



# NetFlow Commands

---

This module provides command line interface (CLI) commands for configuring NetFlow on the Cisco XR 12000 Series Router.

- [cache entries, page 3](#)
- [cache permanent, page 5](#)
- [cache timeout, page 7](#)
- [clear flow exporter, page 9](#)
- [clear flow monitor, page 11](#)
- [destination, page 13](#)
- [dscp, page 15](#)
- [exporter, page 17](#)
- [flow, page 19](#)
- [flow exporter-map, page 21](#)
- [flow monitor-map, page 23](#)
- [options, page 25](#)
- [random 1 out-of, page 27](#)
- [record ipv4, page 28](#)
- [record ipv6, page 30](#)
- [record mpls, page 32](#)
- [sampler-map, page 35](#)
- [show flow exporter, page 37](#)
- [show flow exporter-map, page 40](#)
- [show flow monitor, page 43](#)
- [show flow monitor-map, page 66](#)
- [show sampler-map, page 69](#)

- [source \(NetFlow\)](#), page 71
- [template \(NetFlow\)](#), page 73
- [transport udp](#), page 75
- [version v9](#), page 77

# cache entries

To configure the number of entries in the monitor map flow cache, enter the **cache entries** command in flow monitor map configuration mode. To remove a configured number of entries and return the cache to the default configuration, use the **no** form of this command.

**cache entries** *number*

**no cache entries** *number*

## Syntax Description

<i>number</i>	Number of entries in the flow cache. Replace the <i>number</i> argument with the number of flow entries allowed in the flow cache. Range is from 4096 through 1000000.
---------------	--

## Command Default

*number* : 65535

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to configure the number of entries in the monitor map flow cache to be 10000:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# cache entries 10000
```

## Related Commands

Command	Description
<a href="#">clear flow monitor</a> , <a href="#">on page 11</a>	Clears the flow monitor data

Command	Description
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow monitor, on page 43</a>	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.

# cache permanent

To disable the removal of entries from the monitor map flow cache, enter the **cache permanent** command in flow monitor map configuration mode. To re-enable the removal of entries from the flow cache, use the **no** form of this command.

**cache permanent**

**no cache permanent**

**Syntax Description** This command has no keywords or arguments.

**Command Default** The removal of entries from the monitor map flow cache is enabled.

**Command Modes** Flow monitor map configuration

Release	Modification
Release 3.3.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Operations
netflow	read, write

**Examples** This example shows how to disable the removal of entries from the monitor map flow cache:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)#flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# cache permanent
```

This example shows how to re-enable the removal of entries from the monitor map flow cache:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# no cache permanent
```

cache permanent

**Related Commands**

Command	Description
<a href="#">clear flow monitor</a> , on page 11	Clears the flow monitor data
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map
<a href="#">show flow monitor</a> , on page 43	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map</a> , on page 66	Displays flow monitor map data.

# cache timeout

To configure the active, inactive, and update flow cache timeout, enter the **cache timeout** command in flow monitor map configuration mode. To remove the configured timeout value and return the cache to its default timeout value, use the **no** form of this command.

**cache timeout** {**active**|**inactive**|**update**} *timeout\_value*

**no cache timeout** {**active**|**inactive**|**update**} *timeout\_value*

## Syntax Description

<b>active</b>	Specifies the active flow timeout.
<b>inactive</b>	Specifies the inactive flow timeout.
<b>update</b>	Specifies the update timeout.
<i>timeout_value</i>	Timeout value for the specified keyword ( <b>active</b> , <b>inactive</b> , or <b>update</b> ), in seconds. Range is from 1 through 604800.

## Command Default

For active timeout, the default value is 1800 seconds.

For inactive timeout, the default value is 15 seconds.

For update timeout, the default value is 1800 seconds.

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



### Note

The **inactive** timeout value should be smaller than the **active** timeout value. The **update** keyword is used for permanent caches only. It specifies the timeout value that is used to export entries from permanent caches. In this case, the entries are exported but remain the cache.

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to set the active timeout for the monitor map cache to 200,000 seconds:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# cache timeout active 200000
```

**Related Commands**

Command	Description
<a href="#">clear flow monitor, on page 11</a>	Clears the flow monitor data
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow monitor, on page 43</a>	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.



# clear flow exporter

To export flow exporter templates to the collector or restart the flow exporter statistics collector, enter the **clear flow exporter** command in EXEC mode.

**clear flow exporter** [*fem-name*] {**restart**|**statistics**} **location** *node-id*

## Syntax Description

<i>fem-name</i>	(Optional) Flow exporter name.
<b>restart</b>	Exports all of the current templates to the collector.
<b>statistics</b>	Clears the exporter statistics.
<b>location</b> <i>node-id</i>	Identifies the node whose flow exporter statistics you want to clear, or whose flow exporter statistics collector you want to restart. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.

## Command Default

No default behavior or values

## Command Modes

EXEC

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
basic-services	read, write
netflow	read, write

## Examples

This example exports all templates to the collector:

```
RP/0/0/CPU0:router# clear flow exporter restart location 0/0/SP
Restart exporter all locations. Continue? [confirm]
```

This example shows how to clear flow exporter statistics on a specific node:

```
RP/0/0/CPU0:router# clear flow exporter statistics location 0/0/CPU0
Clear statistics for all exporters on the location. Continue? [confirm]
```

## Related Commands

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data

# clear flow monitor

To clear the flow monitor data, enter the **clear flow monitor** command in EXEC mode.

**clear flow monitor** [ *name* ] **cache** [**force-export**| **statistics**] **location** *node-id*

## Syntax Description

<i>name</i>	(Optional) Identifies a specific cache you want to clear.
<b>cache</b>	Clears all cache related information.
<b>force-export</b>	(Optional) Forces the export of flow records on flushing the cache on the specified node.
<b>statistics</b>	(Optional) Clears cache statistics on a specific node.
<b>location</b> <i>node-id</i>	Node whose flow monitor you want to clear. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.

## Command Default

None

## Command Modes

EXEC

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to clear the cache-related flow records on a specific node:

```
RP/0/0/CPU0:router# clear flow monitor cache force-export location 0/0/CPU0
Clear cache entries for this monitor on this location. Continue? [confirm]
```

**Related Commands**

Command	Description
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.

# destination

To configure the collector export destination, enter the **destination** command in flow exporter map configuration mode. To remove a configured export destination, use the **no** form of this command.

**destination** *hostname\_or\_IP\_address* [**vrf** *vrf\_name*]

**no destination** *hostname\_or\_IP\_address* [**vrf** *vrf\_name*]

## Syntax Description

<i>hostname_or_IP_address</i>	Specify the export destination for the current flow exporter map. Enter the hostname or destination IP address in the <i>A.B.C.D</i> format.
<b>vrf</b> <i>vrf_name</i>	(Optional) Specify the name of the VRF that is used to reach export destination. This is an optional keyword. If the <b>vrf</b> keyword is specified, then the destination is searched in the VRF that is specified ( <i>vrf_name</i> ). If the <b>vrf</b> keyword is not specified then, the destination is searched in the default routing table.

## Command Default

None

## Command Modes

Flow exporter map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	This command was moved to the flow exporter map configuration mode.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to configure the flow exporter map export destination to be a specific IP address:

```
RP/0/0/CPU0:router# configure
```

 destination

```
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# destination 172.18.189.38
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map</a> , on page 21	Creates a flow exporter map
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map
<a href="#">show flow exporter</a> , on page 37	Displays flow exporter data

# dscp

To configure the differentiated services codepoint (DSCP) value for export packets, enter the **dscp** command in flow exporter map configuration mode. To remove a configured DSCP value, use the **no** form of this command.

**dscp** *dscp\_value*

**no dscp** *dscp\_value*

## Syntax Description

<i>dscp_value</i>	Specifies the DSCP value for export packets. Replace <i>dscp_value</i> with a number. Range is from 0 through 63.
-------------------	---

## Command Default

None

## Command Modes

Flow exporter map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	This command was moved to the flow exporter map configuration mode.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to configure the DSCP value for export packets to be 30:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# dscp 30
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data



# exporter

To associate a flow exporter map with the current flow monitor map, enter the **exporter** command in flow monitor map configuration mode. To remove an associated flow exporter map from a flow monitor map, use the **no** form of this command.

**exporter** *map\_name*

**no exporter** *map\_name*

## Syntax Description

<i>map_name</i>	Name of the flow exporter map you want to associate with the current flow monitor map. The exporter map name can be a maximum of 32 characters.
<b>Note</b>	A single flow monitor map supports up to 8 exporters.

## Command Default

None

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	NetFlow was updated so that a single flow monitor map supports up to 8 exporters.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to associate a flow exporter map called “fem\_1” with the current flow monitor map:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# exporter fem_1
```

**Related Commands**

Command	Description
<a href="#">clear flow monitor</a> , on page 11	Clears the flow monitor data
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map
<a href="#">show flow monitor</a> , on page 43	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map</a> , on page 66	Displays flow monitor map data.

