



## **Cisco IOS Media Monitoring Command Reference**

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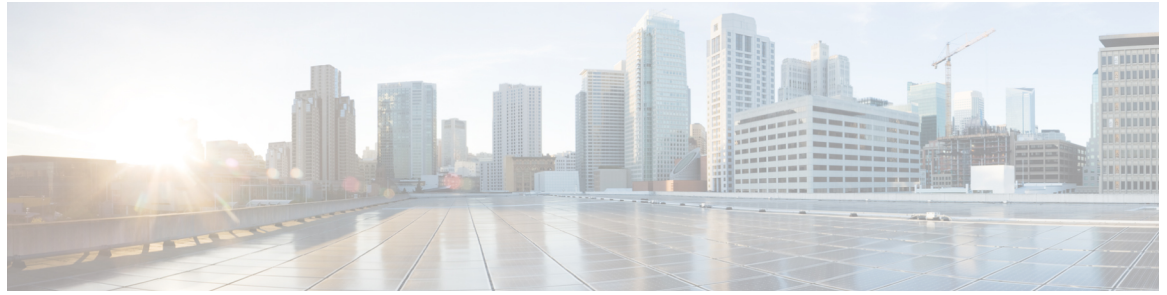
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# admin-params

To configure administrator parameters for a Mediatrace performance monitoring profile, use the **admin-params** command in monitoring profile configuration mode. To return to the default setting, use the **no** form of this command.

**admin-params**

**no admin-params**

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

**Command Modes** Monitoring profile configuration (config-mt-prof-perf)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** This command enters admin parameters configuration mode and enables you to configure administrator parameters for a performance monitoring profile. You can configure the sampling interval.

**Examples** The following example shows how to configure administrator parameters for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# admin-params
Router(config-mt-prof-perf-params)#sampling-interval 10
```

Related Commands	Command	Description
	<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# clear mediatrace incomplete-sessions

To clear ongoing Mediatrace polls, use the **clear mediatrace incomplete-sessions** command in privileged EXEC mode.

**clear mediatrace incomplete-sessions**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

This command clears ongoing Mediatrace polls. This command must be entered in different session.

## Examples

The following example clears incomplete Mediatrace sessions:

```
Router# clear mediatrace incomplete-sessions
```

## Related Commands

Command	Description
<b>mediatrace schedule</b>	Schedules Mediatrace sessions.

## clock-rate (RTP parameters)

To configure the clock rate for samples taken of Real-Time Transport Protocol (RTP) metrics for a Mediatrace performance monitoring profile, use the **clock-rate** command in RTP parameters configuration mode. To return to the default setting, use the **no** form of this command.

**clock-rate** {*type-number*| *type-name*| **default**} *rate*

**no clock-rate** {*type-name*| **default**}

### Syntax Description

<i>type-number</i>	An integer between 0 and 34. This value is compared with the payload type field in the RTP header. Values between 0 and 23 are reserved for audio streams, and values between 24 and 34 are reserved for video streams.
<i>type-name</i>	The name of the payload type field in the RTP header.
<i>rate</i>	Clock rate in Hz. The range is from 9600 to 124000.

### Command Default

The clock rate is set to 96000 Hz

### Command Modes

RTP parameters configuration (config-mt-prof-perf-rtp-params)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

Each payload type has a specific clock rate associated with it. However, because the clock rate can vary depending on the payload codec type, a keyword is provided to set the expected clock rate.

The available values for *type-name* and *type-number* are celb (25), cn (13), dvi4 (5) (8000 Hz as described in RFC 3551, RTP Profile for Audio and Video Conferences with Minimal Control), dvi4-2 (6) (8000 Hz as described in RFC 3551), dvi4-3 (16) (DVI4 Dipol 11025 Hz), dvi4-4 (17) DVI4 Dipol 22050 Hz), g722 (9), g723 (4), g728 (15), g729 (18), gsm (3), h261 (31), h263 (34), jpeg (26), l16 (11) (L16 channel 1), l16-2 (10) (L16 channel 2), lpc (7), mp2t (33), mpa (14), mpv (32), nv (28), pcma (8), pcmu (0), qcelp (12).

**Examples**

The following example shows how to configure the clock rate for a performance monitoring profile:

```
Router(config)#  
mediatrace profile perf-monitor  
v-mon-4  
Router(config-mt-prof-perf)# metric-list rtp  
Router(config-mt-prof-perf-rtp-params)#clock-rate gsm 10000
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.



## dest-ip (flow)

To configure the IP address of the destination node for the flow, use the **dest-ip** command in flow configuration mode. To remove the configuration for the destination node, use the **no** form of this command.

**dest-ip** *ip-address* **dest-port** *port*

**no dest-ip** *ip-address*

### Syntax Description

<i>ip-address</i>	IP address of the destination node for the flow.
<b>dest-port</b> <i>port</i>	Specifies the port number of the destination node for the flow.

### Command Default

No destination node for the flow is configured.

### Command Modes

Flow configuration (config-mt-flowspec)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

When specifying the IP address of the destination node for the flow, you must also specify the port number.

### Examples

The following example shows how to configure the IP address of the destination node for the flow:

```
Router(config)#
mediatrace
  flow-specifier f
low
-4
Router(config-mt-flowspec)# dest-ip 10.10.10.4 dest-port 4800
```

### Related Commands

Command	Description
<b>mediatrace flow-specifier</b>	Configures Mediatrace flow specifier.

## frequency (session parameters)

To configure the interval between samples taken of metrics, use the **frequency** command in session parameters configuration mode. To return to the default setting, use the **no** form of this command.

**frequency** *{frequency| on-demand}* **inactivity-timeout** *seconds*

**no frequency**

### Syntax Description

<i>frequency</i>	Interval, in seconds, between samples taken of metrics. The range is 10 to 3000.
<b>on-demand</b>	Take samples only when the <b>mediatrace poll</b> command is entered.
<b>inactivity-timeout</b> <i>seconds</i>	Specifies the number of seconds the Mediatrace Responder will wait without any requests from the Initiator. The range is 1 to 10800.

### Command Default

The frequency is set to 120 seconds The inactivity-timeout is set to 360 seconds.

### Command Modes

Session parameters configuration (config-mt-sesparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The value of the inactivity-timeout should be three times the value of the frequency.

### Examples

The following example shows how to configure the frequency for a session parameters:

```
Router(config)#
mediatrace session-params
sess-4
Router(config-mt-sesparam)# frequency 20 inactivity-timeout 20
```

**Related Commands**

Command	Description
mediatrace session-params	Configures parameters for Mediatrace sessions.

# gsid

To configure the metadata global session identifier (GSID) for a Mediatrace flow-specifier, use the **gsid** command in flow configuration mode. To remove the GSID, use the **no** form of this command.

**gsid** *gsid*

**no gsid** *gsid*

## Syntax Description

<i>gsid</i>	Metadata global session identifier (GSID) for a Mediatrace flow-specifier.
-------------	--

## Command Modes

Flow configuration (config-mt-flowspec)

## Command History

Release	Modification
15.2(2)S	This command was introduced.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T.
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S.

## Usage Guidelines

The GSID has a maximum length of 25 characters.

## Examples

The following example shows how to configure the IP address of the source node for the flow:

```
Router(config)# mediatrace flow-specifier flow-4
Router(config-mt-flowspec)# gsid 1234
```

## Related Commands

Command	Description
<b>mediatrace flow-specifier</b>	Configures Mediatrace flow specifier.

## history (session parameters)

To configure the number of history buckets retained for metrics collected for a Mediatrace session, use the **history** command in session parameters configuration mode. To return to the default setting, use the **no** form of this command.

**history data-sets-kept** *buckets*

**no history data-sets-kept**

### Syntax Description

<b>data-sets-kept</b> <i>buckets</i>	Number of history buckets retained. The default is 3. The maximum value is 10.
--------------------------------------	--

### Command Default

The number of history buckets retained is set to three.

### Command Modes

Session parameters configuration (config-mt-sesparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The maximum number of history buckets allowed is 10.

### Examples

The following example shows how to configure the number of history buckets retained for a session parameters:

```
Router(config)#
mediatrace
session-params sess-4
Router(config-mt-sesparam)# history data-sets-kept 1
```

### Related Commands

Command	Description
<b>mediatrace session-params</b>	Configures parameters for Mediatrace sessions.

## ip protocol (flow)

To specify which metrics are monitored for a Mediatrace flow-specifier or path-specifier profile, use the **ip-p protocol** command in flow configuration mode. To return to the default setting, use the **no** form of this command.

**ip-protocol** {tcp|udp}

**no ip-protocol**

### Syntax Description

<b>tcp</b>	Specifies that TCP metrics are monitored.
<b>udp</b>	Specifies that UDP metrics are monitored.

### Command Default

The UDP metrics are monitored.

### Command Modes

Flow configuration (config-mt-flowspec)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

If no protocol is specified, UDP metrics are monitored.

### Examples

The following example shows how to specify that UDP metrics are monitored for a flow-specifier profile:

```
Router(config)# mediatrace flow-specifier flow-4
Router(config-mt-flowspec)# ip-protocol tcp
```

### Related Commands

Command	Description
<b>mediatrace flow-specifier</b>	Configures Mediatrace flow specifier.

# l2-params gateway

To configure the IP address and ID of the virtual LAN of the level-2 gateway for a Mediatrace path-specifier profile, use the **monitor-interval** command in path configuration mode. To remove the configuration, use the **no** form of this command.

**l2-params gateway** *ip-address* **vlan** *vlan-id*

**no l2-params gateway** *ip-address* **vlan** *vlan-id*

## Syntax Description

<i>ip-address</i>	IP address of the level-2 gateway.
<b>vlan</b> <i>vlan-id</i>	ID of the virtual LAN of the level-2 gateway.

## Command Default

No level-2 gateway is configured.

## Command Modes

Path configuration (config-mt-path)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
15.0(1)SY	This command was integrated into Cisco IOS Release 15.0(1)SY.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T.

## Usage Guidelines

This command is available only Catalyst platforms.

## Examples

The following example shows how to configure the IP address and ID of the virtual LAN of the level-2 gateway for a Mediatrace path-specifier profile:

```
Router(config)#
mediatrace path-specifier path-4
Router(config-mt-path)# l2-params gateway 10.10.10.4 vlan 22
```

## Related Commands

Command	Description
<b>mediatrace path-specifier</b>	Configures Mediatrace path-specifier profiles.

# max-dropout

To configure the maximum number of dropouts allowed when sampling Real-Time Transport Protocol (RTP) metrics for a Mediatrace performance monitoring profile, use the **max-dropout** command in RTP parameters configuration mode. To return to the default setting, use the **no** form of this command.

**max-dropout** *number*

**no max-dropout**

## Syntax Description

<i>number</i>	Maximum number of allowed dropouts. The default is 10. The maximum value is 20.
---------------	---

## Command Default

The maximum number of allowed dropouts is set to 10.

## Command Modes

RTP parameters configuration (config-mt-prof-perf-rtp-params)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

The definition of maximum dropouts is the maximum number of packets to ignore ahead the current packet in terms of sequence number.

## Examples

The following example shows how to configure the maximum number of allowed dropouts for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# metric-list rtp
Router(config-mt-prof-perf-rtp-params)# max-dropout 4
```

## Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.



# max-reorder

To configure the maximum number of reorders allowed when sampling Real-Time Transport Protocol (RTP) metrics for a Mediatrace performance monitoring profile, use the **max-reorder** command in RTP parameters configuration mode. To return to the default setting, use the **no** form of this command.

**max-reorder** *number*

**no max-reorder**

## Syntax Description

<i>number</i>	Maximum number of allowed reorders. The default is 5. The maximum value is 20.
---------------	--

## Command Default

The maximum number of allowed reorders is set to 5.

## Command Modes

RTP parameters configuration (config-mt-prof-perf-rtp-params)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

The definition of maximum rereorders is the maximum number of packets to ignore behind the current packet in terms of sequence number..The maximum value for the maximum number of allowed reorders is 20.

## Examples

The following example shows how to configure the maximum number of allowed reorders for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# metric-list rtp
Router(config-mt-prof-perf-rtp-params)# max-reorder 4
```

## Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# mediatrace

To configure Mediatrace sessions, use the **mediatrace** command in global configuration mode. To remove Mediatrace sessions, use the **no** form of this command.

**mediatrace** *session-number*

**no mediatrace** *session-number*

## Syntax Description

<i>session-number</i>	ID number of the mediatrace session to configure.
-----------------------	---

## Command Default

No Mediatrace sessions are configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

This command enters Mediatrace session configuration mode and enables you to associate the following Mediatrace profile configurations with the session:

- Path-specifier profile
- Session-params profile
- Flow-specifier profile
- System profile
- Perf-monitor profile

## Examples

The following example shows how to enter Mediatrace session configuration mode:

```
Router(config)# mediatrace
4
```

## Related Commands

Command	Description
<b>mediatrace flow-specifier</b>	Configures the Mediatrace flow-specifier.

<b>Command</b>	<b>Description</b>
<b>mediatrace path-specifier</b>	Configures the Mediatrace path-specifier.
<b>mediatrace profile perf-monitor</b>	Configures the Mediatrace performance monitoring profile.
<b>mediatrace profile system</b>	Configures Mediatrace system profile.
<b>mediatrace session-params</b>	Configures Mediatrace session parameters.

## mediatrace enable provider

To enable network devices to act as a Mediatrace Responder, use the **mediatrace enable provider** command in global configuration mode. To disable a network device acting as a Mediatrace Responder, use the **no** form of this command.

```
mediatrace enable provider {snmp dcm| rtp| [perf-mon| vidmon]} tcp| [perf-mon| vidmon]} system
mediatrace}
```

```
no mediatrace enable provider {snmp dcm| rtp| [perf-mon| vidmon]} tcp| [perf-mon| vidmon]} system
mediatrace}
```

### Syntax Description

<b>snmp dcm</b>	Specifies that an SNMP MIB objects Data Collection Manager (DCM) will be enabled to act as a Mediatrace Responder.
<b>rtp perf-mon</b>	Specifies that a Performance Monitor node running on an ISR or ASR and capable of providing RTP video metrics will be enabled to act as a Mediatrace Responder.
<b>rtp vidmon</b>	Specifies that a Vidmon node running IOS-XR and capable of providing RTP video metrics will be enabled to act as a Mediatrace Responder.
<b>tcp perf-mon</b>	Specifies that a Performance Monitor node running on an ISR or ASR and capable of providing TCP video metrics will be enabled to act as a Mediatrace Responder.
<b>tcp vidmon</b>	Specifies that a Vidmon node running IOS-XR and capable of providing TCP video metrics will be enabled to act as a Mediatrace Responder.
<b>system mediatrace</b>	Specifies that a Mediatrace system node will be enabled to act as a Mediatrace Responder.

### Command Default

No additional network devices will be enabled to act as a Mediatrace Responder.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
15.3(1)T	This command was introduced.

**Usage Guidelines**

This allows you to enable addition nodes to act as Mediatrace Responder No Mediatrace services are available until you have configured at least one Mediatrace Responder. Before you can use Mediatrace, you must also issue the **mediatrace initiator** command on one of the nodes in the media path and issue this command on all nodes that you want to support Mediatrace.

**Examples**

The following example shows how to enable a Vidmon node running IOS-XR and capable of providing RTP video metrics to act as a Mediatrace Responder.

```
Router(config)# mediatrace enable provider rtp vidmon
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## mediatrace enable tag

To enable a Mediatrace tag, use the **mediatrace enable tag** command in global configuration mode. To disable a Mediatrace tag, use the **no** form of this command.

**mediatrace enable tag** *name*

**no mediatrace enable tag** *name*

### Syntax Description

<i>name</i>	Specifies the name of the Mediatrace tag to enable.
-------------	---

### Command Default

No Mediatrace tags are enabled.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
15.3(1)T	This command was introduced.

### Usage Guidelines

Mediatrace tags are used to specify a group of metrics that will be collected when this command is used to enable the tag.

### Examples

The following example shows how to enable a Mediatrace tag.

```
Router(config)# mediatrace enable tag linux
```

### Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# mediatrace initiator

To enable the Mediatrace Initiator, use the **mediatrace initiator** command in global configuration mode. To disable the Mediatrace Initiator, use the **no** form of this command.

**mediatrace initiator source-ip** *ip-address* [**force**] [**max-sessions** *number*]  
**no mediatrace initiator** [**force**]

## Syntax Description

<b>source-ip</b> <i>ip-address</i>	Specifies the IP address to use for the Mediatrace Initiator.
<b>force</b>	(Optional) Forces mediatrace to be disabled.
<b>max-sessions</b> <i>number</i>	(Optional) Sets the maximum number of Mediatrace sessions.

## Command Default

The Mediatrace Initiator is disabled. When the Mediatrace Initiator is enabled, the maximum number of mediatrace sessions is set to 20.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

Mediatrace Initiator is disabled by default. Therefore, no Mediatrace services are available until you issue this command for the Mediatrace Initiator. Before you can use Mediatrace, you must issue this command on one of the nodes in the media path and issue the **mediatrace responder** command on all nodes that you want to support Mediatrace.



### Tip

When you enable the Mediatrace Initiator, you must specify an address on a local interface.

You can also use this command to set the maximum sessions that can be started by the Mediatrace Initiator. The upper limit for the maximum number of mediatrace sessions is platform-dependant.

**Examples**

The following example shows how to enable the Mediatrace Initiator on the local interface with an IP address of 10.10.2.2:

```
Router(config)# mediatrace  
          initiator source-ip 10.10.2.2
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.



# mediatrace flow-specifier

To configure the flow-specifier profile for Mediatrace, use the **mediatrace flow-specifier** command in global configuration mode. To remove the flow-specifier profile, use the **no** form of this command.

**mediatrace flow-specifier** *name*

**no mediatrace flow-specifier** *name*

## Syntax Description

<i>name</i>	Name of the flow-specifier profile.
-------------	-------------------------------------

## Command Default

No flow-specifier profile is configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

The command defines the source IP address, destination IP address, source port, destination port, and protocol that identifies a flow. You can then associate a profile with one or more Cisco Mediatrace sessions later when you configure it.

## Examples

The following example shows how to configure the flow-specifier profile for Mediatrace:

```
Router(config)# mediatrace file-specifier fs-4
Router(config-mt-flowspec)# source-ip 10.1.1.2 source-port 600
Router(config-mt-flowspec)# dest-ip 10.2.2.2 dest-port 400
Router(config-mt-flowspec)# ip-protocol tcp
```

## Related Commands

Command	Description
<b>mediatrace</b>	Configures Mediatrace sessions.

