



Junos[®] OS Interfaces Fundamentals Configuration Guide



Published: 2012-02-27

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

This product includes the Envoy SNMP Engine, developed by Epilogue Technology, an Integrated Systems Company. Copyright © 1986-1997, Epilogue Technology Corporation. All rights reserved. This program and its documentation were developed at private expense, and no part of them is in the public domain.

This product includes memory allocation software developed by Mark Moraes, copyright © 1988, 1989, 1993, University of Toronto.

This product includes FreeBSD software developed by the University of California, Berkeley, and its contributors. All of the documentation and software included in the 4.4BSD and 4.4BSD-Lite Releases is copyrighted by the Regents of the University of California. Copyright © 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994. The Regents of the University of California. All rights reserved.

GateD software copyright © 1995, the Regents of the University. All rights reserved. Gate Daemon was originated and developed through release 3.0 by Cornell University and its collaborators. Gated is based on Kirton's EGP, UC Berkeley's routing daemon (routed), and DCN's HELLO routing protocol. Development of Gated has been supported in part by the National Science Foundation. Portions of the GateD software copyright © 1988, Regents of the University of California. All rights reserved. Portions of the GateD software copyright © 1991, D. L. S. Associates.

This product includes software developed by Maker Communications, Inc., copyright © 1996, 1997, Maker Communications, Inc.

Juniper Networks, Junos, Steel-Belted Radius, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. The Juniper Networks Logo, the Junos logo, and JunosE are trademarks of Juniper Networks, Inc. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Products made or sold by Juniper Networks or components thereof might be covered by one or more of the following patents that are owned by or licensed to Juniper Networks: U.S. Patent Nos. 5,473,599, 5,905,725, 5,909,440, 6,192,051, 6,333,650, 6,359,479, 6,406,312, 6,429,706, 6,459,579, 6,493,347, 6,538,518, 6,538,899, 6,552,918, 6,567,902, 6,578,186, and 6,590,785.

Junos® OS Interfaces Fundamentals Configuration Guide

Copyright © 2012, Juniper Networks, Inc.

All rights reserved.

The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

END USER LICENSE AGREEMENT

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

Table of Contents

About the Documentation	xxiii
Documentation and Release Notes	xxiii
Supported Platforms	xxiii
Using the Examples in This Manual	xxiii
Merging a Full Example	xxiv
Merging a Snippet	xxiv
Documentation Conventions	xxv
Documentation Feedback	xxvii
Requesting Technical Support	xxvii
Self-Help Online Tools and Resources	xxvii
Opening a Case with JTAC	xxviii

Part 1

Chapter 1

Overview

Router Interfaces	3
Router Interfaces Overview	4
Types of Interfaces Overview	4
Permanent Interfaces Overview	5
Understanding Management Ethernet Interfaces	5
Supported Routing Engines by Chassis	7
Understanding Internal Ethernet Interfaces	12
Understanding Transient Interfaces	14
Understanding Services Interfaces	15
Container Interfaces Overview	16
Understanding Traditional APS Concept	17
Container Interfaces Concept	17
APS Support for Container-Based Interfaces	18
Autocopy of APS Parameters	18
Interface Encapsulations Overview	18
Interface Descriptors Overview	29
Interface Naming Overview	30
Physical Part of an Interface Name	31
Logical Part of an Interface Name	35
Separators in an Interface Name	35
Channel Part of an Interface Name	35
Interface Naming for a Routing Matrix Based on a TX Matrix Router	36
Interface Naming for a Routing Matrix Based on a TX Matrix Plus Router	38
Chassis Interface Naming	41
Examples: Interface Naming	41
Displaying Interface Configurations Overview	43

Part 2	Configuration	
Chapter 2	See: Network Interface Technologies	47
Chapter 3	Network Interfaces Configuration Guide - All Related Configuration Hierarchies	49
	[edit chassis] Hierarchy Level	49
	[edit interfaces] Hierarchy Level	50
	[edit logical-systems] Hierarchy Level	66
	[edit protocols connections] Hierarchy Level	71
	[edit protocols dot1x] Hierarchy Level	72
	[edit protocols iccp] Hierarchy Level	72
	[edit protocols lacp] Hierarchy Level	73
	[edit protocols oam] Hierarchy Level	73
	[edit protocols ppp] Hierarchy Level	75
	[edit protocols pppoe] Hierarchy Level	75
	[edit protocols protection-group] Hierarchy Level	76
	[edit protocols vrrp] Hierarchy Level	77
	[edit system processes] Hierarchy Level	77
Chapter 4	Network Interfaces Configuration Guide - All Related Configuration Statements	79
	802.3ad	79
	accept	80
	accept-source-mac	81
	access-concentrator	82
	access-profile	84
	accounting	85
	accounting-profile	85
	acfc	86
	acknowledge-retries	87
	acknowledge-timer	88
	action (OAM)	88
	action (Policer)	89
	action-profile (Applying to CFM)	89
	action-profile (Defining for CFM)	90
	action-profile (Defining for LFM)	91
	action-red-differential-delay	92
	activation-delay	92
	activation-priority	93
	address	94
	advertise-interval	96
	age	96
	agent-specifier	97
	aggregate (Gigabit Ethernet CoS Policer)	98
	aggregate (Hierarchical Policer)	99
	aggregate (SONET/SDH)	99
	aggregate-ports	100
	aggregated-ether-options	101
	aggregated-sonet-options	102

alarm	103
allow-any-vci	103
allow-fragmentation	104
allow-remote-loopback	104
annex	105
apply-action-profile	105
aps	106
arp	107
asynchronous-notification	108
atm-encapsulation	108
atm-options	109
atm-scheduler-map	110
authentication	111
authentication-key	112
authentication-profile-name	112
authenticator	113
auto-configure	114
auto-discovery	115
auto-negotiation	116
auto-negotiation (J Series uPIM)	117
auto-reconnect	118
backup-destination	118
backup-interface	119
backup-options	119
bandwidth	120
bandwidth-limit (Hierarchical Policer)	121
bandwidth-limit (Policer for Gigabit Ethernet Interfaces)	121
bchannel-allocation	122
bearer-bandwidth-limit	123
bert-algorithm	124
bert-error-rate	126
bert-period	128
bridge-domain	129
broadcast	130
buildout (E3 or T3 over ATM Interfaces)	131
buildout (T1 Interfaces)	132
bundle	133
burst-size-limit (Hierarchical Policer)	134
burst-size-limit (Policer for Gigabit Ethernet Interfaces)	134
byte-encoding	135
bytes	136
callback	137
callback-wait-period	138
caller	139
calling-number	140
cbit-parity	140
cbr	141
cell-bundle-size	142
chap	143

chap-secret	144
circuit-type	144
cisco-interoperability	145
classifier	145
clear-dont-fragment-bit	146
client	146
clock-rate	147
clocking	148
clocking-mode	149
compatibility-mode	150
compression (PPP Properties)	151
compression (Voice Services)	152
compression-device	152
connections	153
connectivity-fault-management	154
container-devices	156
container-list	156
container-options	157
container-type	157
continuity-check	158
control-channel	159
control-polarity	159
control-signal	160
copy-tos-to-outer-ip-header	160
core-dump	161
crc-major-alarm-threshold	161
crc-minor-alarm-threshold	162
cts	162
cts-polarity	163
current	163
data-input	164
dcd	165
dcd-polarity	165
dce	166
dce-options	166
deactivation-delay	167
default-actions	167
default-chap-secret	168
default-pap-password	168
delimiter	169
demux-destination (Underlying Interface)	169
demux-destination (Demux Interface)	170
demux-options	170
demux-source (Demux Interface)	171
demux-source (Underlying Interface)	172
demux0 (Static Interface)	173
description	174
destination (IPCP)	175
destination (Routing Instance)	175

destination (Tunnels)	176
destination-class-usage	177
destination-profile	177
interface (Port Mirroring)	178
dial-string	178
dialer	179
dialer-options	180
dialin	181
direction	181
disable (Interface)	182
disable (Link Protection)	183
disable-mlppp-inner-ppp-pfc	183
dlci	184
do-not-fragment	185
domain-name	186
dot1x	187
down-count	188
drop-timeout	189
ds0-options	189
dsl-options	190
dsr	190
dsr-polarity	191
dte-options	191
dtr	192
dtr-circuit	193
dtr-polarity	193
dump-on-flow-control	194
dynamic-call-admission-control	195
dynamic-profile (Stacked VLAN)	196
dynamic-profile (VLAN)	197
e1-options	198
e3-options	199
east-interface	200
egress-policer-overhead	201
encapsulation (Container Interface)	201
encapsulation (Logical Interface)	202
encapsulation (Physical Interface)	206
encoding	209
epd-threshold (Logical Interface)	210
epd-threshold (Physical Interface)	211
es-options	211
ethernet (Protocols OAM)	212
ethernet-policer-profile	215
ethernet-ring	216
ethernet-switch-profile	217
eui-64	218
evcs	219
event (LFM)	220
event-thresholds	220

fast-aps-switch	221
f-max-period	222
facility-override	222
failover-delay	223
family	224
fastether-options	228
fcs	229
feac-loop-respond	230
filter	231
flexible-vlan-tagging	232
flow-control	233
force	234
forwarding-class (ATM2 IQ Scheduler Maps)	234
forwarding-class (Gigabit Ethernet IQ Classifier)	235
fragment-threshold	235
frame-error	236
frame-period	237
frame-period-summary	238
framing (E1, E3, and T1 Interfaces)	239
framing (10-Gigabit Ethernet Interfaces)	240
framing (SONET and SDH Interfaces)	240
gether-options	241
gratuitous-arp-reply	242
guard-interval	243
high-plp-threshold	244
hello-timer	244
hierarchical-policer	245
hierarchical-schedulers	246
high-plp-max-threshold	246
high-plp-threshold	247
hold-interval (OAM)	247
hold-interval (Protection Group)	248
hold-time (APS)	248
hold-time (Physical Interface)	249
hold-time (SONET/SDH Defect Triggers)	250
host	251
idle-cycle-flag	252
idle-timeout	253
ieee802.1p	253
if-exceeding	254
ignore	254
ignore-all	255
ignore-l3-incompletes	255
ilmi	256
ima-group-options	257
ima-link-options	258
inactivity-timeout	259
incoming-called-number	259
incoming-map	260

indication	261
indication-polarity	261
ingress-policer-overhead	262
ingress-rate-limit	262
init-command-string	263
initial-route-check	264
inner-tag-protocol-id	265
inner-vlan-id	266
inner-vlan-id-range	267
input	267
input-list	268
input-policer	268
input-priority-map	269
input-three-color	269
input-vlan-map (Aggregated Ethernet)	270
input-vlan-map (Gigabit Ethernet IQ and 10-Gigabit Ethernet SFPP)	271
instance	271
interface (Hierarchical CoS Schedulers)	272
interface (IEEE 802.1x)	273
interface (IEEE 802.1ag OAM Connectivity-Fault Management)	274
interface (OAM Link-Fault Management)	275
interface-down	276
interface-mode	277
interface-name	278
interface-range	279
interface-set (Ethernet Interfaces)	280
interface-set (IP Demux Interfaces)	280
interface-status-tlv	281
interface-switch	281
interface-type	282
interfaces	283
interleave-fragments	283
interval	284
inverse-arp	285
invert-data	286
ipsec-sa	287
isdn-options	288
keep-address-and-control	289
keepalives	290
key	291
l2tp-interface-id	291
lACP (802.3ad)	292
lACP (Aggregated Ethernet)	293
layer2-policer	294
lcp-max-conf-req	295
lcp-restart-timer	295
level	296
line-encoding	297
line-protocol	298

line-rate	298
linear-red-profile	299
linear-red-profiles	300
link-adjacency-loss	300
link-discovery	301
link-down	301
link-event-rate	302
link-fault-management	303
link-layer-overhead	304
link-mode	305
link-protection	306
link-speed (Aggregated Ethernet)	307
link-speed (Aggregated SONET/SDH)	308
linktrace	309
lmi (Frame Relay)	310
lmi (Ethernet OAM)	312
lmi-type	313
load-interval	314
load-threshold	315
local-name	316
local-password	317
lockout	317
log-prefix	318
logical-interface-policer	318
logical-systems	319
long-buildout	319
loop-timing	320
loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3)	321
loopback (Aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet)	322
loopback (Serial)	323
loopback-clear-timer	324
loss-priority	324
loss-threshold	325
low-plp-max-threshold	325
low-plp-threshold	326
lowest-priority-defect	327
lsq-failure-options	328
mac	328
mac-address (Accept Source Mac)	329
mac-address (VLAN and Stacked VLAN Interfaces)	329
mac-learn-enable	330
mac-validate	331
maintenance-association	332
maintenance-domain	333
master-only	334
maximum-contexts	335
maximum-requests	335
maximum-vcs	336
mc-ae	337

member-interface-speed	338
member-interface-type	338
mep	339
minimum-links	340
mip-half-function	341
mlfr-uni-nni-bundle-options	342
mode	343
modem-options	343
monitor-session	344
mpls	344
mrru	345
mtu	346
multicast-dlci	347
multicast-vci	348
multicast-only	348
multicast-statistics	349
multilink-max-classes	349
multipoint	350
multipoint-destination	351
multiservice-options	352
n391	353
n392	354
n393	355
name-format	356
native-vlan-id	357
ncp-max-conf-req	358
ncp-restart-timer	358
negotiate-address	359
negotiation-options	359
neighbor	360
no-allow-link-events	360
asynchronous-notification	361
no-auto-mdix	361
auto-negotiation	362
auto-negotiation (J Series uPIM)	363
cbit-parity	364
core-dump	364
feac-loop-respond	365
flow-control	366
gratuitous-arp-reply	366
no-gratuitous-arp-request	367
no-keepalives	367
long-buildout	368
loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3)	369
loopback (Aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet)	370
loopback (Serial)	371
mac-learn-enable	372
no-partition	373
payload-scrambler	374

no-redirects	375
source-filtering	376
syslog (Interfaces)	377
syslog (Monitoring)	377
syslog (OAM Action)	378
no-termination-request	378
translate-discard-eligible	379
translate-fecn-and-becn	379
unframed	380
z0-increment	380
node-id	381
non-revertive	381
oam	382
oam-liveness	385
oam-period	386
oc-slice	387
open-timeout	387
operating-mode	388
optics-options	389
option-82	390
otn-options	391
output	393
output-list	394
output-policer	394
output-priority-map	395
output-three-color	395
output-vlan-map (Aggregated Ethernet)	396
output-vlan-map (Gigabit Ethernet IQ and 10-Gigabit Ethernet with SFPP)	397
overflow (Receive Bucket)	397
overflow (Transmit Bucket)	398
paired-group	398
pap	399
pap-password	400
partition	401
passive (CHAP)	402
passive (PAP)	402
passive-monitor-mode	403
password	404
path-database-size	404
path-trace	405
payload-scrambler	406
payload-size	407
pdu-interval	407
pdu-threshold	408
peer-unit	408
per-unit-scheduler	409
performance-monitoring	410
periodic	411
pfc	411

pic-type	412
plp-to-clp	412
plp1	413
point-to-point	414
policer (CFM Firewall)	414
policer (CFM Global)	415
policer (CFM Session)	416
policer (CoS)	417
policer (Interface)	418
policer (MAC)	419
pool	420
pop	421
pop-all-labels	422
pop-pop	423
pop-swap	423
port	424
port-priority	424
port-status-tlv	425
post-service-filter	425
ppp-options	426
pppoe-options	427
pppoe-underlying-options (Static and Dynamic Subscribers)	428
preferred	429
preferred-source-address	430
premium (Hierarchical Policer)	431
premium (Output Priority Map)	432
premium (Policer)	432
preserve-interface	433
primary (Address on Interface)	434
primary (AS PIC or Multiservices PIC Interfaces)	434
priority (OAM Connectivity-Fault Management)	435
priority (Schedulers)	435
promiscuous-mode	436
protect-circuit	436
protection-group	437
protocol-down	438
protocols	439
proxy	439
proxy-arp	440
push	441
push-push	441
queue-depth	442
queue-length	443
queues	443
quiet-period	444
radius-realm	444
ranges (Dynamic Stacked VLAN)	445
ranges (Dynamic VLAN)	445
rate	446

rdi	446
reassemble-packets	447
reauthentication	447
receive-bucket	448
receive-options-packets	448
receive-ttl-exceeded	449
red-differential-delay	449
redial-delay	450
redundancy-options	451
remote	452
remote-loopback	452
remote-loopback-respond	453
remote-mep	454
request	454
required-depth	455
restore-interval	456
retries	457
revert-time	457
revertive	458
rfc-2615	458
ring-protection-link-end	459
ring-protection-link-owner	459
routing-instance	460
rpf-check (interfaces)	461
rpf-loose-mode-discard	462
rtp	462
rts	463
rts-polarity	463
rtvbr	464
sampling	465
satop-options	466
scheduler-maps	467
schedulers	467
secondary	468
send-critical-event	468
serial-options	469
server	470
server-timeout	470
service (Logical Interfaces)	471
service (PPPoE)	472
service-domain	473
service-filter	474
service-name	474
service-name-table	475
service-name-tables	476
service-set	477
services	478
services-options	479
shaping	480

shdsl-options	481
short-name-format	482
short-sequence	483
snext	483
snr-margin	484
sonet-options	485
source	487
source-address-filter	488
source-class-usage	489
source-filtering	490
speed (Ethernet)	491
speed (MX Series DPC)	492
speed (SONET/SDH)	493
spid1	493
spid2	494
stacked-vlan-ranges	495
stacked-vlan-tagging	496
start-end-flag	497
static-tei-val	498
supplicant	498
supplicant-timeout	499
swap	499
swap-push	500
swap-swap	500
switch-options	501
switch-port	502
switch-type	503
switching-mode	504
symbol-period	505
syslog (Interfaces)	506
syslog (Monitoring)	506
syslog (OAM Action)	507
system-priority	507
t1-options	508
t310	509
t391	509
t392	510
t3-options	511
tag-protocol-id (TPIDs Expected to Be Sent or Received)	512
tag-protocol-id (TPID to Rewrite)	513
tei-option	513
then	514
threshold	514
timeslots	515
tm	516
tm-polarity	516
traceoptions (ICCP)	517
traceoptions (Individual Interfaces)	518
traceoptions (Interface Process)	520

traceoptions (LACP)	522
traceoptions (PPP Process)	524
traceoptions (PPPoE)	527
translate-discard-eligible	529
translate-fecn-and-becn	529
translate-plp-control-word-de	530
transmit-bucket	530
transmit-clock	531
transmit-period	531
transmit-weight (ATM2 IQ CoS Forwarding Class)	532
transmit-weight (ATM2 IQ Virtual Circuit)	533
traps	533
trigger	534
trigger-link-failure	535
trunk-bandwidth	535
trunk-id	536
ttl	536
tunnel	537
underlying-interface	538
unframed	539
unidirectional	539
unit	540
unnumbered-address (Demux)	546
unnumbered-address (Ethernet)	547
unnumbered-address (PPP)	548
up-count	549
user-prefix	550
username-include	551
vbr	552
vc-cos-mode	553
vci	554
vci-range	555
virtual-switch	555
vlan-id (Logical Port in Bridge Domain)	556
vlan-id (Outer VLAN ID)	556
vlan-id (VLAN ID to Be Bound to a Logical Interface)	557
vlan-id (VLAN ID to Rewrite)	558
vlan-id-list (Ethernet VLAN Circuit)	559
vlan-id-list (Interface in Bridge Domain)	560
vlan-id-range	561
vlan-ranges	562
vlan-rewrite	563
vlan-tagging	563
vlan-tags (Dual-Tagged Logical Interface)	564
vlan-tags (Stacked VLAN Tags)	566
vlan-tags-outer	567
vlan-vci-tagging	568
vpi (ATM CCC Cell-Relay Promiscuous Mode)	568
vpi (Define Virtual Path)	569

	vpi (Logical Interface and Interworking)	570
	vtmapping	570
	warning	571
	watch-list	571
	wavelength	572
	west-interface	575
	working-circuit	576
	yellow-differential-delay	576
	z0-increment	577
Part 3	Administration	
Chapter 5	See: Network Interface Technologies	581
Chapter 6	Command Summary	583
Part 4	Troubleshooting	
Chapter 7	See: Network Interface Technologies	587
Chapter 8	Interface Diagnostics	589
	Interface Diagnostics	589
	Configuring Loopback Testing	589
	Interface Diagnostics	591
	Starting and Stopping a BERT Test	595
	Example: Configuring Bit Error Rate Testing	595
Part 5	Index	
	Index	599

List of Figures

Part 1	Overview	
Chapter 1	Router Interfaces	3
	Figure 1: APS Interface	17
	Figure 2: Container Interface	17
	Figure 3: Routing Matrix	37
	Figure 4: Routing Matrix Based on a TX Matrix Plus Router	39
	Figure 5: Interface Slot, PIC, and Port Locations	42

List of Tables

	About the Documentation	xxiii
	Table 1: Notice Icons	xxv
	Table 2: Text and Syntax Conventions	xxv
Part 1	Overview	
Chapter 1	Router Interfaces	3
	Table 3: Supported Routing Engines by Chassis	7
	Table 4: Encapsulation Support by Interface Type	18
	Table 5: FPC Numbering for T640 Routers in a Routing Matrix	38
	Table 6: One-to-One FPC Numbering for T640 Routers in a Routing Matrix	38
	Table 7: FPC Numbering for T1600 Routers in a Routing Matrix	40
	Table 8: One-to-One FPC Numbering for T1600 Routers in a Routing Matrix	40
Part 4	Troubleshooting	
Chapter 8	Interface Diagnostics	589
	Table 9: Loopback Modes by Interface Type	590
	Table 10: BERT Capabilities by Interface Type	594

About the Documentation

- Documentation and Release Notes on page xxiii
- Supported Platforms on page xxiii
- Using the Examples in This Manual on page xxiii
- Documentation Conventions on page xxv
- Documentation Feedback on page xxvii
- Requesting Technical Support on page xxvii

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:

- M Series
- MX Series
- T Series
- J 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 [Junos OS 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 xxv 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

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

Convention	Description	Examples
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces 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; interface names; 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.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web 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 J-Web 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](#)
- [Supported Routing Engines by Chassis on page 7](#)
- [Understanding Internal Ethernet Interfaces on page 12](#)
- [Understanding Transient Interfaces on page 14](#)
- [Understanding Services Interfaces on page 15](#)
- [Container Interfaces Overview on page 16](#)
- [Interface Encapsulations Overview on page 18](#)
- [Interface Descriptors Overview on page 29](#)
- [Interface Naming Overview on page 30](#)
- [Displaying Interface Configurations Overview on page 43](#)

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 Configuration Guide](#).

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 14](#)

- [Understanding Services Interfaces on page 15](#) and [Junos OS Services Interfaces Configuration Guide](#)
- [Container Interfaces Overview on page 16](#)
- 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 12](#)

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 [Table 3 on page 7](#) 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**
- [Supported Routing Engines by Chassis on page 7](#)
 - [Types of Interfaces Overview on page 4](#)
 - [Permanent Interfaces Overview on page 5](#)
 - [Understanding Internal Ethernet Interfaces on page 12](#)
 - [Understanding Transient Interfaces on page 14](#)
 - [Understanding Services Interfaces on page 15](#)
 - [Container Interfaces Overview on page 16](#)
 - [Interface Encapsulations Overview on page 18](#)
 - [Interface Descriptors Overview on page 29](#)
 - [Interface Naming Overview on page 30](#)
 - [Displaying Interface Configurations Overview on page 43](#)

Supported Routing Engines by Chassis

Table 3 on page 7 lists the Routing Engines that each chassis supports, the first supported release for the given chassis and Routing Engine combination, the management Ethernet interface, and the internal Ethernet interfaces for each Routing Engine.

Table 3: Supported Routing Engines by Chassis

Chassis	Supported Routing Engines	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
M7i	RE-400-768	9.0	fxp0	fxp1
	RE-850-1536	7.2	fxp0	fxp1
M10i	RE-400-768	9.0	fxp0	fxp1, fxp2
	RE-850-1536	7.2	fxp0	fxp1, fxp2
M40e	RE-600-2048 (EOL details: PSN-2008-02-018)	5.3	fxp0	fxp1, fxp2
	RE-A1000-2048	8.1	fxp0	fxp1, fxp2

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

Chassis	Supported Routing Engines	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
M120	RE-A-1000-2048	8.0R2	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.0R2	fxp0	fxp1, fxp2
	RE-A-1800x2-8G	10.4	fxp0	fxp1, fxp2
	RE-A-1800x2-16G	10.4	fxp0	fxp1, fxp2
		NOTE: 64-bit Junos OS is supported from Junos OS Release 10.4.		
M320	RE-1600-2048 (EOL details: PSN-2008-02-09)	6.2	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.1	fxp0	fxp1, fxp2
	RE-A-1800x2-8G	10.4	fxp0	fxp1, fxp2
	RE-A-1800x2-16G	10.4	fxp0	fxp1, fxp2
		NOTE: 64-bit Junos OS is supported from Junos OS Release 10.4.		
MX240	RE-S-1300-2048	9.0	fxp0	fxp1, fxp2
	RE-S-2000-4096	9.0	fxp0	fxp1, fxp2
	RE-S-1800x2-8G	10.4	em0	em1
	RE-S-1800x4-16G	10.4	em0	em1
		NOTE: 64-bit Junos OS is supported from Junos OS Release 10.4.		

