p> <p>[edit interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping],</p> <p>[edit interfaces at-<i>fpc/pic/ port</i> unit <i>logical-unit-number</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i> shaping]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM encapsulation only, define a constant bit rate bandwidth utilization in the traffic-shaping profile.
Default	Unspecified bit rate (UBR); that is, bandwidth utilization is unlimited.
Options	<p>rate—Peak rate, in bits per second (bps) or cells per second (cps). You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify a value in cells per second by entering a decimal number followed by the abbreviation c; values expressed in cells per second are converted to bits per second by means of the formula 1 cps = 384 bps.</p> <p>For ATM1 and ATM2 OC3 interfaces, the maximum available rate is 100 percent of <i>line-rate</i>, or 135,600,000 bps. For ATM1 OC12 interfaces, the maximum available rate is 50 percent of <i>line-rate</i>, or 271,263,396 bps. For ATM2 IQ interfaces, the maximum available rate is 542,526,792 bps.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Defining the ATM Traffic-Shaping Profile • rtvbr on page 499 • shaping on page 516 • vbr on page 593


cell-bundle-size

Syntax	<code>cell-bundle-size <i>cells</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options], [edit interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces using ATM Layer 2 circuit cell-relay transport mode only, configure the maximum number of ATM cells per frame.
Options	<i>cells</i> —Maximum number of cells. Default: 1 cell Range: 1 through 176 cells
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Layer 2 Circuit Cell-Relay Cell Maximum</i>

chap

Syntax	<pre> chap { access-profile name; challenge-length minimum <i>minimum-length</i> maximum <i>maximum-length</i>; default-chap-secret name; local-name name; passive; } </pre>
Hierarchy Level	<pre> [edit interfaces <i>interface-name</i> ppp-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options] </pre>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Allow each side of a link to challenge its peer, using a “secret” known only to the authenticator and that peer. The secret is not sent over the link.</p> <p>By default, PPP CHAP is disabled. If CHAP is not explicitly enabled, the interface makes no CHAP challenges and denies all incoming CHAP challenges.</p> <p>For ATM2 IQ interfaces only, you can configure CHAP on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 LLC encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  <p>BEST PRACTICE: On inline service (si) interfaces for L2TP, only the chap statement itself is typically used for subscriber management. We recommend that you leave the subordinate statements at their default values.</p> </div> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPP Challenge Handshake Authentication Protocol</i> • <i>Junos OS Administration Library for Routing Devices</i> • <i>Applying PPP Attributes to L2TP LNS Subscribers Per Inline Service Interface</i>

chap-secret

Syntax	<code>chap-secret <i>chap-secret</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with PPP encapsulation on which the PPP Challenge Handshake Authentication Protocol (CHAP) is configured, configure the shared secret (the CHAP secret key associated with a peer), as defined in RFC 1994.
<div>  <p>NOTE: This statement is not supported for L2TP LNS on MX Series routers.</p> </div>	
Options	<i>chap-secret</i> —The secret key associated with a peer.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the CHAP Secret for an L2TP Profile</i> • <i>Configuring PPP CHAP Authentication</i> • pap-password on page 431 • <i>Junos OS Administration Library for Routing Devices</i>

circuit-type

Syntax	<code>circuit-type;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include],
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify that the circuit type is concatenated with the username during the subscriber authentication process.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring VLAN Interface Username Information for AAA Authentication</i>

cisco-interoperability

Syntax	<code>cisco-interoperability send-lip-remove-link-for-link-reject;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	FRF.16 interoperability settings.
Options	send-lip-remove-link-for-link-reject —Send Link Integrity Protocol remove link when an add-link rejection message is received.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

classifier

Syntax	<pre>classifier { per-unit-scheduler { forwarding-class class-name { loss-priority (high low); } } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile output-priority-map]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Gigabit Ethernet IQ and 10-Gigabit Ethernet interfaces only, define the classifier for the output priority map to be applied to outgoing frames on this interface. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying an Output Priority Map</i>• input-priority-map on page 285

clear-dont-fragment-bit

Syntax	clear-dont-fragment-bit;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Clear the don't-fragment (DF) bit on all IP version 4 (IPv4) packets entering a generic routing encapsulation (GRE) tunnel. If the encapsulated packet's size exceeds the tunnel's maximum transmission unit (MTU), the packet is fragmented before encapsulation. The statement is supported only on MX Series routers and all M Series routers except the M320 router.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

client

Syntax	client;
Hierarchy Level	[edit interfaces pp0 unit <i>logical-unit-number</i> pppoe-options], [edit logical-systems <i>logical-system-name</i> interfaces pp0 unit <i>logical-unit-number</i> pppoe-options]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	On J Series Services Routers, configure the router to operate in the PPPoE client mode.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPPoE Client Mode</i>

clock-rate

Syntax	<code>clock-rate rate;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces, configure the interface speed, in megahertz (MHz).
Options	<p>rate—You can specify one of the following rates:</p> <ul style="list-style-type: none">• 2.048 MHz• 2.341 MHz• 2.731 MHz• 3.277 MHz• 4.096 MHz• 5.461 MHz• 8.192 MHz• 16.384 MHz <p>Default: 16.384 MHz</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Clocking Mode</i>



clocking

Syntax	clocking (external [interface <i>interface-name</i>] internal);
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. interface option added in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	For interfaces that can use various clock sources, configure the source of the transmit clock on each interface.
Options	external —The clock source is provided by the data communication equipment (DCE). interface <i>interface-name</i> —For interfaces operating on T1/E1 PIMs for J Series Services Routers only, configure clocking for the drop-and insert feature. When configuring this feature, both ports must use the same clock source: either the router's internal clock or an external clock on one of the interfaces. If an external clock source is required, one interface must specify clocking external and the other must specify the same clock. internal —Use the internal stratum 3 clock as the reference clock. Default: internal
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Clock Source</i> • <i>Configuring the Clock Source on SONET/SDH Interfaces</i> • <i>Clock Sources on Channelized Interfaces</i> • <i>Configuring a Channelized T1/E1 Interface to Drop and Insert Time Slots</i> • loop-timing on page 341

clocking-mode

Syntax	<code>clocking-mode (dce internal loop);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces, configure the clock mode. You cannot configure clocking-mode dce on a DTE router using an X.21 serial line protocol (detected automatically when an X.21 cable is plugged into the serial interface).
Options	dce —DCE timing (DTE mode only, not valid for X.21). internal —Internal baud timing. loop —Loop timing. Default: loop
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Clocking Mode</i>

compatibility-mode

Syntax	<code>compatibility-mode (adtran digital-link kentrox larscom verilink) <subrate value>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> e3-options], [edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the E3 or T3 interface to be compatible with the channel service unit (CSU) at the remote end of the line.
<div>  <p>NOTE: The <code>compatibility-mode</code> statement at the [edit interfaces <i>interface-name</i> e3-options] hierarchy level is not valid for IQE PICs.</p> </div>	
Default	If you omit this option, the full E3 or T3 rate is used.
Options	<p>adtran—For T3 IQ interfaces only, configure compatibility with Adtran CSUs.</p> <p>digital-link—Configure compatibility with Digital Link CSUs. If you include this option on an E3 interface, you must also disable payload scrambling.</p> <p>kentrox—Configure compatibility with Kentrox CSUs. Kentrox subrate is valid for E3 IQ and T3 IQ interfaces only.</p> <p>larscom—For T3 and T3 IQ interfaces only, configure compatibility with Larscom CSUs.</p> <p>verilink—For T3 IQ and T3 IQE interfaces only, configure compatibility with Verilink CSUs.</p>
<div>  <p>NOTE: Verilink configuration is not functional if an IQ interface is paired with an IQE interface.</p> </div>	
	<p>subrate value—Subrate of the E3 or T3 line.</p> <p>Range: For Kentrox CSUs on E3 IQ interfaces and T3 IQ interfaces the subrate value must match the value configured on the CSU. Each increment of the subrate value corresponds to a rate increment of about 0.5 Mbps.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the E3 CSU Compatibility Mode</i> • <i>Configuring the T3 CSU Compatibility Mode</i> • payload-scrambler on page 403

compression (PPP Properties)

Syntax	<pre>compression { acfc; pfc; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For interfaces with PPP encapsulation, set Link Control Protocol (LCP) compression options.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring PPP Address and Control Field Compression</i>• <i>Configuring the PPP Protocol Field Compression</i>

compression (Voice Services)

Syntax	<pre>compression { rtp { f-max-period <i>number</i>; queues [<i>queue-numbers</i>]; port { minimum <i>port-number</i>; maximum <i>port-number</i>; } } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the compression properties for voice services traffic. The remaining statements are described separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

compression-device

Syntax	compression-device <i>interface-name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the compression interface for voice services traffic.
Options	<i>interface-name</i> —Logical interface used for compression.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

connections

Syntax	<pre>connections { interface-switch connection-name { interface interface-name.unit-number; interface interface-name.unit-number; } }</pre>
Hierarchy Level	[edit protocols]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Define the connection between two circuits in a circuit cross-connect (CCC) connection.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Defining the Connection for Switching Cross-Connects</i>• <i>Junos OS MPLS Applications Library for Routing Devices</i>

connectivity-fault-management

```
Syntax connectivity-fault-management {
    action-profile profile-name {
        default-actions {
            interface-down;
        }
        event {
            adjacency-loss;
            interface-status-tlv (down | lower-layer-down);
            port-status-tlv blocked;
            rdi;
        }
    }
    performance-monitoring {
        delegate-server-processing;
        hardware-assisted-timestamping;
        sla-iterator-profiles {
            profile-name {
                disable;
                calculation-weight {
                    delay delay-weight;
                    delay-variation delay-variation-weight;
                }
                cycle-time milliseconds;
                iteration-period connections;
                measurement-type (loss | statistical-frame-loss | two-way-delay);
            }
        }
    }
    linktrace {
        age (30m | 10m | 1m | 30s | 10s);
        path-database-size path-database-size;
    }
    maintenance-domain domain-name {
        bridge-domain <vlan-id [ vlan-ids ]>;
        instance routing-instance-name;
        interface interface-name;
        level number;
        name-format (character-string | none | dns | mac+2oct);
        maintenance-association ma-name {
            protect-maintenance-association protect-ma-name;
            remote-maintenance-association remote-ma-name;
            short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
            continuity-check {
                convey-loss-threshold;
                hold-interval minutes;
                interface-status-tlv;
                interval (10m | 10s | 1m | 1s | 100ms);
                loss-threshold number;
                port-status-tlv;
            }
        }
        mep mep-id {
            auto-discovery;
        }
    }
}
```

```

    direction (up | down);
    interface interface-name (protect | working);
    lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
        rem-err-xcon | xcon );
    priority number;
    remote-mep mep-id {
        action-profile profile-name;
        sla-iterator-profile profile-name {
            data-tlv-size size;
            iteration-count count-value;
            priority priority-value;
        }
    }
}
}
}
virtual-switch routing-instance-name {
    bridge-domain name <vlan-ids [ vlan-ids ]>;
}
}
}

```

Hierarchy Level [edit protocols [oam ethernet](#)]

Release Information Statement introduced in Junos OS Release 8.4.

Description For Ethernet interfaces on M7i and M10i routers with Enhanced CFEB (CFEB-E), and on M120, M320, MX Series, and T Series routers, specify connectivity fault management for IEEE 802.1ag Operation, Administration, and Management (OAM) support. In Junos OS Release 9.3 and later, this statement is also supported on aggregated Ethernet interfaces.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *IEEE 802.1ag OAM Connectivity Fault Management Overview*
- *Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers*

container-devices

Syntax	container-devices { device-count <i>number</i> ; }
Hierarchy Level	[edit chassis]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Specify the container devices configuration. The number option specifies the number of sequentially numbered container interfaces, from ci0 to ci127 maximum.
Options	number —Number of container devices. Range: 1 through 128
Required Privilege Level	chassis—To view this statement in the configuration. chassis-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>

container-list

Syntax	container-list [<i>container-interface-names</i>];
Hierarchy Level	[edit interfaces container-options]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Specify a list of container interfaces; for example: ci0 , ci1 , and up to ci127 .
Options	container-interface-names —Name of each container interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>• container-options on page 164

container-options

Syntax	<pre>container-options { container-list [container-interface-names]; container-type aps; member-interface-type sonet { member-interface-speed [speed]; } }</pre>
Hierarchy Level	[edit interfaces]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Specify the container interface options.
Options	<p>interface-name—Name of the SONET or the container interface.</p> <p>aps—Specify the member link interface type of the container as APS.</p> <p>sonet—Protocol type of the container interface.</p> <p>speed—Set interface speed to OC3, OC12, OC48, OC192, OC768, or mixed.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>

container-type

Syntax	<pre>container-type aps;</pre>
Hierarchy Level	[edit interfaces container-options]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Specify the container-options interface type.
Options	<p>aps—Configure the interface type to be Automatic Protection Switching (APS).</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>

continuity-check

Syntax	<pre>continuity-check { convey-loss-threshold; hold-interval <i>minutes</i>; interface-status-tlv; interval (10m 10s 1m 1s 100ms 10ms); loss-threshold <i>number</i>; port-status-tlv; }</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Specify continuity check protocol options.
Options	<p>convey-loss-threshold—Enable loss-threshold-tlv transmission.</p> <p>hold-interval <i>minutes</i>—Specify the continuity check hold-interval, in minutes.</p> <p>interface-status-tlv—Enable interface-status-tlv transmission.</p> <p>interval (<i>10m 10s 1m 1s 100ms 10ms</i>)—Specify the continuity check interval.</p> <p>loss-threshold <i>minutes</i>—Specify the loss-threshold, in minutes.</p> <p>port-status-tlv—Enable port-status-tlv transmission.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Continuity Check Protocol</i> <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>

control-channel

Syntax	<code>control-channel <i>channel-name</i> { vlan <i>vlan-id</i>; }</code>
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>name</i> (east-interface west-interface)]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Configure the Ethernet RPS control channel logical interface to carry the RAPS PDU. The related physical interface is the physical ring port.
Options	vlan <i>vlan-id</i> —If the control channel logical interface is a trunk port, then a dedicated vlan <i>vlan-id</i> defines the dedicated VLAN channel to carry the RAPS traffic. Only configure the vlan-id when the control channel logical interface is the trunk port.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>• <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i>• <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>

control-polarity

Syntax	<code>control-polarity (negative positive);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For X.21 interfaces only, configure the control signal polarity.
Options	positive —Positive signal polarity. negative —Negative signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

control-signal

Syntax	control-signal (assert de-assert normal);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For X.21 interfaces only, configure the to-DCE signal.
Options	<p>assert—The to-DCE signal must be asserted.</p> <p>de-assert—The to-DCE signal must be deasserted.</p> <p>normal—Normal request-to-send (RTS) signal handling, as defined by ITU-T Recommendation X.21.</p> <p>Default: normal</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Serial Signal Handling</i>

copy-tos-to-outer-ip-header

Syntax	copy-tos-to-outer-ip-header;
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For GRE tunnel interfaces only, enable the inner IP header's TOS bits to be copied to the outer IP packet header.
Default	If you omit this statement, the TOS bits in the outer IP header are set to 0.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Class of Service Library for Routing Devices</i>

core-dump

Syntax	(core-dump no-core-dump);
Hierarchy Level	[edit interfaces mo- <i>fpc/pic/port</i> multiservice-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For monitoring services interfaces only, a useful tool for isolating the cause of a problem. Core dumping is enabled by default. The directory /var/tmp contains core files. The Junos OS saves the current core file (0) and the four previous core files, which are numbered 1 through 4 (from newest to oldest):</p> <ul style="list-style-type: none">• core-dump—Enable the core dumping operation.• no-core-dump—Disable the core dumping operation.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

crc-major-alarm-threshold

Syntax	crc-major-alarm-threshold (1e-3 5e-4 1e-4 5e-5 1e-5);
Hierarchy Level	[edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced in Junos OS Release 8.5. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Major alarm error thresholds for T1 CRC errors. When the threshold is exceeded for one second, a defect condition is declared. If the defect condition continues for the monitoring period, an alarm condition is declared.
Default	10-second monitoring period for all settings except 1e-5. The 1e-5 value uses a 50-second monitoring period.
Options	<p>1e-3—Error rate expressed as the number of errors per number of bits. The value 1e-3 is one crc error in 10^3 bits.</p> <p>1e-4—Error rate expressed as the number of errors per number of bits. The value 1e-4 is one crc error in 10^4 bits.</p> <p>1e-5—Error rate expressed as the number of errors per number of bits. The value 1e-5 is one crc error in 10^5 bits.</p> <p>5e-4—Error rate expressed as the number of errors per number of bits. The value 5e-4 is five crc errors in 10^4 bits.</p> <p>5e-5—Error rate expressed as the number of errors per number of bits. The value 5e-5 is five crc errors in 10^5 bits.</p> <p>Default: 5e-5</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring T1 CRC Error Major Alarm Thresholds

crc-minor-alarm-threshold

Syntax	crc-minor-alarm-threshold (1e-3 5e-4 1e-4 5e-5 1e-5 5e-6 1e-6);
Hierarchy Level	[edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced in Junos OS Release 8.5. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Minor alarm error thresholds for T1 CRC errors. When the threshold is exceeded for one second, a defect condition is declared. If the defect condition continues for the monitoring period, an alarm condition is declared.
Default	10-second monitoring period for values 1e-3 , 5e-4 , 1e-4 , and 5e-5 . The 1e-5 value uses a 50-second monitoring period. The 5e-6 value uses a 100-second monitoring period. The 1e-6 value uses a 500-second monitoring period.
Options	<p>1e-3—Error rate expressed as the number of errors per number of bits. The value 1e-3 is one crc error in 10^3 bits.</p> <p>1e-4—Error rate expressed as the number of errors per number of bits. The value 1e-4 is one crc error in 10^4 bits.</p> <p>1e-5—Error rate expressed as the number of errors per number of bits. The value 1e-5 is one crc error in 10^5 bits.</p> <p>1e-6—Error rate expressed as the number of errors per number of bits. The value 1e-5 is one crc error in 10^6 bits.</p> <p>5e-4—Error rate expressed as the number of errors per number of bits. The value 5e-4 is five crc errors in 10^4 bits.</p> <p>5e-5—Error rate expressed as the number of errors per number of bits. The value 5e-5 is five crc errors in 10^5 bits.</p> <p>5e-6—Error rate expressed as the number of errors per number of bits. The value 5e-5 is five crc errors in 10^6 bits.</p> <p>Default: 5e-6</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring T1 CRC Error Minor Alarm Thresholds</i>

cts

Syntax	cts (ignore normal require);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure the from-DCE signal, clear-to-send (CTS).
Options	<p>ignore—The from-DCE signal is ignored.</p> <p>normal—Normal CTS signal handling as defined by the TIA/EIA Standard 530.</p> <p>require—The from-DCE signal must be asserted.</p> <p>Default: normal</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Serial Signal Handling</i>

cts-polarity

Syntax	cts-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure CTS signal polarity.
Options	<p>positive—Positive signal polarity.</p> <p>negative—Negative signal polarity.</p> <p>Default: positive</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Serial Signal Polarities</i>

current

Syntax	<code>current <i>margin</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> shdsl-options snr-margin], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options snr-margin]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For J Series Services Routers only, configure the current target signal-to-noise ratio (SNR) margin to be used when training the SHDSL line. The current margin is the difference between desired SNR and the actual SNR. When configured, the line trains at higher than the current margin plus SNR threshold.
Options	margin —Desired current SNR margin. Specify either disabled or a value from 0 dB through 10 dB. Default: 0 dB
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ATM-over-SHDSL Overview</i>

data-input

Syntax	<code>data-input (system interface <i>interface-name</i>);</code>
Hierarchy Level	<code>[edit interfaces <i>ds-pim</i>/0/<i>port:channel</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.2.
Description	<p>For interfaces operating on T1/E1 PIMs for J Series Services Routers only, configure whether an interface should send and receive data from the Routing Engine or from a given interface name. On channelized T1/E1 interfaces partitioned into channels, you can insert time slots from one port directly into the other port on the same PIM, to replace time slots coming through the Routing Engine.</p> <p>To avoid slips, both ports must use the same clock source: either the router's internal clock or an external clock on one of the interfaces. If an external clock source is required, one interface must specify clocking external and the other must specify the same clock by including the clocking external interface <i>interface-name</i> statement at the <code>[edit interfaces <i>interface-name</i>]</code> hierarchy level.</p>
Options	<p>system—Interface sends and receives data from the Routing Engine.</p> <p>interface <i>interface-name</i>—Interface sends and receives data from a specific interface.</p> <p>Default: Data is sent and received from the Routing Engine (system).</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Channelized T1/E1 Interface to Drop and Insert Time Slots</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i> • clocking on page 155

dcd

Syntax	dcd (ignore normal require);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure the from-DCE signal, data-carrier-detect (DCD).
Options	ignore —The from-DCE signal is ignored. normal —Normal DCD signal handling as defined by the TIA/EIA Standard 530. require —The from-DCE signal must be asserted. Default: normal
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

dcd-polarity

Syntax	dcd-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure DCD signal polarity.
Options	positive —Positive signal polarity. negative —Negative signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

dce

Syntax	dce;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> serial-options clocking-mode]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Frame Relay only, respond to status enquiry message keepalives. When you configure the router to be a DCE, keepalives are disabled by default.
Default	The router operates in DTE mode.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Router as a DCE with Frame Relay Encapsulation</i>

dce-options

Syntax	<pre>dce-options { control-signal (assert de-assert normal); cts (ignore normal require); dcd (ignore normal require); dsr (ignore normal require); dtr signal-handling-option; ignore-all; indication (ignore normal require); rts (assert de-assert normal); tm (ignore normal require); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced in Junos OS Release 8.3. Statement previously known as control-leads .
Description	For J Series Services Routers, configure the serial interface signal characteristics. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Serial Signal Handling</i>

deactivation-delay

Syntax	<code>deactivation-delay <i>seconds</i></code> ;
Hierarchy Level	[edit interfaces <i>dlm</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, configure the ISDN deactivation delay. Used only for dialer backup and dialer watch cases.
Options	seconds —Interval before the backup interface is deactivated after the primary interface has come up. Range: 1 through 4,294,967,295 seconds Default: 0 (zero)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Logical Interface Properties</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

default-actions

Syntax	<code>default-actions { interface-down; }</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management action-profile <i>profile-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Define the action to be taken when connectivity to the remote MEP is lost.
Default	If no action is configured, no action is taken.
Options	interface-down —When a remote MEP connectivity failure is detected, bring the interface down.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Connectivity Fault Management Action Profile</i>

default-chap-secret

Syntax	<code>default-chap-secret name;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options chap], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap]
Release Information	Statement introduced in Junos OS Release 8.0.
Description	<p>Define the default CHAP secret to be used when no matching CHAP access profile exists.</p> <p>For ATM2 IQ interfaces only, you can configure a default CHAP secret on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 LLC encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation.
Default	If you do not include the default-chap-secret statement in the configuration, and an interface receives a CHAP challenge or response from a peer that is not in the applied access profile, the link is immediately dropped.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring a Default CHAP Secret • access-profile on page 90


default-pap-password

Syntax	<code>default-pap-password password;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	For PAP authentication, the default PAP password.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring a Default PAP Password • access-profile on page 90

delimiter

Syntax	<code>delimiter <i>delimiter-character</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify the character used as the delimiter between the concatenated components of the username. You cannot use the semicolon (;) as a delimiter.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring VLAN Interface Username Information for AAA Authentication

demux-destination (Underlying Interface)

Syntax	<code>demux-destination <i>family</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.0. Support for aggregated Ethernet added in Junos OS Release 9.4.
Description	Configure the logical demultiplexing (demux) destination family type on the IP demux underlying interface.
<div style="display: flex; align-items: center;">  <div> <p>NOTE: The IP demux interface feature currently supports only Fast Ethernet, Gigabit Ethernet, 10-Gigabit Ethernet, or aggregated Ethernet underlying interfaces.</p> </div> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring an IP Demux Underlying Interface

demux-destination (Demux Interface)

Syntax	<code>demux-destination { <code>destination-prefix</code>; }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 9.0. Support for aggregated Ethernet added in Junos OS Release 9.4.
Description	Configure one or more logical demultiplexing (demux) destination prefixes. The prefixes are matched against the destination address of packets that the underlying interface receives. When a match occurs, the packet is processed as if it was received on the demux interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring IP Demux Prefixes</i>


demux-options (Static Interface)

Syntax	<code>demux-options { <code>underlying-interface</code> <i>interface-name</i> }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure logical demultiplexing (demux) interface options. The statement is explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Specifying the Demux Underlying Interface</i>

demux-source (Demux Interface)

Syntax	<code>demux-source { source-prefix; }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 9.0. Support for aggregated Ethernet added in Junos OS Release 9.4.
Description	Configure one or more logical demultiplexing (demux) source prefixes. The prefixes are matched against the source address of packets that the underlying interface receives. When a match occurs, the packet is processed as if it was received on the demux interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring IP Demux Prefixes</i>

demux-source (Underlying Interface)

Syntax	demux-source <i>family</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],
Release Information	Statement introduced in Junos OS Release 9.0. Support for aggregated Ethernet added in Junos OS Release 9.4.
Description	Configure the logical demultiplexing (demux) source family type on the IP demux underlying interface.
<div>  <p>NOTE: The IP demux interface feature currently supports only Fast Ethernet, Gigabit Ethernet, 10-Gigabit Ethernet, or aggregated Ethernet underlying interfaces.</p> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring an IP Demux Underlying Interface</i>

demux0 (Static Interface)

Syntax	<pre> demux0 { unit <i>logical-unit-number</i> { demux-options { underlying-interface <i>interface-name</i> } family <i>family</i> { access-concentrator <i>name</i>; { destination-prefix; } duplicate-protection; dynamic-profile <i>profile-name</i>; { source-prefix; } max-sessions <i>number</i>; service-name-table <i>table-name</i> targeted-distribution; unnumbered-address <i>interface-name</i> <preferred-source-address <i>address</i>>; } vlan-id <i>number</i>; vlan-tags outer [<i>tpid</i>].<i>vlan-id</i> [inner [<i>tpid</i>].<i>vlan-id</i>]; } } </pre>
Hierarchy Level	[edit interfaces], [edit logical-systems <i>logical-system-name</i> interfaces]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	<p>Configure the logical demultiplexing (demux) interface.</p> <p>Logical IP demux interfaces do not support IPv4 and IPv6 dual stack.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Specifying the Demux Underlying Interface</i> • <i>Configuring IP Demux Prefixes</i>

description (Interfaces)

Syntax	<code>description text;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i>],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p>
Description	<p>Provide a textual description of the interface or the logical unit. Any descriptive text you include is displayed in the output of the show interfaces commands, and is also exposed in the ifAlias Management Information Base (MIB) object. It has no effect on the operation of the interface on the router or switch.</p> <p>The textual description can also be included in the extended DHCP relay option 82 Agent Circuit ID suboption.</p>
Options	text —Text to describe the interface. If the text includes spaces, enclose the entire text in quotation marks.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Interface Description</i> • <i>Adding a Logical Unit Description to the Configuration</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i> • <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i> • <i>Enabling and Disabling Insertion of Option 82 Information</i> • <i>Junos OS Network Interfaces Library for Routing Devices</i>

destination (IPCP)

Syntax	<code>destination address destination-profile profile-name;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet unnumbered-address <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet unnumbered-address <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For unnumbered interfaces with PPP encapsulation, specify the IP address of the remote interface.
Options	address —IP address of the remote interface. The remaining statement is explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring IPCP Options</i>• address on page 100• negotiate-address on page 384• <i>Junos OS Administration Library for Routing Devices</i>

destination (Routing Instance)

Syntax	<code>destination routing-instance-name;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel routing-instance], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel routing-instance]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the destination routing instance that points to the routing table containing the tunnel destination address.
Default	The default Internet routing table inet.0 .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

destination (Tunnels)

Syntax	<code>destination address;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet address <i>address</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet <i>unnumbered-address</i> <i>interface-name</i>],</p> <p>[edit interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i> tunnel],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet address <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet <i>unnumbered-address</i> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i> tunnel]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	For encrypted, PPP-encapsulated, and tunnel interfaces, specify the remote address of the connection.
Options	<i>address</i> —Address of the remote side of the connection.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Interface Address</i> • <i>Configuring Generic Routing Encapsulation Tunneling (CLI Procedure)</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • point-to-point on page 445

destination-class-usage

Syntax	destination-class-usage;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet accounting], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet accounting]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Enable packet counters on an interface that count packets that arrive from specific customers and are destined for specific prefixes on the provider core router.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Enabling Source Class and Destination Class Usage</i>• accounting on page 91• source-class-usage on page 525

destination-profile

Syntax	destination-profile <i>name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet address <i>address</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet unnumbered-address <i>interface-name</i> destination <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet address <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet unnumbered-address <i>interface-name</i> destination <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	For interfaces with PPP encapsulation, assign PPP properties to the remote destination end. You define the profile at the [edit access group-profile <i>name</i> ppp] hierarchy level.
Options	<i>name</i> —Profile name defined at the [edit access group-profile <i>name</i> ppp] hierarchy level.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring IPCP Options</i>• destination (IPCP) on page 184• <i>Junos OS Administration Library for Routing Devices</i>

interface (Port Mirroring)

Syntax	<code>interface <i>interface-name</i> { next-hop <i>address</i>; }</code>
Hierarchy Level	[edit forwarding-options port-mirroring family (inet inet6) output]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the output interface for sending copies of packets elsewhere to be analyzed.
Options	<i>interface-name</i> —Name of the interface. The remaining statements are explained separately.
Usage Guidelines	See <i>Configuring Port Mirroring</i> .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

dial-string

Syntax	<code>dial-string [<i>dial-string-numbers</i>];</code>
Hierarchy Level	[edit interfaces br-pim/0/port unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces br-pim/0/port unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, specify one or more ISDN dial strings used to reach a destination subnetwork.
Options	<i>dial-string-numbers</i> —One or more strings of numbers to call.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Dialer Interface</i>

dialer

Syntax	<code>dialer <i>filter-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Apply a dialer filter to an interface. To create the dialer filter, include the dialer-filter statement at the [edit firewall filter family <i>family</i>] hierarchy level.
Options	<i>filter-name</i> —Dialer filter name.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying the Dial-on-Demand Dialer Filter to the Dialer Interfaces</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>


dialer-options

Syntax	<pre> dialer-options { activation-delay seconds; callback; callback-wait-period time; deactivation-delay seconds; dial-string [dial-string-numbers]; idle-timeout seconds; incoming-map { caller caller-number accept-all; initial-route-check seconds; load-interval seconds; load-threshold percent; pool pool-name; redial-delay time; watch-list { [routes]; } } } </pre>
Hierarchy Level	<pre> [edit interfaces umd0], [edit interfaces dln unit logical-unit-number], [edit logical-systems logical-system-name interfaces dln unit logical-unit-number] </pre>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Specify the dialer options for configuring logical interfaces for group and user sessions.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring ISDN Logical Interface Properties</i> <i>Junos OS Services Interfaces Library for Routing Devices</i>

dialin

Syntax	dialin (console routable);
Hierarchy Level	[edit interfaces umd0 modem-options]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	For J Series Services Routers, configure a USB modem port to act as a dial-in console or WAN backup port.
Options	console —Configure the USB modem port to operate as a dial-in console for management. routable —Configure the USB modem port to operate as a dial-in WAN backup interface. Default: console
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying a USB Modem Interface on J Series Routers</i>

direction

Syntax	direction (up down);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> mep <i>mep-id</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Configure the direction of the MEP.
Options	<p>up—An UP MEP CCM is transmitted out of every logical interface which is part of the same bridging or vpls instance except for the interface configured on this MEP.</p> <hr/> <p> NOTE: The up direction for MEP is not supported on T Series routers.</p> <hr/> <p>down—Down MEP CCMs are transmitted only out the interface configured on this MEP.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Maintenance Endpoint</i> • <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i> • <i>IEEE 802.1ag OAM Connectivity Fault Management Overview</i>

disable (Interface)

Syntax	disable;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Disable a physical or a logical interface, effectively unconfiguring it.



CAUTION:

- Dynamic subscribers and logical interfaces use physical interfaces for connection to the network. The Junos OS allows you to set the interface to disable and commit the change while dynamic subscribers and logical interfaces are still active. This action results in the loss of all subscriber connections on the interface. Use care when disabling interfaces.
- If aggregated SONET links are configured between a T1600 router and a T4000 router, interface traffic is disrupted when you disable the physical interface configured on the T1600 router. If you want to remove the interface, we recommend that you deactivate the interface instead of disabling it.



NOTE:

- When you use the disable statement at the [edit interfaces] hierarchy level, depending on the PIC type, the interface might or might not turn off the laser. Older PIC transceivers do not support turning off the laser, but newer Gigabit Ethernet (GE) PICs with SFP and XFP transceivers do support it and the laser will be turned off when the interface is disabled.
- When you disable or deactivate an interface, then all the references made to the deactivated interface must be removed from the routing instance.



WARNING: Do not stare into the laser beam or view it directly with optical instruments even if the interface has been disabled.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Disabling a Physical Interface*
- *Disabling a Logical Interface*

disable (Link Protection)

Syntax disable;

Hierarchy Level [edit interfaces aeX aggregated-ether-options lacp link-protection]

Release Information Statement introduced in Junos OS Release 9.3.
Statement introduced in Junos OS Release 11.4 for EX Series switches.

Description Disable LACP link protection on the interface.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Aggregated Ethernet LACP*
- *Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)*

disable-mlppp-inner-ppp-pfc

Syntax disable-mlppp-inner-ppp-pfc;

Hierarchy Level [edit interfaces *interface-name* unit *logical-unit-number*],
[edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*]

Release Information Statement introduced in Junos OS Release 8.2.

Description For MLPPP interfaces only, disable compression of the inner PPP header in the MLPPP payload. By default, compression is enabled.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Junos OS Services Interfaces Library for Routing Devices*

dlci

Syntax	<code>dlci <i>dlci-identifier</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Frame Relay and Multilink Frame Relay (MLFR) user-to-network interface (UNI) network-to-network interface (NNI) encapsulation only, and for link services, voice services and point-to-point interfaces only, configure the data-link connection identifier (DLCI) for a permanent virtual circuit (PVC) or an switched virtual circuit (SVC).</p> <p>To configure a DLCI for a point-to-multipoint interface, use the multipoint-destination statement to specify the DLCI.</p>
Options	<p><i>dlci-identifier</i>—Data-link connection identifier.</p> <p>Range: 16 through 1022.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Data-Link Connection Identifiers on Channelized Interfaces</i>• <i>Configuring Frame Relay DLCIs</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>• encapsulation (Logical Interface) on page 213• multicast-dlci on page 371• multipoint-destination on page 375

do-not-fragment

Syntax	do-not-fragment;
Hierarchy Level	[edit interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i> tunnel], [edit logical-systems <i>logical-system-name</i> interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i> tunnel]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Disable fragmentation of GRE encapsulated packets.
Default	By default fragmentation is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• reassemble-packets on page 481

domain-name

Syntax From DHCP Local Pool Configuration mode:

domain-name *domainName*

no domain-name

From IPsec Identity Configuration mode:

[no] domain-name *domainName*

Release Information Command introduced before JunosE Release 7.1.0.

Description From DHCP Local Pool Configuration mode, specifies a domain name that can be returned to the subscriber of an address pool if requested. The **no** version removes the association between the address pool and the domain name.

From IPsec Identity mode, specifies the domain name that the router uses in IKE authentication messages and to generate certificate requests. The **no** version removes the domain name.

Options

- *domainName*—Name of the domain
- *domainName*—Name used in certificate requests and in IKE authentication messages; up to 60 characters

Mode DHCP Local Pool Configuration, IPsec Identity Configuration

dot1x

Syntax	<pre>dot1x { authenticator { authentication-profile-name <i>access-profile-name</i>; interface <i>interface-id</i> { maximum-requests <i>integer</i>; quiet-period <i>seconds</i>; reauthentication (disable interval <i>seconds</i>); retries <i>integer</i>; server-timeout <i>seconds</i>; supplicant (<i>single</i>); supplicant-timeout <i>seconds</i>; transmit-period <i>seconds</i>; } } }</pre>
Hierarchy Level	[edit protocols]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	<p>For the MX Series only, specifies settings for using 802.1x Port-Based Network Access Control.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>IEEE 802.1x Port-Based Network Access Control Overview</i> • authenticator on page 119 • authentication-profile-name on page 118 • interface (IEEE 802.1x) on page 290

down-count

Syntax	<code>down-count <i>cells</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> oam-liveness],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i> oam-liveness],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i> oam-liveness]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM encapsulation only, configure Operation, Administration, and Maintenance (OAM) F5 loopback cell count thresholds. This feature is not supported on ATM-over-SHDSL interfaces.</p> <p>For ATM2 IQ PICs only, configure OAM F4 loopback cell count thresholds at the [edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>] hierarchy level.</p>
Options	<p>cells—Minimum number of consecutive OAM F4 or F5 loopback cells lost before a VC is declared down.</p> <p>Range: 1 through 255</p> <p>Default: 5 cells</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the ATM OAM F5 Loopback Cell Threshold</i>

drop-timeout

Syntax	<code>drop-timeout <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services, multilink, and voice services interfaces only, configure the drop timeout period, in milliseconds.
Options	<i>milliseconds</i> —Drop timeout period. Range: 0 through 2000 milliseconds Default: 0 ms (disabled)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

ds0-options

Syntax	<pre>ds0-options { bert-algorithm <i>algorithm</i>; bert-error-rate <i>rate</i>; bert-period <i>seconds</i>; byte-encoding (nx56 nx64); fcs (16 32); idle-cycle-flag (flags ones); invert-data; loopback <i>payload</i>; start-end-flag (filler shared); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure DS0-specific physical interface properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Channelized DS3-to-DS0 Interfaces</i>

dsl-options

Syntax	<pre>dsl-options { loopback local; operating-mode mode; }</pre>
Hierarchy Level	[edit interfaces <i>at-fpc/pic/port</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For J Series Services Routers only, modify the properties of the digital subscriber line for an ATM interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ATM-over-ADSL Overview</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

dsr

Syntax	<pre>dsr (ignore normal require);</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure the from-DCE signal, data-set-ready (DSR).
Options	<p>ignore—The from-DCE signal is ignored.</p> <p>normal—Normal DSR signal handling as defined by the TIA/EIA Standard 530.</p> <p>require—The from-DCE signal must be asserted.</p> <p>Default: normal</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

dsr-polarity

Syntax	<code>dsr-polarity (negative positive);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure DSR signal polarity.
Options	<p>positive—Positive signal polarity.</p> <p>negative—Negative signal polarity.</p> <p>Default: positive</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Serial Signal Polarities</i>

dte-options

Syntax	<pre>dte-options { control-signal (assert de-assert normal); cts (ignore normal require); dcd (ignore normal require); dsr (ignore normal require); dtr <i>signal-handling-option</i>; ignore-all; indication (ignore normal require); rts (assert de-assert normal); tm (ignore normal require); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement previously known as control-leads.</p>
Description	<p>For M Series and T Series routers, configure the serial interface signal characteristics.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring the Serial Signal Handling</i>

dtr

Syntax	<code>dtr <i>signal-handling-option</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure the to-DCE signal, data-transmit-ready (DTR).
Options	<p><i>signal-handling-option</i>—Signal handling for the DTR signal. The signal handling can be one of the following:</p> <p>assert—The to-DCE signal must be asserted.</p> <p>auto-synchronize—Normal DTR signal with automatic synchronization. This statement has two substatements:</p> <p>duration <i>milliseconds</i>—Pulse duration of resynchronization. Range: 1 through 1000 milliseconds Default: 1000 milliseconds</p> <p>interval <i>seconds</i>—Offset interval for resynchronization. Range: 1 through 31 seconds Default: 15 seconds</p> <p>de-assert—The to-DCE signal must be deasserted.</p> <p>normal—Normal DTR signal handling as defined by the TIA/EIA Standard 530. Default: normal</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

dtr-circuit

Syntax	dtr-circuit (balanced unbalanced);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure a DTR circuit.
Options	balanced —Balanced DTR signal. unbalanced —Unbalanced DTR signal. Default: balanced
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial DTR Circuit</i>

dtr-polarity

Syntax	dtr-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure DTR signal polarity.
Options	positive —Positive signal polarity. negative —Negative signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

dump-on-flow-control

Syntax	dump-on-flow-control;
Hierarchy Level	[edit interfaces <i>interface-name</i> multiservice-options]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	This option supports high availability functionality and can be used with various service interfaces, including rsp , rms , lsq , and rlsq .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>• passive-monitor-mode on page 434

dynamic-call-admission-control

Syntax	dynamic-call-admission-control { activation-priority <i>priority</i> ; bearer-bandwidth-limit <i>kilobits-per-second</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	<p>(J4350 and J6350 Services Routers supporting voice over IP with the TGM550 media gateway module) For Fast Ethernet and Gigabit Ethernet interfaces, ISDN BRI interfaces, and serial interfaces with PPP or Frame Relay encapsulation, configure dynamic call admission control (CAC). Dynamic CAC provides enhanced control over WAN bandwidth. When dynamic CAC is configured on an interface responsible for providing call bandwidth, the TGM550 informs the Media Gateway Controller (MGC) of the bandwidth limit available for voice packets on the interface and requests the MGC to block new calls when the bandwidth is exhausted.</p> <p>Dynamic CAC must be configured on each Services Router interface responsible for providing call bandwidth.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Dynamic Call Admission Control</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

dynamic-profile (Stacked VLAN)

Syntax	<code>dynamic-profile <i>profile-name</i> { accept (any dhcp-v4 dhcp-v6 inet inet6 pppoe); ranges (any <i>low-tag-high-tag</i>) ,(any <i>low-tag-high-tag</i>); }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	Configure a dynamic profile for use when configuring dynamic stacked VLANs.
Options	<i>profile-name</i> —Name of the dynamic profile that you want to use when configuring dynamic stacked VLANs. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Dynamic Profiles Overview</i>• <i>Configuring a Basic Dynamic Profile</i>• <i>Associating a Stacked VLAN Dynamic Profile with an Interface</i>

dynamic-profile (VLAN)

Syntax	<code>dynamic-profile <i>profile-name</i> { accept (any dhcp-v4 dhcp-v6 inet inet6 pppoe); ranges (any <i>low-tag</i>)–(any <i>high-tag</i>); }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	Configure a dynamic profile for use when configuring dynamic VLANs.
Options	<p><i>profile-name</i>—Name of the dynamic profile that you want to use when configuring dynamic VLANs.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Dynamic Profiles Overview</i>• <i>Configuring a Basic Dynamic Profile</i>• <i>Associating a Single-Tag VLAN Dynamic Profile with an Interface</i>



e1-options

Syntax	<pre>e1-options { bert-algorithm <i>algorithm</i>; bert-error-rate <i>rate</i>; bert-period <i>seconds</i>; fcs (16 32); framing (g704 g704-no-crc4 unframed); idle-cycle-flag (flags ones); invert-data; loopback (local remote); start-end-flag (filler shared); timeslots <i>time-slot-range</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Configure E1-specific physical interface properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Channelized E1 IQ and IQE Interfaces Overview</i>• <i>Channelized STM1 Interfaces Overview</i>• <i>E1 Interfaces Overview</i>• <i>T1 Interfaces Overview</i>


e3-options

Syntax	<pre>e3-options { atm-encapsulation (direct plcp); bert-algorithm <i>algorithm</i>; bert-error-rate <i>rate</i>; bert-period <i>seconds</i>; buildout <i>feet</i>; compatibility-mode (digital-link kentrox larscom) <subrate <i>value</i>>; fcs (16 32); framing (g.751 g.832); idle-cycle-flag <i>value</i>; invert-data; loopback (local remote); (payload-scrambler no-payload-scrambler); start-end-flag <i>value</i>; (unframed no-unframed); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure E3-specific physical interface properties.</p> <p>For ATM1 interfaces, you can configure a subset of E3 options statements.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>E3 Interfaces Overview</i> • <i>T3 Interfaces Overview</i> • atm-options on page 115

east-interface

Syntax	<pre> east-interface { node-id mac-address; control-channel channel-name { interface-name ring-protection-link-end; } } </pre>
Hierarchy Level	[edit protocols protection-group ethernet-ring ring-name]
Release Information	<p>Statement introduced in Junos OS Release 9.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Define one of the two interface ports for Ethernet ring protection, the other being defined by the west-interface statement at the same hierarchy level. The interface must use the control channel's logical interface name. The control channel is a dedicated VLAN channel for the ring port.</p> <p>EX Series switches do not use the node-id statement--the node ID is automatically configured on the switches using the MAC address.</p> <div style="margin-top: 20px;">  <p>NOTE: Always configure this port first, before configuring the west-interface statement.</p> </div> <div style="margin-top: 20px;">  <p>NOTE: The Node ID is not configurable on EX Series switches. The node ID is automatically configured using the MAC address.</p> </div> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Ethernet Ring Protection Switching Overview</i> • <i>Ethernet Ring Protection Using Ring Instances for Load Balancing</i> • west-interface on page 618 • ethernet-ring on page 228 • <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i> • <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>

egress-policer-overhead

Syntax	<code>egress-policer-overhead bytes;</code>
Hierarchy Level	<code>[edit chassis fpc slot-number pic pic-number]</code>
Release Information	Statement introduced before Junos OS Release 11.1.
Description	<p>Add the specified number of bytes to the actual length of an Ethernet frame when determining the actions of Layer 2 policers, MAC policers, or queue rate limits applied to output traffic on the line card. You can configure egress policer overhead to account for egress <i>shaping</i> overhead bytes added to output traffic on the line card.</p> <p>On M Series and T Series routers, this statement is supported on Gigabit Ethernet Intelligent Queuing 2 (IQ2) PICs and Enhanced IQ2 (IQ2E) PICs. On MX Series routers, this statement is supported for interfaces configured on Dense Port Concentrators (DPCs).</p>
	<div>  <p>NOTE: This statement is not supported on Modular Interface Cards (MICs) or Modular Port Concentrators (MPCs) in MX Series routers.</p> </div>
Options	<p>bytes—Number of bytes added to a packet exiting an interface.</p> <p>Range: 0–255 bytes</p> <p>Default: 0</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>egress-shaping-overhead</i> <i>Policer Overhead to Account for Rate Shaping Overview</i> <i>Example: Configuring Policer Overhead to Account for Rate Shaping</i> <i>Configuring a Policer Overhead</i> <i>CoS on Enhanced IQ2 PICs Overview</i>

encapsulation (Container Interface)

Syntax	<code>encapsulation (cisco-hdlc ppp);</code>
Hierarchy Level	<code>[edit interfaces cin]</code>
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Container link-layer encapsulation type.
Options	cisco-hdlc —Use Cisco-compatible High-Level Data Link Control (HDLC) framing. ppp —Use serial PPP encapsulation.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>

encapsulation (Logical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-ccc-vc-mux atm-cisco-nlpid atm-mlppp-llc atm-nlpid atm-ppp-llc atm-ppp-vc-mux atm-snap atm-tcc-snap atm-tcc-vc-mux atm-vc-mux ether-over-atm-llc ether-vpls-over-atm-llc ether-vpls-over-fr ether-vpls-over-ppp ethernet ethernet-ccc ethernet-vpls ethernet-vpls-fr frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-ppp frame-relay-tcc gre-fragmentation multilink-frame-relay-end-to-end multilink-ppp ppp-over-ether ppp-over-ether-over-atm-llc vlan-bridge vlan-ccc vlan-vci-ccc vlan-tcc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>rlsq number</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers (vlan-ccc and vlan-tcc options only). Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers. Only the atm-ccc-cell-relay and atm-ccc-vc-mux options are supported on ACX Series routers.
Description	Configure a logical link-layer encapsulation type.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-ccc-vc-mux—Use ATM virtual circuit (VC) multiplex encapsulation on CCC circuits. When you use this encapsulation type, you can configure the ccc family only.</p> <p>atm-cisco-nlpid—Use Cisco ATM network layer protocol identifier (NLPID) encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-mlppp-llc—For ATM2 IQ interfaces only, use Multilink Point-to-Point (MLPPP) over AAL5 LLC. For this encapsulation type, your router must be equipped with a Link Services or Voice Services PIC. MLPPP over ATM encapsulation is not supported on ATM2 IQ OC48 interfaces.</p> <p>atm-nlpid—Use ATM NLPID encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-ppp-llc—(ATM2 IQ interfaces and MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP only) Use PPP over AAL5 LLC encapsulation.</p> <p>atm-ppp-vc-mux—(ATM2 IQ interfaces and MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP only) Use PPP over ATM AAL5 multiplex encapsulation.</p> <p>atm-snap—(All interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) Use ATM subnetwork attachment point (SNAP) encapsulation.</p> <p>atm-tcc-snap—Use ATM SNAP encapsulation on translational cross-connect (TCC) circuits.</p>

atm-tcc-vc-mux—Use ATM VC multiplex encapsulation on TCC circuits. When you use this encapsulation type, you can configure the **tcc** family only.

atm-vc-mux—(All interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) Use ATM VC multiplex encapsulation. When you use this encapsulation type, you can configure the **inet** family only.

ether-over-atm-llc—(All IP interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) For interfaces that carry IP traffic, use Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces.

ether-vpls-over-atm-llc—For ATM2 IQ interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.

ether-vpls-over-fr—For E1, T1, E3, T3, and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over Frame Relay encapsulation to support Bridged Ethernet over Frame Relay encapsulated TDM interfaces for VPLS applications, per RFC 2427, *Multiprotocol Interconnect over Frame Relay*.



NOTE: The SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, the Channelized SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, and the DS3/E3 MIC do not support Ethernet over Frame Relay encapsulation.

ether-vpls-over-ppp—For E1, T1, E3, T3, and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over Point-to-Point Protocol (PPP) encapsulation to support Bridged Ethernet over PPP-encapsulated TDM interfaces for VPLS applications.

ethernet—Use Ethernet II encapsulation (as described in RFC 894, *A Standard for the Transmission of IP Datagrams over Ethernet Networks*).

ethernet-ccc—Use Ethernet CCC encapsulation on Ethernet interfaces.

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard Tag Protocol ID (TPID) values.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

ethernet-vpls-fr—Use in a VPLS setup when a CE device is connected to a PE device over a time-division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 Frame Relay connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use the MAC address to forward the packet into a given VPLS instance.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with Cisco Frame Relay. The physical interface must be configured with flexible-frame-relay encapsulation.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media. The physical interface must be configured with flexible-frame-relay encapsulation.

frame-relay-ppp—Use PPP over Frame Relay circuits. When you use this encapsulation type, you can configure the **ppp** family only. J Series routers do not support frame-relay-ppp encapsulation.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

gre-fragmentation—For adaptive services interfaces only, use GRE fragmentation encapsulation to enable fragmentation of IPv4 packets in GRE tunnels. This encapsulation clears the do not fragment (DF) bit in the packet header. If the packet's size exceeds the tunnel's maximum transmission unit (MTU) value, the packet is fragmented before encapsulation.

multilink-frame-relay-end-to-end—Use MLFR FRF.15 encapsulation. This encapsulation is used only on multilink, link services, and voice services interfaces and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

multilink-ppp—Use MLPPP encapsulation. This encapsulation is used only on multilink, link services, and voice services interfaces and their constituent T1 or E1 interfaces.

ppp-over-ether—For underlying Ethernet interfaces on J Series routers, use PPP over Ethernet encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface. You also use PPP over Ethernet encapsulation to configure an underlying Ethernet interface for a dynamic PPPoE logical interface on M120 and M320 routers with Intelligent Queuing 2 (IQ2) PICs, and on MX Series routers with MPCs.

ppp-over-ether-over-atm-llc—(J Series routers and MX Series routers with MPCs using the ATM MIC with SFP only) For underlying ATM interfaces, use PPP over Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface.

vlan-bridge—Use Ethernet VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q tagging, flexible-ethernet-services, and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

vlan-ccc—Use Ethernet virtual LAN (VLAN) encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-tcc—Use Ethernet VLAN encapsulation on TCC circuits. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-vpls—Use Ethernet VLAN encapsulation on VPLS circuits.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
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Related Documentation

- *Configuring Layer 2 Switching Cross-Connects Using CCC*
- *Configuring the Encapsulation for Layer 2 Switching TCCs*
- *Configuring Interface Encapsulation on Logical Interfaces*
- *Configuring MPLS LSP Tunnel Cross-Connects Using CCC*
- *Circuit and Translational Cross-Connects Overview*
- *Identifying the Access Concentrator*
- *Configuring ATM Interface Encapsulation*
- *Configuring VLAN Encapsulation*
- *Configuring Extended VLAN Encapsulation*
- *Configuring ISDN Logical Interface Properties*
- *Configuring ATM-to-Ethernet Interworking*
- *Configuring Interface Encapsulation on PTX Series Packet Transport Routers*
- *Configuring CCC Encapsulation for Layer 2 VPNs*
- *Configuring TCC Encapsulation for Layer 2 VPNs and Layer 2 Circuits*
- *Configuring ATM for Subscriber Access*
- *Junos OS Services Interfaces Library for Routing Devices*
- *CoS on ATM IMA Pseudowire Interfaces Overview*
- *Configuring Policing on an ATM IMA Pseudowire*

encapsulation (Physical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-pvc cisco-hdlc cisco-hdlc-ccc cisco-hdlc-tcc ethernet-bridge ethernet-ccc ethernet-over-atm ethernet-tcc ethernet-vpls ethernet-vpls-fr ether-vpls-over-atm-llc ethernet-vpls-ppp extended-frame-relay-ccc extended-frame-relay-ether-type-tcc extended-frame-relay-tcc extended-vlan-bridge extended-vlan-ccc extended-vlan-tcc extended-vlan-vpls flexible-ethernet-services flexible-frame-relay frame-relay frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-port-ccc frame-relay-tcc generic-services multilink-frame-relay-uni-nni ppp ppp-ccc ppp-tcc vlan-ccc vlan-vci-ccc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces rlsq <i>number:number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for EX Series switches. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers (flexible-ethernet-services , ethernet-ccc , and ethernet-tcc options only).
Description	Specify the physical link-layer encapsulation type. Not all encapsulation types are supported on the switches. See the switch CLI.
Default	ppp —Use serial PPP encapsulation.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-pvc—Use ATM PVC encapsulation.</p> <p>cisco-hdlc—Use Cisco-compatible High-Level Data Link Control (HDLC) framing.</p> <p>cisco-hdlc-ccc—Use Cisco-compatible HDLC framing on CCC circuits.</p> <p>cisco-hdlc-tcc—Use Cisco-compatible HDLC framing on TCC circuits for connecting different media.</p> <p>ethernet-bridge—Use Ethernet bridge encapsulation on Ethernet interfaces that have bridging enabled and that must accept all packets.</p> <p>ethernet-ccc—Use Ethernet CCC encapsulation on Ethernet interfaces that must accept packets carrying standard Tag Protocol ID (TPID) values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, CCC is not supported.</p> <p>ethernet-over-atm—For interfaces that carry IPv4 traffic, use Ethernet over ATM encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces. As defined in RFC 2684, <i>Multiprotocol Encapsulation over ATM Adaptation Layer 5</i>, this encapsulation type allows ATM interfaces to connect to devices that support only bridge protocol data units (BPDUs). Junos OS does not completely support bridging, but accepts BPDUs packets as a default gateway. If you use the router as an edge device, then the router acts as a default gateway. It accepts Ethernet LLC/SNAP frames with IP or ARP in the payload, and drops the rest. For packets destined to the Ethernet LAN, a route lookup is done using the destination</p>

IP address. If the route lookup yields a full address match, the packet is encapsulated with an LLC/SNAP and MAC header, and the packet is forwarded to the ATM interface.

ethernet-tcc—For interfaces that carry IPv4 traffic, use Ethernet TCC encapsulation on interfaces that must accept packets carrying standard TPID values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, TCC is not supported.