# flow

To specify a flow monitor map and a sampler map for the packets on an interface, use the **flow** command in interface configuration mode. To remove a configured flow monitor map, use the **no** form of this command.

**flow** [ipv4| ipv6| mpls] **monitor** *name* **sampler** *name* {egress| ingress}

**no flow** [ipv4| ipv6| mpls] **monitor** *name* **sampler** *name* {egress| ingress}

## Syntax Description

<b>ipv4</b>	Enables IPV4 NetFlow on the specified interface.
<b>ipv6</b>	Enables IPV6 NetFlow on the specified interface.
<b>mpls</b>	Enables Multiprotocol Label Switching (MPLS)-aware NetFlow on the specified interface.
<b>monitor</b> <i>name</i>	Specifies the name of the flow monitor map you want to specify for IPv4, IPv6, or MPLS packets.
<b>sampler</b> <i>name</i>	Name of the sampler map you want to apply to the flow monitor map.
<b>egress</b>	Applies the flow monitor map on outgoing packets.
<b>ingress</b>	Applies the flow monitor map on incoming packets.

## Command Default

None

## Command Modes

Interface configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.5.0	The <b>mpls</b> keyword was added to the <b>flow</b> command to support MPLS-aware NetFlow.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to enable IPv4 NetFlow on a Bridge-group virtual interface, and then apply the flow monitor map on incoming and outgoing IPv4 packets:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# interface BVI 1
RP/0/0/CPU0:router(config-if)# flow ipv4 monitor NMS sampler NMS ingress
RP/0/0/CPU0:router(config-if)# flow ipv4 monitor NMS sampler NMS egress
```

This example shows how to enable IPv6 NetFlow on a Bridge-group virtual interface, and then apply the flow monitor map on incoming and outgoing IPv6 packets:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# interface BVI 1
RP/0/0/CPU0:router(config-if)# flow ipv6 monitor NMS sampler NMS ingress
RP/0/0/CPU0:router(config-if)# flow ipv6 monitor NMS sampler NMS egress
```

**Related Commands**

Command	Description
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.

# flow exporter-map

To create a flow exporter map and enter flow exporter map configuration mode, use the **flow exporter-map** command in global configuration mode. To remove a configured flow exporter map, use the **no** form of this command.

**flow exporter-map** *fem-name*

**no flow exporter-map** *fem-name*

## Syntax Description

<i>fem-name</i>	Creates a new exporter map name, or specifies the name of an existing exporter map.
-----------------	---

## Command Default

None

## Command Modes

Global configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **flow exporter-map** *fem-name* command in global configuration mode, the CLI prompt changes to “config-fem,” indicating that you have entered the flow exporter map configuration submode.

In this sample output, the question mark ( ? ) online help function displays all the commands available under flow exporter map configuration submode:

```
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# ?

RP/0/0/CPU0:routerconfig-fem)#?
clear          Clear the uncommitted configuration
commit         Commit the configuration changes to running
describe       Describe a command without taking real actions
destination    Export destination configuration
do             Run an exec command
dscp           Specify DSCP value for export packets
exit           Exit from this submode
no             Negate a command or set its defaults
pwd            Commands used to reach current submode
root           Exit to the global configuration mode
show           Show contents of configuration
source        Source interface
```

transport Specify the transport protocol for export packets  
 version Specify export version parameters

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to create a flow exporter map called “map1,” and then enter the flow exporter map configuration submode for that map:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)#
```

**Related Commands**

Command	Description
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data

# flow monitor-map

To create and configure a flow monitor map and enter flow monitor map configuration submode, use the **flow monitor-map** command in global configuration mode. To remove a configured flow monitor map, use the **no** form of this command:

**flow monitor-map** *map\_name*

**no flow monitor-map** *map\_name*

## Syntax Description

<i>map_name</i>	New monitor map name, or specifies the name of an existing monitor map. The monitor map name can be a maximum 32 characters.
-----------------	--

## Command Default

None

## Command Modes

Global configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	NetFlow was updated so that a single flow monitor map supports up to 8 exporters.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **flow monitor-map** *map\_name* command in global configuration mode, the CLI prompt changes to “config-fmm,” indicating that you have entered the flow monitor map configuration submode. In the following sample output, the question mark ( ? ) online help function displays all the commands available under flow monitor map configuration submode:

```
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)#?

cache      Specify flow cache attributes
clear      Clear the uncommitted configuration
commit     Commit the configuration changes to running
describe   Describe a command without taking real actions
do         Run an exec command
exit       Exit from this submode
exporter   Specify flow exporter map name
no         Negate a command or set its defaults
pwd        Commands used to reach current submode
record     Specify a flow record map name
```

```

root      Exit to the global configuration mode
show      Show contents of configuration

```

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to enter flow monitor map configuration mode for a monitor map called “map1:”

```

RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)#

```

**Related Commands**

Command	Description
<a href="#">clear flow monitor, on page 11</a>	Clears the flow monitor data
<a href="#">flow, on page 19</a>	Specifies a flow monitor map
<a href="#">show flow monitor, on page 43</a>	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.



# options

To export the tables in the options template and specify export timeout values, enter the **options** command in flow exporter map version configuration mode. To return the options template to its default configuration values, use the **no** form of this command.

**options** {*interface-table*| *sampler-table*} [*timeout seconds*]

**no options** {*interface-table*| *sampler-table*} [*timeout seconds*]

## Syntax Description

<b>interface-table</b>	Export the interface table.
<b>sampler-table</b>	Exports the sampler table.
<b>timeout seconds</b>	Specifies the export timeout value. Replace <i>seconds</i> with the export timeout value. Range is from 1 through 604800 seconds.

## Command Default

Without options command, the default value for timeout is 0 seconds, which means that the template options are not exported by default. Where as when options command is used without mentioning any timeout, default timeout is 1800 seconds.

## Command Modes

Flow exporter map version configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to export the timeout in the interface table to the options template.

```
RP/0/0/CPU0:router(config)# flow exporter-map fl
```

```
RP/0/0/CPU0:router(config-fem)# version v9  
RP/0/0/CPU0:router(config-fem)# options interface-table timeout 45
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data

## random 1 out-of

To configure the packet sampling interval for a monitor map, use the **random 1 out-of** command in sampler map configuration submode. To remove a configured sampling interval and return to the default sampling interval, use the **no** form of this command. The limit of sampling rate values per line card per direction is 4, and limit of total samplers per line card per direction is 16.

**random 1 out-of** *number\_of\_packets*

**no random 1 out-of** *number\_of\_packets*

### Syntax Description

<i>number_of_packets</i>	Sampling interval in units of packets. Replace the <i>number_of_packets</i> argument with a number. Range is from 1 through 65535 units.
--------------------------	--

### Command Default

There is no default value to *number\_of\_packets*. However, for optimal performance, the recommended value for *number\_of\_packets* is 10000.

### Command Modes

Sampler map configuration

### Command History

Release	Modification
Release 3.3.0	This command was introduced.