## mediatrace path-specifier

To configure the path-specifier profile for Mediatrace, use the **mediatrace path-specifier** command in global configuration mode. To remove the path specifier profile, use the **no** form of this command.

```
mediatrace path-specifier name [disc-proto rsvp] {gsid gsid| destination-ip ip-address[port number]}
no mediatrace path-specifier name
```

### Syntax Description

<i>name</i>	Name of the path-specifier profile.
<b>disc-proto rsvp</b>	(Optional) Specifies that RSVP is used as the discovery protocol for the path.
<b>destination -ip</b> <i>ip-address</i>	Specifies on the destination address for the path.
<b>port</b> <i>number</i>	(Optional) Specifies on the destination port for the path.
<b>gsid</b> <i>gsid</i>	Specifies on the Global Session Identifier (GSID) for the path.

### Command Default

No path-specifier profile is configured.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T with the addition of the <b>gsid</b> keyword.
15.2(2)S	This command was integrated into Cisco IOS Release 15.2(2)S with the addition of the <b>gsid</b> keyword.
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S with the addition of the <b>gsid</b> keyword.

**Usage Guidelines**

After using this command to enter path configuration mode, you can configure the source address and port of the path.

You can associate a path-specifier profile with one or more actual Mediatrace sessions when they are configured.

**Examples**

The following example shows how to configure a path-specifier profile with a destination address of 10.10.2.8:

```
Router(config)# mediatrace  
path-specifier path-2 destination ip 10.10.2.8
```

**Related Commands**

Command	Description
<b>mediatrace</b>	Configures Mediatrace sessions.

# mediatrace poll

To perform an on-demand fetch of data, use the **mediatrace poll** command in privileged EXEC mode.

```
mediatrace poll {no-traceroute| session number| [timeout value] path-specifier {name path-name| gsid gsid| [disc-proto rsvp] destination ip-address [port number] source ip-address [port number]destination ip-address [port number] [ip-protocol {tcp| udp}|}} {app-health| hops| system [profile system-profile-name]| [configless] perf-monitor [profile profile-name] } {flow-specifier name| source-ip ipaddress source-port number dest-ip ipaddress dest-port number ip-protocol {tcp| udp}|}}
```

## Syntax Description

<b>no-traceroute</b>	Disables trace route for the Mediatrace poll.
<b>session</b> <i>number</i>	Specifies the session for which to fetch data.
<b>timeout</b> <i>value</i>	(Optional) Specifies the amount of time to wait for a reply.
<b>path-specifier</b>	Fetches data for a specific path.
<b>name</b> <i>path-name</i>	Specifies the path-specifier name for the path for which data is fetched.
<b>gsid</b> <i>gsid</i>	Specifies the metadata global session identifier (GSID) for the path for which to fetch data.
<b>disc-proto</b> <b>rsvp</b>	(Optional) Uses the RSVP transport protocol to perform hop discovery. This is currently the only protocol supported and the default.
<b>destination</b> <i>ip-address</i>	Specifies the destination address for the path for which data is fetched.
<b>port</b> <i>number</i>	Specifies the destination or source port for the path for which data is fetched.
<b>source</b> <i>ip-address</i>	Specifies the source address for the path for which data is fetched.
<b>ip-protocol</b>	(Optional) Specifies the protocol for the path for which data is fetched.
<b>tcp</b>	Fetches data for a TCP flow.
<b>udp</b>	Fetches data for a UDP flow.
<b>app-health</b>	Fetches data on application health.

<b>hops</b>	Fetches data on hops.
<b>system</b>	Fetches data on a system profile
<b>profile</b> <i>system-profile-name</i>	(Optional) Specifies the system profile for which data is fetched.
<b>configless</b>	(Optional) Fetch data from the nodes along a media path, which have existing Performance Monitor policies configured.
<b>perf-monitor</b>	Fetches data on a perf-monitor profile.
<b>flow-specifier</b> <i>-name</i>	Fetches data for a specific flow.
<b>source-ip</b> <i>ipaddress</i>	Specifies the source address of the flow for which data is fetched.
<b>source-port</b> <i>number</i>	(Optional) Specifies the source port of the flow for which data is fetched.
<b>dest-ip</b> <i>ipaddress</i>	Specifies the destination address of the flow for which data is fetched.
<b>dest-port</b> <i>number</i>	(Optional) Specifies the destination port of the flow for which data is fetched.
<b>ip-protocol</b>	(Optional) Specifies the protocol for which data is fetched.

**Command Default** The timeout is 60 seconds.

**Command Modes** Privileged EXEC (#)

<b>Release</b>	<b>Modification</b>
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T with the addition of the <b>gsid</b> keyword.
15.2(2)S	This command was integrated into Cisco IOS Release 15.2(2)S with the addition of the <b>gsid</b> keyword.

Release	Modification
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S with the addition of the <b>gsid</b> keyword.

### Usage Guidelines

For existing Performance Monitor profiles, the minimum value of the timeout allowed will depend on the sampling-interval configured in profile. If default perf-monitor profile is used then default value of sampling-interval is 30 second so minimum timeout value is 60 seconds.

The following examples show some ways you can use the **mediatrace poll** command to perform an on-demand fetch of data from the hops on a specific path:

- To retrieve data using a pre-configured session. In this case, no other parameters have to be specified inline. The pre-configured session must be have the frequency type set to on-demand.
- To retrieve the system data, hop or video monitoring information from hops along the specified path. You can specify the path as a pre-configured path-specifier or an inline path specification, in case you do not have config mode privileges. Note that by default, Cisco Mediatrace tries to configure nodes along the path to report passive monitoring metrics, and then waits for a configurable amount of time before going out again to collect the data.
- The **configless** keyword can be used to fetch data from the nodes along a media path, which already have Performance Monitor policies configured using the Performance Monitor commands. Some key things to keep in mind when fetching data using this method are that:
  - The default perf-monitor profile or associated perf-monitor profile will have a sampling interval. If the sampling interval of the static policy does not match the one in the associated perf-monitor profile, no data is returned.
  - If there is no Performance Monitor policy configured on a Responder node, the Cisco Mediatrace Responder does not try to configure Performance Monitor and simply reports error to the Mediatrace Initiator.

If Cisco Mediatrace is not collecting all of the data that you want:

- Use the **show mediatrace session** command to verify that the intended values are set for the parameters for a specific session or all sessions.
- Use the **show mediatrace responder app-health** command and the **show mediatrace responder sessions** command to determine the status of the nodes being monitored.
- Use the **debug mediatrace** command to view error messages.

### Examples



#### Note

For examples of poll output, see the end of this section.

The following example shows how to fetch the default system metrics when the source IP address, source port, and destination port are not known. Cisco Mediatrace uses the best local IP address as source IP address to find which hops are using RSVP.

**mediatrace poll path-specifier destination *ip-address* system**

The following example shows how to fetch the default system metrics when the source and destination port numbers are not known. RSVP finds the hop between the specified source and destination.

**mediatrace poll path-specifier source *ip-address* destination *ip-address* system**

The following example shows how to fetch the default system metrics when the source and destination port numbers are known. RSVP finds the hop using this information.

**mediatrace poll path-specifier source *ip-address* port *number* destination *ip-address* port *number* ip-protocol udp system**

The following example shows how to fetch the default set of RTP metrics. Cisco Mediatrace uses the path parameters to discover hops and uses the inline flow specifier profile as a filter for Performance Monitor data.

**mediatrace poll path-specifier source *ip-address* destination *ip-address* perf-monitor source-ip *ip-address* source-port *number* dest-ip *ip-address* dest-port *number* ip-protocol udp**

The following example shows how to fetch the default set of TCP metrics. Cisco Mediatrace uses the path parameters to discover hops and uses the inline flow-specifier profile as a filter for Performance Monitor data.

**mediatrace poll path-specifier source *ip-address* destination *ip-address* perf-monitor source-ip *ip-address* source-port *number* dest-ip *ip-address* dest-port *number* ip-protocol tcp**

The following example shows how to fetch the default set of RTP metrics. Cisco Mediatrace uses the best local IP address as source IP address for finding hops on the path and uses the inline flow specifier profile as a filter for Performance Monitor data.

**mediatrace poll path-specifier destination *ip-address* perf-monitor source-ip *ip-address* source-port *number* dest-ip *ip-address* dest-port *number* ip-protocol udp**

The following example shows how to fetch the default set of TCP metrics. Cisco Mediatrace uses the best local IP address as source IP address for finding hops on the path and uses the inline flow-specifier profile as a filter for Performance Monitor data.

**mediatrace poll path-specifier destination *ip-address* perf-monitor source-ip *ip-address* source-port *number* dest-ip *ip-address* dest-port *number* ip-protocol tcp**

The following example shows how to fetch the default set of RTP metrics from an existing static policy configured on the Responders. This command does not configure the Performance Monitor, so for more information, see [Configuring Performance Monitor](#). Cisco Mediatrace uses the path parameters to discover hops and use the inline flow specifier profile as a filter for Performance Monitor data.

**mediatrace poll path-specifier source *ip-address* destination *ip-address* configless perf-monitor flow-specifier source *ip-address* port *number* dest *ip-address* port *number* ip-protocol udp**

This example shows the output is produced by the following hops poll command:

```
mediatrace poll path-specifier source 10.10.130.2 destination 10.10.132.2 hops
Started the data fetch operation.
Waiting for data from hops.
This may take several seconds to complete...
Data received for hop 1
Data received for hop 2
Data fetch complete.
Results:
Data Collection Summary:
  Request Timestamp: 22:47:56.788 PST Fri Oct 29 2010
  Request Status: Completed
  Number of hops responded (includes success/error/no-record): 2
  Number of hops with valid data report: 2
  Number of hops with error report: 0
  Number of hops with no data record: 0
Detailed Report of collected data:
  Number of Mediatrace hops in the path: 2
  Mediatrace Hop Number: 1 (host=responder1, ttl=254)
```

```
Reachability Address: 10.10.12.3
Ingress Interface: Gi0/1
Egress Interface: Gi0/2
Mediatrace Hop Number: 2 (host=responder2, ttl=253)
Reachability Address: 10.10.34.3
Ingress Interface: Gi0/1
Egress Interface: Gi0/2
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.



# mediatrace profile perf-monitor

To configure a Mediatrace performance monitoring profile, use the **mediatrace profile perf-monitor** command in global configuration mode. To remove a performance monitoring profile, use the **no** form of this command.

**mediatrace profile perf-monitor** *name*

**no mediatrace profile perf-monitor** *name*

## Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

## Command Default

No Mediatrace performance monitoring profile is configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

After using this command to enter perf-prof configuration mode, you can configure the following optional parameters:

- Sampling interval
- Clock rate
- Maximum number of dropouts
- Maximum number of reorders
- Minimum number of sequential errors

You can associate a performance monitoring profile with one or more actual Mediatrace sessions when they are configured.

The following example shows how to configure a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# metric-list rtp
Router(config-mt-prof-perf-rtp-params)# clock-rate 84
Router(config-mt-prof-perf-rtp-params)# max-dropout 2
Router(config-mt-prof-perf-rtp-params)# max-reorder
```

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```
Router(config-mt-prof-perf-rtp-params)# min-sequential 2
Router(config-mt-prof-perf-rtp-params)# exit
Router(config-mt-prof-perf)# admin-params
Router(config-mt-prof-perf-params)# sampling-interval 20
```

**Related Commands**

Command	Description
<b>mediatrace flow-specifier</b>	Configures Mediatrace flow specifier.

# mediatrace profile snmp

To configure an SNMP profile, use the **mediatrace profile snmp** command in global configuration mode. To remove an SNMP profile, use the **no** form of this command.

**mediatrace profile snmp** *name*

**no mediatrace profile snmp** *name*

## Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

## Command Default

No Mediatrace SNMP profile is configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.3(1)T	This command was introduced.

## Usage Guidelines

After using this command to enter system-data profile configuration mode and you can configure a list of SNMP objects to be monitored:

You can associate an SNMP profile with one or more actual Mediatrace sessions when they are configured.

## Examples

The following example shows how to configure an SNMP profile:

```
Router(config)# mediatrace profile snmp snmp-2
Router(config-mt-prof-snm) # object-list tag ios
Router(config-mt-prof-obj-list) # add ifDescr
Router(config-mt-prof-obj-list) # add ifType
Router(config-mt-prof-obj-list) # exit
Router(config-mt-prof-snm) # instance-list
Router(config-mt-prof-inst-list) # range start 1 end 5
Router(config-mt-prof-inst-list) # range 7 end 10
```

## Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# mediatrace profile system

To configure a system-data monitoring profile, use the **mediatrace profile system** command in global configuration mode. To remove a system profile, use the **no** form of this command.

**mediatrace profile system** *name*

**no mediatrace profile system** *name*

## Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

## Command Default

No Mediatrace system-data profile is configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

After using this command to enter system-data profile configuration mode, you can configure which of the following types of system data are monitored:

- Interface
- CPU
- Memory

You can associate a system-data monitoring profile with one or more actual Mediatrace sessions when they are configured.

## Examples

The following example shows how to configure a system-data monitoring profile:

```
Router(config)# mediatrace profile system system-8
Router(config-sys-prof)# metric-list CPU MEMORY
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# mediatrace responder

To enable the Mediatrace Responder, use the **mediatrace responder source-ip** *ip-address* command in global configuration mode. To disable the Mediatrace Responder, use the **no** form of this command.

**mediatrace responder source-ip** *ip-address* [**max-sessions** *number*]

**no mediatrace responder source-ip** *ip-address*

## Syntax Description

<b>source-ip</b> <i>ip-address</i>	Specifies on which node to enable the mediatrace initiator.
<b>max-sessions</b> <i>number</i>	(Optional) Sets the maximum number of Mediatrace sessions.

## Command Default

The Mediatrace Responder are disabled. The maximum number of mediatrace sessions is set to 20.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

Mediatrace Responder is disabled by default. Therefore, no Mediatrace services are available until you issue this command for the Mediatrace Responder. Before you can use Mediatrace, you must issue the **mediatrace initiator** command on one of the nodes in the media path and issue this command on all nodes that you want to support Mediatrace.

You can also use this command to set the maximum sessions that can be used by the Mediatrace Responder. The upper limit for the maximum number of mediatrace sessions is platform-dependant.

## Examples

The following example shows how to enable the Mediatrace Responder on a node with an IP address of 10.10.10.4:

```
Router(config)# mediatrace
responder max-sessions 12
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## mediatrace schedule

To configure when a Mediatrace session will occur, use the **mediatrace schedule** command in global configuration mode. To remove a Mediatrace schedule, use the **no** form of this command.

**mediatrace schedule** *session ID* [**life** {**forever**|*seconds*}] [**start-time** {*hh : mm [: ss]* [*month day*|*day month*]}|**pending**|**now**|**after** *hh : mm : ss*}] [**ageout** *seconds*] [**recurring**]

**no mediatrace schedule** *session ID*

### Syntax Description

<i>session ID</i>	ID number of the session to schedule.
<b>life</b>	Specifies how long the session schedule will last.
<b>forever</b>	(Optional) Specifies that the session schedule will last forever.
<i>seconds</i>	(Optional) Number of seconds the session schedule will last.
<b>start-time</b>	(Optional) Specifies when the session schedule will start.
<i>hh :mm:ss</i>	(Optional) Time of day the session schedule will start.
<i>month day</i>	(Optional) Date that the session schedule will start.
<i>day month</i>	(Optional) Date that the session schedule will start.
<b>pending</b>	(Optional) Specifies that the start time of the session schedule is pending.
<b>now</b>	(Optional) Specifies that the session schedule will start now.
<b>after</b>	(Optional) Specifies that the session schedule will end at the specified time.
<b>ageout</b>	(Optional) Specifies that the session schedule will stop after the specified number of seconds.
<b>recurring</b>	(Optional) Specifies that the session schedule will recur.

### Command Default

No schedule is specified for the session and it is in the pending state.



**Command Modes** Global configuration (config)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Examples** The following example shows how to configure a session schedule that will start now and last 60 seconds:

```
Router(config)# mediatrace schedule 22 life 60 now
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>mediatrace</b> <i>session-number</i>	Configures a Mediatrace session.

# mediatrace session-params

To configure session-parameters, use the **mediatrace session-params** command in global configuration mode. To remove the session-parameters configuration, use the **no** form of this command.

**mediatrace session-params** *name*

**no mediatrace session-params** *name*

## Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

## Command Default

No session-parameters profile is configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

After using this command to enter session-parameters configuration mode, you can configure the following parameters:

- Sampling frequency
- Inactivity timeout
- Number of historical data sets kept
- Response timeout
- Route change reaction time

You can associate a session-parameters profile with one or more actual Mediatrace sessions when they are configured.

## Examples

The following example shows how to configure a session-parameters profile:

```
Router(config)# mediatrace session-params session-4
Router(config-mt-sesparam)# frequency 20 inactivity-timeout 40
Router(config-mt-sesparam)# history data-sets-kept 2
Router(config-mt-sesparam)# response-timeout 20
Router(config-mt-sesparam)# route-change reaction-time 4
```

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## metric-list (monitoring profile)

To specify monitoring parameters for a Mediatrace performance monitoring profile, use the **metric-list** command in monitoring profile configuration mode. To return to the default setting, use the **no** form of this command.

**metric-list** {tcp| rtp}

**no metric-list** {tcp| rtp}

### Syntax Description

<b>tcp</b>	Configures monitoring parameters for TCP packets.
<b>rtp</b>	Configures monitoring parameters for Real-Time Transport Protocol (RTP) packets.

### Command Default

The RTP metrics are monitored.

