

Chapter 28

Summary of Flow Monitoring Configuration Statements

The following sections explain each of the flow monitoring configuration statements. The statements are organized alphabetically.

accounting

```
Syntax    accounting name {
              output {
                aggregate-export-interval seconds;
                cflowd [ hostnames ] {
                  aggregation {
                    autonomous-system;
                    destination-prefix;
                    protocol-port;
                    source-destination-prefix {
                      caida-compliant;
                    }
                    source-prefix;
                  }
                  autonomous-system-type (origin | peer);
                  port port-number;
                  version format;
                }
                flow-active-timeout seconds;
                flow-inactive-timeout seconds;
                interface interface-name {
                  engine-id number;
                  engine-type number;
                  source-address address;
                }
              }
            }
```

Hierarchy Level [edit forwarding-options]

Description Specify the discard accounting instance name and options.

The statements are explained separately.

Usage Guidelines See “Configuring Discard Accounting” on page 339.

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

address

Syntax `address address {
 destination address;
}`

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

Description Configure the interface address.

Options *address*—Address of the interface.

The remaining statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323 or “Configuring Traffic Sampling” on page 316.

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

See Also *JUNOS Network Interfaces and Class of Service Configuration Guide* for other options not associated with flow monitoring.

aggregate-export-interval

Syntax `aggregate-export-interval seconds;`

Hierarchy Level [edit forwarding-options accounting *name* output],
[edit forwarding-options sampling output]

Description Specify the duration, in seconds, of the interval for exporting aggregate accounting information.

Options *seconds*—Duration, in seconds.

Usage Guidelines See “Configuring Discard Accounting” on page 339.

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

aggregation

Syntax	<pre> aggregation { autonomous-system; destination-prefix; protocol-port; source-destination-prefix { caida-compliant; } source-prefix; } </pre>
Hierarchy Level	[edit forwarding-options accounting output cflowd <i>hostname</i>], [edit forwarding-options sampling output cflowd <i>hostname</i>]
Description	For cflowd version 8 only, specify the type of data to be aggregated; cflowd records and sends only those flows that match the specified criteria.
Options	<p>autonomous-system—Aggregate by autonomous system (AS) number.</p> <p>caida-compliant—Record source and destination mask-length values in compliance with the Version 2.1b1 release of CAIDA's cflowd application. If this statement is not configured, the JUNOS software records source and destination mask length values in compliance with the <i>cflowd Configuration Guide</i>, dated August 30, 1999.</p> <p>destination-prefix—Aggregate by destination prefix.</p> <p>protocol-port—Aggregate by protocol and port number.</p> <p>source-destination-prefix—Aggregate by source and destination prefix.</p> <p>source-prefix—Aggregate by source prefix.</p>
Usage Guidelines	See “Configuring cflowd” on page 327.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

autonomous-system-type

Syntax	autonomous-system-type (origin peer);
Hierarchy Level	[edit forwarding-options sampling output cflowd <i>hostname</i>]
Description	Specify the type of AS numbers that cflowd exports.
Options	origin—Export origin AS numbers of the packet source address in the Source Autonomous System cflowd field. peer—Export peer AS numbers through which the packet passed in the Source Autonomous System cflowd field.
Default	origin
Usage Guidelines	See “Configuring cflowd” on page 327.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

boot-command

Syntax	boot-command <i>filename</i> ;
Hierarchy Level	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
Description	Specify the boot image for the Monitoring Services PIC. It specifies the filename containing the JUNOS software image for the Monitoring Services PIC relative to the directory path /usr/share/pfe.
Options	<i>filename</i> —Name of the boot image. Enclose the name within quotation marks. By default, the name of the boot image for the Monitoring Services PIC is monitor.jbf.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

cflowd

See the following sections:

cflowd (Discard Accounting and Sampling) on page 349

cflowd (Flow Monitoring) on page 350

cflowd (Discard Accounting and Sampling)