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

### Task ID

Task ID	Operations
netflow	read, write

### Examples

This example shows how to configure the sampler map to randomly sample 1 out of every 10 packets:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# sampler map1
RP/0/0/CPU0:router(config-sm)# random 1 out-of 10
```

# record ipv4

To activate an IPv4 flow record, use the **record ipv4** command in flow monitor map configuration mode. To deactivate the flow record, use the **no** form of this command.

**record ipv4 [peer-as| destination]**

**no record ipv4**

## Syntax Description

<b>peer-as</b>	(Optional) Records peer AS. The Border Gateway Protocol (BGP) AS is not collected unless the <b>bgp attribute download</b> command is configured.
<b>destination</b>	(Optional) Records IPv4 destination based NetFlow accounting.

## Command Default

The default is that no IPv4 flow record is enabled.

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.7.0	The <b>destination</b> keyword was added to support destination-based NetFlow accounting.

## Usage Guidelines

- To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
- The BGP AS is not collected unless the **bgp attribute download** command is configured.
- The **record ipv4** command exports the BGP AS information in the following format:  
 bgpSourceAsNumber  
 bgpDestinationAsNumber
- The **record ipv4 peer-as** command exports the adjacent BGP AS information in the following format:  
 bgpPrevAdjacentAsNumber  
 bgpNextAdjacentAsNumber

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to configure an IPv4 flow record:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# record ipv4
```

This example shows how to configure an IPv4 flow record for destination-based NetFlow accounting:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# record ipv4 destination
RP/0/0/CPU0:router(config-fmm)# exit
RP/0/0/CPU0:router(config)# interface Gigabit Ethernet 0/0/0/0
RP/0/0/CPU0:router(config-if)# flow ipv4 monitor monitor1 ingress
RP/0/0/CPU0:router(config-if)# end
```

**Related Commands**

Command	Description
<a href="#">clear flow monitor, on page 11</a>	Clears the flow monitor data
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">record ipv6, on page 30</a>	Configures the flow record map name for IPv6
<a href="#">show flow monitor, on page 43</a>	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.

# record ipv6

To configure the flow record map name for IPv6, use the **record ipv6** command in flow monitor map configuration mode. To remove the configured name from a flow record, use the **no** form of this command.

**record ipv6**

**no record ipv6**

## Syntax Description

<b>peer-as</b>	Records peer AS.
----------------	------------------

## Command Default

The default is that originating AS numbers are recorded.

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 4.0.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to configure the flow record map name for IPv6:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# record ipv6
```

## Related Commands

Command	Description
<a href="#">clear flow monitor</a> , on page 11	Clears the flow monitor data
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map

Command	Description
<a href="#">record ipv4, on page 28</a>	Activates an IPv4 flow record
<a href="#">show flow monitor, on page 43</a>	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map, on page 66</a>	Displays flow monitor map data.

# record mpls

To configure the flow record map name for MPLS, use the **record mpls** command in flow monitor map configuration mode. To remove the configured name from a flow record, use the **no** form of this command.

**record mpls** [ipv4-fields] [ipv6-fields] [ipv4-ipv6-fields] [labels *number*]

**no record mpls** [ipv4-fields] [ipv6-fields] [ipv4-ipv6-fields] [labels *number*]

## Syntax Description

<b>ipv4-fields</b>	(Optional) Collects IPv4 fields in the MPLS-aware Netflow when the payload of the MPLS packet has IPv4 fields. It also collects MPLS traffic with no IPv4 payload, but the IPv4 fields are set to zero.
<b>ipv6-fields</b>	(Optional) Collects IPv6 fields in the MPLS-aware Netflow when the payload of the MPLS packet has IPv6 fields. It also collects MPLS traffic with no IPv6 payload, but the IPv6 fields are set to zero.
<b>ipv4-ipv6-fields</b>	(Optional) Collects IPv4 and IPv6 fields in the MPLS-aware Netflow when the payload of the MPLS packet has either IPv4 fields or IPv6 fields. It also collects MPLS traffic with no IPv4 or IPv6 payload, but those fields are set to zero.
<b>labels <i>number</i></b>	(Optional) Configures the number of labels that are used in hashing. The <i>number</i> argument is the number of labels that are used in hashing. The range is from 1 to 6.

## Command Default

The default is no IPV4 fields and six labels.

## Command Modes

Flow monitor map configuration

## Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 4.0.0	IPv6 and IPv4-IPv6 fields were added.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

In Cisco IOS XR software, you can have only one MPLS flow monitor running on an interface at a time. If you apply an additional MPLS flow monitor to the interface, the new flow monitor overwrites the existing one.

You can configure the MPLS flow monitor to collect IPv4 fields, IPv6 fields, or both types of fields.



**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This configuration allows you to collect only MPLS fields. No payload information is collected.

```
RP/0/0/CPU0:router(config)# flow monitor-map MPLS-fmm
RP/0/0/CPU0:router(config-fmm)# record mpls labels 3
RP/0/0/CPU0:router(config-fmm)# cache permanent
RP/0/0/CPU0:router(config)# exit
RP/0/0/CPU0:router(config)# interface Gigabit Ethernet 0/0/0/0
RP/0/0/CPU0:router(config-if)# flow mpls monitor MPLS-fmm sampler fsm ingress
```

This configuration allows you to collect MPLS traffic with IPv4 fields. It also collects MPLS traffic with no IPv4 payload, but the IPv4 fields are set to zero.

```
RP/0/0/CPU0:router(config)# flow monitor-map MPLS-IPv4-fmm
RP/0/0/CPU0:router(config-fmm)# record mpls IPv4-fields labels 3
RP/0/0/CPU0:router(config-fmm)# cache permanent
RP/0/0/CPU0:router(config-fmm)# exit
RP/0/0/CPU0:router(config)# interface gigabitEthernet 0/0/0/0
RP/0/0/CPU0:router(config-if)# flow mpls monitor MPLS-IPv4-fmm sampler fsm ingress
```

This configuration allows you to collect MPLS traffic with IPv6 fields. It also collects MPLS traffic with no IPv6 payload, but the IPv6 fields are set to zero.

```
RP/0/0/CPU0:router(config)# flow monitor-map MPLS-IPv6-fmm
RP/0/0/CPU0:router(config-fmm)# record mpls IPv6-fields labels 3
RP/0/0/CPU0:router(config-fmm)# cache permanent
RP/0/0/CPU0:router(config-fmm)# exit
RP/0/0/CPU0:router(config)# interface gigabitEthernet 0/0/0/0
RP/0/0/CPU0:router(config-if)# flow mpls monitor MPLS-IPv6-fmm sampler fsm ingress
```

This configuration allows you to collect MPLS traffic with both IPv6 and IPv4 fields. It also collects MPLS traffic with no IPv4 or IPv6 payload, but those fields are set to zero.

```
RP/0/0/CPU0:router(config)# flow monitor-map MPLS-IPv4-IPv6-fmm
RP/0/0/CPU0:router(config-fmm)# record mpls IPv4-IPv6-fields labels 3
RP/0/0/CPU0:router(config-fmm)# cache permanent
RP/0/0/CPU0:router(config-fmm)# exit
RP/0/0/CPU0:router(config)# interface gigabitEthernet 0/0/0/0
RP/0/0/CPU0:router(config-if)# flow mpls monitor MPLS-IPv4-IPv6-fmm sampler fsm ingress
```

This example shows how to configure three labels for hashing:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow monitor-map map1
RP/0/0/CPU0:router(config-fmm)# record mpls labels 3
```

**Related Commands**

Command	Description
<a href="#">clear flow monitor</a> , on page 11	Clears the flow monitor data
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map
<a href="#">record ipv4</a> , on page 28	Activates an IPv4 flow record

Command	Description
<a href="#">show flow monitor</a> , on page 43	Displays flow monitor cache data in various formats.
<a href="#">show flow monitor-map</a> , on page 66	Displays flow monitor map data.

# sampler-map

To enter sampler map configuration submode for a specific monitor map, use the **sampler-map** command in global configuration mode. To remove a configured sampler map, use the **no** form of this command.

**sampler-map** *map\_name*

**no sampler-map** *map\_name*

## Syntax Description

<i>map_name</i>	Name of the sampler map you want to configure. The sampler map name can be a maximum 32 characters.
-----------------	---

## Command Default

None

## Command Modes

Global configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **sampler-map** *map\_name* command in global configuration mode, the CLI prompt changes to “config-sm,” indicating that you have entered the sampler map configuration submode. In this sample output, the question mark ( ? ) online help function displays all the commands available under sampler map configuration submode:

```
RP/0/0/CPU0:router(config)# sampler-map test
RP/0/0/CPU0:router(config-sm)# ?

clear      Clear the uncommitted configuration
commit     Commit the configuration changes to running
describe   Describe a command without taking real actions
do         Run an exec command
exit       Exit from this submode
no         Negate a command or set its defaults
pwd        Commands used to reach current submode
random     Use random mode for sampling packets
root       Exit to the global configuration mode
show       Show contents of configuration
```

These restrictions prevent the NetFlow processes from using up all of the available CPU:

- NetFlow supports a policer rate of 35,000 packets per second per direction for each individual line card.

- NetFlow supports a policer rate of 50,000 packets per second per direction for each individual line card if Sampled NetFlow (SNF) is enabled in one direction (ingress or egress). Note that this limit does not apply if SNF is enabled in both directions. If SNF is enabled in both directions, then NetFlow supports 25,000 packets per second per direction for each individual line card.

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to use the **sampler-map** command to enter sampler map configuration submode for the monitor map called "map1:"

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# sampler-map map1
RP/0/0/CPU0:router(config-sm)#
```

**Related Commands**

Command	Description
<a href="#">flow</a> , <a href="#">on page 19</a>	Specifies a flow monitor map

# show flow exporter

To display flow exporter data, enter the **show flow exporter** command in EXEC mode.

