

# Chapter 13

## Summary of Flow Monitoring Configuration Statements

The following sections explain each of the services interfaces 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 discard accounting instance name and options.

The statements are explained separately.

**Usage Guidelines** See “Configure Discard Accounting” on page 120.

**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 “Configure Flow Monitoring” on page 109 or “Configure Traffic Sampling” on page 102.

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

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

## aggregate-export-interval

**Syntax** aggregate-export-interval *seconds*;

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

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

**Options** *seconds*—Duration in seconds.

**Usage Guidelines** See “Configure Discard Accounting” on page 120.

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

## aggregation

<b>Syntax</b>	<pre> aggregation {   autonomous-system;   destination-prefix;   protocol-port;   source-destination-prefix {     caida-compliant;   }   source-prefix; } </pre>
<b>Hierarchy Level</b>	[edit forwarding-options accounting output cflowd <i>hostname</i> ], [edit forwarding-options sampling output cflowd <i>hostname</i> ]
<b>Description</b>	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.
<b>Options</b>	<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>
<b>Usage Guidelines</b>	See "Configure cflowd" on page 112.
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

## autonomous-system-type

<b>Syntax</b>	autonomous-system-type (origin   peer);
<b>Hierarchy Level</b>	[edit forwarding-options sampling output cflowd <i>hostname</i> ]
<b>Description</b>	Specify the type of AS numbers that cflowd exports.
<b>Options</b>	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.
<b>Default</b>	origin
<b>Usage Guidelines</b>	See “Configure cflowd” on page 112.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## boot-command

<b>Syntax</b>	boot-command <i>filename</i> ;
<b>Hierarchy Level</b>	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
<b>Description</b>	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.
<b>Options</b>	<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.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

cflowd

**cflowd (discard accounting and sampling)**

```

Syntax  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;
        }

```

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

**Description** Collect an aggregate of sampled flows and send the aggregate to a specified host system that runs the collection utility `cfcollect`.

You can configure up to one version 5 and one version 8 flow format at the [edit forwarding-options accounting *name* output] hierarchy level.

You can configure up to one version 5 and one version 8 flow format at the [edit forwarding-options sampling output] hierarchy level.

**Options** *hostname*—The IP address or identifier of the host system (the workstation running the `cflowd` utility).

The remaining statements are explained separately.

**Usage Guidelines** See “Configure `cflowd`” on page 112.

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

**cflowd (flow monitoring)**

<b>Syntax</b>	cflowd [ <i>hostnames</i> ] { port <i>port-number</i> ; }
<b>Hierarchy Level</b>	[edit forwarding-options monitoring <i>name</i> family inet output]
<b>Description</b>	Collect an aggregate of sampled flows and send the aggregate to a specified host system that runs the collection utility cfdcollect.  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.
<b>Options</b>	<i>hostname</i> —The IP address or identifier of the host system (the workstation running the cflowd utility).  The remaining statements are explained separately.
<b>Usage Guidelines</b>	See “Configure cflowd” on page 112.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

**core-dump**

<b>Syntax</b>	(core-dump   no-core-dump);
<b>Hierarchy Level</b>	[edit interfaces mo- <i>fpc/pic/port</i> multiservice-options]
<b>Description</b>	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 software saves the current core file (0) and the four previous core files, which are numbered 1 through 4 (from newest to oldest):  core-dump—Enable the core dumping operation.  no-core-dump—Disable the core dumping operation.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## destination

<b>Syntax</b>	destination <i>destination-address</i> ;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]
<b>Description</b>	For tunnel interfaces, specify the remote address of the tunnel.
<b>Options</b>	<i>destination-address</i> —Address of the remote side of the connection.
<b>Usage Guidelines</b>	See “Configure a Unicast Tunnel” on page 264, “Configure Traffic Sampling” on page 102, and “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## disable

<b>Syntax</b>	disable;
<b>Hierarchy Level</b>	[edit forwarding-options sampling], [edit forwarding-options sampling output file]
<b>Description</b>	Disable traffic accounting or sampling.
<b>Usage Guidelines</b>	See “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## engine-id

<b>Syntax</b>	engine-id <i>number</i> ;
<b>Hierarchy Level</b>	[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> ]
<b>Description</b>	Specify the engine ID number for flow monitoring and accounting services.
<b>Options</b>	<i>number</i> —Identity of accounting interface.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109, “Configure Discard Accounting” on page 120, or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## engine-type