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard TPID values. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.

ethernet-vpls-fr—Use in a VPLS setup when a CE device is connected to a PE device over a time division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 Frame Relay connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use the MAC address to forward the packet into a given VPLS instance.

ethernet-vpls-ppp—Use in a VPLS setup when a CE device is connected to a PE device over a time division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 PPP connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use it to forward the packet into a given VPLS instance.

ether-vpls-over-atm-llc—For ATM intelligent queuing (IQ) interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.

extended-frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to CCC.

extended-frame-relay-ether-type-tcc—Use extended Frame Relay ether type TCC for Cisco-compatible Frame Relay for DLCIs 1 through 1022. This encapsulation type is used for circuits with different media on either side of the connection.

extended-frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to TCC.

extended-vlan-bridge—Use extended VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q VLAN tagging and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

extended-vlan-ccc—Use extended VLAN encapsulation on CCC circuits with Gigabit Ethernet and 4-port Fast Ethernet interfaces that must accept packets carrying 802.1Q values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, extended VLAN CCC is not supported. For 4-port Gigabit Ethernet PICs, extended VLAN CCC is not supported.

extended-vlan-tcc—For interfaces that carry IPv4 traffic, use extended VLAN encapsulation on TCC circuits with Gigabit Ethernet interfaces on which you want to use 802.1Q tagging. For 4-port Gigabit Ethernet PICs, extended VLAN TCC is not supported.

extended-vlan-vpls—Use extended VLAN VPLS encapsulation on Ethernet interfaces that have VLAN 802.1Q tagging and VPLS enabled and that must accept packets carrying TPIDs 0x8100, 0x9100, and 0x9901. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

flexible-ethernet-services—For Gigabit Ethernet IQ interfaces and Gigabit Ethernet PICs with small form-factor pluggable transceivers (SFPs) (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), use flexible Ethernet services encapsulation when you want to configure multiple per-unit Ethernet encapsulations. Aggregated Ethernet bundles can use this encapsulation type. This encapsulation type allows you to configure any combination of route, TCC, CCC, Layer 2 virtual private networks (VPNs), and VPLS encapsulations on a single physical port. If you configure flexible Ethernet services encapsulation on the physical interface, VLAN IDs from 1 through 511 are no longer reserved for normal VLANs.

flexible-frame-relay—For IQ interfaces only, use flexible Frame Relay encapsulation when you want to configure multiple per-unit Frame Relay encapsulations. This encapsulation type allows you to configure any combination of TCC, CCC, and standard Frame Relay encapsulations on a single physical port. Also, each logical interface can have any DLCI value from 1 through 1022.

frame-relay—Use Frame Relay encapsulation.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with the Cisco Frame Relay.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media.

frame-relay-port-ccc—Use Frame Relay port CCC encapsulation to transparently carry all the DLCIs between two customer edge (CE) routers without explicitly configuring each DLCI on the two provider edge (PE) routers with Frame Relay transport. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media.

generic-services—Use generic services encapsulation for services with a hierarchical scheduler.

multilink-frame-relay-uni-nni—Use MLFR UNI NNI encapsulation. This encapsulation is used on link services, voice services interfaces functioning as FRF.16 bundles, and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

ppp—Use serial PPP encapsulation.

ppp-ccc—Use serial PPP encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

ppp-tcc—Use serial PPP encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-ccc—Use Ethernet VLAN encapsulation on CCC circuits.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only. All logical interfaces configured on the Ethernet interface must also have the encapsulation type set to **vlan-vci-ccc**.

vlan-vpls—Use VLAN VPLS encapsulation on Ethernet interfaces with VLAN tagging and VPLS enabled. Interfaces with VLAN VPLS encapsulation accept packets carrying standard TPID values only. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.



.....
NOTE: Label-switched interfaces (LSIs) do not support VLAN VPLS encapsulation. Therefore, you can only use VLAN VPLS encapsulation on a PE-router-to-CE-router interface and not a core-facing interface.
.....

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.

Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Interface Encapsulation on Physical Interfaces</i> • <i>Configuring CCC Encapsulation for Layer 2 VPNs</i> • <i>Configuring Layer 2 Switching Cross-Connects Using CCC</i> • <i>Configuring TCC Encapsulation for Layer 2 VPNs and Layer 2 Circuits</i> • <i>Configuring ATM Interface Encapsulation</i> • <i>Configuring ATM-to-Ethernet Interworking</i> • <i>Configuring VLAN Encapsulation</i> • <i>Configuring Extended VLAN Encapsulation</i> • <i>Configuring Encapsulation for Layer 2 Wholesale VLAN Interfaces</i> • <i>Configuring Interfaces for Layer 2 Circuits</i> • <i>Configuring Interface Encapsulation on PTX Series Packet Transport Routers</i> • <i>Configuring an MPLS-Based Layer 2 VPN (CLI Procedure)</i> • <i>Configuring MPLS LSP Tunnel Cross-Connects Using CCC</i> • <i>Configuring TCC</i> • <i>Configuring VPLS Interface Encapsulation</i> • <i>Configuring Interfaces for VPLS Routing</i> • <i>Defining the Encapsulation for Switching Cross-Connects</i> • <i>Understanding Encapsulation on an Interface</i>
------------------------------	--

encoding

Syntax	<code>encoding (nrz nrzi);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For serial interfaces, set the line encoding format.
Default	The default line encoding is non-return to zero (NRZ).
Options	<p>nrz—Use NRZ line encoding.</p> <p>nrzi—Use non-return to zero inverted (NRZI) line encoding.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Serial Line Encoding</i>

epd-threshold (Logical Interface)

Syntax	<code>epd-threshold cells plp1 cells;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>For ATM2 IQ interfaces only, define the early packet discard (EPD) threshold on a VC. The EPD threshold is a limit on the number of transmit packets that can be queued. Packets that exceed the limit are discarded. For interfaces configured in trunk mode, you can also configure dual EPD thresholds depending on the packet loss priorities (PLPs).</p>
Default	<p>Approximately 1 percent of the available cell buffers. If shaping is enabled, the default EPD threshold is proportional to the shaping rate according to the following formula:</p> $\text{default epd-threshold} = \text{number of buffers} * \text{shaping rate} / \text{line rate}$ <p>The minimum EPD threshold value is 48 cells. If the default EPD threshold formula results in an EPD threshold of less than 48 cells, the result will be ignored, and the minimum value of 48 cells will be used.</p>
Options	<p>cells—Maximum number of cells.</p> <p>Range: For 1-port and 2-port OC12 interfaces, 48 through 425,984 cells</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the ATM2 IQ EPD Threshold</i> • <i>Configuring Two EPD Thresholds per Queue</i>

epd-threshold (Physical Interface)

Syntax	<code>epd-threshold cells plp1 cells;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options scheduler-maps <i>map-name</i> forwarding-class <i>class-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define the EPD threshold on a VC. The EPD threshold is a limit on the number of transmit packets that can be queued. Packets that exceed the limit are discarded.
Default	If you do not include either the epd-threshold or the linear-red-profile statement in the forwarding class configuration, the Junos OS uses an EPD threshold based on the available bandwidth and other parameters.
Options	<p>cells—Maximum number of cells.</p> <p>Range: For 1-port and 2-port OC12 interfaces, 48 through 425,984 cells. For 1-port OC48 interfaces, 48 through 425,984 cells. For 2-port OC3, DS3, and E3 interfaces, 48 through 212,992 cells. For 4-port DS3 and E3 interfaces, 48 through 106,496 cells.</p> <p>The plp1 statement is explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring an ATM Scheduler Map</i> • linear-red-profile on page 318

es-options

Syntax	<pre>es-options { backup-interface <i>interface-name</i>; }</pre>
Hierarchy Level	[edit interfaces es- <i>fpc/pic/port</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>On ES interfaces, configure ES interface-specific interface properties.</p> <p>The backup-interface statement is explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

ethernet (Protocols OAM)

```

Syntax  ethernet {
        connectivity-fault-management {
            action-profile profile-name {
                default-actions {
                    interface-down;
                }
            }
        }
        performance-monitoring {
            delegate-server-processing;
            hardware-assisted-timestamping;
            sla-iterator-profiles {
                profile-name {
                    disable;
                    calculation-weight {
                        delay delay-weight;
                        delay-variation delay-variation-weight;
                    }
                    cycle-time milliseconds;
                    iteration-period connections;
                    measurement-type (loss | statistical-frame-loss | two-way-delay);
                }
            }
        }
        linktrace {
            age (30m | 10m | 1m | 30s | 10s);
            path-database-size path-database-size;
        }
        maintenance-domain domain-name {
            level number;
            name-format (character-string | none | dns | mac+2octet);
            maintenance-association ma-name {
                short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
                protect-maintenance-association protect-ma-name;
                remote-maintenance-association remote-ma-name;
                continuity-check {
                    convey-loss-threshold;
                    hold-interval minutes;
                    interface-status-tlv;
                    interval (10m | 10s | 1m | 1s | 100ms);
                    loss-threshold number;
                    port-status-tlv;
                }
            }
            mep mep-id {
                auto-discovery;
                direction (up | down);
                interface interface-name (protect | working);
                lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
                    rem-err-xcon | xcon );
                priority number;
                remote-mep mep-id {
                    action-profile profile-name;
                    sla-iterator-profile profile-name {

```

225

```
status-counter number;  
polling-verification-timer value;  
evc-map-type (all-to-one-bundling | bundling | service-multiplexing);  
evc evc-name {  
    default-evc;  
    vlan-list vlan-id-list;  
}  
}  
}
```

Hierarchy Level [edit protocols [oam](#)]

Release Information Statement introduced in Junos OS Release 8.2.

Description For Ethernet interfaces on EX Series switches, and M320, MX Series, and T Series routers, provide fault signaling and detection for 802.3ah Operation, Administration, and Management (OAM) support.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Enabling IEEE 802.3ah OAM Support*
- *Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers*

ethernet-policer-profile

```
Syntax ethernet-policer-profile {
    input-priority-map {
        ieee802.1p premium [ values ];
    }
    output-priority-map {
        classifier {
            premium {
                forwarding-class class-name {
                    loss-priority (high | low);
                }
            }
        }
    }
    policer cos-policer-name {
        aggregate {
            bandwidth-limit bps;
            burst-size-limit bytes;
        }
        premium {
            bandwidth-limit bps;
            burst-size-limit bytes;
        }
    }
}
```

Hierarchy Level [edit interfaces *interface-name* gigether-options [ethernet-switch-profile](#)],
[edit interfaces *interface-name* aggregated-ether-options [ethernet-switch-profile](#)]

Release Information Statement introduced before Junos OS Release 7.4.

Description For Gigabit Ethernet IQ, 10-Gigabit Ethernet, Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), and 100-Gigabit Ethernet Type 5 PIC with CFP, configure a class of service (CoS)-based policer. Policing applies to the inner VLAN identifiers, not to the outer tag. For Gigabit Ethernet interfaces with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), the **premium** policer is not supported.

The statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Gigabit Ethernet Policers*

ethernet-ring

```
Syntax ethernet-ring ring-name {
    control-vlan (vlan-id | vlan-name);
    data-channel {
        vlan number
    }
    east-interface {
        control-channel channel-name {
            vlan number;
        }
    }
    guard-interval number;
    node-id mac-address;
    restore-interval number;
    ring-protection-link-owner;
    west-interface {
        control-channel channel-name {
            vlan number;
        }
    }
}
```

Hierarchy Level [edit protocols [protection-group](#)]

Release Information Statement introduced in Junos OS Release 9.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description For Ethernet PICs on MX Series routers or for EX Series switches, , specify the Ethernet ring in an Ethernet ring protection switching configuration.

Options *ring-name*—Name of the Ethernet protection ring.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Ethernet Ring Protection Switching Overview](#)
- [Example: Configuring Ethernet Ring Protection Switching on EX Series Switches](#)
- [Configuring Ethernet Ring Protection Switching \(CLI Procedure\)](#)

ethernet-switch-profile

```
Syntax ethernet-switch-profile {
    ethernet-policer-profile {
        input-priority-map {
            ieee802.1p premium [ values ];
        }
        output-priority-map {
            classifier {
                premium {
                    forwarding-class class-name {
                        loss-priority (high | low);
                    }
                }
            }
        }
        policer cos-policer-name {
            aggregate {
                bandwidth-limit bps;
                burst-size-limit bytes;
            }
            premium {
                bandwidth-limit bps;
                burst-size-limit bytes;
            }
        }
        tag-protocol-id tpid;
    }
    (mac-learn-enable | no-mac-learn-enable);
}
```

Hierarchy Level [edit interfaces *interface-name* *gigether-options*],
[edit interfaces *interface-name* *aggregated-ether-options*]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.

Description For Gigabit Ethernet IQ, 10-Gigabit Ethernet IQ2 and IQ2-E, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC, aggregated Ethernet with Gigabit Ethernet IQ interfaces, the built-in Gigabit Ethernet port on the M7i router), and 100-Gigabit Ethernet Type 5 PIC with CFP, configure VLAN tag and MAC address accounting and filtering properties.

The statements are explained separately.



NOTE: When you gather interfaces into a bridge domain, the `no-mac-learn-enable` statement at the [edit interfaces *interface-name* *gigether-options* *ethernet-switch-profile*] hierarchy level is not supported. You must use the `no-mac-learning` statement at the [edit bridge-domains *bridge-domain-name* *bridge-options* interface *interface-name*] hierarchy level to disable MAC learning on an interface in a bridge domain. For information

on disabling MAC learning for a bridge domain, see the *MX Series Layer 2 Configuration Guide*.

.....

Default	If the ethernet-switch-profile statement is not configured, Gigabit Ethernet IQ and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router) behave like Gigabit Ethernet interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Gigabit Ethernet Policers</i>• <i>Configuring MAC Address Filtering</i>• <i>Stacking and Rewriting Gigabit Ethernet VLAN Tags Overview</i>

eui-64

Syntax	eui-64;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>number</i> family inet6 address <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 12.2 for the QFX Series.
Description	For interfaces that carry IP version 6 (IPv6) traffic, automatically generate the host number portion of interface addresses. Not supported on QFX Series switches.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Interface Address</i>

evcs

Syntax	<pre>evcs evc-id { evc-protocol cfm management-domain <i>domain-id</i> (management-association <i>association-id</i> vpls (routing-instance <i>instance-id</i>); remote-uni-count <i>count</i>; multipoint-to-multipoint; }</pre>
Hierarchy Level	[edit protocols oam ethernet]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	On MX Series routers with ge , xe , or ae interfaces, configure an OAM Ethernet virtual connection.
Options	<p>evc-protocol cfm vpls—Specify connectivity fault management (CFM) or virtual private LAN service (VPLS) as the Ethernet Virtual Connection (EVC) protocol.</p> <p>management-domain <i>domain-id</i>—(Optional) For CFM, specify the CFM management domain.</p> <p>management-association <i>association-id</i>—(Optional) For CFM, specify the CFM management association.</p> <p>routing-instance <i>instance-id</i>—(Optional) For VPLS, specify the VPLS routing instance.</p> <p>remote-uni-count <i>count</i>—(Optional) Specify the number of remote UNIs in the EVC configuration, the default is 1.</p> <p>multipoint-to-multipoint—(Optional) Specify multiple points in the EVC configuration, the default is point-to-point if remote-uni-count is 1.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Ethernet Local Management Interface</i> lmi (Ethernet OAM) on page 332


event (LFM)

Syntax	<pre>event { link-adjacency-loss; link-event-rate { frame-error count; frame-period count; frame-period-summary count; symbol-period count; } protocol-down; }</pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Configure threshold values for link events in an action profile.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Monitoring Protocol Status</i>

event-thresholds

Syntax	<pre>event-thresholds { frame-error count; frame-period count; frame-period-summary count; symbol-period count; }</pre>
Hierarchy Level	[edit protocols oam link-fault-management interface interface-name]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>Configure threshold limit values for link events in periodic OAM PDUs.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Local Fault Events on an Interface</i>

fast-aps-switch

Syntax	fast-aps-switch;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced in Junos OS Release 12.1.
Description	(M320 routers with Channelized OC3/STM1 Circuit Emulation PIC with SFP only and EX Series switches) Reduce the Automatic Protection Switching (APS) switchover time in Layer 2 circuits.
	<div>  <p>NOTE:</p> <ul style="list-style-type: none"> Configuring this statement reduces the APS switchover time only when the Layer 2 circuit encapsulation type for the interface receiving traffic from a Layer 2 circuit neighbor is SAToP. When the fast-aps-switch statement is configured in revertive APS mode, you must configure an appropriate value for revert time to achieve reduction in APS switchover time. To prevent the logical interfaces in the data path from being shut down, configure appropriate hold-time values on all the interfaces in the data path that support TDM. The fast-aps-switch statement cannot be configured when the APS annex-b option is configured. The interfaces that have the fast-aps-switch statement configured cannot be used in virtual private LAN service (VPLS) environments. </div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Reducing APS Switchover Time in Layer 2 Circuits</i>

f-max-period

Syntax	f-max-period <i>number</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> rtp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For all adaptive services interfaces and for ISDN interfaces on J Series Services Routers. Specify the maximum number of compressed packets allowed between the transmission of full headers in a compressed Real-Time Transport Protocol (RTP) traffic stream.
Options	<i>number</i> —Maximum number of packets. The value can be from 1 through 65535.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Bandwidth on Demand</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

facility-override

Syntax	facility-override <i>facility-name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options sysloghost <i>hostname</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Override default facility for system log reporting.
Options	<i>facility-name</i> —Name of facility that overrides the default assignment.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

failover-delay

Syntax	<code>failover-delay <i>milliseconds</i>;</code>
Hierarchy Level	[edit protocols vrrp]
Release Information	Statement introduced in Junos OS Release 9.4.
Description	Configure the failover delay for VRRP and VRRP for IPv6 operations.
Options	<i>milliseconds</i> —Specify the failover delay time, in milliseconds. Range: 50 through 2000
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring VRRP and VRRP for IPv6</i>

family

```

Syntax  family family {
        accounting {
            destination-class-usage;
            source-class-usage {
                (input | output | input output);
            }
        }
        access-concentrator name;
        address address {
            ... the address subhierarchy appears after the main [edit interfaces interface-name unit
                logical-unit-number family family-name] hierarchy ...
        }
        bridge-domain-type (bvlan | svlan);
        bundle interface-name;
        core-facing;
        demux-destination {
            destination-prefix;
        }
        demux-source {
            source-prefix;
        }
        duplicate-protection;
        dynamic-profile profile-name;
        filter {
            group filter-group-number;
            input filter-name;
            input-list [ filter-names ];
            output filter-name;
            output-list [ filter-names ];
        }
        interface-mode (access | trunk);
        ipsec-sa sa-name;
        isid-list all-service-groups;
        keep-address-and-control;
        mac-validate (loose | strict);
        max-sessions number;
        max-sessions-vsa-ignore;
        mtu bytes;
        multicast-only;
        negotiate-address;
        no-redirects;
        policer {
            arp policer-template-name;
            input policer-template-name;
            output policer-template-name;
        }
        primary;
        protocols [inet iso mpls];
        proxy inet-address address;
        receive-options-packets;
        receive-ttl-exceeded;
        remote (inet-address address | mac-address address);

```



```

rpf-check {
    fail-filter filter-name
    mode loose;
}
sampling {
    input;
    output;
}
service {
    input {
        post-service-filter filter-name;
        service-set service-set-name <service-filter filter-name>;
    }
    output {
        service-set service-set-name <service-filter filter-name>;
    }
}
service-name-table table-name
short-cycle-protection <lockout-time-min minimum-seconds lockout-time-max
    maximum-seconds>;
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
translate-plp-control-word-de;
unnumbered-address interface-name destination address destination-profile profile-name;
vlan-id number;
vlan-id-list [number number-number];
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
    broadcast address;
    destination address;
    destination-profile name;
    evi-64;
    master-only;
    multipoint-destination address dlci dlci-identifier;
    multipoint-destination address {
        epd-threshold cells;
        inverse-arp;
        oam-liveness {
            up-count cells;
            down-count cells;
        }
        oam-period (disable | seconds);
        shaping {
            (cbr rate | rtvbr burst length peak rate sustained rate | vbr burst length peak rate
                sustained rate);
            queue-length number;
        }
        vci vpi-identifier.vci-identifier;
    }
}
preferred;
primary;
vrrp-group group-id {
    (accept-data | no-accept-data);
    advertise-interval seconds;
    authentication-key key;
    authentication-type authentication;
}

```

```
fast-interval milliseconds;  
(preempt | no-preempt) {  
    hold-time seconds;  
}  
priority number;  
track {  
    interface interface-name {  
        bandwidth-threshold bits-per-second priority-cost priority;  
        priority-cost priority;  
    }  
    priority-hold-time seconds;  
    route prefix routing-instance instance-name priority-cost priority;  
}  
}  
virtual-address [ addresses ];  
}  
virtual-link-local-address ipv6-address;  
}
```

Hierarchy Level	[edit interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Option max-sessions-vs-a-ignore introduced in Junos OS Release 11.4.
Description	Configure protocol family information for the logical interface.



NOTE: Not all subordinate stanzas are available to every protocol family.

Options *family*—Protocol family:

- **any**—Protocol-independent family used for Layer 2 packet filtering



NOTE: This option is not supported on T4000 Type 5 FPCs.

- **ethernet-switching**—(M Series and T Series routers only) Configure only when the physical interface is configured with **ethernet-bridge** type encapsulation or when the logical interface is configured with **vlan-bridge** type encapsulation
- **ccc**—Circuit cross-connect protocol suite
- **inet**—Internet Protocol version 4 suite
- **inet6**—Internet Protocol version 6 suite
- **iso**—International Organization for Standardization Open Systems Interconnection (ISO OSI) protocol suite
- **mlfr-end-to-end**—Multilink Frame Relay FRF.15
- **mlfr-uni-nni**—Multilink Frame Relay FRF.16
- **multilink-ppp**—Multilink Point-to-Point Protocol
- **mpls**—Multiprotocol Label Switching (MPLS)
- **pppoe**—Point-to-Point Protocol over Ethernet
- **tcc**—Translational cross-connect protocol suite
- **tnp**—Trivial Network Protocol
- **vpls**—(M Series and T Series routers only) Virtual private LAN service

The remaining statements are explained separately.

Required Privilege Level *interface*—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring the Protocol Family*
- *Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers*
- *Junos OS Services Interfaces Library for Routing Devices*

fastether-options

Syntax

```
fastether-options {
  802.3ad {
    aex (primary | backup);
    lacp {
      port-priority;
    }
  }
  (flow-control | no-flow-control);
  ignore-l3-incompletes;
  ingress-rate-limit rate;
  (loopback | no-loopback);
  mpls {
    pop-all-labels {
      required-depth number;
    }
  }
  source-address-filter {
    mac-address;
  }
  (source-filtering | no-source-filtering);
}
```

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure Fast Ethernet-specific interface properties.


The statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Ethernet Interfaces Overview*

fcs

Syntax	fcs (16 32);
Hierarchy Level	[edit interfaces e1- <i>fpc/pic/port</i>], [edit interfaces t1- <i>fpc/pic/port</i>], [edit interfaces <i>interface-name</i> ds0-options], [edit interfaces <i>interface-name</i> e1-options], [edit interfaces <i>interface-name</i> e3-options], [edit interfaces <i>interface-name</i> sonet-options], [edit interfaces <i>interface-name</i> t1-options], [edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	<p>For E1/E3, SONET/SDH, and T1/T3 interfaces, configure the frame checksum (FCS) on the interface. The checksum must be the same on both ends of the interface.</p> <p>On a channelized OC12 interface, the SONET/SDH fcs statement is not supported. To configure FCS on each DS3 channel, you must include the t3-options fcs statement in the configuration for each channel. For SONET/SDH, the channelized OC12 interface supports DS3 to STS-1 to OC12. For SDH, the channelized OC12 interface supports NxDS3 to NxVC3 to AU3 to STM.</p>
	<div>  <p>NOTE: When configuring E1 or T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the fcs statement must be included at the [edit interfaces e1-<i>fpc/pic/port</i>] or [edit interfaces t1-<i>fpc/pic/port</i>] hierarchy level as appropriate.</p> </div>
Options	<p>16—Use a 16-bit frame checksum on the interface.</p> <p>32—Use a 32-bit frame checksum on the interface. Using a 32-bit checksum provides more reliable packet verification, but some older equipment might not support 32-bit checksums.</p> <p>Default: 16</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring the E1 Frame Checksum Configuring the E3 Frame Checksum Configuring the SONET/SDH Frame Checksum Configuring the T1 Frame Checksum Configuring the T3 Frame Checksum

feac-loop-respond

Syntax	(feac-loop-respond no-feac-loop-respond);
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For T3 interfaces only, configure the router so a remote CSU can place the local router into loopback.</p> <p>If you configure remote or local loopback with the T3 loopback statement, the router does not respond to FEAC requests from the CSU even if you include the feac-loop-respond statement in the configuration. For the router to respond, you must delete the loopback statement from the configuration.</p> <p>You must rollback the setting done on the remote CSU prior to deactivating the feac-loop-respond statement. If the remote CSU cannot comply, clear the remote loop through local configuration to achieve the cleanup. For example, configure remote loopback on the interface and then delete the remote loopback.</p>
Default	The router does not respond to FEAC requests.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the T3 FEAC Response• loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3) on page 342• remote-loopback-respond on page 487


filter

Syntax	<pre>filter { group <i>filter-group-number</i>; input <i>filter-name</i>; input-list [<i>filter-names</i>]; output <i>filter-name</i>; output-list [<i>filter-names</i>]; }</pre>
Hierarchy Level	<pre>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>Apply a filter to an interface. You can also use filters for encrypted traffic. When you configure filters, you can configure them under the family ethernet-switching, inet, inet6, mpls, or vpls only.</p>
Options	<p>group <i>filter-group-number</i>—Define an interface to be part of a filter group. Range: 1 through 255</p> <p>input <i>filter-name</i>—Name of one filter to evaluate when packets are received on the interface.</p> <p>output <i>filter-name</i>—Name of one filter to evaluate when packets are transmitted on the interface.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Applying a Filter to an Interface</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>Routing Policy Feature Guide for Routing Devices</i> • <i>Junos OS Administration Library for Routing Devices</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i> • <i>Configuring Firewall Filters (CLI Procedure)</i> • <i>Configuring Firewall Filters and Policers for VPLS</i> • <i>family</i>

flexible-vlan-tagging

Syntax	flexible-vlan-tagging;
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i>], [edit interfaces <i>et-fpc/pic/port</i>], [edit interfaces <i>ps0</i>]
Release Information	Statement introduced in Junos OS Release 8.1. Support for aggregated Ethernet added in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Description	<p>Support simultaneous transmission of 802.1Q VLAN single-tag and dual-tag frames on logical interfaces on the same Ethernet port, and on pseudowire logical interfaces.</p> <p>This statement is supported on M Series and T Series routers, for Fast Ethernet and Gigabit Ethernet interfaces only on Gigabit Ethernet IQ2 and IQ2-E, IQ, and IQE PICs, and for aggregated Ethernet interfaces with member links in IQ2, IQ2-E, and IQ PICs or in MX Series DPCs, or on Ethernet interfaces for PTX Series Packet Transport Routers or 100-Gigabit Ethernet Type 5 PIC with CFP.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Mixed Tagging</i>• <i>Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers</i>

flow-control

Syntax	(flow-control no-flow-control);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces <i>interface-name</i> multiservice-options], [edit interfaces interface-range <i>name</i> aggregated-ether-options], [edit interfaces interface-range <i>name</i> ether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 in EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only, explicitly enable flow control, which regulates the flow of packets from the router or switch to the remote side of the connection. Enabling flow control is useful when the remote device is a Gigabit Ethernet switch. Flow control is not supported on the 4-port Fast Ethernet PIC.
	<div>  <p>NOTE: On the Type 5 FPC, to prioritize control packets in case of ingress oversubscription, you must ensure that the neighboring peers support MAC flow control. If the peers do not support MAC flow control, then you must disable flow control.</p> </div>
Default	Flow control is enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Flow Control</i> <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i>

force

Syntax	<code>force (protect working);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Perform a forced switch between the protect and working circuits. This statement is honored only if there are no higher-priority reasons to switch. It can be overridden by a signal failure on the protect circuit, thus causing a switch to the working circuit.
Options	protect —Request the circuit to become the protect circuit. working —Request the circuit to become the working circuit.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Switching Between the Working and Protect Circuits</i>• request on page 489

forwarding-class (ATM2 IQ Scheduler Maps)

Syntax	<pre>forwarding-class <i>class-name</i> { epd-threshold <i>cells plp1 cells</i>; linear-red-profile <i>profile-name</i>; priority (high low); transmit-weight (<i>cells number</i> percent <i>number</i>); }</pre>
Hierarchy Level	[edit interfaces <i>at-fpc/pic/port</i> atm-options scheduler-maps <i>map-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define forwarding class name and option values.
Options	class-name —Name of forwarding class. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>• <i>Configuring Scheduler Maps on ATM Interfaces</i>

forwarding-class (Gigabit Ethernet IQ Classifier)

Syntax	<code>forwarding-class class-name { loss-priority (high low); }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile output-priority-map classifier premium]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Gigabit Ethernet IQ interfaces only, define forwarding class name and option values.
Options	<p><i>class-name</i>—Name of forwarding class.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Specifying an Output Priority Map</i> • input-priority-map on page 285 • forwarding-class statement in the <i>Junos OS Class of Service Library for Routing Devices</i>

fragment-threshold

Syntax	<code>fragment-threshold bytes;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For multilink, link services, and voice services interfaces, and for J Series Services Routers ISDN interfaces, set the fragmentation threshold.
Options	<p><i>bytes</i>—Maximum size, in bytes, for multilink packet fragments. Any nonzero value must be a multiple of 64 bytes.</p> <p>Range: 128 through 16,320 bytes</p> <p>Default: 0 bytes (no fragmentation)</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ISDN Logical Interface Properties</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

frame-error

Syntax	<code>frame-error count;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event link-event-rate], [edit protocols oam link-fault-management interface interface-name event-thresholds]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>Threshold for sending frame error events or taking the action specified in the action profile.</p> <p>A frame error is any frame error on the underlying physical layer. The threshold is reached when the number of frame errors reaches the configured value within the window.</p> <p>The window or period during which frame errors are counted is 5 seconds or multiples of it (with a maximum value of 1 minute). This window denotes the duration as intervals of 100 milliseconds, encoded as a 16-bit unsigned integer. This window is not configurable in Junos OS. According to the IEEE 802.3ah standard, the default value of the frame-errors window is 1 second. This window has a lower bound of 1 second and an upper bound of 1 minute.</p>
Options	<p>count—Threshold count for frame error events.</p> <p>Range: 1 through 100</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Local Fault Events on an Interface</i>• <i>Configuring Threshold Values for Fault Events in an Action Profile</i>


frame-period

Syntax	<code>frame-period count;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event link-event-rate], [edit protocols oam link-fault-management interface interface-name event-thresholds]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>Threshold for sending frame period error events or taking the action specified in the action profile.</p> <p>A frame error is any frame error on the underlying physical layer. The frame period threshold is reached when the number of frame errors reaches the configured value within the period window. The default period window is the number of minimum-size frames that can be transmitted on the underlying physical layer in 1 second. The window is not configurable.</p>
Options	<p>count—Threshold count for frame period error events.</p> <p>Range: 1 through 100</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Local Fault Events on an Interface</i>• <i>Configuring Threshold Values for Fault Events in an Action Profile</i>

frame-period-summary

Syntax	<code>frame-period-summary count;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event link-event-rate], [edit protocols oam link-fault-management interface interface-name event-thresholds]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>Threshold for sending frame period summary error events or taking the action specified in the action profile.</p> <p>An errored frame second is any 1-second period that has at least one errored frame. This event is generated if the number of errored frame seconds is equal to or greater than the specified threshold for that period window. The default window is 60 seconds. The window is not configurable.</p>
Options	<p>count—Threshold count for frame period summary error events.</p> <p>Range: 1 through 100</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Local Fault Events on an Interface</i>• <i>Configuring Threshold Values for Fault Events in an Action Profile</i>

framing (E1, E3, and T1 Interfaces)

Syntax	framing (g704 g704-no-crc4 g.751 g.832 unframed sf esf);
Hierarchy Level	[edit interfaces ce1- <i>fpc/pic/port</i>], [edit interfaces ct1- <i>fpc/pic/port</i>], [edit interfaces at- <i>fpc/pic/port</i> e3-options], [edit interfaces e1- <i>fpc/pic/port</i> e1-options], [edit interfaces t1- <i>fpc/pic/port</i> t1-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Configure the framing format.
	<div>  <p>NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the framing statement must be included at the [edit interfaces ce1-<i>fpc/pic/port</i>] or [edit interfaces ct1-<i>fpc/pic/port</i>] hierarchy level as appropriate.</p> </div>
Default	esf for T1 interfaces; g704 for E1 interfaces. There is no default value for E3 over ATM interfaces.
Options	<p>esf—Extended superframe (ESF) mode for T1 interfaces.</p> <p>g704—G.704 framing format for E1 interfaces.</p> <p>g704-no-crc4—G.704 framing with no cyclic redundancy check 4 (CRC4) for E1 interfaces.</p> <p>g.751—G.751 framing format for E3 over ATM interfaces.</p> <p>g.832—G.832 framing format for E3 over ATM interfaces.</p> <p>sf—Superframe (SF) mode for T1 interfaces.</p> <p>unframed—Unframed mode for E1 interfaces.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring E1 Framing Configuring E3 and T3 Parameters on ATM Interfaces Configuring T1 Framing

framing (10-Gigabit Ethernet Interfaces)

Syntax	framing (lan-phy wan-phy);
Hierarchy Level	[edit interfaces xe- <i>fpc/pic/port</i>] [edit interfaces et- <i>fpc/pic/port</i>] (PTX Series Packet Transport Routers)
Release Information	Statement introduced in Junos OS Release 8.0. Statement introduced in Junos OS Release 12.3R2 for PTX Series Packet Transport Routers.
Description	For routers supporting the 10-Gigabit Ethernet interface, configure the framing format. WAN PHY mode is supported on MX240, MX480, MX960, T640, T1600, T4000, and PTX Series Packet Transport Routers routers only.



NOTE:

- The T4000 Core Router supports only LAN PHY mode in Junos OS Release 12.1R1. Starting with Junos OS Release 12.1R2, WAN PHY mode is supported on the T4000 routers with the 12-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-12XGE-SFPP). Starting with Junos OS Release 12.2, WAN PHY mode is supported on the T4000 routers with the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-24XGE-SFPP).
- On PTX Series routers, WAN PHY mode is supported only on the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ .
- When the PHY mode changes, interface traffic is disrupted because of port reinitialization.

Default	Operates in LAN PHY mode.
Options	lan-phy —10GBASE-R interface framing format that bypasses the WIS sublayer to directly stream block-encoded Ethernet frames on a 10-Gigabit Ethernet serial interface. wan-phy —10GBASE-W interface framing format that allows 10-Gigabit Ethernet wide area links to use fiber-optic cables and SONET devices.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>10-Gigabit Ethernet Framing Overview</i> • <i>Configuring SONET Options for 10-Gigabit Ethernet Interfaces</i>

framing (SONET and SDH Interfaces)

Syntax	framing (sdh sonet);
Hierarchy Level	[edit interfaces so- <i>fpc/pic/port</i>]
Release Information	Statement introduced in Junos OS Release 8.1.
Description	<p>This functionality allows you to mix SONET and SDH modes on interfaces on the same PIC.</p> <ul style="list-style-type: none">• For the 4-port OC48 PIC with SFP installed and the 4-port OC192 PIC in T Series and M Series routers, configure SONET or SDH framing on a per-port basis.• For 1-port OC192/STM64 MICs with XFP on MX Series routers, configure the SONET or SDH framing on the single port.
Default	Default framing mode is SONET .
Options	<p>sdh—SDH framing.</p> <p>sonet—SONET framing.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring SONET/SDH Framing Mode</i>

gigether-options

```
Syntax  gigether-options {
        802.3ad {
            aex (primary | backup);
            lacp {
                port-priority;
            }
        }
        (asynchronous-notification | no-asynchronous-notification);
        (auto-negotiation | no-auto-negotiation) remote-fault <local-interface-online |
            local-interface-offline>;
        (flow-control | no-flow-control);
        ignore-l3-incompletes;
        (loopback | no-loopback);
        mpls {
            pop-all-labels {
                required-depth number;
            }
        }
        no-auto-mdix
        source-address-filter {
            mac-address;
        }
        (source-filtering | no-source-filtering);
        speed
        ethernet-switch-profile {
            (mac-learn-enable | no-mac-learn-enable);
            tag-protocol-id [ tpids ];
            ethernet-policer-profile {
                input-priority-map {
                    ieee802.1p premium [ values ];
                }
                output-priority-map {
                    classifier {
                        premium {
                            forwarding-class class-name {
                                loss-priority (high | low);
                            }
                        }
                    }
                }
            }
            policer cos-policer-name {
                aggregate {
                    bandwidth-limit bps;
                    burst-size-limit bytes;
                }
                premium {
                    bandwidth-limit bps;
                    burst-size-limit bytes;
                }
            }
        }
    }
```

}

Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure Gigabit Ethernet specific interface properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Interfaces Overview</i>• <i>gether-options (ACX Series)</i>

gratuitous-arp-reply

Syntax	(gratuitous-arp-reply no-gratuitous-arp-reply);
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 in EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Ethernet interfaces, enable updating of the Address Resolution Protocol (ARP) cache for gratuitous ARPs.
Default	Updating of the ARP cache is disabled on all Ethernet interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Gratuitous ARP</i>• no-gratuitous-arp-request on page 393

guard-interval

Syntax	<code>guard-interval <i>number</i>;</code>
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>ring-name</i>]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	When a link goes down, the ring protection link (RPL) activates. When the downed link comes back up, the RPL link receives notification, restores the link, and waits for the restore interval before issuing another block on the same link. This configuration is a global configuration and applies to all Ethernet rings if the Ethernet ring does not have a more specific configuration for this value. If no parameter is configured at the protection group level, the global configuration of this parameter uses the default value.
Options	<i>number</i> —Guard timer interval, in milliseconds. Range: 10 through 2000 ms Default: 500 ms
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>• <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i>• <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>

high-plp-threshold

Syntax	<code>high-plp-threshold percent;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options linear-red-profiles profile-name]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define CoS VC drop profile fill-level percentage when linear RED is applied to cells with high PLP. When the fill level exceeds the defined percentage, packets with high PLP are randomly dropped by RED. This statement is mandatory.
Options	percent —Fill-level percentage when linear RED is applied to cells with PLP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM2 IQ VC Tunnel CoS Components</i> • high-plp-max-threshold on page 260 • low-plp-max-threshold on page 347 • low-plp-threshold on page 348 • queue-depth on page 476

hello-timer

Syntax	<code>hello-timer milliseconds;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, configure the rate at which hello messages are sent. A hello message is transmitted after a period defined in milliseconds has elapsed.
Options	milliseconds —The rate at which hello messages are sent. Range: 1 through 180 milliseconds Default: 10 milliseconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • acknowledge-timer on page 94 • address on page 100

hierarchical-policer

Syntax hierarchical-policer *name* {
aggregate {
if-exceeding {
bandwidth-limit *bandwidth*;
burst-size-limit *burst*;
}
then {
discard;
}
}
premium {
if-exceeding {
bandwidth-limit *bandwidth*;
burst-size-limit *burst*;
}
then {
discard;
}
}
}

Hierarchy Level [edit firewall]

Release Information Statement introduced in Junos OS Release 9.5.

Description For M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, specify a hierarchical policer.

Options Options are described separately.

Required Privilege Level firewall—To view this statement in the configuration.
firewall-control—To add this statement to the configuration.

Related Documentation

- *Applying Policers*
- *Junos OS Class of Service Library for Routing Devices*

hierarchical-scheduler (Subscriber Interfaces on MX Series Routers)

Syntax	<pre> hierarchical-scheduler { implicit-hierarchy; maximum-hierarchy-levels <i>number</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 10.1. implicit-hierarchy option introduced in Junos OS Release 13.1.
Description	On MX Series routers with MPC/MICs, configure the parameters for hierarchical scheduling on the interface.



NOTE: To enable hierarchical scheduling on MX Series routers, configure the **hierarchical-scheduler** statement at each member physical interface level of a particular aggregated Ethernet interface as well as at that aggregated Ethernet interface level. On other routing platforms, it is enough if you include this statement at the aggregated Ethernet interface level.

Options **implicit-hierarchy**—Configure three-level hierarchical scheduling. When you include the **implicit-hierarchy** option, a hierarchical relationship is formed between the CoS scheduler nodes at level 1, level 2, and level 3. The **implicit-hierarchy** option is supported only on MPC/MIC subscriber interfaces and interface sets running over aggregated Ethernet on MX Series routers.

maximum-hierarchy-levels *number*—Configure two-level hierarchical scheduling. Specify the maximum number of hierarchical scheduling levels allowed for node scaling. The only supported value is 2. The **maximum-hierarchy-levels** option is supported on MPC/MIC or EQ DPC subscriber interfaces and interface sets running over aggregated Ethernet on MX Series routers.

- If you include the **maximum-hierarchy-levels** option, interface sets are allowed only at level 3; they are not allowed at level 2. In this case, if you configure a level 2 interface set, you generate Packet Forwarding Engine errors.
- If you do not include the **maximum-hierarchy-levels** option, interface sets can be at either level 2 or level 3, depending on whether the member logical interfaces within the interface set have a traffic control profile. If any member logical interface has a traffic control profile, then the interface set is a level 2 CoS scheduler node. If no member logical interface has a traffic control profile, the interface set is at level 3.

Required Privilege Level view-level—To view this statement in the configuration.
control-level—To add this statement to the configuration.

- Related Documentation**
- *Understanding Two-Level and Three-level Hierarchical CoS for Subscriber Interfaces on MX Series Routers*
 - *Configuring Hierarchical CoS for a Subscriber Interface of Aggregated Ethernet Links*
 - *Junos OS Class of Service Library for Routing Devices*
 - *Configuring Hierarchical Schedulers for CoS*
 - *Hierarchical CoS on MPLS Pseudowire Subscriber Interfaces Overview*

high-plp-max-threshold

- Syntax** `high-plp-max-threshold percent;`
- Hierarchy Level** [edit interfaces at-*fpc/pic/port* [atm-options linear-red-profiles profile-name](#)]
- Release Information** Statement introduced before Junos OS Release 7.4.
- Description** For ATM2 IQ interfaces only, define the drop profile fill-level for the high PLP CoS VC. When the fill level exceeds the defined percentage, all packets are dropped.
- Options** *percent*—Fill-level percentage when linear random early discard (RED) is applied to cells with PLP.
- Required Privilege Level** interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.
- Related Documentation**
- *Configuring ATM2 IQ VC Tunnel CoS Components*
 - [low-plp-max-threshold on page 347](#)
 - [low-plp-threshold on page 348](#)
 - [queue-depth on page 476](#)

high-plp-threshold

Syntax	<code>high-plp-threshold <i>percent</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options linear-red-profiles <i>profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define CoS VC drop profile fill-level percentage when linear RED is applied to cells with high PLP. When the fill level exceeds the defined percentage, packets with high PLP are randomly dropped by RED. This statement is mandatory.
Options	<i>percent</i> —Fill-level percentage when linear RED is applied to cells with PLP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM2 IQ VC Tunnel CoS Components</i> • high-plp-max-threshold on page 260 • low-plp-max-threshold on page 347 • low-plp-threshold on page 348 • queue-depth on page 476

hold-interval (OAM)

Syntax	<code>hold-interval <i>minutes</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in junos os release 12.1X48 for PTX Series Packet Transport Routers.
Description	The time to wait before flushing the maintenance association end point (MEP) database, if no updates occur.
Options	<i>minutes</i> —Time to wait, in minutes.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Continuity Check Protocol</i> • <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>


hold-interval (Protection Group)

Syntax	hold-interval <i>number</i> ;
Hierarchy Level	[edit protocols protection-group ethernet-ring name]
Release Information	Statement introduced in Junos OS Release 9.4.
Description	Specify the hold-off timer interval <i>for all rings</i> in 100 millisecond (ms) increments.
Options	<i>number</i> —Hold-timer interval, in milliseconds. Range: 0 through 10,000 ms Default: 100 ms
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Ethernet Ring Protection Switching Overview

hold-time (APS)

Syntax	hold-time <i>milliseconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Hold-time value to use to determine whether a neighbor APS router is operational.
Options	<i>milliseconds</i> —Hold-time value. Range: 1 through 65,534 milliseconds Default: 3000 milliseconds (3 times the advertisement interval)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring APS Timers• advertise-interval on page 101

hold-time (Physical Interface)

Syntax	hold-time up <i>milliseconds</i> down <i>milliseconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces interface-range <i>interface-range-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 10.4R5 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Specify the hold-time value to use to damp interface transitions. When an interface goes from up to down, it is not advertised to the rest of the system as being down until it has remained down for the hold-time period. Similarly, an interface is not advertised as being up until it has remained up for the hold-time period.
	<div>  <p>NOTE:</p> <ul style="list-style-type: none"> We recommend that you configure the hold-time value after determining an appropriate value by performing repeated tests in the actual hardware environment. This is because the appropriate value for hold-time depends on the hardware (XFP, SFP, SR, ER, or LR) used in the networking environment. The hold-time option is not available for controller interfaces. </div>
Default	Interface transitions are not damped.
Options	<p>down <i>milliseconds</i>—Hold time to use when an interface transitions from up to down. Junos OS advertises the transition within 100 milliseconds of the time value you specify.</p> <p>Range: 0 through 4,294,967,295 milliseconds</p> <p>Default: 0 milliseconds (interface transitions are not damped)</p> <p>up <i>milliseconds</i>—Hold time to use when an interface transitions from down to up. Junos OS advertises the transition within 100 milliseconds of the time value you specify.</p> <p>Range: 0 through 4,294,967,295 milliseconds</p> <p>Default: 0 milliseconds (interface transitions are not damped)</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> advertise-interval on page 101 <i>interfaces (for EX Series switches)</i>

hold-time (SONET/SDH Defect Triggers)

Syntax	<code>hold-time up <i>milliseconds</i> down <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options trigger defect]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM over SONET/SDH and SONET/SDH interfaces only, apply up and down hold times to SONET/SDH defect triggers. When you apply a down hold time to a defect, the defect must remain present for at least the hold-time period before the interface is marked down. When you apply an up hold time to a defect, the defect must remain absent for at least the hold-time period before the interface is marked up, assuming no other defect is outstanding.



NOTE:

- When up or down hold times are applied to SONET defect triggers of a 10-Gigabit Ethernet WAN-PHY interface, only the defects generated in the WAN Interface Sublayer (WIS) are damped. Therefore, if the hold times are applied to SONET defect triggers only, a 10-Gigabit Ethernet WAN-PHY interface might be marked up or down because of the faults that are generated in other layers, such as the Physical Coding Sublayer (PCS) or Physical Medium Attachment Sublayer (PMA), 10 Gigabit Media Independent Interface (XGMII) Extender Sublayer (XGXS), and Media Access Control (MAC). To damp the interface up or down events of a 10-Gigabit Ethernet WAN-PHY interface, you need to apply up or down hold-times for the interface at the [edit interfaces *interface-name*] hierarchy level.
- On M Series and T Series platforms with Channelized SONET IQ PICs and Channelized SONET IQE PICs, the SONET defect alarm trigger hold-time statement is not supported.


Default	If you do not include this statement, when a defect is detected the interface is marked down immediately, and when the defect becomes absent the interface is marked up immediately.
Options	<p>down <i>milliseconds</i>—Hold time to wait before the interface is marked down. Range: 1 through 65,534 milliseconds Default: No hold time</p> <p>up <i>milliseconds</i>—Hold time to wait before the interface is marked up. Range: 1 through 65,534 milliseconds Default: No hold time</p>

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring SONET/SDH Defect Triggers</i>• hold-time (Physical Interface) on page 263

host (Interfaces)

Syntax	<pre>host <i>hostname</i> { services <i>severity-level</i>; facility-override <i>facility-name</i>; log-prefix <i>prefix-value</i>; port <i>port-number</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options syslog]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the hostname for the system logging utility.
Options	<p>hostname—Name of the system logging utility host machine. This can be the local Routing Engine or an external server address.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying Filters and Services to Interfaces</i>

idle-cycle-flag

Syntax	<code>idle-cycle-flag <i>value</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>e1-fpc/pic/port</i>],</code> <code>[edit interfaces <i>t1-fpc/pic/port</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>ds0-options</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>e1-options</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>e3-options</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>serial-options</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>t1-options</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>t3-options</i>]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Configure the value that the DS0, E1, E3, T1, or T3 interface transmits during idle cycles.
<div>  <p>NOTE: When configuring E1 or T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the <code>idle-cycle-flag</code> statement must be included at the <code>[edit interfaces <i>e1-fpc/pic/port</i>]</code> or <code>[edit interfaces <i>t1-fpc/pic/port</i>]</code> hierarchy level as appropriate.</p> </div>	
Options	<p><i>value</i>—Value to transmit in the idle cycles:</p> <ul style="list-style-type: none"> <i>flags</i>—Transmit the value 0x7E. <i>ones</i>—Transmit the value 0xFF (all ones). <p>Default: <i>Flags</i></p>
Required Privilege Level	<p><i>interface</i>—To view this statement in the configuration.</p> <p><i>interface-control</i>—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring the E1 Idle Cycle Flag</i> <i>Configuring the E3 Idle Cycle Flag</i> <i>Configuring the T1 Idle Cycle Flag</i> <i>Configuring the T3 Idle Cycle Flag</i>

idle-timeout

Syntax	<code>idle-timeout seconds;</code>
Hierarchy Level	[edit interfaces <i>dlN</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, configure the number of seconds the link is idle before losing connectivity.
Options	<p>seconds—Time for which the connection can remain idle. For interfaces configured to use a filter for traffic, the idle timeout is based on traffic.</p> <p>Range: 1 through 429497295</p> <p>Default: 120 seconds</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ISDN Logical Interface Properties</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

ieee802.1p

Syntax	<code>ieee802.1p premium [values];</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> <i>gigether-options</i> ethernet-switch-profile ethernet-policer-profile <i>input-priority-map</i>]
Release Information	Statement introduced before Junos Release 7.4.
Description	For Gigabit Ethernet IQ and 10-Gigabit Ethernet interfaces only, configure premium priority values for IEEE 802.1p input traffic.
Options	<p>values—Define IEEE 802.1p priority values to be treated as premium.</p> <p>Range: 0 through 7</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Specifying an Input Priority Map</i>

if-exceeding

Syntax	<pre>if-exceeding { bandwidth-limit <i>bandwidth</i>; burst-size-limit <i>burst</i>; }</pre>
Hierarchy Level	[edit firewall hierarchical-policer aggregate], [edit firewall hierarchical-policer premium]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	For M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, specify bandwidth and burst limits for an aggregate level of a hierarchical policer.
Options	Options are described separately.
Required Privilege Level	firewall—To view this statement in the configuration. firewall-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying Policers</i>• <i>Junos OS Class of Service Library for Routing Devices</i>

ignore

Syntax	<pre>ignore;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options trigger defect]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM over SONET/SDH and SONET/SDH interfaces only, ignore a specific SONET/SDH defect trigger.
Default	If you do not include this statement, all defects are honored with no hold time.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring SONET/SDH Defect Triggers</i>• hold-time (Physical Interface) on page 263

ignore-all

Syntax	ignore-all;
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Ignore all control leads. You can include the ignore-all statement in the configuration only if you do not explicitly enable other signal handling options at the dte-options hierarchy level.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Serial Signal Handling</i>

ignore-l3-incompletes

Syntax	ignore-l3-incompletes;
Hierarchy Level	[edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Ignore the counting of Layer 3 incomplete errors on Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Ignoring Layer 3 Incomplete Errors</i>

ilmi

Syntax	ilmi;
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Enable the router to communicate with directly attached ATM switches and routers. The router uses the VC 0.16 to communicate with the ATM switch or router. Once configured, you can display the IP address and port number of an ATM switch or router using the show interfaces <i>interface-name</i> switch-id command.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Communication with Directly Attached ATM Switches and Routers</i>• <i>show ilmi</i>• <i>show ilmi statistics</i>

ima-group-options

Syntax	<pre> ima-group-options { differential-delay <i>number</i>; frame-length (32 64 128 256); frame-synchronization { alpha <i>number</i>; beta <i>number</i>; gamma <i>number</i>; } minimum-links <i>number</i>; symmetry (symmetrical-config-and-operation symmetrical-config-asymmetrical-operation); test-procedure { ima-test-start; ima-test-stop; interface <i>name</i>; pattern <i>number</i>; period <i>number</i>; } transmit-clock (common independent); version (1.0 1.1); } </pre>
Hierarchy Level	[edit interfaces (t1-fpc/pic/port:m:n e1-fpc/pic/port:n t1 e1-fpc/pic/port)]
Release Information	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Specify IMA group options.
Options	<p>differential-delay <i>msec</i>—Maximum differential delay among links in msec. Range: 1 through 56 Default: The default value is 25</p> <p>frame-length (32 64 128 256)—IMA frame length in number of cells. Default: The default value is 128</p> <p>frame-synchronization—IMA group frame synchronization selection. alpha <i>number</i>—Number of consecutive invalid ICP cells for IFSM. Range: 1 through 2 Default: The default value is 2</p> <p> beta <i>number</i>—Number of consecutive errored ICP cells for IFSM. Range: 1 through 2 Default: The default value is 2</p> <p> gamma <i>number</i>—Number of consecutive valid ICP cells for IFSM. Range: 1 through 5</p>

Default: The default value is 1

minimum-links *number*—IMA group minimum active links.

Range: 1 through 8

Default: The default value is 1

**symmetry (symmetrical-config-and-operation |
symmetrical-config-asymmetrical-operation)**—IMA group symmetry mode selection.

test-procedure—Specify an IMA link interface test.

ima-test-start—Start IMA group test.

ima-test-stop—Stop IMA group test.

interface *name*—Interface name of the IMA link to test.

pattern *number*—IMA test pattern.

Range: 1 through 254

Default: The default value is 170

period *seconds*—Length of IMA pattern test in seconds.

Range: 1 through 4294967294.

Default: The default value is 10

transmit-clock (common |independent)—Transmit clock configuration.