**show flow exporter** [ *exporter\_name* ] **location** *node-id*

## Syntax Description

<i>exporter_name</i>	Identifies the flow exporter whose data you want to display.
<b>location</b> <i>node-id</i>	Location where the cache resides. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.
<b>Note</b>	Enter the <b>show platform</b> command to see the location of all nodes installed in the router.

## Command Default

None

## Command Modes

EXEC

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read

## Examples

This example shows how to display flow exporter map data:

```
RP/0/0/CPU0:router# show flow exporter fem1 location 0/0/CPU0

Flow Exporter: NFC
Used by flow monitors: fmm4

Status: Normal
Transport    UDP
Destination 12.24.39.0      (50001)
Source      12.25.54.3      (5956)
Flows exported:                                0 (0 bytes)
```

```

Flows dropped:                                0 (0 bytes)
Templates exported:                           1 (88 bytes)
Templates dropped:                           0 (0 bytes)

Option data exported:                         0 (0 bytes)
Option data dropped:                         0 (0 bytes)

Option templates exported:                   2 (56 bytes)
Option templates dropped:                   0 (0 bytes)

Packets exported:                            3 (144 bytes)
Packets dropped:                             0 (0 bytes)

Total export over last interval of:
  1 hour:                                     0 pkts
                                              0 bytes
                                              0 flows
  1 minute:                                  3 pkts
                                              144 bytes
                                              0 flows
  1 second:                                 0 pkts
                                              0 bytes
                                              0 flows

```

**Table 1: show flow exporter Field Descriptions**

Field	Description
Id	Identifies the flow exporter map.
Used by flow monitors	Name of the flow monitors associated with the specified flow exporter map.
Status	Status of the exporter. <ul style="list-style-type: none"> <li>• Normal—Exporter is active and can export packets.</li> <li>• Disabled—Exporter cannot send out packets because the collector is unreachable or the configuration is incomplete.</li> </ul>
Destination	Export destination address the current flow exporter map.
Flows exported	Flows exported, in bytes.
Flows dropped	Flows dropped, in bytes.
Templates exported	Templates exported, in bytes.
Templates dropped	Templates dropped, in bytes.
Option data exported	Option data exported, in bytes.
Option data dropped	Option data dropped, in bytes.

Field	Description
Option templates exported	Option templates exported, in bytes.
Option templates dropped	Option templates dropped, in bytes.
Packets exported:	Packets exported, in bytes.
Packets dropped	Packets dropped, in bytes.
Average export rate over interval of last:	Average export rate, in bytes/pkts. Information is displayed for intervals of the last hour, minute, and second.

# show flow exporter-map

To display flow exporter map information for a specific node, enter the **show flow exporter-map** command in EXEC mode.

**show flow exporter-map** [ *name* ]

## Syntax Description

<i>name</i>	Name of the exporter map whose information you want to display.
-------------	---

## Command Default

None

## Command Modes

EXEC

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read

## Examples

This example shows how to display flow exporter map information:

```
RP/0/0/CPU0:router# show flow exporter-map map1
```

```
Flow Exporter Map : map1
```

```
-----
Id                : 2
DestinationIpAddr : 10.1.1.1
SourceIfName      : Loopback0
SourceIpAddr      : 10.1.1.1
DSCP              : 10
TransportProtocol : UDP
TransportDestPort : 1024
```

```
Export Version: 9
  Common Template Timeout : 1800 seconds
  Options Template Timeout : 1800 seconds
```



```
Data Template Timeout : 600 seconds
Interface-Table Export Timeout : 1800 seconds
Sampler-Table Export Timeout : 0 seconds
```

This table describes the significant fields shown in the display.

**Table 2: show flow exporter-map Field Descriptions**

Field	Description
Id	Identifies the flow exporter map.
DestinationIpAddr	Exports destination configuration.
SourceIfName	Source interface for this exporter map. You can specify the source interface with the <b>flow exporter-map</b> command.
SourceIpAddr	IP address of the source interface (SourceIfName).
DSCP	Differentiated services codepoint (DSCP) value for export packets. <b>Note</b> You can specify the DSCP with the <b>flow exporter-map</b> command.
TransportProtocol	Displays the configured transport protocol. <b>Note</b> Cisco IOS XR software supports the UDP transport protocol only. <b>Note</b> You can specify the transport protocol with the <b>flow exporter-map</b> command.
TransportDestPort	Displays the configured destination port for UDP packets.
Export Version	Displays the configured export format. <b>Note</b> Cisco IOS XR software supports export format version 9 only.
Common Template Timeout	Displays the configured common template timeout.
Options Template Timeout	Displays the configured options template timeout. <b>Note</b> You can specify the options template timeout with the <b>flow exporter-map</b> command.
Data Template Timeout	Displays the configured data template timeout. <b>Note</b> You can specify the data template timeout with the <b>flow exporter-map</b> command.

Field	Description
Interface-Table Export Timeout	Displays the export timeout value for the interface table.  <b>Note</b> You can specify the export timeout for the interface table with the <b>flow exporter-map</b> command.
Sampler-Table Export Timeout	Displays the export timeout value for the sampler table.  <b>Note</b> You can specify the export timeout for the sampler table with the <b>flow exporter-map</b> command.

**Related Commands**

Command	Description
<a href="#">clear flow exporter</a> , on page 9	Exports flow exporter templates to the collector
<a href="#">flow exporter-map</a> , on page 21	Creates a flow exporter map
<a href="#">show flow exporter</a> , on page 37	Displays flow exporter data

# show flow monitor

To display flow monitor cache data in various formats, enter the **show flow monitor** command in EXEC mode.

To match on Access Control Lists (ACLs) and one or more fields:

```
show flow monitor monitor-name cache match {ipv4 {acl name| source-address match-options|  
destination-address match-options| protocol match-options| tos match-options}| ipv6 {acl name|  
source-address match-options| destination-address match-options| protocol match-options| tc match-options}|  
layer4 {source-port-overloaded match-options| destination-port-overloaded match-options| tcp-flags  
match-flags-options}| bgp {source-as match-options| destination-as match-options}| interface {ingress  
match-if-options| egress match-if-options}| timestamp {first match-options| last match-options}| counters  
{byte match-options| packets match-options}| misc {forwarding-status match-options| direction  
match-dir-options}}
```

To sort flow record information according to a particular field:

```
show flow monitor monitor-name cache sort {ipv4 {source-address| destination-address| tos| protocol}|  
ipv4 {source-address| destination-address| tc| protocol}| mpls {label-2| label-3| label-4| label-5| label-6|  
label-type| prefix| top-label}| layer4 {source-port-overloaded| destination-port-overloaded}| bgp  
{source-as| destination-as}| timestamp {first| last}| counters {bytes| packets}| misc {forwarding-status|  
direction } {top| bottom} [entries ]}
```

To include or exclude one or more fields in the **show flow monitor** command output:

```
show flow monitor monitor-name cache {include| exclude} {ipv4 {source-address| destination-address|  
tos| protocol}| ipv6 {source-address| destination-address| tc| flow-label| option-headers| protocol}| mpls  
{label-2| label-3| label-4| label-5| label-6| top-label}| layer4 {source-port-overloaded|  
destination-port-overloaded}| bgp {source-as| destination-as}| timestamp {first| last}| counters {bytes|  
packets}| misc {forwarding-status match-options| direction match-dir-options}}
```