### Command Modes

Monitoring profile configuration (config-mt-prof-perf)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

This command specifies whether TCP packet or RTP packet are monitored and enters monitoring parameters configuration mode for a performance monitoring profile. For RTP, you can configure the following parameters:

- Clock rate
- Maximum number of dropouts allowed
- Maximum number of packet allowed to be received out of order
- Minimum number of packets in a sequence used to classify a RTP flow

### Examples

The following example shows how to configure monitoring parameters for RTP packets:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# metric-list rtp
Router(config-mt-prof-perf-rtp-params)# clock-rate 84
Router(config-mt-prof-perf-rtp-params)# max-dropout 2
Router(config-mt-prof-perf-rtp-params)# max-reorder
```

4  
Router(config-mt-prof-perf-rtp-params) # **min-sequential 2**

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## metric-list (system profile)

To specify which metrics are monitored for a Mediatrace system-data profile, use the **metric-list** command in system profile configuration mode. To return to the default setting, use the **no** form of this command.

**metric-list** {**intf**| **cpu**| **memory**}

**no metric-list** {**intf**| **cpu**| **memory**}

### Syntax Description

<b>intf</b>	(Optional) Monitor interface metrics.
<b>cpu</b>	(Optional) Monitor CPU metrics.
<b>memory</b>	(Optional) Monitor memory metrics.

### Command Default

The interface metrics are monitored.

### Command Modes

System profile configuration (config-mt-prof-sys)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

If no metric list is specified, Interface metrics are monitored.

### Examples

The following example shows how to specify that CPU metrics are monitored:

```
Router(config)#
mediatrace profile
system sp-4
Router(config-mt-prof-sys)# metric-list cpu
```

### Related Commands

Command	Description
<b>mediatrace profile system</b>	Configures Mediatrace system profiles.

# min-sequential

To configure the minimum number of packets in a sequence used to classify a Real-Time Transport Protocol (RTP) flow for a Mediatrace performance monitoring profile, use the **min-sequential** command in RTP parameters configuration mode. To return to the default setting, use the **no** form of this command.

**min-sequential** *number*

**no min-sequential** *number*

## Syntax Description

<i>number</i>	Minimum number of packets in a sequence used to classify a RTP flow.
---------------	--

## Command Default

The minimum number of packets in a sequence is set to 5.

## Command Modes

RTP parameters configuration (config-mt-prof-perf-rtp-params)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T with a behavior change for Phase 2 of Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS Release 12.2(58)SE with a behavior change for Phase 2 of Performance Monitor.

## Usage Guidelines

For releases that have Phase 2 of Performance Monitor, when the min-sequential value is set to X, a flow is validated as a RTP flow once X packets are received in sequence. For releases that have Phase 1 of Performance Monitor, when the min-sequential value is set to X, a flow is validated as a RTP flow once X+1 packets are received in sequence.

The maximum value for the minimum number of packets in a sequence used to classify a RTP flow is 10.

## Examples

The following example shows how to configure the minimum number of packets in a sequence used to classify a RTP flow for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
```

```
Router(config-mt-prof-perf)# metric-list rtp  
Router(config-mt-prof-perf-rtp-params)# min-sequential 4
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.



# monitor-interval

To configure the interval, in seconds, between samples taken of metrics for a Mediatrace performance monitoring profile, use the **monitor-interval** command in admin parameters configuration mode. To return to the default setting, use the **no** form of this command.

**monitor-interval** *seconds*

**no monitor-interval** *seconds*

## Syntax Description

<i>seconds</i>	Number of seconds between samples taken of metrics.
----------------	---

## Command Default

The sampling interval is set to 30 minutes.

## Command Modes

Admin parameters configuration (config-mt-prof-perf-params)

## Command History

Release	Modification
15.2(3)T	This command was introduced.
15.2(2)S	This command was integrated into Cisco IOS Release 15.2(2)S.
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S.

## Usage Guidelines

The sampling interval can be set to a maximum of 30 minutes.

## Examples

The following example shows how to configure the sampling interval for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor v-mon-4
Router(config-mt-prof-perf)# admin-params
Router(config-mt-prof-perf-params)# monitor-interval 10
```

## Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## path-specifier

To associate a Mediatrace path-specifier profile with a Mediatrace session, use the **path-specifier** command in session configuration mode. To remove the association, use the **no** form of this command.

**path-specifier** {*path*| **forward** *path*| **reverse** *path*| **bi** *f-path* *r-path*}

**no path-specifier** {*path*| **forward** *path*| **reverse** *path*| **bi** *f-path* *r-path*}

### Syntax Description

<i>path</i>	Name used to identify the path-specifier profile.
<b>forward</b> <i>path</i>	Specifies the name of the forward path-specifier profile to associate with a Mediatrace session.
<b>reverse</b> <i>path</i>	Specifies the name of the reverse path-specifier profile to associate with a Mediatrace session.
<b>bi</b> <i>f-path</i> <i>r-path</i>	Specifies the name of the forward and reverse path-specifier profiles to associate with a Mediatrace session.

### Command Default

No path-specifier profile is configured.

### Command Modes

Session configuration (config-mt-session)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.3(1)T	This command was modified. The <b>forward</b> , <b>reverse</b> , and <b>bi</b> keywords were added.

### Usage Guidelines

You can associate a path-specifier profile with one or more actual Mediatrace sessions.

### Examples

The following example shows how to associate a Mediatrace path-specifier profile to a Mediatrace session:

```
Router(config)# mediatrace 4
Router(config-mt-session)# path-specifier ps
-4
```

**Related Commands**

Command	Description
mediatrace	Configures a Mediatrace session.

## profile perf-monitor

To associate a performance monitoring profile and a flow-specifier profile with a Mediatrace session, use the **profile perf-monitor** command in session configuration mode. To remove the association, use the **no** form of this command.

**profile perf-monitor** *pm-name* **flow-specifier** {*spec* | **forward** *spec* | **reverse** *spec* | **bi** *f-spec* *r-spec*}

**no profile perf-monitor** *pm-name* **flow-specifier** {*spec* | **forward** *spec* | **reverse** *spec* | **bi** *f-spec* *r-spec*}

### Syntax Description

<i>pm-name</i>	Name used to identify the performance monitoring profile to associate with a Mediatrace session.
<b>flow-specifier</b> <i>spec</i>	Specifies the name of the flow-specifier profile to associate with a Mediatrace session.
<b>forward</b> <i>spec</i>	Specifies the name of the forward flow-specifier profile to associate with a Mediatrace session.
<b>reverse</b> <i>spec</i>	Specifies the name of the reverse flow-specifier profile to associate with a Mediatrace session.
<b>bi</b> <i>f-spec</i> <i>r-spec</i>	Specifies the name of the forward and reverse flow-specifier profiles to associate with a Mediatrace session.

### Command Default

No performance monitoring profile is configured.

### Command Modes

Session configuration (config-mt-session)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.3(1)T	This command was modified. The <b>forward</b> , <b>reverse</b> , and <b>bi</b> keywords were added.

### Usage Guidelines

You can associate a performance monitoring profile with one or more actual Mediatrace sessions.

## Examples

The following example shows how to associate a Mediatrace performance monitoring profile to a Mediatrace session:

```
Router(config)# mediatrace 4  
Router(config-mt-session)# profile perf-monitor pm-4 flow-specifier fs-2
```

## Related Commands

Command	Description
<b>mediatrace</b>	Configures a Mediatrace session.

# profile system

To associate a Mediatrace system profile to a Mediatrace session, use the **profile system** command in session configuration mode. To remove the association, use the **no** form of this command.

**profile system** *name*

**no profile system** *name*

## Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

## Command Default

No system profile is configured.

## Command Modes

Session configuration (config-mt-session)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

You can associate a system profile with one or more actual Mediatrace sessions.

## Examples

The following example shows how to associate a Mediatrace system profile to a Mediatrace session:

```
Router(config)# mediatrace 4
Router(config-mt-session)# profile system sprofile-4
```

## Related Commands

Command	Description
<b>mediatrace</b>	Configures a Mediatrace session.

## response-timeout (session parameters)

To configure the number of seconds the Mediatrace Initiator will wait for the Responder to provide metrics, use the **response-timeout** command in session parameters configuration mode. To return to the default setting, use the **no** form of this command.

**response-timeout** *seconds*

**no response-timeout** *seconds*

### Syntax Description

<i>seconds</i>	The number of seconds the Mediatrace Initiator will wait for the Responder to provide metrics.
----------------	--

### Command Default

The response-timeout is set to 60 seconds.

### Command Modes

Session parameters configuration (config-mt-sesparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The maximum value for the response-timeout is 65535 seconds. The response timeout should be less than the frequency.

### Examples

The following example shows how to configure the response-timeout for a session parameters:

```
Router(config)#
mediatrace session-params
sess-4
Router(config-mt-sesparam)# response-timeout 20
```

### Related Commands

Command	Description
<b>mediatrace session-params</b>	Configures parameters for Mediatrace sessions.

## route-change reaction-time

To configure the number of seconds the Mediatrace Initiator will wait for a response to a route change notification, use the **route change** command in session parameters configuration mode. To return to the default setting, use the **no** form of this command.

**route-change reaction-time** *seconds*

**no route-change reaction-time** *seconds*

### Syntax Description

<i>seconds</i>	Number of seconds the Mediatrace Initiator will wait for a response to a route change notification.
----------------	---

### Command Default

The route change reaction time is set to 5 seconds.

### Command Modes

Session parameters configuration (config-mt-sesparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The maximum value for the route change reaction time is 60 seconds.

### Examples

The following example shows how to configure the route change reaction time for a session parameters:

```
Router(config)#
mediatrace session-params
sess-4
Router(config-mt-sesparam)# route-change reaction-time 20
```

### Related Commands

Command	Description
<b>mediatrace session-params</b>	Configures parameters for Mediatrace sessions.



# sampling-interval

To configure the interval, in seconds, between samples taken of metrics for a Mediatrace pre-packaged performance monitoring profile, use the **sampling-interval** command in admin parameters configuration mode. To return to the default setting, use the **no** form of this command.

**sampling-interval** *seconds*

**no sampling-interval** *seconds*

## Syntax Description

<i>seconds</i>	Number of seconds between samples are taken of metrics.
----------------	---

## Command Default

The sampling interval is set to 30 minutes.

## Command Modes

Admin parameters configuration (config-mt-prof-perf-params)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

The sampling interval can set to a maximum of 30 minutes.

## Examples

The following example shows how to configure the sampling interval for a performance monitoring profile:

```
Router(config)#
mediatrace profile perf-monitor
v-mon-4
Router(config-mt-prof-perf)# admin-params
Router(config-mt-prof-perf-params)#sampling-interval 10
```

## Related Commands

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

## session-params

To associate a Mediatrace session-params profile to a Mediatrace session, use the **session-params** command in session configuration mode. To remove the association, use the **no** form of this command.

**session-params** *name*

**no session-params** *name*

### Syntax Description

<i>name</i>	Name used to identify the profile.
-------------	------------------------------------

### Command Modes

Session configuration (config-mt-session)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

You can associate a session-params profile with one or more actual Mediatrace sessions.

### Examples

The following example shows how to associate a Mediatrace session-params profile to a Mediatrace session:

```
Router(config)# mediatrace 4
Router(config-mt-session)# session-params sp
-4
```

### Related Commands

Command	Description
<b>mediatrace</b>	Configures a Mediatrace session.

# show mediatrace flow-specifier

To display the parameters configured for flow-specifier profiles, use the **show mediatrace flow-specifier** command in privileged EXEC mode.

**show mediatrace flow-specifier** [ *name* ]

## Syntax Description

<i>name</i>	(Optional) Name used to identify the profile.
-------------	---

## Command Default

All flow-specifier profiles are displayed.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no flow-specifier profile name is entered with this command, all profiles are displayed.

## Examples

The following example displays flow-specifier profiles:

```
Router# show mediatrace
flow-specifier flow-1
Flow Specifier: flow-1
Source address/port:
Destination address/port:
Protocol: udp
```

The table below describes the significant fields shown in the display.

**Table 1: show mediatrace flow-specifier Field Descriptions**

Field	Description
Flow Specifier	Name assigned to the profile.
Source address/port	Address of the source node.
Destination address/port	Address of the destination node.
Protocol	Whether metrics are collected for TCP or UDP.

**Related Commands**

Command	Description
mediatrace flow-specifier	Configures Mediatrace monitoring flow specifier.

# show mediatrace initiator

To display the parameters configured for the Mediatrace Initiator profile, use the **show mediatrace initiator** command in privileged EXEC mode.

**show mediatrace initiator**

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

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** There is only one Mediatrace Initiator profile that can be displayed.

**Examples** The following example displays the Mediatrace Initiator profile:

```
Router# show mediatrace
  initiator
Version: Mediatrace 1.0
Mediatrace Initiator status: enabled
Source IP: 1.1.1.1
Number of Maximum Allowed Active Session: 127
Number of Configured Session: 1
Number of Active Session      : 0
Number of Pending Session     : 0
Number of Inactive Session    : 1
Note: the number of active session may be higher than max active session
      because the max active session count was changed recently.
```

The table below describes the significant fields shown in the display.

**Table 2: show mediatrace initiator Field Descriptions**

Field	Description
Verion	Version of the Mediatrace software.
Mediatrace Initiator status	Whether the Initiator is enabled.
Source IP	IP address of the Initiator.
Number of Maximum Allowed Active Session	Maximum number of active sessions allowed on the Initiator.

Field	Description
Number of Configured Session	Number of sessions configured on the Initiator.
Number of Active Session	Number of sessions active on the Initiator.
Number of Pending Session	Number of sessions pending on the Initiator.
Number of Inactive Session	Number of inactive sessions on the Initiator.

**Related Commands**

Command	Description
<b>mediatrace path-specifier</b>	Configures Mediatrace monitoring path specifier.

## show mediatrace path-specifier

To display the parameters configured for path-specifier profiles, use the **show mediatrace path-specifier** command in privileged EXEC mode.

```
show mediatrace path-specifier [ name ]
```

### Syntax Description

<i>name</i>	(Optional) Name used to identify the profile.
-------------	---

### Command Default

All path-specifier profiles are displayed.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

If no path-specifier profile name is entered with this command, all profiles are displayed.

### Examples

The following example displays path-specifier profiles:

```
Router# show mediatrace
path-specifier flow-1
Path Configuration: psl
  Destination address/port: 10.10.10.1
  Source address/port: 10.10.10.4
  Gateway address/vlan:
  Discovery protocol: rsvp
```

The table below describes the significant fields shown in the display.

**Table 3: show mediatrace path-specifier Field Descriptions**

Field	Description
Path Configuration	Name of the path-specifier configuration.
Destination address/port	Address of the node at the end of the flow.
Source address/port	Address of the node at the beginning of the flow.

Field	Description
Gateway address/port	Address of the gateway.
Discovery protocol	Protocol used for path discovery.

**Related Commands**

Command	Description
<b>mediatrace path-specifier</b>	Configures Mediatrace monitoring path specifier.



# show mediatrace profile system

To display the parameters configured for system-data profiles, use the **show mediatrace profile system** command in privileged EXEC mode.

**show mediatrace profile system** [ *name* ]

## Syntax Description

<i>name</i>	(Optional) Name used to identify the profile.
-------------	---

## Command Default

All system-data profiles are displayed.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no system-data profile name is entered with this command, all profiles are displayed.

## Examples

The following example displays system-data profiles:

```
Router# show mediatrace profile
system
```

```
System Profile: sys-1
Metric List: intf
```

The table below describes the significant fields shown in the display.

**Table 4: show mediatrace profile system Field Descriptions**

Field	Description
System Profile	Name assigned to the profile.
Metric List	Whether metrics are collected for interfaces, CPUs, or memory.

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# show mediatrace profile perf-monitor

To display the parameters configured for performance monitoring profiles, use the **show mediatrace profile perf-monitor** command in privileged EXEC mode.

**show mediatrace profile perf-monitor** [ *name* ]

## Syntax Description

<i>name</i>	(Optional) Name used to identify the profile.
-------------	---

## Command Default

All performance monitoring profiles are displayed.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no performance monitoring profile name is entered with this command, all profiles are displayed.

## Examples

The following example displays performance monitoring profiles:

```
Router# show mediatrace profile perf-monitor
Perf-monitor Profile: vprof-4
Metric List: rtp
RTP Admin Parameter:
  Max Dropout: 5
  Max Reorder: 5
  Min Sequential: 5
Admin Parameter:
  Sampling Interval (sec): 30
```

The table below describes the significant fields shown in the display.

**Table 5: show mediatrace profile perf-monitor Field Descriptions**

Field	Description
Perf-monitor Profile	Name assigned to the profile.
Metric List	Whether metrics are collected for TCP or Real-Time Transport Protocol (RTP).

Field	Description
Max Dropout	Maximum number of packets to ignore ahead the current packet in terms of sequence number.
Max Reorder	Maximum number of packets to ignore behind the current packet in terms of sequence number.
Min Sequential	Minimum minimum number of packets in a sequence used to classify a RTP flow.
Sampling Interval	Duration of the sampling interval in seconds.

**Related Commands**

Command	Description
<b>mediatrace profile perf-monitor</b>	Configures Mediatrace performance monitoring profiles.

# show mediatrace responder app-health

To display application health information for the Mediatrace Responder, use the **show mediatrace responder app-health** command in privileged EXEC mode.

**show mediatrace responder app-health**

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

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Examples** The following example displays application health information for the Mediatrace Responder:

```
Router# show mediatrace responder app-health
Mediatrace App-Health Stats:
  Number of all requests received: 0
  Time of the last request received:
  Initiator ID of the last request received: 0
  Requests dropped due to queue full: 0
  Responder current max sessions: 45
  Responder current active sessions: 0
  Session down or tear down requests received: 0
  Session timed out and removed: 0
  HOPS requests received: 0
  VM dynamic polling requests received: 0
  VM dynamic polling failed: 0
  VM configless polling requests received: 0
  VM configless polling failed: 0
  SYSTEM data polling requests received: 0
  SYSTEM data polling requests failed: 0
  APP-HEALTH polling requests received: 0
  Route Change or Interface Change notices received: 0
  Last time Route Change or Interface Change:
  Unknown requests received: 0
```

The table below describes the significant fields shown in the display.

**Table 6: show mediatrace respnder app-health Field Descriptions**

Field	Description
Number of all requests received	Number of requests received by the Responder.
Time of the last request received	When the last request received by the Responder.