Default: The default value is common

version (1.0 |1.1)—IMA specification version.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	• <i>ATM Support on Circuit Emulation PICs Overview</i>
	• ima-link-options on page 273
	• <i>Inverse Multiplexing for ATM (IMA) Overview</i>

ima-link-options

Syntax	<code>ima-link-options group <i>g</i></code>
Hierarchy Level	<code>[edit interfaces (<i>t1-fpc/pic/port:m:n</i> <i>e1-fpc/pic/port:n</i> <i>t1</i> <i>e1-fpc/pic/port</i>)]</code>
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Specify an interface as a member of an IMA group.
Options	group <i>g</i> —Implying at-x/y/g .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>ATM Support on Circuit Emulation PICs Overview</i> • ima-group-options on page 271 • <i>Inverse Multiplexing for ATM (IMA) Overview</i>

inactivity-timeout

Syntax	<code>inactivity-timeout <i>seconds</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> services-options]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For adaptive services interfaces, configure the inactivity timeout period for established flows. The timeout configured in the application protocol definition overrides this value.
Options	<i>seconds</i> —Timeout period, in seconds. Range: 4 through 86,400 seconds Default: 30 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

incoming-called-number

Syntax	<code>incoming-called-number <i>number</i> <reject>;</code>
Hierarchy Level	[edit interfaces <i>br-pim/0/port isdn-options</i>]
Release Information	Statement introduced on Junos OS Release 7.5.
Description	On J Series Services Routers with interfaces configured for ISDN, screen incoming calls. If the incoming number is configured, the call is accepted. If the reject option is specified with the number, the call is rejected. If no numbers are configured, all calls are accepted.
Options	<p><i>number</i>—(Optional) Incoming caller number. Multiple numbers can be configured, up to a maximum of 30 entries. Only a precise match is a valid match, For example, the configured caller number 1-222-333-4444 or 222-333-4444 will match the incoming caller number 1-222-333-4444.</p> <p><i>reject</i>—(Optional) Rejects the incoming number.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an ISDN Interface to Screen Incoming Calls</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

incoming-map

Syntax	<code>incoming-map { <code>caller caller-number</code> accept-all; }</code>
Hierarchy Level	[edit interfaces <code>dl</code> unit <i>logical-unit-number</i> <code>dialer-options</code>], [edit logical-systems <i>logical-system-name</i> interfaces <code>dl</code> unit <i>logical-unit-number</i> <code>dialer-options</code>]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	On J Series Services Routers with interfaces configured for ISDN, specify the dialer to accept incoming calls. The statements are explained separately.



NOTE: The `incoming-map` statement is mandatory for the router to accept any incoming ISDN calls.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><i>Configuring Dial-In and Callback</i><i>Junos OS Interfaces and Routing Configuration Guide</i>

indication

Syntax	indication (ignore normal require);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For X.21 interfaces only, configure the from-DCE signal indication.
Options	ignore —The from-DCE signal is ignored. normal —Normal indication signal handling as defined by ITU-T Recommendation X.21. require —The from-DCE signal must be asserted. Default: normal
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

indication-polarity

Syntax	indication-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For X.21 interfaces only, configure the indication signal polarity.
Options	positive —Positive signal polarity. negative —Negative signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

ingress-policer-overhead

Syntax	<code>ingress-policer-overhead bytes;</code>
Hierarchy Level	<code>[edit chassis fpc slot-number pic pic-number]</code>
Release Information	Statement introduced before Junos OS Release 11.1
Description	Add the configured number of bytes to the length of a packet entering the interface.
Options	bytes —Number of bytes added to a packet entering an interface. Range: 0–255 bytes Default: 0
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ingress-shaping-overhead</i>• <i>Policer Overhead to Account for Rate Shaping Overview</i>• <i>Example: Configuring Policer Overhead to Account for Rate Shaping</i>• <i>Configuring a Policer Overhead</i>• <i>CoS on Enhanced IQ2 PICs Overview</i>

ingress-rate-limit

Syntax	<code>ingress-rate-limit rate;</code>
Hierarchy Level	<code>[edit interfaces interface-name fastether-options]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Perform port-based rate limiting on ingress traffic arriving on Fast Ethernet 8-port, 12-port, and 48-port PICs.
Options	rate —Traffic rate, in megabits per second (Mbps). Range: 1 through 100 Mbps
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Ingress Rate Limit</i>

init-command-string

Syntax	<code>init-command-string <i>initialization-command-string</i>;</code>
Hierarchy Level	[edit interfaces umd0 modem-options]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	<p>For J Series Services Routers, configure the command string used to initialize the USB modem.</p> <p>When you connect the USB modem to the USB port on a Services Router, the router applies the modem AT commands configured in the init-command-string command to the initialization commands on the modem.</p> <p>For example, the initialization command string ATS0 = 2\n configures the USB modem to pick up a call after 2 rings.</p> <p>If you do not include the init-command-string statement, the router applies the default initialization string to the modem.</p>
Options	<p><i>initialization-command-string</i>—Specify an initialization command string using the following AT command values:</p> <ul style="list-style-type: none"> • %C0—Disables data compression. • &C1—Disables reset of the modem when it loses the carrier signal. • &Q8—Enables Microcom Networking Protocol (MNP) error control mode. • AT—Attention. Informs the modem that a command follows. • E0—Disables the display on the local terminal of commands issued to the modem from the local terminal. • Q0—Enables the display of result codes. • S0=0—Disables the auto-answer feature, whereby the modem automatically answers calls. • S7=45—Instructs the modem to wait 45 seconds for a telecommunications service provider (carrier) signal before terminating the call. • V1—Displays result codes as words. <p>Default: <code>AT S7=45 S0=0 V1 X4 &C1 E0 Q0 &Q8 %C0</code></p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Specifying a USB Modem Interface on J Series Routers</i>

initial-route-check

Syntax	<code>initial-route-check seconds;</code>
Hierarchy Level	[edit interfaces <i>dl</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, allows the router to check whether the primary route is up after the initial startup of the router is complete and the timer expires.
Options	seconds —How long to wait to check if the primary interface is up after the router comes up. Range: 1 through 300 seconds Default: 120 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ISDN Interfaces Overview</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

inner-tag-protocol-id

Syntax	<code>inner-tag-protocol-id <i>tpid</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code>input-vlan-map],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code>output-vlan-map]</code>
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	<p>Configure the IEEE 802.1Q TPID value to rewrite for the inner tag.</p> <p>All TPIDs you include in input and output VLAN maps must be among those you specify at the <code>[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile tag-protocol-id [<i>tpids</i>]]</code> hierarchy level.</p> <p>On MX Series routers, you can use this statement for Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, and for aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs.</p>
Default	If the <code>inner-tag-protocol-id</code> statement is not configured, the TPID value is 0x8100.
Required Privilege Level	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><i>Configuring Inner and Outer TPIDs and VLAN IDs</i>

inner-vlan-id

Syntax	<code>inner-vlan-id <i>number</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	<p>For Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, and for aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers or 100-Gigabit Ethernet Type 5 PIC with CFP, or on Ethernet interfaces on EX Series switches, specify the VLAN ID to rewrite for the inner tag of the final packet.</p> <p>You cannot include the inner-vlan-id statement with the swap statement, swap-push statement, push-push statement, or push-swap statement and the inner-vlan-id statement at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map] hierarchy level. If you include any of those statements in the output VLAN map, the VLAN ID in the outgoing frame is rewritten to the inner-vlan-id statement you include at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] hierarchy level.</p>
Options	<p><i>number</i>—VLAN ID number.</p> <p>Range: 0 through 4094</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring Inner and Outer TPIDs and VLAN IDs

inner-vlan-id-range

Syntax	<code>inner-vlan-id-range start <i>start-id</i> end <i>end-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],
Release Information	Statement introduced in Junos OS Release 9.0.
Description	The range of VLAN IDs to be used in the ATM-to-Ethernet interworking cross-connect. Specify the starting VLAN ID and ending VLAN ID.
Options	<i>start-id</i> —The lowest VLAN ID to be used. <i>end-id</i> —The highest VLAN ID to be used. Range: 32 through 4094
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM-to-Ethernet Interworking</i>

input

Syntax	<code>input { service-set <i>service-set-name</i> <service-filter <i>filter-name</i>>; post-service-filter <i>filter-name</i>; }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define one or more input service sets and filters, and one postservice filter to be applied to traffic.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

input-list

Syntax	<code>input-list [<i>filter-names</i>];</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> filter], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> filter]
Release Information	Statement introduced in Junos OS Release 7.6.
Description	Apply a group of filters to evaluate when packets are received on an interface.
Options	[<i>filter-names</i>] —Name of a filter to evaluate when packets are received on the interface. Up to 16 filters can be included in a filter input list.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying a Filter to an Interface</i>• <i>Routing Policy Feature Guide for Routing Devices</i>• <i>Junos OS Administration Library for Routing Devices</i>• output-list on page 422

input-policer

Syntax	<code>input-policer <i>policer-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer] [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Apply a single-rate two-color policer to the Layer 2 input traffic at the logical interface. The input-policer and input-three-color statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the single-rate two-color policer that you define at the [edit firewall] hierarchy level.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Two-Color and Three-Color Policers at Layer 2</i>• <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i>• <i>Configuring a Gigabit Ethernet Policer</i>• input-three-color on page 286• layer2-policer on page 313• logical-interface-policer on page 339• output-policer on page 423• output-three-color on page 425

input-priority-map

Syntax	<code>input-priority-map { ieee802.1p premium [<i>values</i>]; }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Gigabit Ethernet IQ and 10-Gigabit Ethernet interfaces only, define the input policer priority map to be applied to incoming frames on this interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying an Input Priority Map</i>• output-priority-map on page 424

input-three-color

Syntax	<code>input-three-color <i>policer-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer] [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Apply a single-rate or two-rate three-color policer to the Layer 2 input traffic at the logical interface. The input-three-color and input-policer statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the single-rate or two-rate three-color policer.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Two-Color and Three-Color Policers at Layer 2</i>• <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i>• <i>Configuring a Gigabit Ethernet Policer</i>• input-policer on page 284• layer2-policer on page 313• logical-interface-policer on page 339• output-policer on page 423• output-three-color on page 425

input-vlan-map (Aggregated Ethernet)

Syntax	<pre>input-vlan-map { (pop push swap); tag-protocol-id <i>tpid</i>; vlan-id <i>number</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	<p>For aggregated Ethernet interfaces using Gigabit Ethernet IQ, 10-Gigabit Ethernet IQ2 and IQ2-E interfaces and 100-Gigabit Ethernet Type 5 PIC with CFP only, define the rewrite profile to be applied to incoming frames on this logical interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Stacking a VLAN Tag</i>• output-vlan-map (Aggregated Ethernet) on page 426

input-vlan-map (Gigabit Ethernet IQ, 10-Gigabit Ethernet SFPP, 10-Gigabit Ethernet SFP, and 100-Gigabit Ethernet Type 5 PIC with CFP)

Syntax	<pre>input-vlan-map { (pop pop-pop pop-swap push push-push swap swap-push swap-swap); inner-tag-protocol-id <i>tpid</i>; inner-vlan-id <i>number</i>; tag-protocol-id <i>tpid</i>; vlan-id <i>number</i>; }</pre>
Hierarchy Level	<pre>[edit interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>pop-pop, pop-swap, push-push, swap-push, and swap-swap statements introduced in Junos OS Release 8.1.</p>
Description	<p>For Gigabit Ethernet IQ, 10-Gigabit Ethernet SFPP interfaces, 10-Gigabit Ethernet SFP interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP only, define the rewrite profile to be applied to incoming frames on this logical interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Stacking a VLAN Tag • output-vlan-map (Gigabit Ethernet IQ, 10-Gigabit Ethernet with SFPP, 10-Gigabit Ethernet SFP, and 100-Gigabit Ethernet Type 5 PIC with CFP) on page 427

instance

Syntax	<pre>instance <i>vpls-instance-name</i>;</pre>
Hierarchy Level	<pre>[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>name</i>]</pre>
Release Information	<p>Statement introduced in Junos OS Release 9.4.</p>
Description	<p>Specify the VPLS instance of the default maintenance domain.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Maintenance Intermediate Points • maintenance-domain on page 355

interface (Hierarchical CoS Schedulers)

Syntax	<code>interface <i>interface-name</i>;</code>
Hierarchy Level	[edit interfaces interface-set <i>interface-set-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify an interface that is a member of the interface set. Supported on Ethernet interfaces on an MX Series router, Ethernet interfaces on IQ2E PIC on M Series and T Series routers, and IP demux interfaces on an MX Series router.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Class of Service Library for Routing Devices</i>

interface (IEEE 802.1x)

Syntax interface *interface-id* {
 maximum-requests *integer*;
 quiet-period *seconds*;
 reauthentication (disable | interval *seconds*);
 retries *integer*;
 server-timeout *seconds*;
 supplicant (*single*);
 supplicant-timeout *seconds*;
 transmit-period *seconds*;
 }

Hierarchy Level [edit protocols [dot1x authenticator](#)]

Release Information Statement introduced in Junos OS Release 9.3.

Description Use this statement to configure the 802.1x Port-Based Network Access Control protocol-specific Ethernet interface options.

Default The default values are provided for the options below on the respective statement pages.

Options **maximum-requests**—Specify the maximum number of retransmission times for an EAPOL Request packet to the client before it times out the authentication session.

quiet-period—Specify the number of seconds the port remains in the wait state following a failed authentication exchange with the client, before reattempting the authentication.

reauthentication—Includes two options:

- **disable**—Periodic reauthentication of the client is disabled.
- **interval**—Specify the periodic reauthentication time interval.

retries—Specify the number of tries after which the port remains in the wait state for **quiet-period** seconds before reattempting the authentication.

server-timeout—Specify the number of seconds the port waits for a reply when relaying a response from the client to the authentication server before timing out and invoking the server-fail action.

supplicant (*single*)—Specify supplicant single mode. See the usage guidelines to configure other modes.

supplicant-timeout—Specify the number of seconds the port waits for a response when relaying a request from the authentication server to the client before resending the request.

transmit-period—Specify the number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client.

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

Related Documentation

- *IEEE 802.1x Port-Based Network Access Control Overview*
- [authenticator on page 119](#)
- [dot1x on page 197](#)

interface (IEEE 802.1ag OAM Connectivity-Fault Management)

Syntax `interface (interface-name | ((ge- | xe-) (fpc/pic/port | fpc/pic/port.unit-number | fpc/pic/port.unit-number vlan vlan-id)));`

Hierarchy Level [edit protocols [oam ethernet connectivity-fault-management](#) maintenance-domain *domain-name* maintenance-association *ma-name* [mep mep-id](#)]

Release Information Statement introduced in Junos OS Release 8.4.

Description For Ethernet interfaces on M320, MX Series, and T Series routers, configure IEEE 802.1ag Operation, Administration, and Management (OAM) support.

For Gigabit Ethernet interfaces and 10-Gigabit Ethernet interfaces on MX Series routers, configure IEEE 802.1ag Connectivity Fault Management (CFM) support on trunk interface ports.

Options **interface-name**—Interface to which the MEP is attached. It could be a physical Ethernet interface, logical Ethernet interface, or on a specific VLAN of a trunk port interface (MX Series only).

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring a Maintenance Endpoint*
- *Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers*


interface (OAM Link-Fault Management)

Syntax	<pre> interface <i>interface-name</i> { apply-action-profile <i>profile-name</i>; link-discovery (active passive); pdu-interval <i>interval</i>; pdu-threshold <i>threshold-value</i>; remote-loopback; event-thresholds { frame-error <i>count</i>; frame-period <i>count</i>; frame-period-summary <i>count</i>; symbol-period <i>count</i>; } negotiation-options { allow-remote-loopback; no-allow-link-events; } } </pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For Ethernet interfaces on M320, MX Series, and T Series routers, configure IEEE 802.3ah Operation, Administration, and Management (OAM) support.
Options	<p>interface <i>interface-name</i>—Interface to be enabled for IEEE 802.3ah link fault management OAM support.</p> <p>Range: 1 through 10 interfaces can be tracked.</p> <p>The remaining statements are described separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Enabling IEEE 802.3ah OAM Support

interface-down

Syntax	interface-down;
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management action-profile <i>profile-name</i> default-actions]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Bring the interface down when a remote MEP connectivity failure is detected.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Connectivity Fault Management Action Profile</i>

interface-mode

Syntax	interface-mode (access trunk);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family ethernet-switching] [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge]
Release Information	Statement introduced in Junos OS Release 9.2. Statement introduced in Junos Release 12.3R2 for EX Series switches.
Description	Determines whether the logical interface accepts or discards packets based on VLAN tags. Specify the trunk option to accept packets with a VLAN ID that matches the list of VLAN IDs specified in the vlan-id-list statement, then forward the packet within the bridge domain or VLAN configured with the matching VLAN ID. Specify the access option to accept packets with no VLAN ID, then forward the packet within the bridge domain or VLAN configured with the VLAN ID that matches the VLAN ID specified in the vlan-id statement.
	<div>  <p>NOTE: On MX Series routers, if you want IGMP snooping to be functional for a bridge domain, then you should not configure interface-mode and irb for that bridge. Such a configuration commit succeeds, but IGMP snooping is not functional, and a message informing the same is displayed. For more information, see <i>Configuring a Trunk Interface on a Bridge Network</i>.</p> </div>
Options	<p>access—Configure a logical interface to accept untagged packets. Specify the VLAN to which this interface belongs using the vlan-id statement.</p> <p>trunk—Configure a single logical interface to accept packets tagged with any VLAN ID specified with the vlan-id-list statement.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Logical Interface for Access Mode</i> • <i>Configuring a Logical Interface for Trunk Mode</i>

interface-name

Syntax	interface-name;
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include],
Release Information	Statement introduced in Junos OS Release 10.0.
Description	<p>Append the interface name and VLAN ID or stacked VLAN ID to the username string used for authentication. The appended information takes the following format:</p> <ul style="list-style-type: none">• For single VLAN—<interface-name>:<4-digit-vlan-id>• For stack VLANs—<interface-name>:<4-digit-svlan-id>-<4-digit-vlan-id>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring VLAN Interface Username Information for AAA Authentication</i>

interface-range

Syntax `interface-range name {
 member-range interface-name-fpc/pic/port to interface-name-fpc/pic/port;
 member interface-name-fpc/pic/port;
 member interface-name-fpc/[low-high]/*;
 member interface-name-fpc/[pic1,pic2,pic3...picN]/port
 /*Common config is added as part of interface-range definition, as follows*/
 mtu 256;
 hold-time up 10;
 ether-options {
 flow-control;
 speed {
 100m;
 }
 802.3ad primary;
 }
}`

Hierarchy Level [edit [interfaces](#)]

Release Information Statement introduced in Junos OS Release 10.0.

Description Specify a set of identical interfaces as an interface group, to which you can apply a common configuration to the entire set of interfaces. This group can consist of both lexical member ranges of interfaces specified using the **member-range** *interface-type-fpc/pic/port* to *xx-fpc/pic/port* option (regex not supported), and of individual or non-sequential members using the **member** *interface-type-fpc/pic/port* option (with regex support to specify the *fpc/pic/port* values).

Options **member-range**—Adds interfaces in lexical order. Regex is not supported.

Format:—**member-range** <start-range> to <end-range>

Example:—**member-range** ge-0/0/0 to ge-4/0/40;

member—To add individual interfaces or multiple interfaces using regex.

Format:—**member** <list of interface names>

Example:—**member** ge-0/0/0;

member ge-0/1/1;

member ge-0/*/*;

member ge-0/[1-10]/0;

member ge-1/[1,3,6,10]/12

Required Privilege interface—To view this statement in the configuration.

Level interface-control—To add this statement to the configuration.

Related Documentation

- [Configuring Interface Ranges](#)

interface-transmit-statistics

Syntax `interface-transmit-statistics;`

Hierarchy Level `[edit interface interface-name]`

Release Information Statement introduced in Junos OS Release 11.4 R3 for MX Series devices.

Description Configure the interface to report the transmitted load statistics. If this statement is not included in the configuration, the interface statistics show the offered load on the interface, and not the actual transmitted load.



NOTE: This is not supported on Enhanced IQ (IQE) and Enhanced IQ2 (IQ2E) PICs.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Improvements to Interface Transmit Statistics Reporting on page 632](#)
- [show interfaces \(Gigabit Ethernet\)](#)

interface-set (Ethernet Interfaces)

Syntax

```
interface-set interface-set-name {
  interface ethernet-interface-name {
    (unit unit-number | vlan-tags-outer vlan-tag);
  }
}
```

Hierarchy Level `[edit interfaces]`

Release Information Statement introduced in Junos OS Release 8.5.

Description The set of interfaces used to configure hierarchical CoS schedulers on Ethernet interfaces on the MX Series router and IQ2E PIC on M Series and T Series routers.

The remaining statements are described separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers](#)
- [Junos OS Class of Service Library for Routing Devices](#)

interface-set (IP Demux Interfaces)

Syntax	<pre>interface-set <i>interface-set-name</i> { interface <i>interface-name</i> { unit <i>unit-number</i>; } }</pre>
Hierarchy Level	[edit interfaces]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	<p>The set of interfaces used to configure hierarchical CoS schedulers for subscribers on IP demux interfaces on the MX Series router.</p> <p>The remaining statements are described separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos Subscriber Access Configuration Guide</i>• <i>Router Interfaces</i>

interface-status-tlv

Syntax	<pre>interface-status-tlv [down lower-layer-down];</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management action-profile <i>profile-name</i> event]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Defines an action-profile consisting of various events and the action. Based on values of interface-status-tlv in the received CCM packets, specific action such as <i>interface-down</i> can be taken using action-profile options.
Options	<p>down—When the incoming CCM packet contains interface status TLV with value down, the action will be triggered for this action-profile.</p> <p>lower-layer-down—When the incoming CCM packet contains interface status TLV with value lower-layer-down, the action will be triggered for this action-profile.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Remote MEP Action Profile Support</i>

interface-switch

Syntax	<code>interface-switch <i>connection-name</i> { interface <i>interface-name.unit-number</i>; }</code>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols connections], [edit protocols connections]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure Layer 2 switching cross-connects. The cross-connect is bidirectional, so packets received on the first interface are transmitted out the second interface, and those received on the second interface are transmitted out the first.</p> <p>For Layer 2 switching cross-connects to work, you must also configure MPLS.</p>
Options	<p><i>connection-name</i>—Connection name.</p> <p><i>interface interface-name.unit-number</i>—Interface name. Include the logical portion of the name, which corresponds to the logical unit number.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the CCC Connection for Layer 2 Switching Cross-Connects</i>• <i>Defining the Connection for Switching Cross-Connects</i>• <i>Junos OS MPLS Applications Library for Routing Devices</i>

interface-type (Interfaces)

Syntax	<code>interface-type (bc coc1 ct1 ct3 dc ds so t1 t3);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-range</i> name no-partition],</code> <code>[edit interfaces <i>interface-range</i> name partition <i>partition-number</i>],</code> <code>[edit interfaces <i>interface-range</i> name partition <i>partition-number</i> oc-slice <i>oc-slice-range</i>],</code> <code>[edit interfaces <i>interface-range</i> name partition <i>partition-number</i> timeslot <i>timeslot-range</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For IQ and IQE interfaces only, configure the sublevel interface type.
Options	<p>bc—Dual—Port Channelized E1 and T1 ISDN PRI interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> timeslot <i>timeslot-range</i>]</code> hierarchy level to create a bearer (B) channel <code>bc-pim/0/port:channel</code> interface for each time you want to function as an ISDN PRI B-channel.</p> <p>coc1—Channelized OC1 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type coc1-fpc/pic/port]</code> hierarchy level.</p> <p>ct1—Channelized T1 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> interface-type ct3-fpc/pic/port<:channel>]</code> hierarchy level.</p> <p>ct3—Channelized T3 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type coc1-fpc/pic/port:channel no-partition]</code> hierarchy level.</p> <p>dc—Dual-Port Channelized E1 and T1 ISDN PRI interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> timeslot <i>timeslot-range</i>]</code> hierarchy level to create a (D) channel <code>dc-pim/0/port</code> to control the B-channels.</p> <p>ds—DS0 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> interface-type (ce1-fpc/pic/port ct1-fpc/pic/port<:channel>)]</code> hierarchy level.</p> <p>so—SONET/SDH interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type coc12-fpc/pic/port]</code> hierarchy level.</p> <p>t1—T1 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type (coc12-fpc/pic/port coc1-fpc/pic/port)]</code> hierarchy level.</p> <p>t3—T3 interface type. You can specify this interface type at the <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type (coc12-fpc/pic/port coc1-fpc/pic/port:channel no-partition)]</code> hierarchy level.</p>

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Channelized E1 IQ and IQE Interfaces Overview</i> • <i>Channelized OC12/STM4 IQ and IQE Interfaces Overview</i> • <i>Configuring Channelized T3 IQ Interfaces</i>

interfaces

Syntax	interfaces { ... }
Hierarchy Level	[edit]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure interfaces on the router or switch.
Default	The management and internal Ethernet interfaces are automatically configured. You must configure all other interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Physical Interface Configuration Statements Overview</i> • <i>Configuring Aggregated Ethernet Link Protection</i>

interleave-fragments

Syntax	interleave-fragments;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services interfaces only, interleave long packets with high-priority packets. Allows small delay-sensitive packets, such as Voice over IP (VoIP) packets, to interleave with long fragmented packets. This minimizes the latency of delay-sensitive packets.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

interval

Syntax	interval (10m 10s 1m 1s 100ms 10ms);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Ten milliseconds option introduced in Junos OS Release 9.1.
Description	The time between continuity check messages.
Options	10m —10 minutes. 10s —10 seconds. 1m —1 minute. 1s —1 second. 100ms —100 milliseconds. 10ms —10 milliseconds.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Continuity Check Protocol</i>• <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>

inverse-arp

Syntax	inverse-arp;
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet address <i>address</i> multipoint-destination <i>destination</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet address <i>address</i> multipoint-destination <i>destination</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	For ATM encapsulation, enable responses to receive inverse ATM ARP requests. For Frame Relay encapsulation, enable responses to receive inverse Frame Relay ARP requests.
Default	Inverse ARP is disabled on all ATM and Frame Relay interfaces.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Inverse ATM1 or ATM2 ARP</i> • <i>Configuring Inverse Frame Relay ARP</i>

invert-data

Syntax	invert-data;
Hierarchy Level	[edit interfaces e1- <i>fpc/pic/port</i>], [edit interfaces t1- <i>fpc/pic/port</i>], [edit interfaces <i>interface-name</i> ds0-options], [edit interfaces <i>interface-name</i> e1-options], [edit interfaces <i>interface-name</i> t1-options], [edit interfaces <i>interface-name</i> e3-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Invert the transmission of unused data bits on the DS0, E1, E3, and T1 interface.



NOTE: When configuring E1 or T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the invert-data statement must be included at the [edit interfaces e1-*fpc/pic/port*] or [edit interfaces t1-*fpc/pic/port*] hierarchy level as appropriate.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E1 Data Inversion</i> • <i>Configuring E3 Data Inversion</i> • <i>Configuring T1 Data Inversion</i>

ipsec-sa

Syntax	<code>ipsec-sa sa-name;</code>
Hierarchy Level	[edit interfaces es-fpc/pic/port unit logical-unit-number family inet], [edit logical-systems logical-system-name interfaces es-fpc/pic/port unit logical-unit-number family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the IP Security (IPsec) security association (SA) name associated with the interface.
Options	sa-name —IPsec security association name.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• <i>Junos OS Administration Library for Routing Devices</i>

isdn-options

Syntax	<pre>isdn-options { bchannel-allocation (ascending descending); calling-number number; incoming-called-number number <reject>; spid1 spid-string; spid2 spid-string; static-tei-val value; switch-type (att5e etsi nil ntdms100 ntt); t310 seconds; tei-option (first-call power-up); }</pre>
Hierarchy Level	[edit interfaces br- <i>pim</i> /0/ <i>port</i>], [edit interfaces ct1- <i>pim</i> /0/ <i>port</i>], [edit interfaces ce1- <i>pim</i> /0/ <i>port</i>]
Release Information	Statement introduced before Junos OS Release 7.4. bchannel-allocation option added in Junos OS Release 8.3.
Description	<p>For J Series Services Routers only. Specify the ISDN options for configuring ISDN interfaces for group and user sessions.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Physical Interface Properties</i>• <i>Allocating B-Channels for Dialout</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

keep-address-and-control

Syntax	keep-address-and-control;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with encapsulation type PPP CCC, do not remove the address and control bytes before encapsulating the packet into a tunnel.
Default	If you do not include this statement, address and control bytes are removed before encapsulating the packet into a tunnel.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Disabling the Removal of Address and Control Bytes</i>

keepalives

Syntax	<code>keepalives <interval seconds> <down-count number> <up-count number>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Enable the sending of keepalives on a physical interface configured with PPP, Frame Relay, or Cisco HDLC encapsulation.</p> <p>For ATM2 IQ interfaces only, you can enable keepalives on a logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 LLC encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation.
Default	Sending of keepalives is enabled by default. The default keepalive interval is 10 seconds for PPP, Frame Relay, or Cisco HDLC. The default down-count is 3 and the default up-count is 1 for PPP or Cisco HDLC.
Options	<p>down-count <i>number</i>—The number of keepalive packets a destination must fail to receive before the network takes down a link.</p> <p>Range: 1 through 255</p> <p>Default: 3</p> <p>interval <i>seconds</i>—The time in seconds between successive keepalive requests.</p> <p>Range: 1 through 32767 seconds</p> <p>Default: 10 seconds</p> <p>up-count <i>number</i>—The number of keepalive packets a destination must receive to change a link's status from down to up.</p> <p>Range: 1 through 255</p> <p>Default: 1</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Keepalives</i> • <i>Configuring Frame Relay Keepalives</i> • <i>Applying PPP Attributes to L2TP LNS Subscribers Per Inline Service Interface</i>

key

Syntax	<code>key number;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Adaptive Services PICs on M Series routers (except the M320 and M120 routers), identify an individual traffic flow within a tunnel, as defined in RFC 2890, <i>Key and Sequence Number Extensions to GRE</i> .
Options	number —Value of the key. Range: 0 through 4,294,967,295
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Junos OS Services Interfaces Library for Routing Devices

l2tp-interface-id

Syntax	<code>l2tp-interface-id name;</code> (dedicated shared);
Hierarchy Level	[edit interfaces sp- <i>fpc/pic/port</i> unit <i>logical-unit-number</i> interface], [edit logical-systems <i>logical-system-name</i> interfaces sp- <i>fpc/pic/port</i> unit <i>logical-unit-number</i> interface]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the L2TP options for configuring logical interfaces for group and user sessions.
Options	<p>(dedicated shared)—Specifies whether a logical interface can host one (dedicated) or multiple (shared) sessions at one time.</p> <p>name—Interface identifier that must be replicated at the [edit access profile <i>name</i>] hierarchy level.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Junos OS Services Interfaces Library for Routing Devices

lACP (802.3ad)

Syntax	<pre>lACP { traceoptions { file lacpd; flag all; } ppm (centralized distributed); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> fastether-options 802.3ad], [edit interfaces <i>interface-name</i> gigeether-options 802.3ad]
Release Information	Statement introduced in Junos OS Release 9.3. The ppm (centralized distributed) option introduced in Junos OS Release 9.4.
Description	<p>For aggregated Ethernet interfaces only, configure the Link Aggregation Control Protocol (LACP).</p> <p>On MX and T Series routers you can specify distributed or centralized periodic packet management (PPM).</p>
Default	<p>If you do not specify lACP as either active or passive, LACP remains passive.</p> <p>If you do not specify ppm as either centralized or distributed, PPM is distributed.</p>
Options	<ul style="list-style-type: none"> • active—Initiate transmission of LACP packets. • passive—Respond to LACP packets. • ppm—Set PPM to centralized or distributed. <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Aggregated Ethernet LACP</i>

lacp (Aggregated Ethernet)

Syntax

```
lacp {
  (active | passive);
  admin-key key;
  accept-data;
  fast-failover;
  link-protection {
    disable;
    (revertive | non-revertive);
  }
  periodic interval;
  system-id mac-address;
  system-priority priority;
}
```

Hierarchy Level [edit interfaces *aeX* **aggregated-ether-options**]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
fast-failover option introduced in Junos OS Release 12.2.

Description For aggregated Ethernet interfaces only, configure the Link Aggregation Control Protocol (LACP).

When you configure the **accept-data** statement at the [edit interfaces *aeX* **aggregated-ether-options lacp**] hierarchy level, the router processes packets received on a member link irrespective of the LACP state if the aggregated Ethernet bundle is up.



NOTE: When you use the **accept-data** statement at the [edit interfaces *aeX* **aggregated-ether-options lacp**] hierarchy level, this behavior occurs:

- By default, the **accept-data** statement is not configured when LACP is enabled.
- You can configure the **accept-data** statement to improve convergence and reduce the number of dropped packets when member links in the bundle are enabled or disabled.
- When LACP is down and a member link receives packets, the router does not process packets as defined in the IEEE 802.1ax standard. According to this standard, the packets should be dropped, but they are processed instead because the **accept-data** statement is configured.

Default If you do not specify LACP as either **active** or **passive**, LACP remains passive.

Options **active**—Initiate transmission of LACP packets.

admin-key *number*—Specify an administrative key for the router or switch.



NOTE: You must also configure Multichassis Link Aggregation (MC-LAG) when you configure the `admin-key`.

fast-failover—Specify to override the IEEE 802.3ad standard and allow the standby link to receive traffic. Overriding the default behavior facilitates subsecond failover.

passive—Respond to LACP packets.

The remaining statements are explained separately.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
---------------------------------	---

Related Documentation	<ul style="list-style-type: none">• <i>Configuring Aggregated Ethernet LACP</i>• <i>Configuring Aggregated Ethernet LACP (CLI Procedure)</i>• <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks with LACP Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i>
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layer2-policer

Syntax	<pre>layer2-policer { input-policer policer-name; input-three-color policer-name; output-policer policer-name; output-three-color policer-name; }</pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p>
Release Information	<p>Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	<p>For 1-Gigabit Ethernet and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces on M Series, MX Series, and T Series routers, and for aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces on EX Series switches, apply Layer 2 logical interface policers. The following policers are supported:</p> <ul style="list-style-type: none"> Two-color Single-rate tricolor marking (srTCM) Two-rate tricolor marking (trTCM) <p>Two-color and tricolor policers are configured at the [edit firewall] hierarchy level.</p>
Options	<p>input-policer <i>policer-name</i>—Two-color input policer to associate with the interface. This statement is mutually exclusive with the input-three-color statement.</p> <p>input-three-color <i>policer-name</i>—Tricolor input policer to associate with the interface. This statement is mutually exclusive with the input-policer statement.</p> <p>output-policer <i>policer-name</i>—Two-color output policer to associate with the interface. This statement is mutually exclusive with the output-three-color statement.</p> <p>output-three-color <i>policer-name</i>—Tricolor output policer to associate with the interface. This statement is mutually exclusive with the output-policer statement.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i> <i>Configuring Gigabit Ethernet Two-Color and Tricolor Policers</i>

lcp-max-conf-req

Syntax	<code>lcp-max-conf-req <i>number</i></code>
Hierarchy Level	[edit interfaces <i>so-fpc/pic/port unit number ppp-options</i>]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Set the maximum number of LCP Configure-Requests to be sent, after which the router goes to LCP down state.
Options	<i>number</i> —From 0 to 65,535, where 0 means send infinite LCP Configure-Requests, and any other value specifies the maximum number LCP Configure-Requests to send and then stop sending. <i>Default</i> —254
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the LCP Configure-Request Maximum Sent</i>• ppp-options on page 458

lcp-restart-timer

Syntax	<code>lcp-restart-timer <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name unit logical-unit-number ppp-options</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name unit logical-unit-number ppp-options</i>]
Release Information	Statement introduced in Junos OS Release 8.1.
Description	For interfaces with PPP, PPP TCC, PPP over Ethernet, PPP over ATM, and PPP over Frame Relay encapsulations, configure a restart timer for the Link Control Protocol (LCP) component of a PPP session.
Options	<i>milliseconds</i> —The time, in milliseconds, between successive LCP configuration requests. Range: 20 through 10000 milliseconds Default: 3 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the PPP Restart Timers</i>

level

Syntax	<code>level <i>number</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in junos os release 12.1X48 for PTX Series Packet Transport Routers.
Description	A number used in CFM messages to identify the maintenance association.
Options	<i>number</i> —A number used to identify the maintenance domain to which the CFM message belongs. Range: 0 through 7
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Maintenance Domain Level</i>• <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>• <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>

line-encoding

Syntax	line-encoding (ami b8zs);
Hierarchy Level	[edit interfaces <i>ct1-fpc/pic/port</i>], [edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	Set the line encoding format on the T1 interface.



NOTE: When configuring CT1 interfaces on the 10-port Channelized E1/T1 IQE PIC, the **line-encoding** statement must be included at the [edit interfaces *ct1-fpc/pic/port*] hierarchy level.

Default	The default line encoding is B8ZS.
Options	ami —Use Alternate Mark Inversion (AMI) line encoding. b8zs —Use bipolar with 8-zeros substitution (B8ZS) line encoding.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring T1 Line Encoding</i>

line-protocol

Syntax	<code>line-protocol <i>protocol</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For serial interfaces only, configure the line protocol.
Options	<p><i>protocol</i>—You can specify the one of the following line protocols:</p> <ul style="list-style-type: none"> • eia530—Line protocol EIA-530 • v.35—Line protocol V.35 • x.21—Line protocol X.21
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Serial Line Protocol</i>

line-rate

Syntax	<code>line-rate <i>line-rate</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> shdsl-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options]</p>
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For J Series Services Routers only, configure the SHDSL line rate.
Options	<p><i>line-rate</i>—SHDSL line rate, in Kbps. Possible values are:</p> <p>2-wire (Kbps): 192, 256, 320, 384, 448, 512, 576, 640, 704, 768, 832, 896, 960, 1024, 1088, 1152, 1216, 1280, 1344, 1408, 1472, 1536, 1600, 1664, 1728, 1792, 1856, 1920, 1984, 2048, 2112, 2176, 2240, 2304, auto</p> <p>4-wire (Kbps): 384, 512, 640, 768, 896, 1024, 1152, 1280, 1408, 1536, 1664, 1792, 1920, 2048, 2176, 2304, 2432, 2560, 2688, 2816, 2944, 3072, 3200, 3328, 3456, 3584, 3712, 3840, 3968, 4096, 4224, 4352, 4480, 4608</p> <p>Default: For 2-wire mode, auto; for 4-wire mode, 4608 Kbps</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>ATM-over-SHDSL Overview</i>

linear-red-profile

Syntax	<code>linear-red-profile <i>profile-name</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options scheduler-maps <i>map-name</i> forwarding-class <i>class-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, assign a linear RED profile to a specified forwarding class. To define the linear RED profiles, include the linear-red-profiles statement at the [edit interfaces at- <i>fpc/pic/port</i> atm-options] hierarchy level.
Default	If you do not include either the epd-threshold or the linear-red-profile statement in the forwarding class configuration, the Junos OS uses an EPD threshold based on the available bandwidth and other parameters.
Options	<i>profile-name</i> —Name of the linear RED profile.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an ATM Scheduler Map</i>• linear-red-profiles on page 319• <i>Configuring Scheduler Maps on ATM Interfaces</i>• <i>epd-threshold</i>

linear-red-profiles

Syntax	linear-red-profiles <i>profile-name</i> { high-plp-threshold <i>percent</i> ; low-plp-threshold <i>percent</i> ; queue-depth <i>cells</i> ; }
Hierarchy Level	[edit interfaces <i>at-fpc/pic/port</i> atm-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define CoS virtual circuit drop profiles for RED. When a packet arrives, RED checks the queue fill level. If the fill level corresponds to a nonzero drop probability, the RED algorithm determines whether to drop the arriving packet.
Options	<i>profile-name</i> —Name of the drop profile. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM2 IQ VC Tunnel CoS Components</i> • <i>Configuring Linear RED Profiles on ATM Interfaces</i>

link-adjacency-loss

Syntax	link-adjacency-loss;
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile <i>event</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Loss of adjacency with IEEE 802.3ah link-fault management peer event. When included, the loss-of-adjacency event triggers the action specified under the action statement.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Monitoring the Loss of Link Adjacency</i>

link-discovery

Syntax	link-discovery (active passive);
Hierarchy Level	[edit protocols oam ethernet link-fault-management interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For Ethernet interfaces on EX Series switches, and M320, M120, MX Series, and T Series routers, specify the discovery mode used for IEEE 802.3ah Operation, Administration, and Management (OAM) support. The discovery process is triggered automatically when OAM 802.3ah functionality is enabled on a port. Link monitoring is done when the interface sends periodic OAM PDUs.
Options	(active passive)—Passive or active mode. In active mode, the interface discovers and monitors the peer on the link if the peer also supports IEEE 802.3ah OAM functionality. In passive mode, the peer initiates the discovery process. Once the discovery process is initiated, both sides participate in discovery.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Link Discovery</i>

link-down

Syntax	link-down;
Hierarchy Level	[edit protocols oam ethernet link-fault-management]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Mark the interface down for transit traffic.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying the Actions to Be Taken for Link-Fault Management Events</i>

link-event-rate

Syntax	<pre>link-event-rate { frame-error count; frame-period count; frame-period-summary count; symbol-period count; }</pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure the number of link-fault management events per second.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Fault Events in an Action Profile</i>

link-fault-management

```
Syntax  link-fault-management {
        action-profile profile-name {
            action {
                link-down;
                send-critical-event;
                syslog;
            }
            event {
                link-adjacency-loss;
                link-event-rate {
                    frame-error count;
                    frame-period count;
                    frame-period-summary count;
                    symbol-period count;
                }
                protocol-down;
            }
        }
    }
    interface interface-name {
        apply-action-profile profile-name;
        link-discovery (active | passive);
        pdu-interval interval;
        pdu-threshold threshold-value;
        remote-loopback;
        event-thresholds {
            frame-error count;
            frame-period count;
            frame-period-summary count;
            symbol-period count;
        }
        negotiation-options {
            allow-remote-loopback;
            no-allow-link-events;
        }
    }
}
```

Hierarchy Level [edit protocols [oam](#) [ethernet](#)]

Release Information Statement introduced in Junos OS Release 8.2.

Description For Ethernet interfaces on M320, M120, MX Series, and T Series routers and EX Series switches, specify fault signaling and detection for IEEE 802.3ah Operation, Administration, and Management (OAM) support.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation • *Enabling IEEE 802.3ah OAM Support*

link-layer-overhead

Syntax	link-layer-overhead <i>percent</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For AS PIC or MultiServices PIC link services IQ interfaces (lsq) only, configure the percentage of total bundle bandwidth to be set aside for link-layer overhead.
Options	percent —Percentage of total bundle bandwidth to be set aside for link-layer overhead. Range: 0 through 50 percent Default: 4 percent
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	• <i>Junos OS Services Interfaces Library for Routing Devices</i>

link-mode

Syntax	link-mode <i>mode</i> (automatic full-duplex half-duplex);
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>ge-pim</i> /0/0 <i>switch-options</i> <i>switch-port</i> <i>port-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Set the device's link connection characteristic.
Options	<p><i>mode</i>—Link characteristics:</p> <ul style="list-style-type: none"> • automatic—Link mode is negotiated. This is the default for EX Series switches. • full-duplex—Connection is full duplex. • half-duplex—Connection is half duplex. <p>Default: Fast Ethernet interfaces, except the J Series ePIM Fast Ethernet interfaces, can operate in either full-duplex or half-duplex mode. The router's management Ethernet interface, fxp0 or em0, the built-in Fast Ethernet interfaces on the FIC (M7i router), and the Gigabit Ethernet ports on J Series Services Routers with uPIMs installed and configured for access switching mode autonegotiate whether to operate in full-duplex or half-duplex mode. Unless otherwise noted here, all other interfaces operate only in full-duplex mode.</p>



NOTE: On J Series ePIM Fast Ethernet interfaces, if you specify half-duplex (or if full-duplex mode is not autonegotiated), the following message is written to the system log: "Half-duplex mode not supported on this PIC, forcing full-duplex mode."



NOTE: On EX Series switches, if no-auto-negotiation is specified in [edit interfaces *interface-name* ether-options], you can select only full-duplex or half-duplex. If auto-negotiation is specified, you can select any mode.



NOTE: Member links of an aggregated Ethernet bundle must not be explicitly configured with a link mode. You must remove any such link-mode configuration before committing the aggregated Ethernet configuration.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Link Characteristics on Ethernet Interfaces</i>• Understanding Management Ethernet Interfaces on page 5• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i>

link-protection

Syntax	<pre>link-protection { disable; (revertive non-revertive); }</pre>
Hierarchy Level	<p>[edit interfaces aex aggregated-ether-options] [edit interfaces aex aggregated-ether-options <i>lcp</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 9.0 for EX Series switches. Support for disable, revertive, and non-revertive statements added in Junos OS Release 9.3.</p>
Description	<p>On the router, for aggregated Ethernet interfaces only, configure link protection. In addition to enabling link protection, a primary and a secondary (backup) link must be configured to specify what links egress traffic should traverse. To configure primary and secondary links on the router, include the primary and backup statements at the [edit interfaces <i>ge-fpc/pic/port</i> gigether-options 802.3ad aex] hierarchy level or the [edit interfaces <i>fe-fpc/pic/port</i> fastether-options 802.3ad aex] hierarchy level.</p> <p>On the switch, you can configure either Junos OS link protection for aggregated Ethernet interfaces or the LACP standards link protection for aggregated Ethernet interfaces.</p> <p>For Junos OS link protection, specify link-protection at the following hierarchy levels:</p> <ul style="list-style-type: none"> • [edit interfaces <i>ge-fpc/pic/port</i> ether-options 802.3ad aex] • [edit interfaces <i>xe-fpc/pic/port</i> ether-options 802.3ad aex] <p>For LACP standards link protection, specify link-protection at the following hierarchy levels:</p> <ul style="list-style-type: none"> • For global LACP link protection, specify at [edit chassis aggregated-devices ethernet lcp] • For a specific aggregated Ethernet interface, specify at [edit interfaces aeX aggregated-ether-options lcp]
Options	The statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Aggregated Ethernet Link Protection</i> • <i>Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</i>

link-speed (Aggregated Ethernet)

Syntax	link-speed <i>speed</i> ;
Hierarchy Level	[edit interfaces aex aggregated-ether-options], [edit interfaces interface-range <i>name</i> aggregated-ether-options], [edit interfaces interface-range <i>name</i> aggregated-sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For aggregated Ethernet interfaces only, set the required link speed.
Options	<p>speed—For aggregated Ethernet links, you can specify speed in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000).</p> <p>Aggregated Ethernet links on the M120 router can have one of the following speed values:</p> <ul style="list-style-type: none"> • 100m—Links are 100 Mbps. • 10g—Links are 10 Gbps. • 1g—Links are 1 Gbps. • oc192—Links are OC192 or STM64c. <p>Aggregated Ethernet links on EX Series switches can be configured to operate at one of the following speed values:</p> <ul style="list-style-type: none"> • 10m • 100m • 1g • 10g
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Aggregated Ethernet Link Speed</i> • <i>Configuring Aggregated Ethernet Links (CLI Procedure)</i> • <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i>

link-speed (Aggregated SONET/SDH)

Syntax	link-speed (<i>speed</i> mixed);
Hierarchy Level	[edit interfaces asx aggregated-sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4. mixed option added in Release 8.0.
Description	For aggregated SONET/SDH interfaces only, set the required link speed.
Options	<p>speed—Aggregated SONET/SDH links can have one of the following speed values.</p> <ul style="list-style-type: none">• oc3—Links are OC3c or STM1c.• oc12—Links are OC12c or STM4c.• oc48—Links are OC48c or STM16c.• oc192—Links are OC192c or STM64c.• oc768—Links are OC768c or STM256c. <p>mixed—For aggregated SONET/SDH links on T Series routers, you can mix interface speeds in SONET/SDH aggregation bundles. Interface speeds from OC3 through OC768 are supported.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Aggregated Ethernet Link Speed</i>• <i>Configuring Aggregated SONET/SDH Link Speed</i>

linktrace

Syntax	<pre>linktrace { age (30m 10m 1m 30s 10s); path-database-size path-database-size; }</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure connectivity fault management linktrace parameters.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Linktrace Protocol in CFM</i>

lmi (Frame Relay)

Syntax lmi {
 lmi-type (ansi | itu | c-lmi);
 n391dte *number*;
 n392dce *seconds*;
 n392dte *number*;
 n393dce *number*;
 n393dte *number*;
 t391dte *number*;
 t392dce *seconds*;
 }

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Set Frame Relay keepalive parameters.

Options n391dte—DTE full status polling interval.

Range: 1 through 255

Default: 6

n392dce—DCE error threshold, in number of errors.

Range: 1 through 10

Default: 3

n392dte—DTE error threshold, in number of errors.

Range: 1 through 10

Default: 3

n393dce—DCE monitored event-count.

Range: 1 through 10

Default: 4

n393dte—DTE monitored event-count.

Range: 1 through 10

Default: 4

t391dte—DTE polling timer.

Range: 5 through 30 seconds

Default: 10 seconds

t392dce—DCE polling timer.

Range: 5 through 30 seconds

Default: 15 seconds

The remaining statements are explained separately.

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring Tunable Keepalives for Frame Relay LMI*
 - [lmi-type on page 333](#)
 - [mlfr-uni-nni-bundle-options on page 365](#)

lmi (Ethernet OAM)

Syntax	<pre>lmi { status-counter <i>count</i>; polling-verification-timer <i>value</i>; interface <i>name</i> { uni-id <i>uni-name</i>; status-counter <i>number</i>; polling-verification-timer <i>value</i>; evc-map-type (all-to-one-bundling bundling service-multiplexing); evc <i>evc-name</i> { default-evc; vlan-list <i>vlan-id-list</i>; } } }</pre>
Hierarchy Level	[edit protocols oam ethernet]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	On routers with ge , xe , or ae interfaces, configure an OAM Ethernet local management interface.
Options	<p>status-counter <i>count</i>—Status counter (N393), defaults to 4.</p> <p>interface <i>name</i>—Polling verification timer (T392), defaults to 15 seconds.</p> <p>uni-id <i>uni-name</i>—(Optional) Defaults to the physical interface name.</p> <p>status-counter <i>number</i>—(Optional) Defaults to a global value.</p> <p>polling-verification-timer <i>value</i>—(Optional) Defaults to a global value.</p> <p>evc-map-type (all-to-one-bundling bundling service-multiplexing)—Specify the Ethernet virtual connection (EVC) map type.</p> <p>evc <i>evc-name</i>—Specify the name of the EVC.</p> <p>default-evc—Set the specified EVC as the default EVC.</p> <p>vlan-list <i>vlan-id-list</i>—Specify a group of VLANs to assign to the EVC.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Ethernet Local Management Interface</i> evcs on page 231

lmi-type

Syntax	lmi-type (ansi itu c-lmi);
Hierarchy Level	[edit interfaces <i>interface-name</i> lmi], [edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set Frame Relay Local Management Interface (LMI) type.



NOTE: Consortium LMI is supported on all MPCs and I-chip based FPCs.

Options	ansi —Use ANSI T1.167 Annex D LMIs. itu —Use ITU Q933 Annex A LMIs. c-lmi —Use Consortium LMI. Default: ansi
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Frame Relay Keepalives</i> • mlfr-uni-nni-bundle-options on page 365 • lmi (Frame Relay) on page 330 • <i>Junos OS Services Interfaces Library for Routing Devices</i>

load-interval

Syntax	<code>load-interval seconds;</code>
Hierarchy Level	[edit interfaces dln unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces dln unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN logical interfaces, specify the interval used to calculate the average load on the network. By default, the average interface load is calculated every 60 seconds.
Options	seconds —Number of seconds at which the average load calculation is triggered. Range: 20 through 180, in 10-second intervals Default: 60 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Logical Interface Properties</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

load-threshold

Syntax	<code>load-threshold <i>percent</i>;</code>
Hierarchy Level	[edit interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN logical interfaces, specify the bandwidth threshold percentage used for adding interfaces. Another link is added to the multilink bundle when the load reaches the threshold value you set. Specify a percentage between 0 and 100.
Options	percent —Bandwidth threshold percentage used for adding interfaces. When set to 0, all available channels are dialed. Range: 0 through 100 seconds Default: 100 seconds
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Bandwidth on Demand</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

local-name

Syntax	local-name <i>name</i> ;
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> ppp-options chap], [edit interfaces <i>interface-name</i> ppp-options pap], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4. Support for PAP added in Junos OS Release 8.3.</p>
Description	<p>For CHAP authentication, the value sent in CHAP challenge and response packets on a per interface basis. For PAP authentication, the local hostname for sending PAP authentication requests.</p> <p>For ATM2 IQ interfaces only, you can configure a CHAP local name on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 LLC encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation.
Default	For CHAP authentication, if you do not include the local-name statement in the configuration, the interface sends the router's system hostname in CHAP challenge and response packets.
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPP Challenge Handshake Authentication Protocol</i> • <i>Configuring the PPP Password Authentication Protocol</i> • <i>Junos OS Administration Library for Routing Devices</i>

local-password

Syntax	<code>local-password password;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options pap], [edit interfaces <i>interface-name</i> unit logical-unit-number ppp-options pap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number ppp-options pap]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Configure the host password for sending PAP requests.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Local Password</i> • <i>Configuring the PPP Password Authentication Protocol</i>


lockout

Syntax	<code>lockout;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a lockout of protection, forcing the use of the working circuit and locking out the protect circuit regardless of anything else.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Switching Between the Working and Protect Circuits</i>

log-prefix (Interfaces)

Syntax	<code>log-prefix <i>prefix-value</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options syslog host <i>hostname</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set the system logging prefix value.
Options	<i>prefix-value</i> —System logging prefix value.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• <i>Configuring System Logging for Services Interfaces</i>

logical-interface-policer

Syntax	logical-interface-policer;
Hierarchy Level	<p>[edit dynamic-profiles <i>profile-name</i> firewall policer <i>policer-name</i>], [edit dynamic-profiles <i>profile-name</i> firewall three-color-policer <i>name</i>], [edit firewall atm-policer <i>atm-policer-name</i>] [edit firewall policer <i>policer-name</i>], [edit firewall policer <i>policer-template-name</i>], [edit firewall three-color-policer <i>policer-name</i>], [edit logical-systems <i>logical-system-name</i> firewall policer <i>policer-name</i>], [edit logical-systems <i>logical-system-name</i> firewall three-color-policer <i>name</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Support at the [edit firewall three-color-policer <i>policer-name</i>] hierarchy level introduced in Junos OS Release 8.2.</p> <p>Logical systems support introduced in Junos OS Release 9.3.</p> <p>Support at the [edit dynamic-profiles ... policer <i>policer-name</i>] and [edit dynamic-profiles ... three-color-policer <i>name</i>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	Configure a logical interface policer.
	<div>  <p>NOTE: Starting in Junos OS Release 12.2R2, on T Series Core Routers only, you can configure an MPLS LSP policer for a specific LSP to be shared across different protocol family types. You must include the logical-interface-policer statement to do so.</p> </div>
Required Privilege Level	<p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Two-Color and Three-Color Logical Interface Policers</i> • <i>Traffic Policer Types</i> • <i>Configuring Tricolor Marking Policers</i> • <i>action</i> • <i>Configuring Gigabit Ethernet Two-Color and Tricolor Policers</i> • action on page 95


logical-systems

Syntax	<pre>logical-systems { logical-system-name { ...logical-system-configuration... } }</pre>
Hierarchy Level	[edit]
Release Information	Statement introduced before Junos OS Release 7.4. Statement name changed from logical-routers in Junos OS Release 9.3.
Description	Configure a logical system.
Options	logical-system-name —Name of the logical system.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Logical Systems Feature Guide for Routing Devices</i>

long-buildout

Syntax	(long-buildout no-long-buildout);
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure the T3 line buildout. A T3 interface has two settings for the T3 line buildout: a short setting, which is less than 255 feet (68 meters), and a long setting, which is greater than 255 feet and shorter than 450 feet (137 meters).</p> <p>This statement applies to copper-cable-based T3 interfaces only. You cannot configure a line buildout for a DS3 channel on a channelized OC12 interface, which runs over fiber-optic cable.</p>
Default	A T3 interface uses the short line buildout setting (no-long-buildout) for wires shorter than 255 feet (68 meters).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the T3 Line Buildout</i>

loop-timing

Syntax	(loop-timing no-loop-timing);
Hierarchy Level	[edit interfaces ct3- <i>fpc/pic/port</i> t3-options], [edit interfaces e1- <i>fpc/pic/port:0</i> sonet-options], [edit interfaces stm1- <i>fpc/pic/port</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For channelized IQ interfaces and non-IQ channelized STM1 interfaces only, configure the SONET/SDH or DS3-level clocking source.
	<div>  <p>NOTE: On M Series, MX Series, and T Series routers, under E1 channels, loop timing can be configured only at channel 0. When you configure on channel 0, it is applicable on all channels as internal by default.</p> </div>
Options	<p>loop-timing—Configure loop timing (external) clocking.</p> <p>no-loop-timing—Configure line timing (internal) clocking.</p> <p>Default: no-loop-timing</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Channelized IQ and IQE SONET/SDH Loop Timing</i> • <i>Configuring the Channelized T3 Loop Timing</i> • clocking on page 155

loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3)

Syntax	<code>loopback (local payload remote);</code>
Hierarchy Level	<code>[edit interfaces ce1-fpc/pic/port],</code> <code>[edit interfaces ct1-fpc/pic/port],</code> <code>[edit interfaces t1-fpc/pic/port],</code> <code>[edit interfaces interface-name ds0-options],</code> <code>[edit interfaces interface-name dsl-options],</code> <code>[edit interfaces interface-name e1-options],</code> <code>[edit interfaces interface-name e3-options],</code> <code>[edit interfaces interface-name shdsl-options],</code> <code>[edit interfaces interface-name sonet-options],</code> <code>[edit interfaces interface-name t1-options],</code> <code>[edit interfaces interface-name t3-options]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Configure a loopback connection. To turn off the loopback capability, remove the loopback statement from the configuration.



NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the **loopback** statement must be included with the **local** or **remote** option at the `[edit interfaces ce1-fpc/pic/port]` or `[edit interfaces ct1-fpc/pic/port]` hierarchy level as appropriate.

When configuring T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the **loopback** statement must be included with the **payload** option at the `[edit interfaces t1-fpc/pic/port]` hierarchy level.



NOTE: When configuring CE1 or CT1 interfaces on the 16-port Channelized E1/T1 MIC (MIC-3D-16CHE1-T1-CE), you must include the **loopback** statement at the `[edit interfaces ce1-fpc/pic/port]` hierarchy level, or `[edit interfaces ct1-fpc/pic/port]`

To configure loopback on channelized IQ and IQE PICs, SONET/SDH level, use the **sonet-options loopback** statement **local** and **remote** options at the controller interface (coc48, cstm16, coc12, cstm4, coc3, cstm1). It is ignored for path-level interfaces **so-fpc/pic/port** or **so-fpc/pic/port:channel**.


Options	local —Loop packets, including both data and timing information, back on the local router's PIC. NxDS0 IQ interfaces do not support local loopback.
----------------	--

payload—For channelized T3, T1, and NxDS0 IQ interfaces only, loop back data only (without clocking information) on the remote router's PIC. With payload loopback, overhead is recalculated. Neither ATM-over-asymmetrical digital subscriber line (ADSL) interfaces nor ATM-over-SHDSL interfaces support payload loopback.

remote—Loop packets, including both data and timing information, back on the remote router's interface card. NxDS0 IQ interfaces do not support remote loopback.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring E3 and T3 Parameters on ATM Interfaces</i>• <i>Configuring E1 Loopback Capability</i>• <i>Configuring E3 Loopback Capability</i>• <i>Configuring SONET/SDH Loopback Capability</i>• <i>Configuring SHDSL Operating Mode on an ATM Physical Interface</i>• <i>Configuring T1 Loopback Capability</i>• <i>Configuring T3 Loopback Capability</i>• feac-loop-respond on page 242

loopback (Aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet)

Syntax	(loopback no-loopback);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces interface-range <i>name</i> ether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces, enable or disable loopback mode.
<div>  <p>NOTE: By default, local aggregated Ethernet, Fast Ethernet, Tri-Rate Ethernet copper, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces connect to a remote system.</p> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Ethernet Loopback Capability</i>

loopback (Serial)

Syntax	<code>loopback mode;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a loopback connection.
Default	If you do not include this statement, there is no loopback connection.
Options	mode —You can specify the one of the following loopback modes: <ul style="list-style-type: none">• dce-local—For EIA-530 interfaces only, loop packets back on the local DCE.• dce-remote—For EIA-530 interfaces only, loop packets back on the remote DCE.• local—Loop packets back on the local router's PIC.• remote—Loop packets back on the line interface unit (LIU).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Loopback Capability</i>

loopback-clear-timer

Syntax	loopback-clear-timer <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	For interfaces with PPP, PPP TCC, PPP over Ethernet, PPP over ATM, and PPP over Frame Relay encapsulations, configure a loop detection clear timer for the Link Control Protocol (LCP) component of a PPP session.
Options	seconds —The time in seconds to wait before the loop detection flag is cleared if it is not cleared by the protocol. Range: 1 through 60 seconds Default: 9 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the PPP Clear Loop Detected Timer</i>

loss-priority

Syntax	loss-priority (high low);
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile output-priority-map classifier premium forwarding-class <i>class-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the packet loss priority value.
Options	high —Packet has high loss priority. low —Packet has low loss priority.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying an Output Priority Map</i>

loss-threshold

Syntax	<code>loss-threshold <i>number</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the number of continuity check messages lost before marking the remote MEP as down.
Options	<i>number</i> —The number of continuity check messages that can be lost before the remote MEP is considered down.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Continuity Check Protocol</i> • <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>

low-plp-max-threshold

Syntax	<code>low-plp-max-threshold <i>percent</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options linear-red-profiles <i>profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define the drop profile fill-level for the low PLP CoS VC. When the fill level exceeds the defined percentage, all packets are dropped.
Options	<i>percent</i> —Fill-level percentage when linear RED is applied to cells with PLP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM2 IQ VC Tunnel CoS Components</i> • high-plp-max-threshold on page 260 • low-plp-threshold on page 348 • <i>Configuring Linear RED Profiles on ATM Interfaces</i> • <i>high-plp-max-threshold</i> • queue-depth on page 476

low-plp-threshold

Syntax	<code>low-plp-threshold percent;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options linear-red-profiles <i>profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define the CoS VC drop profile fill-level percentage when linear RED is applied to cells with low PLP. When the fill level exceeds the defined percentage, packets with low PLP are randomly dropped by RED. This statement is mandatory.
Options	percent —Fill-level percentage when linear RED is applied to cells with low PLP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>• high-plp-max-threshold on page 260• high-plp-threshold on page 257• <i>Configuring Linear RED Profiles on ATM Interfaces</i>• <i>high-plp-max-threshold</i>• <i>high-plp-threshold</i>• low-plp-max-threshold on page 347• queue-depth on page 476

lowest-priority-defect

Syntax	lowest-priority-defect (all-defects err-xcon mac-rem-err-xcon no-defect rem-err-xcon xcon)
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> mep <i>mep-id</i>]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify the lowest priority defect that is allowed to generate a Fault Alarm whenever CFM detects a defect. This configuration is done at the MEP level.
Options	<p>Specify one of the following lowest priority defect options:</p> <p>all-defects—Allows all defects.</p> <p>err-xcon—Allows only erroneous CCM and cross-connect CCM defects.</p> <p>mac-rem-err-xcon—Allows only MAC, not receiving CCM, erroneous CCM, and cross-connect defects.</p> <p>no-defect—Allows no defects.</p> <p>rem-err-xcon—Allows only not receiving CCM, erroneous CCM, and cross-connect CCM defects.</p> <p>xcon—Allows only cross-connect CCM defects.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Maintenance End Point Lowest Priority Defect</i>

lsq-failure-options

Syntax	<code>lsq-failure-options { no-termination-request; [trigger-link-failure <i>interface-name</i>]; }</code>
Hierarchy Level	[edit interfaces <i>lsq-fpc/pic/port</i>]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For AS PIC or MultiServices PIC link services IQ (lsq) interfaces only, define the failure recovery option settings.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

mac

Syntax	<code>mac <i>mac-address</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set the MAC address of the interface. You can configure the MAC address on the management Ethernet interface (fxp0 or em0) only.
Options	mac-address —MAC address. Specify the MAC address as six hexadecimal bytes in one of the following formats: <i>nnnn.nnnn.nnnn</i> or <i>nn:nn:nn:nn:nn:nn</i> . For example, 0011.2233.4455 or 00:11:22:33:44:55.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the MAC Address on the Management Ethernet Interface</i>


mac-address (Accept Source Mac)

Syntax	<code>mac-address <i>mac-address</i> policer;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> accept-source-mac], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> accept-source-mac]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Gigabit Ethernet IQ and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), for Gigabit Ethernet DPCs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP, specify a remote MAC address on which to count incoming and outgoing packets.
Options	<i>mac-address</i> —MAC address. Specify the MAC address as six hexadecimal bytes in one of the following formats: <i>nnnn.nnnn.nnnn</i> or <i>nn:nn:nn:nn:nn:nn</i> . For example, 0011.2233.4455 or 00:11:22:33:44:55. <i>policer</i> —MAC policer. For more information, see policer (MAC) .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring MAC Address Filtering

mac-address (VLAN and Stacked VLAN Interfaces)

Syntax	<code>mac-address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include],
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify that the client hardware address (chaddr) from the incoming DHCP discover packet be concatenated with the username during the subscriber authentication process.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring VLAN Interface Username Information for AAA Authentication

mac-learn-enable

Syntax	(mac-learn-enable no-mac-learn-enable);
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Gigabit Ethernet IQ and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), for Gigabit Ethernet DPCs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP configure whether source and destination MAC addresses are dynamically learned:</p> <ul style="list-style-type: none"> • mac-learn-enable—Allow the interface to dynamically learn source and destination MAC addresses. • no-mac-learn-enable—Prohibit the interface from dynamically learning source and destination MAC addresses. <p>MAC address learning is based on source addresses. You can start accounting for traffic after there has been traffic sent from the MAC address. Once the MAC address is learned, the frames and bytes transmitted to or received from the MAC address can be tracked.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p> NOTE: When you gather interfaces into a bridge domain, the no-mac-learn-enable statement at the [edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile] hierarchy level is not supported. You must use the no-mac-learning statement at the [edit bridge-domains <i>bridge-domain-name</i> bridge-options interface <i>interface-name</i>] hierarchy level to disable MAC learning on an interface in a bridge domain. For information on disabling MAC learning for a bridge domain, see <i>MX Series Layer 2 Configuration Guide</i>.</p> </div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring MAC Address Filtering

mac-validate

Syntax	mac-validate (loose strict);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Enable IP and MAC address validation for static Ethernet and IP demux interfaces. Supported on MX Series routers only.
Options	<p>loose—Forwards incoming packets when both the IP source address and the MAC source address match one of the trusted address tuples. Drops packets when the IP source address matches one of the trusted tuples, but the MAC address does not match the MAC address of the tuple. Continues to forward incoming packets when the source address of the incoming packet does not match any of the trusted IP addresses.</p> <p>strict—Forwards incoming packets when both the IP source address and the MAC source address match one of the trusted address tuples. Drops packets when the MAC address does not match the tuple's MAC source address, or when IP source address of the incoming packet does not match any of the trusted IP addresses.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>MAC Address Validation on Static Ethernet Interfaces Overview</i>• <i>Configuring MAC Address Validation on Static Demux Interfaces</i>

maintenance-association

Syntax	<pre> maintenance-association <i>ma-name</i> { short-name-format (character-string vlan 2octet rfc-2685-vpn-id); protect-maintenance-association <i>protect-ma-name</i>; remote-maintenance-association <i>remote-ma-name</i>; continuity-check { hold-interval <i>minutes</i>; interval (10m 10s 1m 1s 100ms); loss-threshold <i>number</i>; } mep <i>mep-id</i> { auto-discovery; direction (up down); interface <i>interface-name</i> (protect working); lowest-priority-defect (all-defects err-xcon mac-rem-err-xcon no-defect rem-err-xcon xcon); priority <i>number</i>; remote-mep <i>mep-id</i> { action-profile <i>profile-name</i>; sla-iterator-profile <i>profile-name</i> { data-tlv-size <i>size</i>; iteration-count <i>count-value</i>; priority <i>priority-value</i>; } } } } </pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Configure the name of the maintenance association in IEEE-compliant format.
Options	ma-name —The name of the maintenance association within the maintenance domain. The remaining statements are explained separately.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Creating a Maintenance Association</i> • <i>Configuring a Maintenance Endpoint</i> • <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i> • <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>

maintenance-domain

Syntax `maintenance-domain domain-name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `instance vpls-instance-name;`
 `level number;`
 `maintenance-association ma-name {`
 `protect-maintenance-association protect-ma-name;`
 `remote-maintenance-association remote-ma-name;`
 `short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);`
 `continuity-check {`
 `hold-interval minutes;`
 `interval (10m | 10s | 1m | 1s | 100ms);`
 `loss-threshold number`
 `}`
 `mep mep-id {`
 `auto-discovery;`
 `direction (up | down);`
 `interface interface-name (protect | working);`
 `lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |`
 `rem-err-xcon | xcon);`
 `priority number;`
 `remote-mep mep-id {`
 `action-profile profile-name;`
 `sla-iterator-profile profile-name {`
 `data-tlv-size size;`
 `iteration-count count-value;`
 `priority priority-value;`
 `}`
 `}`
 `}`
 `mip-half-function (none | default | explicit);`
 `name-format (character-string | none | dns | mac+2oct);`
 `}`
 `virtual-switch name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `}`
`}`

Hierarchy Level [edit protocols `oam ethernet connectivity-fault-management`]

Release Information Statement introduced in Junos OS Release 8.4.
 Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description Configure the name of the maintenance domain in IEEE-compliant format.

Options *domain-name*—Name of the maintenance domain.

The remaining statements are explained separately.

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

- Related Documentation**
- *Creating the Maintenance Domain*
 - *Configuring a Maintenance Endpoint*
 - *Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers*
 - *Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers*

master-only

Syntax	master-only;
Hierarchy Level	[edit groups rex interfaces (fxp0 em0) unit <i>logical-unit-number</i> family <i>family</i> address], [edit groups rex logical-systems <i>logical-system-name</i> interfaces fxp0 unit <i>logical-unit-number</i> family <i>family</i> address], [edit interfaces (fxp0 em0) unit <i>logical-unit-number</i> family <i>family</i> address], [edit logical-systems <i>logical-system-name</i> interfaces fxp0 unit <i>logical-unit-number</i> family <i>family</i> address]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Configure the IP address to be used when the Routing Engine is the current master.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Consistent Management IP Address</i>• <i>CLI User Guide</i>

maximum-contexts

Syntax	<code>maximum-contexts <i>number</i> <force>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> compression rtp], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> compression rtp]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	Specify the maximum number of RTP contexts to accept during negotiation.
Options	<p><i>number</i>—Maximum number of contexts.</p> <p><i>force</i>—(Optional) Requires the PIC to use the value specified for maximum RTP contexts, regardless of the negotiated value. This option allows the software to interoperate with Junos OS Releases that base the RTP context value on link speed.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

maximum-requests

Syntax	<code>maximum-requests <i>times</i>;</code>
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Specify the maximum number of retransmission times of an EAPOL Request packet to the client before it times out the authentication session.
Options	<p><i>times</i>—Specify the maximum number of retransmission times.</p> <p>Range: 1 through 10 times</p> <p>Default: 2 times</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>IEEE 802.1x Port-Based Network Access Control Overview</i> • authenticator on page 119 • dot1x on page 197 • interface (IEEE 802.1x) on page 290

maximum-vcs

Syntax	<code>maximum-vcs <i>maximum-vcs</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options vpi <i>vpi-identifier</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM1 interfaces, configure the maximum number of virtual circuits (VCs) allowed on a virtual path (VP). When configuring ATM1 interfaces on the router, you must include this statement.</p> <p>For a configured virtual path identifier (VPI), valid virtual channel identifier (VCI) numbers are from 0 through (<i>maximum-vcs</i> value – 1). VCI numbers 0 through 31 are reserved by the ATM Forum. It is recommended that you use a VCI number higher than 31 when connecting to an ATM switch.</p>
Options	<p><i>maximum-vcs</i>—Maximum number of VCs on the VP.</p> <p>Range: 1 through 4090</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Maximum Number of ATM1 VCs on a VP</i>• multipoint-destination on page 375• promiscuous-mode on page 468• vci on page 595

mc-ae

Syntax

```
mc-ae {
  chassis-id chassis-id;
  events {
    iccp-peer-down {
      force-icl-down;
      prefer-status-control-active;
    }
  }
  mc-ae-id mc-ae-id;
  mode (active-active | active-standby);
  redundancy-group group-id;
  status-control (active | standby);
}
```

Hierarchy Level [edit interfaces aeX aggregated-ether-options]

Release Information Statement introduced in Junos OS Release 9.6.
events statement introduced in Junos OS Release 11.4R4.

Description Enable Multichassis Link Aggregation (MC-LAG), which allows one device to form a logical LAG interface with two or more other devices.

Options **chassis-id**—Specify the chassis ID for Link Aggregation Control Protocol (LACP) to calculate the port number of MC-LAG physical member links.

Values: 0 | 1

events—Specify an action if a specific MC-LAG event occurs.

iccp-peer-down—Specify an action if the peer of this node goes down.

force-icl-down—If the node's peer goes down, bring down the interchassis-link logical linterface.

prefer-status-control-active—If the node's peer goes down, prefer that the node configured as **status-control active** become the active node.



NOTE: The **prefer-status-control-active** statement can be configured with the **status-control standby** configuration to prevent the LACP MC-LAG system ID from reverting to the default LACP system ID on ICCP failure. Use this configuration only if you can ensure that ICCP does not go down unless the router is down. You must also configure the **hold-time down** value (at the [edit interfaces *interface-name*] hierarchy level) for the interchassis link with the **status-control standby** configuration to be higher than the ICCP BFD timeout. This configuration prevents traffic loss by ensuring that when the router with the **status-control active** configuration goes down, the router with the **status-control standby** configuration does not go into standby mode.

mc-ae-id—Specify the identification number of the MC-LAG device. The two MC-LAG network devices that manage a given MC-LAG must have the same identification number.

Range: 1 through 65,535

mode (active-active | active-standby)—Specify whether the MC-LAG is in active-active or active-standby mode.

redundancy-group—Specify the redundancy group identification number. The Inter-Chassis Control Protocol (ICCP) uses the redundancy group ID to associate multiple chassis that perform similar redundancy functions.

Range: 1 through 4294967294

status-control (active | standby)—Specify whether the chassis becomes active or remains in standby when an interchassis link failure occurs.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Multichassis Link Aggregation*

member-interface-speed

Syntax member-interface-speed *speed*;

Hierarchy Level [edit interfaces container-options [member-interface-type](#)]

Release Information Statement introduced in Junos OS Release 9.2.

Description Specify container-interface member-interface speed options.

Options *speed*—Set interface speed to OC3, OC12, OC48, OC192, OC768, or mixed.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Displaying APS Using a Container Interface with ATM Encapsulation*
- *Configuring Container Interfaces for APS on SONET Links*
- [container-options on page 164](#)

member-interface-type

Syntax	<code>member-interface-type sonet { member-interface-speed [<i>speed</i>]; }</code>
Hierarchy Level	[edit interfaces container-options]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Specify container-interface member-interface type as sonet and speed options.
Options	sonet —Protocol type of the container interface, specify sonet. speed —Set interface speed to OC3, OC12, OC48, OC192, OC768, or mixed.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Displaying APS Using a Container Interface with ATM Encapsulation</i>• <i>Configuring Container Interfaces for APS on SONET Links</i>• container-options on page 164

mep

Syntax	<pre> mep mep-id { auto-discovery; direction (up down); interface interface-name (protect working); priority number; remote-mep mep-id { action-profile profile-name; sla-iterator-profile profile-name { data-tlv-size size; iteration-count count-value; priority priority-value; } } } </pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain md-name maintenance-association ma-name]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	The numeric identifier of the maintenance association end point (MEP) within the maintenance association.
Options	<p>mep-id—Specify the numeric identifier of the MEP.</p> <p>Range: 1 through 8191</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring a Maintenance Endpoint</i> <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>

minimum-links

Syntax	<code>minimum-links <i>number</i>;</code>
Hierarchy Level	<code>[edit interfaces aex aggregated-ether-options],</code> <code>[edit interfaces aex aggregated-sonet-options],</code> <code>[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</code> <code>[edit interfaces interface-range <i>range</i> aggregated-ether-options],</code> <code>[edit interfaces interface-range <i>range</i> aggregated-sonet-options],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	For aggregated Ethernet, SONET/SDH, multilink, link services, and voice services interfaces only, set the minimum number of links that must be up for the bundle to be labeled up.
Options	<p><i>number</i>—Number of links.</p> <p>Range: On M120, M320, MX Series, T Series, and TX Matrix routers with Ethernet interfaces, the valid range for minimum-links number is 1 through 64. When the maximum value (16) is specified, all configured links of a bundle must be up for the bundle to be labeled up. On all other routers and on EX Series switches, other than EX8200 switches, the range of valid values for minimum-links number is 1 through 8. When the maximum value (8) is specified, all configured links of a bundle must be up for the bundle to be labeled up. On EX8200 switches, the range of valid values for minimum-links number is 1 through 12. When the maximum value (12) is specified, all configured links of a bundle must be up for the bundle to be labeled up.</p> <p>Default: 1</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Aggregated Ethernet Minimum Links</i> • <i>Configuring Aggregated SONET/SDH Minimum Links</i> • <i>Configuring Aggregated Ethernet Links (CLI Procedure)</i> • <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

mip-half-function

Syntax	mip-half-function (none default explicit);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>md-name</i>], [edit protocols oam ethernet connectivity-fault-management maintenance-association <i>ma-name</i>]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Specify the OAM Ethernet CFM maintenance domain MIP half functions.



NOTE: Whenever a MIP is configured and a bridge domain is mapped to multiple maintenance domains or maintenance associations, it is essential that the `mip-half-function` value for all maintenance domains and maintenance associations are the same.

Options	<p>none—Specify to not use the mip-half-function.</p> <p>default—Specify to use the default mip-half-function.</p> <p>explicit—Specify an explicit mip-half-function.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Creating the Maintenance Domain</i> • <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i> • maintenance-domain on page 355

mlfr-uni-nni-bundle-options

Syntax	<pre>mlfr-uni-nni-bundle-options { acknowledge-retries <i>number</i>; acknowledge-timer <i>milliseconds</i>; action-red-differential-delay (disable-tx remove-link); drop-timeout <i>milliseconds</i>; fragment-threshold <i>bytes</i>; hello-timer <i>milliseconds</i>; link-layer-overhead <i>percent</i>; lmi-type (ansi itu c-lmi); minimum-links <i>number</i>; mrru <i>bytes</i>; n391 <i>number</i>; n392 <i>number</i>; n393 <i>number</i>; red-differential-delay <i>milliseconds</i>; t391 <i>seconds</i>; t392 <i>number</i>; yellow-differential-delay <i>milliseconds</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure link services and voice services interface management properties.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Frame Relay Keepalives</i> • lmi (Frame Relay) on page 330 • lmi-type on page 333 • <i>Junos OS Services Interfaces Library for Routing Devices</i>

mode (Interfaces)

Syntax	mode loose;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family (inet inet6) rpf-check], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family (inet inet6) rpf-check]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Check whether the packet has a source address with a corresponding prefix in the routing table. If a corresponding prefix is not found, unicast reverse path forwarding (RPF) loose mode does not accept the packet. Unlike strict mode, loose mode does not check whether the interface expects to receive a packet with a specific source address prefix.
Default	If you do not include this statement, unicast RPF is in strict mode.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Unicast RPF Strict Mode</i>

modem-options

Syntax	modem-options { dialin (console routable); init-command-string <i>initialization-command-string</i> ; }
Hierarchy Level	[edit interfaces umd0]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For J Series Services Routers, configure a USB port to act as a USB modem. The remaining statement is explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying a USB Modem Interface on J Series Routers</i>

monitor-session

Syntax	<code>monitor-session (<i>interface-name</i> all);</code>
Hierarchy Level	[edit protocols ppp]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	Monitor PPP packet exchanges. When monitoring is enabled, packets exchanged during a session are logged to the default log of <code>/var/log/pppd</code> .
Default	If you do not include this statement, no PPPD-specific monitoring operations are performed.
Options	<p><code>all</code>—Monitor PPP packet exchanges on all sessions.</p> <p><code><i>interface-name</i></code>—Logical interface name on which to enable session monitoring.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Monitoring a PPP Session</i>

mpls (Interfaces)

Syntax	<pre> mpls { pop-all-labels { required-depth <i>number</i>; } } </pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options],</p> <p>[edit interfaces <i>interface-name</i> sonet-options],</p> <p>[edit interfaces <i>interface-name</i> fastether-options],</p> <p>[edit interfaces <i>interface-name</i> gigether-options]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For passive monitoring on ATM and SONET/SDH interfaces and 10-Gigabit Ethernet interfaces in WAN PHY mode, process incoming IP packets that have MPLS labels.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Removing MPLS Labels from Incoming Packets</i> • <i>Removing MPLS Labels from Incoming Packet</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

mrru

Syntax	<code>mrru bytes;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit interfaces <i>interface-name</i> unit logical-unit-number], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For multilink, link services, voice services, and J Series Services Routers ISDN interfaces only, set the maximum received reconstructed unit (MRRU). The MRRU is similar to the MTU, but is specific to multilink interfaces.
Options	bytes —MRRU size. Range: 1500 through 4500 bytes Default: 1500 bytes
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Logical Interface Properties</i>• mtu on page 369• <i>Junos OS Services Interfaces Library for Routing Devices</i>

mtu

Syntax	<code>mtu bytes;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>],</p> <p>[edit interfaces <i>interface-range name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit local-switching interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols l2vpn interface <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols vpls],</p> <p>[edit protocols l2circuit local-switching interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i>],</p> <p>[edit protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols l2vpn interface <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols vpls]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Support for Layer 2 VPNs and VPLS introduced in Junos OS Release 10.4.</p> <p>Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Support at the [set interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>] hierarchy level introduced in Junos OS Release 12.3R3 for MX Series routers.</p>
Description	<p>Specify the maximum transmission unit (MTU) size for the media or protocol. The default MTU size depends on the device type. Changing the media MTU or protocol MTU causes an interface to be deleted and added again.</p> <p>To route jumbo data packets on the routed VLAN interface (RVI) on EX Series switches, you must configure the jumbo MTU size on the member physical interfaces and also on the RVI itself (the vlan interface).</p>



CAUTION: For EX Series switches, setting or deleting the jumbo MTU size on the RVI (the **vlan** interface) while the switch is transmitting packets might cause packets to be dropped.



NOTE: If a packet whose size is larger than the configured MTU size is received on the receiving interface, the packet is eventually dropped. The value

considered for MRU (maximum receive unit) size is also the same as the MTU size configured on that interface.



NOTE: Not all devices allow you to set an MTU value, and some devices have restrictions on the range of allowable MTU values. You cannot configure an MTU for management Ethernet interfaces (fxp0, em0, or me0) or for loopback, multilink, and multicast tunnel devices.

For more information about configuring MTU for specific interfaces and router or switch combinations, see *Configuring the Media MTU*.

Options *bytes*—MTU size.

Range: 256 through 9192 bytes, 256 through 9500 bytes (Junos OS 12.1X48R2 for PTX Series routers)

Default: 1500 bytes (INET, INET6, and ISO families), 1448 bytes (MPLS), 1514 bytes (EX Series switch interfaces)

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Gigabit Ethernet Interfaces (CLI Procedure)*
- *Configuring the Media MTU*
- *Configuring the MTU for Layer 2 Interfaces*
- *Configuring Routed VLAN Interfaces (CLI Procedure)*
- *Setting the Protocol MTU*

multicast-dlci

Syntax	<code>multicast-dlci <i>dlci-identifier</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For point-to-multipoint Frame Relay, link services, and voice services interfaces only, enable multicast support on the interface. You can configure multicast support on the interface if the Frame Relay switch performs multicast replication.
Options	<i>dlci-identifier</i> —DLCI identifier, a number from 16 through 1022 that defines the Frame Relay DLCI over which the switch expects to receive multicast packets for replication.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Multicast-Capable Frame Relay Connection</i>• dlci on page 194• multipoint-destination on page 375• <i>Junos OS Services Interfaces Library for Routing Devices</i>

multicast-vci

Syntax	<code>multicast-vci vpi-identifier.vci-identifier;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM encapsulation only, and for point-to-multipoint ATM logical interfaces only, enable the support of multicast on the interface. You can configure multicast support on the interface if the ATM switch performs multicast replication.
Options	vci-identifier —ATM virtual circuit identifier. Range: 0 through 16,384 vpi-identifier —ATM virtual path identifier. Range: 0 through 255 Default: 0
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Multicast-Capable ATM1 or ATM2 IQ Connection</i>• multipoint-destination on page 375• vci on page 595

multicast-only

Syntax	<code>multicast-only;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the unit and family so that it can transmit and receive multicast traffic only. You can configure this property on the IP family only.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Protocol Family</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>• tunnel on page 578

multicast-statistics

Syntax	multicast-statistics;
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 10.2.
Description	For Ethernet, SONET, aggregated Ethernet, and aggregated SONET interfaces in T Series or TX Matrix routers, specify support for multicast statistics on a physical interface to enable multicast accounting for all the logical interfaces below the physical interface.
Default	not enabled—must be configured to enable
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multicast Statistics Collection on Aggregated Ethernet Interfaces</i>• <i>Configuring Multicast Statistics Collection on Aggregated SONET Interfaces</i>• <i>Configuring Multicast Statistics Collection on Ethernet Interfaces</i>• <i>Configuring Multicast Statistics Collection on SONET Interfaces</i>

multilink-max-classes

Syntax	multilink-max-classes <i>number</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Adaptive Services (AS) PIC link services IQ interfaces (lsq) only, configure the number of multilink classes to be negotiated when a link joins the bundle.
Options	<i>number</i> —The number of multilink classes to be negotiated when a link joins the bundle. Range: 1 through 8 Default: None
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• multipoint on page 374

multipoint

Syntax	<code>multipoint;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the interface unit as a multipoint connection.
Default	If you omit this statement, the interface unit is configured as a point-to-point connection.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Multipoint Connection</i>• point-to-point on page 445

multipoint-destination

Syntax	<pre> multipoint-destination address dlcid dlcid-identifier; multipoint-destination address { epd-threshold cells; inverse-arp; oam-liveness { down-count cells; up-count cells; } oam-period (disable seconds); shaping { (cbr rate rtvbr peak rate sustained rate burst length vbr peak rate sustained rate burst length); queue-length number; } vci vpi-identifier.vci-identifier; } </pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For point-to-multipoint Frame Relay or ATM interfaces only, enable the support of multicast on the interface. You can configure multicast support on the interface if the Frame Relay or ATM switch performs multicast replication.
Options	<p>address—Address of the remote side of the point-to-multipoint connection.</p> <p>dlcid-identifier—For Frame Relay interfaces, the data-link connection identifier. Range: 0 through 0xFFFFF (24 bits)</p> <p>vci-identifier—For ATM interfaces, the virtual circuit identifier. Range: 0 through 16,384</p> <p>vpi-identifier—For ATM interfaces, the virtual path identifier. Range: 0 through 255 Default: 0</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring a Point-to-Point ATM1 or ATM2 IQ Connection • Configuring a Point-to-Multipoint Frame Relay Connection • dlci on page 194 • encapsulation (Logical Interface) on page 213

multiservice-options

Syntax	<pre>multiservice-options { (syslog no-syslog); (core-dump no-core-dump); (dump-on-flow-control); flow-control-options { down-on-flow-control; dump-on-flow-control; reset-on-flow-control; } }</pre>
Hierarchy Level	[edit interfaces mo- <i>fpc/pic/port</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For monitoring services interfaces only, configure multiservice-specific interface properties.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>• passive-monitor-mode on page 434

n391

Syntax	n391 <i>number</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, set the Frame Relay full status polling interval.
Options	<i>number</i> —Polling interval. Range: 1 through 255 Default: 6
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• n392 on page 378• n393 on page 379• timeslots on page 555• t392 on page 549

n392

Syntax	n392 <i>number</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voices interfaces only, set the Frame Relay error threshold, in number of errors.
Options	<i>number</i> —Error threshold. Range: 1 through 10 Default: 3
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• n391 on page 377• n393 on page 379• timeslots on page 555• t392 on page 549

n393

Syntax	n393 <i>number</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voices interfaces only, set the Frame Relay monitored event count.
Options	<i>number</i> —Number of event count. Range: 1 through 10 Default: 4
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• n391 on page 377• n392 on page 378• timeslots on page 555• t392 on page 549

name-format

Syntax	name-format (character-string none dns mac+2oct);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the format of the maintenance domain name.
Options	character-string —The name is an ASCII character string. none —The maintenance domain name is not used. dns —The name is in domain name service (DNS) format. For example: www.juniper.net. mac+2oct —Name is the MAC address plus a two-octet maintenance association identifier. For example: 08:00:22:33:44:55.100. Default: character-string
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Creating a Maintenance Association</i>• <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>

native-vlan-id

Syntax	<code>native-vlan-id <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i>]
Release Information	Statement introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For 1-, 4-, and 8-port Gigabit Ethernet IQ2 and IQ2-E PICs, for 1-port 10-Gigabit Ethernet IQ2 and IQ2-E PICs configured for 802.1Q flexible VLAN tagging, for all Ethernet interfaces on MX Series routers, and for aggregated Ethernet interfaces on IQ2 and IQ2-E PICs or MX Series DPCs, and for 100-Gigabit Ethernet Type 5 PIC with CFP, configure mixed tagging support for untagged packets on a port. When the native-vlan-id statement is included with the flexible-vlan-tagging statement, untagged packets are accepted on the same mixed VLAN-tagged port.</p> <p>The logical interface on which untagged packets are received must be configured with the same native VLAN ID as that configured on the physical interface. To configure the logical interface, include the vlan-id statement (matching the native-vlan-id statement on the physical interface) at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] hierarchy level.</p> <p>When the native-vlan-id statement is included with the interface-mode the statement, untagged packets are accepted and forwarded within the bridge domain that is configured with the matching VLAN ID.</p>
Options	<p><i>number</i>—VLAN ID number.</p> <p>Range: (ACX Series routers) 0 through 4094.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Mixed Tagging Support for Untagged Packets • Configuring a Logical Interface for Access Mode • flexible-vlan-tagging on page 244


ncp-max-conf-req

Syntax	<code>ncp-max-conf-req <i>number</i></code>
Hierarchy Level	[edit interfaces <i>so-fpc/pic/port unit number</i> ppp-options]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Set the maximum number of NCP Configure-Requests to be sent, after which the router goes to NCP down state.
Options	<i>number</i> —Ranges from 0 to 65535, where 0 means send infinite NCP Configure-Requests and any other value specifies the maximum number NCP Configure-Requests to send and then stop sending. Default —254 Range: 0 through 65,535
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the NCP Configure-Request Maximum Sent• ppp-options on page 458

ncp-restart-timer

Syntax	<code>ncp-restart-timer <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name unit logical-unit-number</i> ppp-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name unit logical-unit-number</i> ppp-options]
Release Information	Statement introduced in Junos OS Release 8.1.
Description	For interfaces with PPP and PPP TCC encapsulations and on multilink PPP bundle interfaces, configure a restart timer for the Network Control Protocol (NCP) component of a PPP session.
Options	<i>milliseconds</i> —The time in milliseconds between successive NCP configuration requests. Range: 500 through 10,000 milliseconds Default: 3 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPP Restart Timers

nd6-stale-time

Syntax	<code>nd6-stale-time <i>seconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet6]
Release Information	Statement introduced in Junos OS Release 11.1. Statement introduced in Junos OS Release 11.1 for EX Series switches.
Description	Set the stale timer for IPv6 neighbor reachability confirmation. Reachability of the IPv6 neighbors is confirmed only after the stale timer has expired. For example, by setting the stale timer to 180 seconds, users can specify that IPv6 neighbor reachability be confirmed every 180 seconds.
	<div>  <p>NOTE: When the Routing Engine sends a control packet to an IPv6 neighbor, the stale timer is the maximum interval in which neighbor reachability is confirmed. In such cases, IPv6 neighbor reachability is confirmed before the stale timer expires.</p> </div>
Default	Default is 20 minutes (1200 seconds)
Options	<i>seconds</i> —Duration in seconds. Range: 1 to 1200
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>IPv6 Neighbor Discovery Overview</i> • <i>show ipv6 neighbors</i>

negotiate-address

Syntax	negotiate-address;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with PPP encapsulation, enable the interface to be assigned an IP address by the remote end.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring IPCP Options</i>• address on page 100• unnumbered-address (PPP) on page 589• <i>Junos OS Administration Library for Routing Devices</i>

negotiation-options

Syntax	negotiation-options { allow-remote-loopback ; no-allow-link-events ; }
Hierarchy Level	[edit protocols oam link-fault-management interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Enable and disable IEEE 802.3ah Operation, Administration, and Management (OAM) features for Ethernet interfaces. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.3ah OAM Link-Fault Management Overview</i>

neighbor (Automatic Protection Switching for SONET/SDH)

Syntax	<code>neighbor address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>If you are configuring one router to be the working router and a second to be the protect router, configure the address of the remote interface. You configure this on one or both of the interfaces.</p> <p>The address you specify for the neighbor must never be routed through the interface on which APS is configured, or instability will result. We strongly recommend that you directly connect the working and protect routers and that you configure the interface address of this shared network as the neighbor address.</p>
Options	<i>address</i> —Neighbor's address.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Basic Automatic Protect Switching</i>

no-allow-link-events

Syntax	<code>no-allow-link-events;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management interface <i>interface-name</i> negotiation-options]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Disable the sending of link event TLVs.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Disabling the Sending of Link Event TLVs</i>

asynchronous-notification

Syntax	(asynchronous-notification no-asynchronous-notification);
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i> gigether-options]
Release Information	Statement introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For all 10-Gigabit Ethernet interfaces, M120, M320, and T Series routers, configure support for notification of link down alarm generation and transfer.</p> <ul style="list-style-type: none">• asynchronous-notification—Support notification of link down alarm generation and transfer.• no-asynchronous-notification—Prohibit notification of link down alarm generation and transfer.
Default	Support for notification of link down alarm generation and transfer is not enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>10-Gigabit Ethernet Notification of Link Down Alarm Overview</i>

no-auto-mdix

Syntax	no-auto-mdix;
Hierarchy Level	[edit interface <i>ge-fpc/port/pic</i> <i>gigether-options</i>]
Release Information	Statement introduced in Junos OS Release 9.5. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>Disable the Auto MDI/MDIX feature.</p> <p>MX Series routers with Gigabit Ethernet interfaces automatically detect MDI and MDIX port connections. Use this statement to override the default setting. Remove this statement to return to the default setting.</p>
Default	Auto MDI/MDIX is enabled by default.
Options	There are no options for this statement.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Interfaces Overview</i>• gigether-options on page 254.

auto-negotiation

Syntax	(auto-negotiation no-auto-negotiation) <remote-fault (local-interface-online local-interface-offline)>;
Hierarchy Level	[edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces <i>ge-pim</i> /0/0 switch-options switch-port <i>port-number</i>]
Release Information	Statement introduced in Junos OS Release 7.6. Statement introduced in Junos OS Release 8.4 for J Series Services Routers. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Gigabit Ethernet interfaces on M Series, MX Series, T Series, TX Matrix routers, and ACX Series routers explicitly enable autonegotiation and remote fault. For EX Series switches and J Series Services Routers, explicitly enable autonegotiation only.

- **auto-negotiation**—Enables autonegotiation. This is the default.
- **no-auto-negotiation**—Disable autonegotiation. When autonegotiation is disabled, you must explicitly configure the link mode and speed.

When you configure Tri-Rate Ethernet copper interfaces to operate at 1 Gbps, autonegotiation must be enabled.



NOTE: On EX Series switches, an interface configuration that disables autonegotiation and manually sets the link speed to 1 Gbps is accepted when you commit the configuration; however, if the interface you are configuring is a Tri-Rate Ethernet copper interface, the configuration is ignored as invalid and autonegotiation is enabled by default.

To correct the invalid configuration and disable autonegotiation:

1. Delete the **no-auto-negotiation** statement and commit the configuration.
2. Set the link speed to 10 or 100 Mbps, set **no-auto-negotiation**, and commit the configuration.

On J Series Services Routers with universal Physical Interface Modules (uPIMs) and on EX Series switches, if the link speed and duplex mode are also configured, the interfaces use the values configured as the desired values in the negotiation. If autonegotiation is disabled, the link speed and link mode must be configured.



NOTE: On T4000 routers, the **auto-negotiation** command is ignored for interfaces other than Gigabit Ethernet.

Default	Autonegotiation is automatically enabled. No explicit action is taken after the autonegotiation is complete or if the negotiation fails.
Options	remote-fault (local-interface-online local-interface-offline) —(Optional) For M Series, MX Series, T Series, TX Matrix routers, and ACX Series routers only, manually configure remote fault on an interface. Default: local-interface-online
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Gigabit Ethernet Autonegotiation Overview</i> • <i>Configuring J Series Services Router Switching Interfaces</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i> • <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i>

auto-negotiation (J Series uPIM)

Syntax	(auto-negotiation no-auto-negotiation);
Hierarchy Level	[edit interfaces ge-pim/0/0 switch-options switch-port port-number]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>For universal Physical Interface Modules (uPIMs) on J Series Services Routers only, explicitly enable autonegotiation. If the link speed and duplex are also configured, the interfaces use the values configured as the desired values in the negotiation. Include the no-auto-negotiation statement to disable autonegotiation.</p> <p>If autonegotiation is disabled, the link speed and link mode must be configured.</p>
Default	Autonegotiation is enabled by default.
Options	auto-negotiation —Enables autonegotiation. no-auto-negotiation —Disables autonegotiation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring J Series Services Router Switching Interfaces</i>

cbit-parity

Syntax	(cbit-parity no-cbit-parity);
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For T3 interfaces only, enable or disable C-bit parity mode, which controls the type of framing that is present on the transmitted T3 signal. When C-bit parity mode is enabled, the C-bit positions are used for the far-end block error (FEBE), far-end alarm and control (FEAC), terminal data link, path parity, and mode indicator bits, as defined in ANSI T1.107a-1989. For ATM and ATM2 IQ2 and IQ2-E interfaces, M23 framing is used when the no-cbit-parity statement is included. For all other interfaces, M13 framing is used when the no-cbit-parity statement is included.
Default	C-bit parity mode is enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring E3 and T3 Parameters on ATM Interfaces</i>• <i>Disabling T3 C-Bit Parity Mode</i>


core-dump

Syntax	(core-dump no-core-dump);
Hierarchy Level	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For monitoring services interfaces only, a useful tool for isolating the cause of a problem. Core dumping is enabled by default. The directory /var/tmp contains core files. The Junos OS saves the current core file (0) and the four previous core files, which are numbered 1 through 4 (from newest to oldest): <ul style="list-style-type: none">• core-dump—Enable the core dumping operation.• no-core-dump—Disable the core dumping operation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

feac-loop-respond

Syntax	(feac-loop-respond no-feac-loop-respond);
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For T3 interfaces only, configure the router so a remote CSU can place the local router into loopback.</p> <p>If you configure remote or local loopback with the T3 loopback statement, the router does not respond to FEAC requests from the CSU even if you include the feac-loop-respond statement in the configuration. For the router to respond, you must delete the loopback statement from the configuration.</p> <p>You must rollback the setting done on the remote CSU prior to deactivating the feac-loop-respond statement. If the remote CSU cannot comply, clear the remote loop through local configuration to achieve the cleanup. For example, configure remote loopback on the interface and then delete the remote loopback.</p>
Default	The router does not respond to FEAC requests.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the T3 FEAC Response</i>• loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3) on page 342• remote-loopback-respond on page 487

flow-control

Syntax	(flow-control no-flow-control);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces <i>interface-name</i> multiservice-options], [edit interfaces interface-range <i>name</i> aggregated-ether-options], [edit interfaces interface-range <i>name</i> ether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 in EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only, explicitly enable flow control, which regulates the flow of packets from the router or switch to the remote side of the connection. Enabling flow control is useful when the remote device is a Gigabit Ethernet switch. Flow control is not supported on the 4-port Fast Ethernet PIC.
	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p>NOTE: On the Type 5 FPC, to prioritize control packets in case of ingress oversubscription, you must ensure that the neighboring peers support MAC flow control. If the peers do not support MAC flow control, then you must disable flow control.</p> </div> </div>
Default	Flow control is enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Flow Control</i> <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i>

gratuitous-arp-reply

Syntax	(gratuitous-arp-reply no-gratuitous-arp-reply);
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 in EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Ethernet interfaces, enable updating of the Address Resolution Protocol (ARP) cache for gratuitous ARPs.
Default	Updating of the ARP cache is disabled on all Ethernet interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Gratuitous ARP</i> • no-gratuitous-arp-request on page 393

no-gratuitous-arp-request

Syntax	no-gratuitous-arp-request;
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 9.6 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For Ethernet interfaces and pseudowire logical interfaces, do not respond to gratuitous ARP requests.
Default	Gratuitous ARP responses are enabled on all Ethernet interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Gratuitous ARP</i> • gratuitous-arp-reply on page 255

no-keepalives

Syntax	no-keepalives;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Disable the sending of keepalives on a physical interface configured with PPP, Frame Relay, or Cisco HDLC encapsulation. The default keepalive interval is 10 seconds.</p> <p>For ATM2 IQ interfaces only, you can disable keepalives on a logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:</p> <ul style="list-style-type: none">• atm-ppp-llc—PPP over AAL5 LLC encapsulation.• atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Keepalives</i>• <i>Disabling the Sending of PPPoE Keepalive Messages</i>• <i>Configuring Frame Relay Keepalives</i>

long-buildout

Syntax	(long-buildout no-long-buildout);
Hierarchy Level	[edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure the T3 line buildout. A T3 interface has two settings for the T3 line buildout: a short setting, which is less than 255 feet (68 meters), and a long setting, which is greater than 255 feet and shorter than 450 feet (137 meters).</p> <p>This statement applies to copper-cable-based T3 interfaces only. You cannot configure a line buildout for a DS3 channel on a channelized OC12 interface, which runs over fiber-optic cable.</p>
Default	A T3 interface uses the short line buildout setting (no-long-buildout) for wires shorter than 255 feet (68 meters).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the T3 Line Buildout</i>

loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3)

Syntax	<code>loopback (local payload remote);</code>
Hierarchy Level	<code>[edit interfaces ce1-fpc/pic/port],</code> <code>[edit interfaces ct1-fpc/pic/port],</code> <code>[edit interfaces t1-fpc/pic/port],</code> <code>[edit interfaces interface-name ds0-options],</code> <code>[edit interfaces interface-name dsl-options],</code> <code>[edit interfaces interface-name e1-options],</code> <code>[edit interfaces interface-name e3-options],</code> <code>[edit interfaces interface-name shdsl-options],</code> <code>[edit interfaces interface-name sonet-options],</code> <code>[edit interfaces interface-name t1-options],</code> <code>[edit interfaces interface-name t3-options]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	Configure a loopback connection. To turn off the loopback capability, remove the loopback statement from the configuration.



NOTE: When configuring CE1 or CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the **loopback** statement must be included with the **local** or **remote** option at the `[edit interfaces ce1-fpc/pic/port]` or `[edit interfaces ct1-fpc/pic/port]` hierarchy level as appropriate.

When configuring T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the **loopback** statement must be included with the **payload** option at the `[edit interfaces t1-fpc/pic/port]` hierarchy level.



NOTE: When configuring CE1 or CT1 interfaces on the 16-port Channelized E1/T1 MIC (MIC-3D-16CHE1-T1-CE), you must include the **loopback** statement at the `[edit interfaces ce1-fpc/pic/port]` hierarchy level, or `[edit interfaces ct1-fpc/pic/port]`

To configure loopback on channelized IQ and IQE PICs, SONET/SDH level, use the **sonet-options loopback** statement **local** and **remote** options at the controller interface (coc48, cstm16, coc12, cstm4, coc3, cstm1). It is ignored for path-level interfaces **so-fpc/pic/port** or **so-fpc/pic/port:channel**.


Options	local —Loop packets, including both data and timing information, back on the local router's PIC. NxDS0 IQ interfaces do not support local loopback.
----------------	--

payload—For channelized T3, T1, and NxDS0 IQ interfaces only, loop back data only (without clocking information) on the remote router's PIC. With payload loopback, overhead is recalculated. Neither ATM-over-asymmetrical digital subscriber line (ADSL) interfaces nor ATM-over-SHDSL interfaces support payload loopback.

remote—Loop packets, including both data and timing information, back on the remote router's interface card. NxDS0 IQ interfaces do not support remote loopback.