To display summarized flow record statistics:

```
show flow monitor monitor-name cache summary location node-id
```

To display only key field, packet, and byte information for the flow records:

```
show flow monitor monitor-name cache brief location node-id
```

To display flow record information for a particular node only:

```
show flow monitor monitor-name cache location node-id
```

## Syntax Description

If you specified the **show flow monitor monitor-name cache match** command to match on ACL and one or more fields:

<i>monitor-name</i>	Flow monitor map whose details you want to display.
---------------------	---

<b>cache</b>	Displays details about the flow monitor cache.
<b>match</b>	Specifies match criteria for the display. Enter the <b>match</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.
<b>ipv4</b>	Specifies IPv4 fields.
<b>ipv6</b>	Specifies IPv6 fields.
<b>acl</b> <i>name</i>	Specifies an access list. Replace name with the <i>name</i> of the access whose information you want to display.
<b>source-address</b> <i>match-options</i>	Specifies source IP address match options. Possible match options are: <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>source-address</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>destination-address</b>	Specifies IPV4 or IPv6 destination address match options. Possible match options are: <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>destination-address</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>

<b>tos</b> <i>match-options</i>	<p>Compares fields and matches them based on the type of service value. Range is from 0 through 255. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>tos</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>protocol</b> <i>match-options</i>	<p>Compares fields and matches them based on the protocol value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>protocol</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>layer4</b>	<p>Compares Layer 4 fields and matches them based on specific criteria. You can specify match criteria for any of the following Layer 4 fields:</p> <ul style="list-style-type: none"> <li>• <b>destination-port-overloaded</b></li> <li>• <b>source-port-overloaded</b></li> <li>• <b>tcp-flags</b></li> </ul> <p><b>Note</b> Enter the <b>layer4</b> keyword followed by the <b>?</b> command to see a complete list of possible Layer 4 fields to compare and match.</p>

<b>destination-port-overloaded</b>	<p>Compares fields and matches them based on the <b>destination-port-overloaded</b> value. The destination port is matched if the protocol specified for that port is TCP or UDP.</p> <p>Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>destination-port-overloaded</b> keyword followed by the ? command to see a complete list of possible match criteria.</p>
<b>source-port-overloaded</b>	<p>Compares fields and matches them based on the <b>source-port-overloaded</b> value.</p> <p>The source port is matched if the protocol specified for that port is one of the following:</p> <ul style="list-style-type: none"> <li>• TCP—Range is from 0 through 65535.</li> <li>• UDP—Range is from 0 through 65535.</li> <li>• ICMP—Type or code is in range from 0 through 255.</li> <li>• IGMP—Type is in range from 0 through 255.</li> </ul> <p>Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> NoteEnter the <b>source-port-overloaded</b> keyword followed by the ? command to see a complete list of possible match criteria.</p>

<b>tcp-flags</b> <i>match-flags-options</i>	<p>Specifies TCP flags, as follows:</p> <ul style="list-style-type: none"> <li>• <b>all</b> —Match all of the fields</li> <li>• <b>any</b> —Match any of the fields</li> <li>• <b>none</b> —Match none of the fields.</li> </ul> <p><b>Note</b> Enter the <b>tcp-flags</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>bgp</b>	<p>Compares BGP fields and matches them based on specific criteria. You can specify match criteria for any of the following BGP fields:</p> <ul style="list-style-type: none"> <li>• <b>destination-as</b> —Destination as.</li> <li>• <b>source-as</b> —Source as.</li> </ul>
<b>source-as</b> <i>match-options</i>	<p>Compares and matches the BGP autonomous system number of the destination address.</p> <p>Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>source-as</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>destination-as</b> <i>match-options</i>	<p>Compares and matches the BGP autonomous system number of the source address. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>destination-as</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>

<b>timestamp</b>	Specifies the time stamp for which to compare and match the specified criteria. Enter the <b>first</b> keyword or the <b>last</b> keyword to specify the time stamp whose criteria you want to compare.
<b>first match-options</b>	<p>Compares fields from the first time stamp and matches them based on the match-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>first</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>last match-options</b>	<p>Compares fields from the last time stamp and matches them based on the match-if-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>last</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>counters</b>	Specifies the counters for which to compare and match the specified criteria. Enter the <b>byte</b> keyword or the <b>packets</b> keyword to specify the counters whose criteria you want to compare.



<b>byte</b> <i>match-options</i>	<p>Compares bytes counter fields and matches them based on the match-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>byte</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>packets</b> <i>match-options</i>	<p>Compares packets counter fields and matches them based on the match-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p><b>Note</b> Enter the <b>byte</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>misc</b>	<p>Specifies miscellaneous fields for which to compare and match the specified criteria. Enter the <b>forwarding-status</b> keyword or the <b>direction</b> keyword to specify the field whose criteria you want to compare.</p>

<b>forwarding-status</b> <i>match-options</i>	<p>Compares forwarding status fields and matches them based on the match-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>gt</b> —Match if greater than field value.</li> <li>• <b>lt</b> —Match if less than field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> <li>• <b>range</b> —Match if within the range of field values.</li> </ul> <p>Enter the <b>forwarding-status</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
<b>direction</b> <i>match-dir-options</i>	<p>Compares information about the direction of the flow and matches it based on the match-options value. Possible match options are:</p> <ul style="list-style-type: none"> <li>• <b>eq</b> —Match if equal to field value.</li> <li>• <b>neq</b> —Match if not equal to field value.</li> </ul> <p><b>Note</b> Enter the <b>direction</b> keyword followed by the <b>?</b> command to see a complete list of possible match criteria.</p>
To sort flow record information according to a particular field:	
<i>monitor-name</i>	Flow monitor map whose details you want to display.
<b>cache</b>	Displays details about the flow monitor cache.
<b>sort</b>	Determines sorting criteria for the <b>show flow monitor</b> command display.
<b>ipv4</b>	<p>Specifies sorting criteria for one of the following IPv4 fields:</p> <ul style="list-style-type: none"> <li>• <b>destination-address</b></li> <li>• <b>source-address</b></li> <li>• <b>protocol</b></li> <li>• <b>tos</b></li> </ul> <p><b>Note</b> Enter the <b>ipv4</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>

<b>ipv6</b>	<p>Specifies sorting criteria for one of the following IPv6 fields:</p> <ul style="list-style-type: none"> <li>• <b>destination-address</b></li> <li>• <b>source-address</b></li> <li>• <b>protocol</b></li> <li>• <b>tos</b></li> </ul> <p><b>Note</b> Enter the <b>ipv6</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-address</b>	<p>Displays IPv4 or IPv6 information for the source address according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>source-address</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>destination-address</b>	<p>Displays IPv4 or IPv6 information for the destination address according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>destination-address</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>tos</b>	<p>Displays IPv4 type of service information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>tos</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>

<b>tc</b>	<p>Displays IPv6 traffic class information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>tc</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>protocol</b>	<p>Displays IPv4 or IPv6 protocol information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>tos</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>mpls</b>	<p>Specifies sorting criteria for one of the following MPLS fields:</p> <ul style="list-style-type: none"> <li>• <b>label-2</b></li> <li>• <b>label-3</b></li> <li>• <b>label-4</b></li> <li>• <b>label-5</b></li> <li>• <b>label-6</b></li> <li>• <b>label-type</b></li> <li>• <b>prefix</b></li> <li>• <b>top-label</b></li> </ul> <p><b>Note</b> Enter the <b>mpls</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>label-2</b>	<p>Displays MPLS information for the second label in the MPLS label stack. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>

<b>label-3</b>	Displays MPLS information for the third label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>label-4</b>	Displays MPLS information for the fourth label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>label-5</b>	Displays MPLS information for the fifth label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>label-6</b>	Displays MPLS information for the sixth label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>label-type</b>	Displays MPLS information for the specified type of label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>prefix</b>	Displays MPLS information for the destination address. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>top-label</b>	Displays MPLS information for the top label in the MPLS label stack. Possible sorting options are: <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>