Syntax	<pre> cflowd <i>hostname</i> { aggregation { autonomous-system; destination-prefix; protocol-port; source-destination-prefix { caida-compliant; } source-prefix; } autonomous-system-type (origin peer); (local-dump no-local-dump); port <i>port-number</i>; source-address <i>address</i>; version <i>format</i>; } </pre>
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options sampling output]
Description	<p>Collect an aggregate of sampled flows and send the aggregate to a specified host system that runs the collection utility <code>cfcollect</code>.</p> <p>You can configure up to one version 5 and one version 8 flow format at the [edit forwarding-options accounting <i>name</i> output] hierarchy level.</p> <p>You can configure up to one version 5 and one version 8 flow format at the [edit forwarding-options sampling output] hierarchy level.</p>
Options	<p><i>hostname</i>—The IP address or identifier of the host system (the workstation running the <code>cflowd</code> utility).</p> <p>The remaining statements are explained separately.</p>
Usage Guidelines	See “Configuring <code>cflowd</code> ” on page 327.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

cflowd (Flow Monitoring)

Syntax	<code>cflowd hostname { port port-number; }</code>
Hierarchy Level	[edit forwarding-options monitoring <i>name</i> family inet output]
Description	Collect an aggregate of sampled flows and send the aggregate to a specified host system that runs the collection utility <code>cfcollect</code> . You can configure up to eight version 5 flow formats at the [edit forwarding-options monitoring <i>name</i> output] hierarchy level. Version 8 flow formats are not supported for flow-monitoring applications.
Options	<i>hostname</i> —The IP address or identifier of the host system (the workstation running the <code>cflowd</code> utility). The remaining statements are explained separately.
Usage Guidelines	See “Configuring <code>cflowd</code> ” on page 327.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

core-dump

Syntax	<code>(core-dump no-core-dump);</code>
Hierarchy Level	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
Description	A useful tool for isolating the cause of a problem. Core dumping is enabled by default. The directory <code>/var/tmp</code> contains core files. The JUNOS software saves the current core file (0) and the four previous core files, which are numbered 1 through 4 (from newest to oldest): <code>core-dump</code> —Enable the core dumping operation. <code>no-core-dump</code> —Disable the core dumping operation.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

destination

Syntax	<code>destination destination-address;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]
Description	For tunnel interfaces, specify the remote address of the tunnel.
Options	<i>destination-address</i> —Address of the remote side of the connection.
Usage Guidelines	See “Configuring a Unicast Tunnel” on page 492, “Configuring Traffic Sampling” on page 316, and “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

disable

Syntax	<code>disable;</code>
Hierarchy Level	[edit forwarding-options sampling], [edit forwarding-options sampling output file]
Description	Disable traffic accounting or sampling.
Usage Guidelines	See “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

engine-id

Syntax	<code>engine-id number;</code>
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output interface <i>interface-name</i>], [edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i>], [edit forwarding-options sampling output interface <i>interface-name</i>]
Description	Specify the engine ID number for flow monitoring and accounting services.
Options	<i>number</i> —Identity of accounting interface.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323, “Configuring Discard Accounting” on page 339, or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

engine-type

Syntax	<code>engine-type <i>number</i>;</code>
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output interface <i>interface-name</i>], [edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i>], [edit forwarding-options sampling output interface <i>interface-name</i>]
Description	Specify the engine type number for flow monitoring and accounting services.
Options	<i>number</i> —Platform-specific accounting interface type.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323, “Configuring Discard Accounting” on page 339, or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

export-format

Syntax	<code>export-format <i>format</i>;</code>
Hierarchy Level	[edit forwarding-options monitoring <i>name</i> output]
Description	Flow monitoring export format.
Options	<i>format</i> —cflowd version number.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	version on page 380

family

See the following sections:

family (Interfaces) on page 353

family (Monitoring) on page 354

family (Port Mirroring) on page 355

family (Sampling) on page 355

family (Interfaces)

Syntax family *family* {
 address *address* {
 destination *destination-address*;
 }
 filter {
 group *filter-group-number*;
 input *filter-name*;
 output *filter-name*;
 }
 sampling direction;
 receive-options-packets;
 receive-ttl-exceeded;
 }

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

Description Configure protocol family information for the logical interface.