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

Chassis	Supported Routing Engines	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
MX480	RE-S-1300-2048	8.4	fxp0	fxp1, fxp2
	RE-S-2000-4096	8.4	fxp0	fxp1, fxp2
	RE-S-1800x2-8G	10.4	em0	em1
	RE-S-1800x4-16G	10.4	em0	em1
	NOTE: 64-bit Junos OS is supported from Junos OS Release 10.4.			
MX960	RE-S-1300-2048	8.2	fxp0	fxp1, fxp2
	RE-S-2000-4096	8.2	fxp0	fxp1, fxp2
	RE-S-1800x2-8G	10.4	em0	em1
	RE-S-1800x4-16G	10.4	em0	em1
	NOTE: 64-bit Junos OS is supported from Junos OS Release 10.4.			
T320	RE-600-2048 (EOL details: PSN-2008-02-08)	5.3	fxp0	fxp1, fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-09)	6.2	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.1	fxp0	fxp1, fxp2

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

Chassis	Supported Routing Engines	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
T640	RE-600-2048 (EOL details: PSN-2008-02-06)	5.3	fxp0	fxp1, fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-09)	6.2	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.1	fxp0	fxp1, fxp2
	RE-DUO-C1800-8G	11.2 NOTE: 64-bit Junos OS is supported from Junos OS Release 11.3.	em0	bcm0, em1
T1600	RE-600-2048 (EOL details: PSN-2008-02-06)	8.5	fxp0	fxp1, fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-09)	8.5	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.5	fxp0	fxp1, fxp2
	RE-DUO-C1800-8G (required to connect to a Routing Matrix)	Standalone router: 11.1 Router in a routing matrix: 9.6 NOTE: Junos OS Releases 9.5 through 10.4 support RE-DUO-C1800-8G only during upgrade to an LCC in a routing matrix. NOTE: 64-bit Junos OS is supported from Junos OS Release 11.4	em0	bcm0, em1

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

Chassis	Supported Routing Engines	First Supported Junos OS Release	Supported Management Ethernet Interface	Supported Internal Ethernet Interface
TX Matrix	RE-600-2048 (EOL details: PSN-2008-02-06)	7.0	fxp0	fxp1, fxp2
	RE-1600-2048 (EOL details: PSN-2008-02-06)	7.0	fxp0	fxp1, fxp2
	RE-A-2000-4096	8.5	fxp0	fxp1, fxp2
TX Matrix Plus	RE-D-2000-16384	9.6 <small>NOTE: 64-bit Junos OS is supported from Junos OS Release 11.4.</small>	em0	ixgbe0, ixgbe1

Related Documentation

- Routing Engine Specifications
- [Understanding Internal Ethernet Interfaces on page 12](#)
- [Understanding Management Ethernet Interfaces on page 5](#)

Understanding Internal Ethernet Interfaces

Internal Ethernet interfaces on the router provide communication between the Routing Engine and the Packet Forwarding Engine. 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 (the portion of the router running the Junos OS). Information transmitted includes the internal router temperature, the condition of the fans, whether an FPC has been removed or inserted, and information from the craft interface on the LCD panel.



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

To determine the supported internal Ethernet interface type for your router, see [“Supported Routing Engines by Chassis” on page 7](#).

For M Series, MX Series, and T Series routers not configured in a routing matrix with a TX Matrix Plus router, the internal Ethernet interface is **fxp1**.

If the router has redundant Routing Engines, another internal Ethernet interface, **fxp2**, 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.



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

- J Series, M Series, and MX Series routers and most T Series routers—For J Series, M Series, and MX Series routers, and for T Series routers other than TX Matrix Plus routers or T1600 routers configured in a routing matrix, the Junos OS creates the internal Ethernet interface **fxp1**. The internal Ethernet interface connects the Routing Engine **re0** (the portion of the router running the Junos OS) to the Packet Forwarding Engine. If the router has redundant Routing Engines, another internal Ethernet interface, **fxp2**, 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 (RE-TXP-SFC) and Control Board (TXP-CB) 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**, for the two 10-Gigabit Ethernet ports on the Routing Engine.

The 10-Gigabit Ethernet port at the **ixgbe0** interface connects the TX Matrix Plus Routing Engine to the Routing Engines of every T1600 router configured in the routing matrix.

- The port connects the Routing Engine to a 10-Gigabit Ethernet switch on the local Control Board.
- The 10-Gigabit Ethernet switch connects the Control Board to a Gigabit Ethernet switch on the same local Control Board.
- The Gigabit Ethernet switch connects the Control Board to the remote Routing Engines of every T1600 router 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.

- T1600 routers in a routing matrix—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.

The Gigabit Ethernet port at the **bcm0** interface connects the LCC Routing Engine to the Routing Engines of every other T1600 router configured in the routing matrix.

- The port connects the Routing Engine to a Gigabit Ethernet switch on the local Control Board.
- The switch connects the Control Board to the remote Routing Engines of every other T1600 router configured in the routing matrix.

If a T1600 router 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](#)
- [Understanding Internal Ethernet Interfaces on page 12](#)
- [Supported Routing Engines by Chassis on page 7](#)
- TX Matrix Plus and T1600 Router (Routing Matrix) Management Ethernet Interfaces
- T1600 Routers (Routing Matrix) Internal Ethernet Interfaces
- Displaying the Internal Ethernet Interface for M Series, MX Series, and Most T Series Routers
- Displaying Internal Ethernet Interfaces for a Routing Matrix with a TX Matrix Plus Router
- `show interfaces` (M Series and T Series Router 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 12](#)
- [Supported Routing Engines by Chassis on page 7](#)
- [Understanding Services Interfaces on page 15](#)
- [Container Interfaces Overview on page 16](#)
- [Interface Encapsulations Overview on page 18](#)
- [Interface Descriptors Overview on page 29](#)
- [Interface Naming Overview on page 30](#)
- [Displaying Interface Configurations Overview on page 43](#)

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 Configuration Guide](#). For more information about configuring tunnels, see the [Junos OS Services Interfaces Configuration Guide](#).
- 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 SONET/SDH Physical Interface Properties](#).

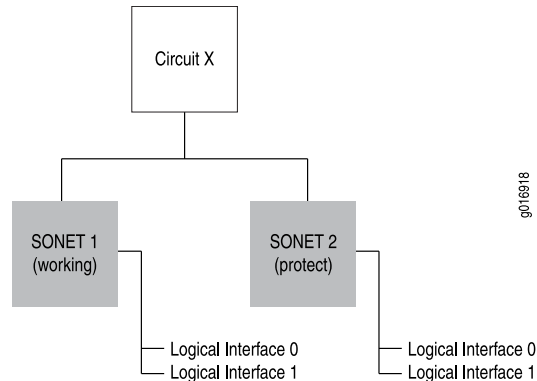
Container interfaces features are described in the following sections:

- [Understanding Traditional APS Concept on page 17](#)
- [Container Interfaces Concept on page 17](#)
- [APS Support for Container-Based Interfaces on page 18](#)
- [Autocopy of APS Parameters on page 18](#)

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 17](#)). The circuit, named Circuit X in the figure, is the link between the two SONET interfaces.

Figure 1: APS Interface

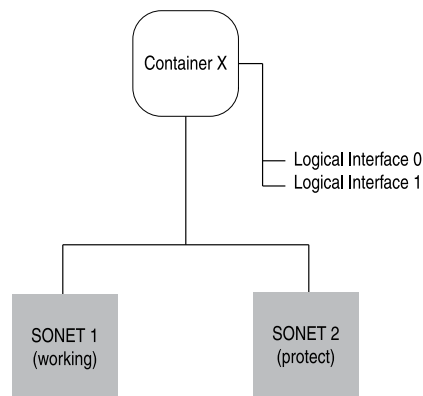


Traditional APS uses routing protocols that run on each individual SONET/SDH interface (since circuit is an abstract construct, instead of being an actual interface). When the working link goes down, the APS infrastructure brings up the protect link and its underlying logical interfaces, and brings down 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 17](#)).

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 SONET/SDH Physical Interface Properties](#)
 - [Configuring SONET/SDH Physical Interface Properties](#)

Interface Encapsulations Overview

Table 4 on page 18 lists encapsulation support by interface type.

Table 4: Encapsulation Support by Interface Type

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
ae —Aggregated Ethernet interface	ethernet-ccc —Ethernet cross-connect	dix —Ethernet DIXv2 (RFC 894)
	extended-vlan-ccc —Nonstandard TPID tagging for a cross-connect	vlan-ccc —802.1Q 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	

Table 4: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
as —Aggregated SONET/SDH interface	cisco-hdlc —Cisco-compatible HDLC framing ppp —Serial PPP device	NA
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

Table 4: Encapsulation Support by Interface Type (*continued*)

Interface Type	Physical Interface Encapsulation	Logical Interface Encapsulation
bcm —Gigabit Ethernet internal interfaces	NA	NA
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 4: 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 4: 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 4: 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 4: 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 4: 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 4: 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 4: 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 4: 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 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 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
Controller-level channelized IQ interfaces (cau4 , coc1 , coc3 , coc12 , cstm1 , ct1 , ct3 , ce1)	NA	NA
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

- Related Documentation**
- [Understanding Transient Interfaces on page 14](#)
 - [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 31](#)
- [Logical Part of an Interface Name on page 35](#)
- [Separators in an Interface Name on page 35](#)
- [Channel Part of an Interface Name on page 35](#)
- [Interface Naming for a Routing Matrix Based on a TX Matrix Router on page 36](#)
- [Interface Naming for a Routing Matrix Based on a TX Matrix Plus Router on page 38](#)
- [Chassis Interface Naming on page 41](#)
- [Examples: Interface Naming on page 41](#)

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. 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**—Gigabit Ethernet internal interface.
- **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 7](#).
- **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 7](#).
- **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.
- **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 Configuration Guide](#) and the [Junos OS Feature Guides](#).
- **ip**—IP-over-IP encapsulation tunnel interface.
- **ipip**—Internally generated interface that is not configurable.
- **ixgbe**—10-Gigabit Ethernet internal interface.
- **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 Configuration Guide](#).
- **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 3D Universal Edge Routers Line Card Guide](#).

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 36](#).

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.



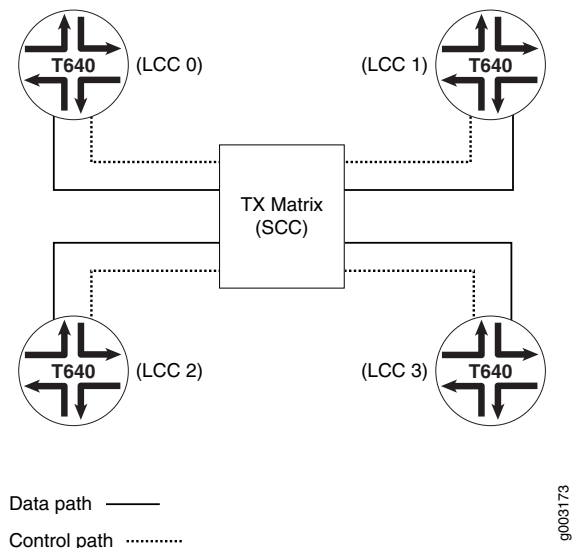
NOTE: In the Junos OS implementation, the term *logical interfaces* generally refers to interfaces you configure by including the unit statement at the [edit interfaces *interface-name*] hierarchy level. Logical interfaces have the *.logical* descriptor at the end of the interface name, as in ge-0/0/0.1 or t1-0/0/0.1, 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 37](#).

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 5 on page 38](#) summarizes the FPC numbering for a T640 router in a routing matrix.

Table 5: 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 6 on page 38 lists each FPC hardware slot and the corresponding configuration numbers for LCCs 0 through 3.

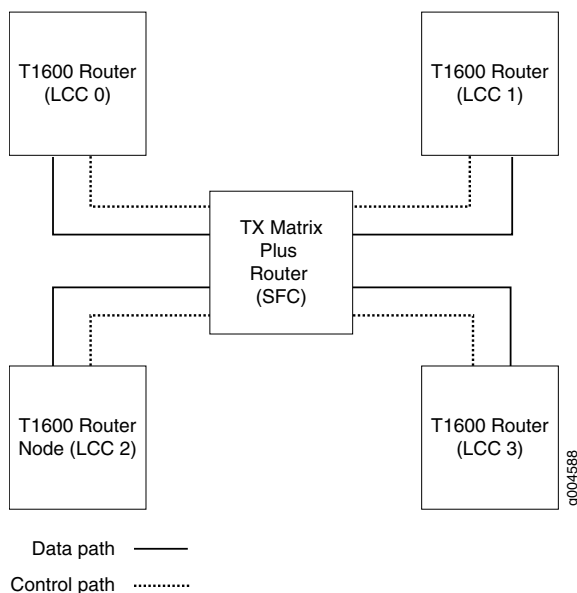
Table 6: One-to-One FPC Numbering for T640 Routers in a Routing Matrix

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 39.

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 7 on page 40 summarizes the FPC numbering for a routing matrix based on a TX Matrix Plus router.

Table 7: 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 8 on page 40 lists each FPC hardware slot and the corresponding configuration numbers for LCCs 0 through 3.

Table 8: 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								
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 {
      ...
    }
  }
}
```

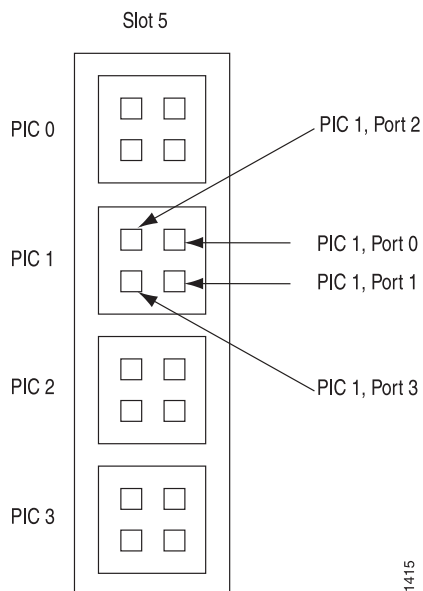
For the FPC slot in a T640 router in a routing matrix, specify the actual hardware slot number, as labeled on the T640 router chassis. Do not use the corresponding software FPC configuration numbers shown in [Table 6 on page 38](#).

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 7 on page 40](#).

For more information about the **[edit chassis]** hierarchy, see the *Junos OS System Basics Configuration Guide*.

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 42](#).

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](#)

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 47](#)
- [Network Interfaces Configuration Guide - All Related Configuration Hierarchies on page 49](#)
- [Network Interfaces Configuration Guide - All Related Configuration Statements on page 79](#)

CHAPTER 2

See: Network Interface Technologies

CHAPTER 3

Network Interfaces Configuration Guide – All Related Configuration Hierarchies

- [\[edit chassis\] Hierarchy Level on page 49](#)
- [\[edit interfaces\] Hierarchy Level on page 50](#)
- [\[edit logical-systems\] Hierarchy Level on page 66](#)
- [\[edit protocols connections\] Hierarchy Level on page 71](#)
- [\[edit protocols dot1x\] Hierarchy Level on page 72](#)
- [\[edit protocols iccp\] Hierarchy Level on page 72](#)
- [\[edit protocols lacp\] Hierarchy Level on page 73](#)
- [\[edit protocols oam\] Hierarchy Level on page 73](#)
- [\[edit protocols ppp\] Hierarchy Level on page 75](#)
- [\[edit protocols pppoe\] Hierarchy Level on page 75](#)
- [\[edit protocols protection-group\] Hierarchy Level on page 76](#)
- [\[edit protocols vrrp\] Hierarchy Level on page 77](#)
- [\[edit system processes\] Hierarchy Level on page 77](#)

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

```
chassis {
  aggregated-devices {
    ethernet {
      device-count number;
    }
    sonet {
      device-count number;
    }
  }
  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{
  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 {
    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);
    }
    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 {
            input-priority-map {
                ieee802.1p premium [ values ];
            }
            output-priority-map {
                classifier {
                    premium {
```



```
    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;
}
otn-options {
    fec (efec | gfec | none);
    (laser-enable | no-laser-enable);
    (line-loopback | no-line-loopback);
    pass-thru;
    rate (fixed-stuff-bytes | no-fixed-stuff-bytes | pass-thru);
    transmit-payload-type number;
    trigger (oc-lof | oc-lom | oc-los | oc-wavelength-lock | odu-ais | odu-bbe-th | odu-bdi
        | odu-es-th | odu-lck | odu-oci | odu-sd | odu-ses-th | odu-ttim | odu-uas-th |
        opu-ptm | otu-ais | otu-bbe-th | otu-bdi | otu-es-th | otu-fec-deg | otu-fec-exe |
        otu-iae | otu-sd | otu-ses-th | otu-ttim | otu-uas-th);
    tti;
}
optics-options {
    wavelength nm;
    alarm alarm-name {
        (syslog | link-down);
    }
    warning warning-name {
        (syslog | link-down);
    }
}
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;
    }
}
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;
            }
        }
    }
}
accounting-profile name;
advisory-options (downstream-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-vsa-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 dlci-identifier | vci vci-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.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 {  
            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](#)
- [Junos OS Ethernet Interfaces Configuration Guide](#)
- [Junos OS Network Interfaces Configuration Guide](#)

[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 [Junos OS Routing Protocols Configuration Guide](#).

```
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 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.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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[\[edit protocols dot1x\] 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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[\[edit protocols iccp\] 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**
- [Junos OS Hierarchy and RFC Reference](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[\[edit protocols ppp\] Hierarchy Level](#)

```

monitor-session (interface-name | all);
traceoptions {
  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](#)
 - [Junos OS Ethernet Interfaces Configuration Guide](#)
 - [Junos OS Network Interfaces Configuration Guide](#)

[\[edit protocols pppoe\] Hierarchy Level](#)

```

pppoe {
  pado-advertise;
  service-name-tables table-name {

```

```
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;  
        }  
    }  
}  
  
traceoptions {  
    file <filename> <files number> <match regular-expression> <size maximum-file-size>  
    <world-readable | no-world-readable>;  
    flag flag;  
    level (all | error | info | notice | verbose | warning);  
    no-remote-trace;  
}
```

[edit protocols protection-group] Hierarchy Level

```

ethernet-ring ring-name {
    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;
        }
    }
}

```

Related Documentation

- *Junos OS Hierarchy and RFC Reference*
- *Junos OS Ethernet Interfaces Configuration Guide*
- *Junos OS Network Interfaces Configuration Guide*