Field	Description
Initiator ID of the last request received	ID of the Initiator that sent the last request received by the Responder.
Requests dropped due to queue full	Number of requests dropped because the queue was full.
Responder current max sessions	Number of current max sessions on the Responder.
Responder current active sessions	Number of current active sessions on the Responder.
Session down or tear down requests received	Number of session down or tear down requests received by the Responder.
Session timed out and removed	Number of sessions that timed out and were removed by the Responder.
HOPS requests received	Number of HOPS requests received by the Responder.
VM dynamic polling requests received	Number of VM dynamic polling requests received by the Responder.
VM dynamic polling failed	Number of VM dynamic polls that failed.
VM configless polling requests received	Number of VM configless polling requests received by the Responder.
VM configless polling failed	Number of VM configless polls that failed.
SYSTEM data polling requests received	Number of SYSTEM data polling requests received by the Responder.
SYSTEM data polling requests failed	Number of SYSTEM data polling requests that failed.
APP-HEALTH polling requests received	Number of APP-HEALTH polling requests received by the Responder.
Route Change or Interface Change notices received	Number of Route Change or Interface Change notices received by the Responder.
Last time Route Change or Interface Change	When the last time Route Change or Interface Change occurred.
Unknown requests received	Number of Unknown requests received by the Responder.

**Related Commands**

Command	Description
mediatrace session-params	Configures parameters for Mediatrace sessions.

# show mediatrace responder sessions

To display session information for the Mediatrace Responder, use the **show mediatrace responder sessions** command in privileged EXEC mode.

**show mediatrace responder sessions** [*global-session-id*] **brief** **details**]

## Syntax Description

<i>global-session-id</i>	ID of the Mediatrace session for which to display information.
<b>brief</b>	Displays only the destination and source address/port of the path, their role as either Initiator or Responder, and some state information.
<b>details</b>	Displays all session information.

## Command Default

The detailed session information is displayed for the Mediatrace Responder

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no session ID is entered with this command, information for all sessions is displayed.

## Examples

The following example displays brief session information for the Mediatrace Responder:

```
Router# show mediatrace responder sessions brief
Local Responder configured session list:
Current configured max sessions: 45
Current number of active sessions: 0
session-id initiator-name      src-ip      src-port  dst-ip      dst-port
  2  host-18      10.10.10.2    200  10.10.10.8    200
```

The table below describes the significant fields shown in the display.



**Table 7: show mediatrace responder breif sessions Field Descriptions**

Field	Description
Current configured max sessions	Number of maximum sessions curently configured on the Responder.
Current number of active sessions	Number of sessions curently active on the Responder.
session-id	ID of each active session.
initiator-name	Host name of the Initiator for each session.
src-ip	IP address of the source of the flow for each session.
src-port	Port of the source of the flow for each session.
dst-ip	IP address of the destination of the flow for each session.
dst-port	Port of the destination of the flow for each session.

**Related Commands**

Command	Description
<b>mediatrace session-params</b>	Configures parameters for Mediatrace sessions.

# show mediatrace session

To display information for Mediatrace sessions, use the **show mediatrace session** command in privileged EXEC mode.

**show mediatrace session** [**config**| **data**| **hops**| **stats**]

## Syntax Description

<b>config</b>	(Optional) Display configuration information for Mediatrace sessions.
<b>data</b>	(Optional) Display data collected for Mediatrace sessions.
<b>hops</b>	(Optional) Display hop information for Mediatrace sessions.
<b>stats</b>	(Optional) Display statistics for Mediatrace sessions.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T with the expansion of the output to include trace route data.
15.2(2)S	This command was integrated into Cisco IOS Release 15.2(2)S with the expansion of the output to include trace route data.
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S with the expansion of the output to include trace route data.

## Usage Guidelines

You must have at least one active session before most session information can be displayed.

## Examples

The following example displays session configuration information:

```
Router# show mediatrace session config
Session Index: 1
Global Session Id: 0
```

```

-----
Session Details:
  Path-Specifier: ps1
  Session Params: spl
  Collectable Metrics Profile: s1
  Flow Specifier: fsl
Schedule:
  Operation frequency (seconds): 120 (not considered if randomly scheduled)
  Next Scheduled Start Time: Pending trigger
  Group Scheduled : FALSE
  Randomly Scheduled : FALSE
  Life (seconds): 3600
  Entry Ageout (seconds): never
  Recurring (Starting Everyday): FALSE
  Status of entry (SNMP RowStatus): notInService

```

The table below describes the significant fields shown in the display.

**Table 8: show mediatrace session config Field Descriptions**

Field	Description
Session Index	Local ID number of the Mediatrace session.
Global Session Id	Global ID number of the Mediatrace session.
Path-Specifier	Name of the Mediatrace path-specifier associated with this session.
Session Params	Name of the Mediatrace session parameters profile associated with this session.
Collectable Metrics Profile	Name of the Mediatrace collectable metrics profile associated with this session.
Flow Specifier	Name of the Mediatrace flow-specifier associated with this session.
Operation frequency (seconds)	Interval between sessions/
Next Scheduled Start Time	Time that the next session will start.
Group Scheduled	Whether this session is part of a group of scheduled sessions.
Randomly Scheduled	Whether this session is part of a regularly occurring schedule of sessions.
Life (seconds)	Duration of the session.
Entry Ageout (seconds)	Amount of time before entries are removed.
Recurring (Starting Everyday)	Whether this session is part of a recurring schedule of sessions.
Status of entry (SNMP RowStatus)	Status of the SNMP entry.

The following example displays session statistics:

```

Router# show mediatrace session stats
Session Index: 1
Global Session Id: 0
Session Operation State: Inactive
Operation time to live: 0
Data Collection Summary:
  Request Timestamp: *22:32:45.991 IST Tue May 3 2011
  Request Status: Completed
  Trace route status: Completed
  Number of hops responded (includes success/error/no-record): 1
  Number of Non Mediatrace hops responded: 0
  Number of hops with valid data report: 0
  Number of hops with error report: 1
  Number of hops with no data record: 0
Detailed Report of collected data:
  Last Route Change Timestamp:
  Route Index: 0
    Number of Mediatrace hops in the path: 1

    Hop Number: 1 (Mediatrace, host=rt2, ttl=254)
      Metrics Collection Status: Fail (16, Responder missing snmp community string error)
      Reachability Address: 10.1.2.21
      Ingress Interface: Et0/0
      Egress Interface: None
      Metrics Collected:
        <other mediatrace metrics>
      Traceroute data:
        Address List: 10.1.2.21,10.3.4.5 (Note: max 3 nodes)
        Round Trip Time List (msec): 8,6 msec (Note: max 3 RTT)

    Hop Number: 2 (TracerouteNon Mediatrace, host=10.1.4.78, ttl=253)
      Traceroute data:
        Address List: 1.2.2.3
        Round Trip Time List (msec): 12 msec

    Hop Number: 3 (Mediatrace, host=rt2, ttl=252)
      Traceroute data:
        Address List: 1.2.2.4
        Round Trip Time List (msec): 20 msec

```

The table below describes the significant fields shown in the display.

**Table 9: show mediatrace session stats Field Descriptions**

Field	Description
Session Index	Local ID number of the Mediatrace session.
Global Session Id	Global ID number of the Mediatrace session.
Session Operation State	Whether the Mediatrace session is active.
Operation time to live	Timeout value for the Mediatrace session.

Field	Description
Data Collection Summary	<p>Session data, such as:</p> <ul style="list-style-type: none"> <li>• Request Timestamp</li> <li>• Request Status</li> <li>• Trace route status</li> <li>• Number of Mediatrace hops responding, Non Mediatrace hops responding, hops with a valid data report, hops with error report, and hops with no data record.</li> </ul>
Detailed Report of Collected Data	<p>General trace data, such as:</p> <ul style="list-style-type: none"> <li>• Last Route Change Timestamp</li> <li>• Route Index</li> <li>• Number of Mediatrace hops in the path</li> </ul> <p>Data for the first hop, including:</p> <ul style="list-style-type: none"> <li>• Metrics Collection Status</li> <li>• Reachability Address</li> <li>• Ingress Interface</li> <li>• Egress Interface</li> <li>• Metrics Collected</li> </ul> <p>Trace route data for each hop, including:</p> <ul style="list-style-type: none"> <li>• Address List</li> <li>• Round Trip Time List (msec)</li> </ul>

**Related Commands**

Command	Description
<code>mediatrace session-params</code>	Configures parameters for Mediatrace sessions.

# show mediatrace session-params

To display the parameters configured for Mediatrace sessions, use the **show mediatrace session-params** command in privileged EXEC mode.

**show mediatrace session-params** [ *name* ]

## Syntax Description

<i>name</i>	(Optional) Name used to identify the profile.
-------------	---

## Command Default

All session profiles are displayed.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no session profile name is entered with this command, all profiles are displayed.

## Examples

The following example displays session profiles:

```
Router# show mediatrace session-params
Session Parameters: s-1
  Response timeout (sec): 60
  Frequency: On Demand
  Inactivity timeout (sec): 300
  History statistics:
    Number of history buckets kept: 3
  Route change:
    Reaction time (sec): 5
```

The table below describes the significant fields shown in the display.

**Table 10: show mediatrace session-params Field Descriptions**

Field	Description
Session Parameters	Name assigned to the session profile.
Response timeout	Number of seconds the Mediatrace Initiator will wait for the Responder to provide metrics for a Mediatrace session.

Field	Description
Frequency	Amount of time between samples taken for a Mediatrace session.
Inactivity timeout	Number of seconds the Mediatrace Initiator will wait without any activity from the Responder for a Mediatrace session.
Number of history buckets	Number of history buckets retained for metrics collected for a Mediatrace session.
Reaction time	Number of seconds the Mediatrace Initiator will wait for a response to a route change notification for a Mediatrace session.

**Related Commands**

Command	Description
<b>mediatrace session-params</b>	Configures parameters for Mediatrace sessions.

## source-ip (flow)

To configure the IP address of the source node for the flow, use the **source-ip** command in flow configuration mode. To remove the configuration for the source node, use the **no** form of this command.

**source-ip** *ip-address* [**source-port** *port*]

**no source-ip** *ip-address* [**source-port** *port*]

### Syntax Description

<i>ip-address</i>	IP address of the source node for the flow.
<b>source-port</b> <i>port</i>	Port number of the source node for the flow.

### Command Modes

Flow configuration (config-mt-flowspec)

### Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T.

### Usage Guidelines

When specifying the IP address of the source node for the flow, the port number is optional.

### Examples

The following example shows how to configure the IP address of the source node for the flow:

```
Router(config)# mediatrace flow-specifier flow-4
Router(config-mt-flowspec)# source-ip 10.10.10.4
```

### Related Commands

Command	Description
<b>mediatrace flow-specifier</b>	Configures Mediatrace flow specifier.



## source ip (path)

To configure the IP address of the source node for the path, use the **source-ip** command in path configuration mode. To remove the configuration for the source node, use the **no** form of this command.

**source ip** *ip-address* [**port** *port*]

**no source ip** *ip-address* [**port** *port*]

### Syntax Description

<i>ip-address</i>	IP address of the source node for the path.
<b>port</b> <i>port</i>	Port number of the source node for the path.

### Command Modes

Path configuration (config-mt-path)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

When specifying the IP address of the source node for a path, the port number is optional.

### Examples

The following example shows how to configure the IP address of the source node for the path:

```
Router(config)#
mediatrace
 path-specifier path-4
Router(config-mt-path)# source ip 10.10.10.4
```

### Related Commands

Command	Description
<b>mediatrace path-specifier</b>	Configures Mediatrace path specifiers

## trace-route

To enable the running of a trace route for a Mediatrace session, use the **trace-route** command in session configuration mode. To disable the running of a trace route, use the **no** form of this command.

**trace-route**

**no trace-route**

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

**Command Default** The running of a trace route is enabled for Mediatrace sessions.

**Command Modes** Session configuration (config-mt-session)

### Command History

Release	Modification
15.2(3)T	This command was introduced.
15.2(2)S	This command was integrated into Cisco IOS Release 15.2(2)S.
Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S.

**Usage Guidelines** Trace route is enabled by default.

### Examples

The following example shows how to disable the running of a trace route for a Mediatrace session:

```
Router(config)#
mediatrace 4
Router(config-mt-session)# no trace-route
Router(config-mt-session)# path-specifier path-4
Router(config-mt-session)# profile perf-monitor pm-4 flow-specifier fs-4
Router(config-mt-session)# profile system sprofile-4
Router(config-mt-session)# session-params params-4
```

### Related Commands

Command	Description
<b>mediatrace</b>	Configures Mediatrace sessions.



# Cisco Performance Monitor

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## action (policy-react and policy-inline-react)

To configure which applications which will receive an alarm or notification, use the **action** command in policy react configuration mode and policy inline react configuration mode. To disable the sending alarms or notifications, use the **no** form of this command.

**action** {syslog| snmp| eem}

**no action** {syslog| snmp| eem}

### Syntax Description

<b>syslog</b>	Sends an alarm or notification to the syslog.
<b>snmp</b>	Sends an alarm or notification to the SNMP MIB variables.
<b>eem</b>	Sends an alarm or notification to Cisco Embedded Event Manager.

### Command Default

Information is saved to syslog.

### Command Modes

Policy react configuration (config-pmap-c-react) Policy inline react configuration (config-spolicy-inline-react)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

You can configure multiple action commands to allow more than one recipients to receive an alarm or notification.

### Examples

The following example shows how to specify that SNMP MIB variables will receive an alarm or notification, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# react 2000 rtp-jitter-average
Router(config-pmap-c-react)# action snmp
```

The following example shows how to specify that SNMP MIB variables will receive an alarm or notification, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
```

```
Router(config-if)# service-policy type performance-monitor inline input  
Router(config-if-spolicy-inline)# react 2000 rtp-jitter-average  
Router(config-spolicy-inline-react)# action snmp
```

**Related Commands**

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## alarm severity (policy-react and policy-inline-react)

To configure the severity of alarms sent for a Performance Monitor policy, use the **alarm severity** command in policy react configuration mode and policy inline react configuration mode. To return to the default and send all alarms, use the **no** form of this command.

**alarm severity** {alert| critical| emergency| error| info}

**no alarm severity** {alert| critical| emergency| error| info}

### Syntax Description

<b>alert</b>	Sends only alerts.
<b>critical</b>	Sends only critical alarms.
<b>emergency</b>	Sends only emergency alarms.
<b>error</b>	Sends only errors.
<b>info</b>	Sends only informational messages.

### Command Default

All alarm severities are sent.

### Command Modes

Policy react configuration (config-pmap-c-react) Policy inline react configuration (config-spolicy-inline-react)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The definition of the alarms types are listed below in order of severity:

- Emergency--System unusable
- Alert--Immediate action needed
- Critical--Critical condition
- Error--Error condition

**Examples**

The following example shows how to specify that only emergency alarms will be sent, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# react 2000 rtp-jitter-average
Router(config-pmap-c-react)# alarm severity emergency
```

The following example shows how to specify that only emergency alarms will be sent, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# react 2000 rtp-jitter-average
Router(config-spolicy-inline-react)# alarm severity emergency
```

**Related Commands**

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## alarm type (policy-react and policy-inline-react)

To configure the types of alarms sent for a Performance Monitor policy, use the **alarm type** command in policy react configuration mode and policy inline react configuration mode. To return to the default and send all alarms, use the **no** form of this command.

**alarm type** {discrete| grouped {count *number*| percent *number*}}

**no alarm type** {discrete| grouped {count *number*| percent *number*}}

### Syntax Description

<b>discrete</b>	Sends only individual alarms.
<b>grouped</b>	Sends only grouped alarms.
<b>count</b> <i>number</i>	Send alarms only when the count of the monitored event is above the specified number
<b>percent</b> <i>number</i>	Send alarms only when percentage of the monitored event is above the specified number.

### Command Default

Alarm type is set to discrete.

### Command Modes

Policy react configuration (config-pmap-c-react) Policy inline react configuration (config-spolicy-inline-react)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The monitored event is specified by the **react** command. You can group alarms by whether they exceed a specified percentage or count.

### Examples

The following example shows how to specify that only percentage type alarms will be sent, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# react 2000 rtp-jitter-average
Router(config-pmap-c-react)# alarm type percent 80
```

The following example shows how to specify that only percentage type alarms will be sent, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# react 2000 rtp-jitter-average
Router(config-spolicy-inline-react)# alarm type percent 80
```

#### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## cache entries

To configure the number of cache entries for a Performance Monitor flow monitor, use the **cache entries** command in flow monitor configuration mode. To remove the configuration, use the **no** form of this command.

**cache entries** *number*

**no cache entries** *number*

### Syntax Description

<i>number</i>	Specifies the number of entries. The range is from 16 to 2000000. The default is 10000.
---------------	---

### Command Default

No cache entries are configured.

### Command Modes

Flow monitor configuration (config-flow-monitor)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Examples

The following example shows how to set the number cache entries to 200, while configuring a flow monitor for Performance Monitor:

```
Router(config)# flow monitor type performance-monitor monitor-4
Router(config-flow-monitor)# cache entries 200
Router(config-flow-monitor)# record r2
Router(config-flow-monitor)# exporter e2
```

### Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor for Performance Monitor.



# cache timeout

To configure the cache timeout for a Performance Monitor flow monitor, use the **cache timeout** command in flow monitor configuration mode. To remove the configuration, use the **no** form of this command.

**cache timeout** {{active|inactive|synchronized}*timeout*|event transaction end}

**no cache timeout** {{active|inactive|synchronized}*timeout*|event transaction end}

## Syntax Description

<b>active</b>	Specifies an active timeout.
<b>inactive</b>	Specifies an inactive timeout.
<b>synchronized</b>	Specifies a synchronized timeout.
<i>timeout</i>	Specifies that the duration of the second.
<b>event transaction end</b>	Specifies that the timeout occurs when the transaction ends.

## Command Default

No timeout is configured.

## Command Modes

Flow monitor configuration (config-flow-monitor)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Examples

The following example shows how to set an active cache timeout of 20 seconds, while configuring a flow monitor for Performance Monitor:

```
Router(config)# flow monitor type performance-monitor monitor-4
Router(config-flow-monitor)# cache timeout active 20
Router(config-flow-monitor)# record r2
Router(config-flow-monitor)# exporter e2
```

## Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor for Performance Monitor.

## cache type

To configure the cache type for a Performance Monitor flow monitor, use the **cache type** command in flow monitor configuration mode. To remove the configuration, use the **no** form of this command.

**cache type** {permanent| normal| immediate}

**no cache type** {permanent| normal| immediate}

### Syntax Description

<b>permanent</b>	Specifies a permanent cache.
<b>normal</b>	Specifies a normal cache.
<b>synchronized</b>	Specifies a synchronized cache.

### Command Default

No cache type is configured.