<b>layer4</b>	<p>Specifies sorting criteria for one of the following Layer 4 fields:</p> <ul style="list-style-type: none"> <li>• <b>source-port-overloaded</b></li> <li>• <b>destination-port-overloaded</b></li> </ul> <p><b>Note</b> Enter the <b>layer4</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-port-overloaded</b>	<p>Displays source port overload information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>source-port-overloaded</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>destination-port-overloaded</b>	<p>Displays destination port overload information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>destination-port-overloaded</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>bgp</b>	<p>Specifies sorting criteria for one of the following BGP fields:</p> <ul style="list-style-type: none"> <li>• <b>source-as</b></li> <li>• <b>destination-as</b></li> </ul> <p><b>Note</b> Enter the <b>layer4</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-as</b>	<p>Displays information about the BGP source address autonomous system number according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>source-as</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>

<b>destination-as</b>	<p>Displays information about the BGP destination address autonomous system number according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>destination-as</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>timestamp</b>	<p>Specifies sorting criteria for the first or last time stamp. Enter the <b>first</b> keyword or the <b>last</b> keyword to specify the time stamp whose criteria you want to specify.</p> <p><b>Note</b> Enter the <b>timestamp</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>first</b>	<p>Displays information for the first time stamp according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>first</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>last</b>	<p>Displays information for the last time stamp according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>last</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>counters</b>	<p>Specifies sorting criteria for the bytes or packets counters. Follow the <b>counters</b> keyword with the <b>byte</b> keyword or the <b>packets</b> keyword to specify the counters whose criteria you want to compare.</p>

<b>bytes</b>	<p>Displays bytes counter information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>bytes</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>packets</b>	<p>Displays packets counter information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>packets</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>misc</b>	<p>Specifies sorting criteria for miscellaneous fields. Follow the <b>misc</b> keyword with the <b>forwarding-status</b> keyword or the <b>direction</b> keyword to specify the counters whose criteria you want to compare.</p>
<b>forwarding-status</b>	<p>Displays forwarding status information according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>forwarding-status</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>direction</b>	<p>Displays information about the direction of the flow according to the specified sorting criteria. Possible sorting options are:</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul> <p><b>Note</b> Enter the <b>direction</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>



<b>top</b>	Displays top cache entries. Replace records with the number of records you want to display.  <b>Note</b> You can follow the <b>top</b> keyword with the optional entries argument to specify the number of records to display.
<b>bottom</b>	Displays bottom cache entries. Replace records with the number of records you want to display.  <b>Note</b> You can follow the <b>bottom</b> keyword with the optional entries argument to specify the number of records to display.
<i>entries</i>	Number of records to display. Range is from 1 through 1000.
To include or exclude one or more fields in the show flow monitor command output:	
<i>monitor-name</i>	Flow monitor map whose details you want to display.
<b>cache</b>	Displays details about the flow monitor cache.
<b>include</b>	Includes the specified fields in the display output. Enter the <b>include</b> keyword, followed by the keyword or keywords that specify the fields to include.  <b>Note</b> To see a list of fields that can be included, enter the <b>include</b> keyword, followed by the ? command.
<b>exclude</b>	Excludes the specified fields in the display output. Enter the <b>exclude</b> keyword, followed by the keyword or keywords that specify the fields to exclude.  <b>Note</b> To see a list of fields that can be excluded, enter the <b>exclude</b> keyword, followed by the ? command.
<b>ipv4</b>	Includes or excludes one of the following IPv4 fields in the command output: <ul style="list-style-type: none"> <li>• <b>destination-address</b></li> <li>• <b>source-address</b></li> <li>• <b>protocol</b></li> <li>• <b>tos</b></li> </ul> <b>Note</b> Enter the <b>ipv4</b> keyword followed by the ? command to see a complete list of possible sorting criteria.

<b>ipv6</b>	<p>Includes or excludes one of the following IPv6 fields in the command output:</p> <ul style="list-style-type: none"> <li>• <b>destination-address</b></li> <li>• <b>flow-label</b></li> <li>• <b>option-headers</b></li> <li>• <b>source-address</b></li> <li>• <b>protocol</b></li> <li>• <b>tos</b></li> </ul> <p><b>Note</b> Enter the <b>ipv6</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-address</b>	Includes or excludes IPV4 or IPV6 information for the source address in the command output.
<b>destination-address</b>	Includes or excludes IPV4 or IPV6 information for the destination address in the command output.
<b>flow-label</b>	Includes or excludes information about the IPv6 flow label in the command output. The flow label is the 20-bit flow label id present in every IPv6 packet header.
<b>option-headers</b>	Includes or excludes IPV6 information for the option headers in the command output. The option header is a bit mask that indicates which options headers are present in the IPv6 header.
<b>tos</b>	Includes or excludes IPV4 type of service information in the command output.
<b>tc</b>	Includes or excludes IPV6 traffic class information in the command output.
<b>protocol</b>	Includes or excludes IPV4 or IPV6 protocol information in the command output.

<b>mpls</b>	<p>Includes or excludes one of the following MPLS fields in the command output:</p> <ul style="list-style-type: none"> <li>• <b>label-2</b></li> <li>• <b>label-3</b></li> <li>• <b>label-4</b></li> <li>• <b>label-5</b></li> <li>• <b>label-6</b></li> <li>• <b>top-label</b></li> </ul> <p><b>Note</b> Enter the <b>mpls</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>label-2</b>	Includes or excludes MPLS information for the second label in the MPLS label stack.
<b>label-3</b>	Includes or excludes MPLS information for the third label in the MPLS label stack.
<b>label-4</b>	Includes or excludes MPLS information for the fourth label in the MPLS label stack.
<b>label-5</b>	Includes or excludes MPLS information for the fifth label in the MPLS label stack.
<b>label-6</b>	Includes or excludes MPLS information for the sixth label in the MPLS label stack.
<b>top-label</b>	Includes or excludes MPLS information for the top label in the MPLS label stack.
<b>layer4</b>	<p>Includes or excludes one of the following the following Layer 4 fields in the command output:</p> <ul style="list-style-type: none"> <li>• <b>source-port-overloaded</b></li> <li>• <b>destination-port-overloaded</b></li> </ul> <p><b>Note</b> Enter the <b>layer4</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-port-overloaded</b>	Includes or excludes source port overload information in the command output.

<b>destination-port-overloaded</b>	<p>Includes or excludes destination port overload information in the command output.</p> <ul style="list-style-type: none"> <li>• <b>top</b> —Displays top cache entries.</li> <li>• <b>bottom</b> —Displays bottom cache entries.</li> </ul>
<b>bgp</b>	<p>Includes or excludes the following BGP fields in the command output:</p> <ul style="list-style-type: none"> <li>• <b>source-as</b></li> <li>• <b>destination-as</b></li> </ul> <p><b>Note</b> Enter the <b>bgp</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>source-as</b>	Includes or excludes information about the BGP source address autonomous system number in the command output.
<b>destination-as</b>	Includes or excludes information about the BGP destination address autonomous system number in the command output.
<b>timestamp</b>	<p>Includes or excludes information from the first or last time stamp in the command output. Enter the <b>first</b> keyword or the <b>last</b> keyword to include or exclude information about a specific time stamp.</p> <p><b>Note</b> Enter the <b>timestamp</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>first</b>	Includes or excludes information for the first time stamp in the command output.
<b>last</b>	Includes or excludes information for the first time stamp in the command output.
<b>counters</b>	<p>Includes or excludes bytes or packets counters in the command output. Follow the <b>counters</b> keyword with the <b>byte</b> keyword or the <b>packets</b> keyword to include or exclude particular counters.</p> <p><b>Note</b> Enter the <b>counters</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
<b>bytes</b>	Includes or excludes bytes counter information in the command output.

<b>packets</b>	Includes or excludes packets counter information in the command output.
<b>misc</b>	Includes or excludes information for miscellaneous fields in the command output. Follow the <b>misc</b> keyword with the <b>forwarding-status</b> keyword or the <b>direction</b> keyword to specify the field you want to include or exclude.  <b>Note</b> Enter the <b>misc</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.
<b>forwarding-status</b>	Includes or excludes forwarding status information in the command output.
<b>direction</b>	Includes or excludes information about the direction of the flow in the command output.
<b>top</b>	Includes or excludes top cache entries in the command output. Replace records with the number of <i>records</i> you want to display.
<b>bottom</b>	Includes or excludes bottom cache entries. Replace records with the number of <i>records</i> you want to display
<i>entries</i>	Number of records to display. Range is from 1 through 1000.
To display summarized flow record statistics:	
<i>monitor-name</i>	Flow monitor map whose details you want to display.
<b>cache</b>	Displays details about the flow monitor cache.
<b>summary</b>	Displays summarized flow monitor information only.
<i>monitor-name</i>	Flow monitor map whose details you want to display.
<b>cache</b>	Displays details about the flow monitor cache.
<b>brief</b>	Abbreviates the <b>show flow monitor</b> command output.
To display flow record information for a particular node only:	
<i>monitor-name</i>	Flow monitor map whose details you want to display.
<b>cache</b>	Displays details about the flow monitor cache.