[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 {
    failover-delay milliseconds;
    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;
    }
  }
}
```

Related Documentation

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

[edit system processes] Hierarchy Level



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


Network Interfaces Configuration Guide – All Related Configuration Statements

802.3ad

Syntax	<pre>802.3ad { aex (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>aex—Aggregated Ethernet logical interface number. 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"> Configuring an Aggregated Ethernet Interface Configuring Aggregated Ethernet Link Protection

accept

Syntax	<code>accept (any dhcp-v4 dhcp-v6 inet inet6 pppoe);</code>
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> <div> NOTE: The DHCP-specific mac-address and option-82 options are rejected if the accept statement is not set to dhcp-v4.</div> <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> <div> NOTE: The pppoe VLAN Ethernet packet type option is supported only for Trio MPC/MIC interfaces on MX Series Routers.</div>
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 12.1 for PTX Packet Transport Switches.

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 Switches.

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 Switches
 - [source-filtering on page 376](#)

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) 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; Trio MPCs on MX Series routers) 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 Trio 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	<code>[edit interfaces interface-name auto-configure vlan-ranges],</code> <code>[edit interfaces interface-name auto-configure stacked-vlan-ranges],</code> <code>[edit interfaces interface-name ppp-options chap],</code> <code>[edit interfaces interface-name ppp-options pap],</code> <code>[edit interfaces interface-name unit logical-unit-number ppp-options chap],</code> <code>[edit interfaces interface-name unit logical-unit-number ppp-options pap],</code> <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number ppp-options chap],</code> <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number ppp-options pap]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Support for PAP added in Junos OS Release 8.3. Support for VLAN and stacked VLAN ranges added in Junos OS Release 10.0.
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	interface —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 Challenge Handshake Authentication Protocol• Configuring the PPP Password Authentication Protocol• default-chap-secret on page 168• Junos OS System Basics Configuration Guide

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"> Enabling Source Class and Destination Class Usage

accounting-profile

Syntax	<code>accounting-profile <i>name</i>;</code>
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"> Applying an Accounting Profile to the Physical Interface Applying an Accounting Profile to the Logical Interface

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">Configuring PPP Address and Control Field Compression

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">• Junos OS Services Interfaces Configuration Guide• action-red-differential-delay on page 92• hello-timer on page 244

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	<code>milliseconds</code> —Time, in milliseconds, to wait for an add link acknowledgment, hello acknowledgment, or remove link acknowledgment message. Range: 1 through 10 milliseconds Default: 4 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">• Junos OS Services Interfaces Configuration Guide• address on page 94, hello-timer on page 244• hello-timer on page 244

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	interface—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 the Actions to Be Taken for Link-Fault Management Events

action (Policer)

Syntax	action { loss-priority high then discard; }
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">• Junos OS Class of Service Configuration Guide• logical-interface-policer on page 318

action-profile (Applying to CFM)

Syntax	action-profile <i>profile-name</i> ;
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">• Configuring a Maintenance Endpoint

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 167](#)
- [event \(CFM\)](#)
- [interface-down on page 276](#)

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"> Configuring an OAM Action Profile

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">• Junos OS Services Interfaces Configuration Guide• remote on page 452• yellow-differential-delay on page 576

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">• Configuring the Dialer Interface• Junos OS Interfaces and Routing Configuration Guide

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"> Configuring Dynamic Call Admission Control Junos OS Services Interfaces Configuration Guide Junos OS Interfaces and Routing Configuration Guide

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 dlcid dlcid-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.



.....
NOTE: The `vrrp` High Availability functionality is not available on the QFX Series.
.....

Options **address**—Address of the interface.

The remaining statements are explained separately.



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

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 359](#)
 - [unnumbered-address \(Ethernet\) on page 547](#)
 - [Junos OS System Basics Configuration Guide](#)

advertise-interval

Syntax	<code>advertise-interval <i>milliseconds</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> 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	<i>milliseconds</i> —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	<ul style="list-style-type: none">Configuring APS Timers

age

Syntax	<code>age (30m 10m 1m 30s 10s);</code>
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">Configuring Linktrace Protocol in CFM

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">Configuring PPPoE Service Name TablesAssigning an ACI/ARI Pair to a Service Name and Configuring the Action Taken When the Client Request Includes ACI/ARI Information

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">Configuring Gigabit Ethernet Policerspremium (Hierarchical Policer) on page 431ieee802.1p on page 253

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, 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">Applying PolicersJunos OS Class of Service Configuration Guide

aggregate (SONET/SDH)

Syntax	<pre>aggregate asx;</pre>
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">Configuring Aggregated SONET/SDH Interfaces

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">• Specifying OC768-over-OC192 Mode

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;
        }
        link-protection;
        link-speed speed;
        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">• Ethernet Interfaces Overview

aggregated-sonet-options

Syntax	<pre>aggregated-sonet-options { link-speed <i>speed</i>; minimum-links <i>number</i>; }</pre>
Hierarchy Level	[edit interfaces <i>asx</i>]
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">• Configuring Aggregated SONET/SDH Interfaces

alarm

Syntax	<code>alarm low-light-alarm { (link-down syslog); }</code>
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 —Drops the 10-Gigabit Ethernet link and marks link as down. syslog —Writes 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">Configuring 10-Gigabit Ethernet Link Down Notification for Optics Options Alarm or Warning

allow-any-vci

Syntax	<code>allow-any-vci;</code>
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.
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">Configuring an ATM1 Cell-Relay Circuit

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">• Junos OS Services Interfaces Configuration Guide• reassemble-packets on page 447

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 all Ethernet interfaces on the 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">• Enabling Remote Loopback Support on the Local Interface

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"> ATM-over-SHDSL Overview

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"> Applying an Action Profile

aps

Syntax `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;
 }`

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

- Configuring APS and MSP

arp

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 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 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	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 edit <i>logical-systems</i> hierarchy is not available on QFabric switches.</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"> Configuring Static ARP Table Entries Configuring Static ARP Entries

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.
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">• 10-Gigabit Ethernet Notification of Link Down Alarm Overview

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	<p>direct—Use direct encapsulation. G.832 framing on E3 interfaces requires direct encapsulation.</p> <p>plcp—Use PLCP encapsulation.</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 E3 and T3 Parameters on ATM Interfaces• encapsulation (Physical Interface) on page 206

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.

Description Configure ATM-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

- [Interface Encapsulations Overview on page 18](#)
- [multipoint-destination on page 351](#)
- [shaping on page 480](#)
- [vci on page 554](#)

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 467](#)

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>; option-82 <<i>circuit-id</i>> <<i>remote-id</i>>; 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], [edit interfaces <i>interface-name</i> auto-configure stacked-vlan-ranges]
Release Information	Statement introduced in Junos OS Release 10.0.
Description	Specify the authentication parameters that trigger the Access-Request message to AAA for the interface.
Options	The remaining statements are explained separately.
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"> Configuring Subscribers over Static Interfaces Configuring the Static Subscriber Global Authentication Password

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">Configuring Basic APS SupportFor 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 Junos OS High Availability Configuration Guide.

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">IEEE 802.1x Port-Based Network Access Control Overviewauthenticator on page 113dot1x on page 187

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"> • IEEE 802.1x Port-Based Network Access Control Overview • authentication-profile-name on page 112 • dot1x on page 187

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-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-82;
                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

- Configuring VLAN Interfaces to Use Dynamic Profiles

auto-discovery

Syntax auto-discovery;

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 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

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

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.
Description	<p>For Gigabit Ethernet interfaces on M Series, MX Series, T Series, and TX Matrix routers, explicitly enable autonegotiation and remote fault. For EX Series switches and J Series Services Routers, explicitly enable autonegotiation only.</p> <ul style="list-style-type: none">• 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. <p>When you configure Tri-Rate Ethernet copper interfaces to operate at 1 Gbps, autonegotiation must be enabled.</p> <div><p>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.</p><p>To correct the invalid configuration and disable autonegotiation:</p><ol style="list-style-type: none">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.</div> <p>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.</p>
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, and TX Matrix 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"> Gigabit Ethernet Autonegotiation Overview Configuring J Series Services Router Switching Interfaces Configuring Gigabit Ethernet Interfaces (CLI Procedure) Configuring Gigabit Ethernet Interfaces (CLI Procedure)

auto-negotiation (J Series uPIM)

Syntax	(auto-negotiation no-auto-negotiation);
Hierarchy Level	[edit interfaces <i>ge-pim</i> /0/0 switch-options switch-port <i>port-number</i>]
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"> Configuring J Series Services Router Switching Interfaces

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">Configuring the PPPoE Automatic Reconnect Wait Timer<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 Configuration Guide</i>destination (Tunnels) on page 176

backup-interface

Syntax	<code>backup-interface es-fpc/pic/port;</code>
Hierarchy Level	<code>[edit interfaces es-fpc/pic/port es-options]</code>
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	<code>es-fpc/pic/port</code> —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"> • Junos OS Services Interfaces Configuration Guide

backup-options

Syntax	<pre>backup-options { interface interface-name; }</pre>
Hierarchy Level	<code>[edit interfaces interface-name unit logical-unit-number]</code> , <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>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.</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"> • Configuring an ISDN Dialer Interface as a Backup Interface • Junos OS Interfaces and Routing Configuration Guide

bandwidth

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>bandwidth</i>;</code>
Hierarchy Level	[edit firewall hierarchical-policer aggregate if-exceeding], [edit firewall hierarchical-policer premium if-exceeding]
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, to define a policer to apply to nonpremium traffic in a hierarchical policer.
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"> Applying Policers Junos OS Class of Service Configuration Guide

bandwidth-limit (Policer for Gigabit Ethernet Interfaces)

Syntax	<code>bandwidth-limit <i>bps</i>;</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	<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	interface—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 burst-size-limit (Policer for Gigabit Ethernet Interfaces) on page 134

bchannel-allocation

Syntax	bchannel-allocation (ascending descending);
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	(ascending descending)—Allocate the B-channels in ascending (from low to high) or descending (from high to low) order. Default: Descending order
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Allocating B-Channels for Dialout<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"> Configuring Dynamic Call Admission Control Junos OS Services Interfaces Configuration Guide Junos OS Interfaces and Routing Configuration Guide

bert-algorithm

Syntax `bert-algorithm algorithm;`

Hierarchy Level [edit interfaces *ce1-fpc/pic/port*],
[edit interfaces *ct1-fpc/pic/port*],
[edit interfaces *interface-name ds0-options*],
[edit interfaces *interface-name e1-options*],
[edit interfaces *interface-name e3-options*],
[edit interfaces *interface-name t1-options*],
[edit interfaces *interface-name t3-options*]

Release Information Statement introduced before Junos OS Release 7.4.

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 *algorithm*—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:

- **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.
- **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	<ul style="list-style-type: none">• Interface Diagnostics on page 591• 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 126• bert-period on page 128
------------------------------	---

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	Statement introduced before Junos OS Release 7.4.
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 124 • bert-period on page 128 • ds0-options on page 189 • e1-options on page 198 • e3-options on page 199 • t1-options on page 508 • t3-options on page 511 • Interface Diagnostics on page 591 • 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	<code>[edit interfaces <i>ce1-fpc/pic/port</i>],</code> <code>[edit interfaces <i>ct1-fpc/pic/port</i>],</code> <code>[edit interfaces <i>interface-name ds0-options</i>],</code> <code>[edit interfaces <i>interface-name e1-options</i>],</code> <code>[edit interfaces <i>interface-name e3-options</i>],</code> <code>[edit interfaces <i>interface-name t1-options</i>],</code> <code>[edit interfaces <i>interface-name t3-options</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
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>  <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 <code>[edit interfaces <i>ce1-fpc/pic/port</i>]</code> or <code>[edit interfaces <i>ct1-fpc/pic/port</i>]</code> 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 591 Configuring E1 BERT Properties Configuring E3 BERT Properties

- Configuring T1 BERT Properties
- Configuring T3 BERT Properties
- [bert-algorithm on page 124](#)
- [bert-error-rate on page 126](#)

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">• Configuring Maintenance Intermediate Points• Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers• maintenance-domain on page 333

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> NOTE: The edit logical-systems hierarchy is not available on QFabric switches.</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 the Interface Address

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">Configuring E3 and T3 Parameters on ATM Interfaces

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.
Description	For T1 interfaces, set the buildout value.



NOTE: When configuring CT1 interfaces on 10-port Channelized E1/T1 IQE PICs, the **buildout** statement must be included at the hierarchy level.

Default	The default buildout value is 0 through 132 feet.
Options	You can set the buildout value to one of the following: <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 J Series routers only, long buildout with 7.5 dB transmit attenuation• long-15db—For J Series routers only, long buildout with 15 dB transmit attenuation• long-22.5db—For 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">• Configuring the T1 Buildout• <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"> Junos OS Services Interfaces Configuration Guide

burst-size-limit (Hierarchical Policer)

Syntax	<code>burst-size-limit</code> <i>burst</i> ;
Hierarchy Level	[edit firewall hierarchical-policer aggregate if-exceeding], [edit firewall hierarchical-policer premium if-exceeding]
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, define a policer burst size limit to apply to nonpremium traffic in a hierarchical policer.
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">Applying PolicersJunos OS Class of Service Configuration Guide

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

Syntax	<code>burst-size-limit</code> <i>bytes</i> ;
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	<i>bytes</i> —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 Policersbandwidth-limit (Policer for Gigabit Ethernet Interfaces) on page 121

byte-encoding

Syntax	byte-encoding (nx56 nx64);
Hierarchy Level	[edit interfaces <i>t1-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.
Description	Set the byte encoding on a DS0 or T1 interface to use 7 bits per byte or 8 bits per byte.




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-fpc/pic/port*] hierarchy level.

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"> Configuring T1 Byte Encoding

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	interface—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 SONET/SDH Header Byte Valuesno-concatenate

callback

Syntax	callback;
Hierarchy Level	[edit interfaces <i>dl n</i> unit <i>logical-unit-number</i> dialer-options incoming-map], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl n</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, 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</i> unit <i>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 <i>caller-id</i> statement at the [edit interfaces <i>dl n</i> unit <i>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"> Configuring Dial-In and Callback <i>Junos OS Interfaces and Routing Configuration Guide</i> callback-wait-period on page 138

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">Configuring Dial-In and Callback<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"> ISDN Interfaces Overview <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">Configuring ISDN Physical Interface Properties<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">Configuring E3 and T3 Parameters on ATM InterfacesDisabling T3 C-Bit Parity Mode

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 line-rate, or 135,600,000 bps. For ATM1 OC12 interfaces, the maximum available rate is 50 percent of line-rate, 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 464 shaping on page 480 vbr on page 552

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, you can 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">Configuring the Layer 2 Circuit Cell-Relay Cell Maximum

chap

Syntax	<pre>chap { access-profile name; default-chap-secret name; local-name name; passive; }</pre>
Hierarchy Level	<p>[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]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Allows 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. <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"> • Configuring the PPP Challenge Handshake Authentication Protocol • Junos OS System Basics Configuration Guide

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, as defined in RFC 1994.
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">Configuring PPP CHAP Authenticationpap-password on page 400Junos OS System Basics Configuration Guide

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">Configuring VLAN Interface Username Information for AAA Authentication

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"> • Junos OS Services Interfaces Configuration Guide

classifier

Syntax	<pre> classifier { per-unit-scheduler { 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]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>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.</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"> • Specifying an Output Priority Map • input-priority-map on page 269

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">• Junos OS Services Interfaces Configuration Guide

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">• Configuring the PPPoE Client Mode

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">• Configuring the Serial Clocking Mode



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.
Description	For interfaces that can use various clock sources, configure the source of the transmit clock on each interface.
Options	<p>external—The clock source is provided by the data communication equipment (DCE).</p> <p>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.</p> <p>internal—Use the internal stratum 3 clock as the reference clock.</p> <p>Default: internal</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 Clock Source• Configuring the Clock Source on SONET/SDH Interfaces• Clock Sources on Channelized Interfaces• Configuring a Channelized T1/E1 Interface to Drop and Insert Time Slots• loop-timing on page 320

clocking-mode

Syntax	clocking-mode (dce internal loop);
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">Configuring the Serial Clocking Mode

compatibility-mode

Syntax	compatibility-mode (adtran digital-link kentrox larscom verilink) <subrate <i>value</i> >;
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 compatibility-mode 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 <i>value</i>—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	interface—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 E3 CSU Compatibility ModeConfiguring the T3 CSU Compatibility Modepayload-scrambler on page 374

compression (PPP Properties)

Syntax	compression { acfc; pfc; }
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	For interfaces with PPP encapsulation, set Link Control Protocol (LCP) compression 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">• Configuring PPP Address and Control Field Compression• Configuring the PPP Protocol Field Compression

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">• Junos OS Services Interfaces Configuration Guide

compression-device

Syntax	<pre>compression-device <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	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">• Junos OS Services Interfaces Configuration Guide• Junos OS Interfaces and Routing Configuration Guide

connections

Syntax	<pre>connections { interface-switch <i>connection-name</i> { interface <i>interface-name.unit-number</i>; interface <i>interface-name.unit-number</i>; } }</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">Defining the Connection for Switching Cross-ConnectsJunos OS MPLS Applications Configuration Guide

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">Configuring Container Interfaces

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">Configuring Container Interfacescontainer-options on page 157

container-options

Syntax	<pre>container-options { container-list [<i>container-interface-names</i>]; container-type aps; member-interface-type sonet { member-interface-speed [<i>speed</i>]; } }</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">Configuring Container Interfaces

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">Configuring Container Interfaces

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">Continuity Check ProtocolExample: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers

control-channel

Syntax	<code>control-channel <i>channel-name</i> { vlan <i>vlan-id</i>; }</code>
Hierarchy Level	[edit protocols protection-group ethernet-ring name (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"> Ethernet Ring Protection Switching Overview Example: Configuring Ethernet Ring Protection Switching on EX Series Switches Configuring Ethernet Ring Protection Switching (CLI Procedure)

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"> Configuring Serial Signal Polarities

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	assert —The to-DCE signal must be asserted. de-assert —The to-DCE signal must be deasserted. normal —Normal request-to-send (RTS) signal handling, as defined by ITU-T Recommendation X.21. 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">Configuring the Serial Signal Handling

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	interface—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 Class of Service Configuration Guide

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	<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"> • Configuring Multiservice Physical Interface Properties • Junos OS Services Interfaces Configuration Guide

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.
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>rate—Error rate expressed as the number of errors per number of bits. The value 1e-3 is one error in 10⁻³ bits and 5e-4 is five errors in 10⁻⁴ 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.
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	rate —Error rate expressed as the number of errors per number of bits. The value 1e-3 is one error in 10 ⁻³ bits and 5e-4 is five errors in 10 ⁻⁴ bits. Default: 5e-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">Configuring T1 CRC Error Minor Alarm Thresholds

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	ignore —The from-DCE signal is ignored. normal —Normal CTS 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">Configuring the Serial Signal Handling

cts-polarity

Syntax	<code>cts-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 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"> Configuring Serial Signal Polarities

current

Syntax	<code>current margin;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> shdsl-options snr-margin],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> shdsl-options snr-margin]</p>
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	<p>margin—Desired current SNR margin. Specify either disabled or a value from 0 dB through 10 dB.</p> <p>Default: 0 dB</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"> ATM-over-SHDSL Overview

data-input

Syntax	<code>data-input (system interface <i>interface-name</i>);</code>
Hierarchy Level	[edit interfaces <i>ds-pim</i> /0/ <i>port:channel</i>]
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 [edit interfaces <i>interface-name</i>] 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">• Configuring a Channelized T1/E1 Interface to Drop and Insert Time Slots• <i>Junos OS Interfaces and Routing Configuration Guide</i>• clocking on page 148

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	<p>ignore—The from-DCE signal is ignored.</p> <p>normal—Normal DCD 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"> Configuring the Serial Signal Handling

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	<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"> Configuring Serial Signal Polarities

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">Configuring the Router as a DCE with Frame Relay Encapsulation

dce-options

Syntax	dce-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); }
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">Configuring the Serial Signal Handling

deactivation-delay

Syntax	<code>deactivation-delay 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, configure the ISDN deactivation delay. Used only for dialer backup and dialer watch cases.
Options	<p>seconds—Interval before the backup interface is deactivated after the primary interface has come up.</p> <p>Range: 1 through 4,294,967,295 seconds</p> <p>Default: 0 (zero)</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 ISDN Logical Interface Properties <i>Junos OS Interfaces and Routing Configuration Guide</i>

default-actions

Syntax	<pre>default-actions { interface-down; }</pre>
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	<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 Connectivity Fault Management Action Profile

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	interface—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 a Default CHAP Secret• access-profile on page 84


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	interface—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 a Default PAP Password• access-profile on page 84

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 { <i>destination-prefix</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>], [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">Configuring IP Demux Prefixes


demux-options

Syntax	<code>demux-options { underlying-interface <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">Specifying the Demux Underlying Interface

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">Configuring IP Demux Prefixes

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">Configuring an IP Demux Underlying Interface

demux0 (Static Interface)

```
Syntax  demux0 {
        unit logical-unit-number {
            demux-options {
                underlying-interface interface-name
            }
            family family {
                access-concentrator name;
                {
                    destination-prefix;
                }
                duplicate-protection;
                dynamic-profile profile-name;
                {
                    source-prefix;
                }
                max-sessions number;
                service-name-table table-name
                targeted-distribution;
                unnumbered-address interface-name <preferred-source-address address>;
            }
            vlan-id number;
            vlan-tags outer [tpid].vlan-id [inner [tpid].vlan-id];
        }
    }
```

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

Release Information Statement introduced in Junos OS Release 9.0.

Description Configure the logical demultiplexing (demux) interface.

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

- Specifying the Demux Underlying Interface
- Configuring IP Demux Prefixes

description

Syntax	<code>description text;</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. Statement introduced in Junos OS Release 9.0 for EX Series switches.
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	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Adding an Interface Description to the Configuration• Adding a Logical Unit Description to the Configuration• Configuring Gigabit Ethernet Interfaces (CLI Procedure)• Enabling and Disabling Insertion of Option 82 Information

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"> Configuring IPCP Options address on page 94 negotiate-address on page 359 Junos OS System Basics Configuration Guide

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"> Junos OS Services Interfaces Configuration Guide

destination (Tunnels)

Syntax	<code>destination address;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet address <i>address</i>],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <i>family</i> inet <i>unnumbered-address</i></code> <code> <i>interface-name</i>],</code> <code>[edit interfaces <i>interface-name</i> <i>unit logical-unit-number</i> tunnel],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code> <i>family</i> inet address <i>address</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i></code> <code> <i>family</i> inet <i>unnumbered-address</i> <i>interface-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>unit logical-unit-number</i></code> <code> tunnel]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
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	<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">• Configuring the Interface Address• Configuring Generic Routing Encapsulation Tunneling (CLI Procedure)• Junos OS Services Interfaces Configuration Guide• point-to-point on page 414

destination-class-usage

Syntax	<code>destination-class-usage;</code>
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"> Enabling Source Class and Destination Class Usage accounting on page 85 source-class-usage on page 489

destination-profile

Syntax	<code>destination-profile <i>name</i>;</code>
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"> Configuring IPCP Options destination (IPCP) on page 175 Junos OS System Basics Configuration Guide

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 Configuring Port Mirroring.
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">Configuring the Dialer Interface

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">Applying the Dial-on-Demand Dialer Filter to the Dialer Interfaces<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">• Configuring ISDN Logical Interface Properties• Specifying a USB Modem Interface on J Series Routers• Junos OS Services Interfaces Configuration Guide

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"> Specifying a USB Modem Interface on J Series Routers

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 mep-id]
Release Information	Statement introduced in Junos OS Release 8.4.
Description	Configure the direction of the MEP.
Options	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. down —Down MEP CCMs are transmitted only out the interface configured on this MEP.
Required Privilege Level	interface—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 a Maintenance Endpoint Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers IEEE 802.1ag OAM Connectivity Fault Management Overview

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.
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.



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.



NOTE: 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	<ul style="list-style-type: none"> 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.
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	<ul style="list-style-type: none">• Configuring Aggregated Ethernet LACP

disable-mlppp-inner-ppp-pfc

Syntax	disable-mlppp-inner-ppp-pfc;
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	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	<ul style="list-style-type: none">• Junos OS Services Interfaces Configuration Guide

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">• Data-Link Connection Identifiers on Channelized Interfaces• Configuring Frame Relay DLCIs• Junos OS Services Interfaces Configuration Guide• encapsulation (Logical Interface) on page 202• multicast-dlci on page 347• multipoint-destination on page 351

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">• Junos OS Services Interfaces Configuration Guide• reassemble-packets on page 447

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"> • IEEE 802.1x Port-Based Network Access Control Overview • authenticator on page 113 • authentication-profile-name on page 112 • interface (IEEE 802.1x) on page 273

down-count

Syntax	<code>down-count <i>cells</i>;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> oam-liveness]</code> , <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness]</code> , <code>[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]</code> , <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> oam-liveness]</code> , <code>[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]</code>
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 <code>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i>]</code> hierarchy level.</p>
Options	<p><i>cells</i>—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">Configuring the ATM OAM F5 Loopback Cell Threshold

drop-timeout

Syntax	<code>drop-timeout milliseconds;</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"> • Junos OS Services Interfaces Configuration Guide

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"> • Configuring Channelized DS3-to-DS0 Interfaces

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">• ATM-over-ADSL Overview• <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">• Configuring the Serial Signal Handling

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"> Configuring Serial Signal Polarities

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"> Configuring the Serial Signal Handling

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">Configuring the Serial Signal Handling

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">Configuring the Serial DTR Circuit

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">Configuring Serial Signal Polarities

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">• Configuring Multiservice Physical Interface Properties• Junos OS Services Interfaces Configuration Guide• passive-monitor-mode on page 403

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"> Configuring Dynamic Call Admission Control Junos OS Services Interfaces Configuration Guide Junos OS Interfaces and Routing Configuration Guide

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">• Dynamic Profiles Overview• Configuring a Basic Dynamic Profile• Associating a Stacked VLAN Dynamic Profile with an Interface

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	<i>profile-name</i> —Name of the dynamic profile that you want to use when configuring dynamic 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">• Dynamic Profiles Overview• Configuring a Basic Dynamic Profile• Associating a Single-Tag VLAN Dynamic Profile with an Interface

e1-options

Syntax e1-options {
 bert-algorithm *algorithm*;
 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*;
 }

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

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

- Channelized E1 IQ and IQE Interfaces Overview
- Channelized STM1 Interfaces Overview
- E1 Interfaces Overview
- T1 Interfaces Overview

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"> E3 Interfaces Overview T3 Interfaces Overview atm-options on page 109

east-interface

Syntax east-interface {
 node-id *mac-address*;
 control-channel *channel-name* {
 interface-none
 ring-protection-link-end;
 }
 }

Hierarchy Level [edit protocols **protection-group ethernet-ring** *ring-name*]

Release Information Statement introduced in Junos OS Release 9.4.
 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 **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.

EX Series switches do not use the node-id statement--the node ID is automatically configured on the switches using the MAC address.



.....
NOTE: Always configure this port first, before configuring the **west-interface** statement.
.....



.....
NOTE: The Node ID is not configurable on EX Series switches. The node ID is automatically configured using the MAC address.
.....

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
- [west-interface on page 575](#)
- [ethernet-ring on page 216](#)
- Example: Configuring Ethernet Ring Protection Switching on EX Series Switches
- Configuring Ethernet Ring Protection Switching (CLI Procedure)

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	Add the configured number of bytes to the length of a packet exiting the interface.
Options	bytes —Number of bytes added to a packet exiting 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">Configuring a Policer Overheadingress-policer-overhead on page 262CoS on Enhanced IQ2 PICs Overview

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">Configuring Container Interfaces

encapsulation (Logical Interface)

Syntax	<code>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 frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-ppp frame-relay-tcc 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);</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> <code>[edit interfaces <i>rlsnumber</i> unit <i>logical-unit-number</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches (vlan-ccc and vlan-tcc options only).
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—For ATM2 IQ interfaces only, use PPP over AAL5 LLC encapsulation.</p> <p>atm-ppp-vc-mux—For ATM2 IQ interfaces only, use PPP over ATM AAL5 multiplex encapsulation.</p> <p>atm-snap—Use ATM subnetwork attachment point (SNAP) encapsulation.</p> <p>atm-tcc-snap—Use ATM SNAP encapsulation on translational cross-connect (TCC) circuits.</p> <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.</p> <p>atm-vc-mux—Use ATM VC multiplex encapsulation. When you use this encapsulation type, you can configure the inet family only.</p>

ether-over-atm-llc—For interfaces that carry IPv4 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, as per RFC 2427 (1490).



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-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.

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-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.

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.

multilink-frame-relay-end-to-end—Use MLFR FRF.15 encapsulation. This encapsulation is used only on multilink, link services, 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 Services 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 Series routers with Intelligent Queuing 2 (IQ2) PICs, and on MX Series routers with Trio MPC/MIC interfaces.

ppp-over-ether-over-atm-llc—For underlying ATM interfaces on J Series Services Routers only, 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.
---------------------------------	---

**Related
Documentation**

- Configuring Interface Encapsulation on Logical Interfaces
- 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 Switches
- [*Junos OS Services Interfaces Configuration Guide*](#)

encapsulation (Physical Interface)

Syntax	<code>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 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);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i>],</code> <code>[edit interfaces rlsq <i>number:number</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches (flexible-ethernet-services , ethernet-ccc , and ethernet-tcc options only).
Description	Specify the physical link-layer encapsulation type.
Default	ppp —Use serial PPP encapsulation.
Options	atm-ccc-cell-relay —Use ATM cell-relay encapsulation. atm-pvc —Use ATM PVC encapsulation. cisco-hdlc —Use Cisco-compatible High-Level Data Link Control (HDLC) framing. cisco-hdlc-ccc —Use Cisco-compatible HDLC framing on CCC circuits. cisco-hdlc-tcc —Use Cisco-compatible HDLC framing on TCC circuits for connecting different media. ethernet-bridge —Use Ethernet bridge encapsulation on Ethernet interfaces that have bridging enabled and that must accept all packets. 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 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 1483, <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). The Junos OS does not completely support bridging, but accepts BPDU 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 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.

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 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.



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 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.

Required Privilege Level	interface—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 Interface Encapsulation on Physical Interfaces• Defining the Encapsulation for Switching Cross-Connects• Configuring ATM Interface Encapsulation• Configuring VLAN Encapsulation• Configuring ATM-to-Ethernet Interworking• Configuring Extended VLAN Encapsulation• Configuring Encapsulation for Layer 2 Wholesale VLAN Interfaces• Configuring Interfaces for Layer 2 Circuits• Configuring Interfaces for Layer 2 Circuits• Configuring Interface Encapsulation on PTX Series Packet Transport Switches

encoding

Syntax	encoding (nrz nrzi);
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	nrz —Use NRZ line encoding. nrzi —Use non-return to zero inverted (NRZI) 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">• Configuring Serial Line Encoding

epd-threshold (Logical Interface)

Syntax	<code>epd-threshold cells plp1 cells;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</code> <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> address <i>address</i> family <i>family</i></code> <code> multipoint-destination <i>address</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> 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> <code> address <i>address</i> family <i>family</i> multipoint-destination <i>address</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	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).
Default	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: $\text{default epd-threshold} = \text{number of buffers} * \text{shaping rate} / \text{line rate}$ 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.
Options	cells —Maximum number of cells. Range: For 1-port and 2-port OC12 interfaces, 48 through 425,984 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">Configuring the ATM2 IQ EPD ThresholdConfiguring Two EPD Thresholds per Queue

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"> Configuring an ATM Scheduler Map linear-red-profile on page 299

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"> Junos OS Services Interfaces Configuration Guide

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 {
```


213

```
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 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, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), 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.

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, and the built-in Gigabit Ethernet port on the M7i router), 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">• Configuring Gigabit Ethernet Policers• Configuring MAC Address Filtering• Stacking and Rewriting Gigabit Ethernet VLAN Tags Overview

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.
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">• Configuring the Interface Address

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"> Configuring Ethernet Local Management Interface lmi (Ethernet OAM) on page 312

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">Monitoring Protocol Status

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">Configuring Threshold Values for Local Fault Events on an Interface

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) Reduce the Automatic Protection Switching (APS) switchover time in Layer 2 circuits.



NOTE:

- 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.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Reducing APS Switchover Time in Layer 2 Circuits

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">Configuring Bandwidth on DemandJunos OS Services Interfaces Configuration Guide

facility-override

Syntax	facility-override <i>facility-name</i> ;
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	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">Junos OS Services Interfaces Configuration Guide

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">Configuring VRRP and VRRP for IPv6

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;  
vrp-inherit-from active-group | active-interface  
}
```

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. 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. See the [Junos OS Configuration Statements and Commands](#) for details about each 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.