### Command Modes

Flow monitor configuration (config-flow-monitor)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Examples

The following example shows how to configure a normal cache, while configuring a flow monitor for Performance Monitor:

```
Router(config)# flow monitor type performance-monitor monitor-4
Router(config-flow-monitor)# cache type normal
Router(config-flow-monitor)# record r2
Router(config-flow-monitor)# exporter e2
```

### Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor for Performance Monitor.

# class-map

To create a class map to be used for matching packets to a specified class and to enter QoS class-map configuration mode, use the **class-map** command in global configuration mode. To remove an existing class map from a device, use the **no** form of this command.

## Cisco 2600, 3660, 3845, 6500, 7200, 7401, and 7500 Series Routers

**class-map** [**type** {**stack**| **access-control**| **port-filter**| **queue-threshold**| **logging** *log-class*}] [**match-all**| **match-any**] *class-map-name*

**no class-map** [**type** {**stack**| **access-control**| **port-filter**| **queue-threshold**| **logging** *log-class*}] [**match-all**| **match-any**] *class-map-name*

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**class-map** *class-map-name* [**match-all**| **match-any**]

**no class-map** *class-map-name* [**match-all**| **match-any**]

## Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

**class-map** *class-map-name*

**no class-map** *class-map-name*

### Syntax Description

<b>type</b>	(Optional) Specifies the class-map type.
<b>stack</b>	<p>(Optional) Enables the flexible packet matching (FPM) functionality to determine the protocol stack to examine.</p> <p>When you use the <b>load protocol</b> command to load protocol header description files (PHDFs) on the device, a stack of protocol headers can be defined so that the filter can determine which headers are present and in what order.</p>
<b>access-control</b>	<p>(Optional) Determines the pattern to look for in the configured protocol stack.</p> <p><b>Note</b> You must specify a stack class map (by using the <b>type stack</b> keywords) before specifying an access-control class map (by using the <b>type access-control</b> keywords).</p>
<b>port-filter</b>	(Optional) Creates a port-filter class map that enables the TCP or UDP port policing of control plane packets. When this keyword is enabled, the command filters the traffic that is destined to specific ports on the control-plane host subinterface.

<b>queue-threshold</b>	(Optional) Enables queue thresholding, which limits the total number of packets for a specified protocol allowed in the control plane IP input queue. The queue-thresholding applies only to the control-plane host subinterface.
<b>logging</b> <i>log-class</i>	(Optional) Enables the logging of packet traffic on the control plane. The value for the <i>log-class</i> argument is the name of the log class.
<b>match-all</b>	(Optional) Determines how packets are evaluated when multiple match criteria exist. Matches statements under this class map based on the logical AND function. A packet must match all statements to be accepted. If you do not specify the <b>match-all</b> or <b>match-any</b> keyword, the default keyword used is <b>match-all</b> .
<b>match-any</b>	(Optional) Determines how packets are evaluated when multiple match criteria exist. Matches statements under this class map based on the logical OR function. A packet must match any of the match statements to be accepted. If you do not specify the <b>match-any</b> or <b>match-all</b> keyword, the default keyword is used <b>match-all</b> .
<i>class-map-name</i>	Name of the class for the class map. The class name is used for both the class map and to configure a policy for the class in the policy map.  <b>Note</b> You can enter the value for the <i>class-map-name</i> argument within quotation marks. The software does not accept spaces in a class map name entered without quotation marks.

**Command Default** A class map is not configured.

**Command Modes** Global configuration (config)

#### Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.

Release	Modification
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(14)SX	This command was integrated into Cisco IOS Release 12.2(14)SX and implemented on Cisco 7600 series routers.
12.2(17d)SXB	This command was integrated into Cisco IOS Release 12.2(17d)SXB and implemented on Cisco 7600 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(4)T	This command was modified. The <b>stack</b> and <b>access-control</b> keywords were added to support FPM. The <b>port-filter</b> and <b>queue-threshold</b> keywords were added to support control-plane protection.
12.4(6)T	This command was modified. The <b>logging</b> <i>log-class</i> keyword and argument pair was added to support control-plane packet logging.
12.2(18)ZY	This command was modified. The <b>stack</b> and <b>access-control</b> keywords were integrated into Cisco IOS Release 12.2(18)ZY on Catalyst 6500 series switches equipped with the programmable intelligent services accelerator (PISA).
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1 and implemented on Cisco ASR 1000 Series Aggregation Services Routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with the <i>class-map-name</i> argument as the only syntax element available.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with the <i>class-map-name</i> argument.
12.2(33)SCF	This command was integrated into Cisco IOS Release 12.2(33)SCF.
15.2(3)T	This command was modified. The software does not accept spaces in a class map name entered without quotation marks.
15.1(2)SNG	This command was integrated into Cisco ASR 901 Series Aggregation Services Routers.

## Usage Guidelines

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

Only the *class-map-name* argument is available.

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Use the **class-map** command to specify the class that you will create or modify to meet the class-map match criteria. This command enters QoS class-map configuration mode in which you can enter one or more **match**

commands to configure the match criteria for this class. Packets that arrive at either the input interface or the output interface (determined by how the **service-policy** command is configured) are checked against the match criteria that are configured for a class map to determine if packets belong to that class.

When configuring a class map, you can use one or more **match** commands to specify the match criteria. For example, you can use the **match access-group** command, the **match protocol** command, or the **match input-interface** command. The **match** commands vary according to the Cisco software release. For more information about match criteria and **match** commands, see the “Modular Quality of Service Command-Line Interface (CLI) (MQC)” chapter of the *Cisco IOS Quality of Service Solutions Configuration Guide*.

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Apply the **class-map** command and commands available in QoS class-map configuration mode on a per-interface basis to define packet classification, marking, aggregating, and flow policing as part of a globally named service policy.

You can attach a service policy to an EtherChannel. Do not attach a service policy to a port that is a member of an EtherChannel.

When a device is in QoS class-map configuration mode, the following configuration commands are available:

- **description**—Specifies the description for a class-map configuration.
- **exit**—Exits from QoS class-map configuration mode.
- **match**—Configures classification criteria.
- **no**—Removes a match statement from a class map.

The following commands appear in the CLI help but are not supported on LAN interfaces or WAN interfaces on Optical Service Modules (OSMs):

- **destination-address mac** *mac-address*
- **input-interface** {*interface-type interface-number* | **null** *number* | **vlan** *vlan-id*}
- **protocol** *link-type*
- **source-address mac** *mac-address*

OSMs are not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 32.

Policy Feature Card (PFC) QoS does not support the following commands:

- **destination-address mac** *mac-address*
- **input-interface** {*interface-type interface-number* | **null** *number* | **vlan** *vlan-id*}
- **protocol** *link-type*
- **qos-group** *group-value*
- **source-address mac** *mac-address*

If you enter these commands, PFC QoS does not detect unsupported keywords until you attach a policy map to an interface. When you try to attach the policy map to an interface, an error message is generated. For additional information, see the *Cisco 7600 Series Router Cisco IOS Software Configuration Guide* and Cisco IOS command references.

After configuring the class-map name and the device you can enter the **match access-group** and **match ip dscp** commands in QoS class-map configuration mode. The syntax for these commands is as follows:

**match** [**access-group** {*acl-index* | *acl-name*} | **ip dscp** | **precedence**] *value*

See the table below for a description of **match** command keywords.

**Table 11: match command Syntax Description**

Optional command	Description
<b>access-group</b> <i>acl-index</i>   <i>acl-name</i>	(Optional) Specifies the access list index or access list names. Valid access list index values are from 1 to 2699.
<b>access-group</b> <i>acl-name</i>	(Optional) Specifies the named access list.
<b>ip dscp</b> <i>value1 value2 ... value8</i>	(Optional) Specifies IP differentiated services code point (DSCP) values to match. Valid values are from 0 to 63. You can enter up to eight DSCP values separated by spaces.
<b>ip precedence</b> <i>value1 value2 ... value8</i>	(Optional) Specifies the IP precedence values to match. Valid values are from 0 to 7. You can enter up to eight precedence values separated by spaces.

## Examples

The following example shows how to specify class101 as the name of a class and define a class map for this class. The class named class101 specifies policy for the traffic that matches ACL 101.

```
Device(config)# class-map class101
Device(config-cmap)# match access-group 101
Device(config-cmap)# end
```

The following example shows how to define FPM traffic classes for slammer and UDP packets. The match criteria defined within class maps are for slammer and UDP packets with an IP length that does not exceed 404 (0x194) bytes, UDP port 1434 (0x59A), and pattern 0x4011010 at 224 bytes from the start of the IP header.

```
Device(config)# load protocol disk2:ip.phdf
Device(config)# load protocol disk2:udp.phdf
Device(config)# class-map type stack match-all ip-udp
Device(config-cmap)# description "match UDP over IP packets"
Device(config-cmap)# match field ip protocol eq 0x11 next udp
Device(config-cmap)# exit
Device(config)# class-map type access-control match-all slammer
Device(config-cmap)# description "match on slammer packets"
Device(config-cmap)# match field udp dest-port eq 0x59A
Device(config-cmap)# match field ip length eq 0x194
Device(config-cmap)# match start 13-start offset 224 size 4 eq 0x 4011010
Device(config-cmap)# end
```

The following example shows how to configure a port-filter policy to drop all traffic that is destined to closed or "nonlistened" ports except Simple Network Management Protocol (SNMP):

```
Device(config)# class-map type port-filter pf-class
Device(config-cmap)# match not port udp 123
```

```

Device(config-cmap) # match closed-ports
Device(config-cmap) # exit
Device(config) # policy-map type port-filter pf-policy
Device(config-pmap) # class pf-class
Device(config-pmap-c) # drop
Device(config-pmap-c) # end

```

The following example shows how to configure a class map named ipp5 and enter a match statement for IP precedence 5:

```

Device(config) # class-map ipp5
Device(config-cmap) # match ip precedence 5

```

### Examples

The following example shows how to set up a class map and match traffic classes for the 802.1p domain with packet class of service (CoS) values:

```

Device> enable
Device# configure terminal
Device(config) # class-map cos1
Device(config-cmap) # match cos 0
Device(config-pmap-c) # end

```

### Examples

The following example shows how to set up a class map and match traffic classes for the Multiprotocol Label Switching (MPLS) domain with packet experimental (EXP) values:

```

Device> enable
Device# configure terminal
Device(config) # class-map exp7
Device(config-cmap) # match mpls experimental topmost 2
Device(config-pmap-c) # end

```

### Related Commands

Command	Description
<b>description</b>	Specifies the description for a class map or policy map configuration.
<b>drop</b>	Configures the traffic class to discard packets belonging to a specific class map.
<b>class (policy-map)</b>	Specifies the name of the class whose policy you want to create or change, and the default class before you configure its policy.
<b>load protocol</b>	Loads a PHDF onto a router.
<b>match (class-map)</b>	Configures the match criteria for a class map on the basis of port filter or protocol queue policies.
<b>match access-group</b>	Configures the match criteria for a class map on the basis of the specified ACL.
<b>match input-interface</b>	Configures a class map to use the specified input interface as a match criterion.



<b>Command</b>	<b>Description</b>
<b>match ip dscp</b>	Identifies one or more DSCP, AF, and CS value as a match criterion.
<b>match mpls experimental</b>	Configures a class map to use the specified EXP field value as a match criterion.
<b>match protocol</b>	Configures the match criteria for a class map on the basis of the specified protocol.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
<b>protocol</b>	Configures a timer and authentication method for a control interface.
<b>qos-group</b>	Associates a QoS group value for a class map.
<b>service-policy</b>	Attaches a policy map to an input interface or VC or to an output interface or VC to be used as the service policy for that interface or VC.
<b>show class-map</b>	Displays class map information.
<b>show policy-map interface</b>	Displays statistics and configurations of input and output policies that are attached to an interface.
<b>source-address</b>	Configures the source-address control on a port.

## clear fm performance-monitor counters

To clear counters for the Performance Monitor component of Feature Monitor, use the **clear fm performance-monitor counters** command in privileged EXEC mode.

**clear fm performance-monitor counters**

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

**Command Default** Counters for the Performance Monitor are not cleared.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	15.0(1)SY	This command was introduced on the Catalyst 6500 platform.

**Usage Guidelines** This command is available only on the Catalyst 6500 platform.

**Examples** The following example shows the how to clear counters for the Performance Monitor component of Feature Monitor:

```
Router# clear fm performance-monitor counters
```

### Related Commands

Command	Description
<b>show platform hardware acl entry interface</b>	Displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries.
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager performance-monitor</b>	Displays information about the Performance Monitor component of Feature Manager.
<b>show platform software feature-manager team</b>	Displays information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager.

## clock-rate (policy RTP)

To configure the rate for the RTP packet time-stamp clock, use the **clock-rate** command in policy RTP configuration mode. To remove the configuration, use the **no** form of this command.

**clock-rate** {*type-number*|*type-name*} *rate*

**no clock-rate**

### Syntax Description

<i>type-number</i>	An integer between 0 and 34. This value is compared with the payload type field in the RTP header. Values between 0 and 23 are reserved for audio streams, and values between 24 and 34 are reserved for video streams.
<i>type-name</i>	The name of the payload type field in the RTP header.
<i>rate</i>	Clock rate in Hz. The range is from 9600 to 124000.

### Command Default

Clock rate is 90000.

### Command Modes

policy RTP configuration (config-pmap-c-mrtp) policy inline RTP configuration (config-spolicy-inline-mrtp)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

For more information about how the clock rate for RTP packet time-stamp clock is used to calculate the packet arrival latency, see RFC 3550, *RTP, A Transport Protocol for Real-Time Applications*. The clock rate has to be synchronized with the routers along the path of the flow. Because the clock rate can vary depending on the payload codec type, a keyword is provided to set the expected clock rate.

The available values for *type-name* and *type-number* are celb (25), cn (13), dvi4 (5) (8000 Hz as described in RFC 3551, RTP Profile for Audio and Video Conferences with Minimal Control), dvi4-2 (6) (8000 Hz as described in RFC 3551), dvi4-3 (16) (DVI4 Dipol 11025 Hz), dvi4-4 (17) (DVI4 Dipol 22050 Hz), g722 (9), g723 (4), g728 (15), g729 (18), gsm (3), h261 (31), h263 (34), jpeg (26), l16 (11) (L16 channel 1), l16-2 (10) (L16 channel 2), lpc (7), mp2t (33), mpa (14), mpv (32), nv (28), pcma (8), pcmu (0), qcelp (12).

**Examples**

The following example shows how to set the rate for the RTP packet time-stamp clock, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
Router(config-pmap-c-mrtp)# clock-rate 8 9600
```

The following example shows how to set the rate for the RTP packet time-stamp clock, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
Router(config-spolicy-inline-mrtp)# clock-rate 8 9600
```

**Related Commands**

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

# collect application description

To configure one or more of the application description field as a nonkey field for a flow record, use the **collect application description** command in flow record configuration mode. To disable the use the application fields as a key field for a flow record, use the **no** form of this command.

**collect application description**

**no collect description**

## Syntax Description

This command has no arguments or keywords.

## Command Default

The application description field is not configured as a nonkey field.

## Command Modes

Flow record configuration (config-flow-record)

## Command History

Release	Modification
15.2(3)T	This command was introduced.
Cisco IOS XE Release 3.6S.	This command was integrated into Cisco IOS XE Release 3.6S.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

### Examples

The following example configures the application description as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application description
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



# collect application http

To configure one of the HTTP application fields as a nonkey field for a flow record, use the **collect application http host** command in flow record configuration mode. To disable the use of the HTTP application fields as a key field for a flow record, use the **no** form of this command.

**collect application http {host| uri statistics}**

**no collect application http {host| uri statistics}**

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

**Command Default** The HTTP application fields are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(4)S	This command was introduced.
	Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.
	15.2(4)M2	This command was integrated into Cisco IOS Release 15.2(4)M2 for MACE.
	15.3(1)T	This command was integrated into Cisco IOS Release 15.3(1)T for MACE.

**Usage Guidelines** This command can be used with Flexible NetFlow, MACE (Measurement, Aggregation, and Correlation Engine), and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for all three products, here we refer to the command mode for these products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the HTTP application host as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application http host
```

**Examples**

The following example configures the HTTP application host as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application http host
```

The following example configures the HTTP application URI statistics as a nonkey field for Performance Monitor:

```
Router(config)# flow record type mace RECORD-1
Router(config-flow-record)# collect application http uri statistics
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.
<b>flow record type mace</b>	Creates a flow record, and enters MACE flow record configuration mode.



## collect application media

To configure one of the application media fields as a nonkey field for a flow record, use the **collect application media** command in flow record configuration mode. To disable the use of one of the application media field as a nonkey field for a flow record, use the **no** form of this command.

```
collect application media {bytes {rate| counter [long]}| packets {rate [variation]| counter [long]}| events}
no collect application media {bytes| packets| events}
```

### Syntax Description

<b>bytes rate</b>	Configures the field that counts the rate of bytes collected, in Bps, for all flows, as a nonkey field.
<b>bytes counter</b>	Configures the field that counts the total number of bytes collected, as a nonkey field.
<b>long</b>	Configures the field for the long count (byte or packet) as a nonkey field.
<b>packets rate</b>	Configures the field that counts the total number of application media packets collected, per second, for all flows, as a nonkey field.
<b>variation</b>	Configures the field for the variation in the rate application media packets collected, for all flows, as a nonkey field.
<b>packets counter</b>	Configures the field that counts the total number of application media packets collected, for all flows, as a nonkey field.
<b>events</b>	Configures the field that indicates whether one of the media application thresholds configured for the flow was crossed at least once in the monitoring interval, field as a nonkey field.

### Command Default

The application media field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
15.1(3)T	This command was introduced.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures application media packet field as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect application media packets
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect application name

To configure the use of the application name as a nonkey field for a flow record, use the **collect application name** command in flow record configuration mode. To disable the use of the application name as a nonkey field for a flow record, use the **no** form of this command.

**collect application name**

**no collect application name**

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

**Command Default** The application name is not configured as a non-key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.0(1)M	This command was introduced.
	15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.
	15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples**

The following example configures the application name as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect application name
```

**Examples**

The following example configures the application name as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application name
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.
<b>match application name</b>	Configures the use of application name as a key field for a Flexible NetFlow flow record.

# collect application nntp

To configure the NNTP application group name field as a nonkey field for a flow record, use the **collect application nntp group-name** command in flow record configuration mode. To disable the use the application fields as a key field for a flow record, use the **no** form of this command.