Options *family*—Protocol family; for flow monitoring and accounting services, only the IPv4 protocol (inet) is supported.

The remaining statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

See Also *JUNOS Network Interfaces and Class of Service Configuration Guide* for other options not used with services interfaces.

family (Monitoring)

```

Syntax  family inet {
            output {
                flow-active-timeout seconds;
                flow-inactive-timeout seconds;
                export-format format;
                cflowd hostname {
                    aggregation {
                        autonomous-system;
                        destination-prefix;
                        protocol-port;
                        source-destination-prefix {
                            caida-compliant;
                        }
                        source-prefix;
                    }
                    port port-number;
                }
                interface interface-name {
                    engine-id number;
                    engine-type number;
                    input-interface-index number;
                    output-interface-index number;
                    source-address address;
                }
            }
        }

```

Hierarchy Level [edit forwarding-options monitoring *name*]

Description Specify input and output interfaces and properties for flow monitoring. Only the IPv4 protocol (inet) is supported.

The statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

family (Port Mirroring)

Syntax family inet {
 rate *number*;
 run-length *number*;
 }

Hierarchy Level [edit forwarding-options port-mirroring input]

Description Configure the protocol family to be sampled. Only the IPv4 protocol (inet) is supported.

The statements are explained separately.

Usage Guidelines See “Configuring Port Mirroring” on page 330.

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

family (Sampling)

Syntax family inet {
 max-packets-per-second *number*;
 rate *number*;
 run-length *number*;
 }

Hierarchy Level [edit forwarding-options sampling input]

Description Configure the protocol family to be sampled. Only the IPv4 protocol is supported.

The statements are explained separately.

Usage Guidelines See “Configuring Traffic Sampling” on page 316.

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

file

See the following sections:

file (Sampling) on page 356

file (Trace Options) on page 356

file (Sampling)

Syntax file {
 disable;
 filename *filename*;
 files *number*;
 size *bytes*;
 (stamp | no-stamp);
 (world-readable | no-world-readable);
 }

Hierarchy Level [edit forwarding-options sampling output]

Description Collect the traffic samples in a file.
 The statements are explained separately.

Usage Guidelines See “Configuring Traffic Sampling” on page 316.

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

file (Trace Options)

Syntax file *filename* {
 files *number*;
 size *bytes*;
 (world-readable | no-world-readable);
 }

Hierarchy Level [edit forwarding-options port-mirroring traceoptions],
 [edit forwarding-options sampling traceoptions]

Description Configure information about the files that contain trace logging information.

Options *filename*—The name of the file containing the trace information.
Default: /var/log/sampled

The remaining statements are explained separately.

Usage Guidelines See “Tracing Traffic Sampling Operations” on page 320.

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

filename

Syntax	filename <i>filename</i> ;
Hierarchy Level	[edit forwarding-options sampling output file]
Description	Configure the name of the output file.
Options	<i>filename</i> —Name of the file in which to place the traffic samples. All files are placed in the directory <i>/var/tmp</i> .
Usage Guidelines	See “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

files

Syntax	files <i>number</i> ;
Hierarchy Level	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
Description	Configure the total number of files to be saved with samples or trace data.
Options	<i>number</i> —Maximum number of traffic sampling or trace log files. When a file named <i>sampling-file</i> reaches its maximum size, it is renamed <i>sampling-file.0</i> , then <i>sampling-file.1</i> , and so on, until the maximum number of traffic sampling files is reached. Then the oldest sampling file is overwritten. Range: 1 through 100 files Default: 5 files for sampling output; 10 files for trace log information
Usage Guidelines	See “Configuring Port Mirroring” on page 330 or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

filter

Syntax	filter { input <i>filter-name</i> ; output <i>filter-name</i> ; group <i>filter-group-number</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Description	Apply a firewall filter to an interface. You can also use filters for encrypted traffic.
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.</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>
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	<i>JUNOS Policy Framework Configuration Guide</i> or the <i>JUNOS System Basics Configuration Guide</i>