- **bridge**—(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 Configuration Guide](#)

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.
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	<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 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 321• remote-loopback-respond on page 453

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	[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 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.
Options	<p>group <i>filter-group-number</i>—Define an interface to be part of a filter group. The default filter group number is 0. Range: 0 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	interface—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 a Filter to an Interface Junos OS Services Interfaces Configuration Guide Junos OS Policy Framework Configuration Guide Junos OS System Basics Configuration Guide

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>]
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 12.1 for PTX Series Packet Transport Switches.
Description	<p>Simultaneously supports transmission of 802.1Q VLAN single-tag and dual-tag frames on logical interfaces on the same Ethernet port.</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 Switches.</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">• Configuring Mixed Tagging• Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches

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.
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.
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"> Configuring Flow Control Configuring Gigabit Ethernet Interfaces (CLI Procedure)

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">Configuring Switching Between the Working and Protect Circuitsrequest on page 454

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">Configuring ATM2 IQ VC Tunnel CoS Componentsforwarding-class statement in the Junos OS Class of Service Configuration Guide

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"> Specifying an Output Priority Map input-priority-map on page 269 forwarding-class statement in the <i>Junos OS Class of Service Configuration Guide</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"> Configuring ISDN Logical Interface Properties Junos OS Services Interfaces Configuration Guide

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. The default window is 100 milliseconds and is not configurable.</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">Configuring Threshold Values for Local Fault Events on an InterfaceConfiguring Threshold Values for Fault Events in an Action Profile


frame-period

Syntax	<code>frame-period <i>count</i>;</code>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event link-event-rate], [edit protocols oam link-fault-management interface <i>interface-name</i> 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"> Configuring Threshold Values for Local Fault Events on an Interface Configuring Threshold Values for Fault Events in an Action Profile

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">• Configuring Threshold Values for Local Fault Events on an Interface• Configuring Threshold Values for Fault Events in an Action Profile

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.
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	<code>framing (lan-phy wan-phy);</code>
Hierarchy Level	<code>[edit interfaces xe-<i>fpc/pic/port</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.0.
Description	For routers supporting the 10-Gigabit Ethernet interface, configure the framing format. WAN PHY mode is supported on MX240, MX480, MX960, T640, and T1600 routers only.
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">10-Gigabit Ethernet Framing OverviewConfiguring SONET Options for 10-Gigabit Ethernet Interfaces

framing (SONET and SDH Interfaces)

Syntax	<code>framing (sdh sonet);</code>
Hierarchy Level	<code>[edit interfaces so-<i>fpc/pic/port</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.1.
Description	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. This functionality allows you to mix SONET and SDH modes on interfaces on the same PIC.
Options	sdh —SDH framing. sonet —SONET framing.
Required Privilege Level	interface—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 SONET/SDH Framing

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">• Ethernet Interfaces Overview

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.
Description	For Ethernet interfaces, enable updating of the ARP cache for replies received in response to gratuitous ARP requests.
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">• Configuring Gratuitous ARP• no-gratuitous-arp-request on page 367

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">• Ethernet Ring Protection Switching Overview• Example: Configuring Ethernet Ring Protection Switching on EX Series Switches• Configuring Ethernet Ring Protection Switching (CLI Procedure)

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">• Configuring ATM2 IQ VC Tunnel CoS Components• high-plp-max-threshold on page 246• low-plp-max-threshold on page 325• low-plp-threshold on page 326• queue-depth on page 442

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">• Junos OS Services Interfaces Configuration Guide• acknowledge-timer on page 88• address on page 94

hierarchical-policer

Syntax	<pre> hierarchical-policer <i>name</i> { aggregate { if-exceeding { bandwidth-limit <i>bandwidth</i>; burst-size-limit <i>burst</i>; } then { discard; } } premium { if-exceeding { bandwidth-limit <i>bandwidth</i>; burst-size-limit <i>burst</i>; } then { discard; } } } </pre>
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	<ul style="list-style-type: none"> Applying Policers Junos OS Class of Service Configuration Guide

hierarchical-schedulers

Syntax	hierarchical-schedulers { maximum-hierarchy-levels <i>number</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 10.1.
Description	On MX Series routers with Trio MPC/MICs, configure the parameters for hierarchical scheduling on the interface.
Default	If you do not include this statement, the system uses default hierarchical scheduler parameters.
Options	maximum-hierarchical-levels <i>number</i> —The maximum number of hierarchical scheduling levels allowed for node scaling. The only supported value is 2.
Required Privilege Level	view-level—To view this statement in the configuration. control-level—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Junos OS Class of Service Configuration Guide• hierarchical-scheduler

high-plp-max-threshold

Syntax	high-plp-max-threshold <i>percent</i> ;
Hierarchy Level	[edit interfaces <i>at-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 high PLP CoS VC. When the fill level exceeds the defined percentage, all packets are dropped.
Options	<i>percent</i> —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	<ul style="list-style-type: none">• Configuring ATM2 IQ VC Tunnel CoS Components• low-plp-max-threshold on page 325• low-plp-threshold on page 326• queue-depth on page 442

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"> Configuring ATM2 IQ VC Tunnel CoS Components high-plp-max-threshold on page 246 low-plp-max-threshold on page 325 low-plp-threshold on page 326 queue-depth on page 442

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 12.1 for PTX Series Packet Transport Switches.
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"> Continuity Check Protocol Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches


hold-interval (Protection Group)

Syntax	<code>hold-interval <i>number</i>;</code>
Hierarchy Level	[edit protocols protection-group ethernet-ring <i>name</i>]
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	<code>hold-time <i>milliseconds</i>;</code>
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 96

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.
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: The hold-time option is not available for controller interfaces.</p> </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"> Damping Interface Transitions advertise-interval on page 96 interfaces (for EX Series switches)


hold-time (SONET/SDH Defect Triggers)

Syntax	hold-time up <i>milliseconds</i> down <i>milliseconds</i> ;
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.
	<div>NOTE: 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.</div>
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">Configuring SONET/SDH Defect Hold Times

host

Syntax	<pre>host <i>hostname</i> { <i>facility-override</i>; <i>log-prefix prefix-number</i>; <i>services priority-level</i>; }</pre>
Hierarchy Level	[edit interfaces interface-name services-options syslog]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify hostname for system logging utility.
Options	<p><i>hostname</i>—Name of system logging utility host machine.</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">• Junos OS Services Interfaces Configuration Guide

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	Statement introduced before Junos OS Release 7.4.
Description	Configure the value that the DS0, E1, E3, T1, or T3 interface transmits during idle cycles.
<div> 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.</div>	
Options	<p><i>value</i>—Value to transmit in the idle cycles:</p> <ul style="list-style-type: none">• flags—Transmit the value 0x7E.• ones—Transmit the value 0xFF (all ones). <p>Default: <code>Flags</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">• Configuring the E1 Idle Cycle Flag• Configuring the E3 Idle Cycle Flag• Configuring the T1 Idle Cycle Flag• Configuring the T3 Idle Cycle Flag

idle-timeout

Syntax	<code>idle-timeout seconds;</code>
Hierarchy Level	[edit interfaces <i>dltn</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"> Configuring ISDN Logical Interface Properties <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"> Specifying an Input Priority Map

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">Applying PolicersJunos OS Class of Service Configuration Guide

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">Configuring SONET/SDH Defect Triggers to Be Ignoredhold-time (Physical Interface) on page 249

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">Configuring the Serial Signal Handling

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.
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">Ignoring Layer 3 Incomplete Errors

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">Configuring Communication with Directly Attached ATM Switches and Routersshow ilmishow ilmi statistics

ima-group-options

Syntax

```
ima-group-options {
    differential-delay number;
    frame-length (32 | 64 | 128 | 256);
    frame-synchronization {
        alpha number;
        beta number;
        gamma number;
    }
    minimum-links number;
    symmetry (symmetrical-config-and-operation |
        symmetrical-config-asymmetrical-operation);
    test-procedure {
        ima-test-start;
        ima-test-stop;
        interface name;
        pattern number;
        period number;
    }
    transmit-clock (common | independent);
    version (1.0 | 1.1);
}
```

Hierarchy Level [edit interfaces (t1-fpc/pic/port:m:n | e1-fpc/pic/port:n | t1|e1-fpc/pic/port)]

Release Information Statement introduced in Junos OS Release 10.0.

Description Specify IMA group options.

Options

- differential-delay 1–56**—Maximum differential delay among links in msec, the default is 25.
- frame-length (32 | 64 | 128 | 256)**—IMA frame length in number of cells; default is 128.
- frame-synchronization**—IMA group frame synchronization selection.
 - alpha 1–2**—Number of consecutive invalid ICP cells for IFSM, the default is 2.
 - beta 1–2**—Number of consecutive errored ICP cells for IFSM, the default is 2.
 - gamma 1–5**—Number of consecutive valid ICP cells for IFSM, the default is 1.
- minimum-links 1–8**—IMA group minimum active links; the default 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 1-254—IMA test pattern, default is 170.

period 1-4294967294—Length of IMA pattern test in seconds, the default is 10.

transmit-clock (common |independent)—Transmit clock configuration; the default 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	<ul style="list-style-type: none">• ATM Support on Circuit Emulation PICs Overview• ima-link-options on page 258

ima-link-options

Syntax	ima-link-options group <i>g</i>
Hierarchy Level	[edit interfaces (t1- <i>fpc/pic/port:m:n</i> e1- <i>fpc/pic/port:n</i> t1 e1- <i>fpc/pic/port</i>)]
Release Information	Statement introduced in Junos OS Release 10.0.
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">• ATM Support on Circuit Emulation PICs Overview• ima-group-options on page 257


inactivity-timeout

Syntax	<code>inactivity-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	For adaptive services interfaces, configure the inactivity timeout period for established flows. The timeout configured in the application protocol definition overrides this value.
Options	<p><i>seconds</i>—Timeout period, in seconds.</p> <p>Range: 4 through 86,400 seconds</p> <p>Default: 30 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"> • Junos OS Services Interfaces Configuration Guide

incoming-called-number

Syntax	<code>incoming-called-number <i>number</i> <reject>;</code>
Hierarchy Level	[edit interfaces <i>br-pim/0/port</i> isdn-options]
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>reject—(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"> • Configuring an ISDN Interface to Screen Incoming Calls • Junos OS Services Interfaces Configuration Guide

incoming-map

Syntax	<code>incoming-map { <code>caller caller-number</code> accept-all; }</code>
Hierarchy Level	[edit interfaces <i>dl</i> n unit <i>logical-unit-number</i> <code>dialer-options</code>], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl</i> n unit <i>logical-unit-number</i> <code>dialer-options</code>]
Release Information	Statement introduced in Junos OS Release 7.5.
Description	<p>On J Series Services Routers with interfaces configured for ISDN, specify the dialer to accept incoming calls.</p> <p>The statements are explained separately.</p>
	<div> NOTE: The <code>incoming-map</code> statement is mandatory for the router to accept any incoming ISDN calls.</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 Dial-In and Callback<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	<p>ignore—The from-DCE signal is ignored.</p> <p>normal—Normal indication signal handling as defined by ITU-T Recommendation X.21.</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"> Configuring the Serial Signal Handling

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	<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"> Configuring Serial Signal Polarities

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">Configuring a Policer Overheadegress-policer-overhead on page 201CoS on Enhanced IQ2 PICs Overview

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">Configuring the Ingress Rate Limit

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"> • Specifying a USB Modem Interface on J Series Routers

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">• ISDN Interfaces Overview• <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.
Description	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, configure the IEEE 802.1Q TPID value to rewrite for the inner tag. 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.
Default	If the <code>inner-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"> Configuring Inner and Outer TPIDs and VLAN IDs

inner-vlan-id

Syntax	<code>inner-vlan-id number;</code>
Hierarchy Level	<code>[edit interfaces interface-name unit logical-unit-number input-vlan-map]</code> , <code>[edit interfaces interface-name unit logical-unit-number output-vlan-map]</code> , <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number input-vlan-map]</code> , <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number output-vlan-map]</code>
Release Information	Statement introduced in Junos OS Release 8.1.
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, 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 <code>[edit interfaces interface-name unit logical-unit-number output-vlan-map]</code> 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 <code>[edit interfaces interface-name unit logical-unit-number]</code> 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"> Configuring ATM-to-Ethernet Interworking

input

Syntax	<pre>input { service-set <i>service-set-name</i> <service-filter <i>filter-name</i>>; post-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 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"> Junos OS Services Interfaces Configuration Guide

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">• Applying a Filter to an Interface• Junos OS Policy Framework Configuration Guide• Junos OS System Basics Configuration Guide• output-list on page 394

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]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Associate a Layer 2 policer with a logical interface. The input-policer and input-three-color statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the 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">• Applying a Policer• output-policer on page 394

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">• Specifying an Input Priority Map• output-priority-map on page 395

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]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Associate a Layer 2, three-color policer with a logical interface. The input-three-color and input-policer statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the three-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">• Applying a Policer• output-three-color on page 395

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 and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces 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">Stacking a VLAN Tagoutput-vlan-map (Aggregated Ethernet) on page 396

input-vlan-map (Gigabit Ethernet IQ and 10-Gigabit Ethernet SFPP)

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 and 10-Gigabit Ethernet SFPP interfaces 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 and 10-Gigabit Ethernet with SFPP) on page 397

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 333

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">• Junos OS Class of Service Configuration Guide

interface (IEEE 802.1x)

Syntax	<pre> 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 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	<p>maximum-requests—Specify the maximum number of retransmission times for an EAPOL Request packet to the client before it times out the authentication session.</p> <p>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.</p> <p>reauthentication—Includes two options:</p> <ul style="list-style-type: none"> • disable—Periodic reauthentication of the client is disabled. • interval—Specify the periodic reauthentication time interval. <p>retries—Specify the number of tries after which the port remains in the wait state for quiet-period seconds before reattempting the authentication.</p> <p>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.</p> <p>supplicant (<i>single</i>)—Specify supplicant single mode. See the usage guidelines to configure other modes.</p> <p>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.</p> <p>transmit-period—Specify the number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client.</p>

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

Related Documentation

- IEEE 802.1x Port-Based Network Access Control Overview
- [authenticator on page 113](#)
- [dot1x on page 187](#)

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 Level interface—To view this statement in the configuration.
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">• Configuring a Connectivity Fault Management Action Profile

interface-mode

Syntax	interface-mode (access trunk);
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	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 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 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 Configuring a Trunk Interface on a Bridge Network.</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"> Configuring a Logical Interface for Access Mode Configuring a Logical Interface for Trunk Mode

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">• Configuring VLAN Interface Username Information for AAA Authentication

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-set (Ethernet Interfaces)

Syntax	<pre>interface-set <i>interface-set-name</i> { interface <i>ethernet-interface-name</i> { (unit <i>unit-number</i> vlan-tags-outer <i>vlan-tag</i>); } }</pre>
Hierarchy Level	[edit interfaces]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>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.</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">• Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers• Junos OS Class of Service Configuration Guide

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">• Junos Subscriber Access Configuration Guide

interface-status-tlv

Syntax	interface-status-tlv [down lower-layer-down];
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	<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 Remote MEP Action Profile Support

interface-switch

Syntax	interface-switch <i>connection-name</i> { interface <i>interface-name.unit-number</i> ; interface <i>interface-name.unit-number</i> ; }
Hierarchy Level	[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 interface.</p> <p>For Layer 2 switching cross-connects to work, you must also configure MPLS.</p>
Options	interface <i>interface-name.unit-number</i> —Interface name. Include the logical portion of the name, which corresponds to the logical unit number.
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"> Defining the Connection for Switching Cross-Connects Junos OS MPLS Applications Configuration Guide

interface-type

Syntax	<code>interface-type (bc coc1 ct1 ct3 dc ds so t1 t3);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> no-partition], [edit interfaces <i>interface-name</i> partition <i>partition-number</i>], [edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i>], [edit interfaces <i>interface-name</i> partition <i>partition-number</i> timeslot <i>timeslot-range</i>]
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 [edit interfaces <i>interface-name</i> partition <i>partition-number</i> timeslot <i>timeslot-range</i>] hierarchy level to create a bearer (B) channel bc-pim/0/port:channel 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 [edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type coc12-fpc/pic/port] hierarchy level.</p> <p>ct1—Channelized T1 interface type. You can specify this interface type at the [edit interfaces <i>interface-name</i> partition <i>partition-number</i> interface-type ct3-fpc/pic/port<:channel>] hierarchy level.</p> <p>ct3—Channelized T3 interface type. You can specify this interface type at the [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] hierarchy level.</p> <p>dc—Dual-Port Channelized E1 and T1 ISDN PRI interface type. You can specify this interface type at the [edit interfaces <i>interface-name</i> partition <i>partition-number</i> timeslot <i>timeslot-range</i>] hierarchy level to create a (D) channel dc-pim/0/port to control the B-channels.</p> <p>ds—DS0 interface type. You can specify this interface type at the [edit interfaces <i>interface-name</i> partition <i>partition-number</i> interface-type (ce1-fpc/pic/port ct1-fpc/pic/port<:channel>)] hierarchy level.</p> <p>so—SONET/SDH interface type. You can specify this interface type at the [edit interfaces <i>interface-name</i> partition <i>partition-number</i> oc-slice <i>oc-slice-range</i> interface-type coc12-fpc/pic/port] hierarchy level.</p> <p>t1—T1 interface type. You can specify this interface type at the [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)] hierarchy level.</p> <p>t3—T3 interface type. You can specify this interface type at the [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)] 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">• Channelized E1 IQ and IQE Interfaces Overview• Channelized OC12/STM4 IQ and IQE Interfaces Overview• Configuring Channelized T3 IQ Interfaces

interfaces

Syntax	interfaces { ... }
Hierarchy Level	[edit]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure interfaces on the router.
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">• Physical Interface Configuration Statements Overview• Configuring Aggregated Ethernet Link Protection

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">• Junos OS Services Interfaces Configuration Guide

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">Continuity Check ProtocolExample: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers

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"> Configuring Inverse ATM1 or ATM2 ARP Configuring Inverse Frame Relay ARP

invert-data

Syntax	invert-data;
Hierarchy Level	[edit interfaces <i>e1-fpc/pic/port</i>], [edit interfaces <i>t1-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.
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">• Configuring E1 Data Inversion• Configuring E3 Data Inversion• Configuring T1 Data Inversion

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 <i>logical-system-name</i> 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">• Junos OS Services Interfaces Configuration Guide• Junos OS System Basics Configuration Guide

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	<pre>[edit interfaces br-pim/O/port], [edit interfaces ct1-pim/O/port], [edit interfaces ce1-pim/O/port]</pre>
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">Configuring ISDN Physical Interface PropertiesAllocating B-Channels for Dialout<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">Disabling the Removal of Address and Control Bytes

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. Range: 1 through 255 Default: 3</p> <p>interval <i>seconds</i>—The time in seconds between successive keepalive requests. Range: 1 through 32767 seconds 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. Range: 1 through 255 Default: 1</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 Keepalives• Configuring Frame Relay Keepalives

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 Configuration Guide

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	(dedicated shared)—Specifies whether a logical interface can host one (dedicated) or multiple (shared) sessions at one time. name —Interface identifier that must be replicated at the [edit access profile <i>name</i>] 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"> • Junos OS Services Interfaces Configuration Guide

lACP (802.3ad)

Syntax	<pre>lACP { traceoptions { file <i>lACPd</i>; flag <i>all</i>; } 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	<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 Aggregated Ethernet LACP

lACP (Aggregated Ethernet)

Syntax	<pre>lACP { (active passive); admin-key <i>key</i>; link-protection { disable; (revertive non-revertive); } periodic <i>interval</i>; system-id <i>mac-address</i>; system-priority <i>priority</i>; }</pre>
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.
Description	For aggregated Ethernet interfaces only, configure Link Aggregation Control Protocol (LACP).
Default	If you do not specify LACP as either active or passive, LACP remains passive.
Options	<ul style="list-style-type: none"> active—Initiate transmission of LACP packets. passive—Respond to LACP packets. <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"> Configuring Aggregated Ethernet LACP Configuring Aggregated Ethernet LACP (CLI Procedure) Example: Configuring Aggregated Ethernet High-Speed Uplinks with LACP Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch

layer2-policer

Syntax	<pre>layer2-policer { input-policer <i>policer-name</i>; input-three-color <i>policer-name</i>; output-policer <i>policer-name</i>; output-three-color <i>policer-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 in Junos OS Release 8.2.
Description	<p>For 1-Gigabit Ethernet and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces on M Series and T Series routers, 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	interface—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 Two-Color and Tricolor Policers• Junos OS Class of Service Configuration Guide• Junos OS Policy Framework Configuration Guide

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</i> ppp-options]
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	<p><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.</p> <p>Default—254</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 LCP Configure-Request Maximum Sent ppp-options on page 426


lcp-restart-timer

Syntax	<code>lcp-restart-timer <i>milliseconds</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name unit logical-unit-number</i> ppp-options],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name unit logical-unit-number</i> ppp-options]</p>
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	<p><i>milliseconds</i>—The time, in milliseconds, between successive LCP configuration requests.</p> <p>Range: 20 through 10000 milliseconds</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"> Configuring the PPP Restart Timers

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 12.1 for PTX Series Packet Transport Switches.
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">Configuring the Maintenance Domain LevelExample: Configuring Connectivity Fault Management for a PBB Network on MX Series RoutersConfiguring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

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.
Description	Set the line encoding format on the T1 interface.
	<div>  <p>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 <i>ct1-fpc/pic/port</i>] hierarchy level.</p> </div>
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"> Configuring T1 Line Encoding

line-protocol

Syntax	<code>line-protocol protocol;</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	protocol —You can specify the one of the following line protocols: <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	interface—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 Serial Line Protocol

line-rate

Syntax	<code>line-rate line-rate;</code>
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	For J Series Services Routers only, configure the SHDSL line rate.
Options	line-rate —SHDSL line rate, in Kbps. Possible values are: 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 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 Default: For 2-wire mode, auto ; for 4-wire mode, 4608 Kbps
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• ATM-over-SHDSL Overview

linear-red-profile

Syntax	<code>linear-red-profile <i>profile-name</i>;</code>
Hierarchy Level	<code>[edit interfaces at-<i>fpc/pic/port</i> atm-options scheduler-maps <i>map-name</i> class-name]</code>
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 <code>[edit interfaces at-<i>fpc/pic/port</i> atm-options]</code> hierarchy level.
Default	If you do not include either the <code>epd-threshold</code> or the <code>linear-red-profile</code> 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">Configuring an ATM Scheduler Maplinear-red-profiles on page 300

linear-red-profiles

Syntax	<pre>linear-red-profiles <i>profile-name</i> { high-plp-threshold <i>percent</i>; low-plp-threshold <i>percent</i>; queue-depth <i>cells</i>; }</pre>
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	<p><i>profile-name</i>—Name of the drop profile.</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">Configuring ATM2 IQ VC Tunnel CoS Components

link-adjacency-loss

Syntax	<pre>link-adjacency-loss;</pre>
Hierarchy Level	[edit protocols oam ethernet link-fault-management action-profile event]
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">Monitoring the Loss of Link Adjacency

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 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"> Configuring Link Discovery

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"> Specifying the Actions to Be Taken for Link-Fault Management Events

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">Configuring Threshold Values for Fault Events in an Action Profile

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, 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	<code>link-layer-overhead <i>percent</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 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	• Junos OS Services Interfaces Configuration Guide

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 ge-pim/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.
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>
	<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."</p>
	<p> NOTE: On EX Series switches, if no-auto-negotiation is specified in [edit interfaces <i>interface-name</i> ether-options], you can select only full-duplex or half-duplex. If auto-negotiation is specified, you can select any mode.</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 Link Characteristics on Ethernet Interfaces • Understanding Management Ethernet Interfaces on page 5

link-protection

Syntax	<pre>link-protection { disable; (revertive non-revertive); }</pre>
Hierarchy Level	<pre>[edit interfaces aex aggregated-ether-options] [edit interfaces aex aggregated-ether-options lcp]</pre>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>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 ge-fpc/pic/port gigether-options 802.3ad aex] hierarchy level or the [edit interfaces fe-fpc/pic/port fastether-options 802.3ad aex] hierarchy level.</p> <p>To configure those links on the switch, configure those statements at the [edit interfaces ge-fpc/pic/port ether-options 802.3ad aex] hierarchy level or at the [edit interfaces xe-fpc/pic/port ether-options 802.3ad aex] hierarchy level.</p>
Options	The 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">Configuring Aggregated Ethernet Link Protection

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"> • Configuring Aggregated Ethernet Link Speed • Configuring Aggregated Ethernet Interfaces (CLI Procedure) • Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch

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">• Configuring Aggregated Ethernet Link Speed• Configuring Aggregated SONET/SDH Link Speed

linktrace

Syntax	<pre>linktrace { age (30m 10m 1m 30s 10s); path-database-size <i>path-database-size</i>; }</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">Configuring Linktrace Protocol in CFM

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 313](#)
- [mlfr-uni-nni-bundle-options on page 342](#)

lmi (Ethernet OAM)