**collect application nntp group-name**

**no collect application nntp group-name**

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(4)S	This command was introduced.
	Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the NNTP application group name as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application nntp group-name
```

**Examples**

The following example configures the NNTP application group name as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application nntp group-name
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect application pop3

To configure the POP3 application server field as a nonkey field for a flow record, use the **collect application pop3 server** command in flow record configuration mode. To disable the use of the application fields as a key field for a flow record, use the **no** form of this command.

**collect application pop3 server**

**no collect application pop3 server**

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.7S	This command was introduced.

**Usage Guidelines** The fields collected by this command can only be extracted using the IPFIX export protocol.

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the POP3 application server as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application pop3 server
```

**Examples**

The following example configures the POP3 application server as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application pop3 server
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



# collect application rtsp

To configure the RTSP application hostname field as a nonkey field for a flow record, use the **collect application rtsp host-name** command in flow record configuration mode. To disable the use the application fields as a key field for a flow record, use the **no** form of this command.

**collect application rtsp host-name**

**no collect application rtsp host-name**

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.7S	This command was introduced.

**Usage Guidelines** The fields collected by this command can only be extracted using the IPFIX export protocol.

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the RTSP application hostname as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application rtsp host-name
```

**Examples**

The following example configures the RTSP application hostname as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application rtsp host-name
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect application sip

To configure the SIP application destination or source field as a nonkey field for a flow record, use the **collect application sip** command in flow record configuration mode. To disable the use of the application fields as a key field for a flow record, use the **no** form of this command.

```
collect application sip {destination| source}
no collect application sip {destination| source}
```

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.7S	This command was introduced.

**Usage Guidelines** The fields collected by this command can only be extracted using the IPFIX export protocol.

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the SIP application source as a nonkey field for Flexible NetFlow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application sip source
```

**Examples**

The following example configures the application SMTP hostname as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application sip source
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect application smtp

To configure the SMTP application server or sender field as a nonkey field for a flow record, use the **collect application smtp** command in flow record configuration mode. To disable the use of the application fields as a key field for a flow record, use the **no** form of this command.

**collect application smtp** {sender| server}

**no collect application smtp** {sender| server}

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.7S	This command was introduced.

**Usage Guidelines** The fields collected by this command can only be extracted using the IPFIX export protocol.

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the SMTP application server as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect application smtp server
```

**Examples**

The following example configures the SMTP application server as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application smtp server
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect application vendor

To configure one or more of the application vendor field as a nonkey field for a flow record, use the **collect application vendor** command in flow record configuration mode. To disable the use of the application fields as a key field for a flow record, use the **no** form of this command.

**collect application vendor**

**no collect application vendor**

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

**Command Default** The application vendor field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(3)T	This command was introduced.
	Cisco IOS XE Release 3.6S.	This command was integrated into Cisco IOS XE Release 3.6S.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

**Examples** The following example configures the application vendor as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application vendor
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.





# collect application version

To configure one or more of the application version field as a nonkey field for a flow record, use the **collect application version** command in flow record configuration mode. To disable the use of the application fields as a key field for a flow record, use the **no** form of this command.

**collect application version**

**no collect application version**

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

**Command Default** The application version field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(3)T	This command was introduced.
	Cisco IOS XE Release 3.6S.	This command was integrated into Cisco IOS XE Release 3.6S.

**Usage Guidelines** The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

**Examples** The following example configures the application version as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect application version
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect connection

To configure various connection information fields as a nonkey field for a flow record, use the **collect connection** command in flow record configuration mode. To disable the use of the connection information fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection** {initiator| new-translations| sum-duration}

**no collect connection** {initiator| new-translations| sum-duration}

### Syntax Description

<b>initiator</b>	Configures the connection initiator as a nonkey field.
<b>new-translations</b>	Configures the number of TCP or UDP connections which were opened during an observation period as a nonkey field.
<b>sum-duration</b>	Configures the total time in seconds for all of the TCP or UDP connections which were in use during an observation period as a nonkey field.

### Command Default

Connection information fields are not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.4S	This command was introduced.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible

NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **initiator** keyword provides the following information about the direction of the flow.

- 0x00=undefined
- 0x01=initiator - the flow source is initiator of the connection.
- 0x02=reverseInitiator - the flow destination is the initiator of the connection.

For the **new-translations** and **sum-duration** keywords, the observation period can be specified by the start and end timestamps for the flow.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures information about the connection initiator as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect connection initiator
```

### Examples

The following example configures information about the connection initiator as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect connection initiator
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect connection client

To configure one of the connection client fields as a nonkey field for a flow record, use the **collect connection client** command in flow record configuration mode. To disable the use of one of the connection client fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection client {counter{{bytes long| packets long| packets retransmitted}}| {{ipv4|
ipv6}} address| transport port}
```

```
no collect connection client {counter{{bytes long| packets long| packets retransmitted}}| {{ipv4|
ipv6}} address| transport port}
```

### Syntax Description

<b>counter</b>	Configures one of client connection counter fields, as a nonkey field.
<b>bytes long</b>	Configures the client connection bytes long counter field, as a nonkey field.
<b>packets long</b>	Configures the client connection packets long counter field, as a nonkey field.
<b>packets retransmitted</b>	Configures the client connection packets retransmitted field, as a nonkey field.
<b>ipv4 address</b>	Configures the client connection ipv4 address field, as a nonkey field.
<b>ipv6 address</b>	Configures the client connection ipv6 address field, as a nonkey field.
<b>transport port</b>	Configures the client connection transport port field, as a nonkey field.

### Command Default

The connection client fields are not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines**

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the field for the connection client IPv6 address, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection client ipv6 address
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect connection delay application

To configure one of the connection application delay fields as a nonkey field for a flow record, use the **collect connection delay application** command in flow record configuration mode. To disable the use of one of the connection application delay field as a nonkey field for a flow record, use the **no** form of this command.

**collect connection delay application** {{sum| min| max}}

**no collect connection delay application**

## Syntax Description

<b>application</b>	Configures the field for the application delay, as a nonkey field.
<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

## Command Default

The connection application delay fields are not configured as a nonkey field for a user-defined flow record.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

The following example configures the field that counts the total amount of application delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection delay application sum
```

**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.



# collect connection delay network

To configure one of the connection network delay fields as a nonkey field for a flow record, use the **collect connection delay network** command in flow record configuration mode. To disable the use of one of the connection network delay field as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection delay network {{client-to-server| to-client| to-server}} {{sum| min| max}}
```

```
no collect connection delay network {{client-to-server| to-client| to-server}}
```

## Syntax Description

<b>client-to-server</b>	Configures the field for the client-to-server network delay, as a nonkey field.
<b>to-client</b>	Configures the field for the to-client network delay, from the responder, as a nonkey field.
<b>to-server</b>	Configures the field for the to-server network delay, as a nonkey field.
<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

## Command Default

The connection network delay fields are not configured as a nonkey field for a user-defined flow record.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the field that counts the total amount of client-to-server network delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection delay network client-to-server sum
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect connection delay response

To configure one of the connection response delay fields as a nonkey field for a flow record, use the **collect connection delay response** command in flow record configuration mode. To disable the use of one of the connection response delay fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection delay response {{client-to-server {{sum| min| max}}}| to-server {{sum| min| max}}}|
to-server histogram {{bucket1| bucket2| bucket3| bucket4| bucket5| bucket6| bucket7| late}}}}
no collect connection delay response {{client-to-server| to-server| to-server histogram}}
```

### Syntax Description

<b>client-to-server</b>	Configures the field for the client-to-server response delay, as a nonkey field.
<b>to-server</b>	Configures the field for the to-server response delay, from the responder, as a nonkey field.
<b>histogram</b>	Configures the field for the to-server response delay histogram, as a nonkey field.
<b>max</b>	Configures the field for the maximum amount of response delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of response delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of response delay, as a nonkey field.
<b>late</b>	Configures the field for the late to-server response delay histogram, as a nonkey field.

### Command Default

The connection response delay fields are not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines**

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the field that counts the total amount of client-to-server response delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection delay response client-to-server sum
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect connection performance application-delay

To configure one of the connection performance application-delay fields as a nonkey field for a flow record, use the **collect connection performance application-delay** command in flow record configuration mode. To disable the use of one of the application-delay fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance application-delay** {{max| min| sum}}

**no collect connection performance application-delay**

## Syntax Description

<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

## Command Default

The connection performance application-delay field is not configured as a nonkey field for a user-defined flow record.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

The following example configures the field that counts the total amount of application-delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder application-delay sum
```

**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.

## collect connection performance initiator

To configure one of the connection performance initiator fields as a nonkey field for a flow record, use the **collect connection performance initiator** command in flow record configuration mode. To disable the use of one of the application media field as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance initiator** {bytes long| count late-responses| network-delay {{max| min| sum}}}| packets long}

**no collect connection performance initiator**{bytes| count| network-delay| packets}

### Syntax Description

<b>bytes long</b>	Configures the field for the total number of layer 4 payload bytes in a flow from the initiator, as a nonkey field.
<b>count late-responses</b>	Configures the field that counts the total number of late responses collected from the initiator, as a nonkey field.
<b>network-delay max</b>	Configures the field for the maximum amount of network delay from a initiator, as a nonkey field.
<b>network-delay min</b>	Configures the field for the minimum amount of network delay from a initiator, as a nonkey field.
<b>network-delay sum</b>	Configures the field for the total amount of network delay from a initiator, as a nonkey field.
<b>packets long</b>	Configures the field for the long packet count in a flow from the initiator, as a nonkey field.

### Command Default

The connection performance initiator field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to

provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the field that counts the total number of late responses collected from the initiator, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance initiator count late-responses
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.



## collect connection performance network-delay

To configure one of the connection performance network-delay fields as a nonkey field for a flow record, use the **collect connection performance network-delay** command in flow record configuration mode. To disable the use of one of the performance network-delay fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance network-delay** {{max|min|sum}}

**no collect connection performance network-delay**

### Syntax Description

<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

### Command Default

The connection performance network-delay field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the field that counts the total amount of network-delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder network-delay sum
```

**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.

# collect connection performance new-transaction

To configure one of the connection performance new-transaction fields as a nonkey field for a flow record, use the **collect connection performance new-transaction** command in flow record configuration mode. To disable the use of one of the performance new-transaction fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance new-transaction**

**no collect connection performance new-transaction**

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

**Command Default** The connection performance new-transaction field is not configured as a nonkey field for a user-defined flow record.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the field that counts the total amount of new-transaction, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder new-transaction
```

Related Commands	Command	Description
	<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect connection performance responder

To configure one of the connection performance responder fields as a nonkey field for a flow record, use the **collect connection performance responder** command in flow record configuration mode. To disable the use of one of the application media field as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection performance responder {bytes long| count {histogram {{bucket1| bucket2| bucket3|
bucket4 | bucket5| bucket6| bucket7}}| late-responses| responses}| network-delay {{max| min| sum}}|
packets long| response-time {{sum| min| max}}}
```

```
no collect connection performance responder {bytes| count| network-delay| packets| response-time}
```

### Syntax Description

<b>bytes long</b>	Configures the field for the total number of layer 4 payload bytes in a flow from the responder, as a nonkey field.
<b>count histogram bucket #</b>	Configures the field that counts the total number of histograms collected , in the specified bucket number, from the responder, as a nonkey field.
<b>count late-responses</b>	Configures the field that counts the total number of late responses collected from the responder, as a nonkey field.
<b>count responses</b>	Configures the field that counts the total number of responses collected from the responder, as a nonkey field.
<b>network-delay max</b>	Configures the field for the maximum amount of network delay from a responder, as a nonkey field.
<b>network-delay min</b>	Configures the field for the minimum amount of network delay from a responder, as a nonkey field.
<b>network-delay sum</b>	Configures the field for the total amount of network delay from a responder, as a nonkey field.
<b>packets long</b>	Configures the field for the long packet count in a flow from the responder, as a nonkey field.
<b>response-time max</b>	Configures the field for the maximum amount of response time from a responder, field as a nonkey field.
<b>response-time min</b>	Configures the field for the minimum amount of response time from a responder, field as a nonkey field.

<b>response-time sum</b>	Configures the field for the total amount of response time from a responder, field as a nonkey field.
--------------------------	---

**Command Default** The connection performance responder field is not configured as a nonkey field for a user-defined flow record.

**Command Modes** flow record configuration (config-flow-record)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the field that counts the total number of late responses collected from the responder, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder count late-responses
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect connection performance total-delay

To configure one of the connection performance total-delay fields as a nonkey field for a flow record, use the **collect connection performance total-delay** command in flow record configuration mode. To disable the use of one of the performance total-delay fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance total-delay** {{max| min| sum}}

**no collect connection performance total-delay**

### Syntax Description

<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

### Command Default

The connection performance total-delay field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the field that counts the total amount of total-delay, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder total-delay sum
```

**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.

## collect connection performance total-transaction-time

To configure one of the connection performance total-transaction-time fields as a nonkey field for a flow record, use the **collect connection performance total-transaction-time** command in flow record configuration mode. To disable the use of one of the performance total-transaction-time fields as a nonkey field for a flow record, use the **no** form of this command.

**collect connection performance total-transaction-time** {{max| min| sum}}

**no collect connection performance total-transaction-time**

### Syntax Description

<b>max</b>	Configures the field for the maximum amount of network delay, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of network delay, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of network delay, as a nonkey field.

### Command Default

The connection performance total-transaction-time field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the field that counts the total amount of total-transaction-time, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect connection performance responder total-transaction-time
sum
```



**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.

## collect connection server

To configure one of the connection server fields as a nonkey field for a flow record, use the **collect connection server** command in flow record configuration mode. To disable the use of one of the connection server fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection server {counter {{bytes long| packets long| packets retransmitted}}| {{ipv4|
ipv6}} address| transport port}
```

```
no collect connection server {counter {{bytes long| packets long| packets retransmitted}}| {{ipv4|
ipv6}} address| transport port}
```

### Syntax Description

<b>counter</b>	Configures one of server connection counter fields, as a nonkey field.
<b>bytes long</b>	Configures the server connection bytes long counter field, as a nonkey field.
<b>packets long</b>	Configures the server connection packets long counter field, as a nonkey field.
<b>packets retransmitted</b>	Configures the server connection packets retransmitted field, as a nonkey field.
<b>ipv4 address</b>	Configures the server connection ipv4 address field, as a nonkey field.
<b>ipv6 address</b>	Configures the server connection ipv6 address field, as a nonkey field.
<b>transport port</b>	Configures the server connection transport port field, as a nonkey field.

### Command Default

The connection server fields are not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines**

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the field for the connection server IPv6 address, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4  
Router(config-flow-record)# collect connection server ipv6 address
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect connection transaction

To configure one of the connection transaction fields as a nonkey field for a flow record, use the **collect connection delay application** command in flow record configuration mode. To disable the use of one of the connection transaction fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect connection transaction {counter complete| duration {{sum| min| max}}}
```

```
no collect connection transaction {{counter complete| duration {{sum| min| max}}}}
```

### Syntax Description

<b>counter complete</b>	Configures the field for the connection complete-transaction counter, as a nonkey field.
<b>duration</b>	Configures the field for the transaction duration, as a nonkey field.
<b>max</b>	Configures the field for the maximum amount of transaction duration, as a nonkey field.
<b>min</b>	Configures the field for the minimum amount of transaction duration, as a nonkey field.
<b>sum</b>	Configures the field for the total amount of transaction duration, as a nonkey field.

### Command Default

The connection transaction duration fields are not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the field for the total transaction duration, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4  
Router(config-flow-record)# collect connection transaction duration sum
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect counter

To configure the number of bytes or packets in a flow as a nonkey field for a Flexible NetFlow flow record, use the **collect counter** command in Flexible NetFlow flow record configuration mode. To disable the use of the number of bytes or packets in a flow (counters) as a nonkey field for a Flexible NetFlow flow record, use the **no** form of this command.

**collect counter** {bytes [long| replicated [long]| squared long]} packets [long| replicated [long]]}

**no collect counter** {bytes [long| replicated [long]| squared long]} packets [long| replicated [long]]}

## Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

**collect counter** {bytes [long| rate]} packets [dropped [long]| long]}

**no collect counter** {bytes [long| rate]} packets [dropped [long]| long]}

### Syntax Description

<b>bytes</b>	Configures the number of bytes seen in a flow as a nonkey field and enables collecting the total number of bytes from the flow.
<b>long</b>	(Optional) Enables collecting the total number of bytes or packets from the flow using a 64-bit counter rather than a 32-bit counter.
replicated	Total number of replicated (multicast) IPv4 packets.
<b>squared long</b>	(Optional) Enables collecting the total of the square of the number of bytes from the flow.
<b>packets</b>	Configures the number of packets seen in a flow as a nonkey field and enables collecting the total number of packets from the flow.
<b>rate</b>	Configures the byte rate counter as a nonkey field.
<b>dropped</b>	Configures the dropped packet counter as a nonkey field.

### Command Default

The number of bytes or packets in a flow is not configured as a nonkey field.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

**Command History**

<b>Release</b>	<b>Modification</b>
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.4(22)T	The <b>replicated</b> keyword was added.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor without the <b>replicated</b> and <b>squared long</b> keywords and with the addition of the <b>rate</b> and <b>dropped</b> keywords.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor without the <b>replicated</b> and <b>squared long</b> keywords and with the addition of the <b>rate</b> and <b>dropped</b> keywords.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

The **rate** and **dropped** keywords were added and the **replicated** and **squared long** keywords are not available. You must first enter the **flow record type performance-monitor** command.

**collect counter bytes**

This command configures a 32-bit counter for the number of bytes seen in a flow.

**collect counter packets**

This command configures a 32-bit counter that is incremented for each packet seen in the flow. For extremely long flows it is possible for this counter to restart at 0 (wrap) when it reaches the limit of approximately 4 billion packets. On detection of a situation that would cause this counter to restart at 0, a flow monitor with a normal cache type exports the flow and starts a new flow.

**collect counter packets long**

This command configures a 64-bit counter that will be incremented for each packet seen in the flow. It is unlikely that a 64-bit counter will ever restart at 0.

**collect counter bytes squared long**

This counter can be used in conjunction with the byte and packet counters in order to calculate the variance of the packet sizes. Its value is derived from squaring each of the packet sizes in the flow and adding the results. This value can be used as part of a standard variance function.