flow-active-timeout

Syntax	flow-active-timeout <i>seconds</i> ;
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options monitoring <i>name</i> output], [edit forwarding-options sampling output]
Description	Interval after which an active flow is exported.
Options	<p><i>seconds</i>—Duration of the timeout period.</p> <p>Range: 60 through 1800 seconds</p> <p>Default: 1800 seconds</p>
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

flow-export-destination

Syntax	flow-export-destination { collector-pic; }
Hierarchy Level	[edit forwarding-options monitoring <i>group-name</i> family inet output]
Description	Configure flow collection.
Options	collector-pic—Collector PIC.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

flow-inactive-timeout

Syntax	flow-inactive-timeout <i>seconds</i> ;
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options monitoring <i>name</i> output], [edit forwarding-options sampling output]
Description	Interval of inactivity that marks a flow inactive.
Options	<i>seconds</i> —Duration of the timeout period. Range: 15 through 1800 seconds Default: 60 seconds
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

forwarding-options

Syntax	forwarding-options { ... }
Hierarchy Level	[edit]
Description	Configure traffic forwarding. The statements that apply to services interfaces are explained separately. For other statements, see the <i>JUNOS Policy Framework Configuration Guide</i> .
Usage Guidelines	See “Flow Monitoring and Discard Accounting Configuration Guidelines” on page 315.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

input

See the following sections:

input (Port Mirroring) on page 360

input (Sampling) on page 360

input (Port Mirroring)

Syntax input {
 family inet {
 rate *number*;
 run-length *number*;
 }
 }

Hierarchy Level [edit forwarding-options port-mirroring]

Description Configure port mirroring on a logical interface.

The statements are explained separately.

Usage Guidelines See “Configuring Port Mirroring” on page 330.

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

input (Sampling)

Syntax input {
 family inet {
 max-packets-per-second *number*;
 rate *number*;
 run-length *number*;
 }
 }

Hierarchy Level [edit forwarding-options sampling]

Description Configure traffic sampling on a logical interface.

The statements are explained separately.

Usage Guidelines See “Configuring Traffic Sampling” on page 316.

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

input-interface-index

Syntax	input-interface-index <i>number</i> ;
Hierarchy Level	[edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i>]
Description	Specify a value for the input interface index that overrides the default supplied by SNMP.
Options	<i>number</i> —Input interface index value.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

interface

See the following sections:

interface (Accounting or Sampling) on page 361

interface (Monitoring) on page 362

interface (Port Mirroring) on page 362

interface (Accounting or Sampling)

Syntax	interface <i>interface-name</i> { engine-id <i>number</i> ; engine-type <i>number</i> ; source-address <i>address</i> ; }
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options sampling output]
Description	Specify the output interface for monitored traffic.
Options	<i>interface-name</i> —Name of the interface. The remaining statements are explained separately.
Usage Guidelines	See “Configuring Discard Accounting” on page 339 or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

interface (Monitoring)

Syntax interface *interface-name* {
 engine-id *number*;
 engine-type *number*;
 input-interface-index *number*;
 output-interface-index *number*;
 source-address *address*;
 }

Hierarchy Level [edit forwarding-options monitoring *name* family inet output]

Description Specify the output interface for monitored traffic.

Options *interface-name*—Name of the interface.

The remaining statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

interface (Port Mirroring)

Syntax interface *interface-name* {
 next-hop *address*;
 }

Hierarchy Level [edit forwarding-options port-mirroring output]

Description Specify the output interface for sending copies of packets elsewhere to be analyzed.

Options *interface-name*—Name of the interface.

The remaining statements are explained separately.

Usage Guidelines See “Configuring Port Mirroring” on page 330.