<b>location</b> <i>node-id</i>	<p>Identifies the node whose flow exporter statistics you want to clear, or whose flow exporter statistics collector you want to restart. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.</p> <p><b>Note</b> Enter the <b>location</b> keyword followed by the <b>?</b> command to see a complete list of possible sorting criteria.</p>
--------------------------------	--

**Command Default**

None

**Command Modes**

EXEC

**Command History**

Release	Modification
Release 3.3.0	This command was introduced.
Release 4.0.0	Command was modified to add support for IPv6 and IPv6-aware MPLS fields. The interface keyword options were removed.

**Usage Guidelines**

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

**Note**

To collect source and destination AS information, you must enable BGP on the relevant BGP AFI/SAFI. Unless this is done, all AS numbers in the flow records are displayed as 0.

Keep these information in mind when using the **show flow monitor** command:

- The **show flow monitor** command can include combinations of these options:
  - **format**
  - **match**
  - **include**
  - **exclude**
  - **sort**
  - **summary**
  - **location**
- We do not recommend including the **summary** option with the **sort** and **format** options.

- The mutually exclusive options are **summary**, **brief**, **include**, and **exclude**.
- To see a list of fields that can be included after a keyword, enter the **?** command, as shown in this example:

```
RP/0/0/CPU0:router# show flow monitor map1 cache summary ?

brief      Show just the key fields
exclude    Exclude field
format     Display format
include    Include field
location   Specify a location
match      Match criteria
sort       Sorting criteria
```

**Task ID**

Task ID	Operations
netflow	read

**Examples**

This example shows how to display flow monitor data for a specific monitor map cache in the location 0/0/CPU0 :

```
RP/0/0/CPU0:router# show flow monitor fmm2 cache loc 0/0/CPU0
```

```
Cache summary for Flow Monitor fmm2:
Cache size:                        65535
Current entries:                   4
High Watermark:                   62258
Flows added:                       4
Flows not added:                   0
Ager Polls:                       60
- Active timeout                   0
- Inactive timeout                 0
- TCP FIN flag                     0
- Watermark aged                   0
- Emergency aged                   0
- Counter wrap aged                0
- Total                           0
Periodic export:
- Counter wrap                     0
- TCP FIN flag                     0
Flows exported                     0
Matching entries:                   4

IPV4SrcAddr    IPV4DstAddr    L4SrcPort    L4DestPort    BGPDstOrigAS    BGPSrcOrigAS
IPV4DstPrfxLen
IPV4SrcPrfxLen IPV4Prot  IPV4TOS  InputInterface  OutputInterface L4TCPFlags  ForwardStatus
ForwardReason  FirstSwitched  LastSwitched  ByteCount    PacketCount  Dir  Sampler ID
17.17.17.2     18.18.18.2     0            0            0            0            0            24
24            $
61            normal    HundredGigE /0/0/8    HundredGigE 0/0/0/12    0            Fwd
0            00
00:02:43:800 00 00:02:49:980 37200    620            In 0
18.18.18.2     17.17.17.2     0            0            0            0            0            24
24            $
61            normal    HundredGigE 0/0/0/12    HundredGigE 0/0/0/8     0            Fwd
0            00
00:02:43:791 00 00:02:49:980 37200    620            In 0
17.17.17.2     18.18.18.2     0            0            0            0            0            24
0            $
61            normal    HundredGigE 0/0/0/8     HundredGigE 0/0/0/12    0            Fwd
0            00
00:02:43:798 00 00:02:49:980 34720    620            Out 0
```

```

18.18.18.2      17.17.17.2      0      0      0      0      24
0
$
61      normal      HundredGigE 0/0/0/12      HundredGigE 0/0/0/8      0      Fwd
0
00:02:43:797 00 00:02:49:980 34720      620      Out 0
L4SrcPort L4DestPort BGPDstOrigAS BGPSrcOrigAS IPV4DstPrfxLen

```

This table describes the significant fields shown in the display.

**Table 3: show flow monitor Field Descriptions**

Field	Description
Cache summary for Flow Monitor fmm2	<p>Displays general cache information for the specified flow monitor. The following information is displayed</p> <ul style="list-style-type: none"> <li>• Cache size for the specified flow monitor map</li> <li>• Current number of entries in the cache</li> <li>• High watermark for this cache</li> <li>• Number of flows added to the cache</li> <li>• Number of flows not added to the cache</li> </ul>
Ager Polls	<p>Displays the following ager statistics:</p> <ul style="list-style-type: none"> <li>• Active timeout</li> <li>• Inactive timeout</li> <li>• TCP FIN flag</li> <li>• Watermark aged</li> <li>• Emergency aged</li> <li>• Counter wrap aged</li> <li>• Total</li> </ul>
Periodic export	<ul style="list-style-type: none"> <li>• Counter wrap</li> <li>• TCP FIN flag</li> </ul>
Cache summary for Flow Monitor fmm2	<p>Displays general cache information for the specified flow monitor. The following information is displayed</p> <ul style="list-style-type: none"> <li>• Cache size for the specified flow monitor map</li> <li>• Current number of entries in the cache</li> <li>• High watermark for this cache</li> <li>• Number of flows added to the cache</li> <li>• Number of flows not added to the cache</li> </ul>



Field	Description
FirstSwitched	Displays the system uptime at which the first packet of this flow was switched. The display format is days hours:minutes:seconds:milliseconds
LastSwitched	Displays the system uptime at which the last packet of this flow was switched. The display format is days hours:minutes:seconds:milliseconds

# show flow monitor-map

To display flow monitor map data, enter the **show flow monitor-map** command in EXEC mode.

**show flow monitor-map** *map-name*

## Syntax Description

<i>map-name</i>	Name of the monitor map whose data you want to display.
-----------------	---

## Command Default

None

## Command Modes

EXEC

## Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.1	The ipv4-raw record map name was replaced with ipv4.
Release 3.5.0	The show flow monitor-map command output was modified to include raw MPLS, and IPv4-aware MPLS information.
Release 4.0.0	The show flow monitor-map command output was modified to include IPv6 and IPv6-aware MPLS information

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read

## Examples

This example shows how to display monitor-map data for a specific flow:

```
RP/0/0/CPU0:router# show flow monitor-map map1
```

```
Flow Monitor Map : map1
```

```
-----
```

```
Id: 1
RecordMapName: ipv4
```

```

ExportMapName:      NFC
CacheAgingMode:     Permanent
CacheMaxEntries:    10000
CacheActiveTout:    N/A
CacheInactiveTout:  N/A
CacheUpdateTout:    60 seconds

```

This table describes the significant fields shown in the display.

**Table 4: show flow monitor-map Field Descriptions**

Field	Description
Flow Monitor Map	Name of the flow monitor map whose information is display in the <b>show flow monitor-map</b> command output.
Id	Number that identifies the flow monitor map.
RecordMapName	Name of the flow record map that is associated with this monitor map. The RecordMapName indicates the type of packets NetFlow captures as they leave the router.
ExportMapName	Name of the export map that is associated with this monitor map.
CacheAgingMode	<p>Current aging mode configured on this cache. "Permanent" indicates that the removal of entries from the monitor map flow cache is disabled.</p> <p><b>Note</b> To configure the number of entries allowed in the monitor map flow cache, enter the <b>cache entries</b> command in flow monitor map configuration mode. To disable the removal of entries from the monitor map flow cache, enter the <b>cache permanent</b> command in flow monitor map configuration mode.</p>
CacheMaxEntries	<p>Number of flow entries currently allowed in the flow cache before the oldest entry is removed.</p> <p><b>Note</b> To modify the number of entries in the monitor map flow cache, enter the <b>cache entries</b> command in flow monitor map configuration mode</p>
CacheActiveTout	<p>Active flow timeout configured for this cache, in seconds.</p> <p><b>Note</b> To modify the configured active flow timeout, use the <b>cache timeout</b> command in flow monitor map configuration mode.</p>

Field	Description
CacheInactiveTout	Inactive flow timeout configured for this cache, in seconds.  <b>Note</b> To modify the configured inactive flow timeout, use the <b>cache timeout</b> command in flow monitor map configuration mode.
CacheUpdateTout	Update timeout configured for this cache, in seconds.  <b>Note</b> To modify the configured update timeout, use the <b>cache timeout</b> command in flow monitor map configuration mode.