Syntax

```
lmi {  
    status-counter count;  
    polling-verification-timer value;  
    interface name {  
        uni-id uni-name;  
        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](#) [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

- status-counter *count***—Status counter (N393), defaults to 4.
- interface *name***—Polling verification timer (T392), defaults to 15 seconds.
- uni-id *uni-name***—(Optional) Defaults to the physical interface name.
- status-counter *number***—(Optional) Defaults to a global value.
- polling-verification-timer *value***—(Optional) Defaults to a global value.
- evc-map-type (all-to-one-bundling | bundling | service-multiplexing)**—Specify the Ethernet virtual connection (EVC) map type.
- evc *evc-name***—Specify the name of the EVC.
- default-evc**—Set the specified EVC as the default EVC.
- vlan-list *vlan-id-list***—Specify a group of VLANs to assign to the EVC.

Required Privilege Level

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

Related Documentation

- [Configuring Ethernet Local Management Interface](#)
- [evcs on page 219](#)

lmi-type

Syntax	<code>lmi-type (ansi itu c-lmi);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> lmi],</code> <code>[edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set Frame Relay Local Management Interface (LMI) type.



NOTE: Consortium LMI is supported only on M320 routers with Enhanced III FPCs and specific IQE PICs and on MX80, MX240, MX480, and MX960 routers with MICs specified in Configuring Tunable Keepalives for Frame Relay LMI.

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"> Configuring Frame Relay Keepalives mlfr-uni-nni-bundle-options on page 342 lmi (Frame Relay) on page 310 <i>Junos OS Services Interfaces Configuration Guide</i>

load-interval

Syntax	<code>load-interval seconds;</code>
Hierarchy Level	[edit interfaces <i>dl</i> <i>unit</i> <i>logical-unit-number</i> <i>dialer-options</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl</i> <i>unit</i> <i>logical-unit-number</i> <i>dialer-options</i>]
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">Configuring ISDN Logical Interface Properties<i>Junos OS Interfaces and Routing Configuration Guide</i>

load-threshold

Syntax	<code>load-threshold <i>percent</i>;</code>
Hierarchy Level	[edit interfaces <i>dl</i> <i>n</i> unit <i>logical-unit-number</i> dialer-options], [edit logical-systems <i>logical-system-name</i> interfaces <i>dl</i> <i>n</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">Configuring Bandwidth on Demand<i>Junos OS Interfaces and Routing Configuration Guide</i>

local-name

Syntax	<code>local-name name;</code>
Hierarchy Level	<code>[edit interfaces interface-name ppp-options chap],</code> <code>[edit interfaces interface-name ppp-options pap],</code> <code>[edit interfaces interface-name unit logical-unit-number ppp-options chap],</code> <code>[edit interfaces interface-name unit logical-unit-number ppp-options pap],</code> <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number ppp-options chap],</code> <code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number ppp-options pap]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Support for PAP added in Junos OS Release 8.3.
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 ATM2IQ 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	interface—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 Challenge Handshake Authentication Protocol• Configuring the PPP Password Authentication Protocol• Junos OS System Basics Configuration Guide

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"> Configuring the Local Password Configuring the PPP Password Authentication Protocol

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"> Configuring Switching Between the Working and Protect Circuits

log-prefix

Syntax	<code>log-prefix <i>prefix-number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> services-options host <i>hostname</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Set the system logging prefix value.
Options	<i>prefix-number</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">• Junos OS Services Interfaces Configuration Guide

logical-interface-policer

Syntax	<code>logical-interface-policer;</code>
Hierarchy Level	[edit firewall policer <i>policer-template-name</i>], [edit firewall three-color-policer <i>policer-name</i>],
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Apply a policer to a logical interface in the ingress or egress direction as part of a configuration to discard high loss priority traffic, or configure an aggregate policer.
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">• Configuring Gigabit Ethernet Two-Color and Tricolor Policers• Junos OS Class of Service Configuration Guide• action (Policer) on page 89

logical-systems

Syntax	<code>logical-systems <i>logical-system-name</i>;</code>
Hierarchy Level	[edit]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a logical system.
Options	<i>logical-system-name</i> —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">Configuring Logical System Interface Properties

long-buildout

Syntax	<code>(long-buildout no-long-buildout);</code>
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">Configuring the T3 Line Buildout

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.



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.

Options	loop-timing —Configure loop timing (external) clocking. no-loop-timing —Configure line timing (internal) clocking. Default: no-loop-timing
Required Privilege Level	interface—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 Channelized IQ and IQE SONET/SDH Loop TimingConfiguring the Channelized T3 Loop Timingclocking on page 148

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	Statement introduced before Junos OS Release 7.4.
Description	Configure a loopback connection. To turn off the loopback capability, remove the loopback statement from the configuration.
<div>  <p>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 <code>[edit interfaces ce1-fpc/pic/port]</code> or <code>[edit interfaces ct1-fpc/pic/port]</code> hierarchy level as appropriate.</p> <p>When configuring T1 interfaces on 10-port Channelized E1/T1 IQE PICs, the loopback statement must be included with the payload option at the <code>[edit interfaces t1-fpc/pic/port]</code> hierarchy level.</p> </div>	
<p>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 (<code>coc48</code>, <code>cstm16</code>, <code>coc12</code>, <code>cstm4</code>, <code>coc3</code>, <code>cstm1</code>). It is ignored for path-level interfaces so-fpc/pic/port or so-fpc/pic/port:channel.</p>	
Options	<p>local—Loop packets, including both data and timing information, back on the local router's PIC. NxDS0 IQ interfaces do not support local loopback.</p> <p>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.</p> <p>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.</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 E3 and T3 Parameters on ATM Interfaces
 - Configuring E1 Loopback Capability
 - Configuring E3 Loopback Capability
 - Configuring Channelized IQ and IQE SONET/SDH Loop Timing
 - Configuring SHDSL Operating Mode on an ATM Physical Interface
 - Configuring T1 Loopback Capability
 - Configuring T3 Loopback Capability
 - [feac-loop-respond on page 230](#)

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.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces, enable or disable loopback mode.



NOTE: By default, local aggregated Ethernet, Fast Ethernet, Tri-Rate Ethernet copper, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces connect to a remote system.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	• Configuring Ethernet Loopback Capability

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">• Configuring Serial Loopback Capability

loopback-clear-timer

Syntax	<code>loopback-clear-timer seconds;</code>
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">Configuring the PPP Clear Loop Detected Timer

loss-priority

Syntax	<code>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 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">Specifying an Output Priority Map

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 12.1 for PTX Series Packet Transport Switches.
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"> Continuity Check Protocol Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

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"> Configuring ATM2 IQ VC Tunnel CoS Components high-plp-max-threshold on page 246 low-plp-threshold on page 326 queue-depth on page 442

low-plp-threshold

Syntax	<code>low-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 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	<i>percent</i> —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">• Configuring ATM2 IQ VC Tunnel CoS Components• high-plp-max-threshold on page 246• high-plp-threshold on page 244• low-plp-max-threshold on page 325• queue-depth on page 442

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">Configuring the Maintenance End Point Lowest Priority Defect

lsq-failure-options

Syntax	<pre>lsq-failure-options { no-termination-request; [trigger-link-failure <i>interface-name</i>]; }</pre>
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">• Junos OS Services Interfaces Configuration Guide

mac

Syntax	<pre>mac <i>mac-address</i>;</pre>
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">• Configuring the MAC Address on the Management Ethernet Interface


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.
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), and for Gigabit Ethernet DPCs on MX Series routers, 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), and for Gigabit Ethernet DPCs on MX Series routers, 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><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	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• MAC Address Validation on Static Ethernet Interfaces Overview• Configuring MAC Address Validation on Static Demux Interfaces

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 12.1 for PTX Series Packet Transport Switches.
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"> Creating a Maintenance Association 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 Switches

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 12.1 for PTX Series Packet Transport Switches.

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 | <ul style="list-style-type: none">• 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 Switches |
|------------------------------|---|

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">• Configuring a Consistent Management IP Address• Junos OS CLI User Guide

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"> • Junos OS Services Interfaces Configuration Guide

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"> • IEEE 802.1x Port-Based Network Access Control Overview • authenticator on page 113 • dot1x on page 187 • interface (IEEE 802.1x) on page 273

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">• Configuring the Maximum Number of ATM1 VCs on a VP• multipoint-destination on page 351• promiscuous-mode on page 436• vci on page 554

mc-ae

Syntax	<pre>mc-ae { chassis-id <i>chassis-id</i>; mc-ae-id <i>mc-ae-id</i>; mode (active-active active-standby); redundancy-group <i>group-id</i>; status-control (active standby); }</pre>
Hierarchy Level	[edit interfaces aeX aggregated-ether-options]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	MC-LAG allows one device to form a logical LAG interface with two or more other devices.
Options	<p>chassis-id—Specify the chassis ID for LACP to calculate the port number of MC-LAG physical member links.</p> <p>mc-ae-id—Specify the identification number of MC-LAG device. The two MC-LAG network devices that manage a given MC-LAG must have the same mc-lag-id.</p> <p>mode (active-active active-standby)—Specify that MC-LAG is active-active or active-standby.</p> <p>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.</p> <p>status-control—Specify if the chassis must be active when both the chassis boot simultaneously. The status control is applicable only if the mode active-standby statement is also included.</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 Multichassis Link Aggregation

member-interface-speed

Syntax	<code>member-interface-speed <i>speed</i>;</code>
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	<i>speed</i> —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">Configuring Container Interfacescontainer-options on page 157

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	<i>sonet</i> —Protocol type of the container interface, specify sonet. <i>speed</i> —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">Configuring Container Interfacescontainer-options on page 157


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 <i>md-name maintenance-association</i> <i>ma-name</i>]
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"> Configuring a Maintenance Endpoint Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers

minimum-links

Syntax	<code>minimum-links <i>number</i>;</code>
Hierarchy Level	[edit interfaces aex aggregated-ether-options], [edit interfaces aex aggregated-sonet-options], [edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces interface-range <i>range</i> aggregated-ether-options], [edit interfaces interface-range <i>range</i> aggregated-sonet-options], [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	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	<i>number</i> —Number of links. Range: 1 through 8 (1 through 16 for Ethernet and SONET interfaces on the MX Series, M320, M120, T Series, or TX Matrix routers, and 1 through 12 for EX8200 switches) Default: 1
Required Privilege Level	interface—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 Aggregated Ethernet Minimum Links• Configuring Aggregated SONET/SDH Minimum Links• Configuring Aggregated Ethernet Interfaces (CLI Procedure)• Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch• Junos OS Services Interfaces Configuration Guide

mip-half-function

Syntax	mip-half-function (none default explicit);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management <i>maintenance-domain md-name</i>], [edit protocols oam ethernet connectivity-fault-management <i>maintenance-association ma-name</i>]
Release Information	Statement introduced in Junos OS Release 9.6.
Description	Specify the OAM Ethernet CFM maintenance domain MIP half functions.
	<div>  <p>NOTE: Whenever a MIP is configured and a bridge domain is mapped to multiple maintenance domains or maintenance associations, it is essential that the <code>mip-half-function</code> value for all maintenance domains and maintenance associations are the same.</p> </div>
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"> Creating the Maintenance Domain Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers maintenance-domain on page 333

mlfr-uni-nni-bundle-options

Syntax 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*;
 [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](#) *number*;
 [yellow-differential-delay](#) *milliseconds*;
 }

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure link services and voice services interface management 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

- [Configuring Frame Relay Keepalives](#)
- [lmi \(Frame Relay\) on page 310](#)
- [lmi-type on page 313](#)
- [Junos OS Services Interfaces Configuration Guide](#)

mode

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"> Configuring Unicast RPF Strict Mode

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"> Specifying a USB Modem Interface on J Series Routers

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	<code>all</code> —Monitor PPP packet exchanges on all sessions. <code><i>interface-name</i></code> —Logical interface name on which to enable session monitoring.
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">Monitoring a PPP Session



mpls

Syntax	<pre>mpls { pop-all-labels { required-depth <i>number</i>; } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options], [edit interfaces <i>interface-name</i> sonet-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.
Description	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. The remaining statements are explained separately.
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">Removing MPLS Labels from Incoming PacketsRemoving MPLS Labels from Incoming PacketJunos OS Services Interfaces Configuration Guide

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">• Configuring ISDN Logical Interface Properties• mtu on page 346• Junos OS Services Interfaces Configuration Guide

mtu

Syntax	<code>mtu bytes;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i>],</p> <p>[edit interfaces <i>interface-name</i> <i>unit</i> <i>logical-unit-number</i> <i>family</i> <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> <i>unit</i> <i>logical-unit-number</i> <i>family</i> <i>family</i>]</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>
Description	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> 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.</p> <p> 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 (<i>fxp0</i>, <i>em0</i>, or <i>me0</i>) or for loopback, multilink, and multicast tunnel devices.</p> <p>For more information on configuring MTU for specific interfaces and router or switch combinations, see <i>Configuring the Media MTU</i>.</p>
Options	<p><i>bytes</i>—MTU size.</p> <p>Range: 256 through 9192 bytes</p> <p>Default: 1500 bytes (INET, INET6, and ISO families), 1448 bytes (MPLS)</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 Media MTU 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">• Configuring a Multicast-Capable Frame Relay Connection• dlci on page 184• multipoint-destination on page 351• Junos OS Services Interfaces Configuration Guide

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">Configuring a Multicast-Capable ATM1 or ATM2 IQ Connectionmultipoint-destination on page 351vci on page 554

multicast-only

Syntax	<code>multicast-only;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>inet</i>]
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">Configuring the Protocol FamilyJunos OS Services Interfaces Configuration Guidetunnel on page 537

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"> Configuring Multicast Statistics Collection on Aggregated Ethernet Interfaces Configuring Multicast Statistics Collection on Aggregated SONET Interfaces Configuring Multicast Statistics Collection on Ethernet Interfaces Configuring Multicast Statistics Collection on SONET Interfaces

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	<p>number—The number of multilink classes to be negotiated when a link joins the bundle.</p> <p>Range: 1 through 8</p> <p>Default: None</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 Configuration Guide multipoint on page 350

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">Configuring a Multipoint Connectionpoint-to-point on page 414

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 0xFFFFFFFF (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 184 encapsulation (Logical Interface) on page 202

multiservice-options

Syntax 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;
 }
}

Hierarchy Level [edit interfaces mo-*fpc/pic/port*]

Release Information Statement introduced before Junos OS Release 7.4.

Description For monitoring services interfaces only, configure multiservice-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

- [Configuring Multiservice Physical Interface Properties](#)
- [Junos OS Services Interfaces Configuration Guide](#)
- [passive-monitor-mode on page 403](#)

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">• Junos OS Services Interfaces Configuration Guide• n392 on page 354• n393 on page 355• timeslots on page 515• t392 on page 510

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">• Junos OS Services Interfaces Configuration Guide• n391 on page 353• n393 on page 355• timeslots on page 515• t392 on page 510

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">• Junos OS Services Interfaces Configuration Guide• n391 on page 353• n392 on page 354• timeslots on page 515• t392 on page 510

name-format

Syntax	name-format (character-string none dns mac+2oct);
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 12.1 for PTX Series Packet Transport Switches.
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">• Creating a Maintenance Association• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

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.
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, 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	<i>number</i> —VLAN ID 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"> Configuring Mixed Tagging Support for Untagged Packets Configuring a Logical Interface for Access Mode flexible-vlan-tagging on page 232

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 Sentppp-options on page 426

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

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"> Configuring IPCP Options address on page 94 unnumbered-address (PPP) on page 548 Junos OS System Basics Configuration Guide

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"> IEEE 802.3ah OAM Link-Fault Management Overview

neighbor

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">Configuring Basic APS Support

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">Disabling the Sending of Link Event TLVs


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.
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	<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"> • 10-Gigabit Ethernet Notification of Link Down Alarm Overview

no-auto-mdix

Syntax	no-auto-mdix;
Hierarchy Level	[edit interface <i>ge-fpc/port/pic</i> gigether-options]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	<p>On MX Series routers, 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	<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"> • Ethernet Interfaces Overview • gigether-options on page 241.

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.
Description	<p>For Gigabit Ethernet interfaces on M Series, MX Series, T Series, and TX Matrix routers, explicitly enable autonegotiation and remote fault. For EX Series switches and J Series Services Routers, explicitly enable autonegotiation only.</p> <ul style="list-style-type: none">• 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. <p>When you configure Tri-Rate Ethernet copper interfaces to operate at 1 Gbps, autonegotiation must be enabled.</p> <div><p>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.</p><p>To correct the invalid configuration and disable autonegotiation:</p><ol style="list-style-type: none">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.</div> <p>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.</p>
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, and TX Matrix 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">• Gigabit Ethernet Autonegotiation Overview• Configuring J Series Services Router Switching Interfaces• Configuring Gigabit Ethernet Interfaces (CLI Procedure)• Configuring Gigabit Ethernet Interfaces (CLI Procedure)

auto-negotiation (J Series uPIM)

Syntax	(auto-negotiation no-auto-negotiation);
Hierarchy Level	[edit interfaces <i>ge-pim</i> /0/0 switch-options switch-port <i>port-number</i>]
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">• Configuring J Series Services Router Switching Interfaces

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">Configuring E3 and T3 Parameters on ATM InterfacesDisabling T3 C-Bit Parity Mode

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">Configuring Multiservice Physical Interface PropertiesJunos OS Services Interfaces Configuration Guide

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 Responseloopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3) on page 321remote-loopback-respond on page 453

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.
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.
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">Configuring Flow ControlConfiguring Gigabit Ethernet Interfaces (CLI Procedure)

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.
Description	For Ethernet interfaces, enable updating of the ARP cache for replies received in response to gratuitous ARP requests.
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">Configuring Gratuitous ARPno-gratuitous-arp-request on page 367

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.
Description	For Ethernet 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"> Configuring Gratuitous ARP gratuitous-arp-reply on page 242

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"> Configuring Keepalives Disabling the Sending of PPPoE Keepalive Messages Configuring Frame Relay Keepalives

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">Configuring the T3 Line Buildout

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	Statement introduced before Junos OS Release 7.4.
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.

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	<p>local—Loop packets, including both data and timing information, back on the local router's PIC. NxDS0 IQ interfaces do not support local loopback.</p> <p>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.</p> <p>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.</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 E3 and T3 Parameters on ATM Interfaces
 - Configuring E1 Loopback Capability
 - Configuring E3 Loopback Capability
 - Configuring Channelized IQ and IQE SONET/SDH Loop Timing
 - Configuring SHDSL Operating Mode on an ATM Physical Interface
 - Configuring T1 Loopback Capability
 - Configuring T3 Loopback Capability
 - [feac-loop-respond on page 230](#)

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.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces, enable or disable loopback mode.




NOTE: By default, local aggregated Ethernet, Fast Ethernet, Tri-Rate Ethernet copper, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces connect to a remote system.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	• Configuring Ethernet Loopback Capability

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">• Configuring Serial Loopback Capability

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), and for Gigabit Ethernet DPCs on MX Series routers, 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><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	<pre>[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]</pre>
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"> Channelized E1 IQ and IQE Interfaces Overview Channelized OC12/STM4 IQ and IQE Interfaces Overview Configuring an OC12/STM4 Interface

- Configuring Channelized STM1 IQ and IQE Interfaces
- Configuring T3 IQ Interfaces
- [partition on page 401](#)

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">• Configuring E3 and T3 Parameters on ATM Interfaces• Configuring E3 HDLC Payload Scrambling• Configuring SONET/SDH HDLC Payload Scrambling• Configuring T3 HDLC Payload Scrambling• Examples: Configuring T3 Interfaces• compatibility-mode on page 150

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">Disabling the Transmission of Redirect Messages on an InterfaceJunos OS System Basics Configuration Guide

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 12.1 for PTX Packet Transport Switches.
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">• Enabling Ethernet MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Switches• accept-source-mac on page 81• source-address-filter on page 488

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"> • Junos OS Services Interfaces Configuration Guide

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"> • Configuring Multiservice Physical Interface Properties • Junos OS Services Interfaces Configuration Guide

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">• Specifying the Actions to Be Taken for Link-Fault Management Events

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">• Configuring Link PIC Failover on Channelized OC3 IQ and IQE Interfaces• Configuring Link PIC Failover on Channelized OC12/STM4 IQ and IQE Interfaces• Configuring Link PIC Failover on Channelized STM1 Interfaces• Junos OS Services Interfaces Configuration Guide

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"> 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 <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"> Configuring Frame Relay Control Bit Translation

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">Configuring E3 IQ and IQE Unframed Mode

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">Configuring an Incrementing STM IDsonet-options on page 485

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">• Ethernet Ring Protection Switching Overview

non-revertive

Syntax	<code>non-revertive;</code>
Hierarchy Level	[edit interfaces aeX aggregated-ether-options lacp link-protection]
Release Information	Statement introduced in Junos OS Release 9.3.
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 306• Configuring Aggregated Ethernet Link Protection

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 12.1 for PTX Series Packet Transport Switches.

Description For Ethernet interfaces on M320, M120, MX Series, and T Series routers and PTX Series Packet Transport Switches, provide IEEE 802.3ah Operation, Administration, and Maintenance (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

- IEEE 802.3ah OAM Link-Fault Management Overview
- Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

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	[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>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	For ATM encapsulation only, configure the OAM F5 loopback cell period. Not supported on ATM-over-SHDSL interfaces. 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.
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	disable —Disable the OAM loopback cell transmit feature. seconds —OAM loopback cell period. Range: 1 through 900 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">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><i>oc-slice-range</i>—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	<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"> Channelized OC12/STM4 IQ and IQE Interfaces Overview

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><i>seconds</i>—Timeout period in seconds.</p> <p>Range: 4 through 86,400 seconds</p> <p>Default: 30 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"> Junos OS Services Interfaces Configuration Guide


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">• adsl2plus—Set the ADSL line to train in the ITU G.992.5 mode.• ansi-dmt—Set the ADSL line to train in the ANSI T1.413 Issue 2 mode.• auto—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 (ansi-dmt) or ITU G.992.1 (itu-dmt) mode.• etsi—Set the ADSL line to train in the ETSI TS 101 388 V1.3.1 mode.• itu-annexb-ur2—Set the ADSL line to train in the ITU G.992.1 UR-2 mode.• itu-annexb-non-ur2—Set the ADSL line to train in the ITU G.992.1 non-UR-2 mode.• itu-dmt—Set the ADSL line to train in the ITU G.992.1 mode.• itu-dmt-bis—Set the ADSL line to train in the ITU G.992.3 mode. <p>Default: <code>auto</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">• ATM-over-ADSL Overview• <i>Junos OS Interfaces and Routing Configuration Guide</i>

optics-options

Syntax	<pre>optics-options { alarm low-light-alarm { (link-down syslog); } warning low-light-warning { (link-down syslog); } wavelength nm; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. alarm option and warning options introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	For 10-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	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">10-Gigabit Ethernet DWDM Interface Wavelength Overview

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><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">Configuring VLAN Interface Username Information for AAA Authentication

otn-options

Syntax

```
otn-options {
  apply-groups group-name;
  apply-groups-except exception-group-name;
  fec (efec | gfec | none);
  (laser-enable | no-laser-enable);
  (line-loopback } no-line-loopback);
  pass-thru;
  rate (fixed-stuff-bytes | no-fixed-stuff-bytes | pass-thru);
  transmit-payload-type number;
  trigger (oc-lof | oc-lom | oc-los | oc-wavelength-lock | odu-ais | odu-bbe-th | odu-bdi |
    odu-es-th | odu-lck | odu-oci | odu-sd | odu-ses-th | odu-ttim | odu-uas-th | opu-ptm |
    otu-ais | otu-bbe-th | otu-bdi | otu-es-th | otu-fec-deg | otu-fec-exe | otu-iae | otu-sd |
    otu-ses-th | otu-ttim | otu-uas-th);
  tti;
}
```

Hierarchy Level [edit interfaces *ge-fpc/pic/port*]

Release Information Statement introduced in Junos OS Release 9.4.

Description Specify the Gigabit Ethernet Optical Transport Network (OTN) interface and options.

Options **apply-groups**—Groups from which to inherit configuration data.

apply-groups-except—Do not inherit configuration data from these groups.

fec—Enable Forward Error Correction (FEC) mode.

laser-enable—Enable laser.

line-loopback—Enable line loopback.

no-laser-enable—Do not enable laser.

no-line-loopback—Do not enable line loopback.

rate (options)—OTN mode:

- **fixed-stuff-bytes**—Fixed stuff bytes 11.0957 Gbps.
- **no-fixed-stuff-bytes**—No fixed stuff bytes 11.0491 Gbps.
- **pass-through**—Enable OTN passthrough mode.
- **no-pass-through**—Do not enable OTN passthrough mode.

transmit-payload-type *number*—Transmit payload type, specify from 0 through 255.

trigger—Defect triggers, specify from the following possible completions:

- **oc-lof**—OC Loss of Frame defect trigger.
- **oc-lom**—OC Loss of Multiframe defect trigger.

- **oc-los**—OC Loss of Signal defect trigger.
- **oc-wavelength-lock**—OC Wavelength Lock defect trigger.
- **odu-ais**—ODU Alarm Indication Signal defect trigger.
- **odu-bbe-th**—ODU Background Block Error Threshold defect trigger.
- **odu-bdi**—ODU Backward Defect Indication defect trigger.
- **odu-es-th**—ODU Errored Seconds Threshold defect trigger.
- **odu-lck**—ODU Locked defect trigger.
- **odu-oci**—ODU Open Connection Indication defect trigger.
- **odu-sd**—ODU Signal Degrade defect trigger.
- **odu-ses-th**—ODU Severely Errored Seconds Threshold defect trigger.
- **odu-ttim**—ODU Trail Trace Identifier Mismatch defect trigger.
- **odu-uas-th**—ODU Unavailable Seconds Threshold defect trigger.
- **opu-ptm**—OPU Payload Type Mismatch defect trigger.
- **otu-ais**—OTU Alarm Indication Signal defect trigger.
- **otu-bbe-th**—OTU Background Block Error Threshold defect trigger.
- **otu-bdi**—OTU Backward Defect Indication defect trigger.
- **otu-es-th**—OTU Errored Seconds Threshold defect trigger.
- **otu-fec-deg**—OTU FEC Degrade defect trigger.
- **otu-fec-exe**—OTU FEC Excessive Error defect trigger.
- **otu-iae**—OTU Incoming Alignment defect trigger.
- **otu-sd**—OTU Signal Degrade defect trigger.
- **otu-ses-th**—OTU Severely Errored Seconds Threshold defect trigger.
- **otu-ttim**—OTU Trail Trace Identifier Mismatch defect trigger.
- **otu-uas-th**—OTU Unavailable Seconds Threshold defect trigger.

tti—Trace identifier, select from the following options:

- **odu-dapi**—ODU Destination Access Point Identifier.
- **odu-expected-receive-dapi**—ODU Expected Receive Destination Access Point Identifier.
- **odu-expected-receive-sapi**—ODU Expected Receive Source Access Point Identifier.
- **odu-sapi**—ODU Source Access Point Identifier.
- **otu-dapi**—OTU Destination Access Point Identifier.
- **otu-expected-receive-dapi**—OTU Expected Receive Destination Access Point Identifier.
- **otu-expected-receive-sapi**—OTU Expected Receive Source Access Point Identifier.
- **otu-sapi**—OTU Source Access Point Identifier.

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

Related Documentation

- [Gigabit Ethernet OTN Options Configuration Overview](#)

output

Syntax