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

interfaces

Syntax	interfaces { ... }
Hierarchy Level	[edit]
Description	Configure interfaces on the router.
Default	The management and internal Ethernet interfaces are automatically configured. You must configure all other interfaces.
Usage Guidelines	See the <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> for general information.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

local-dump

Syntax	(local-dump no-local-dump);
Hierarchy Level	[edit forwarding-options sampling output cflowd <i>hostname</i>]
Description	Enable collection of cflowd records in a log file.
Options	no-local-dump—Do not dump cflowd records to a log file before exporting. local-dump—Dump cflowd records to a log file before exporting.
Usage Guidelines	See “Configuring cflowd” on page 327.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

max-packets-per-second

Syntax	max-packets-per-second <i>number</i> ;
Hierarchy Level	[edit forwarding-options sampling input family inet]
Description	Specify the traffic threshold that must be exceeded before packets are dropped. A value of 0 instructs the Packet Forwarding Engine not to sample any traffic.
Options	<i>number</i> — Maximum number of packets per second. Range: 0 through 65,535 Default: 1000
Usage Guidelines	See “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

monitoring

Syntax monitoring *name* {
 family inet {
 output {
 cflowd *hostname* port *port-number*;
 export-format cflowd-version-5;
 flow-active-timeout *seconds*;
 flow-export-destination {
 collector-pic;
 }
 flow-inactive-timeout *seconds*;
 interface *interface-name* {
 engine-id *number*;
 engine-type *number*;
 input-interface-index *number*;
 output-interface-index *number*;
 source-address *address*;
 }
 }
 }
 }

Hierarchy Level [edit forwarding-options]

Description Specify the flow monitoring instance name and properties.

The statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

multiservice-options

Syntax multiservice-options {
 boot-command *filename*;
 (core-dump | no-core-dump);
 (syslog | no-syslog);
 }

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

Description For flow-monitoring interfaces only, configure multiservice-specific interface properties.

The statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

next-hop

Syntax	<code>next-hop <i>address</i>;</code>
Hierarchy Level	[edit forwarding-options port-mirroring output interface <i>interface-name</i>]
Description	Specify the next-hop address for sending copies of packets to an analyzer.
Options	<i>address</i> —IP address of the next-hop router.
Usage Guidelines	See “Configuring Port Mirroring” on page 330.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

next-hop-group

Syntax	<code>next-hop-group [<i>group-names</i>] { interface <i>interface-name</i> { next-hop [<i>addresses</i>]; } }</code>
Hierarchy Level	[edit forwarding-options]
Description	Specify the next-hop address for sending copies of packets to an analyzer.
Options	<i>addresses</i> —IP address of the next-hop router. Each next-hop group supports up to 16 next-hop addresses. Up to 30 next-hop groups are supported. Each next-hop group must have at least two next-hop addresses. <i>group-names</i> —Name of next-hop group. Up to 30 next-hop groups are supported for the router. Each next-hop group must have at least 2 next-hop addresses. <i>interface-name</i> —Interface used to reach the next-hop destination.
Usage Guidelines	See “Configuring Port Mirroring” on page 330.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

no-core-dump

See `core-dump` on page 350

no-filter-check

Syntax	no-filter-check ;
Hierarchy Level	[edit forwarding-options port-mirroring output]
Description	Disable filter checking on the port-mirroring interface. This statement is required when you send port-mirrored traffic to a Tunnel PIC that has a filter applied to it.
Usage Guidelines	See “Configuring Port Mirroring” on page 330.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

no-local-dump

See local-dump on page 363

no-stamp

See stamp on page 378

no-syslog

See syslog on page 378

no-world-readable

See world-readable on page 381

output

See the following sections:

output (Accounting) on page 367

output (Monitoring) on page 368

output (Port Mirroring) on page 368

output (Sampling) on page 369

output (Accounting)

```

Syntax  output {
            aggregate-export-interval seconds;
            cflowd hostname {
                aggregation {
                    autonomous-system;
                    destination-prefix;
                    protocol-port;
                    source-destination-prefix {
                        caida-compliant;
                    }
                    source-prefix;
                }
                autonomous-system-type (origin | peer);
                (local-dump | no-local-dump);
                port port-number;
                source-address address;
                version format;
            }
            flow-active-timeout seconds;
            flow-inactive-timeout seconds;
            interface interface-name {
                engine-id number;
                engine-type number;
                source-address address;
            }
        }

```

Hierarchy Level [edit forwarding-options accounting *name*]

Description Configure cflowd, output interfaces, and flow properties.