This example shows how to display monitor-map data for a specific IPv6 flow:

```
RP/0/0/CPU0:router# show flow monitor-map map2
```

```
Tue Jan 22 00:15:53.424 PST
Flow Monitor Map : map2
-----
Id: 1
RecordMapName: ipv6-destination
CacheAgingMode: Normal
CacheMaxEntries: 65535
CacheActiveTout: 1800 seconds
CacheInactiveTout: 15 seconds
CacheUpdateTout: N/A
```

## Related Commands

Command	Description
<a href="#">clear flow monitor</a> , on page 11	Clears the flow monitor data
<a href="#">flow monitor-map</a> , on page 23	Creates and configures a flow monitor map
<a href="#">flow</a> , on page 19	Specifies a flow monitor map
<a href="#">record ipv4</a> , on page 28	Activates an IPv4 flow record
<a href="#">record ipv6</a> , on page 30	Configures the flow record map name for IPv6
<a href="#">record mpls</a> , on page 32	Configures the flow record map name for MPLS

# show sampler-map

To display sampler map information, enter the **show sampler-map** command in EXEC mode.

**show sampler-map** [ *sampler-name* ]

Syntax Description	
<i>sampler-name</i>	Identifies the sampler map whose information you want to display.

**Command Default** None

**Command Modes** EXEC

Command History	Release	Modification
	Release 3.3.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	netflow	read

**Examples** This example shows how to display sampler map information for a router:

```
RP/0/0/CPU0:router# show sampler-map map1
```

```
Sampler Map : map1
```

```
-----
Id:      1
Mode:    Random (1 out of 100 Pkts)
```

This table describes the significant fields shown in the display.

**Table 5: show sampler-map Field Descriptions**

Field	Description
Id	Flow sampler map identifier.

Field	Description
Mode	Sampling interval in units of packet. “Random” mode is any mode that was configured with the <b>flow monitor-map</b> command.  <b>Note</b> Currently, Cisco IOS XR software supports “Random” mode only.

#### Related Commands

Command	Description
<a href="#">sampler-map</a> , on page 35	Enter sampler map configuration submode for a specific monitor map
<a href="#">flow</a> , on page 19	Specifies a flow monitor map

## source (NetFlow)

To configure a source interface for the current collector, use the **source** command in flow exporter map configuration mode. To remove a configured source interface, use the **no** form of this command.

**source** *type interface-path-id*

**no source** *type interface-path-id*

### Syntax Description

<i>type</i>	Interface type. For more information, use the question mark ( ? ) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface.  <b>Note</b> Use the <b>show interfaces</b> command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark ( ? ) online help function.

### Command Default

None

### Command Modes

Flow exporter map configuration

### Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	This command was moved to the flow exporter map configuration mode.

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

For the *interface-path-id* argument, use the following guidelines:

- If specifying T1/E1/DS0 physical interfaces, the naming notation is *rack/slot/module/port/t1-num*.
- *channel-group-number*. If specifying other physical interface types, the naming notation is *rack/slot/module/port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the modular services card or line card.

- *module*: Module number. A physical layer interface module (PLIM) is always 0. Shared port adapters (SPAs) are referenced by their subslot number.
  - *port*: Physical port number of the T3 controller.
  - *t1-num* : T1 or E1 channel number. T1 channels range from 1 to 24; E1 channels range from 1 to 31.
  - *channel-group-number* : Time slot number. T1 time slots range from 1 to 24; E1 time slots range from 1 to 31. The *channel-group-number* is preceded by a colon and not a slash.
- If specifying a virtual interface, the number range varies, depending on interface type.

**Task ID**

Task ID	Operations
netflow	read, write

**Examples**

This example shows how to configure a physical interface as a source for the current collector:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# source GigabitEthernet 0/1/0/0
```

This example shows how to configure a virtual interface as a source for the current collector. In this example, the source is an Ethernet bundle:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# source Bundle-Ether 1
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data
<a href="#">show flow exporter-map, on page 40</a>	Displays flow exporter map information for a specific node.



# template (NetFlow)

To configure the export timeout value for the data and options templates, enter the **template** command in flow exporter map version configuration mode. To remove a configured template export timeout value, use the **no** form of this command.

**template** [**data**| **options**] **timeout** *seconds*

**no template** [**data**| **options**] **timeout** *seconds*

## Syntax Description

<b>data</b>	(Optional) Specifies the data template.
<b>options</b>	(Optional) Specifies the options template.
<b>timeout</b> <i>seconds</i>	Configures the timeout value for the specified template, or for both the data and options templates. Replace <i>seconds</i> with the export timeout value. Range is from 1 through 604800 seconds.

## Command Default

Default timeout value for data and options template is 1800 seconds.

## Command Modes

Flow exporter map version configuration

## Command History

Release	Modification
Release 3.3.0	This command was introduced.

## Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

## Task ID

Task ID	Operations
netflow	read, write

## Examples

This example shows how to configure the export timeout value for the data template to be 300 seconds:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map fem1
```

```
RP/0/0/CPU0:router(config-fem)# version v9  
RP/0/0/CPU0:router(config-fem-ver)# template data timeout 300
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data
<a href="#">show flow exporter-map, on page 40</a>	Displays flow exporter map information for a specific node.

## transport udp

To configure the destination port for User Datagram Protocol (UDP) packets, enter the **transport udp** command in flow exporter map configuration mode. To remove a configured destination port, use the **no** form of this command.

**transport udp** *port\_value*

**no transport udp** *port\_value*

### Syntax Description

<i>port_value</i>	Destination port for UDP packets. Replace <i>port</i> with the destination port value. Range is from 1024 through 65535.
-------------------	--

### Command Default

None

### Command Modes

Flow exporter map configuration

### Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	This command was moved to the flow exporter map configuration mode.

### Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

### Task ID

Task ID	Operations
netflow	read, write

### Examples

This example shows how to configure the destination port for UDP packets:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# transport udp 1030
```

**Related Commands**

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data
<a href="#">show flow exporter-map, on page 40</a>	Displays flow exporter map information for a specific node.

## version v9

To enter flow exporter map version configuration submode so that you can configure export version parameters, enter the **version v9** command in flow exporter map configuration mode. To remove the current export version configuration and return to the default configuration, use the **no** form of this command.

**version v9**

**no version v9**

**Syntax Description** This command has no keywords or arguments.

**Command Default** None

**Command Modes** Flow exporter map configuration

Command History	Release	Modification
	Release 3.3.0	This command was introduced.

**Usage Guidelines** To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **version v9** command, the CLI prompt changes to “config-fem-ver,” indicating that you have entered flow exporter map version configuration submode. In this sample output, the question mark ( ? ) online help function displays all the commands available under flow exporter map version configuration submode:

```
RP/0/0/CPU0:router(config-fem)# version v9
RP/0/0/CPU0:router(config-fem-ver)#?

clear      Clear the uncommitted configuration
commit     Commit the configuration changes to running
describe   Describe a command without taking real actions
do         Run an exec command
exit       Exit from this submode
no         Negate a command or set its defaults
options    Specify export of options template
pwd        Commands used to reach current submode
root       Exit to the global configuration mode
show       Show contents of configuration
template   Specify template export parameters
```

Task ID	Operations
netflow	read, write

## Examples

This example shows how to enter flow exporter map version configuration submode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# flow exporter-map map1
RP/0/0/CPU0:router(config-fem)# version v9
RP/0/0/CPU0:router(config-fem-ver)#
```

## Related Commands

Command	Description
<a href="#">flow exporter-map, on page 21</a>	Creates a flow exporter map
<a href="#">flow monitor-map, on page 23</a>	Creates and configures a flow monitor map
<a href="#">show flow exporter, on page 37</a>	Displays flow exporter data
<a href="#">show flow exporter-map, on page 40</a>	Displays flow exporter map information for a specific node.