```
output {  
    service-set service-set-name <service-filter filter-name>;  
}
```

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

- [Junos OS Services Interfaces Configuration Guide](#)

output-list

Syntax	output-list [<i>filter-names</i>];
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">• Applying a Filter to an Interface• input-list on page 268• Junos OS Policy Framework Configuration Guide• Junos OS Services Interfaces Configuration Guide• Junos OS System Basics Configuration Guide

output-policer

Syntax	output-policer <i>policer-name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Associate a Layer 2 policer with a logical interface. The output-policer and output-three-color statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the 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">• Applying a Policer• input-policer on page 268

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	<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"> Specifying an Output Priority Map input-priority-map on page 269

output-three-color

Syntax	output-three-color <i>policer-name</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer]
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Associate a Layer 2, three-color policer with a logical interface. The output-three-color and output-policer statements are mutually exclusive.
Options	<i>policer-name</i> —Name of the three-color policer that you define at the [edit firewall] hierarchy level.
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"> Applying a Policer input-three-color on page 269

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 and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces 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">Stacking and Rewriting Gigabit Ethernet VLAN Tagsinput-vlan-map (Aggregated Ethernet) on page 270

output-vlan-map (Gigabit Ethernet IQ and 10-Gigabit Ethernet with SFPP)

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>
Description	<p>For Gigabit Ethernet IQ and 10-Port 10-Gigabit Ethernet SFPP interfaces 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"> Stacking and Rewriting Gigabit Ethernet VLAN Tags input-vlan-map (Gigabit Ethernet IQ and 10-Gigabit Ethernet SFPP) on page 271

overflow (Receive Bucket)

Syntax	<pre>overflow (discard tag);</pre>
Hierarchy Level	<pre>[edit interfaces <i>interface-name</i> <i>receive-bucket</i>]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p>
Description	<p>Specify how to handle packets that exceed the threshold for the receive leaky bucket.</p>
Options	<p>tag—Tag, count, and process received packets that exceed the threshold.</p> <p>discard—Discard received packets that exceed the threshold. No counting is done.</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 Receive and Transmit Leaky Bucket Properties Configuring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfaces

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">• Configuring Receive and Transmit Leaky Bucket Properties• Configuring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfaces

paired-group

Syntax	paired-group <i>group-name</i> ;
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">• Configuring APS Load Sharing Between Circuit Pairs• working-circuit on page 576

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> <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"> Configuring the PPP Challenge Handshake Authentication Protocol Configuring PPP PAP Authentication Tracing Operations of the pppd Process traceoptions (PPP Process) on page 524 Junos OS System Basics Configuration Guide

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.
Description	Configure the Password Authentication Protocol (PAP) password.
Options	<i>password</i> —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">Configuring PPP PAP Authenticationchap-secret on page 144Junos OS System Basics Configuration Guide

partition

Syntax	<code>partition <i>partition-number</i> <i>oc-slice</i> <i>oc-slice-range</i> <i>interface-type</i> <i>type</i> <i>timeslots</i> <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"> • Channelized E1 IQ and IQE Interfaces Overview • Channelized OC12/STM4 IQ and IQE Interfaces Overview • Configuring Channelized T3 IQ Interfaces • no-partition on page 373

passive (CHAP)

Syntax	<code>passive;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> <code>ppp-options chap</code>], [edit interfaces <i>interface-name</i> <code>unit logical-unit-number ppp-options chap</code>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <code>unit logical-unit-number ppp-options chap</code>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Do not challenge the peer, but respond if challenged. If you omit this statement from the configuration, the interface always challenges its peer.</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">• <code>atm-ppp-llc</code>—PPP over AAL5 LLC encapsulation.• <code>atm-ppp-vc-mux</code>—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">• Configuring Passive Mode• Junos OS System Basics Configuration Guide

passive (PAP)

Syntax	<code>passive;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> <code>ppp-options pap</code>], [edit interfaces <i>interface-name</i> <code>unit logical-unit-number ppp-options pap</code>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <code>unit logical-unit-number ppp-options pap</code>]
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">• Configuring Passive Mode• Junos OS System Basics Configuration Guide

passive-monitor-mode

Syntax	<code>passive-monitor-mode;</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>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 the <i>Junos OS ATM Interfaces Configuration Guide</i> and <i>Junos OS ATM Interfaces Configuration Guide</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	<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 Passive Monitoring on ATM Interfaces • Passive Monitoring on Ethernet Interfaces Overview • Enabling Passive Monitoring on SONET/SDH Interfaces • multiservice-options on page 352 • <i>Junos OS Services Interfaces Configuration Guide</i>

password

Syntax	<code>password <i>password-string</i>;</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 <i>path-database-size</i>;</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	[edit interfaces <i>interface-name</i> sonet-options]
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 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.</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>trace-string—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 trace-string. For all nonchannelized SONET/SDH interfaces, the default trace-string is system-name interface-name. For channelized SONET/SDH interfaces and 10-Gigabit Ethernet WAN-PHY interfaces, the default trace-string is interface-name.</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 SONET/SDH Path Trace Identifier sonet-options on page 485

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> NOTE: The payload-scrambler statement at the [edit interfaces <i>interface-name</i> e3-options] hierarchy level is not valid for IQE PICs.</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">• Configuring E3 and T3 Parameters on ATM Interfaces• Configuring E3 HDLC Payload Scrambling• Configuring SONET/SDH HDLC Payload Scrambling• Configuring T3 HDLC Payload Scrambling• Examples: Configuring T3 Interfaces• compatibility-mode on page 150

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">• ATM Support on Circuit Emulation PICs Overview• satop-options on page 466

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 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">• Configuring the OAM PDU Interval

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 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	<i>threshold-value</i> —The number of PDUs missed before declaring the peer lost. Range: 3 through 10 PDUs Default: 3 PDUs
Required Privilege Level	interface—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 OAM PDU Threshold

peer-unit

Syntax	<code>peer-unit <i>unit-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	Configure a peer relationship between two logical systems.
Options	<i>unit-number</i> —Peering logical system unit 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">Junos OS Services Interfaces Configuration Guide

per-unit-scheduler

Syntax	<code>per-unit-scheduler;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
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-Gigabit Ethernet interfaces only, enable 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 for interfaces on the IQ2 and IQ2-E PIC, you must also include the `vlan-tagging` statement at the [edit interfaces *interface-name*] hierarchy level.

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"> • vlan-tagging on page 563 • Junos OS Class of Service Configuration Guide

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"> Configuring Aggregated Ethernet LACP Configuring Aggregated Ethernet LACP (CLI Procedure) Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch

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"> Configuring the PPP Protocol Field Compression

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	<code>atm1</code> —ATM1 PIC. <code>atm2</code> —ATM2 IQ 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">Configuring the ATM PIC Type

plp-to-clp

Syntax	<code>plp-to-clp;</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 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	interface—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 the PLP Setting to Be Copied to the CLP Bit

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"> Configuring Two EPD Thresholds per Queue Configuring an ATM Scheduler Map linear-red-profile on page 299

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">Configuring a Point-to-Point Connectionmultipoint on page 350

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">Configuring Rate Limiting of Ethernet OAM Messagespolicer (CFM Global) on page 415policer (CFM Session) on page 416

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">Configuring Rate Limiting of Ethernet OAM Messagespolicer (CFM Session) on page 416

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">• Configuring Rate Limiting of Ethernet OAM Messages• policer (CFM Global) on page 415


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	<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), define a CoS policer template to specify the premium bandwidth and burst-size limits, and the aggregate bandwidth and burst-size limits. 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.</p>
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"> Configuring Gigabit Ethernet Policers

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">• Applying Policers• Junos OS Policy Framework Configuration Guide• Junos OS Services Interfaces Configuration Guide

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	Statement introduced before Junos OS Release 7.4.
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), configure MAC policing.
	<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"> • Configuring MAC Address Filtering

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">• Configuring ISDN Physical Interface Properties• Specifying a USB Modem Interface on J Series Routers• <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.
Description	For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, and aggregated Ethernet interfaces using Gigabit Ethernet IQ interfaces, 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"> Removing a VLAN Tag

pop-all-labels

Syntax	<pre>pop-all-labels { required-depth <i>number</i>; }</pre>
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.
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 PacketsRemoving MPLS Labels from Incoming PacketJunos OS Services Interfaces Configuration Guide

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.
Description	For 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, 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"> Removing the Outer and Inner VLAN Tags

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.
Description	For 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, 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.
Required Privilege Level	interface—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 the Outer VLAN Tag and Rewriting the Inner VLAN Tag

port

Syntax	<pre>port { minimum <i>port-number</i>; maximum <i>port-number</i>; }</pre>
Hierarchy Level	[edit interfaces <i>vsp-fpc/pic/port</i> unit logical-unit-number compression rtp]
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	<p>minimum <i>port-number</i>—Specify minimum port number. Range: 0 through 65,535</p> <p>maximum <i>port-number</i>—Specify maximum port number. Range: 0 through 65,535</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 Configuration Guide

port-priority

Syntax	<pre>port-priority <i>priority</i>;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> gigether-options 802.3ad lacp]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Define LACP port priority at the interface level.
Options	<p><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</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

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"> Configuring a Connectivity Fault Management Action Profile Configuring Remote MEP Action Profile Support

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	<i>filter-name</i> —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"> Junos OS Services Interfaces Configuration Guide

ppp-options

Syntax	<pre>ppp-options { chap { access-profile <i>name</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>; 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	<p>[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>]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4. lcp-restart-timer statement introduced in Junos OS Release 8.1. ncp-restart-timer statement introduced in Junos OS Release 8.1. loopback-clear-timer statement introduced in Junos OS Release 8.5. dynamic-profile statement introduced in Junos OS Release 9.5.</p>
Description	<p>On interfaces with PPP encapsulation, configure PPP-specific interface properties.</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. <p>The remaining statements are explained separately.</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**
- [Configuring the PPP Challenge Handshake Authentication Protocol](#)


pppoe-options

Syntax	<pre>pppoe-options { access-concentrator <i>name</i>; auto-reconnect <i>seconds</i>; (client server); service-name <i>name</i>; underlying-interface <i>interface-name</i>; }</pre>
Hierarchy Level	[edit interfaces pp0 unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces pp0 unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. client Statement introduced in Junos OS Release 8.5. server Statement introduced in Junos OS Release 8.5.
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">• Configuring a PPPoE Interface

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">• Configuring PPPoE (for static interfaces)• Configuring an Underlying Interface for Dynamic PPPoE Subscriber Interfaces• Assigning a Service Name Table to a PPPoE Underlying Interface

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 switches.</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"> Configuring the Interface Address

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">Configuring a Preferred Source Address for Unnumbered Ethernet or Demux Interfacesaddress on page 94<i>Junos OS System Basics Configuration Guide</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 firewall hierarchical-policer]
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 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">Applying PolicersJunos OS Class of Service Configuration Guide

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	<p>For Gigabit Ethernet IQ interfaces only, define the classifier for egress premium traffic.</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">• Specifying an Output Priority Map• input-priority-map on page 269


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	<p>Define a policer to apply to nonpremium traffic.</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">• Configuring Gigabit Ethernet Policers• aggregate (Gigabit Ethernet CoS Policer) on page 98• ieee802.1p on page 253

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">• Configuring Link PIC Redundancy• Junos OS Services Interfaces Configuration Guide

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> NOTE: The edit logical-systems hierarchy is not available on QFabric switches.</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">Configuring the Interface Address

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">Junos OS Services Interfaces Configuration Guide

priority (OAM Connectivity-Fault Management)

Syntax	<code>priority <i>number</i>;</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><i>number</i>—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"> Configuring a Maintenance Endpoint

priority (Schedulers)

Syntax	<code>priority (high low);</code>
Hierarchy Level	[edit interfaces <i>at-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"> Configuring ATM2 IQ VC Tunnel CoS Components

promiscuous-mode

Syntax	<pre>promiscuous-mode { vpi vpi-identifier; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options]
Release Information	Statement introduced before Junos OS Release 7.4.
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.
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 Modevpi (ATM CCC Cell-Relay Promiscuous Mode) on page 568

protect-circuit

Syntax	<pre>protect-circuit group-name;</pre>
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	group-name —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">Configuring Basic APS Supportworking-circuit on page 576

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  
  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">• Ethernet Ring Protection Switching Overview• Ethernet Ring Protection Using Ring Instances for Load Balancing• Example: Configuring Load Balancing Within Ethernet Ring Protection for MX Series Routers• Example: Configuring Ethernet Ring Protection Switching on EX Series Switches• Configuring Ethernet Ring Protection Switching (CLI Procedure)

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">• Configuring an OAM Action Profile

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"> Configuring IS-IS or MPLS Traffic for TCC Interfaces

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"> Configuring Ethernet TCC Example: Configuring an Ethernet TCC or Extended VLAN TCC remote on page 452 Junos OS VPNs Configuration Guide

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.
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.
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">• Configuring Restricted and Unrestricted Proxy ARP• Configuring Proxy ARP (CLI Procedure)• Example: Configuring Proxy ARP on an EX Series Switch• Configuring Gratuitous ARP

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.
Description	For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, and aggregated Ethernet interfaces using Gigabit Ethernet IQ interfaces, 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. 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.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Stacking a VLAN Tag

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.
Description	For 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, specify the VLAN rewrite operation to push two VLAN tags in front 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"> Stacking Two VLAN Tags

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">Configuring ATM2 IQ VC Tunnel CoS Componentshigh-plp-threshold on page 244low-plp-threshold on page 326

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"> Configuring the ATM1 Queue Length

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	<code>queues <i>queue-numbers</i></code> —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"> Junos OS Services Interfaces Configuration Guide

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">• IEEE 802.1x Port-Based Network Access Control Overview• authenticator on page 113• dot1x on page 187• interface (IEEE 802.1x) on page 273

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],</code> <code>[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	radius-realm-string —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">• Configuring VLAN Interface Username Information for AAA Authentication

ranges (Dynamic Stacked VLAN)

Syntax	<code>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 dynamic-profile <i>profile-name</i>]
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"> Configuring Stacked VLAN Ranges for Use with Stacked VLAN Dynamic Profiles

ranges (Dynamic VLAN)

Syntax	<code>ranges (any <i>low-tag</i>)-(any <i>high-tag</i>);</code>
Hierarchy Level	[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.
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"> Configuring Single-Level VLAN Ranges for Use with VLAN Dynamic Profiles

rate

Syntax	<code>rate percentage;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> <code>receive-bucket</code>], [edit interfaces <i>interface-name</i> <code>transmit-bucket</code>]
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">Configuring Receive and Transmit Leaky Bucket PropertiesConfiguring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfaces

rdi

Syntax	<code>rdi;</code>
Hierarchy Level	[edit protocols <code>oam ethernet</code> connectivity-fault-management <code>action-profile tlv-action</code> 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">Configuring a Connectivity Fault Management Action Profile

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"> • Junos OS Services Interfaces Configuration Guide

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"> • IEEE 802.1x Port-Based Network Access Control Overview • dot1x on page 187 • interface (IEEE 802.1x) on page 273 • quiet-period on page 444

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">Configuring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfacestransmit-bucket on page 530

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">Enabling Passive Monitoring on ATM InterfacesEnabling Passive Monitoring on SONET/SDH Interfaces

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	<p><i>milliseconds</i>—Red differential delay threshold.</p> <p>Range: 1 through 2000 milliseconds</p> <p>Default: 10 milliseconds</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"> • action-red-differential-delay on page 92 • yellow-differential-delay on page 576 • Junos OS Services Interfaces Configuration Guide

redial-delay

Syntax	<code>redial-delay <i>time</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 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><i>time</i>—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">• ISDN Interfaces Overview• <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>; hot-standby; }</pre>
Hierarchy Level	[edit interfaces (rsp0 rsp1)], [edit interfaces rlsqnumber]
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">• Junos OS Services Interfaces Configuration Guide

remote

Syntax	<pre>remote { (inet-address <i>address</i> mac-address <i>address</i>); }</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">• Configuring Ethernet TCC• Example: Configuring an Ethernet TCC or Extended VLAN TCC• proxy on page 439• Junos OS VPNs Configuration Guide

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 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">• Setting a Remote Interface into Loopback Mode

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.
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"> Configuring the T1 Remote Loopback Response feac-loop-respond on page 230 loopback (ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3) on page 321

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">Configuring a Maintenance Endpoint

request

Syntax	<pre>request (protect working);</pre>
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	<p>protect—Request that the circuit become the protect circuit.</p> <p>working—Request that the circuit become the working circuit.</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 Switching Between the Working and Protect Circuitsforce on page 234

required-depth

Syntax	<code>required-depth <i>number</i>;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> atm-options mpls pop-all-labels],</p> <p>[edit interfaces <i>interface-name</i> sonet-options mpls pop-all-labels],</p> <p>[edit interfaces <i>interface-name</i> fastether-options mpls pop-all-labels],</p> <p>[edit interfaces <i>interface-name</i> gigether-options mpls pop-all-labels]</p>
Release Information	Statement introduced before Junos OS Release 7.4.
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	<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"> Removing MPLS Labels from Incoming Packets Removing MPLS Labels from Incoming Packets Junos OS Services Interfaces Configuration Guide

restore-interval

Syntax	<code>restore-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	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">• Ethernet Ring Protection Switching Overview• Example: Configuring Ethernet Ring Protection Switching on EX Series Switches• Configuring Ethernet Ring Protection Switching (CLI Procedure)

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	<p><i>integer</i>—Specify the number of retries.</p> <p>Range: 1 through 10</p> <p>Default: 3 retries</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"> • IEEE 802.1x Port-Based Network Access Control Overview • dot1x on page 187 • interface (IEEE 802.1x) on page 273 • quiet-period on page 444

revert-time

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	<p><i>seconds</i>—Amount of time to wait after the working circuit has again become functional before making the working circuit active again.</p> <p>Range: 1 through 65,535 seconds</p> <p>Default: None (APS operates in nonrevertive 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"> • Configuring Revertive Mode

revertive

Syntax	revertive;
Hierarchy Level	[edit interfaces aeX aggregated-ether-options lacp link-protection]
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Enable the ability to switch to a better priority link (if one is available).



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.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• non-revertive

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">• Configuring SONET/SDH RFC 2615 Support

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">• Ethernet Ring Protection Switching Overview• Example: Configuring Ethernet Ring Protection Switching on EX Series Switches• Configuring Ethernet Ring Protection Switching (CLI Procedure)

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">• Ethernet Ring Protection Switching Overview

routing-instance

Syntax	routing-instance { destination <i>routing-instance-name</i> ; }
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">• Junos OS Services Interfaces Configuration Guide

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">• Configuring Unicast RPF Strict Mode• Configuring Unicast RPF Loose Mode• Example: Configuring Unicast Reverse-Path-Forwarding Check

rpf-loose-mode-discard

Syntax	<pre>rpf-loose-mode-discard { family { inet; } }</pre>
Hierarchy Level	[edit forwarding-options]
Release Information	Statement introduced in Junos OS Release 12.1.
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.
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">• Configuring Unicast RPF

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">• Junos OS Services Interfaces Configuration Guide

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	<p>assert—The to-DCE signal must be asserted.</p> <p>de-assert—The to-DCE signal must be deasserted.</p> <p>normal—Normal RTS signal handling, as defined by the TIA/EIA Standard 530.</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"> Configuring the Serial Signal Handling

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	<p>negative—Negative signal polarity.</p> <p>positive—Positive 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"> Configuring Serial Signal Polarities

rtvbr

Syntax	<code>rtvbr peak rate sustained rate burst length;</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> atm-options vpi <i>vpi-identifier</i> shaping]</code> , <code>[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]</code> , <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping]</code> , <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> shaping]</code> , <code>[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]</code>
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">Configuring ATM CBRConfiguring ATM2 IQ Real-Time VBRcbr on page 141

- [vbr on page 552](#)

sampling

Syntax	<code>sampling <i>direction</i>;</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 direction of traffic to be sampled.
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">• Junos OS Services Interfaces Configuration Guide

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	Statement introduced in Junos OS Release 9.3.
Description	Set Structure-Agnostic TDM over Packet (SAToP) protocol options.
Options	<p>excessive-packet-loss-rate options—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> <p>jitter-buffer-latency <i>milliseconds</i>—Number of milliseconds delay in jitter buffer (from 1 to 1000 milliseconds).</p> <p>jitter-buffer-packets <i>packets</i>—Number of packets in jitter buffer (from 1 to 64).</p> <p>payload-size <i>bytes</i>—Payload size in integer number of bytes.</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">• ATM Support on Circuit Emulation PICs Overview

scheduler-maps

Syntax	<pre>scheduler-maps <i>map-name</i> { forwarding-class (<i>class-name</i> assured-forwarding best-effort expedited-forwarding network-control); vc-cos-mode (alternate strict); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> 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	<p><i>map-name</i>—Name of the scheduler map.</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">Configuring ATM2 IQ VC Tunnel CoS Componentsatm-scheduler-map on page 110Junos OS Class of Service Configuration Guide

schedulers

Syntax	<pre>schedulers <i>number</i>;</pre>
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	<p><i>number</i>—Number of schedulers to configure on the port.</p> <p>Range: 1 through 1024</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 Class of Service Configuration Guide

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">• Junos OS Services Interfaces Configuration Guide

send-critical-event

Syntax	<code>send-critical-event;</code>
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">• Specifying the Actions to Be Taken for Link-Fault Management Events

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 113• dot1x on page 187• interface (IEEE 802.1x) on page 273

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	[edit interfaces interface-name unit logical-unit-number family inet], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit logical-unit-number family inet]
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	interface—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 Configuration Guide

service (PPPoE)

Syntax `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;`
 `}`
 `}`
 `}`
 `}`

Hierarchy Level [edit protocols pppoe [service-name-tables table-name](#)]

Release Information Statement introduced in Junos OS Release 10.0.
 any, **dynamic-profile**, **routing-instance**, **max-sessions**, and **static-interface** options
 introduced in Junos OS Release 10.2.

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 **service-name**—Service entry in the PPPoE service name table:

- **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.

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 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	• Junos OS Services Interfaces Configuration Guide

service-filter

Syntax	<code>service-filter <i>filter-name</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service (input output)], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service (input output)]
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, the 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">• Junos OS Services Interfaces Configuration Guide

service-name

Syntax	<code>service-name <i>name</i>;</code>
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 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">• Configuring the PPPoE Service Name• Junos OS Interfaces and Routing Configuration Guide

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	Statement introduced in Junos OS Release 10.0. (MX Series routers with Trio MPCs only) Support at the [edit ... family pppoe] hierarchies introduced in Junos OS Release 11.2.
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.
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"> Configuring PPPoE Service Name Tables Assigning a Service Name Table to a PPPoE Underlying Interface Configuring the PPPoE Family for an Underlying Interface

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	Statement introduced in Junos OS Release 10.0. dynamic-profile , routing-instance , max-sessions , and static-interface options introduced in Junos OS Release 10.2.
Description	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.
Options	table-name —Name of the PPPoE service name table, a string of up to 32 alphanumeric characters. 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">Configuring PPPoE Service Name TablesCreating 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 inet service (input output)], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet service (input output)]
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">• Junos OS Services Interfaces Configuration Guide

services

Syntax	<code>services priority-level;</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	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">• Junos OS Services Interfaces Configuration Guide

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 Configuration Guide](#)


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">• Defining Virtual Path Tunnels• Defining the ATM Traffic-Shaping Profile• Configuring ATM QoS or Shaping

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">• ATM-over-SHDSL Overview

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 12.1 for PTX Series Packet Transport Switches.
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
	<div> NOTE: The PTX Series Packet Transport Switches support the vlan and 2octet options only.</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">• Creating a Maintenance Association• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

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"> • Junos OS Services Interfaces Configuration Guide

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"> • ATM-over-SHDSL Overview • Junos OS Interfaces and Routing Configuration Guide

snr-margin

Syntax	<pre>snr-margin { <i>current margin</i>; <i>snext margin</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> <i>shdsl-options</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <i>shdsl-options</i>]
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">• ATM-over-SHDSL Overview• <i>Junos OS Interfaces and Routing Configuration Guide</i>

sonet-options

```
Syntax  sonet-options {
        aps {
            advertise-interval milliseconds;
            annex-b
            authentication-key key;
            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">• Configuring SONET/SDH Parameters on ATM Interfaces• Channelized OC12/STM4 IQ and IQE Interfaces Overview• Channelized STM1 Interfaces Overview• Configuring SONET/SDH Physical Interface Properties• no-concatenate

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 348• primary (Address on Interface) on page 434• Junos OS Services Interfaces Configuration Guide

source-address-filter

Syntax	<pre>source-address-filter { mac-address; }</pre>
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 12.1 for PTX Packet Transport Switches.
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 VRRP and VRRP for IPv6 Overview, 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">Enabling Ethernet MAC Address FilteringConfiguring MAC Filtering on PTX Series Packet Transport Switchessource-filtering on page 376

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]
Release Information	Statement introduced before Junos OS Release 7.4.
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	<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	<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 Source Class and Destination Class Usage • accounting on page 85 • destination-class-usage on page 177 • Junos OS Services Interfaces Configuration Guide


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 12.1 for PTX Packet Transport Switches.
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">• Enabling Ethernet MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Switches• accept-source-mac on page 81• source-address-filter on page 488

speed (Ethernet)

Syntax	<code>speed (10m 100m 1g auto);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i>],</code> <code>[edit interfaces <i>ge-pim/0/0</i> <i>switch-options</i> <i>switch-port</i> <i>port-number</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
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	<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"> Configuring the Interface Speed Configuring the Interface Speed on Ethernet Interfaces Configuring Gigabit Ethernet Autonegotiation Configuring J Series Services Router Switching Interfaces

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> 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.</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">Configuring Gigabit Ethernet Autonegotiationno-auto-mdix on page 361

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"> Configuring SONET/SDH Interface Speed

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><i>spid1-string</i></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"> Configuring ISDN Physical Interface Properties <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">Configuring ISDN Physical Interface Properties<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-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.