The statements are explained separately.

Usage Guidelines See “Configuring Discard Accounting” on page 339.

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

output (Monitoring)

```

Syntax  output {
            cflowd hostname port port-number;
            export-format format;
            flow-active-timeout seconds;
            flow-export-destination {
                collector-pic;
            }
            flow-inactive-timeout seconds;
            interface interface-name {
                engine-id number;
                engine-type number;
                input-interface-index number;
                output-interface-index number;
                source-address address;
            }
        }

```

Hierarchy Level [edit forwarding-options monitoring *name*]

Description Configure cflowd, output interfaces, and flow properties.

The statements are explained separately.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

output (Port Mirroring)

```

Syntax  output {
            interface interface-name {
                next-hop address;
            }
            no-filter-check;
        }

```

Hierarchy Level [edit forwarding-options port-mirroring]

Description Configure output interfaces and flow properties.

The statements are explained separately.

Usage Guidelines See “Configuring Port Mirroring” on page 330.

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

output (Sampling)

```

Syntax  output {
            aggregate-export-interval seconds;
            cflowd hostname {
                aggregation {
                    autonomous-system;
                    destination-prefix;
                    protocol-port;
                    source-destination-prefix {
                        caida-compliant;
                    }
                    source-prefix;
                }
                autonomous-system-type (origin | peer);
                (local-dump | no-local-dump);
                port port-number;
                source-address address;
                version format;
            }
            file {
                filename filename;
                files number;
                size bytes;
                (stamp | no-stamp);
                (world-readable | no-world-readable);
            }
            flow-active-timeout seconds;
            flow-inactive-timeout seconds;
            interface interface-name {
                engine-id number;
                engine-type number;
                source-address address;
            }
        }

```

Hierarchy Level [edit forwarding-options sampling]

Description Configure cflowd, output files and interfaces, and flow properties.

The statements are explained separately.

Usage Guidelines See “Configuring Traffic Sampling” on page 316.

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

output-interface-index

Syntax	output-interface-index <i>number</i> ;
Hierarchy Level	[edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i>]
Description	Specify a value for the output interface index that overrides the default supplied by SNMP.
Options	<i>number</i> —Output interface index value.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

passive-monitor-mode

Syntax	passive-monitor-mode;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Description	For ATM and SONET/SDH interfaces only, monitor packet flows from another router. If you include this statement in the configuration, the SONET/SDH interface does not send keepalives or alarms, and does not participate actively on the network.
Usage Guidelines	See “Enabling Passive Flow Monitoring” on page 341.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	multiservice-options on page 364

pop-all-labels

Syntax	pop-all-labels { required-depth <i>number</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options mpls], [edit interfaces <i>interface-name</i> sonet-options mpls]
Description	For passive monitoring on ATM and SONET/SDH interfaces only, removes up to two MPLS labels from incoming IP packets. This statement has no effect on IP packets with more than two MPLS labels. Packets with MPLS labels cannot be processed by the Monitoring PIC; if packets with MPLS labels are forwarded to the Monitoring PIC, they are discarded. The remaining statement is explained separately.
Default	If you omit this statement, the MPLS labels are not removed, and the packet is not processed by the Monitoring PIC.
Usage Guidelines	See “Passive Flow Monitoring for MPLS Encapsulated Packets” on page 342.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	<i>JUNOS Network Interfaces and Class of Service Configuration Guide</i>

port

Syntax	port <i>port-number</i> ;
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output cflowd <i>hostname</i>], [edit forwarding-options monitoring <i>name</i> family inet output cflowd <i>hostname</i>], [edit forwarding-options sampling output cflowd <i>hostname</i>]
Description	Specify the UDP port number on the cflowd host system.
Options	<i>port-number</i> —Any valid UDP port number on the host system.
Usage Guidelines	See “Configuring cflowd” on page 327.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

port-mirroring

```

Syntax port-mirroring {
    input {
        family inet {
            rate rate;
            run-length number;
        }
    }
    output {
        interface interface-name {
            next-hop address;
        }
        no-filter-check;
    }
    traceoptions {
        file filename {
            files number;
            size bytes;
            (world-readable | no-world-readable);
        }
    }
}

```

Hierarchy Level [edit forwarding-options]

Description Specify the input, output, and traceoptions properties for sending copies of packets to an analyzer.