The variance and standard deviation of the packet sizes for the flow can be calculated with the following formulas:

cbs: value from the **counter bytes squared** field

pkts: value from the **counter packets** field

bytes: value from the **counter bytes** field

Variance = (cbs/pkts) - (bytes/pkts)<sup>2</sup>

Standard deviation = square root of Variance

Example 1:

Packet sizes of the flow: 100, 100, 100, 100

Counter packets: 4

Counter bytes: 400, mean packet size = 100

Counter bytes squared: 40,000

Variance = (40,000/4) - (400/4)<sup>2</sup> = 0

Standard Deviation = 0

Size = 100 +/- 0

Example 2:

Packet sizes of the flow: 50, 150, 50, 150

Counter packets: 4

Counter bytes: 400, mean packet size = 100

Counter bytes squared: 50,000

Variance = (50,000/4) - (400/4)<sup>2</sup> = 2500

Standard deviation = 50

Size = 100 +/- 50

**Examples**

The following example configures the total number of bytes in the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect counter bytes
```

The following example configures the total number of bytes in the flows as a nonkey field using a 64-bit counter:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect counter bytes long
```



The following example configures the sum of the number of bytes of each packet in the flow squared as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect counter bytes squared long
```

The following example configures the total number of packets from the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect counter packets
```

The following example configures the total number of packets from the flows as a nonkey field using a 64-bit counter:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect counter packets long
```

## Examples

The following example configures the total number of packets from the flows as a nonkey field using a 64-bit counter:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect counter packets long
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect datalink destination-vlan-id

To configure the use of destination VLAN ID as a nonkey field for a flow record, use the **collectdatalinkdestination-vlan-id** command in flow record configuration mode. To disable the use of destination VLAN ID as a nonkey field for a flow record, use the **no** form of this command.

**collect datalink destination-vlan-id**

**no collect datalink destination-vlan-id**

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

**Command Default** Destination VLAN ID addresses are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the use of the destination VLAN ID as a nonkey field for a Performance Monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect datalink destination-vlan-id output
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect datalink mac

To configure the use of MAC addresses as a nonkey field for a Flexible NetFlow flow record, use the **collectdatalinkmac** command in Flexible NetFlow flow record configuration mode. To disable the use of Layer 2 MAC addresses as a non-key field for a Flexible NetFlow flow record, use the **no** form of this command.

**collect datalink mac** {destination| source} address {input| output}

**no collect datalink mac** {destination| source} address {input| output}

### Syntax Description

<b>destination address</b>	Configures the use of the destination MAC address as a non-key field.
<b>source address</b>	Configures the use of the source MAC address as a non-key field.
input	Packets received by the router.
output	Packets transmitted by the router.

### Command Default

MAC addresses are not configured as a nonkey field.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into 15.2(2)T without the <b>destination</b> keyword for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

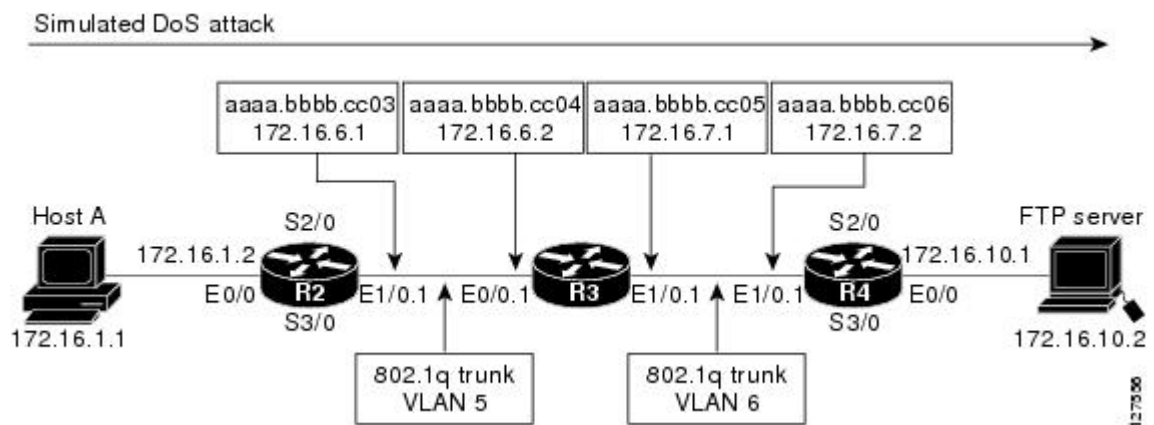
Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible

NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

The **input** and **output** keywords of the **collectdatalinkmac** command are used to specify the observation point that is used by the **collectdatalinkmac** command to capture the MAC addressees from network traffic. For example, when you configure a flow record with the **collectdatalinkmacdestinationaddressinput** command to monitor the simulated denial of service (DoS) attack in the figure below and apply the flow monitor to which the flow record is assigned in either input (ingress) mode on interface Ethernet 0/0.1 on R3 or output (egress) mode on interface Ethernet 1/0.1 on R3, the observation point is always Ethernet 0/0.1 on R3. The destination MAC address that is collected is aaaa.bbbb.cc04.

**Figure 5: Simulated DoS Attack (b)**



When the destination output mac address is configured, the value is the destination mac address of the output packet, even if the monitor the flow record is applied to is input only.

When the destination input mac address is configured, the value is the destination mac address of the input packet, even if the monitor the flow record is applied to is output only.

When the source output mac address is configured, the value is the source mac address of the output packet, even if the monitor the flow record is applied to is input only.

When the source input mac address is configured, the value is the source mac address of the input packet, even if the monitor the flow record is applied to is output only.

## Examples

The following example configures the use of the destination MAC address of packets that are received by the router as a nonkey field for a Flexible NetFlow flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect datalink mac destination address input
```

The following example configures the use of the source MAC addresses of packets that are transmitted by the router as a nonkey field for a Flexible NetFlow flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect datalink mac source address output
```

**Examples**

The following example configures the use of the source MAC addresses of packets that are transmitted by the router as a nonkey field for a Performance Monitor flow record: :

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect datalink mac source address output
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect datalink source-vlan-id

To configure the use of source VLAN ID as a nonkey field for a flow record, use the **collectdatalinksource-vlan-id** command in flow record configuration mode. To disable the use of source VLAN ID as a nonkey field for a flow record, use the **no** form of this command.

**collect datalink source-vlan-id**

**no collect datalink source-vlan-id**

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

**Command Default** Source VLAN ID addresses are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the use of the source VLAN ID as a nonkey field for a Performance Monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect datalink source-vlan-id output
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect datalink vlan

To configure the use of VLAN as a nonkey field for a flow record, use the **collectdatalinkvlan** command in flow record configuration mode. To disable the use of VLAN as a nonkey field for a flow record, use the **no** form of this command.

**collect datalink vlan** {input| output}

**no collect datalink vlan** {input| output}

### Syntax Description

<b>input</b>	Packets received by the router.
<b>output</b>	Packets transmitted by the router.

### Command Default

VLAN addresses are not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into 15.2(2)T without the <b>destination</b> keyword for Cisco Performance Monitor.

### Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

The **input** and **output** keywords are used to specify the observation point that is used by the **collectdatalinkvlan** command to capture the VLAN from network traffic.

**Examples**

The following example configures the use of the VLAN as a nonkey field for a Performance Monitor flow record: :

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect datalink vlan output
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



# collect flow

To configure the flow direction, the flow sampler ID number, or reason why the flow ended as a nonkey field for a flow record, use the **collect flow** command in flow record configuration mode. To disable the use of the flow direction and the flow sampler ID number as a nonkey field for a flow record, use the **no** form of this command.

**collect flow** {**direction**| **sampler**}

**no collect flow** {**direction**| **sampler**}

**Cisco IOS Release 15.1(4)M1**

**collect flow direction**

**no collect flow direction**

## Syntax Description

<b>direction</b>	Configures the flow direction as a nonkey field and enables the collection of the direction in which the flow was monitored.
<b>sampler</b>	Configures the flow sampler ID as a nonkey field and enables the collection of the ID of the sampler that is assigned to the flow monitor.

## Command Default

The flow direction and the flow sampler ID number are not configured as nonkey fields.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(4)M1	This command was integrated into Cisco IOS Release 15.1(4)M1 with only the <b>direction</b> keyword.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**collect flow direction**

This field indicates the direction of the flow. This is of most use when a single flow monitor is configured for input and output flows. It can be used to find and eliminate flows that are being monitored twice, once on input and once on output. This field may also be used to match up pairs of flows in the exported data when the two flows are flowing in opposite directions.

**collect flow sampler**

This field contains the ID of the flow sampler used to monitor the flow. This is useful when more than one flow sampler is being used with different sampling rates. The flow exporter **option sampler-table** command exports options records with mappings of the flow sampler ID to sampling rate so the collector can calculate the scaled counters for each flow.

**Examples**

The following example configures the ID of the flow sampler that is assigned to the flow as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect flow sampler
```

**Examples**

The following example configures the direction in which the flow was monitored as a nonkey field:

```
Router(config)# flow record type performance-monitor FLOW-RECORD-1
Router(config-flow-record)# collect flow direction
```

**Related Commands**

Command	Description
<b>flow exporter</b>	Creates a flow exporter
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect interface

To configure the input and output interface as a nonkey field for a flow record, use the **collect interface** command in flow record configuration mode. To disable the use of the input and output interface as a nonkey field for a flow record, use the **no** form of this command.

**collect interface** {input| output}

**no collect interface** {input| output}

## Syntax Description

<b>input</b>	Configures the input interface as a nonkey field and enables collecting the input interface from the flows.
<b>output</b>	Configures the output interface as a nonkey field and enables collecting the output interface from the flows.

## Command Default

The input and output interface is not configured as a nonkey field.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is

the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **flow record type performance-monitor** command.

#### Examples

The following example configures the input interface as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect interface input
```

The following example configures the output interface as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect interface output
```

#### Examples

The following example configures the input interface as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect interface input
```

#### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect ipv4

To configure one or more of the IPv4 fields as a nonkey field for a flow record, use the **collect ipv4** command in flow record configuration mode. To disable the use of one or more of the IPv4 fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv4 {dscp| header-length| id| option map| precedence| protocol| tos| version}
```

```
no collect ipv4 {dscp| header-length| id| option map| precedence| protocol| tos| version}
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
collect ipv4 dscp
```

```
no collect ipv4 dscp
```

#### Syntax Description

<b>dscp</b>	Configures the differentiated services code point (DCSP) field as a nonkey field and enables collecting the value in the IPv4 DSCP type of service (ToS) fields from the flows.
<b>header-length</b>	Configures the IPv4 header length flag as a nonkey field and enables collecting the value in the IPv4 header length (in 32-bit words) field from the flows.
<b>id</b>	Configures the IPv4 ID flag as a nonkey field and enables collecting the value in the IPv4 ID field from the flows.
<b>option map</b>	Configures the IPv4 options flag as a nonkey field and enables collecting the value in the bitmap representing which IPv4 options have been seen in the options field from the flows.
<b>precedence</b>	Configures the IPv4 precedence flag as a nonkey field and enables collecting the value in the IPv4 precedence (part of ToS) field from the flows.
<b>protocol</b>	Configures the IPv4 payload protocol field as a nonkey field and enables collecting the IPv4 value of the payload protocol field for the payload in the flows
<b>tos</b>	Configures the ToS field as a nonkey field and enables collecting the value in the IPv4 ToS field from the flows.
<b>version</b>	Configures the version field as a nonkey field and enables collecting the value in the IPv4 version field from the flows.

**Command Default** The IPv4 fields are not configured as a nonkey field.

**Command Modes** flow record configuration (config-flow-record)

**Command History**

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with only the <b>dscp</b> keyword.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with only the <b>dscp</b> keyword.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.



**Note**

Some of the keywords of the **collect ipv4** command are documented as separate commands. All of the keywords for the **collect ipv4** command that are documented separately start with **collect ipv4**. For example, for information about configuring the IPv4 time-to-live (TTL) field as a nonkey field and collecting its value for a flow record, refer to the **collect ipv4 ttl** command.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

Only the the **dscp** keyword is available. You must first enter the **flow record type performance-monitor** command.

### Examples

The following example configures the DSCP field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 dscp
```

### Examples

The following example configures the DSCP field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 dscp
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect ipv4 destination

To configure the IPv4 destination address as a nonkey field for a flow record, use the **collect ipv4 destination** command in flow record configuration mode. To disable the use of an IPv4 destination address field as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv4 destination {address| {mask| prefix} [minimum-mask mask]}
```

```
no collect ipv4 destination {address| {mask| prefix} [minimum-mask mask]}
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
collect ipv4 destination mask [minimum-mask mask]
```

```
no collect ipv4 destination mask [minimum-mask mask]
```

#### Syntax Description

<b>address</b>	Configures the IPv4 destination address as a nonkey field and enables collecting the value of the IPv4 destination address from the flows.
<b>mask</b>	Configures the IPv4 destination address mask as a nonkey field and enables collecting the value of the IPv4 destination address mask from the flows.
<b>prefix</b>	Configures the prefix for the IPv4 destination address as a nonkey field and enables collecting the value of the IPv4 destination address prefix from the flows.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 32.

#### Command Default

The IPv4 destination address is not configured as a nonkey field.

#### Command Modes

flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.



Release	Modification
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with only the <b>mask</b> and <b>minimum-mask</b> keywords.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with only the <b>mask</b> and <b>minimum-mask</b> keywords.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

Only the **mask** and **minimum-mask** keywords are available. You must first enter the **flow record type performance-monitor** command.

### Examples

The following example configures the IPv4 destination address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 destination prefix minimum-mask 16
```

### Examples

The following example configures the IPv4 destination address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 destination prefix minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect ipv4 fragmentation

To configure the IPv4 fragmentation flags and the IPv4 fragmentation offset as a nonkey field for a flow record, use the **collect ipv4 fragmentation** command in flow record configuration mode. To disable the use of the IPv4 fragmentation flags and the IPv4 fragmentation offset as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 fragmentation** {flags| offset}

**no collect ipv4 fragmentation** {flags| offset}

### Syntax Description

<b>flags</b>	Configures the IPv4 fragmentation flags as a nonkey field and enables collecting the value in the IPv4 fragmentation flag fields from the flows.
<b>offset</b>	Configures the IPv4 fragmentation offset value as a nonkey field and enables collecting the value in the IPv4 fragmentation offset field from the flows.

### Command Default

The IPv4 fragmentation flags and the IPv4 fragmentation offset are not configured as nonkey fields.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.

### Usage Guidelines

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**collect ipv4 fragmentation flags**

This field collects the "don't fragment" and "more fragments" flags.

Bit 0: reserved, must be zero.

Bit 1: (DF) 0 = May Fragment, 1 = Don't Fragment

Bit 2: (MF) 0 = Last Fragment, 1 = More Fragments

Bits 3-7: (DC) Don't Care, value is irrelevant

```

      0   1   2   3   4   5   6   7
+---+---+---+---+---+---+---+---+
|   | D | M | D | D | D | D | D |
| 0 | F | F | C | C | C | C | C |
+---+---+---+---+---+---+---+

```

For more information on IPv4 fragmentation flags, see RFC 791 *Internet Protocol* at the following URL:  
<http://www.ietf.org/rfc/rfc791.txt> .

**Examples**

The following example configures the IPv4 fragmentation flags as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 fragmentation flags

```

**Examples**

The following example configures the IPv4 fragmentation flags as a nonkey field:

```

Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 fragmentation flags

```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv4 initiator

To configure one or more of the IPv4 initiator address field as a nonkey field for a flow record, use the **collect ipv4 initiator** command in flow record configuration mode. To disable the use of one or more of the IPv4 initiator address field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 initiatoraddress**

**no collect ipv4 initiatoraddress**

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

**Command Default** The IPv4 initiator address field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the IPv4 initiator address field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 initiator address
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect ipv4 responder

To configure one or more of the IPv4 responder address field as a nonkey field for a flow record, use the **collect ipv4 responder** command in flow record configuration mode. To disable the use of one or more of the IPv4 responder address field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 responderaddress**

**no collect ipv4 responderaddress**

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

**Command Default** The IPv4 responder address field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the IPv4 initiator address field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 responder address
```

Related Commands	Command	Description
	<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv4 section

To configure a section of an IPv4 packet as a nonkey field for a flow record, use the **collect ipv4 section** command in flow record configuration mode. To disable the use of a section of an IPv4 packet as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 section** {**header size** *header-size*| **payload size** *payload-size*}

**no collect ipv4 section** {**header size** *header-size*| **payload size** *payload-size*}

### Syntax Description

<b>header size</b> <i>header-size</i>	Configures the number of bytes of raw data starting at the IPv4 header to use as a nonkey field, and enables collecting the value in the raw data from the flows. Range: 1 to 1200.
<b>payload size</b> <i>payload-size</i>	Configures the number of bytes of raw data starting at the IPv4 payload to use as a nonkey field, and enables collecting the value in the raw data from the flows. Range: 1 to 1200.

### Command Default

A section of an IPv4 packet is not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.

### Usage Guidelines

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of

a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

It is recommended that you configure both **header size** and **payload size** so that you know how much data is going to be captured.

#### collect ipv4 section header

This command causes the first IPv4 header to be copied into the flow record for this flow. Only the configured size in bytes will be copied and part of the payload will also be captured if the configured size is larger than the size of the header.



**Note** This command can result in large records which use a lot of router memory and export bandwidth.

#### collect ipv4 section payload

This command results in a copy of the first IPv4 payload being put into the flow record for this flow. Only the configured size in bytes will be copied and may end in a series of 0's if the configured size is greater than the size of the payload.



**Note** This command can result in large records which use a lot of router memory and export bandwidth.

### Examples

The following example configures the first eight bytes from the IP header of the packets in the flows as a non-key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 section header size 8
```

The following example configures the first 16 bytes from the payload of the packets in the flows as a non-key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 section payload size 16
```

### Examples

The following example configures the first 16 bytes from the payload of the packets in the flows as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 section payload size 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv4 source

To configure the IPv4 source address as a nonkey field for a flow record, use the **collect ipv4 source** command in flow record configuration mode. To disable the use of the IPv4 source address field as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv4 source {address| {mask| prefix} [minimum-mask mask]}
```

```
no collect ipv4 source {address| {mask| prefix} [minimum-mask mask]}
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
collect ipv4 source mask [minimum-mask mask]
```

```
no collect ipv4 source mask [minimum-mask mask]
```

#### Syntax Description

<b>address</b>	Configures the IPv4 source address as a nonkey field and enables collecting the value of the IPv4 source address from the flows.
<b>mask</b>	Configures the IPv4 source address mask as a nonkey field and enables collecting the value of the IPv4 source address mask from the flows.
<b>prefix</b>	Configures the prefix for the IPv4 source address as a nonkey field and enables collecting the value of the IPv4 source address prefix from the flows.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 32.