Options **any**—Any valid VLAN ID number.

vlan-id-low—Specify the first VLAN ID number for the group of VLANs.

vlan-id-high—Specify the last VLAN ID number for the group of VLANs.

Range: 1 through 4094

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.
Description	For Gigabit Ethernet IQ interfaces, enable stacked VLAN tagging for all logical interfaces on the 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">Stacking and Rewriting Gigabit Ethernet VLAN Tags Overviewvlan-tags (Stacked VLAN Tags) on page 566

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.
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"> Configuring E1 Start and End Flags Configuring the E3 Start and End Flags Configuring T1 Start and End Flags Configuring T3 Start and End Flags

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">Configuring ISDN Physical Interface Properties<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">IEEE 802.1x Port-Based Network Access Control Overviewauthenticator on page 113dot1x on page 187interface (IEEE 802.1x) on page 273

supplicant-timeout

Syntax	<code>supplicant-timeout <i>seconds</i>;</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 waits for a response when relaying a request from the authentication server to the client before resending the request.
Options	<p><i>seconds</i>—Specify the number of seconds the port waits for the supplicant timeout.</p> <p>Range: 1 through 60 seconds</p> <p>Default: 30 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"> • IEEE 802.1x Port-Based Network Access Control Overview • authenticator on page 113 • dot1x on page 187 • interface (IEEE 802.1x) on page 273

swap

Syntax	<code>swap;</code>
Hierarchy Level	<p><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> input-vlan-map],</code> <code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]</code></p>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For Gigabit Ethernet IQ and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces, 10-Gigabit Ethernet LAN/WAN PIC, and aggregated Ethernet using Gigabit Ethernet IQ interfaces, 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.
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"> • Rewriting the VLAN Tag on Tagged Frames

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.
Description	For 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, 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.
Required Privilege Level	interface—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.
Description	For 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, 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.
Required Privilege Level	interface—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 the Inner and Outer VLAN Tags

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">Configuring J Series Services Router Switching Interfaces

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</i> /0/0 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	<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 J Series Services Router Switching Interfaces

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">• ISDN Interfaces Overview• <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">Configuring Unidirectional Switching Mode Support

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">Configuring Threshold Values for Local Fault Events on an InterfaceConfiguring Threshold Values for Fault Events in an Action Profile

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">• Junos OS Services Interfaces Configuration Guide

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">• Configuring Multiservice Physical Interface Properties• Junos OS Services Interfaces Configuration Guide

syslog (OAM Action)

Syntax	<code>syslog;</code>
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"> Specifying the Actions to Be Taken for Link-Fault Management Events

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.
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><i>priority</i>—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.

t1-options

Syntax `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*;
 `}`

Hierarchy Level [edit interfaces *interface-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure T1-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 • T1 Interfaces Overview

t310

Syntax	t310-value <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>br-pim/O/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	<p>seconds—Timer value, in seconds.</p> <p>Range: 1 through 65536 seconds</p> <p>Default: 10 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"> Configuring ISDN Physical Interface Properties <i>Junos OS Interfaces and Routing Configuration Guide</i>

t391

Syntax	t391 <i>seconds</i> ;
Hierarchy Level	[edit interfaces <i>interface-name mlfr-uni-nni-bundle-options</i>]
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	<p>seconds—Link integrity polling interval.</p> <p>Range: 5 through 30 seconds</p> <p>Default: 10 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"> n391 on page 353 n392 on page 354 n393 on page 355 t392 on page 510 <i>Junos OS Services Interfaces Configuration Guide</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 353• n392 on page 354• n393 on page 355• t391 on page 509• timeslots on page 515• Junos OS Services Interfaces Configuration Guide

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"> T3 Interfaces Overview

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> gi gether-options e thernet-switch-profile], [edit interfaces <i>interface-name</i> a ggregated-ether-options e thernet-switch-profile]
Release Information	Statement introduced before Junos OS Release 7.4.
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	tpids —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">Configuring Frames with Particular TPIDs to Be Processed as Tagged Frames

tag-protocol-id (TPID to Rewrite)

Syntax	<code>tag-protocol-id <i>tpid</i>;</code>
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.
Description	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 [edit interfaces <i>interface-name</i> gigether-options ethernet-switch-profile tag-protocol-id [<i>tpids</i>]] hierarchy level. For 10-Gigabit Ethernet LAN/WAN PIC interfaces on T Series routers, value the default TPID value (0x8100) is supported.
Default	If the tag-protocol-id 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"> Configuring Inner and Outer TPIDs and VLAN IDs

tei-option

Syntax	<code>tei-option (first-call power-up);</code>
Hierarchy Level	[edit interfaces <i>br-pim</i> / <i>0/port</i> 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	first-call —Activation does not occur until the call setup is sent. power-up —Activation occurs when the Services Router is powered on. Default: power-up
Required Privilege Level	interface—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 ISDN Physical Interface Properties <i>Junos OS Interfaces and Routing Configuration Guide</i>



then

Syntax	<pre>then { discard; }</pre>
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	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">Applying PolicersJunos OS Class of Service Configuration Guide

threshold

Syntax	<pre>threshold <i>bytes</i>;</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	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.
Options	bytes —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 k (1000). For example, the entry threshold 2k corresponds to a threshold of 2000 bytes. Range: 0 through 65,535 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 Receive and Transmit Leaky Bucket PropertiesConfiguring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfaces

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-options],</code> <code>[edit interfaces <i>interface-name</i> partition <i>partition-number</i>],</code> <code>[edit interfaces <i>interface-name</i> t1-options]</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"> • Configuring Fractional E1 IQ and IQE Interfaces • Configuring Fractional T1 IQ and IQE Interfaces

- 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">• Configuring the Serial Signal Handling

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">• Configuring Serial Signal Polarities

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"> Configuring ICCP for MC-LAG

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	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
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 <i>name</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, interface process tracing output is placed in the file files <i>number</i>—(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 <i>size</i>—(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	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">• Tracing Operations of an Individual Router or Switch 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	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
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">Tracing Operations of the Interface Process

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">• Tracing LACP Operations

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>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, 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>files <i>number</i>—(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 and a filename.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <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>flag—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>; 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.
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>flag <i>flag</i>—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—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 <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"> 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 <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"> Configuring Frame Relay Control Bit Translation

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">Configuring Frame Relay Control Bit Translation

transmit-bucket

Syntax	transmit-bucket { overflow discard; rate <i>percentage</i> ; threshold <i>bytes</i> ; }
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">Configuring Receive and Transmit Leaky Bucket PropertiesConfiguring Receive and Transmit Leaky Bucket Properties on SONET/SDH Interfacesreceive-bucket on page 448

transmit-clock

Syntax	<code>transmit-clock invert;</code>
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"> Configuring the Serial Clocking Mode

transmit-period

Syntax	<code>transmit-period <i>seconds</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 the number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client.
Options	<i>seconds</i> —The number of seconds the port waits before retransmitting the initial EAPOL PDUs to the client. Range: 1 through 65,535 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 113 dot1x on page 187 interface (IEEE 802.1x) on page 273

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">Configuring ATM2 IQ VC Tunnel CoS Components

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"> Configuring the ATM2 IQ Transmission Weight

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 interface-range <i>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.
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"> Enabling or Disabling SNMP Notifications on Physical Interfaces Enabling or Disabling SNMP Notifications on Logical Interfaces

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	interface—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 SONET/SDH Defect Triggers to Be Ignored

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"> • Junos OS Services Interfaces Configuration Guide

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"> • Configuring Layer 2 Circuit Trunk Mode Scheduling

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	<p>For ATM2 IQ interfaces with ATM CCC cell-relay encapsulation, configure the trunk identification number.</p> <p>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.</p>
Options	<p><i>number</i>—A valid trunk identifier.</p> <p>Range: For UNI mode, 0 through 7. For NNI mode, 0 through 31.</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 Layer 2 Circuit Transport Mode


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	<p><i>value</i>—Time-to-live value.</p> <p>Range: 0 through 255</p> <p>Default: 64</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">Junos OS Services Interfaces Configuration Guide

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"> • Junos OS Services Interfaces Configuration Guide • Junos OS VPNs Configuration Guide

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>  <p>NOTE: Demux interfaces are currently supported on Gigabit Ethernet, Fast Ethernet, 10-Gigabit Ethernet interfaces, or aggregated Ethernet devices.</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"> Configuring an IP Demux Underlying Interface Configuring a VLAN Demux Underlying Interface Specifying the Demux Underlying Interface Configuring the PPPoE Underlying Interface <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"> Configuring E3 IQ and IQE Unframed Mode

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.
Description	<p>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:</p> <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"> Enabling Unidirectional Traffic Flow on Physical Interfaces

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 | 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 <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>], [edit interfaces <i>interface-set</i> <i>interface-set-name</i> interface <i>interface-name</i>]
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	<p><i>logical-unit-number</i>—Number of the logical unit.</p> <p>Range: 0 through 1,073,741,823 for demux and PPPoE static interfaces only. 0 through 16,385 for all other static interface types.</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**
- Configuring Logical Interface Properties
 - Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers
 - [Junos OS Services Interfaces Configuration Guide](#)

unnumbered-address (Demux)

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 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 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	<ul style="list-style-type: none">• Configuring an Unnumbered Interface• address on page 94• 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"> Configuring an Unnumbered Interface address on page 94 <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	<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. 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">• Configuring IPCP Options• address on page 94• negotiate-address on page 359• Junos OS System Basics Configuration Guide

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"> Configuring the ATM OAM F5 Loopback Cell Threshold

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">Configuring VLAN Interface Username Information for AAA Authentication

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-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"> Configuring VLAN Interface Username Information for AAA Authentication

vbr

Syntax	<code>vbr 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> 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 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 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 rate—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 cbr on page 141

- [rtvbr on page 464](#)
- [shaping on page 480](#)

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">• Configuring ATM2 IQ VC Tunnel CoS Components

vci

Syntax	<code>vci vpi-identifier.vci-identifier;</code>
Hierarchy Level	[edit interfaces at- <i>fpc/pic/port</i> unit <i>logical-unit-number</i>], [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>], [edit logical-systems <i>logical-system-name</i> 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> family <i>family</i> address <i>address</i> multipoint-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	<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	interface—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 a Point-to-Point ATM1 or ATM2 IQ Connection• multipoint-destination on page 351• promiscuous-mode on page 436• vpi (ATM CCC Cell-Relay Promiscuous Mode) on page 568

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"> Configuring ATM-to-Ethernet Interworking

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"> Configuring MIP for Bridge Domains of a Virtual Switch Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers

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">Configuring a Logical Interface for Access Mode

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">Configuring ATM-to-Ethernet Interworking

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">Configuring Mixed Tagging

vlan-id (VLAN ID to Rewrite)

Syntax	<code>vlan-id <i>number</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.
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 <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> output-vlan-map]</code> 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 <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]</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">• Rewriting the VLAN Tag on Tagged Frames• Binding VLAN IDs to Logical Interfaces

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 Configuration Guide](#).

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

- Binding VLAN IDs to Logical Interfaces
- [encapsulation \(Logical Interface\) on page 202](#)
- [encapsulation \(Physical Interface\) on page 206](#)
- encapsulation-type (Layer 2 VPN routing instance), see the *Junos OS VPNs Configuration Guide*
- [flexible-vlan-tagging on page 232](#)
- [vlan-tagging on page 563](#)
- [vlan-tags \(Dual-Tagged Logical Interface\) on page 564](#)

vlan-id-list (Interface in Bridge Domain)

Syntax `vlan-id-list [number number-number];`

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

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 *number number*—Individual VLAN IDs separated by a space.
number-number—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

- Configuring a Logical Interface for Trunk Mode
- Configuring the VLAN ID List for a Trunk Interface

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"> Binding a Range of VLAN IDs to a Logical Interface

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* dynamic-profile *profile-name*]

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.

Options *any*—Any valid VLAN ID number.

vlan-id-low—Specify the first VLAN ID number for the group of VLANs.

vlan-id-high—Specify the last VLAN ID number for the group of VLANs.

Range: 1 through 4094

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	<code>vlan-rewrite translate (200 500 201 501)</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>number</i> family bridge interface-mode trunk]
Release Information	Statement introduced in Junos OS Release 9.4.
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	<p>translate 200 500—Translates incoming packets with VLAN 200 to 500.</p> <p>translate 201 501—Translates incoming packets with VLAN 201 to 501.</p> <p>translate 202 502—Translates incoming packets with VLAN 202 to 502.</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"> Rewriting a VLAN Tag and Adding a New Tag

vlan-tagging

Syntax	<code>vlan-tagging;</code>
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>
Description	For Fast Ethernet and Gigabit Ethernet interfaces and aggregated Ethernet interfaces configured for VPLS, enable the reception and transmission of 802.1Q VLAN-tagged frames on the interface.
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"> 802.1Q VLANs Overview vlan-id Configuring a Layer 3 Subinterface (CLI Procedure) Configuring Tagged Aggregated Ethernet Interfaces Example: Configuring Layer 3 Subinterfaces for a Distribution Switch and an Access Switch

vlan-tags (Dual-Tagged Logical Interface)

Syntax	<code>vlan-tags inner-list [vlan-id vlan-id-vlan-id] outer <tpid.>vlan-id;</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 Configuration Guide](#).

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

Related Documentation	<ul style="list-style-type: none">• Binding VLAN IDs to Logical Interfaces• encapsulation (Logical Interface) on page 202• encapsulation (Physical Interface) on page 206• encapsulation-type (Layer 2 VPN routing instance), see the <i>Junos OS VPNs Configuration Guide</i>.• flexible-vlan-tagging on page 232• vlan-id-list (Ethernet VLAN Circuit) on page 559• vlan-tagging on page 563
------------------------------	--

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	[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 12.1 for PTX Series Packet Transport Switches.
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	<ul style="list-style-type: none">Configuring Dual VLAN TagsConfiguring Flexible VLAN Tagging on PTX Series Packet Transport Switchesstacked-vlan-tagging on page 496

vlan-tags-outer

Syntax	vlan-tags-outer <i>vlan-tag</i> ;
Hierarchy Level	[edit interfaces interface-set <i>interface-set-name</i> interface <i>interface-name</i>]
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	<ul style="list-style-type: none">Junos OS Class of Service Configuration Guide

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">Configuring ATM-to-Ethernet Interworking

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.
Description	For ATM interfaces, allow all VCIs in this VPI to open in ATM CCC cell-relay mode. When you include <code>vpi</code> statements at the [edit interfaces <i>interface-name</i> atm-options promiscuous-mode] hierarchy level, the specified VPIs open in promiscuous mode.
Options	<code>vpi-identifier</code> —ATM virtual path identifier. This is one of the VPIs that you define in the <code>vci</code> statement. (For a list of hierarchy levels at which you can include the <code>vci</code> 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">Configuring ATM Cell-Relay Promiscuous Mode

vpi (Define Virtual Path)

Syntax	<pre> vpi <i>vpi-identifier</i> { maximum-vcs <i>maximum-vcs</i>; oam-liveness { up-count <i>cells</i>; down-count <i>cells</i>; } oam-period (disable <i>seconds</i>); shaping { (cbr <i>rate</i> rtvbr <i>peak rate</i> <i>sustained rate</i> <i>burst length</i> vbr <i>peak rate</i> <i>sustained rate</i> <i>burst length</i>); queue-length <i>number</i>; } } </pre>
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 virtual path (VP).
Options	<p>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.)</p> <p>Range: 0 through 255</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 the Maximum Number of ATM1 VCs on a VP multipoint-destination on page 351 promiscuous-mode on page 436 vci on page 554

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.
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">Configuring ATM-to-Ethernet InterworkingConfiguring ATM Cell-Relay Promiscuous Mode

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">Configuring Virtual Tributary Mapping of Channelized STM1 InterfacesJunos OS System Basics Configuration Guide

warning

Syntax	<code>warning low–light–warning { (link-down syslog); }</code>
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	Specifies the action to take if the receiving optics signal is below the optics low light warning threshold.
Options	link-down —Drops the 10-Gigabit Ethernet link and marks link as down. syslog —Writes 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"> Configuring 10-Gigabit Ethernet Link Down Notification for Optics Options Alarm or Warning

watch-list

Syntax	<code>watch-list { [routes]; }</code>
Hierarchy Level	[edit 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 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"> Configuring Dialer Watch <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.
Description	For 10-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 to 100 gGHz
- **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 to 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

- 10-Gigabit 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 200
- **ethernet-ring** on page 216
- 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">Configuring Basic APS Supportprotect-circuit on page 436

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">Junos OS Services Interfaces Configuration Guideaction-red-differential-delay on page 92remote on page 452

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">Configuring an Incrementing STM IDsonet-options on page 485

PART 3

Administration

- [See: Network Interface Technologies on page 581](#)
- [Command Summary on page 583](#)

CHAPTER 5

See: Network Interface Technologies

CHAPTER 6

Command Summary

PART 4

Troubleshooting

- [See: Network Interface Technologies on page 587](#)
- [Interface Diagnostics on page 589](#)

CHAPTER 7

See: Network Interface Technologies

CHAPTER 8

Interface Diagnostics

- [Interface Diagnostics on page 589](#)

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 589](#)
- [Interface Diagnostics on page 591](#)

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 9 on page 590 shows the loopback modes supported on the various interface types.

Table 9: Loopback Modes by Interface Type

Interface	Loopback Modes	Usage Guidelines
Aggregated Ethernet, Fast Ethernet, Gigabit Ethernet	Local	Configuring Ethernet Loopback Capability
Circuit Emulation E1	Local and remote	Configuring E1 Loopback Capability
Circuit Emulation T1	Local and remote	Configuring T1 Loopback Capability
E1 and E3	Local and remote	Configuring E1 Loopback Capability and Configuring E3 Loopback Capability
NxDSO	Payload	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
Serial (V.35 and X.21)	Local and remote	Configuring Serial Loopback Capability
Serial (EIA-530)	DCE local, DCE remote, local, and remote	Configuring Serial Loopback Capability
SONET/SDH	Local and remote	Configuring SONET/SDH Physical Interface Properties

Table 9: Loopback Modes by Interface Type (*continued*)

Interface	Loopback Modes	Usage Guidelines
T1 and T3	Local, payload, and remote	Configuring T1 Loopback Capability and Configuring T3 Loopback Capability See also Configuring the T1 Remote Loopback Response

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 10 on page 594 shows the BERT capabilities for various interface types.

Table 10: 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 System Basics and Services Command Reference](#).