The statements are explained separately.

Usage Guidelines See “Configuring Port Mirroring” on page 330.

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

rate

```

Syntax rate number;

```

Hierarchy Level [edit forwarding-options port-mirroring input family inet],
[edit forwarding-options sampling input family inet]

Description Set the ratio of the number of packets to be sampled. For example, if you specify a rate of 10, every tenth packet (1 packet out of 10) is sampled.

Options *number*—Denominator of the ratio.
Range: 1 through 65,535

Usage Guidelines See “Configuring Port Mirroring” on page 330 or “Configuring Traffic Sampling” on page 316.

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

receive-options-packets

Syntax	receive-options-packets;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Description	When you enable passive monitoring, this statement is required for conformity with cflowd records structure.
Usage Guidelines	See “Enabling Passive Flow Monitoring” on page 341.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

receive-ttl-exceeded

Syntax	receive-ttl-exceeded;
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
Description	When you enable passive monitoring, this statement is required for conformity with cflowd records structure.
Usage Guidelines	See “Enabling Passive Flow Monitoring” on page 341.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

required-depth

Syntax	<code>required-depth number;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> atm-options mpls pop-all-labels], [edit interfaces <i>interface-name</i> sonet-options mpls pop-all-labels]
Description	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. 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.
Options	<i>number</i> —Number of MPLS labels on incoming IP packets. Range: 1 through 2 labels. 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.
Usage Guidelines	See “Passive Flow Monitoring for MPLS Encapsulated Packets” on page 342.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	<i>JUNOS Network Interfaces and Class of Service Configuration Guide</i>

run-length

Syntax	<code>run-length number;</code>
Hierarchy Level	[edit forwarding-options port-mirroring input family inet], [edit forwarding-options sampling input family inet]
Description	Set the number of samples following the initial trigger event. This allows you to sample packets following those already being sampled.
Options	<i>number</i> —Number of samples. Range: 0 through 20 Default: 0
Usage Guidelines	See “Configuring Port Mirroring” on page 330 or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

sampling

See the following sections:

sampling (Forwarding Options) on page 375

sampling (Interfaces) on page 376

sampling (Forwarding Options)

```

Syntax sampling {
    disable;
    input {
        family inet {
            max-packets-per-second number;
            rate number;
            run-length number;
        }
    }
    output {
        aggregate-export-interval seconds;
        cflowd hostname {
            aggregation {
                autonomous-system;
                destination-prefix;
                protocol-port;
                source-destination-prefix {
                    caida-compliant;
                }
                source-prefix;
            }
            autonomous-system-type (origin | peer);
            (local-dump | no-local-dump);
            port port-number;
            source-address address;
            version format;
        }
        file {
            disable;
            filename filename;
            files number;
            size bytes;
            (stamp | no-stamp);
            (world-readable | no-world-readable);
        }
        flow-active-timeout seconds;
        flow-inactive-timeout seconds;
        interface interface-name {
            engine-id number;
            engine-type number;
            source-address address;
        }
    }
    traceoptions {
        file filename {
            files number;

```

```

        size bytes;
        (world-readable | no-world-readable);
    }
}

```

Hierarchy Level [edit forwarding-options]

Description Configure traffic sampling.

The statements are explained separately.

Usage Guidelines See “Configuring Traffic Sampling” on page 316.

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

sampling (Interfaces)

Syntax `sampling direction;`

Hierarchy Level [edit interfaces *mo-fpc/pic/port* unit *logical-unit-number* family inet]

Description Configure the direction of traffic to be sampled.

Options 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.

Usage Guidelines See “Configuring Flow Monitoring” on page 323.