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring E3 and T3 Parameters on ATM Interfaces</i>• <i>Configuring E1 Loopback Capability</i>• <i>Configuring E3 Loopback Capability</i>• <i>Configuring SONET/SDH Loopback Capability</i>• <i>Configuring SHDSL Operating Mode on an ATM Physical Interface</i>• <i>Configuring T1 Loopback Capability</i>• <i>Configuring T3 Loopback Capability</i>• feac-loop-respond on page 242


loopback (Aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet)

Syntax	(loopback no-loopback);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options], [edit interfaces interface-range <i>name</i> ether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces, enable or disable loopback mode.
<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;">  </div> <div style="flex: 3; padding-left: 10px;"> <p>NOTE: By default, local aggregated Ethernet, Fast Ethernet, Tri-Rate Ethernet copper, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces connect to a remote system.</p> </div> </div>	
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Ethernet Loopback Capability</i>

loopback (Serial)

Syntax	<code>loopback <i>mode</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a loopback connection.
Default	If you do not include this statement, there is no loopback connection.
Options	<i>mode</i> —You can specify the one of the following loopback modes: <ul style="list-style-type: none">• dce-local—For EIA-530 interfaces only, loop packets back on the local DCE.• dce-remote—For EIA-530 interfaces only, loop packets back on the remote DCE.• local—Loop packets back on the local router's PIC.• remote—Loop packets back on the line interface unit (LIU).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Loopback Capability</i>

mac-learn-enable


Syntax	(mac-learn-enable no-mac-learn-enable);
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Gigabit Ethernet IQ and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), for Gigabit Ethernet DPCs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP configure whether source and destination MAC addresses are dynamically learned:</p> <ul style="list-style-type: none"> • mac-learn-enable—Allow the interface to dynamically learn source and destination MAC addresses. • no-mac-learn-enable—Prohibit the interface from dynamically learning source and destination MAC addresses. <p>MAC address learning is based on source addresses. You can start accounting for traffic after there has been traffic sent from the MAC address. Once the MAC address is learned, the frames and bytes transmitted to or received from the MAC address can be tracked.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p> NOTE: When you gather interfaces into a bridge domain, the no-mac-learn-enable statement at the [edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile] hierarchy level is not supported. You must use the no-mac-learning statement at the [edit bridge-domains <i>bridge-domain-name</i> bridge-options interface <i>interface-name</i>] hierarchy level to disable MAC learning on an interface in a bridge domain. For information on disabling MAC learning for a bridge domain, see <i>MX Series Layer 2 Configuration Guide</i>.</p> </div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring MAC Address Filtering

no-partition

Syntax	no-partition interface-type (e1 (cau4 so) (ct3 t3) so t3);
Hierarchy Level	[edit interfaces ce1-fpc/pic/port], [edit interfaces coc1-fpc/pic/port:channel], [edit interfaces coc12-fpc/pic/port], [edit interfaces cstm1-fpc/pic/port], [edit interfaces ct3-fpc/pic/port]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Channelized E1 IQ PICs only, configure the channelized E1 interface as an unpartitioned, clear channel.</p> <p>For Channelized OC12 PIC only, convert the channelized OC1 IQ interface into a channelized T3 interface or a T3 interface. You perform this configuration task for C-bit parity and M13-mapped configurations.</p> <p>For Channelized OC12 IQ PICs only, configure the channelized OC12 interface as an unpartitioned, clear channel.</p> <p>For Channelized STM1 PIC only, convert the channelized STM1 IQ interface into a channelized Administrative Unit 4 (AU-4) interface or a SONET/SDH STM1 interface.</p> <p>For Channelized DS3 PIC only, configure the channelized T3 interface as an unpartitioned, clear channel.</p>
Default	If you do not include either this statement or the partition statement, the Channelized IQ PIC is not partitioned, and no data channels are configured.
Options	<p>The option used must correspond to the physical interface type:</p> <p>e1—E1 interface type.</p> <p>coc12 so—Channelized OC12 interface type, in SONET mode.</p> <p>cau4—Channelized AU-4 interface type.</p> <p>cstm1—SONET/SDH STM1 interface type, in SDH mode.</p> <p>ct3—Channelized T3 interface type.</p> <p>t3—T3 interface type.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Channelized E1 IQ and IQE Interfaces Overview</i> • <i>Channelized OC12/STM4 IQ and IQE Interfaces Overview</i> • <i>Configuring an OC12/STM4 Interface</i>

- *Configuring Channelized STM1 IQ and IQE Interfaces*
- *Configuring T3 IQ Interfaces*
- [partition on page 432](#)
- *no-partition*

payload-scrambler

Syntax	(payload-scrambler no-payload-scrambler);
Hierarchy Level	[edit interfaces <i>interface-name</i> e3-options], [edit interfaces <i>interface-name</i> sonet-options], [edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Enable or disable HDLC scrambling on an E3, a SONET/SDH, or a T3 interface. This type of scrambling provides better link stability. Both sides of a connection must either use or not use scrambling.</p> <p>If you commit a T3 interface configuration that has HDLC payload scrambling enabled, the interface must also be configured to be compatible with the channel service unit (CSU) at the remote end of the line.</p> <p>Disable payload scrambling on an E3 interface if Digital Link compatibility mode is used.</p> <p>On a channelized OC12 interface, the sonet payload-scrambler statement is ignored. To configure scrambling on the DS3 channels on the interface, you can include the t3-options payload-scrambler statement in the configuration for each DS3 channel.</p>
	<div>  <p>NOTE: The payload-scrambler statement at the [edit interfaces <i>interface-name</i> e3-options] hierarchy level is not valid for IQE PICs.</p> </div>
Default	Payload scrambling is disabled on all E3 and T3 interfaces; it is enabled by default on E3/T3 over ATM interfaces and on SONET/SDH interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E3 and T3 Parameters on ATM Interfaces</i> • <i>Configuring E3 HDLC Payload Scrambling</i> • <i>Configuring SONET/SDH HDLC Payload Scrambling</i> • <i>Configuring T3 HDLC Payload Scrambling</i> • <i>Examples: Configuring T3 Interfaces</i> • compatibility-mode on page 157

no-redirects

Syntax	no-redirects;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	<p>Do not send protocol redirect messages on the interface.</p> <p>To disable the sending of protocol redirect messages for the entire router or switch, include the no-redirects statement at the [edit system] hierarchy level.</p>
Default	Interfaces send protocol redirect messages.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Disabling the Transmission of Redirect Messages on an Interface</i>• <i>Junos OS Administration Library for Routing Devices</i>

source-filtering

Syntax	(source-filtering no-source-filtering);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.
Description	<p>For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and Gigabit Ethernet IQ interfaces only, enable the filtering of MAC source addresses, which blocks all incoming packets to that interface. To allow the interface to receive packets from specific MAC addresses, include the source-address-filter statement.</p> <p>If the remote Ethernet card is changed, the interface is no longer able to receive packets from the new card because it has a different MAC address.</p>
Default	Source address filtering is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling Ethernet MAC Address Filtering</i> • <i>Configuring MAC Filtering on PTX Series Packet Transport Routers</i> • accept-source-mac on page 87 • source-address-filter on page 524

syslog (Interfaces)

Syntax	<pre>syslog { host hostname { facility-override facility-name; log-prefix prefix-number; services priority-level; } }</pre>
Hierarchy Level	[edit interfaces interface-name services-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For adaptive services interfaces, configure generation of system log messages for the service set. System log information is passed to the kernel for logging in the /var/log directory. Any values configured in the service set definition override these values.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

syslog (Monitoring)

Syntax	(syslog no-syslog);
Hierarchy Level	[edit interfaces mo-fpc/pic/port multiservice-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	System logging is enabled by default. The system log information of the Monitoring Services PIC is passed to the kernel for logging in the /var/log directory. <ul style="list-style-type: none">• syslog—Enable PIC system logging.• no-syslog—Disable PIC system logging.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

syslog (OAM Action)

Syntax	syslog;
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile action]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Generate a syslog message for the Ethernet Operation, Administration, and Management (OAM) event.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Specifying the Actions to Be Taken for Link-Fault Management Events</i>

no-termination-request

Syntax	no-termination-request;
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options], [edit interfaces lsq- <i>fpc/pic/port</i> lsq-failure-options]
Release Information	Statement introduced in Junos OS Release 7.4. Support at the [edit interfaces <i>interface-name</i> ppp-options] hierarchy level added in Junos OS Release 8.3.
Description	For LSQ PICs or link PICs in redundant LSQ configurations, you can inhibit the router from sending PPP termination-request messages to the remote host if the PIC fails.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Link PIC Failover on Channelized OC3 IQ and IQE Interfaces</i> <i>Configuring Link PIC Failover on Channelized OC12/STM4 IQ and IQE Interfaces</i> <i>Configuring Link PIC Failover on Channelized STM1 Interfaces</i> <i>Junos OS Services Interfaces Library for Routing Devices</i>

translate-discard-eligible

Syntax	(translate-discard-eligible no-translate-discard-eligible);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with encapsulation type Frame Relay CCC, enable or disable translation of Frame Relay discard eligible (DE) control bits.
Default	DE bit translation is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Frame Relay Control Bit Translation</i>

translate-fecn-and-becn

Syntax	(translate-fecn-and-becn no-translate-fecn-and-becn);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>ccc</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with encapsulation type Frame Relay CCC, enable or disable translation of Frame Relay forward explicit congestion notification (FECN) control bits and Frame Relay backward explicit congestion notification (BECN) control bits.
Default	FECN and BECN bit translation is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Frame Relay Control Bit Translation</i>

unframed

Syntax	(unframed no-unframed);
Hierarchy Level	[edit interfaces <i>interface-name</i> e3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For E3 IQ interfaces only, enable or disable unframed mode. In unframed mode, the E3 IQ interface do not detect yellow (ylw) or loss-of-frame (lof) alarms.
Default	Unframed mode is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring E3 IQ and IQE Unframed Mode</i>

z0-increment

Syntax	(z0-increment no-z0-increment);
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure an incremental STM ID rather than a static one.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an Incrementing STM ID</i>• sonet-options on page 521

node-id

Syntax	<code>node-id mac-address;</code>
Hierarchy Level	[edit protocols protection-group ethernet-ring ring-name]
Release Information	Statement introduced in Junos OS Release 9.4.
Description	<p>For EX Series switches, node-id is not configurable.</p> <p>For MX Series routers, optionally specify the MAC address of a node in the protection group. If this statement is not included, the router assigns the node's MAC address.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>

non-revertive (Interfaces)

Syntax	<code>non-revertive;</code>
Hierarchy Level	[edit interfaces aeX aggregated-ether-options lacp link-protection]
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Statement introduced in Junos OS Release 11.4 for EX Series switches.</p>
Description	Disable the ability to switch to a better priority link (if one is available) once a link is established as active and collection distribution is enabled.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• link-protection on page 326• <i>Configuring Aggregated Ethernet Link Protection</i>• <i>Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</i>

oam

```

Syntax  oam {
        ethernet {
            connectivity-fault-management {
                action-profile profile-name {
                    default-actions {
                        interface-down;
                    }
                }
            }
            performance-monitoring {
                delegate-server-processing;
                hardware-assisted-timestamping;
                sla-iterator-profiles {
                    profile-name {
                        disable;
                        calculation-weight {
                            delay delay-weight;
                            delay-variation delay-variation-weight;
                        }
                        cycle-time milliseconds;
                        iteration-period connections;
                        measurement-type (loss | statistical-frame-loss | two-way-delay);
                    }
                }
            }
            linktrace {
                age (30m | 10m | 1m | 30s | 10s);
                path-database-size path-database-size;
            }
            maintenance-domain domain-name {
                level number;
                name-format (character-string | none | dns | mac+2octet);
                maintenance-association ma-name {
                    short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
                    protect-maintenance-association protect-ma-name;
                    remote-maintenance-association remote-ma-name;
                    continuity-check {
                        convey-loss-threshold;
                        hold-interval minutes;
                        interface-status-tlv;
                        interval (10m | 10s | 1m | 1s | 100ms);
                        loss-threshold number;
                        port-status-tlv;
                    }
                }
                mep mep-id {
                    auto-discovery;
                    direction (up | down);
                    interface interface-name (protect | working);
                    lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
                        rem-err-xcon | xcon );
                    priority number;
                    remote-mep mep-id {
                        action-profile profile-name;
                    }
                }
            }
        }
    }

```

```

        sla-iterator-profile profile-name {
            data-tlv-size size;
            iteration-count count-value;
            priority priority-value;
        }
    }
}
}
}
link-fault-management {
    action-profile profile-name {
        action {
            link-down;
            send-critical-event;
            syslog;
        }
        event {
            link-adjacency-loss;
            link-event-rate {
                frame-error count;
                frame-period count;
                frame-period-summary count;
                symbol-period count;
            }
            protocol-down;
        }
    }
}
interface interface-name {
    apply-action-profile
    link-discovery (active | passive);
    pdu-interval interval;
    pdu-threshold threshold-value;
    remote-loopback;
    event-thresholds {
        frame-error count;
        frame-period count;
        frame-period-summary count;
        symbol-period count;
    }
    negotiation-options {
        allow-remote-loopback;
        no-allow-link-events;
    }
}
}
}
}

```

Hierarchy Level [edit protocols]

Release Information Statement introduced in Junos OS Release 8.2.
Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description For Ethernet interfaces on M320, M120, MX Series, and T Series routers and PTX Series Packet Transport Routers, provide IEEE 802.3ah Operation, Administration, and Maintenance (OAM) support.

The remaining statements are explained separately.

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

Related Documentation

- *IEEE 802.3ah OAM Link-Fault Management Overview*
- *Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers*

oam-liveness

Syntax	<pre>oam-liveness { down-count cells; up-count cells; }</pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>For ATM encapsulation only, configure Operation, Administration, and Maintenance (OAM) F5 loopback cell count thresholds. Not supported on ATM-over-SHDSL interfaces.</p> <p>For ATM2 IQ PICs only, configure OAM F4 loopback cell count thresholds at the [edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>] hierarchy level.</p>
Options	<p>down-count cells—Minimum number of consecutive OAM F4 or F5 loopback cells lost before a VC is declared down. Range: 1 through 255 Default: 5 cells</p> <p>up-count cells—Minimum number of consecutive OAM F4 or F5 loopback cells received before a VC is declared up. Range: 1 through 255 Default: 5 cells</p>
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring the ATM OAM F5 Loopback Cell Threshold

oam-period

Syntax	<code>oam-period (disable seconds);</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>For ATM encapsulation only, configure the OAM F5 loopback cell period. Not supported on ATM-over-SHDSL interfaces.</p> <p>For ATM2 IQ PICs only, configure the OAM F4 loopback cell period at the [edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>] hierarchy level.</p>
Default	If you omit this statement, OAM F5 loopback cells are not initiated, but the interface still responds if it receives OAM F5 loopback cells.
Options	<p>disable—Disable the OAM loopback cell transmit feature.</p> <p>seconds—OAM loopback cell period.</p> <p>Range: 1 through 900 seconds</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Defining the ATM OAM F5 Loopback Cell Period

oc-slice

Syntax	<code>oc-slice <i>oc-slice-range</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> partition <i>partition-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For channelized OC12 IQ interfaces only, configure the range of SONET/SDH slices.
Default	If you do not include either this statement or the no-partition statement, the Channelized OC12 IQ PICs not partitioned, and no data channels are configured.
Options	<p>oc-slice-range—Range of SONET/SDH slices. OC3 interfaces must occupy three consecutive OC slices per interface, in the form 1–3, 4–6, 7–9, or 10–12. The T3, T1, and DS0 interface types each occupy one OC slice per interface.</p> <p>Range: For OC3 interfaces, 1–3, 4–6, 7–9, or 10–12; for SONET/SDH and T3 interfaces, 1–12</p> <p>The remaining statement is explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Channelized OC12/STM4 IQ and IQE Interfaces Overview</i>

open-timeout

Syntax	<code>open-timeout <i>seconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure timeout period for Transmission Control Protocol (TCP) session establishment.
Options	<p>seconds—Timeout period in seconds.</p> <p>Range: 4 through 224 seconds</p> <p>Default: 30 seconds</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>


operating-mode

Syntax	<code>operating-mode <i>mode</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> dsl-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For J Series Services Routers only, modify the operating mode of the digital subscriber line for an ATM interface.
Options	<p><i>mode</i>—Operating mode for ATM-over-ADSL interfaces. The mode can be one of the following:</p> <ul style="list-style-type: none"> • <i>adsl2plus</i>—Set the ADSL line to train in the ITU G.992.5 mode. • <i>ansi-dmt</i>—Set the ADSL line to train in the ANSI T1.413 Issue 2 mode. • <i>auto</i>—Set the ADSL line to autonegotiate the setting to match the setting of the DSL access multiplexer (DSLAM) located at the central office. The ADSL line trains in the ANSI T1.413 Issue 2 (<i>ansi-dmt</i>) or ITU G.992.1 (<i>itu-dmt</i>) mode. • <i>etsi</i>—Set the ADSL line to train in the ETSI TS 101 388 V1.3.1 mode. • <i>itu-annexb-ur2</i>—Set the ADSL line to train in the ITU G.992.1 UR-2 mode. • <i>itu-annexb-non-ur2</i>—Set the ADSL line to train in the ITU G.992.1 non-UR-2 mode. • <i>itu-dmt</i>—Set the ADSL line to train in the ITU G.992.1 mode. • <i>itu-dmt-bis</i>—Set the ADSL line to train in the ITU G.992.3 mode. <p>Default: <i>auto</i></p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>ATM-over-ADSL Overview</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

optics-options

Syntax	<pre> optics-options { alarm low-light-alarm { (link-down syslog); } tx-power <i>dbm</i>; warning low-light-warning { (link-down syslog); } wavelength <i>nm</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>alarm option and warning options introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p> <p>Statement and tx-power option introduced in Junos OS Release 13.2 for PTX Series routers.</p>
Description	For 10-Gigabit Ethernet or 100-Gigabit Ethernet dense wavelength-division multiplexing (DWDM) interfaces only, configure full C-band International Telecommunication Union (ITU)-Grid tunable optics.
Options	The remaining statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Ethernet DWDM Interface Wavelength Overview</i> <i>100-Gigabit Ethernet OTN Options Configuration Overview</i>

option-82

Syntax	<code>option-82 <circuit-id> <remote-id>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include]
Release Information	Statement introduced in Junos OS Release 10.0. Options circuit-id and remote-id introduced in Junos OS Release 11.4.
Description	<p>Specify that the option 82 information from the client PDU is concatenated with the username during the subscriber authentication process.</p> <p>For autosense VLANs, you can additionally specify Option 82 suboption information that is concatenated with the username. You can specify either both or neither of the Agent Circuit ID (suboption 1) and Agent Remote ID (suboption 1). If you specify both, the Agent Circuit ID is supplied first, followed by a delimiter, and then the Agent Remote ID. If you specify that neither suboption is supplied, the raw payload of Option 82 from the PDU is concatenated to the username.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  <p>NOTE: The option 82 value used in creating the username is based on the option 82 value that is encoded in the incoming DHCP discover packet. The use of suboptions is supported for DHCPv4 only.</p> </div>
Options	<p>none—Use the raw payload of Option 82 from the PDU.</p> <p>circuit-id—(Optional) Use the Agent Circuit ID suboption (suboption 1).</p> <p>remote-id—(Optional) Use the Agent Remote ID suboption (suboption 2).</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring VLAN Interface Username Information for AAA Authentication</i> <i>Option 82 Suboptions in Authentication Usernames for Autosense VLANs</i>

otn-options

Syntax `otn-options {`

```

bytes transmit-payload-type value;
fec (efec | gfec | gfec-sdfec | none);
(is-ma | no-is-ma);
(laser-enable | no-laser-enable);
(line-loopback | no-line-loopback);
(local-loopback | no-local-loopback);
(odu-ttim-action-enable | no-odu-ttim-action-enable);
(otu-ttim-action-enable | no-otu-ttim-action-enable);
odu-delay-management {
    (bypass | no-bypass);
    (monitor-end-point | no-monitor-end-point);
    (number-of-frames | no-number-of-frames);
    (start-measurement | no-start-measurement);
}
(prbs | no-prbs);
preemptive-fast-reroute {
    (backward-frr-enable | no-backward-frr-enable);
    (signal-degrade-monitor-enable | no-signal-degrade-monitor-enable);
}
rate {
    (fixed-stuff-bytes | no-fixed-stuff-bytes);
    otu4;
    (pass-through | no-pass-through);
}
signal-degrade {
    ber-threshold-clear value;
    ber-threshold-signal-degrade value;
    interval value;
}
trigger trigger-identifier;
tti tti-identifier;
}

```

Hierarchy Level [edit interfaces *ge-fpc/pic/port*]

Release Information Statement introduced in Junos OS Release 9.4.
bytes, **is-ma**, **local-loopback**, **no-is-ma**, **no-local-loopback**, **no-odu-ttim-action-enable**, **no-otu-ttim-action-enable**, **no-prbs**, **odu-delay-management**, **odu-ttim-action-enable**, **otu-ttim-action-enable**, **prbs**, **preemptive-fast-reroute**, and **signal-degrade** statements introduced in Junos OS Release 13.2 for PTX Series routers.

Description Specify the Ethernet Optical Transport Network (OTN) interface and options.

Options The remaining statements are explained separately.

Required Privilege Level interfaces—To view this statement in the configuration.
 interfaces-control—To add this statement to the configuration.

- Related Documentation**
- *10-Gigabit Ethernet OTN Options Configuration Overview*
 - *100-Gigabit Ethernet OTN Options Configuration Overview*
 - *Configuring OTN Optics*

output

Syntax	<pre>output { service-set <i>service-set-name</i> <service-filter <i>filter-name</i>>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define one or more output service sets and filters to be applied to traffic.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

output-list

Syntax	<code>output-list [<i>filter-names</i>];</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> filter], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> filter]
Release Information	Statement introduced in Junos OS Release 7.6.
Description	Apply a group of filters to evaluate when packets are transmitted on an interface.
Options	[<i>filter-names</i>]—Name of a filter to evaluate when packets are transmitted on the interface. Up to 16 filters can be included in a filter input list.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying a Filter to an Interface</i>• input-list on page 283• <i>Routing Policy Feature Guide for Routing Devices</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>• <i>Junos OS Administration Library for Routing Devices</i>

output-policer

Syntax	<code>output-policer <i>policer-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Apply a single-rate two-color policer to the Layer 2 output traffic at the logical interface. The output-policer and output-three-color statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the single-rate two-color policer that you define at the [edit firewall] hierarchy level.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Two-Color and Three-Color Policers at Layer 2</i> • <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i> • <i>Configuring a Gigabit Ethernet Policer</i> • input-policer on page 284 • input-three-color on page 286 • layer2-policer on page 313 • logical-interface-policer on page 339 • output-three-color on page 425

output-priority-map

Syntax	<pre>output-priority-map { classifier { premium { forwarding-class <i>class-name</i> { loss-priority (high low); } } } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> together-options ethernet-switch-profile ethernet-policer-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For Gigabit Ethernet IQ and 10-Gigabit Ethernet interfaces only, define the output policer priority map to be applied to outgoing frames on this interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying an Output Priority Map</i>• input-priority-map on page 285

output-three-color

Syntax	<code>output-three-color <i>policer-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer] [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Apply a single-rate or two-rate three-color policer to the Layer 2 output traffic at the logical interface. The output-three-color and output-policer statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the single-rate or two-rate three-color policer.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Two-Color and Three-Color Policers at Layer 2</i>• <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i>• <i>Configuring a Gigabit Ethernet Policer</i>• input-three-color on page 286• input-policer on page 284• layer2-policer on page 313• logical-interface-policer on page 339• output-policer on page 423

output-vlan-map (Aggregated Ethernet)

Syntax	<pre>output-vlan-map { (pop push swap); tag-protocol-id <i>tpid</i>; vlan-id <i>number</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	<p>For aggregated Ethernet interfaces using Gigabit Ethernet IQ, 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP only, define the rewrite profile to be applied to outgoing frames on this logical interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Stacking and Rewriting Gigabit Ethernet VLAN Tags</i>• input-vlan-map (Aggregated Ethernet) on page 287

output-vlan-map (Gigabit Ethernet IQ, 10-Gigabit Ethernet with SFPP, 10-Gigabit Ethernet SFP, and 100-Gigabit Ethernet Type 5 PIC with CFP)

Syntax	<pre>output-vlan-map { (pop pop-pop pop-swap push push-push swap swap-push swap-swap); inner-tag-protocol-id <i>tpid</i>; inner-vlan-id <i>number</i>; tag-protocol-id <i>tpid</i>; vlan-id <i>number</i>; }</pre>
Hierarchy Level	<pre>[edit interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i>]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>pop-pop, pop-swap, push-push, swap-push, and swap-swap statements added in Junos OS Release 8.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	<p>For Gigabit Ethernet IQ, 10-Port 10-Gigabit Ethernet SFPP interfaces, 10-Gigabit Ethernet SFP interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP only, define the rewrite operation to be applied to outgoing frames on this logical interface.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Stacking and Rewriting Gigabit Ethernet VLAN Tags</i> input-vlan-map (Gigabit Ethernet IQ, 10-Gigabit Ethernet SFPP, 10-Gigabit Ethernet SFP, and 100-Gigabit Ethernet Type 5 PIC with CFP) on page 288

overflow (Receive Bucket)

Syntax	overflow (discard tag);
Hierarchy Level	[edit interfaces <i>interface-name</i> receive-bucket]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify how to handle packets that exceed the threshold for the receive leaky bucket.
Options	tag —Tag, count, and process received packets that exceed the threshold. discard —Discard received packets that exceed the threshold. No counting is done.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>


overflow (Transmit Bucket)

Syntax	overflow discard;
Hierarchy Level	[edit interfaces <i>interface-name</i> transmit-bucket]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Discard packets that exceed the threshold for the transmit leaky bucket.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>

paired-group

Syntax	<code>paired-group <i>group-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure load sharing between two working protect circuit pairs.
Options	<i>group-name</i> —Circuit's group name, as configured with the protect-circuit or working-circuit statement.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring APS Load Sharing</i>• working-circuit on page 619

pap

Syntax	<pre>pap { access-profile <i>name</i>; default-pap-password <i>password</i>; local-name <i>name</i>; local-password <i>password</i>; passive; }</pre>
Hierarchy Level	<pre>[edit interfaces <i>interface-name</i> ppp-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options]</pre>
Release Information	Statement introduced in Junos OS Release 8.3.
Description	<p>Configure the Password Authentication Protocol (PAP). Use PAP authentication as a means to provide a simple method for the peer to establish its identity using a two-way handshake. This is done only upon initial link establishment.</p> <p>After the link is established, an ID and password pair is repeatedly sent by the peer to the authenticator until authentication is acknowledged or the connection is terminated.</p>
	<div>  <p>BEST PRACTICE: On inline service (si) interfaces for L2TP, only the pap statement itself is typically used for subscriber management. We recommend that you leave the subordinate statements at their default values.</p> </div>
	The remaining statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPP Challenge Handshake Authentication Protocol</i> • <i>Configuring PPP PAP Authentication</i> • <i>Tracing Operations of the pppd Process</i> • traceoptions (PPP Process) on page 564 • <i>Junos OS Administration Library for Routing Devices</i> • <i>Applying PPP Attributes to L2TP LNS Subscribers Per Inline Service Interface</i>

pap-password

Syntax	<code>pap-password password;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the Password Authentication Protocol (PAP) password.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options	<code>password</code> —PAP password.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the PAP Password for an L2TP Profile</i>

partition

Syntax	<code>partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type <i>type</i> timeslots <i>time-slot-range</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For IQ interfaces and J Series interfaces on the Dual-Port Channelized E1 and T1PIM, configure the channelized interface partition. The partition number is correlated with the channel number. Partition and channel numbering on IQ interfaces begins with :1, not :0.
Default	If you omit this statement, the channelized PIC or PIM is not partitioned, and no data channels are configured.
Options	<p><i>partition-number</i>—Sublevel interface partition index.</p> <p>Range:</p> <ul style="list-style-type: none"> • 1 through 4 for an OC3 interface on a channelized OC12 IQ interface. • 1 through 12 for a T3 interface on a channelized OC12 IQ interface. • 1 through 4 for a T3 interface on a channelized T3 IQ interface. • 1 through 28 for a T1 IQ interface on a channelized OC12 IQ or channelized T3 IQ interface. • 1 through 10 for an E1 interface on a channelized E1 IQ interface. • 1 through 30 on a channelized E1 interface. • 1 through 23 on a channelized T1 interface. • 1 through 24 for NxDS0 interfaces on either channelized OC12 IQ or channelized DS3 IQ interfaces. • 0 through 31 (with 0 reserved for framing) for NxDS0 interfaces on channelized E1 IQ interfaces. <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Channelized E1 IQ and IQE Interfaces Overview</i> • <i>Channelized OC12/STM4 IQ and IQE Interfaces Overview</i> • <i>Configuring Channelized T3 IQ Interfaces</i> • no-partition on page 401

passive (CHAP)

Syntax	passive;
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options chap], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options chap]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Do not challenge the peer, but respond if challenged. If you omit this statement from the configuration, the interface always challenges its peer. For ATM2 IQ interfaces only, you can configure CHAP on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types: <ul style="list-style-type: none"> • atm-ppp-llc—PPP over AAL5 LLC encapsulation. • atm-ppp-vc-mux—PPP over AAL5 multiplex encapsulation.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Passive Mode</i> • <i>Junos OS Administration Library for Routing Devices</i>

passive (PAP)

Syntax	passive;
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options pap], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ppp-options pap]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Initiate an authentication request when the PAP option is received from a peer. If you omit this statement from the configuration, the interface requires the peer to initiate an authentication request.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Passive Mode</i> • <i>Junos OS Administration Library for Routing Devices</i>

passive-monitor-mode

Syntax	passive-monitor-mode;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Monitor packet flows from another router. If you include this statement in the configuration, the interface does not send keepalives or alarms, and does not participate actively on the network.</p> <p>This statement is supported on ATM, Ethernet, and SONET/SDH interfaces. For more information, see <i>ATM Interfaces Feature Guide for Routing Devices</i>.</p> <p>For ATM and Ethernet interfaces, you can include this statement on the physical interface only.</p> <p>For SONET/SDH interfaces, you can include this statement on the logical interface only.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Enabling Passive Monitoring on ATM Interfaces</i>• <i>Passive Monitoring on Ethernet Interfaces Overview</i>• <i>Enabling Passive Monitoring on SONET/SDH Interfaces</i>• multiservice-options on page 376• <i>Junos OS Services Interfaces Library for Routing Devices</i>

password (Interfaces)

Syntax	<code>password password-string;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Configure the password that is sent to the external AAA authentication server for subscriber VLAN or stacked VLAN interface authentication.
Options	<i>password-string</i> —Authentication password.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring an Authentication Password for VLAN or Stacked VLAN Ranges


path-database-size

Syntax	<code>path-database-size path-database-size;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management linktrace]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Number of linktrace reply entries to be stored per linktrace request.
Options	<i>path-database-size</i> —Database size. Range: 1 through 255 Default: 64
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Linktrace Protocol in CFM

path-trace

Syntax	<code>path-trace <i>trace-string</i>;</code>
Hierarchy Level	[<code>edit interfaces <i>interface-name</i> sonet-options</code>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For SONET/SDH interfaces and 10-Gigabit Ethernet interfaces in WAN PHY mode, configure a path trace identifier, which is a text string that identifies the circuit.</p> <p>On SONET/SDH OC48 interfaces that are configured for channelized (multiplexed) mode (by including the <code>no-concatenate</code> statement at the [<code>edit chassis fpc <i>slot-number</i> pic <i>pic-number</i></code>] hierarchy level), the <code>bytes e1-quiet</code> and <code>bytes f1</code> options have no effect. The <code>bytes f2</code>, <code>bytes z3</code>, <code>bytes z4</code>, and <code>path-trace</code> options work correctly on channel 0 and work in the transmit direction only on channels 1, 2, and 3.</p> <p>For DS3 channels on a channelized OC12 interface, you can configure a unique path trace for each of the 12 channels. Each path trace can be up to 16 bytes. For channels on a channelized OC12 IQ interface, each path trace can be up to 64 bytes.</p>
Options	<p><i>trace-string</i>—Text string that identifies the circuit. If the string contains spaces, enclose it in quotation marks. A common convention is to use the circuit identifier as the path trace identifier. If you do not configure an identifier, the Junos OS uses the system and interface names to construct the default <i>trace-string</i>. For all nonchannelized SONET/SDH interfaces, the default <i>trace-string</i> is <i>system-name interface-name</i>. For channelized SONET/SDH interfaces and 10-Gigabit Ethernet WAN-PHY interfaces, the default <i>trace-string</i> is <i>interface-name</i>.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the SONET/SDH Path Trace Identifier</i>• sonet-options on page 521

payload-scrambler

Syntax	(payload-scrambler no-payload-scrambler);
Hierarchy Level	[edit interfaces <i>interface-name</i> e3-options], [edit interfaces <i>interface-name</i> sonet-options], [edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Enable or disable HDLC scrambling on an E3, a SONET/SDH, or a T3 interface. This type of scrambling provides better link stability. Both sides of a connection must either use or not use scrambling.</p> <p>If you commit a T3 interface configuration that has HDLC payload scrambling enabled, the interface must also be configured to be compatible with the channel service unit (CSU) at the remote end of the line.</p> <p>Disable payload scrambling on an E3 interface if Digital Link compatibility mode is used.</p> <p>On a channelized OC12 interface, the sonet payload-scrambler statement is ignored. To configure scrambling on the DS3 channels on the interface, you can include the t3-options payload-scrambler statement in the configuration for each DS3 channel.</p>
	<div>  <p>NOTE: The payload-scrambler statement at the [edit interfaces <i>interface-name</i> e3-options] hierarchy level is not valid for IQE PICs.</p> </div>
Default	Payload scrambling is disabled on all E3 and T3 interfaces; it is enabled by default on E3/T3 over ATM interfaces and on SONET/SDH interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E3 and T3 Parameters on ATM Interfaces</i> • <i>Configuring E3 HDLC Payload Scrambling</i> • <i>Configuring SONET/SDH HDLC Payload Scrambling</i> • <i>Configuring T3 HDLC Payload Scrambling</i> • <i>Examples: Configuring T3 Interfaces</i> • compatibility-mode on page 157

payload-size

Syntax	<code>payload-size bytes ;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> satop-options]
Release Information	Option introduced in Junos OS Release 9.3.
Description	Specify the satop-options payload-size in integer number of bytes.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ATM Support on Circuit Emulation PICs Overview</i>• satop-options on page 501

pdu-interval

Syntax	<code>pdu-interval interval;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For Ethernet interfaces on EX Series switches and M320, M120, MX Series, and T Series routers, specify the periodic OAM PDU sending interval for fault detection. Used for IEEE 802.3ah Operation, Administration, and Management (OAM) support.
Options	<i>interval</i> —Periodic OAM PDU sending interval. Range: 100 through 1000 milliseconds Default: 1000 milliseconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the OAM PDU Interval</i>

pdu-threshold

Syntax	<code>pdu-threshold <i>threshold-value</i>;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For Ethernet interfaces on EX Series switches and M320, M120, MX Series, and T Series routers, specify the number of OAM PDUs to miss before an error is logged. Used for IEEE 802.3ah Operation, Administration, and Management (OAM) support.
Options	<p><i>threshold-value</i>—The number of PDUs missed before declaring the peer lost.</p> <p>Range: 3 through 10 PDUs</p> <p>Default: 3 PDUs</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring the OAM PDU Threshold

peer-unit

Syntax	<code>peer-unit <i>unit-number</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a peer relationship between two logical systems.
Options	<i>unit-number</i> —Peering logical system unit number.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Junos OS Services Interfaces Library for Routing Devices

per-unit-scheduler

Syntax	<code>per-unit-scheduler;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 13.2 on 16x10GE MPC and MPC3E line cards. Statement introduced in Junos OS Release 13.2 on PTX Series Packet Transport Routers.
Description	For Channelized OC3 IQ, Channelized OC12 IQ, Channelized STM1 IQ, Channelized T3 IQ, Channelized E1 IQ, E3 IQ, link services IQ interfaces (lsq-), link services (ls-) on J Series routers, Gigabit Ethernet IQ, Gigabit Ethernet IQ2 and IQ2-E, and 10-, 40-, and 100-Gigabit Ethernet interfaces (including the 16x10GE MPC), enable the association of scheduler map names with logical interfaces.



NOTE: Per-unit scheduling is not supported on T1 interfaces configured on the Channelized OC12 IQ PIC.



NOTE: On Gigabit Ethernet IQ2 and IQ2-E PICs without the `per-unit-scheduler` statement, the entire PIC supports 4071 VLANs and the user can configure all the VLANs on the same port.

On Gigabit Ethernet IQ2 and IQ2-E PICs with the `per-unit-scheduler` statement, the entire PIC supports $1024 - 2 * \text{number of ports}$ (1024 minus two times the number of ports), because each port is allocated two default schedulers.

When including the `per-unit-scheduler` statement, you must also include the `vlan-tagging` statement or the `flexible-vlan-tagging` statement (to apply scheduling to VLANs) or the `encapsulation frame-relay` statement (to apply scheduling to DLCIs) at the `[edit interfaces interface-name]` hierarchy level.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
---------------------------------	---

Related Documentation	<ul style="list-style-type: none"> • Applying Scheduler Maps and Shaping Rate to DLCIs and VLANs • Applying Scheduling and Shaping to VLANs • Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers • Scaling of Per-VLAN Queuing on Non-Queuing MPCs • flexible-vlan-tagging on page 244 • vlan-tagging on page 605
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performance-monitoring

Syntax

```
performance-monitoring {
  delegate-server-processing;
  hardware-assisted-timestamping;
  sla-iterator-profiles {
    profile-name {
      disable;
      calculation-weight {
        delay delay-weight;
        delay-variation delay-variation-weight;
      }
      cycle-time milliseconds;
      iteration-period connections;
      measurement-type (loss | statistical-frame-loss | two-way-delay);
    }
  }
}
```

Hierarchy Level [edit protocols [oam ethernet connectivity-fault-management](#)]

Release Information Statement introduced in Junos OS Release 9.5.

Description Specify performance monitoring support for Ethernet frame delay measurement.

The remaining statements are explained separately.

Required Privilege Level Configure—To enter configuration mode.
Control—To modify any configuration.

Related Documentation

- *Ethernet Frame Delay Measurements Overview*
- *Guidelines for Configuring Routers to Support an ETH-DM Session*
- *Enabling the Hardware-Assisted Timestamping Option*

periodic

Syntax	<code>periodic interval;</code>
Hierarchy Level	[edit interfaces aex aggregated-ether-options lacp], [edit interfaces interface-range <i>name</i> aggregated-ether-options lacp]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For aggregated Ethernet interfaces only, configure the interval for periodic transmission of LACP packets.
Options	<i>interval</i> —Interval for periodic transmission of LACP packets. <ul style="list-style-type: none">• fast—Transmit packets every second.• slow—Transmit packets every 30 seconds. Default: fast
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Aggregated Ethernet LACP</i>• <i>Configuring Aggregated Ethernet LACP (CLI Procedure)</i>• <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i>

pfc

Syntax	<code>pfc;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> ppp-options compression], [edit interfaces <i>interface-name</i> unit logical-unit-number ppp-options compression], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number ppp-options compression]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with PPP encapsulation, configure the router to compress the protocol field to one byte.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the PPP Protocol Field Compression</i>

pic-type

Syntax	<code>pic-type (atm1 atm2);</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM interfaces, configure the type of ATM PIC installed in your router.
Options	<p>atm1—ATM1 PIC.</p> <p>atm2—ATM2 IQ PIC.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the ATM PIC Type</i>

plp-to-clp

Syntax	<code>plp-to-clp;</code>
Hierarchy Level	<p>[edit interfaces at-<i>fpc/pic/port</i> atm-options],</p> <p>[edit interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces at-<i>--fpc/pic/port</i> unit <i>logical-unit-number</i>]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, enable the PLP setting to be copied to the cell-loss priority (CLP) bit.
Default	If you omit this statement, the Junos OS does not copy the PLP setting to the CLP bit.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling the PLP Setting to Be Copied to the CLP Bit</i> • <i>Copying the PLP Setting to the CLP Bit on ATM Interfaces</i>

plp1

Syntax	<code>plp1 cells;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 11.1 for QFX Series switches.</p>
Description	For ATM2 IQ interfaces only, define the EPD threshold on a VC. The EPD threshold is a limit on the number of transmit packets that can be queued. Packets that exceed the limit are discarded. This threshold applies to packets that have a PLP of 1.
Default	EPD threshold is unregulated.
Options	<p>cells—Maximum number of cells.</p> <p>Range: For 1-port and 2-port OC12 interfaces, 1 through 425,984 cellsFor 1-port OC48 interfaces, 1 through 425,984 cellsFor 2-port OC3, DS3, and E3 interfaces, 1 through 212,992 cellsFor 4-port DS3 and E3 interfaces, 1 through 106,496 cells</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Two EPD Thresholds per Queue</i> • <i>Configuring an ATM Scheduler Map</i> • linear-red-profile on page 318

point-to-point

Syntax	point-to-point;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For all interfaces except aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet, configure the interface unit as a point-to-point connection. This is the default connection type.
Default	If you omit this statement, the interface unit is configured as a point-to-point connection.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Point-to-Point Connection</i> • multipoint on page 374

policer (CFM Firewall)

Syntax	<pre> policer <i>cfm-policer</i> { if-exceeding { bandwidth-limit 8k; burst-size-limit 2k; } then discard; } </pre>
Hierarchy Level	[edit firewall]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Attach an explicit policer to CFM sessions.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Rate Limiting of Ethernet OAM Messages</i> • policer (CFM Global) on page 446 • policer (CFM Session) on page 447

policer (CFM Global)

Syntax	<pre>policer { all <i>cfm-policer-name</i>; continuity-check <i>cfm-policer-name</i>; other <i>cfm-policer-name</i>; }</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify a policer at the global level to police the CFM traffic belonging to all sessions.
Options	<p>continuity-check <i>cfm-policer-name</i>—Police all continuity check packets with the policer specified.</p> <p>other <i>cfm-policer-name</i>—Police all non-continuity check packets with the policer specified.</p> <p>all <i>cfm-policer-name</i>—Police all CFM packets with policer specified. If the all option is used, then you cannot specify above two options.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Rate Limiting of Ethernet OAM Messages</i>• policer (CFM Session) on page 447

policer (CFM Session)

Syntax	<pre>policer { all <i>cfm-policer-name</i>; continuity-check <i>cfm-policer-name</i>; other <i>cfm-policer-name</i>; }</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>name</i> level <i>number</i> maintenance-association <i>name</i>]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify a separate policer to rate-limit packets specific to that session.
Options	<ul style="list-style-type: none">• continuity-check <i>cfm-policer-name</i>—Police continuity check packets belonging to this session.• other <i>cfm-policer-name</i>—Police all non-continuity check packets belonging to this session.• all <i>cfm-policer-name</i>—Police all CFM packets belonging to this session. If the all option is used, then you cannot specify the above two options.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Rate Limiting of Ethernet OAM Messages</i>• policer (CFM Global) on page 446


policer (CoS)

Syntax	<pre>policer <i>cos-policer-name</i> { aggregate { bandwidth-limit <i>bps</i>; burst-size-limit <i>bytes</i>; } premium { bandwidth-limit <i>bps</i>; burst-size-limit <i>bytes</i>; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Gigabit Ethernet IQ, Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), and 100-Gigabit Ethernet Type 5 PIC with CFP, define a CoS policer template to specify the premium bandwidth and burst-size limits, and the aggregate bandwidth and burst-size limits. The premium policer is not supported on MX Series routers or for Gigabit Ethernet interfaces with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router).
Options	<p><i>cos-policer-name</i>—Name of one policer to specify the premium bandwidth and burst-size limits, and the aggregate bandwidth and burst-size limits.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Gigabit Ethernet Policers</i>

policer (Interface)

Syntax	<pre>policer { arp <i>policer-template-name</i>; input <i>policer-template-name</i>; output <i>policer-template-name</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Apply a policer to an interface.
Options	<p>arp <i>policer-template-name</i>—For inet family only, name of one policer to evaluate when ARP packets are received on the interface.</p> <p>input <i>policer-template-name</i>—Name of one policer to evaluate when packets are received on the interface.</p> <p>output <i>policer-template-name</i>—Name of one policer to evaluate when packets are transmitted on the interface.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Applying Policers</i>• <i>Configuring Firewall Filters and Policers for VPLS</i>• <i>Routing Policy Feature Guide for Routing Devices</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

policer (MAC)

Syntax	<pre> policer { input <i>cos-policer-name</i>; output <i>cos-policer-name</i>; } </pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> accept-source-mac <i>mac-address</i> <i>mac-address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> accept-source-mac <i>mac-address</i> <i>mac-address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	<p>For Gigabit Ethernet IQ and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), and 100-Gigabit Ethernet Type 5 PIC with CFP, configure MAC policing.</p>
<div>  <p>NOTE:</p> <p>On MX Series routers with Gigabit Ethernet or Fast Ethernet PICs, the following considerations apply:</p> <ul style="list-style-type: none"> Interface counters do not count the 7-byte preamble and 1-byte frame delimiter in Ethernet frames. In MAC statistics, the frame size includes MAC header and CRC before any VLAN rewrite/imposition rules are applied. In traffic statistics, the frame size encompasses the L2 header without CRC after any VLAN rewrite/imposition rule. </div>	
Options	<p>input <i>cos-policer-name</i>—Name of one policer to specify the premium bandwidth and aggregate bandwidth.</p> <p>output <i>cos-policer-name</i>—Name of one policer to specify the premium bandwidth and aggregate bandwidth.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring MAC Address Filtering</i>

pool

Syntax	<code>pool <i>pool-name</i> <priority <i>priority</i>>;</code>
Hierarchy Level	[edit interfaces <i>br-pim/0/port</i> dialer-options], [edit interfaces <i>umd0</i> dialer-options], [edit interfaces <i>dlm</i> unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>dlm</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers, for logical and physical ISDN interfaces, specify the dial pool. The dial pool allows logical (dialer) and physical (<i>br-pim/0/port</i>) interfaces to be bound together dynamically on a per-call basis. On a dialer interface, pool directs the dialer interface which dial pool to use. On <i>br-pim/0/port</i> interface, pool defines the pool to which the interface belongs.
Options	<i>pool-name</i> —Pool identifier. <i>priority priority</i> —(Physical <i>br-pim/0/port</i> interfaces only) Specify a priority value of 0 (lowest) to 255 (highest) for the interface within the pool.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring ISDN Physical Interface Properties</i> <i>Junos OS Interfaces and Routing Configuration Guide</i>

pop

Syntax	pop;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	For Gigabit Ethernet IQ, 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, aggregated Ethernet interfaces using Gigabit Ethernet IQ interfaces, 10-Gigabit Ethernet SFP interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP, specify the VLAN rewrite operation to remove a VLAN tag from the top of the VLAN tag stack. The outer VLAN tag of the frame is removed.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Removing a VLAN Tag</i>

pop-all-labels

Syntax	pop-all-labels { required-depth <i>number</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options mpls], [edit interfaces <i>interface-name</i> sonet-options mpls], [edit interfaces <i>interface-name</i> fastether-options mpls], [edit interfaces <i>interface-name</i> gigether-options mpls]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For passive monitoring on ATM, SONET/SDH, Fast Ethernet, and Gigabit Ethernet interfaces only, removes up to two MPLS labels from incoming IP packets. For passive monitoring on T Series devices, removes up to five MPLS labels from incoming IP packets.</p> <p>This statement has no effect on IP packets with more than two MPLS labels, or IP packets with more than five MPLS labels on T Series devices. Packets with MPLS labels cannot be processed by the Monitoring Services PIC; if packets with MPLS labels are forwarded to the Monitoring Services PIC, they are discarded.</p> <p>The remaining statement is explained separately.</p>
Default	If you omit this statement, the MPLS labels are not removed, and the packet is not processed by the Monitoring Services PIC.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Removing MPLS Labels from Incoming Packets Removing MPLS Labels from Incoming Packet Junos OS Services Interfaces Library for Routing Devices

pop-pop

Syntax	pop-pop;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	For Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, for aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP, and for 10-Gigabit Ethernet SFP interfaces on EX Series switches, specify the VLAN rewrite operation to remove both the outer and inner VLAN tags of the frame.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Removing the Outer and Inner VLAN Tags</i>

pop-swap

Syntax	pop-swap;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Specify the VLAN rewrite operation to remove the outer VLAN tag of the frame, and replace the inner VLAN tag of the frame with a user-specified VLAN tag value. The inner tag becomes the outer tag in the final frame. You can use this statement on Gigabit Ethernet IQ, IQ2, IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, on aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Removing the Outer VLAN Tag and Rewriting the Inner VLAN Tag</i>

port

Syntax	<code>port { minimum <i>port-number</i>; maximum <i>port-number</i>; }</code>
Hierarchy Level	[edit interfaces <i>vsp-fpc/pic/port</i> unit <i>logical-unit-number</i> compression <i>rtp</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For voice services interfaces only, assign User Datagram Protocol (UDP) destination port numbers reserved for Real-Time Transport Protocol (RTP) traffic.
Options	minimum <i>port-number</i> —Specify minimum port number. Range: 0 through 65,535 maximum <i>port-number</i> —Specify maximum port number. Range: 0 through 65,535
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

port-priority

Syntax	<code>port-priority <i>priority</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options 802.3ad <i>lacp</i>] [edit interfaces <i>interface-name</i> ether-options 802.3ad <i>lacp</i>]
Release Information	Statement introduced in Junos OS Release 9.3. Statement introduced in Junos OS Release 11.4 for EX Series switches.
Description	Define LACP port priority at the interface level.
Options	<i>priority</i> —Priority for being elected to be the active port and both collect and distribute traffic. A smaller value indicates a higher priority for being elected. Range: 1 through 255 Default: 127
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</i>

port-status-tlv

Syntax	port-status-tlv blocked;
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management action-profile <i>tlv-action</i> event]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Define an action-profile consisting of various events and the action. Based on values of port-status-tlv in the received CCM packets, specific action such as <i>interface-down</i> can be taken using action-profile options.
Options	blocked —When the incoming CCM packet contains port status TLV with value blocked, the action will be triggered for this action-profile.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Connectivity Fault Management Action Profile</i> • <i>Configuring Remote MEP Action Profile Support</i>

post-service-filter

Syntax	post-service-filter <i>filter-name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service input], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service input]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define the filter to be applied to traffic after service processing. The filter is applied only if a service set is configured and selected.
Options	filter-name —Identifier for postservice filter.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

ppp-options

Syntax	<pre> ppp-options { authentication [<i>authentication-protocols</i>]; chap { access-profile <i>name</i>; challenge-length minimum <i>minimum-length</i> maximum <i>maximum-length</i>; default-chap-secret <i>name</i>; local-name <i>name</i>; passive; } compression { acfc; pfc; } dynamic-profile <i>profile-name</i>; lcp-max-conf-req <i>number</i> lcp-restart-timer <i>milliseconds</i>; loopback-clear-timer <i>seconds</i>; ncp-max-conf-req <i>number</i> ncp-restart-timer <i>milliseconds</i>; on-demand-ip-address pap { access-profile <i>name</i>; default-pap-password <i>password</i>; local-name <i>name</i>; local-password <i>password</i>; passive; } } </pre>
Hierarchy Level	<pre> [edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] </pre>

Release Information Statement introduced before Junos OS Release 7.4.

Description On interfaces with PPP encapsulation, configure PPP-specific interface properties.

For ATM2 IQ interfaces only, you can configure CHAP on the logical interface unit if the logical interface is configured with one of the following PPP over ATM encapsulation types:

- **atm-ppp-llc**—PPP over AAL5 LLC encapsulation.
- **atm-ppp-vc-mux**—PPP over AAL5 multiplex encapsulation.



BEST PRACTICE: On inline service (si) interfaces for L2TP, only the **chap** and **pap** statements are typically used for subscriber management. We recommend that you leave the other statements subordinate to **ppp-options**—including those subordinate to **chap** and **pap**—at their default values.

The remaining statements are explained separately.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPP Challenge Handshake Authentication Protocol</i> • <i>Applying PPP Attributes to L2TP LNS Subscribers Per Inline Service Interface</i>


pppoe-options

Syntax	<pre>pppoe-options { access-concentrator name; auto-reconnect seconds; (client server); service-name name; underlying-interface interface-name; }</pre>
Hierarchy Level	<pre>[edit interfaces pp0 unit logical-unit-number], [edit logical-systems logical-system-name interfaces pp0 unit logical-unit-number]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>client Statement introduced in Junos OS Release 8.5.</p> <p>server Statement introduced in Junos OS Release 8.5.</p>
Description	<p>For J Series Services Routers, M120 Multiservice Edge Routers, M320 Multiservice Edge Service Routers, and MX Series Universal Edge Routers with PPP over Ethernet interfaces, configure PPP over Ethernet-specific interface properties.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a PPPoE Interface</i>

pppoe-underlying-options (Static and Dynamic Subscribers)

Syntax	<pre>pppoe-underlying-options { access-concentrator <i>name</i>; dynamic-profile <i>profile-name</i>; duplicate-protection; max-sessions <i>number</i>; max-sessions-vsa-ignore; service-name-table <i>table-name</i>; short-cycle-protection <lockout-time-min <i>minimum-seconds</i> lockout-time-max <i>maximum-seconds</i>>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	<p>Configure PPPoE-specific interface properties for the underlying interface on which the router creates a static or dynamic PPPoE logical interface. The underlying interface must be configured with PPPoE (ppp-over-ether) encapsulation.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring PPPoE</i> (for static interfaces)• <i>Configuring an Underlying Interface for Dynamic PPPoE Subscriber Interfaces</i>• <i>Assigning a Service Name Table to a PPPoE Underlying Interface</i>

preferred

Syntax	preferred;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Configure this address to be the preferred address on the interface. If you configure more than one address on the same subnet, the preferred source address is chosen by default as the source address when you initiate frame transfers to destinations on the subnet.
<div style="display: flex; align-items: center;">  <div> <p>NOTE: The edit logical-systems hierarchy is not available on QFabric systems.</p> </div> </div>	
Default	The lowest-numbered address on the subnet is the preferred address.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Interface Address</i>

preferred-source-address

Syntax	<code>preferred-source-address address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> unnumbered-address <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> unnumbered-address <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	<p>For unnumbered Ethernet interfaces configured with a loopback interface as the donor interface, specify one of the loopback interface's secondary addresses as the preferred source address for the unnumbered Ethernet interface. Configuring the preferred source address enables you to use an IP address other than the primary IP address on some of the unnumbered Ethernet interfaces in your network.</p> <p>Configuration of a preferred source address for unnumbered Ethernet interfaces is supported for the IPv4 and IPv6 address families.</p>
Options	address —Secondary IP address of the donor loopback interface.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Preferred Source Address for Unnumbered Ethernet or Demux Interfaces</i>• address on page 100• <i>Junos OS Administration Library for Routing Devices</i>

premium (Hierarchical Policer)

Syntax	<pre> premium { if-exceeding { bandwidth-limit <i>bandwidth</i>; burst-size-limit <i>burst</i>; } then { discard; } } </pre>
Hierarchy Level	[edit dynamic-profiles <i>profile-name</i> firewall hierarchical-policer], [edit firewall hierarchical-policer]
Release Information	Statement introduced in Junos OS Release 9.5. Support at the [edit dynamic-profiles ... hierarchical-policer <i>name</i>] hierarchy level introduced in Junos OS Release 11.4.
Description	On M40e, M120, and M320 edge routers with FPC input as FFPC and FPC output as SFPC, and on MX Series, T320, T640, and T1600 edge routers with Enhanced Intelligent Queuing (IQE) PICs, T4000 routers with Type 5 FPC and Enhanced Scaling Type 4 FPC, specify a premium level for a hierarchical policer.
Options	Options are described separately.
Required Privilege Level	firewall—To view this statement in the configuration. firewall-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Applying Policers</i> • <i>Junos OS Class of Service Library for Routing Devices</i> • <i>Hierarchical Policer Configuration Overview</i> • <i>Hierarchical Policers</i> • <i>aggregate (Hierarchical Policer)</i> • bandwidth-limit (Hierarchical Policer) on page 127 • burst-size-limit (Hierarchical Policer) on page 140 • <i>hierarchical-policer</i> • <i>if-exceeding (Hierarchical Policer)</i>

premium (Output Priority Map)

Syntax	<pre>premium { forwarding-class <i>class-name</i> { loss-priority (high low); } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile output-priority-map <i>classifier</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Gigabit Ethernet IQ interfaces only, define the classifier for egress premium traffic. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Specifying an Output Priority Map• input-priority-map on page 285


premium (Policer)

Syntax	<pre>premium { bandwidth-limit <i>bps</i>; burst-size-limit <i>bytes</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile ethernet-policer-profile policer <i>cos-policer-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define a policer to apply to nonpremium traffic. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Gigabit Ethernet Policers• aggregate (Gigabit Ethernet CoS Policer) on page 104• ieee802.1p on page 267

preserve-interface

Syntax	preserve-interface;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced in Junos OS Release 7.6.
Description	<p>Provide link PIC replication, providing MLPPP link redundancy at the port level. This feature is supported with SONET APS and the following link PICs:</p> <ul style="list-style-type: none">• Channelized OC3 IQ PIC• Channelized OC12 IQ PIC• Channelized STM1 IQ PIC <p>Link PIC replication provides the ability to add two sets of links, one from the active SONET PIC and the other from the standby SONET PIC, to the same bundle. If the active SONET PIC fails, links from the standby PIC are used without triggering link renegotiation. All the negotiated state is replicated from the active links to the standby links to prevent link renegotiation.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Link PIC Redundancy</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

primary (Address on Interface)

Syntax	<code>primary;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Configure this address to be the primary address of the protocol on the interface. If the logical unit has more than one address, the primary address is used by default as the source address when packet transfer originates from the interface and the destination address does not indicate the subnet.
<div>  <p>NOTE: The edit logical-systems hierarchy is not available on QFabric systems.</p> </div>	
Default	For unicast traffic, the primary address is the lowest non-127 (in other words, non-loopback) preferred address on the unit.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Interface Address</i>

primary (AS PIC or Multiservices PIC Interfaces)

Syntax	<code>primary <i>interface-name</i>;</code>
Hierarchy Level	[edit interfaces (rsp0 rsp1) redundancy-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the primary AS PIC or MultiServices PIC interface.
Options	<i>interface-name</i> —The identifier for the AS PIC interface or MultiServices PIC interface, which must be of the form sp-fpc/pic/port .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>


priority (OAM Connectivity-Fault Management)

Syntax	<code>priority number;</code>
Hierarchy Level	<p>[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>md-name maintenance-association ma-name mep mep-id</i>]</p> <p>For EX Series Switches:</p> <p>[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name maintenance-association ma-name mep mep-id</i>]</p>
Release Information	Statement introduced in Junos OS Release 8.4.
Description	IEEE 802.1p priority bits used by the continuity check messages.
Options	<p>number—Configure the IEEE 802.1p priority bits to be used in the VLAN header of the CFM packets.</p> <p>Range: 0 through 7</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring a Maintenance Endpoint</i>

priority (Schedulers)

Syntax	<code>priority (high low);</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options scheduler-maps <i>map-name forwarding-class class-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, assign queuing priority to a forwarding class.
Options	<p>low—Forwarding class has low priority.</p> <p>high—Forwarding class has high priority.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>

promiscuous-mode

Syntax	<code>promiscuous-mode { vpi vpi-identifier; }</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	For ATM interfaces with atm-ccc-cell-relay encapsulation, map all incoming cells from either an interface port or a VP to a single label-switched path (LSP) without restricting the VCI number. Promiscuous mode allows you to map traffic from all 65,535 VCIs to a single LSP, or from all 256 VPIs to a single LSP.
	<div>  <p>NOTE: In ACX Series routers, the statement supports only Inverse Multiplexing for ATM (IMA).</p> </div>
Options	vpi-identifier —Open this VPI in promiscuous mode. Range: 0 through 255
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring ATM Cell-Relay Promiscuous Mode vpi (ATM CCC Cell-Relay Promiscuous Mode) on page 610

protect-circuit

Syntax	<code>protect-circuit <i>group-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the protect router in an APS circuit pair. When the working interface fails, APS brings up the protection circuit and the traffic is moved to the protection circuit.
Options	<i>group-name</i> —Circuit's group name.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Basic Automatic Protect Switching</i>• working-circuit on page 619

protection-group

```
Syntax  protection-group {
        ethernet-ring ring-name {
            control-vlan (vlan-id | vlan-name);
            data-channel {
                vlan number
            }
            east-interface {
                control-channel channel-name {
                    vlan number;
                }
            }
            guard-interval number;
            node-id mac-address;
            restore-interval number;
            ring-protection-link-owner;
            west-interface {
                control-channel channel-name {
                    vlan number;
                }
            }
        }
        control-vlan (vlan-id | vlan-name);
        east-interface {
            node-id mac-address;
            control-channel channel-name {
                interface-none
                ring-protection-link-end;
            }
        }
        control-channel channel-name {
            vlan number;
        }
    }
    data-channel {
        vlan number
    }
    guard-interval number;
    node-id mac-address;
    restore-interval number;
    ring-protection-link-owner;
    west-interface {
        node-id mac-address;
        control-channel channel-name {
            interface-none
            ring-protection-link-end;
        }
        control-channel channel-name {
            vlan number;
        }
    }
    guard-interval number;
```

```

restore-interval number;
traceoptions {
  file filename <no-stamp> <world-readable | no-world-readable> <replace> <size size>;
  flag flag;
}