<b>Syntax</b>	engine-type <i>number</i> ;
<b>Hierarchy Level</b>	[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> ]
<b>Description</b>	Specify the engine type number for flow monitoring and accounting services.
<b>Options</b>	<i>number</i> —Platform-specific accounting interface type.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109, “Configure Discard Accounting” on page 120, or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## export-format

<b>Syntax</b>	export-format <i>format</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options monitoring <i>name</i> output]
<b>Description</b>	Flow monitoring export format.
<b>Options</b>	<i>format</i> —cflowd version number.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>See Also</b>	version on page 155

## family

**family (interfaces)**

<b>Syntax</b>	<pre>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; }</pre>
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]
<b>Description</b>	Configure protocol family information for the logical interface.
<b>Options</b>	<i>family</i> —Protocol family; for flow monitoring and accounting services, only the IPv4 protocol (inet) is supported
	The remaining statements are explained separately.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>See Also</b>	<i>JUNOS Internet Software Configuration Guide: Network Interfaces and Class of Service</i> for other options not used with services interfaces.

**family (monitoring)**

<b>Syntax</b>	<pre>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;   } }</pre>
---------------	--

```

        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 “Configure Flow Monitoring” on page 109.

**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 “Configure Port Mirroring” on page 115.

**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 “Configure Traffic Sampling” on page 102.

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

file

### **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 “Configure Traffic Sampling” on page 102.

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

### **file (traceoptions)**

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

**Hierarchy Level** [edit forwarding-options sampling traceoptions],  
 [edit forwarding-options port-mirroring 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 “Trace Traffic-Sampling Operations” on page 106.

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

## filename

<b>Syntax</b>	filename <i>filename</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options sampling output file]
<b>Description</b>	Configure the name of the output file.
<b>Options</b>	<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> .
<b>Usage Guidelines</b>	See “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## files

<b>Syntax</b>	files <i>number</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
<b>Description</b>	Configure the total number of files to be saved with samples or trace data.
<b>Options</b>	<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. <b>Range:</b> 1 through 100 files <b>Default:</b> 5 files for sampling output; 10 files for trace log information
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115 or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## filter

<b>Syntax</b>	filter { input <i>filter-name</i> ; output <i>filter-name</i> ; group <i>filter-group-number</i> ; }
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
<b>Description</b>	Apply a firewall filter to an interface. You can also use filters for encrypted traffic.
<b>Options</b>	group <i>filter-group-number</i> —Define an interface to be part of a filter group. The default filter group number is 0.  input <i>filter-name</i> —Name of one filter to evaluate when packets are received on the interface.  output <i>filter-name</i> —Name of one filter to evaluate when packets are transmitted on the interface.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>See Also</b>	<i>JUNOS Internet Software Configuration Guide: Policy Framework</i> or <i>JUNOS Internet Software Configuration Guide: Getting Started</i> .

## flow-active-timeout

<b>Syntax</b>	flow-active-timeout <i>seconds</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options monitoring <i>name</i> output], [edit forwarding-options sampling output]
<b>Description</b>	Interval after which an active flow is exported.
<b>Options</b>	<i>seconds</i> —Duration of timeout period. <b>Range:</b> 60 through 1800 seconds <b>Default:</b> 1800 seconds
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## flow-inactive-timeout

<b>Syntax</b>	flow-inactive-timeout <i>seconds</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options monitoring <i>name</i> output], [edit forwarding-options sampling output]
<b>Description</b>	Interval of inactivity that marks a flow inactive.
<b>Options</b>	<i>seconds</i> —Duration of timeout period. <b>Range:</b> 15 through 1800 seconds <b>Default:</b> 60 seconds
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## forwarding-options

<b>Syntax</b>	forwarding-options { ... }
<b>Hierarchy Level</b>	[edit]
<b>Description</b>	Configure traffic forwarding.  The statements that apply to services interfaces are explained separately. For other statements, see the <i>JUNOS Internet Software Configuration Guide: Policy Framework</i> .
<b>Usage Guidelines</b>	See “Configure Flow Monitoring and Discard Accounting” on page 101.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## input

**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 “Configure Port Mirroring” on page 115.

**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 “Configure Traffic Sampling” on page 102.

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

## input-interface-index

<b>Syntax</b>	input-interface-index <i>number</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i> ]
<b>Description</b>	Specify a value for the input interface index that overrides the default supplied by SNMP.
<b>Options</b>	<i>number</i> —Input interface index value.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## interface

***interface (accounting or sampling)***

<b>Syntax</b>	interface <i>interface-name</i> { engine-id <i>number</i> ; engine-type <i>number</i> ; source-address <i>address</i> ; }
<b>Hierarchy Level</b>	[edit forwarding-options accounting <i>name</i> output], [edit forwarding-options sampling output]
<b>Description</b>	Specify the output interface for monitored traffic.
<b>Options</b>	<i>interface-name</i> —Name of the interface.  The remaining statements are explained separately.
<b>Usage Guidelines</b>	See “Configure Discard Accounting” on page 120 or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