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;
```

```
}  
}
```


PART 5

Index

- [Index on page 599](#)

Index

Symbols

#, comments in configuration statements.....	xxvi
(), in syntax descriptions.....	xxvi
802.1Q VLANs	
dynamic.....	114
mixed VLAN tagging.....	232, 357
VLAN IDs.....	557, 561
VLAN tagging.....	563
802.1x Port-Based Network Access Control.....	187
802.3ad statement.....	79
< >, in syntax descriptions.....	xxvi
[], in configuration statements.....	xxvi
{ }, in configuration statements.....	xxvi
(pipe), in syntax descriptions.....	xxvi

A

accept statement.....	80
accept-source-mac statement.....	81
access-concentrator statement.....	82
access-profile statement.....	84
accounting statement.....	85
accounting-profile statement.....	85
acfc statement.....	86
acknowledge-retries statement.....	87
acknowledge-timer statement.....	88
usage guidelines.....	88
action statement	
OAM.....	88
policer.....	89
action-profile statement	
applying to remote MEP.....	89
CFM.....	90
LFM.....	91
action-red-differential-delay statement.....	92
usage guidelines.....	92
activation-delay statement.....	92
activation-priority statement.....	93
address entries.....	29
address statement.....	94
advertise-interval statement.....	96

ae

physical part of interface name.....	31
age statement.....	96
agent-specifier statement	
PPPoE.....	97
aggregate statement	
hierarchical policer.....	99
aggregate-ports statement.....	100
aggregated-ether-options statement.....	101
aggregated-sonet-options statement.....	102
alarm statement.....	103
allow-any-vci statement.....	103
allow-fragmentation statement.....	104
allow-remote-loopback statement.....	104
annex statement.....	105
apply-action-profile statement.....	105
aps statement.....	106
annex-b.....	105
arp statement.....	107
as	
physical part of interface name.....	31
asynchronous-notification statement.....	108, 361
at	
physical part of interface name.....	31
atm-encapsulation statement.....	108
atm-options statement.....	109
atm-scheduler-map statement	110
ATM-to-Ethernet interworking.....	568
VCI range.....	555
virtual path identifier.....	570
VLAN tagging.....	267, 556
authentication statement	
stacked vlan ranges.....	111
vlan ranges.....	111
authentication-key statement.....	112
authentication-profile-name statement.....	112
authenticator statement.....	113
auto-configure statement.....	114
auto-discovery statement.....	115
auto-negotiation statement	
Gigabit Ethernet.....	116, 362
J Series uPIM.....	117, 363
auto-reconnect statement.....	118

B

backup-destination statement.....	118
backup-interface statement.....	119
backup-options statement.....	119
bandwidth statement.....	120

bandwidth-limit statement	
hierarchical policer.....	121
policer for Gigabit Ethernet interface.....	121
bchannel-allocation statement.....	122
bcm0	
internal Ethernet interface.....	4
physical part of interface name.....	31
bearer-bandwidth-limit statement.....	123
BERT	
configuring interface diagnostics.....	591
bert-algorithm statement.....	124
usage guidelines.....	591
bert-error-rate statement.....	126
usage guidelines.....	591
bert-period statement.....	128
usage guidelines.....	591
bit error rate test See BERT	
br	
physical part of interface name.....	31
braces, in configuration statements.....	xxvi
brackets	
angle, in syntax descriptions.....	xxvi
square, in configuration statements.....	xxvi
bridge-domain statement.....	129
broadcast statement.....	130
buildout statement	
E3 or T3 over ATM interfaces.....	131
T1 interfaces.....	132
bundle statement.....	133
burst-size-limit statement	
hierarchical policer.....	134
policer for Gigabit Ethernet interface.....	134
byte encoding.....	135
byte-encoding statement.....	135
bytes statement.....	136
C	
C-bit parity mode.....	140, 364
callback statement.....	137
callback-wait-period statement.....	138
caller statement.....	139
calling-number statement.....	140
cau4	
physical part of interface name.....	31
cbit-parity statement.....	140, 364
cbr statement.....	141

CCC	
encapsulation	
VLAN-bundled dual-tag logical	
interfaces.....	564
VLAN-bundled single-tag logical	
interfaces.....	559
cel	
physical part of interface name.....	31
cell-bundle-size statement.....	142
channel part of interface name.....	35
chap statement.....	143
chap-secret statement.....	144
ci	
physical part of interface name.....	31
circuit cross-connect (CCC)	
encapsulation	
VLAN-bundled dual-tag logical	
interfaces.....	564
VLAN-bundled single-tag logical	
interfaces.....	559
circuit-type statement	
stacked vlan ranges.....	144
vlan ranges.....	144
cisco-interoperability statement.....	145
classifier statement.....	145
clear-dont-fragment-bit statement.....	146
client statement.....	146
clock sources.....	148
clock-rate statement.....	147
clocking statement.....	148
clocking-mode statement.....	149
coc1	
physical part of interface name.....	31
coc12	
physical part of interface name.....	31
coc3	
physical part of interface name.....	31
coc48	
physical part of interface name.....	31
comments, in configuration statements.....	xxvi
compatibility-mode statement.....	150
compression-device statement.....	152
connections	
configuration statements.....	71, 75
connections statement.....	153
connectivity-fault management.....	89, 90
connectivity-fault-management statement.....	154
container interfaces.....	16

- container-devices statement.....156
 - device-count.....156
- container-list statement.....156
- container-options statement.....157
- container-type statement.....157
- continuity-check statement.....158
- control-channel statement.....159
- control-polarity statement.....159
- control-signal statement.....160
- conventions
 - text and syntax.....xxv
- copy-tos-to-outer-ip-header statement.....160
- core-dump statement.....161, 364
- cp
 - physical part of interface name.....31
- crc-major-alarm-threshold statement.....161
- crc-minor-alarm-threshold statement.....162
- cstm1
 - physical part of interface name.....31
- cstm16
 - physical part of interface name.....31
- cstm4
 - physical part of interface name.....31
- ct1
 - physical part of interface name.....31
- ct3
 - physical part of interface name.....31
- cts statement.....162
- cts-polarity statement.....163
- curly braces, in configuration statements.....xxvi
- current statement.....163
- customer support.....xxvii
 - contacting JTAC.....xxvii
- D**
- data-input statement.....164
- dcd statement.....165
- dcd-polarity statement.....165
- DCE.....166
- dce statement.....166
- dce-options statement.....166
- deactivation-delay statement.....167
- default-actions statement.....167
- default-chap-secret statement.....168
- default-pap-password statement.....168
- delimiter statement
 - stacked vlan ranges.....169
 - vlan ranges.....169
- demux
 - physical part of interface name.....31
- demux-destination statement.....169
 - demux interfaces.....170
- demux-options statement.....170
- demux-source statement.....172
 - demux interfaces.....171
- demux0 statement.....173
- description statement.....174
- descriptors, interface.....29
- destination-class-usage statement.....177
- destination-profile statement.....177
- dfc
 - physical part of interface name.....31
- dial-string statement.....178
- dialer statement.....179
- dialer-options statement.....180
- dialin statement.....181
- digital certificate commands
 - domain-name.....186
- direction statement.....181
- disable statement.....182
 - link protection.....183
- disable-mlpp-inner-ppp-pfc statement.....183
- dlci statement.....184
- do-not-fragment statement.....185
- documentation
 - comments on.....xxvii
- dot1x
 - configuration statements.....72
- dot1x statement.....187
 - authenticator.....187
 - authentication-profile-name.....187
 - interface.....187
 - See also* maximum-requests
 - See also* quiet-period
 - See also* reauthentication
 - See also* retries
 - See also* server-timeout
 - See also* supplicant
 - See also* supplicant-timeout
 - See also* transmit-period
- down-count statement.....188
- drop-timeout statement.....189
- ds
 - physical part of interface name.....31
- ds0-options statement.....189
- dsc
 - physical part of interface name.....31

dsl-options statement.....	190	epd-threshold statement	
dsr statement.....	190	logical interface.....	210
dsr-polarity statement.....	191	physical interface.....	211
dte-options statement.....	191	es	
dtr statement.....	192	physical part of interface name.....	31
dtr-circuit statement.....	193	es-options statement.....	211
dtr-polarity statement.....	193	et	
dual-tag framing		physical part of interface name.....	31
VLAN ID list.....	564	Ethernet interfaces	
dump-on-flow-control statement.....	194	dynamic VLANs.....	114
dynamic PPPoE statements		internal Ethernet interface.....	5
pppoe-underlying-options.....	428	mixed VLAN tagging.....	232, 357
dynamic subscribers		unnumbered	
pppoe-underlying-options statement.....	428	preferred source address.....	430
dynamic VLANs.....	114	VLAN IDs.....	557
authenticating.....	111	VLAN tagging.....	563
dynamic-call-admission-control statement.....	195	Ethernet Ring Protection	
dynamic-profile statement		configuration statements.....	76
stacked VLAN ranges.....	196	ethernet statement.....	212
VLAN ranges.....	197	Ethernet VLAN circuit	
E		VLAN ID list.....	559
E-LMI.....	312	ethernet-policer-profile statement.....	215
e1		ethernet-ring statement.....	216
physical part of interface name.....	31	ethernet-switch-profile statement.....	217
e1-options statement.....	198	eui-64 statement.....	218
e3		evcs statement.....	219
physical part of interface name.....	31	event statement.....	220
e3-options statement.....	199	interface-status-tlv statement.....	281
east-interface statement.....	200	port-status-tlv statement.....	425
egress-policer-overhead statement.....	201	rdi statement.....	446
em		event-thresholds	
physical part of interface name.....	31	frame-error statement.....	236
em0.....	7	frame-period statement.....	237
management Ethernet interface.....	4	frame-period-summary statement.....	238
management interface.....	5	symbol-period statement.....	505
physical part of interface name.....	31	event-thresholds statement.....	220
em1		external clock sources.....	148
internal Ethernet interface.....	4	F	
physical part of interface name.....	31	f-max-period statement.....	222
em2		facility-override statement.....	222
physical part of interface name.....	31	fail-filter statement.....	461
encapsulation statement		failover-delay statement.....	223
container interface.....	201	family bridge	
logical interface.....	202	VLAN ID list.....	560
physical interface.....	206	VLAN IDs.....	556
encoding		family descriptors.....	29
byte.....	135	family statement.....	224
encoding statement.....	209		

-
- Fast Ethernet interfaces
 - dynamic VLANs.....114
 - VLAN IDs.....557
 - VLAN tagging.....563
 - fast-aps-switch statement.....221
 - fastether-options statement.....228
 - fcs statement.....229
 - fe
 - physical part of interface name.....31
 - feac-loop-respond statement.....230, 365
 - filter statement.....231
 - firewall
 - hierarchical-policer.....245
 - flexible-vlan-tagging statement.....232
 - flow-control statement.....233, 366
 - font conventions.....xxv
 - force statement.....234
 - fragment-threshold statement.....235
 - Frame Relay encapsulation
 - DCE.....166
 - frame-error statement.....236
 - frame-period statement.....237
 - frame-period-summary statement.....238
 - framing statement
 - 10-Gigabit Ethernet interfaces.....240
 - E1, E3, and T1 interfaces.....239
 - SONET and SDH interfaces.....240
 - fxp
 - physical part of interface name.....31
 - fxp0.....7
 - management Ethernet interface.....4
 - management interface.....5
 - physical part of interface name.....31
 - fxp1
 - internal Ethernet interface.....4
 - physical part of interface name.....31
 - fxp2
 - internal Ethernet interface.....4
 - physical part of interface name.....31
 - G**
 - ge
 - physical part of interface name.....31
 - Gigabit Ethernet interfaces
 - dynamic VLANs.....114
 - VLAN IDs.....557, 561
 - VLAN tagging.....267, 556, 563
 - gigether-options statement.....241
 - gr
 - physical part of interface name.....31
 - gratuitous-arp-reply statement.....242, 366
 - gre
 - physical part of interface name.....31
 - guard-interval statement.....243
 - H**
 - hello-timer statement.....244
 - hierarchical-policer statement.....245
 - hierarchical-schedulers statement.....246
 - high-plp-max-threshold statement.....246
 - high-plp-threshold statement.....244, 247
 - hold-interval statement
 - connectivity-fault management.....247
 - Ethernet ring protection switching.....248
 - hold-time statement
 - APS.....248
 - Physical Interface.....249
 - SONET/SDH Defect Triggers.....250
 - host statement.....251
 - I**
 - iccp
 - configuration statements.....72
 - idle-cycle-flag statement.....252
 - idle-timeout statement.....253
 - ieee802.1p statement.....253
 - if-exceeding statement
 - hierarchical policer.....254
 - ignore statement.....254
 - ignore-all statement.....255
 - ignore-l3-incompletes statement.....255
 - ilmi statement.....256
 - ima-group-options statement.....257
 - ima-link-options statement.....258
 - inactivity-timeout statement.....259
 - incoming-called-number statement.....259
 - incoming-map statement.....260
 - indication statement.....261
 - indication-polarity statement.....261
 - ingress-policer-overhead statement.....262
 - ingress-rate-limit statement.....262
 - init-command-string statement.....263
 - initial-route-check statement.....264
 - inner-tag-protocol-id statement.....265
 - inner-vlan-id statement.....266
 - inner-vlan-id-range statement.....267
 - input statement.....267

input-list statement.....	268	ipip	
input-policer statement.....	268	physical part of interface name.....	31
input-priority-map statement.....	269	IPSec identity commands	
input-three-color statement.....	269	domain-name.....	186
instance statement.....	271	ipsec-sa statement.....	287
interface naming		ISDN interfaces	
chassis, routing matrix.....	41	callback-wait-period.....	138
routing matrix based on a TX Matrix Plus		caller.....	139
router.....	38	calling-number.....	140
routing matrix based on a TX Matrix router.....	36	redial-delay.....	450
TX Matrix Plus router.....	38	isdn-options statement.....	288
TX Matrix router.....	36	iw	
interface statement		physical part of interface name.....	31
CoS.....	272	ixgbe0	
IEEE 802.lag.....	274	internal Ethernet interface.....	4
IEEE 802.IX.....	273	physical part of interface name.....	31
IEEE 802.3ah.....	275	ixgbe1	
interface-down statement.....	167, 276	internal Ethernet interface.....	4
interface-mode statement.....	277	physical part of interface name.....	31
interface-name statement		K	
stacked vlan ranges.....	278	keep-address-and-control statement.....	289
vlan ranges.....	278	keepalives statement.....	290
interface-range statement.....	279	key statement.....	291
interface-status-tlv statement.....	281	L	
interface-switch statement.....	281	l2tp-interface-id statement.....	291
interface-type statement.....	282	lACP statement	
interfaces.....	41	802.3ad.....	292
clock sources.....	148	Aggregated Ethernet.....	293
configuration statements.....	50	Layer 3 incomplete errors.....	255
container interfaces.....	16	layer2-policer statement.....	294
descriptive text.....	174	lc	
descriptors.....	29	physical part of interface name.....	31
display order in configurations.....	43	LCC.....	36
interface-range.....	279	in a routing matrix based on a TX Matrix Plus	
mixed VLAN tagging.....	232, 357	router.....	38
names.....	30	lcp-max-conf-req statement.....	295
permanent interfaces.....	4, 5	lcp-restart-timer statement.....	295
services interfaces.....	15	level statement.....	296
transient interfaces.....	4, 14	line-card chassis See LCC	
interfaces statement.....	283	line-encoding statement.....	297
interleave-fragments statement.....	283	line-protocol statement.....	298
internal clock sources.....	148	line-rate statement.....	298
internal Ethernet interface.....	5	linear-red-profile statement.....	299
interval statement.....	284	linear-red-profiles statement.....	300
inverse-arp statement.....	285		
invert-data statement.....	286		
ip			
physical part of interface name.....	31		

-
- link protection
 - disable statement.....183
 - non-revertive statement.....381
 - revertive statement.....458
 - link-adjacency-loss statement.....300
 - link-discovery statement.....301
 - link-down statement.....301
 - link-event-rate statement.....302
 - link-fault management.....91
 - link-fault-management statement.....303
 - link-layer-overhead statement.....304
 - link-mode statement.....305
 - link-protection statement.....306
 - linktrace statement.....309
 - lmi statement
 - Ethernet OAM.....312
 - Frame Relay keepalives.....310
 - lmi-type statement.....313
 - lo
 - physical part of interface name.....31
 - load-interval statement.....314
 - load-threshold statement.....315
 - local-name statement.....316
 - local-password statement.....317
 - lockout statement.....317
 - log-prefix statement.....318
 - logical interfaces
 - descriptors.....29
 - VLAN IDs.....557, 561
 - VLAN-bundled
 - dual-tag.....564
 - single-tag.....559
 - logical part of interface name.....35
 - logical systems
 - configuration statements.....66
 - logical-interface-policer statement.....318
 - logical-systems statement.....319
 - long-buildout statement.....319, 368
 - loop-timing statement.....320
 - loopback statement
 - ADSL, DS0, E1/E3, SONET/SDH, SHDSL, and T1/T3.....321, 369
 - Aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet.....322, 370
 - serial.....323, 371
 - loopback testing.....589
 - loopback-clear-timer statement.....324
 - loss-priority statement.....324
 - loss-threshold statement.....325
 - low-plp-max-threshold statement.....325
 - low-plp-threshold statement.....326
 - lowest-priority-defect statement.....327
 - ls
 - physical part of interface name.....31
 - lsi
 - physical part of interface name.....31
 - lsq-failure-options statement.....328
 - M**
 - mac statement.....328
 - mac-address statement
 - Accept Source Mac.....329
 - stacked vlan ranges.....329
 - vlan ranges.....329
 - mac-learn-enable statement.....330, 372
 - mac-validate statement.....331
 - maintenance-association statement.....332
 - maintenance-domain statement.....333
 - mip-half-function.....341
 - virtual-switch.....555
 - management Ethernet interface
 - overview.....5
 - management interface.....7
 - em0.....5, 7
 - fxp0.....5, 7
 - manuals
 - comments on.....xxvii
 - master-only statement.....334
 - maximum-contexts statement.....335
 - maximum-requests statement.....335
 - maximum-vcs statement.....336
 - mc-ae statement.....337
 - member-interface-speed statement.....338
 - member-interface-type statement.....338
 - mep statement.....339
 - minimum-links statement.....340
 - mip-half-function statement.....341
 - mixed VLAN tagging.....232, 357
 - ml
 - physical part of interface name.....31
 - mlfr-uni-nni-bundle-options statement.....342
 - mo
 - physical part of interface name.....31
 - mode statement.....343
 - modem-options statement.....343
 - monitor-session statement.....344
 - mpls statement.....344
 - mrru statement.....345

ms	
physical part of interface name.....	31
mt	
physical part of interface name.....	31
mtu statement.....	346
mtun	
physical part of interface name.....	31
multicast-dlci statement.....	347
multicast-only statement.....	348
multicast-statistics	
aggregated Ethernet interfaces.....	349
aggregated SONET interfaces.....	349
multicast-vci statement.....	348
multilink-max-classes statement.....	349
multipoint statement.....	350
multipoint-destination statement.....	351
multiservice-options statement.....	352

N

n391 statement.....	353
n392 statement.....	354
n393 statement.....	355
name-format statement.....	356
names.....	41
of interfaces.....	30
native-vlan-id statement.....	357
nbp-max-conf-req statement.....	358
nbp-restart-timer statement.....	358
negotiate-address statement.....	359
negotiation-options	
allow-remote-loopback statement.....	104
no-allow-link-events statement.....	360
negotiation-options statement.....	359
neighbor statement.....	360
no unidirectional statement.....	539
no-allow-link-events statement.....	360
no-asynchronous-notification statement.....	108, 361
no-auto-mdix statement.....	361
no-auto-negotiation statement	
J Series uPIM.....	117, 363
no-cbit-parity statement.....	140, 364
no-core-dump statement.....	161, 364
no-feac-loop-respond statement.....	230, 365
no-flow-control statement.....	233, 366
no-gratuitous-arp-reply statement.....	242, 366
no-gratuitous-arp-request statement.....	367
no-keepalives statement.....	367
no-long-buildout statement.....	319, 368
no-loop-timing statement.....	320

no-loopback statement.....	322, 370
no-mac-learn-enable statement.....	330, 372
no-partition statement.....	373
no-payload-scrambler statement.....	374, 406
no-redirects statement.....	375
no-source-filtering statement.....	376, 490
no-termination-request statement.....	378
no-translate-discard-eligible statement.....	379, 529
no-translate-fecn-and-beecn statement.....	379, 529
no-traps statement.....	533
no-unframed statement.....	380, 539
no-z0-increment statement.....	380, 577
non-PPP equal access commands	
domain-name.....	186
non-revertive statement.....	381
nonconfigurable interfaces.....	4

O

OAM	
configuration statements.....	73
oam statement.....	382
oam-liveness statement.....	385
oam-period statement.....	386
oc-slice statement.....	387
oc12	
physical part of interface name.....	31
oc3	
physical part of interface name.....	31
oc48	
physical part of interface name.....	31
open-timeout statement.....	387
operating-mode statement.....	388
optics-options statement.....	389
alarm.....	103
warning.....	571
option-82 statement	
stacked vlan ranges.....	390
vlan ranges.....	390
otn-options statement.....	391
output statement.....	393
output-list statement.....	394
output-policer statement.....	394
output-priority-map statement.....	395
output-three-color statement.....	395
output-vlan-map statement	
Aggregated Ethernet.....	396
Gigabit Ethernet IQ.....	397

overflow statement		
receive bucket.....	397	
transmit bucket.....	398	
P		
paired-group statement.....	398	
pap statement.....	399	
pap-password statement.....	400	
parentheses, in syntax descriptions.....	xxvi	
partition statement.....	401	
passive statement		
CHAP.....	402	
PAP.....	402	
passive-monitor-mode statement.....	403	
password statement		
stacked vlan ranges.....	404	
vlan ranges.....	404	
path-database-size statement.....	404	
path-trace statement.....	405	
payload-scrambler statement.....	374, 406	
payload-size statement.....	407	
pd		
physical part of interface name.....	31	
pdu-interval statement.....	407	
pdu-threshold statement.....	408	
pe		
physical part of interface name.....	31	
peer-unit statement.....	408	
per-unit-scheduler statement.....	409	
performance-monitoring statement.....	410	
periodic statement.....	411	
permanent interfaces.....	4, 5	
pfc statement.....	411	
physical interfaces		
byte encoding.....	135	
C-bit parity mode.....	140, 364	
clock sources.....	148	
DCE.....	166	
descriptive text.....	174	
descriptors.....	29	
dynamic VLANs.....	114	
mixed VLAN tagging.....	232, 357	
VLAN tagging.....	563	
physical part of interface name.....	31	
pic-type statement.....	412	
pimd		
physical part of interface name.....	31	
pime		
physical part of interface name.....	31	
plp-to-clp statement.....	412	
plp1 statement.....	413	
point-to-point statement.....	414	
policer		
interface.....	418	
policer statement		
CFM firewall.....	414	
CFM global level.....	415	
CFM session level.....	416	
CoS.....	417	
interface MAC.....	419	
pool statement.....	420	
pop statement		
Gigabit Ethernet IQ interfaces.....	421	
pop-all-labels statement.....	422	
pop-pop statement		
Gigabit Ethernet IQ interfaces.....	423	
pop-swap statement		
Gigabit Ethernet IQ interfaces.....	423	
port statement		
voice services.....	424	
port-priority statement		
LACP.....	424	
port-status-tlv statement.....	425	
post-service-filter statement.....	425	
ppp-options statement.....	426	
lcp-max-conf-req.....	295	
ncp-max-conf-req.....	358	
pppoe-options statement.....	427	
pppoe-underlying-options statement		
static and dynamic PPPoE.....	428	
preferred statement.....	429	
preferred-source-address statement.....	430	
premium		
policer.....	432	
premium statement		
hierarchical policer.....	431	
output priority map.....	432	
preserve-interface statement.....	433	
primary statement		
address on interface.....	434	
AS PIC or Multiservices PIC interfaces.....	434	
priority		
schedulers.....	435	
priority statement		
OAM connectivity-fault management.....	435	
promiscuous-mode statement.....	436	
protect-circuit statement.....	436	

protection-group	
configuration statements.....	76
protection-group statement.....	437
protocol-down statement.....	438
protocols connections	
configuration statements.....	71, 75
protocols dot1x	
configuration statements.....	72
protocols Ethernet Ring Protection	
configuration statements.....	76
protocols iccp	
configuration statements.....	72
protocols OAM	
configuration statements.....	73
protocols statement.....	439
protocols VRRP	
configuration statements.....	73
proxy statement.....	439
proxy-arp statement.....	440
push statement	
Gigabit Ethernet IQ interfaces.....	441
push-push statement	
Gigabit Ethernet IQ interfaces.....	441

Q

queue-depth statement.....	442
queue-length statement.....	443
queues statement.....	443
quiet-period statement.....	444

R

radius-realm statement	
stacked vlan ranges.....	444
vlan ranges.....	444
ranges statement	
stacked VLAN.....	445
VLAN.....	445
rate statement.....	446
rdi statement.....	446
reassemble-packets statement.....	447
reauthentication statement.....	447
receive-bucket statement.....	448
receive-options-packets statement.....	448
receive-ttl-exceeded statement.....	449
red-differential-delay statement.....	449
redial-delay statement.....	450
redundancy-options statement.....	451
remote statement.....	452
remote-loopback statement.....	452

remote-loopback-respond statement.....	453
remote-mep statement.....	454
request statement.....	454
required-depth statement.....	455
retries statement.....	457
revert-time statement.....	457
revertive statement.....	458
rfc-2615 statement.....	458
ring-protection-link-end statement.....	459
ring-protection-link-owner statement.....	459
rlsq	
physical part of interface name.....	31
rms	
physical part of interface name.....	31
routing matrix	
chassis, interface naming.....	41
interface naming.....	36, 38
routing-instance statement.....	460
rpf-check statement.....	461
rpf-loose-mode-discard statement.....	462
rsp	
physical part of interface name.....	31
rtp statement.....	462
rts statement.....	463
rts-polarity statement.....	463
rtvbr statement.....	464

S

sampling statement.....	465
satop-options	
payload-size.....	407
satop-options statement.....	466
SCC.....	36
scheduler-maps statement.....	467
schedulers statement.....	467
se	
physical part of interface name.....	31
secondary statement.....	468
send-critical-event statement.....	468
separators, in interface names.....	35
serial-options statement.....	469
server statement.....	470
server-timeout statement.....	470
service statement	
logical interfaces.....	471
PPPoE.....	472
service-domain statement.....	473
service-filter statement.....	474
service-name statement.....	474

-
- service-name-table statement
 - PPPoE underlying interface.....475
 - service-name-tables statement
 - PPPoE.....476
 - service-set statement.....477
 - services interfaces.....15
 - services statement.....478
 - services-options statement.....479
 - SFC.....38
 - shaping statement.....480
 - shdsl-options statement.....481
 - short-name-format statement.....482
 - short-sequence statement.....483
 - si
 - physical part of interface name.....31
 - snext statement.....483
 - snr-margin statement.....484
 - so
 - physical part of interface name.....31
 - sonet-options statement.....485
 - source statement.....487
 - source-address-filter statement.....488
 - source-class-usage statement.....489
 - source-filtering statement.....376, 490
 - sp
 - physical part of interface name.....31
 - speed statement
 - Ethernet.....491
 - MX Series DPC.....492
 - SONET/SDH.....493
 - spid1 statement.....493
 - spid2 statement.....494
 - stacked VLAN-tag framing
 - VLAN ID list.....566
 - stacked-vlan-ranges statement.....495
 - stacked-vlan-tagging statement.....496
 - start-end-flag statement.....497
 - static PPPoE statements
 - pppoe-underlying-options.....428
 - static subscribers
 - pppoe-underlying-options statement.....428
 - static-tei-val statement.....498
 - stm1
 - physical part of interface name.....31
 - stm16
 - physical part of interface name.....31
 - stm4
 - physical part of interface name.....31
 - subscriber interface statements
 - access-concentrator.....82
 - pppoe-underlying-options.....428
 - supplicant statement
 - single (mode).....498
 - supplicant-timeout statement.....499
 - support, technical See technical support
 - swap statement
 - Gigabit Ethernet IQ interfaces.....499
 - swap-push statement
 - Gigabit Ethernet IQ interfaces.....500
 - swap-swap statement
 - Gigabit Ethernet IQ interfaces.....500
 - switch-card chassis SCC.....36
 - switch-fabric chassis SFC.....38
 - switch-options statement.....501
 - switch-port statement
 - access switching.....502
 - switch-type statement.....503
 - switching-mode statement.....504
 - symbol-period statement.....505
 - syntax conventions.....xxv
 - system processes
 - configuration statements.....77
 - system-priority statement
 - LACP.....507
- ## T
- t1
 - physical part of interface name.....31
 - T1 interfaces
 - byte encoding.....135
 - t1-options statement.....508
 - T1600 routers
 - configured in a routing matrix.....38
 - t3
 - physical part of interface name.....31
 - T3 interfaces
 - C-bit parity mode.....140, 364
 - t3-options statement.....511
 - t310 statement.....509
 - t391 statement.....509
 - t392 statement.....510
 - T640 routers.....36
 - tag-protocol-id statement
 - TPID to rewrite.....513
 - TPIDs expected to be sent or received.....512
 - tap
 - physical part of interface name.....31

technical support	
contacting JTAC.....	xxvii
tei-option statement.....	513
then statement	
hierarchical policer.....	514
threshold statement.....	514
timeslots statement.....	515
tm statement.....	516
tm-polarity statement.....	516
traceoptions statement	
ICCP.....	517
interface processes.....	520
interfaces.....	518
LACP.....	522
PPPD.....	524
PPPoE.....	527
transient interfaces.....	4, 14
translate-discard-eligible statement.....	379, 529
translate-fecn-and-becn statement.....	379, 529
translate-plp-control-word-de statement.....	530
transmit-bucket statement.....	530
transmit-clock statement.....	531
transmit-period statement.....	531
transmit-weight statement	
ATM2 IQ CoS Forwarding Class.....	532
ATM2 IQ Virtual Circuit.....	533
traps statement.....	533
trigger statement.....	534
trigger-link-failure statement.....	535
trunk interface.....	277
trunk port.....	277
VLAN ID list.....	560
trunk-bandwidth statement.....	535
trunk-id statement.....	536
ttl statement.....	536
tunnel statement.....	537
TX Matrix Plus router	
interface naming.....	38
chassis.....	41
TX Matrix router	
interface naming.....	36
chassis.....	41
U	
umd	
physical part of interface name.....	31
underlying-interface statement.....	538
unframed statement.....	380, 539
unidirectional statement.....	539

unit statement.....	540
unnumbered interfaces	
Ethernet	
preferred source address.....	430
unnumbered-address statement	
demux interface.....	546
Ethernet.....	547
PPP.....	548
up-count statement.....	549
user-prefix statement	
stacked vlan ranges.....	550
vlan ranges.....	550
username-include statement	
stacked vlan ranges.....	551
vlan ranges.....	551
V	
vbr statement.....	552
vc-cos-mode statement.....	553
vc4	
physical part of interface name.....	31
vci statement.....	554
vci-range statement.....	555
virtual-switch statement.....	555
VLAN IDs.....	561
VLAN tagging.....	563
vlan-id statement	
802.1Q VLANs.....	557
ATM-to-Ethernet cross-connect.....	556
Ethernet interfaces.....	557
interface in bridge domain.....	556
rewriting at ingress or egress.....	558
vlan-id-list statement	
bridge domain.....	560
Ethernet VLAN circuit.....	559
vlan-id-range statement.....	561
Ethernet interfaces.....	561
vlan-ranges statement.....	562
vlan-rewrite statement.....	563
vlan-tagging statement.....	563
vlan-tags statement	
dual-tag framing.....	564
stacked VLAN tags.....	566
vlan-tags-outer statement.....	567
vlan-vci-tagging statement.....	568
VLANs	
configuring VLAN ranges.....	495, 562

vpi statement	
ATM CCC cell-relay promiscuous mode.....	568
Logical Interface and Interworking.....	570
virtual path.....	569
VRRP	
configuration statements.....	73
vrrp	
failover-delay.....	223
vsp	
physical part of interface name.....	31
vt	
physical part of interface name.....	31
vtmapping statement.....	570

W

warning statement.....	571
watch-list statement.....	571
wavelength statement.....	572
west-interface statement.....	575
working-circuit statement.....	576

X

xe	
physical part of interface name.....	31
xt	
physical part of interface name.....	31

Y

yellow-differential-delay statement.....	576
--	-----

Z

z0-increment statement.....	380, 577
-----------------------------	----------