```

Hierarchy Level	[edit protocols]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Configure Ethernet ring protection switching. The statements are explained separately. All statements apply to MX Series routers. EX Series switches do not assign node-id and use control-vlan instead of control-channel .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Ethernet Ring Protection Switching Overview</i> • <i>Ethernet Ring Protection Using Ring Instances for Load Balancing</i> • <i>Example: Configuring Load Balancing Within Ethernet Ring Protection for MX Series Routers</i> • <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i> • <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>

protocol-down

Syntax	protocol-down;
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Upper layer indication of protocol down event. When the protocol-down statement is included, the protocol down event triggers the action specified under the action statement.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring an OAM Action Profile</i>


protocols

Syntax	<code>protocols [inet iso mpls];</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit logical-unit-number family tcc]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	For Layer 2.5 VPNs on T Series, MX Series, M120, and M320 routers support, configure IS-IS (ISO traffic) or MPLS traffic to traverse a TCC interface. By default, IPv4 (inet) traffic runs on T Series, MX, Series, M120, and M320 routers and over TCC interfaces. You must configure the same traffic type on both ends of the Layer 2.5 VPN.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring IS-IS or MPLS Traffic for TCC Interfaces</i>

proxy

Syntax	<code>proxy inet-address <i>address</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit logical-unit-number family tcc], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number family tcc]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Layer 2.5 VPNs using an Ethernet interface as the TCC router, configure the IP address for which the TCC router is proxying. Ethernet TCC is supported on interfaces that carry IPv4 traffic only. Ethernet TCC encapsulation is supported on 1-port Gigabit Ethernet, 2-port Gigabit Ethernet, 4-port Gigabit Ethernet, and 4-port Fast Ethernet PICs only. Ethernet TCC is not supported on the T640 router.
Options	inet-address —Configure the IP address of the neighbor to the TCC router.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Ethernet TCC</i>• <i>Example: Configuring an Ethernet TCC or Extended VLAN TCC</i>• remote on page 486• <i>Junos OS VPNs Library for Routing Devices</i>

proxy-arp

Syntax	<code>proxy-arp (restricted unrestricted);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.6 for EX Series switches. restricted added in Junos OS Release 10.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for the QFX Series..
Description	For Ethernet interfaces only, configure the router or switch to respond to any ARP request, as long as the router or switch has an active route to the ARP request's target address.
	<div>  <p>NOTE: You must configure the INET family and IP address of the interface when you enable proxy ARP.</p> </div>
Default	Proxy ARP is not enabled. The router or switch responds to an ARP request only if the destination IP address is its own.
Options	<ul style="list-style-type: none"> • none—The router or switch responds to any ARP request for a local or remote address if the router or switch has a route to the target IP address. • restricted—(Optional) The router or switch responds to ARP requests in which the physical networks of the source and target are different and does not respond if the source and target IP addresses are in the same subnet. The router or switch must also have a route to the target IP address. • unrestricted—(Optional) The router or switch responds to any ARP request for a local or remote address if the router or switch has a route to the target IP address. <p>Default: unrestricted</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Restricted and Unrestricted Proxy ARP</i> • <i>Configuring Proxy ARP (CLI Procedure)</i> • <i>Example: Configuring Proxy ARP on an EX Series Switch</i> • <i>Configuring Gratuitous ARP</i>

push

Syntax	push;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	<p>Specify the VLAN rewrite operation to add a new VLAN tag to the top of the VLAN stack. An outer VLAN tag is pushed in front of the existing VLAN tag.</p> <p>You can use this statement on Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, aggregated Ethernet interfaces using Gigabit Ethernet IQ interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP.</p> <p>If you include the push statement in the configuration, you must also include the pop statement at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map] hierarchy level.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Stacking a VLAN Tag</i>

push-push

Syntax	push-push;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Specify the VLAN rewrite operation to push two VLAN tags in front of the frame. You can use this statement on Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, on aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Stacking Two VLAN Tags</i>

queue-depth

Syntax	<code>queue-depth <i>cells</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options linear-red-profiles <i>profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, define maximum queue depth in the CoS VC drop profile. Packets are always dropped beyond the defined maximum. This statement is mandatory; there is no default configuration.
Default	Buffer usage is unregulated.
Options	<i>cells</i> —Maximum number of cells the queue can contain. Range: 1 through 64,000 cells
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>• <i>Configuring Linear RED Profiles on ATM Interfaces</i>• high-plp-threshold on page 257• low-plp-threshold on page 348

queue-length

Syntax	<code>queue-length <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	For ATM1 interfaces only, define the maximum queue length in the traffic-shaping profile. For ATM1 PICs, each VC has its own independent shaping parameters.
Default	Buffer usage is unregulated.
Options	<i>number</i> —Maximum number of packets the queue can contain. Range: 1 through 16,383 packets Default: 16,383 packets
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the ATM1 Queue Length</i>

queues

Syntax	<code>queues [<i>queue-numbers</i>];</code>
Hierarchy Level	[edit interfaces <i>vsp-fpc/pic/port</i> unit <i>logical-unit-number</i> compression rtp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For voice services interfaces only, assign queue numbers for RTP traffic.
Options	queues <i>queue-numbers</i> —Assign one or more of the following queues: q0 , q1 , q2 , q3 . For VRRP services, specify the q3 option instead of q0 .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

quiet-period

Syntax	<code>quiet-period seconds;</code>
Hierarchy Level	<code>[edit protocols dot1x authenticator interface <i>interface-id</i>]</code>
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Specify the number of seconds the port remains in the wait state following a failed authentication exchange with the client, before reattempting authentication.
Options	seconds —Specify the number of seconds the port remains in the wait state following a failed authentication exchange with the client, before reattempting authentication. Range: 0 through 65,535 seconds Default: 60 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• authenticator on page 119• dot1x on page 197• interface (IEEE 802.1x) on page 290

radius-realm

Syntax	<code>radius-realm <i>radius-realm-string</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include]</code>
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify that the user-defined RADIUS realm string is appended as a last piece to the username and used by RADIUS to direct the authentication request to a profile that does not allocates addresses.
Options	<i>radius-realm-string</i> —A string to describe the RADIUS realm.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring VLAN Interface Username Information for AAA Authentication</i>

ranges (Dynamic Stacked VLAN)

Syntax	<code>ranges (any <i>low-tag-high-tag</i>), (any <i>low-tag-high-tag</i>);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges dynamic-profile <i>profile-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 9.5.
Description	Configure VLAN ranges for dynamic, auto-sensed stacked VLANs.
Options	<p>any—The entire VLAN range.</p> <p><i>low-tag</i>—The lower limit of the VLAN range.</p> <p><i>high-tag</i>—The upper limit of the VLAN range.</p> <p>Range: 1 through 4094</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Stacked VLAN Ranges for Use with Stacked VLAN Dynamic Profiles</i>

ranges (Dynamic VLAN)

Syntax	<code>ranges (any <i>low-tag</i>)-(any <i>high-tag</i>);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> auto-configure vlan-ranges dynamic-profile <i>profile-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 9.5.
Description	Configure VLAN ranges for dynamic, auto-sensed VLANs.
Options	<p>any—The entire VLAN range.</p> <p><i>low-tag</i>—The lower limit of the VLAN range.</p> <p><i>high-tag</i>—The upper limit of the VLAN range.</p> <p>Range: 1 through 4094</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Single-Level VLAN Ranges for Use with VLAN Dynamic Profiles</i>

rate

Syntax	<code>rate percentage;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> receive-bucket], [edit interfaces <i>interface-name</i> transmit-bucket]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify percentage of the interface line rate that is available to receive or transmit packets.
Options	percentage —Percentage of the interface line rate that is available to receive or transmit packets. Range: 0 through 100
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>

rdi

Syntax	<code>rdi;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management action-profile tlv-action event]
Release Information	Statement introduced in Junos OS Release 10.1.
Description	Define a new event rdi . The remote defect indication (rdi) event is triggered whenever CCM packets are received from a remote location with the rdi bit set. This event is cleared and action is reverted when none of the remote MEPs send the CCM packets with the RDI bit.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Connectivity Fault Management Action Profile</i>

reassemble-packets

Syntax	reassemble-packets;
Hierarchy Level	[edit interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>gr-fpc/pic/port</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Enable reassembly of fragmented tunnel packets on generic routing encapsulation (GRE) tunnel interfaces.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>Configuring Packet Reassembly</i>

reauthentication

Syntax	reauthentication (disable interval <i>seconds</i>);
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Set or disable the periodic reauthentication of the client.
Options	<ul style="list-style-type: none"> • disable—Disable the periodic reauthentication of the client. • interval <i>seconds</i>—Specify the periodic reauthentication time interval. <p>Range: 1 through 65,535 seconds Default: 3600 seconds</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>IEEE 802.1x Port-Based Network Access Control Overview</i> • dot1x on page 197 • interface (IEEE 802.1x) on page 290 • quiet-period on page 478

receive-bucket

Syntax	<pre>receive-bucket { overflow (discard tag); rate <i>percentage</i>; threshold <i>bytes</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Set parameters for the receive leaky bucket, which specifies what percentage of the interface's total capacity can be used to receive packets.</p> <p>For each DS3 channel on a channelized OC12 interface, you can configure a unique receive bucket.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>• transmit-bucket on page 571

receive-options-packets

Syntax	<pre>receive-options-packets;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For a Monitoring Services PIC and an ATM or SONET/SDH PIC installed in an M160, M40e, or T Series router, guarantee conformity with cflowd records structure. This statement is required when you enable passive monitoring.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Enabling Passive Monitoring on ATM Interfaces</i>• <i>Enabling Passive Monitoring on SONET/SDH Interfaces</i>

receive-ttl-exceeded

Syntax	receive-ttl-exceeded;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Monitoring Services PIC and an ATM or SONET/SDH PIC installed in an M160, M40e, or T Series router, guarantee conformity with cflowd records structure. This statement is required when you enable passive monitoring.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Enabling Passive Monitoring on ATM Interfaces • Enabling Passive Monitoring on SONET/SDH Interfaces

red-differential-delay

Syntax	red-differential-delay <i>milliseconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voice services interfaces only, configure the red differential delay among bundle links to give warning when a link has a differential delay that exceeds the configured threshold.
Options	<i>milliseconds</i> —Red differential delay threshold. Range: 1 through 2000 milliseconds Default: 10 milliseconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • action-red-differential-delay on page 98 • yellow-differential-delay on page 619 • Junos OS Services Interfaces Library for Routing Devices

redial-delay

Syntax	redial-delay <i>time</i> ;
Hierarchy Level	[edit interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	<p>On J Series Services Routers with interfaces configured for ISDN with dialout, specify the delay (in seconds) between two successive calls made by the dialer. To configure callback mode, include the callback statement at the [edit interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options] hierarchy level.</p> <p>If the callback statement is configured, you cannot use the caller <i>caller-id</i> statement at the [edit interfaces <i>dlr</i> unit <i>logical-unit-number</i> dialer-options] hierarchy level.</p>
Options	<p>time—Delay (in seconds) between two successive calls.</p> <p>Range: 2 through 255 seconds</p> <p>Default: 3 seconds</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>ISDN Interfaces Overview</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

redundancy-options

Syntax	<pre>redundancy-options { primary <i>interface-name</i>; secondary <i>interface-name</i>; }</pre>
Hierarchy Level	[edit interfaces (rsp0 rsp1)], [edit interfaces <i>rlsqnumber</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the primary and secondary (backup) AS PIC interfaces or MultiServices PIC interfaces.
Options	<p>primary <i>interface-name</i>—The identifier for the primary LSQ AS or MultiServices PIC interface.</p> <p>secondary <i>interface-name</i>—The identifier for the secondary (backup) LSQ AS or MultiServices PIC interface.</p> <p>hot-standby—For one-to-one AS or MultiServices PIC redundancy configurations, specify that the failure detection and recovery must take place in less than 5 seconds.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

remote

Syntax	<pre>remote { (inet-address address mac-address address); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family tcc], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family tcc]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Layer 2.5 VPNs using an Ethernet interface as the TCC router, configure the location of the remote router. Ethernet TCC is supported on interfaces that carry IPv4 traffic only. Ethernet TCC encapsulation is supported on 1-port Gigabit Ethernet, 2-port Gigabit Ethernet, 4-port Gigabit Ethernet, and 4-port Fast Ethernet PICs only.
Options	mac-address —Configure the MAC address of the remote site. inet-address —Configure the IP address of the remote site.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Ethernet TCC</i>• <i>Example: Configuring an Ethernet TCC or Extended VLAN TCC</i>• proxy on page 472• <i>Junos OS VPNs Library for Routing Devices</i>

remote-loopback

Syntax	<pre>remote-loopback;</pre>
Hierarchy Level	[edit protocols oam link-fault-management interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	For Ethernet interfaces on EX Series switches and M320, M120, MX Series, and T Series routers, set the remote DTE into loopback mode. Remove the statement from the configuration to take the remote DTE out of loopback mode. Used for IEEE 802.3ah Operation, Administration, and Management (OAM) support.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Setting a Remote Interface into Loopback Mode</i>

remote-loopback-respond

Syntax	remote-loopback-respond;
Hierarchy Level	[edit interfaces <i>ct1-fpc/pic/port</i>], [edit interfaces <i>interface-name</i> t1-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	For T1 interfaces only, configure the router to respond to remote loopback requests. Remote loopback requests can be from the facilities data link or inband.



NOTE: When configuring CT1 interfaces on the 10-port Channelized E1/T1 IQE PIC, the remote-loopback-respond statement must be included at the [edit interfaces *ct1-fpc/pic/port*] hierarchy level.

Default	The router does not respond to remote loop requests.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the T1 Remote Loopback Response</i> • feac-loop-respond on page 242 • loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3) on page 342

remote-mep

Syntax	<pre>remote-mep mep-id { action-profile profile-name; sla-iterator-profile profile-name { data-tlv-size size; iteration-count count-value; priority priority-value; } }</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain md-name maintenance-association ma-name mep mep-id]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Configure the numeric identifier of the remote maintenance association end point (MEP) within the maintenance association.
Options	<p>mep-id—Numeric identifier of the MEP.</p> <p>Range: 1 through 8191</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	Configure—To enter configuration mode. Control—To modify any configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring a Maintenance Endpoint</i>

remove-when-no-subscribers

Syntax	<pre>remove-when-no-subscribers;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure]
Release Information	Statement introduced in Junos OS Release 11.4.
Description	Remove subscriber VLANs automatically when no client sessions (for example, DHCP or PPPoE) exist on the VLAN.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Automatically Removing VLANs with No Subscribers</i>

request

Syntax	<code>request (protect working);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Perform a manual switch between the protect and working circuits. This statement is honored only if there are no higher-priority reasons to switch.
Options	protect —Request that the circuit become the protect circuit. working —Request that the circuit become the working circuit.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Switching Between the Working and Protect Circuits</i>• force on page 246

required-depth

Syntax	<code>required-depth <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options mpls pop-all-labels], [edit interfaces <i>interface-name</i> sonet-options mpls pop-all-labels], [edit interfaces <i>interface-name</i> fastether-options mpls pop-all-labels], [edit interfaces <i>interface-name</i> gigether-options mpls pop-all-labels]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For passive monitoring on ATM and SONET/SDH interfaces only, specify the number of MPLS labels an incoming packet must have for the pop-all-labels statement to take effect.</p> <p>If you include the required-depth 1 statement, the pop-all-labels statement takes effect for incoming packets with one label only. If you include the required-depth 2 statement, the pop-all-labels statement takes effect for incoming packets with two labels only.</p>
Options	<p>number—Number of MPLS labels on incoming IP packets.</p> <p>Range: 1 or 2 labels</p> <p>Default: If you omit this statement, the pop-all-labels statement takes effect for incoming packets with one or two labels. The default is equivalent to including the required-depth [1 2] statement.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Removing MPLS Labels from Incoming Packets</i>• <i>Removing MPLS Labels from Incoming Packets</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

restore-interval

Syntax	restore-interval <i>number</i> ;
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>ring-name</i>]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Configures the number of minutes that the node does not process any Ethernet ring protection (ERP) protocol data units (PDUs).. This configuration is a global configuration and applies to all Ethernet rings if the Ethernet ring does not have a more specific configuration for this value. If no parameter is configured at the protection group level, the global configuration of this parameter uses the default value.
Options	<i>number</i> —Specify the restore interval. Range: 5 through 12 minutes
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>• <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i>• <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>


retries

Syntax	<code>retries <i>integer</i>;</code>
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Set a limit on the number of failed authentication attempts between a port and a client. When the limit is exceeded, the port waits to reattempt authentication for the number of seconds set by the quiet-period statement configured at the same hierarchy level.
Options	<i>integer</i> —Specify the number of retries. Range: 1 through 10 Default: 3 retries
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• dot1x on page 197• interface (IEEE 802.1x) on page 290• quiet-period on page 478

revert-time (Interfaces)

Syntax	<code>revert-time <i>seconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure APS revertive mode.
Default	APS operates in nonrevertive mode.
Options	<i>seconds</i> —Amount of time to wait after the working circuit has again become functional before making the working circuit active again. Range: 1 through 65,535 seconds Default: None (APS operates in nonrevertive mode)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Revertive Mode</i>

revertive

Syntax	revertive;
Hierarchy Level	[edit interfaces aeX aggregated-ether-options lacp link-protection]
Release Information	Statement introduced in Junos OS Release 9.3. Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	Enable the ability to switch to a better priority link (if one is available).
	<div>  <p>NOTE: By default, LACP link protection is revertive. However, you can use this statement to define a specific aggregated Ethernet interface as revertive to override a global non-revertive statement specified at the [edit chassis] hierarchy level.</p> </div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>non-revertive (Chassis)</i> <i>Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</i>

rfc-2615

Syntax	rfc-2615;
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Include this statement to enable features described in RFC 2615, <i>PPP over SONET/SDH</i> .
Default	Settings required by RFC 1619, <i>PPP over SONET/SDH</i> .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring SONET/SDH RFC 2615 Support</i>

ring-protection-link-end

Syntax	ring-protection-link-end;
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>ring-name</i> (east-interface west-interface)]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Specify that the port is one side of a ring protection link (RPL) by setting the RPL end flag.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>• <i>Example: Configuring Ethernet Ring Protection Switching on EX Series Switches</i>• <i>Configuring Ethernet Ring Protection Switching (CLI Procedure)</i>

ring-protection-link-owner

Syntax	ring-protection-link-owner;
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>ring-name</i>]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Specify the ring protection link (RPL) owner flag in the Ethernet protection ring. Include this statement only once for each ring (only one node can function as the RPL owner).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Ethernet Ring Protection Switching Overview</i>

routing-instance

Syntax	<pre>routing-instance { destination <i>routing-instance-name</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	To configure interfaces and logical-systems , specify the destination routing instance that points to the routing table containing the tunnel destination address.
Default	The default Internet routing table is inet.0 .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

rpf-check (interfaces)

Syntax	<pre>rpf-check { fail-filter <i>filter-name</i>; mode loose; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Check whether traffic is arriving on an expected path. You can include this statement with the inet or inet6 protocol family only.</p> <p>The mode statement is explained separately.</p>
Options	fail-filter —A filter to evaluate when packets are received on the interface. If the RPF check fails, this optional filter is evaluated. If the fail filter is not configured, the default action is to silently discard the packet.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Unicast RPF Strict Mode</i>• <i>Configuring Unicast RPF Loose Mode</i>• <i>Example: Configuring Unicast Reverse-Path-Forwarding Check</i>

rpf-loose-mode-discard

Syntax	<pre>rpf-loose-mode-discard { family { inet; inet6; } }</pre>
Hierarchy Level	[edit forwarding-options]
Release Information	Statement introduced in Junos OS Release 12.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Configure unicast reverse path forwarding (unicast RPF) loose mode with the ability to discard packets with the source address pointing to the discard next hop.
Options	inet —IPv4 address family. inet6 —IPv6 address family.
Required Privilege Level	interface-control—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Unicast RPF</i>

rtp

Syntax	<pre>rtp { f-max-period <i>number</i>; queues [<i>queue-numbers</i>]; port { minimum <i>port-number</i>; maximum <i>port-number</i>; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> compression]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the real-time transport protocol (RTP) properties for voice services traffic. The remaining statements are described separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

rts

Syntax	rts (assert de-assert normal);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 and V.35 interfaces only, configure the to-DCE signal, request to send (RTS).
Options	assert —The to-DCE signal must be asserted. de-assert —The to-DCE signal must be deasserted. normal —Normal RTS signal handling, as defined by the TIA/EIA Standard 530. Default: normal
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

rts-polarity

Syntax	rts-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure RTS signal polarity.
Options	negative —Negative signal polarity. positive —Positive signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

rtvbr

Syntax	<code>rtvbr peak rate sustained rate burst length;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> shaping],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM2 IQ PICs only, define the real-time variable bandwidth utilization in the traffic-shaping profile.</p> <p>When you configure the real-time bandwidth utilization, you must specify all three options (burst, peak, and sustained). You can specify the rate in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify the rate in cells per second by entering a decimal number followed by the abbreviation c; values expressed in cells per second are converted to bits per second using the formula 1 cps = 384 bps.</p>
Default	If the rtvbr statement is not included, bandwidth utilization is unlimited.
Options	<p>burst length—Burst length, in cells. If you set the length to 1, the peak traffic rate is used. Range: 1 through 4000 cells</p> <p>peak rate—Peak rate, in bits per second or cells per second. Range: For ATM2 IQ OC3 and OC12 interfaces, 33 Kbps through 542,526,792 bps. For ATM2 IQ OC48 interfaces, 33 Kbps through 2,170,107,168 bps. For ATM2 IQ DS3 and E3 interfaces, 33 Kbps through the maximum rate, which depends on the ATM encapsulation and framing you configure..</p> <p>sustained rate—Sustained rate, in bps or cps. Range: For ATM2 IQ OC3 and OC12 interfaces, 33 Kbps through 542,526,792 bps. For ATM2 IQ OC48 interfaces, 33 Kbps through 2,170,107,168 bps. For ATM2 IQ DS3 and E3 interfaces, from 33 Kbps through the maximum rate, which depends on the ATM encapsulation and framing you configure.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM CBR</i> • <i>Configuring ATM2 IQ Real-Time VBR</i> • <i>Applying Scheduler Maps to Logical ATM Interfaces</i>

- [cbr on page 148](#)
- [vbr on page 593](#)

sampling (Interfaces)

Syntax	sampling <i>direction</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the direction of traffic to be sampled.
Options	<p><i>direction</i> can be one of the following:</p> <p>input—Configure at least one expected ingress point.</p> <p>output—Configure at least one expected egress point.</p> <p>input output—On a single interface, configure at least one expected ingress point and one expect egress point.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• <i>Configuring Flow Monitoring</i>

satop-options

Syntax	<pre> satop-options { excessive-packet-loss-rate { apply-groups <i>group-name</i> apply-groups-except <i>group-name</i> groups <i>group-name</i> sample-period <i>milliseconds</i> threshold <i>percentile</i> } idle-pattern <i>pattern</i> jitter-buffer-auto-adjust jitter-buffer-latency <i>milliseconds</i> jitter-buffer-packets <i>packets</i> payload-size <i>bytes</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	<p>Set Structure-Agnostic TDM over Packet (SAToP) protocol options.</p> <p>On ACX Series routers, the following statements are not supported:</p> <pre> apply-groups <i>group-name</i> apply-groups-except <i>group-name</i> groups <i>group-name</i> jitter-buffer-auto-adjust </pre>
Options	<p>excessive-packet-loss-rate options—Set packet loss options.</p> <ul style="list-style-type: none"> apply-groups <i>group-name</i>—Groups from which to inherit configuration data. apply-groups-except <i>group-name</i>—Don't inherit configuration data from these groups. groups <i>group-name</i>—Specify groups. sample-period <i>milliseconds</i>—Number of milliseconds over which excessive packet loss rate is calculated. threshold <i>percentile</i>—Percentile designating the threshold of excessive packet loss rate (from 1 to 100). <p>idle-pattern <i>pattern</i>—An 8-bit hexadecimal pattern to replace TDM data in a lost packet (from 0 to 255).</p> <p>jitter-buffer-auto-adjust—Automatically adjust the jitter buffer.</p>



NOTE: This option is not applicable on MX Series routers.

jitter-buffer-latency *milliseconds*—Number of milliseconds delay in jitter buffer (from 1 to 1000 milliseconds).

jitter-buffer-packets *packets*—Number of packets in jitter buffer (from 1 to 64).

payload-size *bytes*—Payload size in integer number of bytes.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring SAToP on 4-Port Channelized OC3/STM1 Circuit Emulation PICs*
- *Configuring SAToP Emulation on T1/E1 Interfaces on Circuit Emulation PICs*
- *Configuring SAToP on Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP*
- *Configuring SAToP Encapsulation on T1/E1 Interfaces on Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP*
- *Configuring SAToP on Channelized E1/T1 Circuit Emulation MIC*
- *ATM Support on Circuit Emulation PICs Overview*

scheduler-maps

Syntax `scheduler-maps map-name {
 forwarding-class (class-name | assured-forwarding | best-effort | expedited-forwarding
 | network-control);
 vc-cos-mode (alternate | strict);
}`

Hierarchy Level [edit interfaces *interface-name* **atm-options**]

Release Information Statement introduced before Junos OS Release 7.4.

Description For ATM2 IQ interfaces only, define CoS parameters assigned to forwarding classes.

Options *map-name*—Name of the scheduler map.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring ATM2 IQ VC Tunnel CoS Components*
- [atm-scheduler-map on page 116](#)
- *Junos OS Class of Service Library for Routing Devices*

schedulers

Syntax	<code>schedulers <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Specify the number of schedulers for Ethernet IQ2 and IQ2-E PIC port interfaces.
Default	If you omit this statement, the 1024 schedulers are distributed equally over all ports in multiples of 4.
Options	<i>number</i> —Number of schedulers to configure on the port. Range: 1 through 1024
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Class of Service Library for Routing Devices</i>

secondary

Syntax	<code>secondary <i>interface-name</i>;</code>
Hierarchy Level	[edit interfaces (rsp0 rsp1) redundancy-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the secondary (backup) AS PIC interface or MultiServices PIC interface.
Options	<i>interface-name</i> —The identifier for the AS PIC interface or MultiServices PIC interface, which must be of the form sp-fpc/pic/port .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

send-critical-event

Syntax	send-critical-event;
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile action]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Send OAM PDUs with the critical event bit set.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying the Actions to Be Taken for Link-Fault Management Events</i>

serial-options

Syntax

```
serial-options {
  clock-rate rate;
  clocking-mode (dce | loop);
  control-polarity (negative | positive);
  cts-polarity (negative | positive);
  dcd-polarity (negative | positive);
  dce-options {
    control-signal (assert | de-assert | normal);
    cts (ignore | normal | require);
    dcd (ignore | normal | require);
    dsr (ignore | normal | require);
    dtr signal-handling-option;
    ignore-all;
    indication (ignore | normal | require);
    rts (assert | de-assert | normal);
    tm (ignore | normal | require);
  }
  dsr-polarity (negative | positive);
  dte-options {
    control-signal (assert | de-assert | normal);
    cts (ignore | normal | require);
    dcd (ignore | normal | require);
    dsr (ignore | normal | require);
    dtr signal-handling-option;
    ignore-all;
    indication (ignore | normal | require);
    rts (assert | de-assert | normal);
    tm (ignore | normal | require);
  }
  dtr-circuit (balanced | unbalanced);
  dtr-polarity (negative | positive);
  encoding (nrz | nrzi);
  indication-polarity (negative | positive);
  line-protocol protocol;
  loopback (dce-local | dce-remote | local | remote);
  rts-polarity (negative | positive);
  tm-polarity (negative | positive);
  transmit-clock invert;
}
```

Hierarchy Level [edit interfaces *se-pim*/0/*port*]

Release Information Statement introduced prior to Junos OS Release 7.4.

Description Configure serial-specific interface properties.

The statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

- Related Documentation**
- [Serial Interfaces Overview](#)
 - [no-concatenate](#)

server

Syntax	server;
Hierarchy Level	[edit interfaces pp0 unit <i>logical-unit-number</i> pppoe-options], [edit logical-systems <i>logical-system-name</i> interfaces pp0 unit <i>logical-unit-number</i> pppoe-options]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure the router to operate in the PPPoE server mode. Supported on M120 and M320 Multiservice Edge Routers and MX Series Universal Edge Routers operating as access concentrators.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPPoE Server Mode

server-timeout

Syntax	server-timeout <i>seconds</i> ;
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Sets the number of seconds the port waits for a reply when relaying a response from the client to the authentication server before timing out and invoking the server-fail action.
Options	seconds —The number of seconds the port waits for a response when relaying a request from the authentication server to the client before resending the request. Range: 1 through 60 seconds Default: 30 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• IEEE 802.1x Port-Based Network Access Control Overview• authenticator on page 119• dot1x on page 197• interface (IEEE 802.1x) on page 290

service (Logical Interfaces)

Syntax	<pre> service { input { service-set service-set-name <service-filter filter-name>; post-service-filter filter-name; } output { service-set service-set-name <service-filter filter-name>; } } </pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i>]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define one or more service sets and filters, and one postservice filter to be applied to an interface.
Options	The remaining statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Junos OS Services Interfaces Library for Routing Devices</i>

service (PPPoE)

Syntax	<pre> service service-name { drop; delay seconds; terminate; dynamic-profile profile-name; routing-instance routing-instance-name; max-sessions number; agent-specifier { aci circuit-id-string ari remote-id-string { drop; delay seconds; terminate; dynamic-profile profile-name; routing-instance routing-instance-name; static-interface interface-name; } } } </pre>
Hierarchy Level	[edit protocols pppoe service-name-tables table-name]
Release Information	<p>Statement introduced in Junos OS Release 10.0.</p> <p>any, dynamic-profile, routing-instance, max-sessions, and static-interface options introduced in Junos OS Release 10.2.</p>
Description	Specify the action taken by the interface on receipt of a PPPoE Active Discovery Initiation (PADI) control packet for the specified named service, empty service, or any service in a PPPoE service name table. You can also specify the dynamic profile and routing instance that the router uses to instantiate a dynamic PPPoE interface, and the maximum number of active PPPoE sessions that the router can establish with the specified service.
Default	The default action is terminate.
Options	<p>service-name—Service entry in the PPPoE service name table:</p> <ul style="list-style-type: none"> • service-name—Named service entry of up to 32 characters; for example, premiumService. You can configure a maximum of 512 named service entries across all PPPoE service name tables on the router. • empty—Service entry of zero length that represents an unspecified service. Each PPPoE service name table includes one empty service entry by default. • any—Default service for non-empty service entries that do not match the named or empty service entries configured in the PPPoE service name table. Each PPPoE service name table includes one any service entry by default. <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

- Related Documentation**
- *Configuring PPPoE Service Name Tables*
 - *Assigning a Service to a Service Name Table and Configuring the Action Taken When the Client Request Includes a Non-zero Service Name Tag*
 - *Configuring the Action Taken When the Client Request Includes an Empty Service Name Tag*
 - *Configuring the Action Taken for the Any Service*

service-domain

Syntax	service-domain (inside outside);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For adaptive services interfaces, specify a service interface domain. If you specify this interface using the next-hop-service statement at the [edit services service-set service-set-name] hierarchy level, the interface domain must match that used with the inside-service-interface and outside-service-interface statements.
Options	inside —Interface used within the network. outside —Interface used outside the network.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	• <i>Junos OS Services Interfaces Library for Routing Devices</i>


service-filter (Interfaces)

Syntax	<code>service-filter <i>filter-name</i>;</code>
Hierarchy Level	[edit <code>interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service (input output) service-set <i>service-set-name</i></code>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service (input output) service-set <i>service-set-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define the filter to be applied to traffic before it is accepted for service processing. Configuration of a service filter is optional; if you include the service-set statement without a service-filter definition, Junos OS assumes the match condition is true and selects the service set for processing automatically.
Options	<i>filter-name</i> —Identifies the filter to be applied in service processing.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Applying Filters and Services to Interfaces</i> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

service-name

Syntax	<code>service-name <i>name</i>;</code>
Hierarchy Level	[edit interfaces pp0 unit <i>logical-unit-number</i> <code>pppoe-options</code>], [edit logical-systems <i>logical-system-name</i> interfaces pp0 unit <i>logical-unit-number</i> <code>pppoe-options</code>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For J Series Services Routers with PPP over Ethernet interfaces, configure the service to be requested from the PPP over Ethernet server; that is, the access concentrator. For example, you can use this statement to indicate an Internet service provider (ISP) name or a class of service.
Options	<i>name</i> —Service to be requested from the PPP over Ethernet server.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the PPPoE Service Name</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

service-name-table

Syntax	<code>service-name-table <i>table-name</i>;</code>
Hierarchy Level	<p>[edit dynamic-profiles <i>profile-name</i> interfaces demux0 unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit dynamic-profiles <i>profile-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family pppoe],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> pppoe-underlying-options]</p>
Release Information	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Support at the [edit ... family pppoe] hierarchies introduced in Junos OS Release 11.2.</p>
Description	Specify the PPPoE service name table assigned to a PPPoE underlying interface. This underlying interface is configured with either the encapsulation ppp-over-ether statement or the family pppoe statement; the two statements are mutually exclusive.
<div>  <p>NOTE: The [edit ... family pppoe] hierarchies are supported only on MX Series routers with MPCs.</p> </div>	
Options	<i>table-name</i> —Name of the PPPoE service name table, a string of up to 32 alphanumeric characters.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring PPPoE Service Name Tables</i> • <i>Assigning a Service Name Table to a PPPoE Underlying Interface</i> • <i>Configuring the PPPoE Family for an Underlying Interface</i>

service-name-tables

Syntax	<pre> service-name-tables <i>table-name</i> { service <i>service-name</i> { drop; delay <i>seconds</i>; terminate; dynamic-profile <i>profile-name</i>; routing-instance <i>routing-instance-name</i>; max-sessions <i>number</i>; agent-specifier { aci <i>circuit-id-string</i> ari <i>remote-id-string</i> { drop; delay <i>seconds</i>; terminate; dynamic-profile <i>profile-name</i>; routing-instance <i>routing-instance-name</i>; static-interface <i>interface-name</i>; } } } } </pre>
Hierarchy Level	[edit protocols pppoe]
Release Information	<p>Statement introduced in Junos OS Release 10.0.</p> <p>dynamic-profile, routing-instance, max-sessions, and static-interface options introduced in Junos OS Release 10.2.</p>
Description	<p>Create and configure a PPPoE service name table. Specify the action taken for each service and remote access concentrator on receipt of a PPPoE Active Discovery Initiation (PADI) packet. You can also specify the dynamic profile and routing instance that the router uses to instantiate a dynamic PPPoE interface, and the maximum number of active PPPoE sessions that the router can establish with the specified service. A maximum of 32 PPPoE service name tables is supported per router.</p>
Options	<p>table-name—Name of the PPPoE service name table, a string of up to 32 alphanumeric characters.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring PPPoE Service Name Tables Creating a Service Name Table

service-set

Syntax	<code>service-set service-set-name;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i> service (input output) service-set <i>service-set-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i> service (input output) service-set <i>service-set-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Define one or more service sets to be applied to an interface. If you define multiple service sets, the Junos OS evaluates the filters in the order in which they appear in the configuration.
Options	<i>service-set-name</i> —Identifies the service set.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

services (Priority Level)

Syntax	<code>services priority-level;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options sysloghost <i>hostname</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify system logging priority level.
Options	<p><i>priority-level</i>—Assigns a priority level to the facility. Valid entries are as follows:</p> <ul style="list-style-type: none">• alert—Conditions that should be corrected immediately.• any—Matches any level.• emergency—Panic conditions.• critical—Critical conditions.• error—Error conditions.• info—Informational messages.• notice—Conditions that require special handling.• warning—Warning messages.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

services-options

Syntax

```

services-options {
  inactivity-timeout seconds;
  open-timeout seconds;
  session-limit {
    maximum number;
    rate new-sessions-per-second;
  }
  syslog {
    host hostname {
      facility-override facility-name;
      log-prefix prefix-number;
      services priority-level;
    }
  }
}

```

Hierarchy Level [edit [interfaces](#) *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Define the service options to be applied on an interface.

Options The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Junos OS Services Interfaces Library for Routing Devices*

shaping

Syntax	<pre>shaping { (cbr rate rtvbr peak rate sustained rate burst length vbr peak rate sustained rate burst length); queue-length number; }</pre>
Hierarchy Level	<pre>[edit interfaces interface-name atm-options vpi vpi-identifier], [edit interfaces interface-name unit logical-unit-number], [edit interfaces interface-name unit logical-unit-number address address family family multipoint-destination address], [edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number], [edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number address address family family multipoint-destination address]</pre>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM encapsulation only, define the traffic-shaping profile.</p> <p>For Circuit Emulation PICs, specify traffic shaping in the ingress and egress directions.</p> <p>For ATM2 IQ interfaces, changing or deleting VP tunnel traffic shaping causes all logical interfaces on a VP to be deleted and then re-added.</p> <p>VP tunnels are not supported on multipoint interfaces.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Defining Virtual Path Tunnels</i> • <i>Defining the ATM Traffic-Shaping Profile</i> • <i>Configuring ATM QoS or Shaping</i> • <i>Applying Scheduler Maps to Logical ATM Interfaces</i>

shdsl-options

Syntax	<pre>shdsl-options { annex (annex-a annex-b); line-rate <i>line-rate</i>; loopback (local remote payload); snr-margin { current <i>margin</i>; snext <i>margin</i>; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For J Series Services Routers only, configure symmetric DSL (SHDSL) options. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ATM-over-SHDSL Overview</i>

short-name-format

Syntax	short-name-format (character-string vlan 2octet rfc-2685-vpn-id);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name maintenance-association ma-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the name format of the maintenance association name.
Options	character-string —The name is an ASCII character string. vlan —The primary VLAN identifier. 2octet —A number in the range 0 through 65,535. rfc-2685-vpn-id —A VPN identifier that complies with RFC 2685. Default: character-string



NOTE: The PTX Series Packet Transport Routers support the vlan and 2octet options only.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
---------------------------------	---

Related Documentation	<ul style="list-style-type: none"> • <i>Creating a Maintenance Association</i> • <i>Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers</i>
------------------------------	---

short-sequence

Syntax	<code>short-sequence;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For multilink interfaces only, set the length of the packet sequence identification number to 12 bits.
Default	If you omit this statement from the configuration, the length is set to 24 bits.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

snext

Syntax	<code>snext margin;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> shdsl-options snr-margin], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options snr-margin]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	For J Series Services Routers only, configure self-near-end crosstalk (SNEXT) signal-to-noise ratio (SNR) margin for a SHDSL line. When configured, the line trains at higher than SNEXT threshold. The SNR margin is the difference between the desired SNR and the actual SNR.
Options	margin —Desired SNEXT margin. Possible values are disabled or a margin between –10dB and 10 dB. Default: disabled
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>ATM-over-SHDSL Overview</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

snr-margin

Syntax	<pre>snr-margin { current margin; snext margin; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> shdsl-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	<p>For J Series Services Routers only, configure the SHDSL signal-to-noise ratio (SNR) margin. The SNR margin is the difference between the desired SNR and the actual SNR. Configuring the SNR creates a more stable SHDSL connection by making the line train at a SNR margin higher than the threshold. If any external noise below the threshold is applied to the line, the line remains stable.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>ATM-over-SHDSL Overview</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

sonet-options

```
Syntax  sonet-options {
        aps {
            advertise-interval milliseconds;
            annex-b
            authentication-key key;
            (break-before-make | no-break-before-make);
            fast-aps-switch;
            force;
            hold-time milliseconds;
            lockout;
            neighbor address;
            paired-group group-name;
            protect-circuit group-name;
            request;
            revert-time seconds;
            switching-mode (bidirectional | unidirectional);
            working-circuit group-name;
        }
        bytes {
            c2 value;
            e1-quiet value;
            f1 value;
            f2 value;
            s1 value;
            z3 value;
            z4 value;
        }
        fcs (16 | 32);
        loopback (local | remote);
        mpls {
            pop-all-labels {
                required-depth number;
            }
        }
        path-trace trace-string;
        (payload-scrambler | no-payload-scrambler);
        rfc-2615;
        trigger {
            defect ignore;
            defect hold-time up milliseconds down milliseconds;
        }
    }
    vtmapping (itu-t | klm);
    (z0-increment | no-z0-increment);
```

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure SONET/SDH-specific interface properties.

On SONET/SDH OC48 interfaces that you configure for channelized (multiplexed) mode (by including the **no-concatenate** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level), the **bytes e1-quiet** and **bytes f1** options 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.

On a channelized OC12 interface, the **bytes e1-quiet**, **bytes f1**, **bytes f2**, **bytes z3**, and **bytes z4** options are not supported. The **fcs** and **payload-scrambler** statements are also not supported; you must configure these for each DS3 channel using the **t3-options fcs** and **t3-options payload-scrambler** statements. The **aps** and **loopback** statements are supported only on channel 0 and are ignored if included in the configurations for channels 1 through 11. You can configure loopbacks for each DS3 channel with the **t3-options loopback** statement. The **path-trace** statement can be included in the configuration for each DS3 channel, thereby configuring a unique path trace for each channel.

To configure loopback on channelized IQ and IQE PICs, SONET/SDH level, use the **loopback** statement **local** and **remote** options at the controller interface (coc48, cstm16, coc12, cstm4, coc3, and cstm1). It is ignored for path-level interfaces **so-fpc/pic/port** or **so-fpc/pic/port:channel**.

If you are running Intermediate System-to-Intermediate System (IS-IS) over SONET/SDH interfaces, use PPP if you are running Cisco IOS Release 12.0 or later. If you need to run HDLC, configure an ISO family MTU of 4469 on the router.

The statements are explained separately.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring SONET/SDH Parameters on ATM Interfaces</i>• <i>Channelized OC12/STM4 IQ and IQE Interfaces Overview</i>• <i>Channelized STM1 Interfaces Overview</i>• <i>SONET/SDH Physical Interface Properties Overview</i>• <i>no-concatenate</i>

source

Syntax	<code>source source-address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel <i>address</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel <i>address</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify the source address of the tunnel.
Default	If you do not specify a source address, the tunnel uses the unit's primary address as the source address of the tunnel.
Options	source-address —Address of the local side of the tunnel. This is the address that is placed in the outer IP header's source field.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• multicast-only on page 372• primary (Address on Interface) on page 466• <i>Junos OS Services Interfaces Library for Routing Devices</i>

source-address-filter

Syntax	source-address-filter { <code>mac-address</code> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, Gigabit Ethernet IQ interfaces, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), specify the MAC addresses from which the interface can receive packets. For this statement to have any effect, you must include the source-filtering statement in the configuration to enable source address filtering. This statement is not supported on the J Series Services Routers.
Options	<p>mac-address—MAC address filter. You can specify the MAC address as <i>nn:nn:nn:nn:nn:nn</i> or <i>nnnn.nnnn.nnnn</i>, where <i>n</i> is a decimal digit. To specify more than one address, include multiple mac-address options in the source-address-filter statement.</p> <p>If you enable the VRRP on a Fast Ethernet or Gigabit Ethernet interface, as described in <i>VRRP and VRRP for IPv6 Overview</i>, and if you enable MAC source address filtering on the interface, you must include the virtual MAC address in the list of source MAC addresses that you specify in the source-address-filter statement. MAC addresses ranging from 00:00:5e:00:01:00 through 00:00:5e:00:01:ff are reserved for VRRP, as defined in RFC 3768, <i>Virtual Router Redundancy Protocol</i>. When you configure the VRRP group, the group number must be the decimal equivalent of the last hexadecimal byte of the virtual MAC address.</p> <p>On untagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement with an identical MAC address specified in both filters.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling Ethernet MAC Address Filtering</i> • <i>Configuring MAC Filtering on PTX Series Packet Transport Routers</i> • source-filtering on page 405

source-class-usage

Syntax	source-class-usage { <i>direction</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet accounting], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet accounting], [edit routing-instances <i>routing-instance-name</i> vrf-table-label]
Release Information	Statement introduced before Junos OS Release 7.4. Support for the vrf-table-label statement added in Junos OS Release 9.3.
Description	Enable packet counters on an interface that count packets that arrive from specific prefixes on the provider core router and are destined for specific prefixes on the customer edge router.
Options	<i>direction</i> can be one of the following: input —Configure at least one expected ingress point. output —Configure at least one expected egress point. input output —On a single interface, configure at least one expected ingress point and one expect egress point.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling Source Class and Destination Class Usage</i> • accounting on page 91 • destination-class-usage on page 186 • <i>Junos OS Services Interfaces Library for Routing Devices</i> • <i>vrf-table-label</i>


source-filtering

Syntax	(source-filtering no-source-filtering);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.
Description	<p>For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and Gigabit Ethernet IQ interfaces only, enable the filtering of MAC source addresses, which blocks all incoming packets to that interface. To allow the interface to receive packets from specific MAC addresses, include the source-address-filter statement.</p> <p>If the remote Ethernet card is changed, the interface is no longer able to receive packets from the new card because it has a different MAC address.</p>
Default	Source address filtering is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Enabling Ethernet MAC Address Filtering</i>• <i>Configuring MAC Filtering on PTX Series Packet Transport Routers</i>• accept-source-mac on page 87• source-address-filter on page 524

speed (Ethernet)

Syntax	<code>speed (10m 100m 1g auto);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i>],</code> <code>[edit interfaces ge-<i>pim</i>/0/0 <i>switch-options</i> <i>switch-port</i> <i>port-number</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Configure the interface speed. This statement applies to the management Ethernet interface (fxp0 or em0), Fast Ethernet 12-port and 48-port PICs, the built-in Fast Ethernet port on the FIC (M7i router), the built-in Ethernet interfaces on J Series Services Routers, Combo Line Rate DPCs and Tri-Rate Ethernet Copper interfaces on MX Series routers, and on the Gigabit Ethernet ports on J Series Services Routers with uPIMs installed and configured for access switching mode. When you configure the Tri-Rate Ethernet copper interface to operate at 1 Gbps, autonegotiation must be enabled. When you configure 100BASE-FX SFP, you must set the port speed at 100 Mbps.
Options	You can specify the speed as either 10m (10 Mbps), 100m (100 Mbps), or on J Series routers with uPIMs installed and on MX Series routers, 1g (1 Gbps). You can specify the auto option only on MX Series routers.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring the Interface Speed</i> • <i>Configuring the Interface Speed on Ethernet Interfaces</i> • <i>Configuring Gigabit Ethernet Autonegotiation</i> • <i>Configuring J Series Services Router Switching Interfaces</i>

speed (MX Series DPC)

Syntax	<code>speed (auto 1Gbps 100Mbps 10Mbps);</code>
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i>]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	On MX Series routers with Combo Line Rate DPCs and Tri-Rate Copper SFPs you can set auto negotiation of speed. To specify the auto negotiation speed, use the speed (auto 1Gbps 100Mbps 10Mbps) statement under the [edit interface <i>ge-/fpc/pic/port</i>] hierarchy level. The auto option will attempt to automatically match the rate of the connected interface. To set port speed negotiation to a specific rate, set the port speed to 1Gbps , 100Mbps , or 10Mbps .
<div>  <p>NOTE: If the negotiated speed and the interface speed do not match, the link will not be brought up. Half duplex mode is not supported.</p> </div>	
Options	You can specify the speed as either auto (autonegotiate), 10Mbps (10 Mbps), 100Mbps (100 Mbps), or 1Gbps (1 Gbps).
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Gigabit Ethernet Autonegotiation</i> no-auto-mdix on page 387

speed (SONET/SDH)

Syntax	<code>speed (oc3 oc12 oc48);</code>
Hierarchy Level	<code>[edit interfaces so-<i>fpc/pic/port</i>],</code> <code>[edit interfaces so-<i>fpc/pic/port:channel</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Configure the interface speed. This statement applies to SONET/SDH interfaces on next-generation SONET/SDH Type 1 and Type 2 PICs with SFP. Available speeds depend on whether the PIC is in concatenated mode or nonconcatenated mode. Include the channel in the interface name when configuring nonconcatenated interfaces.
Options	<p><code>oc3 oc12 oc48</code>—Speed when the PIC is in concatenated mode. For example, you can configure each port of a 4-port OC12 PIC to have a speed of <code>oc3</code>.</p> <p>You can configure port 0 of a 4-port OC12 PIC to have a speed of <code>oc12</code>.</p> <p><code>oc3 oc12</code>—Speed when the PIC is in nonconcatenated mode.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring SONET/SDH Interface Speed</i>

spid1

Syntax	<code>spid1 <i>spid1-string</i>;</code>
Hierarchy Level	<code>[edit interfaces br-<i>pim</i>/0/<i>port isdn-options</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the Service Profile Identifier (SPID).
Options	<code>spid1-string</code> —Numeric SPID.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ISDN Physical Interface Properties</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

spid2

Syntax	<code>spid2 <i>spid2-string</i>;</code>
Hierarchy Level	[edit interfaces <i>br-pim</i> /0/ <i>port isdn-options</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure an additional SPID.
Options	<i>spid2-string</i> —Numeric SPID.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Physical Interface Properties</i>• <i>J Series Services Router Configuration Guide</i>

stacked-vlan-ranges

Syntax

```
stacked-vlan-ranges {
  access-profile profile-name;
  authentication {
    password password-string;
    username-include {
      circuit-type;
      delimiter delimiter-character;
      domain-name domain-name-string;
      interface-name;
      mac-address;
      option-18
      option-37
      option-82;
      radius-realm radius-realm-string;
      user-prefix user-prefix-string;
    }
  }
  dynamic-profile profile-name {
    accept (any | dhcp-v4 | inet);
    ranges (any | low-tag-high-tag), (any | low-tag-high-tag);
  }
  override;
}
```

Hierarchy Level [edit interfaces *interface-name* **auto-configure**]

Release Information Statement introduced in Junos OS Release 9.5.

Description Configure multiple VLANs. Each VLAN is assigned a VLAN ID number from the range.

The remaining statements are explained separately.

Required Privilege Level routing—To view this statement in the configuration.
routing—control—To add this statement to the configuration.