**interface (for 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 “Configure Flow Monitoring” on page 109.

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

**interface (for 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 “Configure Port Mirroring” on page 115.

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

## interfaces

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

## local-dump

<b>Syntax</b>	(local-dump   no-local-dump);
<b>Hierarchy Level</b>	[edit forwarding-options sampling output cflowd <i>hostname</i> ]
<b>Description</b>	Enable collection of cflowd records in a log file.
<b>Options</b>	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.
<b>Usage Guidelines</b>	See “Configure cflowd” on page 112.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## max-packets-per-second

<b>Syntax</b>	max-packets-per-second <i>number</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options sampling input family inet]
<b>Description</b>	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.
<b>Options</b>	<i>number</i> — Maximum number of packets per second. <b>Range:</b> 0 through 65,535 <b>Default:</b> 1000
<b>Usage Guidelines</b>	See “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	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 [ hostnames ] port port-number;
                    export-format cflowd-version-5;
                    flow-active-timeout seconds;
                    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 flow monitoring instance name and properties.

The statements are explained separately.

**Usage Guidelines** See “Configure Flow Monitoring” on page 109.

**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 “Configure Flow Monitoring” on page 109.

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

## next-hop

<b>Syntax</b>	next-hop <i>address</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring output interface <i>interface-name</i> ]
<b>Description</b>	Specify the next-hop address for sending copies of packets to an analyzer.
<b>Options</b>	<i>address</i> —IP address of the next-hop router.
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## next-hop-group

<b>Syntax</b>	next-hop-group [ <i>group-names</i> ] { interface <i>interface-name</i> { next-hop [ <i>addresses</i> ]; } }
<b>Hierarchy Level</b>	[edit forwarding-options]
<b>Description</b>	Specify the next-hop address for sending copies of packets to an analyzer.
<b>Options</b>	<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.
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115.
<b>Required Privilege Level</b>	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 128

## no-filter-check

<b>Syntax</b>	no-filter-check ;
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring output]
<b>Description</b>	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.
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115.
<b>Required Privilege Level</b>	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 140

## no-stamp

**See** stamp on page 153

## no-syslog

**See** syslog on page 153

## no-world-readable

**See** world-readable on page 156

output

**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 “Configure Discard Accounting” on page 120.

**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-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 “Configure Flow Monitoring” on page 109.

**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 “Configure Port Mirroring” on page 115.

**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 “Configure Traffic Sampling” on page 102.

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

## output-interface-index

<b>Syntax</b>	output-interface-index <i>number</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options monitoring <i>name</i> output interface <i>interface-name</i> ]
<b>Description</b>	Specify a value for the output interface index that overrides the default supplied by SNMP.
<b>Options</b>	<i>number</i> —Output interface index value.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## passive-monitor-mode

<b>Syntax</b>	passive-monitor-mode;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]
<b>Description</b>	For SONET interfaces only, monitor packet flows from another router. If you include this statement in the configuration, the SONET interface does not send keepalives or alarms, and does not participate actively on the network.
<b>Usage Guidelines</b>	See “Enable Passive Flow Monitoring” on page 122.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>See Also</b>	multiservice-options on page 141

## port

<b>Syntax</b>	port <i>port-number</i> ;
<b>Hierarchy Level</b>	[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> ]
<b>Description</b>	Specify the UDP port number on the cflowd host system.
<b>Options</b>	<i>port-number</i> —Any valid UDP port number on the host system.
<b>Usage Guidelines</b>	See “Configure cflowd” on page 112.
<b>Required Privilege Level</b>	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 “Configure Port Mirroring” on page 115.

**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 “Configure Port Mirroring” on page 115 or “Configure Traffic Sampling” on page 102.

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

## receive-options-packets

<b>Syntax</b>	receive-options-packets;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
<b>Description</b>	When you enable passive monitoring, this statement is required for conformity with cflowd records structure.
<b>Usage Guidelines</b>	See “Enable Passive Flow Monitoring” on page 122.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## receive-ttl-exceeded

<b>Syntax</b>	receive-ttl-exceeded;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet]
<b>Description</b>	When you enable passive monitoring, this statement is required for conformity with cflowd records structure.
<b>Usage Guidelines</b>	See “Enable Passive Flow Monitoring” on page 122.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## run-length

<b>Syntax</b>	run-length <i>number</i> ;
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring input family inet], [edit forwarding-options sampling input family inet]
<b>Description</b>	Set the number of samples following the initial trigger event. This allows you to sample packets following those already being sampled.
<b>Options</b>	<i>number</i> —Number of samples. <b>Range:</b> 0 through 20 <b>Default:</b> 0
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115 or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## sampling

**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);
            }
        }
    }