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

size

Syntax	<code>size bytes;</code>
Hierarchy Level	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
Description	Specify the maximum size of each file containing sample or log data. The file size is limited by the number of files to be created and the available hard disk space. When a traffic sampling file named <code>sampling-file</code> reaches the maximum size, it is renamed <code>sampling-file.0</code> . When the <code>sampling-file</code> again reaches its maximum size, <code>sampling-file.0</code> is renamed <code>sampling-file.1</code> and <code>sampling-file</code> is renamed <code>sampling-file.0</code> . This renaming scheme continues until the maximum number of traffic sampling files is reached. Then the oldest traffic sampling file is overwritten.
Options	<code>bytes</code> —Maximum size of each traffic sampling file or trace log file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). Syntax: <code>xk</code> to specify KB, <code>xm</code> to specify MB, or <code>xg</code> to specify GB Range: 10 KB through the maximum file size supported on your router Default: 1 MB for sampling data; 128 KB for log information
Usage Guidelines	See “Configuring Port Mirroring” on page 330 or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.

source-address

Syntax	<code>source-address address;</code>
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output interface <i>interface-name</i>], [edit forwarding-options monitoring <i>name</i> family inet output interface <i>interface-name</i>], [edit forwarding-options sampling output cflowd <i>hostname</i>], [edit forwarding-options sampling output interface <i>interface-name</i>]
Description	Specify the source address for monitored packets.
Options	<code>address</code> —Interface source address.
Usage Guidelines	See “Configuring Discard Accounting” on page 339, “Configuring Flow Monitoring” on page 323, or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.

stamp

Syntax	(stamp no-stamp);
Hierarchy Level	[edit forwarding-options sampling output file]
Description	Include a timestamp with each line in the output file.
Options	no-stamp—Do not include timestamps. This is the default. stamp—Include a timestamp with each line of packet sampling information. Default: No timestamp is included.
Usage Guidelines	See “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

syslog

Syntax	(syslog no-syslog);
Hierarchy Level	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
Description	System logging is enabled by default. The system log information of the Monitoring Services PIC is passed to the kernel for logging in the /var/log directory. syslog—Enable PIC system logging. no-syslog—Disable PIC system logging.
Usage Guidelines	See “Configuring Flow Monitoring” on page 323.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

traceoptions

Syntax	<pre>traceoptions { file <i>filename</i> { files <i>number</i>; size <i>bytes</i>; (world-readable no-world-readable); } }</pre>
Hierarchy Level	[edit forwarding-options port-mirroring], [edit forwarding-options sampling]
Description	Configure traffic sampling tracing operations. The statements are explained separately.
Usage Guidelines	See “Tracing Traffic Sampling Operations” on page 320.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

unit

Syntax	<pre> unit <i>logical-unit-number</i> { family inet { address <i>address</i> { destination <i>destination-address</i>; } filter { group <i>filter-group-number</i>; input <i>filter-name</i>; output <i>filter-name</i>; } sampling <i>direction</i>; } } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Description	Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.
Options	<i>logical-unit-number</i> —Number of the logical unit. Range: 0 through 16,384 The remaining statements are explained separately.
Usage Guidelines	For general information, see the <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
See Also	<i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> for other statements that do not affect services interfaces.

version

Syntax	version <i>format</i> ;
Hierarchy Level	[edit forwarding-options accounting <i>name</i> output cflowd <i>hostname</i>], [edit forwarding-options sampling output cflowd <i>hostname</i>]
Description	Specify the version format of the aggregated flows exported to a cflowd server.
Options	<i>format</i> —Format of the flows. Values: 5 or 8 Default: 5
Usage Guidelines	See “Configuring cflowd” on page 327.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

world-readable

Syntax	(world-readable no-world-readable);
Hierarchy Level	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
Description	Enable unrestricted file access.
Options	no-world-readable—Restrict file access to owner. This is the default. world-readable—Enable unrestricted file access.
	Default: no-world-readable
Usage Guidelines	See “Configuring Port Mirroring” on page 330, or “Configuring Traffic Sampling” on page 316.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