Related Documentation

- *Configuring Stacked VLAN Ranges for Use with Stacked VLAN Dynamic Profiles*
- *Configuring Dynamic Mixed VLAN Ranges*

stacked-vlan-tagging

Syntax	stacked-vlan-tagging;
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For Gigabit Ethernet IQ interfaces, Gigabit Ethernet, 10-Gigabit Ethernet LAN/WAN PIC, and 100-Gigabit Ethernet Type 5 PIC with CFP, enable stacked VLAN tagging for all logical interfaces on the physical interface.</p> <p>For pseudowire subscriber interfaces, enable stacked VLAN tagging for logical interfaces on the pseudowire service.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Stacking and Rewriting Gigabit Ethernet VLAN Tags Overview</i>• vlan-tags (Stacked VLAN Tags) on page 608

start-end-flag

Syntax	start-end-flag (filler shared);
Hierarchy Level	[edit interfaces e1- <i>fpc/pic/port</i>], [edit interfaces t1- <i>fpc/pic/port</i>], [edit interfaces <i>interface-name</i> ds0-options], [edit interfaces <i>interface-name</i> e1-options], [edit interfaces <i>interface-name</i> e3-options], [edit interfaces <i>interface-name</i> t1-options], [edit interfaces <i>interface-name</i> t3-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.
Description	For DS0, E1, E3, T1, and T3 interfaces, configure the interface to share the transmission of start and end flags.
	<div>  <p>NOTE: When configuring E1 or T1 interfaces on the 10-port Channelized E1/T1 IQE PIC, the start-end-flag statement must be included at the [edit interfaces e1-<i>fpc/pic/port</i>] or [edit interfaces t1-<i>fpc/pic/port</i>] hierarchy level as appropriate.</p> </div>
Options	filler —Wait two idle cycles between the start and end flags. shared —Share the transmission of the start and end flags. This is the default.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E1 Start and End Flags</i> • <i>Configuring the E3 Start and End Flags</i> • <i>Configuring T1 Start and End Flags</i> • <i>Configuring T3 Start and End Flags</i>

static-tei-val

Syntax	<code>static-tei-val value;</code>
Hierarchy Level	[edit interfaces <i>br-pim</i> /0/port isdn-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For J Series Services Routers only. Statically configure the Terminal Endpoint Identifier (TEI) value. The TEI value represents any ISDN-capable device attached to an ISDN network that is the terminal endpoint. TEIs are used to distinguish between several different devices using the same ISDN links.
Options	value —Value between 0 through 63.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Physical Interface Properties</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

supplicant

Syntax	<code>supplicant single;</code>
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	<p>Specify the supplicant mode. Only single mode is supported.</p> <p>This option will authenticate only the first client that connects to a port. All other clients that connect later (802.1x compliant or non-compliant) will be allowed free access on that port without any further authentication. If the first authenticated client logs out, all other users are locked out until a client authenticates again.</p>
Options	single —Sets single mode.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• authenticator on page 119• dot1x on page 197• interface (IEEE 802.1x) on page 290

supplicant-timeout

Syntax	supplicant-timeout <i>seconds</i> ;
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Specify the number of seconds the port waits for a response when relaying a request from the authentication server to the client before resending the request.
Options	<i>seconds</i> —Specify the number of seconds the port waits for the supplicant timeout. Range: 1 through 60 seconds Default: 30 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• authenticator on page 119• dot1x on page 197• interface (IEEE 802.1x) on page 290

swap

Syntax	swap;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	<p>Specify the VLAN rewrite operation to replace a VLAN tag. The outer VLAN tag of the frame is overwritten with the user-specified VLAN tag information.</p> <p>On MX Series routers, you can enter this statement on Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, aggregated Ethernet using Gigabit Ethernet IQ interfaces, and 100-Gigabit Ethernet Type 5 PIC with CFP.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Rewriting the VLAN Tag on Tagged Frames</i>

swap-push

Syntax	swap-push;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Specify the VLAN rewrite operation to replace the outer VLAN tag of the frame with a user-specified VLAN tag value. A user-specified outer VLAN tag is pushed in front. The outer tag becomes an inner tag in the final frame. You can use this statement on Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, and for aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers, and 100-Gigabit Ethernet Type 5 PIC with CFP.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Rewriting a VLAN Tag and Adding a New Tag

swap-swap

Syntax	swap-swap;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]
Release Information	Statement introduced in Junos OS Release 8.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	<p>Specify the VLAN rewrite operation to replace both the inner and the outer VLAN tags of the frame with a user-specified VLAN tag value.</p> <p>You can use this statement on Gigabit Ethernet IQ, IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, for aggregated Ethernet interfaces using Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet PICs on MX Series routers, and for 100-Gigabit Ethernet Type 5 PIC with CFP.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Rewriting the Inner and Outer VLAN Tags</i>

switch-options

Syntax	<pre>switch-options { switch-port <i>port-number</i> { (<i>auto-negotiation</i> no-auto-negotiation); speed (10m 100m 1g); link-mode (full-duplex half-duplex); } }</pre>
Hierarchy Level	[edit interfaces <i>ge-pim</i> /0/0]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	On a J Series Services Router with multiport Gigabit Ethernet uPIMs installed and operating in access switching mode, only one physical interface is configured for the entire multiport Gigabit Ethernet uPIM. Configuration of the physical port characteristics is done under the single physical interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring J Series Services Router Switching Interfaces</i>

switch-port

Syntax	<pre>switch-port <i>port-number</i> { (auto-negotiation no-auto-negotiation); speed (10m 100m 1g); link-mode (full-duplex half-duplex); }</pre>
Hierarchy Level	[edit interfaces <i>ge-pim/0/0</i> switch-options]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	On a J Series Services Router with Ethernet uPIMs installed and operating in access switching mode, configuration of the physical port characteristics, done under the single physical interface.
Default	Autonegotiation is enabled by default. If the link speed and duplex are also configured, the interfaces use the values configured as the desired values in the negotiation.
Options	<p><i>port-number</i>—Ports are numbered 0 through 5 on the 6-port Gigabit Ethernet uPIM, 0 through 7 on the 8-port Gigabit Ethernet uPIM, and 0 through 15 on the 16-port Gigabit Ethernet uPIM.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><i>Configuring J Series Services Router Switching Interfaces</i>

switch-type

Syntax	switch-type (att5e etsi ni1 ntdms-100)
Hierarchy Level	[edit interfaces br-pim/0/port isdn-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For J Series Services Routers only. Configure the ISDN variant supported.
Options	<p>att5e—AT&T switch variant.</p> <p>etsi—European Telecommunications Standards Institute switch variant.</p> <p>ni1—National ISDN 1 switch variant.</p> <p>ntdms-100—Northern Telecom DMS-100.</p> <p>ntt—NTT Group switch for Japan.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>ISDN Interfaces Overview</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

switching-mode

Syntax	switching-mode (bidirectional unidirectional);
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For unchannelized OC3, OC12, and OC48 SONET/SDH interfaces on T Series routers only, configure the interface to interoperate with SONET/SDH line-terminating equipment (LTE) that is provisioned for unidirectional linear APS in 1+1 architecture.
Default	If the switching-mode statement is not configured, the mode is bidirectional, and the interface does not interoperate with a unidirectional SONET/SDH LTE.
Options	bidirectional —Support bidirectional mode only. unidirectional —Interoperate with a SONET/SDH LTE provisioned for unidirectional mode.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Switching Mode</i>

symbol-period

Syntax	<code>symbol-period count;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event , link-event-rate], [edit protocols oam link-fault-management interface interface-name event-thresholds]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	<p>Configure the threshold for sending symbol period events or taking the action specified in the action profile.</p> <p>A symbol error is any symbol code error on the underlying physical layer. The symbol period threshold is reached when the number of symbol errors reaches the configured value within the period window. The default period window is the number of symbols that can be transmitted on the underlying physical layer in 1 second. The window is not configurable.</p>
Options	<p>count—Threshold count for symbol period events.</p> <p>Range: 1 through 100</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Threshold Values for Local Fault Events on an Interface</i>• <i>Configuring Threshold Values for Fault Events in an Action Profile</i>

syslog (Interfaces)

Syntax	<pre>syslog { host hostname { facility-override facility-name; log-prefix prefix-number; services priority-level; } }</pre>
Hierarchy Level	[edit interfaces interface-name services-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For adaptive services interfaces, configure generation of system log messages for the service set. System log information is passed to the kernel for logging in the /var/log directory. Any values configured in the service set definition override these values.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

syslog (Monitoring)

Syntax	(syslog no-syslog);
Hierarchy Level	[edit interfaces mo-fpc/pic/port multiservice-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>System logging is enabled by default. The system log information of the Monitoring Services PIC is passed to the kernel for logging in the /var/log directory.</p> <ul style="list-style-type: none">• syslog—Enable PIC system logging.• no-syslog—Disable PIC system logging.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Multiservice Physical Interface Properties</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

syslog (OAM Action)

Syntax	syslog;
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile action]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Generate a syslog message for the Ethernet Operation, Administration, and Management (OAM) event.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Specifying the Actions to Be Taken for Link-Fault Management Events</i>

system-priority

Syntax	<code>system-priority <i>priority</i>;</code>
Hierarchy Level	[edit interfaces aeX aggregated-ether-options lacp]
Release Information	Statement introduced in Junos OS Release 9.3. Statement introduced in Junos OS Release 11.4 for EX Series switches.
Description	<p>Define LACP system priority at the aggregated Ethernet interface level. This system priority value takes precedence over a system priority value configured at the global [edit chassis] hierarchy level.</p> <p>The device with the lower system priority value determines which links between LACP partner devices are active and which are in standby for each LACP group. The device on the controlling end of the link uses port priorities to determine which ports are bundled into the aggregated bundle and which ports are put in standby mode. Port priorities on the other device (the noncontrolling end of the link) are ignored. In priority comparisons, numerically lower values have higher priority. Therefore, the system with the numerically lower value (higher priority value) for LACP system priority becomes the controlling system. If both devices have the same LACP system priority (for example, they are both configured with the default setting of 127), the device MAC address determines which switch is in control.</p>
Options	<p>priority—Priority for the aggregated Ethernet system. A smaller value indicates a higher priority.</p> <p>Range: 0 through 65535</p> <p>Default: 127</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</i>

t1-options

Syntax	<pre> t1-options { bert-algorithm <i>algorithm</i>; bert-error-rate <i>rate</i>; bert-period <i>seconds</i>; buildout <i>value</i>; byte-encoding (nx56 nx64); crc-major-alarm-threshold (1e-3 5e-4 1e-4 5e-5 1e-5); crc-minor-alarm-threshold (1e-3 5e-4 1e-4 5e-5 1e-5 5e-6 1e-6); fcs (16 32); framing (esf sf); idle-cycle-flag (flags ones); invert-data; line-encoding (ami b8zs); loopback (local payload remote); remote-loopback-respond; start-end-flag (filler shared); timeslots <i>time-slot-range</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p>
Description	<p>Configure T1-specific physical interface properties.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>T1 Interfaces Overview</i>

t310

Syntax	t310-value <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>br-pim</i> /O/ <i>port isdn-options</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ISDN interfaces, configure the Q.931-specific timer for T310, in seconds. The Q.931 protocol is involved in the setup and termination of connections.
Options	seconds —Timer value, in seconds. Range: 1 through 65,536 seconds Default: 10 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ISDN Physical Interface Properties</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

t391

Syntax	t391 <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voices interfaces only, set Frame Relay link integrity polling interval.
Options	seconds —Link integrity polling interval. Range: 5 through 30 seconds Default: 10 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• n391 on page 377• n392 on page 378• n393 on page 379• t392 on page 549• <i>Junos OS Services Interfaces Library for Routing Devices</i>

t392

Syntax	t392 <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voices interfaces only, set Frame Relay polling verification interval.
Options	<i>seconds</i> —Polling verification interval. Range: 5 through 30 seconds Default: 15 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• n391 on page 377• n392 on page 378• n393 on page 379• t391 on page 548• timeslots on page 555• <i>Junos OS Services Interfaces Library for Routing Devices</i>

t3-options

Syntax	<pre> t3-options { atm-encapsulation (direct plcp); bert-algorithm <i>algorithm</i>; bert-error-rate <i>rate</i>; bert-period <i>seconds</i>; (cbit-parity no-cbit-parity); compatibility-mode (digital-link kentrox larscom) <subrate <i>value</i>>; fcs (16 32); (feac-loop-respond no-feac-loop-respond); idle-cycle-flag <i>value</i>; (long-buildout no-long-buildout); (loop-timing no-loop-timing); loopback (local payload remote); start-end-flag <i>value</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure T3-specific physical interface properties, including the properties of DS3 channels on a channelized OC12 interface. The long-buildout statement is not supported for DS3 channels on a channelized OC12 interface.</p> <p>On T3 interfaces, the default encapsulation is PPP.</p> <p>For ATM1 interfaces, you can configure a subset of E3 options statements.</p> <p>The statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>T3 Interfaces Overview</i>

tag-protocol-id (TPIDs Expected to Be Sent or Received)

Syntax	<code>tag-protocol-id [<i>tpids</i>];</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile], [edit interfaces <i>interface-name</i> aggregated-ether-options ethernet-switch-profile]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	<p>For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, aggregated Ethernet with Gigabit Ethernet IQ interfaces, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC, and the built-in Gigabit Ethernet port on the M7i router), define the TPIDs expected to be sent or received on a particular VLAN. For each Gigabit Ethernet port, you can configure up to eight TPIDs using the tag-protocol-id statement; but only the first four TPIDs are supported on IQ2 and IQ2-E interfaces.</p> <p>For 10-Gigabit Ethernet LAN/WAN PIC interfaces on T Series routers only the default TPID value (0x8100) is supported.</p>
Options	<i>tpids</i> —TPIDs to be accepted on the VLAN. Specify TPIDs in hexadecimal.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><i>Configuring Frames with Particular TPIDs to Be Processed as Tagged Frames</i>

tag-protocol-id (TPID to Rewrite)

Syntax	<code>tag-protocol-id <i>tpid</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code>input-vlan-map],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code>output-vlan-map]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	<p>For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces only, configure the outer TPID value. All TPIDs you include in input and output VLAN maps must be among those you specify at the <code>[edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile tag-protocol-id [<i>tpids</i>]]</code> hierarchy level.</p> <p>For 10-Gigabit Ethernet LAN/WAN PIC interfaces on T Series routers the default TPID value (0x8100) is supported.</p>
Default	If the <code>tag-protocol-id</code> statement is not configured, the TPID value is 0x8100.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Inner and Outer TPIDs and VLAN IDs</i>

tei-option

Syntax	tei-option (first-call power-up);
Hierarchy Level	[edit interfaces br-pim/0/port isdn-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ISDN interfaces, configure when the Terminal Endpoint Identifier (TEI) negotiates with the ISDN provider.
Options	<p>first-call—Activation does not occur until the call setup is sent.</p> <p>power-up—Activation occurs when the Services Router is powered on.</p> <p>Default: power-up</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ISDN Physical Interface Properties</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>



then

Syntax	then { discard; }
Hierarchy Level	[edit firewall hierarchical-policer aggregate], [edit firewall hierarchical-policer premium]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	On M40e, M120, and M320 (with FFPC and SFPC) edge routers and T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs, discard packets when a specified bandwidth or burst limits for an aggregate level of a hierarchical policer is reached.
Options	discard —Discard packets if condition is met.
Required Privilege Level	<p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Applying Policers</i> • <i>Junos OS Class of Service Library for Routing Devices</i>

threshold

Syntax	<code>threshold <i>bytes</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Specify the bucket threshold, which controls the burstiness of the leaky bucket mechanism. The larger the value, the more bursty the traffic, which means that over a very short amount of time, the interface can receive or transmit close to line rate, but the average over a longer time is at the configured bucket rate.</p>
Options	<p><i>bytes</i>—Maximum size, in bytes, for traffic bursts. For ease of entry, you can enter <i>number</i> either as a complete decimal number or as a decimal number followed by the abbreviation <i>k</i> (1000). For example, the entry threshold 2k corresponds to a threshold of 2000 bytes.</p> <p>Range: 0 through 65,535 bytes</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>

timeslots

Syntax	<code>timeslots <i>time-slot-range</i>;</code>
Hierarchy Level	<code>[edit interfaces e1-<i>fpc/pic/port</i>],</code> <code>[edit interfaces t1-<i>fpc/pic/port</i>],</code> <code>[edit interfaces <i>interface-name</i> e1-<i>options</i>],</code> <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i>],</code> <code>[edit interfaces <i>interface-name</i> t1-<i>options</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For E1 and T1 interfaces, allocate the specific time slots by number.
<div>  <p>NOTE: When configuring E1 or T1 interfaces on the 10-port Channelized E1/T1 IQE PIC, the <code>timeslots</code> statement must be included at the <code>[edit interfaces e1-<i>fpc/pic/port</i>]</code> or <code>[edit interfaces t1-<i>fpc/pic/port</i>]</code> hierarchy level as appropriate.</p> </div>	
Options	<p><i>time-slot-range</i>—Actual time slot numbers allocated:</p> <p>Range: Ranges vary by interface type and configuration option as follows:</p> <ul style="list-style-type: none"> • 1 through 24 for T1 interfaces (0 is reserved) • 1 through 31 for 4-port E1 PICs (0 is reserved) • 1 through 31 for NxDS0 interfaces (0 is reserved) • 2 through 32 for 10-port Channelized E1 and 10-port Channelized E1 IQ PICs (1 is reserved) • 2 through 32 for the setting under e1-<i>options</i> with IQE PICs (1 is reserved) (when creating fractional E1) • 1 through 31 for the setting under partition with IQE PICs (0 is reserved) (when creating NxDS0)
<div>  <p>NOTE: When creating fractional E1 interfaces only, if you connect a 4-port E1 PIC interface to a device that uses time slot numbering from 2 through 32, you must subtract 1 from the configured number of time slots.</p> </div>	
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Fractional E1 IQ and IQE Interfaces</i> • <i>Configuring Fractional T1 IQ and IQE Interfaces</i>

- *Configuring Fractional E1 Time Slots*
- *Configuring Fractional T1 Time Slots*
- *Configuring a Channelized T1/E1 Interface to Drop and Insert Time Slots*

tm

Syntax	tm (ignore normal require);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options dce-options], [edit interfaces <i>interface-name</i> serial-options dte-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For EIA-530 interfaces only, configure the from-DCE signal, test-mode (TM).
Options	ignore —The from-DCE signal is ignored. normal —Normal TM signal handling as defined by the TIA/EIA Standard 530. require —The from-DCE signal must be asserted. Default: normal
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Signal Handling</i>

tm-polarity

Syntax	tm-polarity (negative positive);
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure TM signal polarity.
Options	negative —Negative signal polarity. positive —Positive signal polarity. Default: positive
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Serial Signal Polarities</i>

traceoptions (ICCP)

Syntax	<pre> traceoptions { local-ip-address <i>ip address</i>; session-establishment-hold-time <i>value</i>; authentication-key <i>string</i>; peer <i>ip-address</i> { local-ip-address <i>ip address</i>; session-establishment-hold-time <i>value</i>; authentication-key <i>string</i>; redundancy-group-id-list <i>redundancy-group-id-list</i>; liveness-detection; } } </pre>
Hierarchy Level	[edit protocols iccp]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Define tracing operations for the ICCP protocol.
Default	If you do not include this statement, no ICCP protocol tracing operations are performed.
Options	<p>local-ip-address—Specify the source address where the ICCP packet is routed.</p> <p>session-establishment-hold-time—Specify if the chassis takes over as the master at the ICCP session.</p> <p>authentication-key—Specify TCP Message Digest 5 (MD5) option for an ICCP TCP session.</p> <p>redundancy-group-id-list—Specify the redundancy groups between two ICCP peers.</p> <p>liveness-detection—Specify Bidirectional Forwarding Detection (BFD) protocol options.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ICCP for MC-LAG</i>

traceoptions (Individual Interfaces)

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>name</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i>; match; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p>
Description	<p>Define tracing operations for individual interfaces.</p> <p>To specify more than one tracing operation, include multiple flag statements.</p> <p>The interfaces traceoptions statement does not support a trace file. The logging is done by the kernel, so the tracing information is placed in the system syslog file in the directory /var/log.</p>
Default	If you do not include this statement, no interface-specific tracing operations are performed.
Options	<p>file name—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. By default, interface process tracing output is placed in the file files number—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.dcd.</p> <p>match—(Optional) Regular expression for lines to be traced.</p> <p>no-world-readable—(Optional) Prevent any user from reading the log file.</p> <p>world-readable—(Optional) Allow any user to read the log file.</p> <p>size size—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named trace-file reaches this size, it is renamed trace-file.0. When the trace-file again reaches its maximum size, trace-file.0 is renamed trace-file.1 and trace-file is renamed trace-file.0. This renaming scheme continues until the maximum number of trace files is reached. Then, the oldest trace file is overwritten.</p> <p>flag—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. The following are the interface-specific tracing options.</p> <ul style="list-style-type: none"> • all—All interface tracing operations • event—Interface events

- **ipc**—Interface interprocess communication (IPC) messages
- **media**—Interface media changes
- **q921**—Trace ISDN Q.921 frames
- **q931**—Trace ISDN Q.931 frames

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation • *Tracing Operations of an Individual Router Interface*

traceoptions (Interface Process)

Syntax	<pre> traceoptions { file <filename> <files number> <match regular-expression> <size size> <world-readable no-world-readable>; flag flag <disable>; no-remote-trace; } </pre>
Hierarchy Level	[edit interfaces]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Define tracing operations for the interface process (dcd).
Default	If you do not include this statement, no interface-specific tracing operations are performed.
Options	<p>disable—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as all.</p> <p>filename—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. By default, interface process tracing output is placed in the file dcd.</p> <p>files number—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size with the size option.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <p>flag—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none"> • all • change-events—Log changes that produce configuration events • config-states—Log the configuration state machine changes • kernel—Log configuration IPC messages to kernel • kernel-detail—Log details of configuration messages to kernel <p>no-world-readable—(Optional) Disallow any user to read the log file.</p>

size *size*—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named **trace-file** reaches this size, it is renamed **trace-file.0**. When the **trace-file** again reaches its maximum size, **trace-file.0** is renamed **trace-file.1** and **trace-file** is renamed **trace-file.0**. This renaming scheme continues until the maximum number of trace files is reached. Then, the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

Syntax: **xk** to specify kilobytes, **xm** to specify megabytes, or **xg** to specify gigabytes

Range: 10 KB through the maximum file size supported on your router

Default: 1 MB

world-readable—(Optional) Allow any user to read the log file.

match *regex*—(Optional) Refine the output to include only those lines that match the given regular expression.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Tracing Operations of the Interface Process</i>

traceoptions (LACP)

Syntax	<pre>traceoptions { file <filename> <files number> <size size> <world-readable no-world-readable>; flag flag; no-remote-trace; }</pre>
Hierarchy Level	[edit protocols lacp]
Release Information	Statement introduced in Junos OS Release 7.6.
Description	Define tracing operations for the LACP protocol.
Default	If you do not include this statement, no LACP protocol tracing operations are performed.
Options	<p>disable—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as all.</p> <p>filename—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. By default, interface process tracing output is placed in the file lacpd.</p> <p>files number—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size with the size option.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <p>flag—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none">• all—All LACP tracing operations• configuration—Configuration code• packet—Packets sent and received• process—LACP process events• protocol—LACP protocol state machine• routing-socket—Routing socket events• startup—Process startup events <p>no-world-readable—(Optional) Prevent any user from reading the log file.</p>

size size—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named **trace-file** reaches this size, it is renamed **trace-file.0**. When the **trace-file** again reaches its maximum size, **trace-file.0** is renamed **trace-file.1** and **trace-file** is renamed **trace-file.0**. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option:

Syntax: **xk** to specify kilobytes, **xm** to specify megabytes, or **xg** to specify gigabytes

Range: 10 KB through the maximum file size supported on your router

Default: 1 MB

world-readable—(Optional) Allow any user to read the log file.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Tracing LACP Operations</i>

traceoptions (PPP Process)

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>number</i>> <match <i>regular-expression</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i>; level <i>severity-level</i>; no-remote-trace; } </pre>
Hierarchy Level	[edit protocols ppp]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	<p>Define tracing operations for the PPP process.</p> <p>To specify more than one tracing operation, include multiple flag statements.</p> <p>You cannot specify a separate trace tile. Tracing information is placed in the system syslog file in the directory /var/log/pppd.</p>
Default	If you do not include this statement, no PPPD-specific tracing operations are performed.
Options	<p><i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. By default, commit script process tracing output is placed in the file ppd. If you include the file statement, you must specify a filename. To retain the default, you can specify eventd as the filename.</p> <p><i>files number</i>—(Optional) Maximum number of trace files. When a trace file named <i>trace-file</i> reaches its maximum size, it is renamed <i>trace-file.0</i>, then <i>trace-file.1</i>, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size with the size option and a filename.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <p><i>disable</i>—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as all.</p> <p><i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. The following are the PPPD-specific tracing options.</p> <ul style="list-style-type: none"> • access—Access code • address-pool—Address pool code • all—All areas of code

- **auth**—Authentication code
- **chap**—Challenge Handshake Authentication Protocol (CHAP) code
- **config**—Configuration code
- **ifdb**—Interface database code
- **lcp**—LCP state machine code
- **memory**—Memory management code
- **message**—Message processing code
- **mlppp**—Trace MLPPP code
- **ncp**—NCP state machine code
- **pap**—Password Authentication Protocol (PAP) code
- **ppp**—PPP protocol processing code
- **radius**—RADIUS processing code
- **rtsock**—Routing socket code
- **session**—Session management code
- **signal**—Signal handling code
- **timer**—Timer code
- **ui**—User interface code

match *regex*—(Optional) Refine the output to include only those lines that match the given regular expression.

size *size*—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named ***trace-file*** reaches this size, it is renamed ***trace-file.0***. When the ***trace-file*** again reaches its maximum size, ***trace-file.0*** is renamed ***trace-file.1*** and ***trace-file*** is renamed ***trace-file.0***. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option and filename.

Syntax: *xk* to specify KB, *xm* to specify MB, or *xg* to specify GB

Range: 10 KB through 1 GB

Default: 128 KB


world-readable—(Optional) Enable unrestricted file access.

non-world-readable—(Optional) By default, log files can be accessed only by the user who configures the tracing operation. Specify **non-world-readable** to reset the default.

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.

- Related Documentation**
- *Tracing Operations of the pppd Process*

traceoptions (PPPoE)

Syntax	<pre> traceoptions { file <filename> <files number> <match regular-expression> <size maximum-file-size> <world-readable no-world-readable>; filter { aci regular-expression; ari regular-expression; service-name regular-expresion; underlying-interface interface-name; } flag flag; level (all error info notice verbose warning); no-remote-trace; } </pre>
Hierarchy Level	[edit protocols pppoe]
Release Information	Statement introduced in Junos OS Release 9.6. Option filter introduced in Junos OS Release 12.3
Description	Define tracing operations for PPPoE processes.
Options	<p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files to create before overwriting the oldest one. If you specify a maximum number of files, you also must specify a maximum file size with the size option.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <p>disable—Disable this trace flag.</p> <p>filter—Additional filter to refine the output to display particular subscribers. Filtering based on the following subscriber identifiers simplifies troubleshooting in a scaled environment.</p>
	<div>  <p>BEST PRACTICE: Due to the complexity of agent circuit identifiers and agent remote identifiers, we recommend that you do not try an exact match when filtering on these options. For service names, searching on the exact name is appropriate, but you can also use a regular expression with that option.</p> </div>
	<ul style="list-style-type: none"> • aci <i>regular-expression</i>—Regular expression to match the agent circuit identifier provided by PPPoE client. • ari <i>regular-expression</i>—Regular expression to match the agent remote identifier provided by PPPoE client.

- **service *regular-expression***—Regular expression to match the name of PPPoE service.
- **underlying-interface *interface-name***—Name of a PPPoE underlying interface. You cannot use a regular expression for this filter option.

flag *flag*—Tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements. You can include the following flags:

- **all**—Trace all operations.
- **config**—Trace configuration events.
- **events**—Trace events.
- **gres**—Trace GRES events.
- **init**—Trace initialization events.
- **interface-db**—Trace interface database operations.
- **memory**—Trace memory processing events.
- **protocol**—Trace protocol events.
- **rtsock**—Trace routing socket events.
- **session-db**—Trace connection events and flow.
- **signal**—Trace signal operations.
- **state**—Trace state handling events.
- **timer**—Trace timer processing.
- **ui**—Trace user interface processing.

level—Level of tracing to perform. You can specify any of the following levels:

- **all**—Match all levels.
- **error**—Match error conditions.
- **info**—Match informational messages.
- **notice**—Match notice messages about conditions requiring special handling.
- **verbose**—Match verbose messages.
- **warning**—Match warning messages.

match *regular-expression*—(Optional) Refine the output to include lines that contain the regular expression.

no-remote-trace—Disable remote tracing.

no-world-readable—(Optional) Disable unrestricted file access.

size *maximum-file-size*—(Optional) Maximum size of each trace file. By default, the number entered is treated as bytes. Alternatively, you can include a suffix to the number to indicate kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

Syntax: *sizek* to specify KB, *sizem* to specify MB, or *sizeg* to specify GB

Range: 10240 through 1073741824

Default: 128 KB

world-readable—(Optional) Enable unrestricted file access.

Required Privilege Level trace—To view this statement in the configuration.
trace-control—To add this statement to the configuration.

Related Documentation

- *Configuring PPPoE Service Name Tables*
- *Tracing PPPoE Operations*

translate-discard-eligible

Syntax (translate-discard-eligible | no-translate-discard-eligible);

Hierarchy Level [edit interfaces *interface-name* **unit** *logical-unit-number* **family** *ccc*],
[edit logical-systems *logical-system-name* interfaces *interface-name* **unit** *logical-unit-number* **family** *ccc*]

Release Information Statement introduced before Junos OS Release 7.4.

Description For interfaces with encapsulation type Frame Relay CCC, enable or disable translation of Frame Relay discard eligible (DE) control bits.

Default DE bit translation is disabled.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Frame Relay Control Bit Translation*

translate-fecn-and-becn

Syntax	(translate-fecn-and-becn no-translate-fecn-and-becn);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family ccc], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family ccc]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with encapsulation type Frame Relay CCC, enable or disable translation of Frame Relay forward explicit congestion notification (FECN) control bits and Frame Relay backward explicit congestion notification (BECN) control bits.
Default	FECN and BECN bit translation is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Frame Relay Control Bit Translation</i>

translate-plp-control-word-de

Syntax	translate-plp-control-word-de
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family ccc]
Release Information	Statement introduced before Junos OS Release 11.1.
Description	For the interfaces with encapsulation type Frame Relay CCC, classify and rewrite the control word discard eligibility (DE) bit based on the packet loss priority (PLP).
Default	PLP bit translation is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Frame Relay Control Bit Translation</i>• <i>frame-relay-de</i>

transmit-bucket

Syntax	<pre>transmit-bucket { overflow discard; rate <i>percentage</i>; threshold <i>bytes</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Set parameters for the transmit leaky bucket, which specifies what percentage of the interface's total capacity can be used to transmit packets.</p> <p>For each DS3 channel in a channelized OC12 interface, you can configure a unique transmit bucket.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Receive and Transmit Leaky Bucket Properties</i>• receive-bucket on page 482

transmit-clock

Syntax	<pre>transmit-clock invert;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> serial-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the transmit clock signal.
Options	invert —Shift the clock phase 180 degrees.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Serial Clocking Mode</i>

transmit-period

Syntax	transmit-period <i>seconds</i> ;
Hierarchy Level	[edit protocols dot1x authenticator interface <i>interface-id</i>]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Set the number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client.
Options	<p>seconds—The number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client.</p> <p>Range: 1 through 65,535 seconds</p> <p>Default: 30 seconds</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IEEE 802.1x Port-Based Network Access Control Overview</i>• authenticator on page 119• dot1x on page 197• interface (IEEE 802.1x) on page 290

transmit-weight (ATM2 IQ CoS Forwarding Class)

Syntax	transmit-weight (cells <i>number</i> percent <i>number</i>);
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options scheduler-maps <i>map-name</i> forwarding-class <i>class-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, assign a transmission weight to a forwarding class.
Default	95 percent for queue 0, 5 percent for queue 3.
Options	<p>percent <i>percent</i>—Transmission weight of the forwarding class as a percentage of the total bandwidth. Range: 5 through 100</p> <p>cells <i>number</i>—Transmission weight of the forwarding class as a number of cells. Range: 0 through 32,000</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>

transmit-weight (ATM2 IQ Virtual Circuit)

Syntax	<code>transmit-weight <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ PICs only, configure the transmission weight. Each VC is serviced in weighted round robin (WRR) mode. When VCs have data to send, they send the number of cells equal to their weight before passing control to the next active VC. This allows proportional bandwidth sharing between multiple VCs within a rate-shaped VP tunnel. VP tunnels are not supported on multipoint interfaces.
Options	<i>number</i> —Number of cells a VC sends before passing control to the next active VC within a VP tunnel. Range: 1 through 32,767
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring the ATM2 IQ Transmission Weight</i>

traps

Syntax	<code>(traps no-traps);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>interface-range name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Description	Enable or disable the sending of Simple Network Management Protocol (SNMP) notifications when the state of the connection changes.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Enabling or Disabling SNMP Notifications on Physical Interfaces</i> <i>Enabling or Disabling SNMP Notifications on Logical Interfaces</i>

trigger

Syntax	<pre>trigger { defect ignore; defect hold-time up <i>milliseconds</i> down <i>milliseconds</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM over SONET/SDH, SONET/SDH interfaces, and 10-Gigabit Ethernet interfaces in WAN PHY mode, configure SONET/SDH defect triggers to be ignored.
Default	If you do not include this statement, all SONET/SDH defect triggers are honored.
Options	<p>defect—Defect to ignore or hold. It can be one of the following:</p> <ul style="list-style-type: none"> • ais-l—Line alarm indication signal • ais-p—Path alarm indication signal • ber-sd—Bit error rate signal degrade • ber-sf—Bit error rate signal fault • locd (ATM only)—Loss of cell delineation • lof—Loss of frame • lol—PHY loss of light • lop-p—Path loss of pointer • los—Loss of signal • pll—PHY phase-locked loop out of lock • plm-p—Path payload (signal) label mismatch • rfi-l—Line remote failure indication • rfi-p—Path remote failure indication • uneq-p—Path unequipped <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring SONET/SDH Defect Triggers</i>

trigger-link-failure

Syntax	[trigger-link-failure <i>interface-name</i>];
Hierarchy Level	[edit interfaces <i>lsq-fpc/pic/port</i> lsq-failure-options]
Release Information	Statement introduced in Junos OS Release 7.4.
Description	List of SONET interfaces connected to the LSQ interface that can implement Automatic Protection Switching (APS) if the LSQ PIC fails.
Options	<i>interface-name</i> —Name of SONET interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>

trunk-bandwidth

Syntax	trunk-bandwidth <i>rate</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM2 IQ interfaces configured to use Layer 2 circuit trunk mode, configure a scheduler so that unused bandwidth from any inactive trunk is proportionally shared among the active trunks.</p> <p>During congestion, each trunk receives a proportional share of the leftover bandwidth, thus minimizing the latency on each trunk.</p>
Options	<p><i>rate</i>—Peak rate, in bits per second (bps) or cells per second (cps). You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify a value in cells per second by entering a decimal number followed by the abbreviation c; values expressed in cells per second are converted to bits per second by means of the formula 1 cps = 384 bps.</p> <p>Range: 1,000,000 through 542,526,792 bps</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Layer 2 Circuit Trunk Mode Scheduling</i>

trunk-id

Syntax	<code>trunk-id number;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces with ATM CCC cell-relay encapsulation, configure the trunk identification number. When you associate a trunk ID number with a logical interface, you are in effect specifying the interfaces that are allowed to send ATM traffic over an LSP.
Options	number —A valid trunk identifier. Range: For UNI mode, 0 through 7. For NNI mode, 0 through 31.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Layer 2 Circuit Transport Mode</i>


ttl

Syntax	<code>ttl value;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>number</i> tunnel]
Release Information	Statement introduced before Junos OS Release 7.4
Description	Set the time-to-live value bit in the header of the outer IP packet.
Options	value —Time-to-live value. Range: 0 through 255 Default: 64
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i>

tunnel

Syntax	<pre>tunnel { backup-destination address; destination address; key number; routing-instance { destination routing-instance-name; } source source-address; ttl number; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure a tunnel. You can use the tunnel for unicast and multicast traffic or just for multicast traffic. You can also use tunnels for encrypted traffic or VPNs.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Junos OS Services Interfaces Library for Routing Devices</i>• <i>Junos OS VPNs Library for Routing Devices</i>


underlying-interface

Syntax	<code>underlying-interface <i>interface-name</i>;</code>
Hierarchy Level	<p>[edit interfaces pp0 unit <i>logical-unit-number</i> pppoe-options],</p> <p>[edit interfaces demux0 unit <i>logical-unit-number</i> demux-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces demux0 unit <i>logical-unit-number</i> demux-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces pp0 unit <i>logical-unit-number</i> pppoe-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces demux0 unit <i>logical-unit-number</i> demux-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> interfaces pp0 unit <i>logical-unit-number</i> pppoe-options]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Support for aggregated Ethernet added in Junos OS Release 9.4.</p>
Description	<p>For J Series Services Routers, M120 and M320 Multiservice Edge routers, and MX Series Universal Edge Routers with PPP over Ethernet interfaces, configure the interface on which PPP over Ethernet is running.</p> <p>For demux interfaces, configure the underlying interface on which the demultiplexing (demux) interface is running.</p>
Options	<p><i>interface-name</i>—Name of the interface on which PPP over Ethernet or demux is running. For example, at-0/0/1.0 (ATM VC), fe-1/0/1.0 (Fast Ethernet interface), ge-2/0/0.0 (Gigabit Ethernet interface), ae1.0 (for IP demux on an aggregated Ethernet interface), or ae1 (for VLAN demux on an aggregated Ethernet interface).</p>
<div style="display: flex; align-items: center;">  <div> <p>NOTE: Demux interfaces are currently supported on Gigabit Ethernet, Fast Ethernet, 10-Gigabit Ethernet interfaces, or aggregated Ethernet devices.</p> </div> </div>	
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring an IP Demux Underlying Interface</i> • <i>Configuring a VLAN Demux Underlying Interface</i> • <i>Specifying the Demux Underlying Interface</i> • <i>Configuring the PPPoE Underlying Interface</i> • <i>Junos OS Interfaces and Routing Configuration Guide</i>

unframed

Syntax	(unframed no-unframed);
Hierarchy Level	[edit interfaces <i>interface-name</i> e3-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For E3 IQ interfaces only, enable or disable unframed mode. In unframed mode, the E3 IQ interface do not detect yellow (ylw) or loss-of-frame (lof) alarms.
Default	Unframed mode is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring E3 IQ and IQE Unframed Mode</i>

unidirectional

Syntax	unidirectional;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Create two new, unidirectional (transmit-only and receive-only) physical interfaces subordinate to the original parent interface. Unidirectional links are currently supported only on 10-Gigabit Ethernet interfaces on the following hardware:
	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p>NOTE: Which interfaces and pic for EX9200?</p> </div> </div>
	<ul style="list-style-type: none"> • 4-port 10-Gigabit Ethernet DPC on the MX960 router • 10-Gigabit Ethernet IQ2 PIC and 10-Gigabit Ethernet IQ2E PIC on the T Series router
Default	Disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Understanding Unidirectional Traffic Flow on Physical Interfaces</i> • <i>Enabling Unidirectional Traffic Flow on Physical Interfaces</i>

unit

```
Syntax  unit logical-unit-number {
    accept-source-mac {
        mac-address mac-address {
            policer {
                input cos-policer-name;
                output cos-policer-name;
            }
        }
    }
    accounting-profile name;
    advisory-options {
        downstream-rate rate;
        upstream-rate rate;
    }
    allow-any-vci;
    atm-scheduler-map (map-name | default);
    backup-options {
        interface interface-name;
    }
    bandwidth rate;
    cell-bundle-size cells;
    clear-dont-fragment-bit;
    compression {
        rtp {
            maximum-contexts number <force>;
            f-max-period number;
            queues [ queue-numbers ];
            port {
                minimum port-number;
                maximum port-number;
            }
        }
    }
    compression-device interface-name;
    copy-tos-to-outer-ip-header;
    demux-destination family;
    demux-source family;
    demux-options {
        underlying-interface interface-name;
    }
    description text;
    interface {
        l2tp-interface-id name;
        (dedicated | shared);
    }
    dialer-options {
        activation-delay seconds;
        callback;
        callback-wait-period time;
        deactivation-delay seconds;
        dial-string [ dial-string-numbers ];
        idle-timeout seconds;
    }
}
```

```

incoming-map {
  caller caller-id) | accept-all;
  initial-route-check seconds;
  load-interval seconds;
  load-threshold percent;
  pool pool-name;
  redial-delay time;
  watch-list {
    [ routes ];
  }
}
}
disable;
disable-mlppp-inner-ppp-pfc;
dlci dlci-identifier;
drop-timeout milliseconds;
dynamic-call-admission-control {
  activation-priority priority;
  bearer-bandwidth-limit kilobits-per-second;
}
encapsulation type;
epd-threshold cells plp1 cells;
family family-name {
  ... the family subhierarchy appears after the main [edit interfaces interface-name unit
    logical-unit-number] hierarchy ...
}
fragment-threshold bytes;
inner-vlan-id-range start start-id end end-id;
input-vlan-map {
  (pop | pop-pop | pop-swap | push | push-push | swap |
  swap-push | swap-swap);
  inner-tag-protocol-id tpid;
  inner-vlan-id number;
  tag-protocol-id tpid;
  vlan-id number;
}
interleave-fragments;
inverse-arp;
layer2-policer {
  input-policer policer-name;
  input-three-color policer-name;
  output-policer policer-name;
  output-three-color policer-name;
}
link-layer-overhead percent;
minimum-links number;
mrru bytes;
multicast-dlci dlci-identifier;
multicast-vci vpi-identifier.vci-identifier;
multilink-max-classes number;
multipoint;
oam-liveness {
  up-count cells;
  down-count cells;
}
oam-period (disable | seconds);

```

```

output-vlan-map {
  (pop | pop-pop | pop-swap | push | push-push | swap |
  swap-push | swap-swap);
  inner-tag-protocol-id tpid;
  inner-vlan-id number;
  tag-protocol-id tpid;
  vlan-id number;
}
passive-monitor-mode;
peer-unit unit-number;
plp-to-clp;
point-to-point;
ppp-options {
  chap {
    access-profile name;
    default-chap-secret name;
    local-name name;
    passive;
  }
  compression {
    acfc;
    pfc;
  }
  dynamic-profile profile-name;
  lcp-restart-timer milliseconds;
  loopback-clear-timer seconds;
  ncp-restart-timer milliseconds;
  pap {
    access-profile name;
    default-pap-password password;
    local-name name;
    local-password password;
    passive;
  }
}
pppoe-options {
  access-concentrator name;
  auto-reconnect seconds;
  (client | server);
  service-name name;
  underlying-interface interface-name;
}
pppoe-underlying-options {
  access-concentrator name;
  dynamic-profile profile-name;
  max-sessions number;
}
proxy-arp;
service-domain (inside | outside);
shaping {
  (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst
  length);
  queue-length number;
}
short-sequence;
targeted-distribution;

```

```
transmit-weight number;  
(traps | no-traps);  
trunk-bandwidth rate;  
trunk-id number;  
tunnel {  
    backup-destination address;  
    destination address;  
    key number;  
    routing-instance {  
        destination routing-instance-name;  
    }  
    source source-address;  
    ttl number;  
}  
vci vpi-identifier.vci-identifier;  
vci-range start start-vci end end-vci;  
vpi vpi-identifier;  
vlan-id number;  
vlan-id-range number-number;  
vlan-tags inner tpid.vlan-id outer tpid.vlan-id;  
family family {  
    accounting {  
        destination-class-usage;  
        source-class-usage {  
            (input | output | input output);  
        }  
    }  
    access-concentrator name;  
    address address {  
        ... the address subhierarchy appears after the main [edit interfaces interface-name unit  
        logical-unit-number family family-name] hierarchy ...  
    }  
    bridge-domain-type (bvlan | svlan);  
    bundle interface-name;  
    core-facing;  
    demux-destination {  
        destination-prefix;  
    }  
    demux-source {  
        source-prefix;  
    }  
    duplicate-protection;  
    dynamic-profile profile-name;  
    filter {  
        group filter-group-number;  
        input filter-name;  
        input-list [ filter-names ];  
        output filter-name;  
        output-list [ filter-names ];  
    }  
    interface-mode (access | trunk);  
    ipsec-sa sa-name;  
    isid-list all-service-groups;  
    keep-address-and-control;  
    mac-validate (loose | strict);  
    max-sessions number;
```

```

mtu bytes;
multicast-only;
no-redirects;
policer {
    arp policer-template-name;
    input policer-template-name;
    output policer-template-name;
}
primary;
protocols [inet iso mpls];
proxy inet-address address;
receive-options-packets;
receive-ttl-exceeded;
remote (inet-address address | mac-address address);
rpf-check {
    fail-filter filter-name
    mode loose;
}
sampling {
    input;
    output;
}
service {
    input {
        post-service-filter filter-name;
        service-set service-set-name <service-filter filter-name>;
    }
    output {
        service-set service-set-name <service-filter filter-name>;
    }
}
service-name-table table-name
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
translate-plp-control-word-de;
unnumbered-address interface-name destination address
    destination-profile profile-name;
vlan-id number;
vlan-id-list [number number-number];
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
    broadcast address;
    destination address;
    destination-profile name;
    eui-64;
    master-only;
    multipoint-destination address {
        dlci dlci-identifier;
        epd-threshold cells <plp1 cells>;
        inverse-arp;
        oam-liveness {
            up-count cells;
            down-count cells;
        }
        oam-period (disable | seconds);
        shaping {

```

```

        (cbr rate | rtvbr burst length peak rate sustained rate | vbr burst length peak rate
         sustained rate);
        queue-length number;
    }
    vci vpi-identifier.vci-identifier;
}
preferred;
primary;
(vrrp-group | vrrp-inet6-group) group-number {
    (accept-data | no-accept-data);
    advertise-interval seconds;
    authentication-type authentication;
    authentication-key key;
    fast-interval milliseconds;
    (preempt | no-preempt) {
        hold-time seconds;
    }
    priority number;
    track {
        interface interface-name {
            bandwidth-threshold bits-per-second priority-cost number;
        }
        priority-hold-time seconds;
        route ip-address/prefix-length routing-instance instance-name priority-cost cost;
    }
    virtual-address [ addresses ];
    virtual-link-local-address ipv6-address;
    vrrp-inherit-from {
        active-interface interface-name;
        active-group group-number;
    }
}
}
}
}

```

Hierarchy Level [edit interfaces *interface-name*],
 [edit logical-systems *logical-system-name* interfaces *interface-name*],
 [edit interfaces *interface-set* *interface-set-name* interface *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.

Options *logical-unit-number*—Number of the logical unit.

Range: 0 through 1,073,741,823 for demux and PPPoE static interfaces only. 0 through 16,385 for all other static interface types.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring Logical Interface Properties*
 - *Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers*
 - *Junos OS Services Interfaces Library for Routing Devices*

unnumbered-address (Demux)

- Syntax** `unnumbered-address interface-name <preferred-source-address address>;`
- Hierarchy Level** [edit [interfaces interface-name unit logical-unit-number family inet](#)],
[edit [logical-systems logical-system-name interfaces interface-name unit logical-unit-number family inet](#)]
- Release Information** Statement introduced in Junos OS Release 8.2.
preferred-source-address option introduced in Junos OS Release 9.0.
IP demultiplexing interfaces supported in Junos OS Release 9.2.
- Description** For IP demultiplexing interfaces, enable the local address to be derived from the specified interface. Configuring an unnumbered interface enables IP processing on the interface without assigning an explicit IP address to the interface.
- Options** **interface-name**—Name of the interface from which the local address is derived. The specified interface must have a logical unit number and a configured IP address, and must not be an unnumbered interface.
- The **preferred-source-address** statement is explained separately.
- Required Privilege Level** interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.
- Related Documentation**
- *Configuring an Unnumbered Interface*
 - [address on page 100](#)
 - *Junos System Basics Configuration Guide*

unnumbered-address (Ethernet)

Syntax	<code>unnumbered-address interface-name <preferred-source-address address>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 8.2. preferred-source-address option introduced in Junos OS Release 9.0.
Description	For Ethernet interfaces, enable the local address to be derived from the specified interface. Configuring an unnumbered Ethernet interface enables IP processing on the interface without assigning an explicit IP address to the interface.
Options	<i>interface-name</i> —Name of the interface from which the local address is derived. The specified interface must have a logical unit number and a configured IP address, and must not be an unnumbered interface. The preferred-source-address statement is explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an Unnumbered Interface</i>• address on page 100• <i>Junos System Basics Configuration Guide</i>

unnumbered-address (PPP)

Syntax	<code>unnumbered-address interface-name destination address destination-profile profile-name;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with PPP encapsulation, enable the local address to be derived from the specified interface.
Options	<p><i>interface-name</i>—Interface from which the local address is derived. The interface name must include a logical unit number and must have a configured address.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring IPCP Options</i> • address on page 100 • negotiate-address on page 384 • <i>Junos OS Administration Library for Routing Devices</i>

up-count

Syntax	<code>up-count <i>cells</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> oam-liveness],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i> oam-liveness],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i> oam-liveness]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM encapsulation only, configure Operation, Administration, and Maintenance (OAM) F5 loopback cell count thresholds. Not supported on ATM-over-SHDSL interfaces.</p> <p>For ATM2 IQ PICs only, configure OAM F4 loopback cell count thresholds at the [edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>] hierarchy level.</p>
Options	<p>cells—Minimum number of consecutive OAM F4 or F5 loopback cells received before a VC is declared up.</p> <p>Range: 1 through 255</p> <p>Default: 5 cells</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> <i>Configuring the ATM OAM F5 Loopback Cell Threshold</i>

user-prefix

Syntax	<code>user-prefix <i>user-prefix-string</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication username-include], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication username-include]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify the user prefix that is concatenated with the username during the subscriber authentication process.
Options	<i>user-prefix-string</i> —The user prefix string.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring VLAN Interface Username Information for AAA Authentication</i>

username-include

Syntax	<pre>username-include { circuit-type; delimiter <i>delimiter-character</i>; domain-name <i>domain-name-string</i>; interface-name; mac-address; option-18; option-37; option-82 <circuit-id> <remote-id>; radius-realm <i>radius-realm-string</i>; user-prefix <i>user-prefix-string</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> auto-configure vlan-ranges authentication], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges authentication]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	<p>Configure the username that the router passes to the external AAA server. You must include at least one of the optional statements for the username to be valid. If you do not configure a username, the router accesses the local authentication service only and does not use external authentication services, such as RADIUS.</p> <p>The username takes the format <i>user-prefix mac-address circuit-type option-82 interface-name domain-name radius-realm</i> with each component separated by whatever delimiter you choose.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring VLAN Interface Username Information for AAA Authentication</i> • <i>Option 82 Suboptions in Authentication Usernames for Autosense VLANs</i> • <i>Option 18 and Option 37 in Authentication Usernames for DHCPv6 Autosense VLANs</i>

vbr

Syntax	<code>vbr peak <i>rate</i> sustained <i>rate</i> burst <i>length</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> shaping],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i> shaping],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>For ATM encapsulation only, define the variable bandwidth utilization in the traffic-shaping profile.</p> <p>When you configure the variable bandwidth utilization, you must specify all three options (burst, peak, and sustained). You can specify the rate in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify the rate in cells per second by entering a decimal number followed by the abbreviation c; values expressed in cells per second are converted to bits per second by means of the formula 1 cps = 384 bps.</p>
Default	If the vbr statement is not specified, bandwidth utilization is unlimited.
Options	<p>burst <i>length</i>—Burst length, in cells. If you set the length to 1, the peak traffic rate is used. Range: 1 through 4000 cells</p> <p>peak <i>rate</i>—Peak rate, in bits per second or cells per second. Range: For ATM1 interfaces, 33 Kbps through 135.6 Mbps (ATM OC3); 33 Kbps through 276 Mbps (ATM OC12). For ATM2 IQ OC3 and OC12 interfaces, 33 Kbps through 542,526,792 bps. For ATM2 IQ OC48 interfaces, 33 Kbps through 2,170,107,168 bps. For ATM2 IQ DS3 and E3 interfaces, from 33 Kbps through the maximum rate, which depends on the ATM encapsulation and framing you configure.</p> <p>sustained <i>rate</i>—Sustained rate, in bits per second or cells per second. Range: For ATM1 interfaces, 33 Kbps through 135.6 Mbps (ATM OC3); 33 Kbps through 276 Mbps (ATM OC12). For ATM2 IQ OC3 and OC12 interfaces, 33 Kbps through 542,526,792 bps. For ATM2 IQ OC48 interfaces, 33 Kbps through 2,170,107,168 bps. For ATM2 IQ DS3 and E3 interfaces, from 33 Kbps through the maximum rate, which depends on the ATM encapsulation and framing you configure.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring ATM CBR Applying Scheduler Maps to Logical ATM Interfaces

- [cbr on page 148](#)
- [rtvbr on page 499](#)
- [shaping on page 516](#)

vc-cos-mode

Syntax	vc-cos-mode (alternate strict);
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options scheduler-maps <i>map-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For ATM2 IQ interfaces only, specify packet-scheduling priority value for ATM2 IQ VC tunnels.
Options	<p>alternate—VC CoS queue has high priority. The scheduling of the queues alternates between the high-priority queue and the remaining queues, so every other scheduled packet is from the high-priority queue.</p> <p>strict—VC CoS queue has strictly high priority. A queue with strict high priority is always scheduled before the remaining queues. The remaining queues are scheduled in round-robin fashion.</p> <p>Default: alternate</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM2 IQ VC Tunnel CoS Components</i>• <i>Configuring Scheduler Maps on ATM Interfaces</i>

vci

Syntax	<code>vci vpi-identifier.vci-identifier;</code>
Hierarchy Level	<p>[edit interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i>],</p> <p>[edit interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces at-<i>fpc/pic/port</i> unit <i>logical-unit-number</i> family <i>family</i> address <i>address</i> multipoint-destination <i>address</i>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access routers.</p>
Description	<p>For ATM point-to-point logical interfaces only, configure the virtual circuit identifier (VCI) and virtual path identifier (VPI).</p> <p>To configure a VPI for a point-to-multipoint interface, specify the VPI in the multipoint-destination statement.</p> <p>VCIs 0 through 31 are reserved for specific ATM values designated by the ATM Forum.</p>
Options	<p>vci-identifier—ATM virtual circuit identifier. Unless you configure the interface to use promiscuous mode, this value cannot exceed the highest-numbered VC configured for the interface with the maximum-vcs option of the vpi statement.</p> <p>Range: 0 through 4089 or 0 through 65,535 with promiscuous mode, with VCIs 0 through 31 reserved.</p> <p>vpi-identifier—ATM virtual path identifier.</p> <p>Range: 0 through 255</p> <p>Default: 0</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring a Point-to-Point ATM1 or ATM2 IQ Connection • Applying Scheduler Maps to Logical ATM Interfaces • multipoint-destination on page 375 • promiscuous-mode on page 468 • vpi (ATM CCC Cell-Relay Promiscuous Mode) on page 610

vci-range

Syntax	<code>vci-range start <i>start-vci</i> end <i>end-vci</i>;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Range of VCI values used in ATM-to-Ethernet interworking cross-connects. VCI 0 through 31 are reserved. VCI 0 through 31 should not be used.
Options	<i>start-vci</i> —Lowest number VCI in the range. <i>end-vci</i> —Highest number VCI in the range. Range: 0 through 255
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM-to-Ethernet Interworking</i>

virtual-switch

Syntax	<code>virtual-switch <i>name</i> bridge-domain <i>name</i> vlan-id [<i>vlan-ids</i>];</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> default-x]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Specify the routing-instance type as a virtual switch, under which bridge-domain MIPs must be enabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring MIP for Bridge Domains of a Virtual Switch</i>• <i>Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers</i>

vlan-id (Logical Port in Bridge Domain)

Syntax	<code>vlan-id <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	The VLAN ID configured on the logical port. Received packets with no VLAN tags are forwarded within the bridge domain with the matching VLAN ID.
Options	number —The VLAN ID. Range: 1 through 4095
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Logical Interface for Access Mode</i>

vlan-id (Outer VLAN ID)

Syntax	<code>vlan-id <i>outer-vlan-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	The outer VLAN ID to be used in ATM-to-Ethernet interworking cross-connects. Outer VLAN IDs are converted to the ATM VPI. The outer VLAN ID must match the VPI value configured. The allowable VPI range is 0 to 255. Do not configure the outer VLAN ID to be greater than 255.
Options	outer-vlan-id —Outer VLAN ID number. Range: 0 through 4094
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring ATM-to-Ethernet Interworking</i>

vlan-id (VLAN ID to Be Bound to a Logical Interface)

Syntax	<code>vlan-id <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Fast Ethernet, Gigabit Ethernet, and Aggregated Ethernet interfaces only, bind a 802.1Q VLAN tag ID to a logical interface.
Options	<p><i>number</i>—A valid VLAN identifier.</p> <p>Range: For aggregated Ethernet, 4-port, 8-port, and 12-port Fast Ethernet PICs, and for management and internal Ethernet interfaces, 1 through 1023.</p> <p>For 48-port Fast Ethernet and Gigabit Ethernet PICs, 1 through 4094.</p> <p>VLAN ID 0 is reserved for tagging the priority of frames.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Mixed Tagging</i>

vlan-id (VLAN ID to Rewrite)

Syntax	<code>vlan-id number;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> input-vlan-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
Description	<p>For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2, 10-Gigabit Ethernet LAN/WAN PIC, and IQ2-E interfaces and aggregated Ethernet using Gigabit Ethernet IQ interfaces, specify the line VLAN identifiers to be rewritten at the input or output interface.</p> <p>You cannot include the vlan-id statement with the swap statement, swap-push statement, push-push statement, or push-swap statement at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map] hierarchy level. If you include any of those statements in the output VLAN map, the VLAN ID in the outgoing frame is rewritten to the vlan-id statement that you include at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] hierarchy level.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Rewriting the VLAN Tag on Tagged Frames</i> • <i>Binding VLAN IDs to Logical Interfaces</i>

vlan-id-list (Ethernet VLAN Circuit)

Syntax	<code>vlan-id-list [<i>vlan-id</i> <i>vlan-id-vlan-id</i>];</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</code>
Release Information	Statement introduced in Junos OS Release 9.5.
Description	(MX Series routers only) Binds a single-tag logical interface to a list of VLAN IDs. Configures a logical interface to receive and forward any tag frame whose VLAN ID tag matches the list of VLAN IDs you specify.



NOTE:

When you create a circuit cross-connect (CCC) using VLAN-bundled single-tag logical interfaces on Layer 2 VPN routing instances, the circuit automatically uses ethernet encapsulation. For Layer 2 VPN, you need to include the `encapsulation-type` statement and specify the value `ethernet` at either of the following hierarchy levels:

- `[edit routing-instances routing-instance-name protocols l2vpn]`
- `[edit logical-systems logical-system-name routing-instances routing-instance-name protocols l2vpn]`

For more information about the `encapsulation-type` configuration statement and the Layer 2 encapsulation types `ethernet` and `ethernet-vlan`, see the *Junos OS VPNs Library for Routing Devices*.

Options	<code>[<i>vlan-id</i> <i>vlan-id-vlan-id</i>]</code> —A list of valid VLAN ID numbers. Specify the VLAN IDs individually by using a space to separate each ID, as an inclusive list by separating the starting VLAN ID and ending VLAN ID with a hyphen, or as a combination of both.
Range:	1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.