```

<b>Hierarchy Level</b>	[edit forwarding-options]
<b>Description</b>	Configure traffic sampling. The statements are explained separately.
<b>Usage Guidelines</b>	See “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

### ***sampling (interfaces)***

<b>Syntax</b>	sampling <i>direction</i> ;
<b>Hierarchy Level</b>	[edit interfaces <i>mo-fpc/pic/port</i> unit <i>logical-unit-number</i> family inet]
<b>Description</b>	Configure direction of traffic to be sampled.
<b>Options</b>	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.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## size

<b>Syntax</b>	<code>size bytes;</code>
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
<b>Description</b>	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.
<b>Options</b>	<code>bytes</code> —Maximum size of each traffic sampling file or trace log file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). <b>Syntax:</b> <code>xk</code> to specify KB, <code>xm</code> to specify MB, or <code>xg</code> to specify GB <b>Range:</b> 10 KB through the maximum file size supported on your router <b>Default:</b> 1 MB for sampling data; 128 KB for log information
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115 or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.

## source-address

<b>Syntax</b>	<code>source-address address;</code>
<b>Hierarchy Level</b>	[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 interface <i>interface-name</i> ], [edit forwarding-options sampling output cflowd <i>hostname</i> ]
<b>Description</b>	Specify source address for monitored packets.
<b>Options</b>	<code>address</code> —Interface source address.
<b>Usage Guidelines</b>	See “Configure Discard Accounting” on page 120, “Configure Flow Monitoring” on page 109, or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.

## stamp

<b>Syntax</b>	(stamp   no-stamp);
<b>Hierarchy Level</b>	[edit forwarding-options sampling output file]
<b>Description</b>	Include a timestamp with each line in the output file.
<b>Options</b>	no-stamp—Do not include timestamps. This is the default.  stamp—Include a timestamp with each line of packet sampling information. <b>Default:</b> No timestamp is included.
<b>Usage Guidelines</b>	See “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## syslog

<b>Syntax</b>	(syslog   no-syslog);
<b>Hierarchy Level</b>	[edit interfaces <i>mo-fpc/pic/port</i> multiservice-options]
<b>Description</b>	System logging is enabled by default. The system log information of the Monitoring Services PIC is passed to the kernel for logging in the <i>/var/log</i> directory.  syslog—Enable PIC system logging.  no-syslog—Disable PIC system logging.
<b>Usage Guidelines</b>	See “Configure Flow Monitoring” on page 109.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## traceoptions

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

**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 “Trace Traffic-Sampling Operations” on page 106.

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

## unit

```

Syntax  unit logical-unit-number {
            family inet {
                address address {
                    destination destination-address;
                }
                filter {
                    group filter-group-number;
                    input filter-name;
                    output filter-name;
                }
                sampling direction;
            }
        }

```

**Hierarchy Level** [edit interfaces *interface-name*]

**Description** Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.

**Options** *logical-unit-number*—Number of the logical unit.  
**Range:** 0 through 16384

The remaining statements are explained separately.

**Usage Guidelines** For general information, see the *JUNOS Internet Software Configuration Guide: Network Interfaces and Class of Service*.

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

**See Also** *JUNOS Internet Software Configuration Guide: Network Interfaces and Class of Service* for other statements that do not affect services interfaces.

## version

**Syntax** version *format*;

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

**Description** Specify the version format of the aggregated flows exported to a cflowd server.

**Options** *format*—Format of the flows.  
**Values:** 5 or 8  
**Default:** 5

**Usage Guidelines** See “Configure cflowd” on page 112.

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

## world-readable

<b>Syntax</b>	(world-readable   no-world-readable);
<b>Hierarchy Level</b>	[edit forwarding-options port-mirroring traceoptions file], [edit forwarding-options sampling output file], [edit forwarding-options sampling traceoptions file]
<b>Description</b>	Enable unrestricted file access.
<b>Options</b>	no-world-readable—Restrict file access to owner. This is the default.  world-readable—Enable unrestricted file access.  <b>Default:</b> no-world-readable
<b>Usage Guidelines</b>	See “Configure Port Mirroring” on page 115, or “Configure Traffic Sampling” on page 102.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.