NOTE: Configuring `vlan-id-list` with the entire `vlan-id` range is an unnecessary waste of system resources and is not best practice. It should be used only when a subset of VLAN IDs (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1-4094), it has the same result as not specifying a range; however, it consumes PFE resources such as VLAN lookup tables entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]
vlan-tagging;
unit number {
```

```

        vlan-id-range 1-4094;
    }

    [edit interfaces interface-name]
    unit 0;

```

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Binding VLAN IDs to Logical Interfaces</i> • encapsulation (Logical Interface) on page 213 • encapsulation (Physical Interface) on page 217 • encapsulation-type (Layer 2 VPN routing instance), see the <i>Junos OS VPNs Library for Routing Devices</i> • flexible-vlan-tagging on page 244 • vlan-tagging on page 605 • vlan-tags (Dual-Tagged Logical Interface) on page 606

vlan-id-list (Interface in Bridge Domain)

Syntax	<code>vlan-id-list [<i>number number-number</i>];</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge]</code>
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Configure a logical interface to forward packets and learn MAC addresses within each bridge domain configured with a VLAN ID that matches a VLAN ID specified in the list. VLAN IDs can be entered individually using a space to separate each ID, entered as an inclusive list separating the starting VLAN ID and ending VLAN ID with a hyphen, or a combination of both.
Options	<i>number number</i> —Individual VLAN IDs separated by a space. <i>number-number</i> —Starting VLAN ID and ending VLAN ID in an inclusive range. Range: 1 through 4095
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring a Logical Interface for Trunk Mode</i> • <i>Configuring the VLAN ID List for a Trunk Interface</i>

vlan-id-range

Syntax	<code>vlan-id-range <i>vlan-id-vlan-id</i></code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Bind a range of VLAN IDs to a logical interface.
Options	number —The first number is the lowest VLAN ID in the range the second number is the highest VLAN ID in the range. Range: 1 through 4094



NOTE: Configuring `vlan-id-range` with the entire `vlan-id` range is an unnecessary waste of system resources and is not best practice. It should be used only when a subset of VLAN IDs (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1-4094), it has the same result as not specifying a range; however, it consumes PFE resources such as VLAN lookup tables entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]  
vlan-tagging;  
unit number {  
    vlan-id-range 1-4094;  
}  
  
[edit interfaces interface-name]  
unit 0;
```

VLAN ID 0 is reserved for tagging the priority of frames.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Binding a Range of VLAN IDs to a Logical Interface</i>

vlan-ranges

```
Syntax  vlan-ranges {
        access-profile profile-name;
        authentication {
            password password-string;
            username-include {
                circuit-type;
                delimiter delimiter-character;
                domain-name domain-name-string;
                interface-name;
                mac-address;
                option-82 <circuit-id> <remote-id>;
                radius-realm radius-realm-string;
                user-prefix user-prefix-string;
            }
        }
        dynamic-profile profile-name {
            accept (any | dhcp-v4 | inet);
            ranges (any | low-tag)–(any | high-tag);
        }
        override;
    }
```

Hierarchy Level [edit interfaces *interface-name* [auto-configure](#)]

Release Information Statement introduced in Junos OS Release 9.5.

Description Configure multiple VLANs. Each VLAN is assigned a VLAN ID number from the range.

The remaining statements are explained separately.

Required Privilege Level routing—To view this statement in the configuration.
routing—control—To add this statement to the configuration.

Related Documentation

- *Configuring Single-Level VLAN Ranges for Use with VLAN Dynamic Profiles*
- *Configuring Dynamic Mixed VLAN Ranges*

vlan-rewrite

Syntax	vlan-rewrite translate (200 500 201 501)
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>number</i> family bridge interface-mode trunk] [edit interfaces <i>interface-name</i> unit <i>number</i> family ethernet-switching interface-mode trunk]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Description	Translates an incoming VLAN to a bridge-domain VLAN, corresponding counter translation at egress. Supports translation of VLAN 200 to VLAN 500 and VLAN 201 to VLAN 501. Other valid VLANs pass through without translation.
Options	translate 200 500 —Translates incoming packets with VLAN 200 to 500. translate 201 501 —Translates incoming packets with VLAN 201 to 501. translate 202 502 —Translates incoming packets with VLAN 202 to 502.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Rewriting a VLAN Tag and Adding a New Tag</i>

vlan-tagging

Syntax	vlan-tagging;
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Statement introduced in Junos OS Release 13.2 for PTX Series Routers.
Description	For Fast Ethernet and Gigabit Ethernet interfaces, aggregated Ethernet interfaces configured for VPLS, and pseudowire subscriber interfaces, enable the reception and transmission of 802.1Q VLAN-tagged frames on the interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Example: Configuring Layer 3 Subinterfaces for a Distribution Switch and an Access Switch</i> • <i>Example: Configuring BGP Autodiscovery for LDP VPLS</i> • <i>Configuring a Layer 3 Subinterface (CLI Procedure)</i> • <i>Configuring Tagged Aggregated Ethernet Interfaces</i> • <i>Configuring Interfaces for VPLS Routing</i> • <i>Enabling VLAN Tagging</i> • <i>802.1Q VLANs Overview</i> • <i>vlan-id</i>

vlan-tags (Dual-Tagged Logical Interface)

Syntax	<code>vlan-tags inner-list [<i>vlan-id vlan-id-vlan-id</i>] outer <<i>tpid</i>><i>vlan-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	(MX Series routers only) Binds a dual-tag logical interface to a list of VLAN IDs. Configures the logical interface to receive and forward any dual-tag frame whose inner VLAN ID tag matches the list of VLAN IDs you specify.



NOTE:

To create a circuit cross-connect (CCC) using VLAN-bundled dual-tag logical interfaces on Layer 2 VPN routing instances, you must include the `encapsulation-type` statement and specify the value `ethernet-vlan` at the one of the following hierarchy levels:

- [edit routing-instances *routing-instance-name* protocols l2vpn]
- [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols l2vpn]

For more information about the `encapsulation-type` configuration statement and the Layer 2 encapsulation types `ethernet` and `ethernet-vlan`, see the *Junos OS VPNs Library for Routing Devices*.

Options `inner-list [vlan-id vlan-id vlan-id-vlan-id]`—A list of valid VLAN ID numbers. Specify the VLAN IDs individually by using a space to separate each ID, as an inclusive list by separating the starting VLAN ID and ending VLAN ID with a hyphen, or as a combination of both.

Range: 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.

`outer <tpid>vlan-id`—An optional Tag Protocol ID (TPID) and a valid VLAN ID.

Range: For TPID, specify a hexadecimal value in the format `0xnnnn`.

Range: For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.



NOTE: Configuring `inner-list` with the entire `vlan-id` range is an unnecessary waste of system resources and is not best practice. It should be used only when a subset of VLAN IDs of inner tag (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1 through 4094), it has the same result as not specifying a range; however, it consumes PFE resources such as VLAN lookup tables entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]  
vlan-tagging;  
unit number {  
    vlan-tags outer vid inner-list 1-4094;  
}  
  
[edit interfaces interface-name]  
vlan-tagging;  
unit number {  
    vlan-id vid;  
}
```

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.

- | | |
|------------------------------|---|
| Related Documentation | <ul style="list-style-type: none">• <i>Binding VLAN IDs to Logical Interfaces</i>• encapsulation (Logical Interface) on page 213• encapsulation (Physical Interface) on page 217• encapsulation-type (Layer 2 VPN routing instance), see the <i>Junos OS VPNs Library for Routing Devices</i>.• flexible-vlan-tagging on page 244• vlan-id-list (Ethernet VLAN Circuit) on page 600• vlan-tagging on page 605 |
|------------------------------|---|

vlan-tags (Stacked VLAN Tags)

Syntax	<code>vlan-tags inner <i>tpid.vlan-id</i> inner-range <i>vid1—vid2</i> outer <i>tpid.vlan-id</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	For Gigabit Ethernet IQ and IQE interfaces only, bind TPIDs and 802.1Q VLAN tag IDs to a logical interface.



NOTE: The inner-range *vid1—vid2* option is supported on MX Series with IQE PICs only.

Options	<p>inner <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 4094.</p> <p>inner-range <i>vid1—vid2</i>—For MX Series routers with Enhanced IQ (IQE) PICs only; specify a range of VLAN IDs where <i>vid1</i> is the start of the range and <i>vid2</i> is the end of the range.</p> <p>Range: For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>outer <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces.</p>
----------------	---



NOTE: Configuring inner-range with the entire *vlan-id* range consumes system resources and is not a best practice. It should be used only when a subset of VLAN IDs of inner tag (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1–4094), it has the same result as not specifying a range; however, it consumes Packet Forwarding Engine resources such as VLAN lookup table entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]
```

```
stacked-vlan-tagging;
unit number {
    vlan-tags outer vid inner-range 1-4094;
}

[edit interfaces interface-name]
vlan-tagging;
unit number {
    vlan-id vid;
}
```

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring Dual VLAN Tags*
- *Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers*
- [stacked-vlan-tagging on page 532](#)

vlan-tags-outer

Syntax `vlan-tags-outer vlan-tag;`

Hierarchy Level [edit interfaces [interface-set](#) *interface-set-name* interface *interface-name*]

Release Information Statement introduced in Junos OS Release 8.5.

Description The S-VLAN outer tag that belongs to a set of interfaces used to configure hierarchical CoS schedulers.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Junos OS Class of Service Library for Routing Devices*

vlan-vci-tagging

Syntax	<code>vlan-vci-tagging;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Enable the ATM-to-Ethernet interworking cross-connect function on a Gigabit Ethernet, 10-Gigabit Ethernet, or aggregated Ethernet interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM-to-Ethernet Interworking</i>

vpi (ATM CCC Cell-Relay Promiscuous Mode)

Syntax	<code>vpi vpi-identifier;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> atm-options promiscuous-mode]
Release Information	Statement introduced before Junos OS Release 7.4. Junos OS Release 12.2 for the ACX Series Universal Access routers.
Description	For ATM interfaces, allow all VCI in this VPI to open in ATM CCC cell-relay mode. When you include vpi statements at the [edit interfaces <i>interface-name</i> atm-options promiscuous-mode] hierarchy level, the specified VPIs open in promiscuous mode.
Options	vpi-identifier —ATM virtual path identifier. This is one of the VPIs that you define in the vci statement. (For a list of hierarchy levels at which you can include the vci statement, see vci .) Range: 0 through 255
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM Cell-Relay Promiscuous Mode</i>

vpi (Define Virtual Path)

Syntax `vpi vpi-identifier {
 maximum-vcs maximum-vcs;
 oam-liveness {
 up-count cells;
 down-count cells;
 }
 oam-period (disable | seconds);
 shaping {
 (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst length);
 queue-length number;
 }
}`

Hierarchy Level [edit interfaces at-*fpc/pic/port* atm-options]

Release Information Statement introduced before Junos OS Release 7.4.

Description For ATM interfaces, configure the virtual path (VP).



NOTE: Certain options apply only to specific platforms.

Options *vpi-identifier*—ATM virtual path identifier. This is one of the VPIs that you define in the **vci** statement. (For a list of hierarchy levels at which you can include the **vci** statement, see **vci**.)

Range: 0 through 255

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation

- *Configuring the Maximum Number of ATM1 VCs on a VP*
- [multipoint-destination on page 375](#)
- [promiscuous-mode on page 468](#)
- [vci on page 595](#)

vpi (Logical Interface and Interworking)

Syntax	<code>vpi virtual-path-identifier;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access routers.
Description	VPI used in an ATM-to-Ethernet interworking cross-connect.
Options	virtual-path-identifier —VPI to be used. Range: 0 through 255
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring ATM-to-Ethernet Interworking</i>• <i>Configuring ATM Cell-Relay Promiscuous Mode</i>

vtmapping

Syntax	<code>vtmapping (itu-t klm);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]; [edit chassis <i>fpc number</i> <i>pic number</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For the Channelized STM1 IQ PIC or Channelized STM1 PIC, configure virtual tributary mapping. For the Channelized STM1 PIC, you configure virtual tributary mapping at the [edit chassis <i>fpc number</i> <i>pic number</i>] hierarchy level.
Options	itu-t —International Telephony Union standard. klm —KLM standard. Default: klm
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Virtual Tributary Mapping of Channelized STM1 Interfaces</i>• <i>Configuring the Junos OS to Support Channelized STM1 Interface Virtual Tributary Mapping</i>

warning

Syntax	<pre>warning low-light-warning { (link-down syslog); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.1 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specifies the action to take if the receiving optics signal is below the optics low-light warning threshold.
Options	link-down —Drop the 10-Gigabit Ethernet link and marks link as down. syslog —Write the optics information to the system log.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring 10-Gigabit Ethernet Link Down Notification for Optics Options Alarm or Warning</i>• optics-options on page 418• <i>100-Gigabit Ethernet OTN Options Configuration Overview</i>

watch-list

Syntax	<code>watch-list { [<i>routes</i>]; }</code>
Hierarchy Level	[edit interfaces <i>dl</i> unit <i>logical-unit-number</i> dialer-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	On J Series Services Routers with ISDN interfaces, configure an ISDN list of routes to watch. Used only for dialer watch.
Options	routes —IP prefix of a route. Specify one or more. The primary interface is considered up if there is at least one valid route for any of the addresses in the watch list to an interface other than the backup interface.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Dialer Watch</i>• <i>Junos OS Interfaces and Routing Configuration Guide</i>

wavelength

Syntax	<code>wavelength <i>nm</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	For 10-Gigabit or 100-Gigabit Ethernet DWDM interfaces only, configure full C-band ITU-Grid tunable optics.
Options	<p><i>nm</i>—Wavelength value. It can be one of the following:</p> <ul style="list-style-type: none"> • 1528.77—1528.77 nanometers (nm), corresponds to 50 GHz through 100 GHz • 1529.16—1529.16 nm, corresponds to 50 GHz • 1529.55—1529.55 nm, corresponds to 50 GHz through 100 GHz • 1529.94—1529.94 nm, corresponds to 50 GHz • 1530.33—1530.33 nm, corresponds to 50 GHz through 100 GHz • 1530.72—1530.72 nm, corresponds to 50 GHz • 1531.12—1531.12 nm, corresponds to 50 GHz through 100 GHz • 1531.51—1531.51 nm, corresponds to 50 GHz • 1531.90—1531.90 nm, corresponds to 50 GHz through 100 GHz • 1532.29—1532.29 nm, corresponds to 50 GHz • 1532.68—1532.68 nm, corresponds to 50 GHz through 100 GHz • 1533.07—1533.07 nm, corresponds to 50 GHz • 1533.47—1533.47 nm, corresponds to 50 GHz through 100 GHz • 1533.86—1533.86 nm, corresponds to 50 GHz • 1534.25—1534.25 nm, corresponds to 50 GHz through 100 GHz • 1534.64—1534.64 nm, corresponds to 50 GHz • 1535.04—1535.04 nm, corresponds to 50 GHz through 100 GHz • 1535.43—1535.43 nm, corresponds to 50 GHz • 1535.82—1535.82 nm, corresponds to 50 GHz through 100 GHz • 1536.22—1536.22 nm, corresponds to 50 GHz • 1536.61—1536.61 nm, corresponds to 50 GHz through 100 GHz • 1537.00—1537.00 nm, corresponds to 50 GHz • 1537.40—1537.40 nm, corresponds to 50 GHz through 100 GHz

- **1537.79**—1537.79 nm, corresponds to 50 GHz
- **1538.19**—1538.19 nm, corresponds to 50 GHz through 100 GHz
- **1538.58**—1538.58 nm, corresponds to 50 GHz
- **1538.98**—1538.98 nm, corresponds to 50 GHz through 100 GHz
- **1539.37**—1539.37 nm, corresponds to 50 GHz
- **1539.77**—1539.77 nm, corresponds to 50 GHz through 100 GHz
- **1540.16**—1540.16 nm, corresponds to 50 GHz
- **1540.56**—1540.56 nm, corresponds to 50 GHz through 100 GHz
- **1540.95**—1540.95 nm, corresponds to 50 GHz
- **1541.35**—1541.35 nm, corresponds to 50 GHz through 100 GHz
- **1541.75**—1541.75 nm, corresponds to 50 GHz
- **1542.14**—1542.14 nm, corresponds to 50 GHz through 100 GHz
- **1542.54**—1542.54 nm, corresponds to 50 GHz
- **1542.94**—1542.94 nm, corresponds to 50 GHz through 100 GHz
- **1543.33**—1543.33 nm, corresponds to 50 GHz
- **1543.73**—1543.73 nm, corresponds to 50 GHz through 100 GHz
- **1544.13**—1544.13 nm, corresponds to 50 GHz
- **1544.53**—1544.53 nm, corresponds to 50 GHz through 100 GHz
- **1544.92**—1544.92 nm, corresponds to 50 GHz
- **1545.32**—1545.32 nm, corresponds to 50 GHz through 100 GHz
- **1545.72**—1545.72 nm, corresponds to 50 GHz
- **1546.12**—1546.12 nm, corresponds to 50 GHz through 100 GHz
- **1546.52**—1546.52 nm, corresponds to 50 GHz
- **1546.92**—1546.92 nm, corresponds to 50 GHz through 100 GHz
- **1547.32**—1547.32 nm, corresponds to 50 GHz
- **1547.72**—1547.72 nm, corresponds to 50 GHz through 100 GHz
- **1548.11**—1548.11 nm, corresponds to 50 GHz
- **1548.51**—1548.51 nm, corresponds to 50 GHz through 100 GHz
- **1548.91**—1548.91 nm, corresponds to 50 GHz
- **1549.32**—1549.32 nm, corresponds to 50 GHz through 100 GHz
- **1549.72**—1549.72 nm, corresponds to 50 GHz
- **1550.12**—1550.12 nm, corresponds to 50 GHz through 100 GHz
- **1550.52**—1550.52 nm, corresponds to 50 GHz

- **1550.92**—1550.92 nm, corresponds to 50 GHz through 100 GHz
- **1551.32**—1551.32 nm, corresponds to 50 GHz
- **1551.72**—1551.72 nm, corresponds to 50 GHz through 100 GHz
- **1552.12**—1552.12 nm, corresponds to 50 GHz
- **1552.52**—1552.52 nm, corresponds to 50 GHz through 100 GHz
- **1552.93**—1552.93 nm, corresponds to 50 GHz
- **1553.33**—1554.33 nm, corresponds to 50 GHz through 100 GHz
- **1553.73**—1554.73 nm, corresponds to 50 GHz
- **1554.13**—1554.13 nm, corresponds to 50 GHz through 100 GHz
- **1554.54**—1554.54 nm, corresponds to 50 GHz
- **1554.94**—1554.94 nm, corresponds to 50 GHz through 100 GHz
- **1555.34**—1555.34 nm, corresponds to 50 GHz
- **1555.75**—1555.75 nm, corresponds to 50 GHz through 100 GHz
- **1556.15**—1556.15 nm, corresponds to 50 GHz
- **1556.55**—1556.55 nm, corresponds to 50 GHz through 100 GHz
- **1556.96**—1556.96 nm, corresponds to 50 GHz
- **1557.36**—1557.36 nm, corresponds to 50 GHz through 100 GHz
- **1557.77**—1557.77 nm, corresponds to 50 GHz
- **1558.17**—1558.17 nm, corresponds to 50 GHz through 100 GHz
- **1558.58**—1558.58 nm, corresponds to 50 GHz
- **1558.98**—1558.98 nm, corresponds to 50 GHz through 100 GHz
- **1559.39**—1559.39 nm, corresponds to 50 GHz
- **1559.79**—1559.79 nm, corresponds to 50 GHz through 100 GHz
- **1560.20**—1560.20 nm, corresponds to 50 GHz
- **1560.61**—1560.61 nm, corresponds to 50 GHz through 100 GHz
- **1561.01**—1561.01 nm, corresponds to 50 GHz
- **1561.42**—1561.42 nm, corresponds to 50 GHz through 100 GHz
- **1561.83**—1561.83 nm, corresponds to 50 GHz
- **1562.23**—1562.23 nm, corresponds to 50 GHz through 100 GHz
- **1562.64**—1562.64 nm, corresponds to 50 GHz
- **1563.05**—1563.05 nm, corresponds to 50 GHz through 100 GHz
- **1563.45**—1563.45 nm, corresponds to 50 GHz

- **1563.86**—1563.86 nm, corresponds to 50 GHz through 100 GHz

Default: 1550.12—1550.12 nm, corresponds to 50 GHz through 100 GHz

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Ethernet DWDM Interface Wavelength Overview*

west-interface

Syntax

```
west-interface {
  node-id mac-address;
  control-channel channel-name {
    interface-name
    ring-protection-link-end;
  }
}
```

Hierarchy Level [edit protocols **protection-group ethernet-ring ring-name**]

Release Information Statement introduced in Junos OS Release 9.5.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Define one of the two interface ports for Ethernet ring protection, the other being defined by the **east-interface** statement at the same hierarchy level. The interface must use the control channel's logical interface name. The control channel is a dedicated VLAN channel for the ring port.



NOTE: Always configure this port second, after configuring the **east-interface** statement.

The statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- *Ethernet Ring Protection Switching Overview*
- *Ethernet Ring Protection Using Ring Instances for Load Balancing*
- [east-interface on page 210](#)
- [ethernet-ring on page 228](#)
- *Example: Configuring Ethernet Ring Protection Switching on EX Series Switches*
- *Configuring Ethernet Ring Protection Switching (CLI Procedure)*

working-circuit

Syntax	<code>working-circuit <i>group-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options aps]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the working router in an APS circuit pair.
Options	<i>group-name</i> —Circuit's group name.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Basic Automatic Protect Switching</i> • protect-circuit on page 469

yellow-differential-delay

Syntax	<code>yellow-differential-delay <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For link services and voices interfaces only, configure the yellow differential delay among bundle links to give warning when a link has a differential delay that exceeds the configured threshold.
Options	<i>milliseconds</i> —Yellow differential delay threshold. Range: 1 through 2000 milliseconds Default: 6 milliseconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Junos OS Services Interfaces Library for Routing Devices</i> • action-red-differential-delay on page 98 • remote on page 486

z0-increment

Syntax	(z0-increment no-z0-increment);
Hierarchy Level	[edit interfaces <i>interface-name</i> sonet-options]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure an incremental STM ID rather than a static one.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring an Incrementing STM ID</i>• sonet-options on page 521

PART 3

Administration

- [See: Network Interface Technologies on page 623](#)
- [Understanding Operational Mode Commands on page 625](#)

CHAPTER 5

See: Network Interface Technologies

CHAPTER 6

Understanding Operational Mode Commands

- [Common Output Fields Description on page 625](#)
- [Improvements to Interface Transmit Statistics Reporting on page 632](#)

Common Output Fields Description

This chapter explains the content of the output fields, which appear in the output of most **show interfaces** commands.

Destination Class Field

For the logical interface, the **Destination class** field provides the names of destination class usage (DCU) counters per family and per class for a particular interface. The counters display packets and bytes arriving from designated user-selected prefixes. For example:

Destination class	Packets (packet-per-second)	Bytes (bits-per-second)
gold	1928095	161959980
	(889)	(597762)
bronze	0	0
	(0)	(0)
silver	0	0
	(0)	(0)

Enabled Field

For the physical interface, the **Enabled** field provides information about the state of the interface, displaying one or more of the following values:

- **Administratively down, Physical link is Down**—The interface is turned off, and the physical link is inoperable and cannot pass packets even when it is enabled. To change the interface state to **Enabled**, use the following command:

```
user@host# set interfaces interface enable
```

Manually verify the connections to bring the physical link up.

- **Administratively down, Physical link is Up**—The interface is turned off, but the physical link is operational and can pass packets when it is enabled. To change the interface state to **Enabled**, use the following command:

```
user@host# set interfaces interface enable
```

- **Enabled, Physical link is Down**—The interface is turned on, but the physical link is inoperable and cannot pass packets. Manually verify the connections to bring the physical link up.
- **Enabled, Physical link is Up**—The interface is turned on, and the physical link is operational and can pass packets.

Filters Field

For the logical interface, the **Filters** field provides the name of the firewall filters to be evaluated when packets are received or transmitted on the interface. The format is **Filters: Input: *filter-name* and Filters: Output: *filter-name***. For example:

```
Filters: Input: sample-all
```

```
Filters: Output: cp-ftp
```

Flags Fields

The following sections provide information about flags that are specific to interfaces:

- [Addresses, Flags Field on page 626](#)
- [Device Flags Field on page 627](#)
- [Family Flags Field on page 627](#)
- [Interface Flags Field on page 628](#)
- [Link Flags Field on page 629](#)
- [Logical Interface Flags Field on page 629](#)

Addresses, Flags Field

The **Addresses, Flags** field provides information about the addresses configured for the protocol family on the logical interface and displays one or more of the following values:

- **Dest-route-down**—The routing process detected that the link was not operational and changed the interface routes to nonforwarding status
- **Is-Default**—The default address of the router used as the source address by SNMP, ping, traceroute, and other network utilities.
- **Is-Preferred**—The default local address for packets originating from the local router and sent to destinations on the subnet.
- **Is-Primary**—The default local address for broadcast and multicast packets originated locally and sent out the interface.
- **Preferred**—This address is a candidate to become the preferred address.
- **Primary**—This address is a candidate to become the primary address.

Device Flags Field

The **Device flags** field provides information about the physical device and displays one or more of the following values:

- **Down**—Device has been administratively disabled.
- **Hear-Own-Xmit**—Device receives its own transmissions.
- **Link-Layer-Down**—The link-layer protocol has failed to connect with the remote endpoint.
- **Loopback**—Device is in physical loopback.
- **Loop-Detected**—The link layer has received frames that it sent, thereby detecting a physical loopback.
- **No-Carrier**—On media that support carrier recognition, no carrier is currently detected.
- **No-Multicast**—Device does not support multicast traffic.
- **Present**—Device is physically present and recognized.
- **Promiscuous**—Device is in promiscuous mode and recognizes frames addressed to all physical addresses on the media.
- **Quench**—Transmission on the device is quenched because the output buffer is overflowing.
- **Recv-All-Multicasts**—Device is in multicast promiscuous mode and therefore provides no multicast filtering.
- **Running**—Device is active and enabled.

Family Flags Field

The **Family flags** field provides information about the protocol family on the logical interface and displays one or more of the following values:

- **DCU**—Destination class usage is enabled.
- **Dest-route-down**—The software detected that the link is down and has stopped forwarding the link's interface routes.
- **Down**—Protocol is inactive.
- **Is-Primary**—Interface is the primary one for the protocol.
- **Mac-Validate-Loose**—Interface is enabled with loose MAC address validation.
- **Mac-Validate-Strict**—Interface is enabled with strict MAC address validation.
- **Maximum labels**—Maximum number of MPLS labels configured for the MPLS protocol family on the logical interface.
- **MTU-Protocol-Adjusted**—The effective MTU is not the configured value in the software.
- **No-Redirects**—Protocol redirects are disabled.

- **Primary**—Interface can be considered for selection as the primary family address.
- **Protocol-Down**—Protocol failed to negotiate correctly.
- **SCU-in**—Interface is configured for source class usage input.
- **SCU-out**—Interface is configured for source class usage output.
- **send-bcast-packet-to-re**—Interface is configured to forward IPv4 broadcast packets to the Routing Engine.
- **targeted-broadcast**—Interface is configured to forward IPv4 broadcast packets to the LAN interface and the Routing Engine.
- **Unnumbered**—Protocol family is configured for unnumbered Ethernet. An unnumbered Ethernet interface borrows an IPv4 address from another interface, which is referred to as the donor interface.
- **Up**—Protocol is configured and operational.
- **uRPF**—Unicast Reverse Path Forwarding is enabled.

Interface Flags Field

The **Interface flags** field provides information about the physical interface and displays one or more of the following values:

- **Admin-Test**—Interface is in test mode and some sanity checking, such as loop detection, is disabled.
- **Disabled**—Interface is administratively disabled.
- **Down**—A hardware failure has occurred.
- **Hardware-Down**—Interface is nonfunctional or incorrectly connected.
- **Link-Layer-Down**—Interface keepalives have indicated that the link is incomplete.
- **No-Multicast**—Interface does not support multicast traffic.
- **No-receive No-transmit**—Passive monitor mode is configured on the interface.
- **OAM-On-SVLAN**—(MX Series routers with MPC/MIC interfaces only) Interface is configured to propagate the Ethernet OAM state of a static, single-tagged service VLAN (S-VLAN) on a Gigabit Ethernet, 10-Gigabit Ethernet, or aggregated Ethernet interface to a dynamic or static double-tagged customer VLAN (C-VLAN) that has the same S-VLAN (outer) tag as the S-VLAN.
- **Point-To-Point**—Interface is point-to-point.
- **Pop all MPLS labels from packets of depth**—MPLS labels are removed as packets arrive on an interface that has the **pop-all-labels** statement configured. The depth value can be one of the following:
 - **1**—Takes effect for incoming packets with one label only.
 - **2**—Takes effect for incoming packets with two labels only.
 - **[1 2]**—Takes effect for incoming packets with either one or two labels.

- **Promiscuous**—Interface is in promiscuous mode and recognizes frames addressed to all physical addresses.
- **Recv-All-Multicasts**—Interface is in multicast promiscuous mode and provides no multicast filtering.
- **SNMP-Traps**—SNMP trap notifications are enabled.
- **Up**—Interface is enabled and operational.

Link Flags Field

The **Link flags** field provides information about the physical link and displays one or more of the following values:

- **ACFC**—Address control field compression is configured. The Point-to-Point Protocol (PPP) session negotiates the ACFC option.
- **Give-Up**—Link protocol does not continue connection attempts after repeated failures.
- **Loose-LCP**—PPP does not use the Link Control Protocol (LCP) to indicate whether the link protocol is operational.
- **Loose-LMI**—Frame Relay does not use the Local Management Interface (LMI) to indicate whether the link protocol is operational.
- **Loose-NCP**—PPP does not use the Network Control Protocol (NCP) to indicate whether the device is operational.
- **No-Keepalives**—Link protocol keepalives are disabled.
- **PFC**—Protocol field compression is configured. The PPP session negotiates the PFC option.

Logical Interface Flags Field

The **Logical interface flags** field provides information about the logical interface and displays one or more of the following values:

- **ACFC Encapsulation**—Address control field Compression (ACFC) encapsulation is enabled (negotiated successfully with a peer).
- **Device-down**—Device has been administratively disabled.
- **Disabled**—Interface is administratively disabled.
- **Down**—A hardware failure has occurred.
- **Clear-DF-Bit**—GRE tunnel or IPsec tunnel is configured to clear the Don't Fragment (DF) bit.
- **Hardware-Down**—Interface protocol initialization failed to complete successfully.
- **PFC**—Protocol field compression is enabled for the PPP session.
- **Point-To-Point**—Interface is point-to-point.

- **SNMP-Traps**—SNMP trap notifications are enabled.
- **Up**—Interface is enabled and operational.

Label-Switched Interface Traffic Statistics Field

When you use the **vrf-table-label** statement to configure a VRF routing table, a label-switched interface (LSI) logical interface label is created and mapped to the VRF routing table.

Any routes present in a VRF routing table and configured with the **vrf-table-label** statement are advertised with the LSI logical interface label allocated for the VRF routing table. When packets for this VPN arrive on a core-facing interface, they are treated as if the enclosed IP packet arrived on the LSI interface and are then forwarded and filtered based on the correct table. For more information on the **vrf-table-label** statement, including a list of supported interfaces, see the *Junos VPNs Configuration Guide*.

If you configure the **family mpls** statement at the **[edit interfaces interface-name unit logical-unit-number]** hierarchy level and you also configure the **vrf-table-label** statement at the **[edit routing-instances routing-instance-name]** hierarchy level, the output for the **show interface interface-name extensive** command includes the following output fields about the LSI traffic statistics:

- **Input bytes**—Number of bytes entering the LSI and the current throughput rate in bits per second (bps).
- **Input packets**—Number of packets entering the LSI and the current throughput rate in packets per second (pps).



NOTE: If LSI interfaces are used with VPLS when **no-tunnel-services** is configured or L3VPN when **vrf-table-label** configuration is applied inside the routing-instance, the **Input packets** field associated with the core-facing interfaces may not display the correct value. Only the Input counter is affected because the LSI is used to receive traffic from the remote PEs. Traffic that arrives on an LSI interface might not be counted at both the Traffic Statistics and the Label-switched interface (LSI) traffic statistics levels.

This note applies to the following platforms:

- M Series routers with -E3 FPC model numbers or configured with an Enhanced CFEB (CFEB-E), and M120 routers
- MX Series routers with DPC or ADPC only

The following example shows the LSI traffic statistics that you might see as part of the output of the **show interface interface-name extensive** command:

Label-switched interface (LSI) traffic statistics:

Input bytes:	0	0 bps
Input packets:	0	0 pps

Policer Field

For the logical interface, the **Policer** field provides the policers that are to be evaluated when packets are received or transmitted on the interface. The format is **Policer: Input: *type-fpc/picport-in-policer*, Output: *type-fpc/pic/port-out-policer***. For example:

Policer: Input: at-1/2/0-in-policer, Output: at-2/4/0-out-policer

Protocol Field

For the logical interface, the **Protocol** field indicates the protocol family or families that are configured on the interface, displaying one or more of the following values:

- **aenet**—Aggregated Ethernet. Displayed on Fast Ethernet interfaces that are part of an aggregated Ethernet bundle.
- **ccc**—Circuit cross-connect (CCC). Configured on the logical interface of CCC physical interfaces.
- **inet**—IP version 4 (IPv4). Configured on the logical interface for IPv4 protocol traffic, including Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Internet Control Message Protocol (ICMP), and Internet Protocol Control Protocol (IPCP).
- **inet6**—IP version 6 (IPv6). Configured on the logical interface for IPv6 protocol traffic, including Routing Information Protocol for IPv6 (RIPng), Intermediate System-to-Intermediate System (IS-IS), and BGP.
- **iso**—International Organization for Standardization (ISO). Configured on the logical interface for IS-IS traffic.
- **mlfr-uni-nni**—Multilink Frame Relay (MLFR) FRF.16 user-to-network network-to-network (UNI NNI). Configured on the logical interface for link services bundling.
- **mlfr-end-to-end**—Multilink Frame Relay end-to-end. Configured on the logical interface for multilink bundling.
- **mlppp**—Multilink Point-to-Point Protocol (MLPPP). Configured on the logical interface for multilink bundling.
- **mpls**—Multiprotocol Label Switching (MPLS). Configured on the logical interface for participation in an MPLS path.
- **pppoe**—Point-to-Point Protocol over Ethernet (PPPoE). Configured on Ethernet interfaces enabled to support multiple protocol families.
- **tcc**—Translational cross-connect (TCC). Configured on the logical interface of TCC physical interfaces.
- **tnp**—Trivial Network Protocol (TNP). Used to communicate between the Routing Engine and the router's packet forwarding components. The Junos OS automatically configures this protocol family on the router's internal interfaces only.
- **vpls**—Virtual private LAN service (VPLS). Configured on the logical interface on which you configure VPLS.

RPF Failures Field

For the logical interface, the **RPF Failures** field provides information about the amount of incoming traffic (in packets and bytes) that failed a unicast reverse path forwarding (RPF) check on a particular interface. The format is **RPF Failures: Packets: xx,Bytes: yy**. For example:

RPF Failures: Packets: 0, Bytes:0

Source Class Field

For the logical interface, the **Source class** field provides the names of source class usage (SCU) counters per family and per class for a particular interface. The counters display packets and bytes arriving from designated user-selected prefixes. For example:

Source class	Packets (packet-per-second)	Bytes (bits-per-second)
gold	1928095	161959980
(889)	(597762)
bronze	0	0
(0)	(0)
silver	0	0
(0)	(0)

Improvements to Interface Transmit Statistics Reporting

The offered load on an interface can be defined as the amount of data the interface is capable of transmitting during a given time period. The actual traffic that goes out of the interface is the transmitted load. However, when outgoing interfaces are oversubscribed, there could be traffic drops in the schedulers attached to the outgoing interfaces. Hence, the offered load is not always the same as the actual transmitted load because the offered load calculation does not take into account possible packet drop or traffic loss.

On MX Series routers, the logical interface-level statistics show the offered load, which is often different from the actual transmitted load. To address this limitation, Junos OS introduces a new configuration option in Release 11.4 R3 and later. The new configuration option, **interface-transmit-statistics**, at the **[edit interface *interface-name*]** hierarchy level, enables you to configure Junos OS to accurately capture and report the transmitted load on interfaces.

When the **interface-transmit-statistics** statement is included at the **[edit interface *interface-name*]** hierarchy level, the following operational mode commands report the actual transmitted load:

- **show interface *interface-name* <detail | extensive>**
- **monitor interface *interface-name***
- **show snmp mib get *objectID.ifIndex***



NOTE: This configuration is supported only on Enhanced Queuing Dense Port Concentrators (DPCs) and Enhanced IQ (IQE) PICs of MX Series routers.

The **show interface *interface-name*** command also shows whether the **interface-transmit-statistics** configuration is enabled or disabled on the interface.

**Related
Documentation**

- [interface-transmit-statistics on page 297](#)
- *show interfaces (Gigabit Ethernet)*

PART 4

Troubleshooting

- [Interface Diagnostics on page 637](#)

CHAPTER 7

Interface Diagnostics

- [Interface Diagnostics on page 637](#)
- [Troubleshooting: em0 Management Interface Link is Down on page 644](#)
- [Troubleshooting: fxp0 Management Interface Link is Down on page 645](#)

Interface Diagnostics

You can use two diagnostic tools to test the physical layer connections of interfaces: loopback testing and bit error rate test (BERT) testing. Loopback testing enables you to verify the connectivity of a circuit. BERT testing enables you to identify poor signal quality on a circuit. This section contains the following topics:

- [Configuring Loopback Testing on page 637](#)
- [Interface Diagnostics on page 639](#)

Configuring Loopback Testing

Loopback testing allows you to verify the connectivity of a circuit. You can configure any of the following interfaces to execute a loopback test: Aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, E1, E3, NxDSO, serial, SONET/SDH, T1, and T3.

The physical path of a network data circuit usually consists of segments interconnected by devices that repeat and regenerate the transmission signal. The transmit path on one device connects to the receive path on the next device. If a circuit fault occurs in the form of a line break or a signal corruption, you can isolate the problem by using a loopback test. Loopback tests allow you to isolate segments of the circuit and test them separately.

To do this, configure a *line loopback* on one of the routers. Instead of transmitting the signal toward the far-end device, the line loopback sends the signal back to the originating router. If the originating router receives back its own data link layer packets, you have verified that the problem is beyond the originating router. Next, configure a line loopback farther away from the local router. If this originating router does not receive its own data link layer packets, you can assume the problem is on one of the segments between the local router and the remote router's interface card. In this case, the next troubleshooting step is to configure a line loopback closer to the local router to find the source of the problem.

There are several types of loopback testing supported by the Junos OS, as follows:

- DCE local—Loops packets back on the local DCE.
- DCE remote—Loops packets back on the remote DCE.
- Local—Useful for troubleshooting physical PIC errors. Configuring local loopback on an interface allows transmission of packets to the channel service unit (CSU) and then to the circuit toward the far-end device. The interface receives its own transmission, which includes data and timing information, on the local router's PIC. The data received from the CSU is ignored. To test a local loopback, issue the **show interfaces *interface-name*** command. If PPP keepalives transmitted on the interface are received by the PIC, the **Device Flags** field contains the output **Loop-Detected**.
- Payload—Useful for troubleshooting the physical circuit problems between the local router and the remote router. A payload loopback loops data only (without clocking information) on the remote router's PIC. With payload loopback, overhead is recalculated.
- Remote—Useful for troubleshooting the physical circuit problems between the local router and the remote router. A remote loopback loops packets, including both data and timing information, back on the remote router's interface card. A router at one end of the circuit initiates a remote loopback toward its remote partner. When you configure a remote loopback, the packets received from the physical circuit and CSU are received by the interface. Those packets are then retransmitted by the PIC back toward the CSU and the circuit. This loopback tests all the intermediate transmission segments.

Table 12 on page 638 shows the loopback modes supported on the various interface types.

Table 12: Loopback Modes by Interface Type

Interface	Loopback Modes	Usage Guidelines
Aggregated Ethernet, Fast Ethernet, Gigabit Ethernet	Local	<i>Configuring Ethernet Loopback Capability</i>
Circuit Emulation E1	Local and remote	<i>Configuring E1 Loopback Capability</i>
Circuit Emulation T1	Local and remote	<i>Configuring T1 Loopback Capability</i>
E1 and E3	Local and remote	<i>Configuring E1 Loopback Capability and Configuring E3 Loopback Capability</i>
NxDSO	Payload	<i>Configuring Channelized E1 IQ and IQE Interfaces, Configuring T1 and NxDSO Interfaces, Configuring Channelized OC12/STM4 IQ and IQE Interfaces (SONET Mode), Configuring Channelized STM1 IQ and IQE Interfaces, and Configuring Channelized T3 IQ Interfaces</i>
Serial (V.35 and X.21)	Local and remote	<i>Configuring Serial Loopback Capability</i>

Table 12: Loopback Modes by Interface Type (*continued*)

Interface	Loopback Modes	Usage Guidelines
Serial (EIA-530)	DCE local, DCE remote, local, and remote	<i>Configuring Serial Loopback Capability</i>
SONET/SDH	Local and remote	<i>Configuring SONET/SDH Loopback Capability</i>
T1 and T3	Local, payload, and remote	<i>Configuring T1 Loopback Capability and Configuring T3 Loopback Capability</i> <i>See also Configuring the T1 Remote Loopback Response</i>

To configure loopback testing, include the **loopback** statement:

loopback mode;

You can include this statement at the following hierarchy levels:

- [edit interfaces *interface-name* [aggregated-ether-options](#)]
- [edit interfaces *interface-name* [ds0-options](#)]
- [edit interfaces *interface-name* [e1-options](#)]
- [edit interfaces *interface-name* [e3-options](#)]
- [edit interfaces *interface-name* [fastether-options](#)]
- [edit interfaces *interface-name* [gigether-options](#)]
- [edit interfaces *interface-name* [serial-options](#)]
- [edit interfaces *interface-name* [sonet-options](#)]
- [edit interfaces *interface-name* [t1-options](#)]
- [edit interfaces *interface-name* [t3-options](#)]

Interface Diagnostics

BERT allows you to troubleshoot problems by checking the quality of links. You can configure any of the following interfaces to execute a BERT when the interface receives a request to run this test: E1, E3, T1, T3; the channelized DS3, OC3, OC12, and STM1 interfaces; and the channelized DS3 IQ, E1 IQ, and OC12 IQ interfaces.

A BERT test requires a line loop to be in place on either the transmission devices or the far-end router. The local router generates a known bit pattern and sends it out the transmit path. The received pattern is then verified against the sent pattern. The higher the bit error rate of the received pattern, the worse the noise is on the physical circuit. As you move the position of the line loop increasingly downstream toward the far-end router, you can isolate the troubled portion of the link.

To configure BERT, you must configure the duration of the test, the bit pattern to send on the transmit path, and the error rate to monitor when the inbound pattern is received.

To configure the duration of the test, the pattern to send in the bit stream, and the error rate to include in the bit stream, include the **bert-period**, **bert-algorithm**, and **bert-error-rate** statements, respectively, at the `[edit interfaces interface-name interface-type options]` hierarchy level:

```
[edit interfaces interface-name interface-type options]
bert-algorithm algorithm;
bert-error-rate rate;
bert-period seconds;
```

By default, the BERT period is 10 seconds. You can configure the BERT period to last from 1 through 239 seconds on some PICs and from 1 through 240 seconds on other PICs.

rate is the bit error rate. This can be an integer from 0 through 7, which corresponds to a bit error rate from 10^{-0} (1 error per bit) to 10^{-7} (1 error per 10 million bits).

algorithm is the pattern to send in the bit stream. For a list of supported algorithms, enter a ? after the **bert-algorithm** statement; for example:

```
[edit interfaces t1-0/0/0 t1-options]
user@host# set bert-algorithm ?
Possible completions:
pseudo-2e11-o152      Pattern is 2^11 -1 (per 0.152 standard)
pseudo-2e15-o151      Pattern is 2^15 - 1 (per 0.152 standard)
pseudo-2e20-o151      Pattern is 2^20 - 1 (per 0.151 standard)
pseudo-2e20-o153      Pattern is 2^20 - 1 (per 0.153 standard)
...
```

For specific hierarchy information, see the individual interface types.



NOTE: The 4-port E1 PIC supports only the following algorithms:

pseudo-2e11-o152	Pattern is 2^11 -1 (per 0.152 standard)
pseudo-2e15-o151	Pattern is 2^15 - 1 (per 0.151 standard)
pseudo-2e20-o151	Pattern is 2^20 - 1 (per 0.151 standard)
pseudo-2e23-o151	Pattern is 2^23 (per 0.151 standard)

When you issue the **help** command from the CLI, all BERT algorithm options are displayed, regardless of the PIC type, and no commit check is available. Unsupported patterns for a PIC type can be viewed in system log messages.



NOTE: The 12-port T1/E1 Circuit Emulation (CE) PIC supports only the following algorithms:

```
all-ones-repeating    Repeating one bits
all-zeros-repeating   Repeating zero bits
alternating-double-ones-zeros Alternating pairs of ones and zeros
alternating-ones-zeros Alternating ones and zeros
pseudo-2e11-o152      Pattern is 2^11 - 1 (per 0.152 standard)
pseudo-2e15-o151      Pattern is 2^15 - 1 (per 0.151 standard)
pseudo-2e20-o151      Pattern is 2^20 - 1 (per 0.151 standard)
pseudo-2e7            Pattern is 2^7 - 1
pseudo-2e9-o153       Pattern is 2^9 - 1 (per 0.153 standard)
repeating-1-in-4       1 bit in 4 is set
repeating-1-in-8       1 bit in 8 is set
repeating-3-in-24      3 bits in 24 are set
```

When you issue the help command from the CLI, all BERT algorithm options are displayed, regardless of the PIC type, and no commit check is available. Unsupported patterns for a PIC type can be viewed in system log messages.



NOTE: The IQE PICs support only the following algorithms:

```
all-ones-repeating    Repeating one bits
all-zeros-repeating   Repeating zero bits
alternating-double-ones-zeros Alternating pairs of ones and zeros
alternating-ones-zeros Alternating ones and zeros
pseudo-2e9-o153       Pattern is 2^9 - 1 (per 0.153 (511 type) standard)
pseudo-2e11-o152      Pattern is 2^11 - 1 (per 0.152 and 0.153 (2047 type)
standards)
pseudo-2e15-o151      Pattern is 2^15 - 1 (per 0.151 standard)
pseudo-2e20-o151      Pattern is 2^20 - 1 (per 0.151 standard)
pseudo-2e20-o153      Pattern is 2^20 - 1 (per 0.153 standard)
pseudo-2e23-o151      Pattern is 2^23 - 1 (per 0.151 standard)
repeating-1-in-4       1 bit in 4 is set
repeating-1-in-8       1 bit in 8 is set
repeating-3-in-24      3 bits in 24 are set
```

When you issue the help command from the CLI, all BERT algorithm options are displayed, regardless of the PIC type, and no commit check is available. Unsupported patterns for a PIC type can be viewed in system log messages.



NOTE: BERT is supported on the PDH interfaces of the Channelized SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP and the DS3/E3 MIC. The following BERT algorithms are supported:

all-ones-repeating	Repeating one bits
all-zeros-repeating	Repeating zero bits
alternating-double-ones-zeros	Alternating pairs of ones and zeros
alternating-ones-zeros	Alternating ones and zeros
repeating-1-in-4	1 bit in 4 is set
repeating-1-in-8	1 bit in 8 is set
repeating-3-in-24	3 bits in 24 are set
pseudo-2e9-o153	Pattern is $2^9 - 1$ (per 0.153 standard)
pseudo-2e11-o152	Pattern is $2^{11} - 1$ (per 0.152 standard)
pseudo-2e15-o151	Pattern is $2^{15} - 1$ (per 0.151 standard)
pseudo-2e20-o151	Pattern is $2^{20} - 1$ (per 0.151 standard)
pseudo-2e20-o153	Pattern is $2^{20} - 1$ (per 0.153 standard)
pseudo-2e23-o151	Pattern is $2^{23} - 1$ (per 0.151 standard)

Table 13 on page 642 shows the BERT capabilities for various interface types.

Table 13: BERT Capabilities by Interface Type

Interface	T1 BERT	T3 BERT	Comments
12-port T1/E1 Circuit Emulation	Yes (ports 0–11)		<ul style="list-style-type: none"> Limited algorithms
4-port Channelized OC3/STM1 Circuit Emulation	Yes (port 0–3)		<ul style="list-style-type: none"> Limited algorithms
E1 or T1	Yes (port 0–3)	Yes (port 0–3)	<ul style="list-style-type: none"> Single port at a time Limited algorithms
E3 or T3	Yes (port 0–3)	Yes (port 0–3)	<ul style="list-style-type: none"> Single port at a time
Channelized OC12	N/A	Yes (channel 0–11)	<ul style="list-style-type: none"> Single channel at a time Limited algorithms No bit count
Channelized STM1	Yes (channel 0–62)	N/A	<ul style="list-style-type: none"> Multiple channels Only one algorithm No error insert No bit count
Channelized T3 and Multichannel T3	Yes (channel 0–27)	Yes (port 0–3 on channel 0)	<ul style="list-style-type: none"> Multiple ports and channels Limited algorithms for T1 No error insert for T1 No bit count for T1

These limitations do not apply to channelized IQ interfaces. For information about BERT capabilities on channelized IQ interfaces, see *Channelized IQ and IQE Interfaces Properties*.

Starting and Stopping a BERT Test

Before you can start the BERT test, you must disable the interface. To do this, include the **disable** statement at the **[edit interfaces *interface-name*]** hierarchy level:

```
[edit interfaces interface-name]  
  disable;
```

After you configure the BERT properties and commit the configuration, begin the test by issuing the **test interface *interface-name* *interface-type*-bert-start** operational mode command:

```
user@host> test interface interface-name interface-type-bert-start
```

The test runs for the duration you specify with the **bert-period** statement. If you wish to terminate the test sooner, issue the **test interface *interface-name* *interface-type*-bert-stop** command:

```
user@host> test interface interface-name interface-type-bert-stop
```

For example:

```
user@host> test interface t3-1/2/0 t3-bert-start  
user@host> test interface t3-1/2/0 t3-bert-stop
```

To view the results of the BERT test, issue the **show interfaces extensive | find BERT** command:

```
user@host> show interfaces interface-name extensive | find BERT
```

For more information about running and evaluating the results of the BERT procedure, see the *Junos OS Operational Mode Commands*.



NOTE: To exchange BERT patterns between a local router and a remote router, include the **loopback remote** statement in the interface configuration at the remote end of the link. From the local router, issue the **test interface** command.

Example: Configuring Bit Error Rate Testing

Configure a BERT test on a T3 interface. In this example, the run duration lasts for 120 seconds. The configured error rate is 0, which corresponds to a bit error rate of 10^{-0} (1 error per bit). The configured bit pattern of **all-ones-repeating** means that every bit the interface sends is a set to a value of 1.

```
[edit interfaces]  
  t3-1/2/0 {  
    t3-options {  
      bert algorithm all-ones-repeating;  
      bert-error-rate 0;  
      bert-period 120;
```

```
}  
}
```

Troubleshooting: em0 Management Interface Link is Down

Problem Ethernet Link Down alarm is raised when you run the **show chassis alarm** operational mode command on a T640 router, a T1600 router, T4000 router, or a TX Matrix Plus router.

Diagnosis Perform the following tests to check if the em0 management interface is down on the master Routing Engine or the backup Routing Engine:

1. Run the **show chassis alarms** command.

show chassis alarms

```
user@host0> show chassis alarms  
1 alarms currently active  
Alarm time Class Description  
2011-10-19 11:13:02 MYT Major Host 1 em0 : Ethernet Link Down
```

Is the alarm **Ethernet Link Down** displayed against the em0 interface of the master Routing Engine (Host 0)?

- Yes: Contact JTAC for further assistance.
- No: Continue to the next diagnostic test.

2. Run the **show interfaces em0** and the **show interfaces em0 terse** operational mode commands.

show interfaces em0

```
user@host> show interfaces em0  
Physical interface: em0, Enabled, Physical link is Up  
Interface index: 1, SNMP ifIndex: 1  
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps  
Device flags : Present Running  
Interface flags: SNMP-Traps  
...
```

show interfaces em0 terse

```
user@host> show interfaces em0 terse  
Interface Admin Link Proto Local Remote  
em0 up up  
em0.0 up up inet 10.100.100.1/30
```

Is the em0 interface on the master Routing Engine **up**?

- Yes: Continue to resolution.

- No: Contact JTAC for further assistance

Resolution *To Resolve This Issue*

From the aforementioned diagnosis, we ascertain that the chassis alarm has been raised for the em0 management interface in the backup Routing Engine (Host 1) and not for the master Routing Engine (Host 0).

Implement one of the following solutions on the backup Routing Engine to resolve this issue:

- Disable the em0 interface in the backup Routing Engine:
 1. In configuration mode, go to the **[edit groups re1]** hierarchy level.


```
user@host1# edit groups re1
```
 2. Disable the em0 interface.


```
[edit groups re1]
user@host1# set interfaces em0 disable
```
- Ignore the alarm:
 1. In configuration mode, go to the **[edit chassis]** hierarchy level.


```
user@host1# edit chassis
```
 2. Ignore the **Ethernet link down** alarm on the management interface by setting the **management-ethernet link-down** alarm option to **ignore**.


```
[edit chassis]
user@host1# set alarm management-ethernet link-down ignore
```

- Related Documentation**
- [Supported Routing Engines by Chassis on page 8](#)
 - *show chassis alarms*

Troubleshooting: fxp0 Management Interface Link is Down

Problem Ethernet Link Down alarm is raised when you run the **show chassis alarm** operational mode command on an M Series router, an MX Series router, a T320 router, a T640 router, a T1600 router, or on a TX Matrix router.

Diagnosis Perform the following tests to check if the fxp0 interface is down on the master Routing Engine or the backup Routing Engine:

1. Run the **show chassis alarms** command.

show chassis alarms

```
user@host0> show chassis alarms
1 alarms currently active
```

Alarm time Class Description

2011-10-19 11:13:02 MYT Major Host 1 fxp0 : Ethernet Link Down

Is the alarm **Ethernet Link Down** displayed against the fxp0 interface of the master Routing Engine (Host 0)?

- Yes: Contact JTAC for further assistance.
- No: Continue to the next diagnostic test.

2. Run the **show interfaces fxp0** and the **show interfaces fxp0 terse** operational mode commands.

show interfaces fxp0

```
user@host> show interfaces fxp0
Physical interface: fxp0, Enabled, Physical link is Up
Interface index: 1, SNMP ifIndex: 1
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
...
```

show interfaces fxp0 terse

```
user@host> show interfaces fxp0 terse
Interface Admin Link Proto Local Remote
fxp0 up up
fxp0.0 up up inet 10.100.100.1/30
```

Is the fxp0 interface on the master Routing Engine **up**?

- Yes: Continue to resolution.
- No: Contact JTAC for further assistance

Resolution *To Resolve This Issue*

From the diagnosis, we ascertain that the chassis alarm has been raised for the fxp0 management interface in the backup Routing Engine (Host 1) and not for the master Routing Engine (Host 0).

Implement one of the following solutions on the backup Routing Engine to avoid this issue:

- Disable the fxp0 interface in the backup Routing Engine:
 1. In configuration mode, go to the **[edit groups re1]** hierarchy level.

```
user@host1# edit groups re1
```
 2. Disable the fxp0 interface.

```
[edit groups re1]
user@host1# set interfaces fxp0 disable
```
- Ignore the alarm:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.
`user@host1# edit chassis`
2. Ignore the **Ethernet link down** alarm on the management interface by setting the **management-ethernet link-down** alarm option to **ignore**.
`[edit chassis]`
`user@host1# set alarm management-ethernet link-down ignore`

- Related Documentation**
- [Supported Routing Engines by Chassis on page 8](#)
 - `show chassis alarms`

PART 5

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