#### Command Default

The IPv4 source address is not configured as a nonkey field.

#### Command Modes

flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.



Release	Modification
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with only the <b>mask</b> and <b>minimum-mask</b> keywords.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with only the <b>mask</b> and <b>minimum-mask</b> keywords.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

Only the **mask** and **minimum-mask** keywords are available. You must first enter the **flow record type performance-monitor** command.

#### collect ipv4 source prefix minimum-mask

The source address prefix is the network part of an IPv4 source address. The optional minimum mask allows more information to be gathered about large networks.

#### collect ipv4 source mask minimum-mask

The source address mask is the number of bits that make up the network part of the source address. The optional minimum mask allows a minimum value to be configured. This command is useful when there is a minimum mask configured for the source prefix field and the mask is to be used with the prefix. In this case, the values configured for the minimum mask should be the same for the prefix and mask fields.

Alternatively, if the collector is aware of the minimum mask configuration of the prefix field, the mask field can be configured without a minimum mask so that the true mask and prefix can be calculated.

### Examples

The following example configures the IPv4 source address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 source prefix minimum-mask 16
```

**Examples**

The following example configures the IPv4 source address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 source prefix minimum-mask 16
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect ipv4 total-length

To configure the IPv4 total-length field as a nonkey field for a flow record, use the **collect ipv4 total-length** command in flow record configuration mode. To disable the use of the IPv4 total-length field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 total-length** [maximum| minimum]

**no collect ipv4 total-length** [maximum| minimum]

## Syntax Description

<b>maximum</b>	(Optional) Configures the maximum value of the total length field as a nonkey field and enables collecting the maximum value of the total length field from the flows.
<b>minimum</b>	(Optional) Configures the minimum value of the total length field as a nonkey field and enables collecting the minimum value of the total length field from the flows.

## Command Default

The IPv4 total-length field is not configured as a nonkey field.

## Command Modes

Flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.

## Usage Guidelines

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of

a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### **collect ipv4 total-length [minimum | maximum]**

This command is used to collect the lowest and highest IPv4 total length values seen in the lifetime of the flow. Configuring this command results in more processing than is needed to simply collect the first total length value seen using the **collect ipv4 total-length** command.

#### **Examples**

The following example configures total-length value as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 total-length
```

The following example configures minimum total-length value seen in the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 total-length minimum
```

#### **Examples**

The following example configures the minimum total-length value seen in the flows as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 total-length minimum
```

#### **Related Commands**

<b>Command</b>	<b>Description</b>
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv4 ttl

To configure the IPv4 time-to-live (TTL) field as a nonkey field for a flow record, use the **collect ipv4 ttl** command in flow record configuration mode. To disable the use of the IPv4 TTL field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv4 ttl** [**maximum**| **minimum**]

**no collect ipv4 ttl** [**maximum**| **minimum**]

### Syntax Description

<b>maximum</b>	(Optional) Configures the maximum value of the TTL field as a nonkey field and enables collecting the maximum value of the TTL field from the flows.
<b>minimum</b>	(Optional) Configures the minimum value of the TTL field as a nonkey field and enables collecting the minimum value of the TTL field from the flows.

### Command Default

The IPv4 time-to-live (TTL) field is not configured as a nonkey field.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the **flow record type performance-monitor** command.

**collect ipv4 ttl [minimum | maximum]**

This command is used to collect the lowest and highest IPv4 TTL values seen in the lifetime of the flow. Configuring this command results in more processing than is needed to simply collect the first TTL value seen using the **collect ipv4 ttl** command.

**Examples**

The following example configures the largest value for IPv4 TTL seen in the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 ttl maximum
```

The following example configures the smallest value for IPv4 TTL seen in the flows as a nonkey field

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv4 ttl minimum
```

**Examples**

The following example configures the smallest value for IPv4 TTL seen in the flows as a nonkey field

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv4 ttl minimum
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record for Flexible NetFlow.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect ipv6

To configure one or more of the IPv6 fields as a nonkey field for a flow record, use the **collect ipv6** command in flow record configuration mode. To disable the use of one or more of the IPv6 fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv6 {dscp| flow-label| next-header| payload-length| precedence| protocol| traffic-class| version}
no collect ipv6 {dscp| flow-label| next-header| payload-length| precedence| protocol| traffic-class| version}
```

### Syntax Description

<b>dscp</b>	Configures the differentiated services code point (DSCP) field as a nonkey field and enables collecting the value in the IPv6 DSCP type of service (ToS) fields from the flows.
<b>flow-label</b>	Configures the IPv6 flow label as a nonkey field and enables collecting the value in the IPv6 flow label from the flows.
<b>next-header</b>	Configures the next-header field as a nonkey field and enables collecting the value of the next-header field in the IPv6 header from the flows.
<b>payload-length</b>	Configures the length of the IPv6 payload as a nonkey field and enables collecting the number of bytes used for the payload in the flows.
<b>precedence</b>	Configures the IPv6 precedence flag as a nonkey field and enables collecting the value in the IPv6 precedence (part of ToS) field from the flows.
<b>protocol</b>	Configures the IPv6 payload protocol field as a nonkey field and enables collecting the IPv6 value of the payload protocol field for the payload in the flows.
<b>traffic-class</b>	Configures the IPv6 traffic-class field as a nonkey field and enables collecting the value in the IPv6 protocol field from the flows.
<b>version</b>	Configures the IPv6 version field as a nonkey field and enables collecting the value in the IPv6 version field from the flows.

### Command Default

The IPv6 fields are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.



#### Note

Some of the keywords for the **collect ipv6** command are documented as separate commands. All of the keywords for the **collect ipv6** command that are documented separately start with **collect ipv6**. For example, for information about configuring the IPv6 hop limit field as a nonkey field and collecting its value for a flow record, refer to the **collect ipv6 hop-limit** command.

### Examples

The following example configures the IPv6 DSCP field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 dscp
```



**Examples**

The following example configures the IPv6 DSCP field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 dscp
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 destination

To configure the IPv6 destination address as a nonkey field for a flow record, use the **collect ipv6 destination** command in flow record configuration mode. To disable the use of an IPv6 destination address field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 destination** {address| {mask| prefix} [minimum-mask *mask*]}  
**no collect ipv6 destination** {address| {mask| prefix} [minimum-mask *mask*]}

### Command Syntax on Cisco Catalyst 6500 Switches running Cisco IOS Release 12.2(50)SY

**collect ipv6 destination** {mask| prefix}

**no collect ipv6 destination** {mask| prefix}

#### Syntax Description

<b>address</b>	Configures the IPv6 destination address as a nonkey field and enables collecting the value of the IPv6 destination address from the flows.
<b>mask</b>	Configures the IPv6 destination address mask as a nonkey field and enables collecting the value of the IPv6 destination address mask from the flows.
<b>prefix</b>	Configures the prefix for the IPv6 destination address as a nonkey field and enables collecting the value of the IPv6 destination address prefix from the flows.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 128.

#### Command Default

The IPv6 destination address is not configured as a nonkey field.

#### Command Modes

Flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was modified. The <b>address</b> and <b>minimum-mask</b> keywords were not supported in Cisco IOS Release 12.2(50)SY.

Release	Modification
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the IPv6 destination address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 destination prefix minimum-mask 16
```

### Examples

The following example configures the IPv6 destination address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 destination prefix minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect ipv6 extension map

To configure the bitmap of the IPv6 extension header map as a nonkey field for a flow record, use the **collect ipv6 extension map** command in flow record configuration mode. To disable the use of the IPv6 bitmap of IPv6 extension header map as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 extension map**

**no collect ipv6 extension map**

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

**Command Default** The use of the bitmap of the IPv6 extension header map is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Bitmap of the IPv6 Extension Header Map

The bitmap of IPv6 extension header map is made up of 32 bits.

0	1	2	3	4	5	6	7	
Res	FRA1	RH	FRA0	UNK	Res	HOP	DST	
8	9	10	11	12	13	14	15	
PAY	AH	ESP	Reserved					
16	17	18	19	20	21	22	23	
Reserved								
24	25	26	27	28	29	30	31	
Reserved								

```

0 Res Reserved
1 FRA1 Fragmentation header - not first fragment
2 RH Routing header
3 FRA0 Fragment header - first fragment
4 UNK Unknown Layer 4 header
   (compressed, encrypted, not supported)
5 Res Reserved
6 HOP Hop-by-hop option header
7 DST Destination option header
8 PAY Payload compression header
9 AH Authentication Header
10 ESP Encrypted security payload
11 to 31 Reserved

```

For more information on IPv6 headers, refer to RFC 2460 *Internet Protocol, Version 6 (IPv6)* at the following URL: <http://www.ietf.org/rfc/rfc2460.txt>.

#### Examples

The following example configures the bitmap of IPv6 extension header map as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 extension map

```

#### Examples

The following example configures the bitmap of IPv6 extension header map as a nonkey field:

```

Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 extension map

```

#### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 fragmentation

To configure one or more of the IPv6 fragmentation fields as a nonkey field for a flow record, use the **collect ipv6 fragmentation** command in flow record configuration mode. To disable the use one or more of the IPv6 fragmentation fields as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 fragmentation** {flags| id| offset}

**no collect ipv6 fragmentation** {flags| id| offset}

### Syntax Description

<b>flags</b>	Configures the IPv6 fragmentation flags as a non-key field and enables collecting the value in the IPv6 fragmentation flag fields from the flows.
<b>id</b>	Configures the IPv6 fragmentation ID as a non-key field and enables collecting the value in the IPv6 fragmentation id fields from the flows
<b>offset</b>	Configures the IPv6 fragmentation offset as a non-key field and enables collecting the value in the IPv6 fragmentation offset field from the flows.

### Command Default

The use of one or more of the IPv6 fragmentation fields is not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is

the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the IPv6 fragmentation flags field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 fragmentation flags
```

### Examples

The following example configures the IPv6 fragmentation flags field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 fragmentation flags
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 hop-limit

To configure the IPv6 hop limit as a nonkey field for a flow record, use the **collect ipv6 hop-limit** command in flow record configuration mode. To disable the use of the IPv6 hop limit field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 hop-limit [maximum] [minimum]**

**no collect ipv6 hop-limit [maximum] [minimum]**

### Syntax Description

<b>maximum</b>	(Optional) Configures the IPv6 maximum hop limit as a nonkey field and enables collecting the value of the IPv6 maximum hop limit from the flows.
<b>minimum</b>	(Optional) Configures the IPv6 minimum hop limit as a nonkey field and enables collecting the value of the IPv6 minimum hop limit from the flows.

### Command Default

The IPv6 hop limit is not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

**collect ipv6 hop-limit [minimum | maximum]**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.



Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

This command is used to collect the lowest and highest IPv6 hop limit values seen in the lifetime of the flow. Configuring this command results in more processing than is needed to simply collect the first hop limit value seen using the **collect ipv6 hop-limit** command.

### Examples

The following example configures the IPv6 maximum hop limit from the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 hop-limit maximum
```

### Examples

The following example configures the IPv6 maximum hop limit from the flows as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 hop-limit maximum
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect ipv6 initiator

To configure one or more of the IPv6 initiator address field as a nonkey field for a flow record, use the **collect ipv6 initiator** command in flow record configuration mode. To disable the use of one or more of the IPv6 initiator address field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 initiatoraddress**

**no collect ipv6 initiatoraddress**

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

**Command Default** The IPv6 fields are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

The following example configures the IPv6 initiator address field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 initiator address
```

## Examples

The following example configures the IPv6 initiator address field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 initiator address
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 length

To configure one or more of the IPv6 length fields as a nonkey field for a flow record, use the **collect ipv6 length** command in flow record configuration mode. To disable the use of one or more of the IPv6 length fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv6 length {header| payload| total [maximum] [minimum]}
```

```
no collect ipv6 length {header| payload| total [maximum] [minimum]}
```

### Syntax Description

<b>header</b>	Configures the length in bytes of the IPv6 header, not including any extension headers, as a nonkey field and collects the value of it for a flow record.
<b>payload</b>	Configures the length in bytes of the IPv6 payload, including any extension headers, as a nonkey field and collects the value of it for a flow record.
<b>total</b>	Configures the total length in bytes of the IPv6 header and payload as a nonkey field and collects the value of it for a flow record.
<b>maximum</b>	(Optional) Configures the maximum total length in bytes of the IPv6 header and payload as a nonkey field and collects the value of it for a flow record.
<b>minimum</b>	(Optional) Configures the minimum total length in bytes of the IPv6 header and payload as a nonkey field and collects the value of it for a flow record.

### Command Default

The IPv6 length fields are not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

#### **collect ipv6 length [minimum | maximum]**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

This command is used to collect the lowest and highest IPv6 length values seen in the lifetime of the flow. Configuring this command results in more processing than is needed to simply collect the length value seen using the **collect ipv6 length** command.

### Examples

The following example configures the length of the IPv6 header, not including any extension headers, in bytes as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 length header
```

### Examples

The following example configures the length of the IPv6 header, not including any extension headers, in bytes as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 length header
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect ipv6 responder

To configure one or more of the IPv6 responder address field as a nonkey field for a flow record, use the **collect ipv6 responder** command in flow record configuration mode. To disable the use of one or more of the IPv6 responder address field as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 responderaddress**

**no collect ipv6 responderaddress**

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

**Command Default** The IPv6 fields are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the IPv6 responder address field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 responder address
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 section

To configure a section of an IPv6 packet as a nonkey field for a flow record, use the **collect ipv6 section** command in flow record configuration mode. To disable the use of a section of an IPv6 packet as a nonkey field for a flow record, use the **no** form of this command.

**collect ipv6 section** {**header size** *header-size*| **payload size** *payload-size*}

**no collect ipv6 section** {**header size** *header-size*| **payload size** *payload-size*}

### Syntax Description

<b>header size</b> <i>header-size</i>	Configures the number of bytes of raw data, starting at the IPv6 header, to use as a nonkey field, and enables collecting the value in the raw data from the flows. Range: 1 to 1200.
<b>payload size</b> <i>payload-size</i>	Configures the number of bytes of raw data, starting at the IPv6 payload, to use as a nonkey field, and enables collecting the value in the raw data from the flows. Range: 1 to 1200.

### Command Default

A section of an IPv6 packet is not configured as a non-key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

It is recommended that you configure both **header size** and **payload size** so that you know how much data is going to be captured.

**Note**

The IPv6 payload data is captured only if the first packet in the flow is an IPv6 packet. If the first packet in the flow is not an IPv6 packet, information from other packets in the flow such as packet and byte counters, is still captured.

**collect ipv6 section header**

This command causes a copy of the first IPv6 header to be put into the flow record for this flow. Only the configured size in bytes will be copied, and part of the payload will also be captured if the configured size is larger than the size of the header.

**Note**

Configuring this command can result in large records that use a lot of router memory and export bandwidth.

**collect ipv6 section payload**

This command causes a copy of the first IPv6 payload to be put into the flow record for this flow. Only the configured size in bytes will be copied, and it may end in a series of zeros if the configured size is smaller than the size of the payload.

**Note**

Configuring this command can result in large records that use a lot of router memory and export bandwidth.

**Examples**

The following example configures the first eight bytes from the IPv6 header of the packets in the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 section header size 8
```

The following example configures the first 16 bytes from the payload of the IPv6 packets in the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 section payload size 16
```



**Examples**

The following example configures the first 16 bytes from the payload of the IPv6 packets in the flows as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 section payload size 16
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect ipv6 source

To configure the IPv6 source address as a nonkey field for a flow record, use the **collect ipv6 source** command in flow record configuration mode. To disable the use of the IPv6 source address field as a nonkey field for a flow record, use the **no** form of this command.

```
collect ipv6 source {address| {mask| prefix} [minimum-mask mask]}
```

```
no collect ipv6 source {address| {mask| prefix} [minimum-mask mask]}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
collect ipv6 source {mask| prefix}
```

```
no collect ipv6 source {mask| prefix}
```

### Syntax Description

<b>address</b>	Configures the IPv6 source address as a nonkey field and enables collecting the value of the IPv6 source address from the flows.
<b>mask</b>	Configures the IPv6 source address mask as a nonkey field and enables collecting the value of the IPv6 source address mask from the flows.
<b>prefix</b>	Configures the prefix for the IPv6 source address as a nonkey field and enables collecting the value of the IPv6 source address prefix from the flows.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 128.

### Command Default

The IPv6 source address is not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was modified. The <b>address</b> and <b>minimum-mask</b> keywords were not supported in Cisco IOS Release 12.2(50)SY.

Release	Modification
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

#### collect IPv6 source prefix minimum mask

The source address prefix field is the network part of the source address. The optional minimum mask allows more information to be gathered about large networks.

#### collect IPv6 source mask minimum mask

The source address mask is the number of bits that make up the network part of the source address. The optional minimum mask allows a minimum value to be configured. This command is useful when there is a minimum mask configured for the source prefix field and the mask is to be used with the prefix. In this case, the values configured for the minimum mask should be the same for the prefix and mask fields.

Alternatively, if the collector is aware of the minimum mask configuration of the prefix field, the mask field can be configured without a minimum mask so that the true mask and prefix can be calculated.

### Examples

The following example configures the IPv6 source address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect ipv6 source prefix minimum-mask 16
```

### Examples

The following example configures the IPv6 source address prefix from the flows that have a prefix of 16 bits as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect ipv6 source prefix minimum-mask 16
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect metadata

To configure one or more of the metadata fields as a nonkey field for a flow record, use the **collect metadata** command in flow record configuration mode. To disable the use the metadata fields as a key field for a flow record, use the **no** form of this command.

**collect metadata** {global-session-id| multi-party-session-id}

**no collect metadata** {global-session-id| multi-party-session-id}

### Syntax Description

<b>global-session-id</b>	Configured the name used by the media monitoring system to maintain tracking of a flow end to end as a nonkey field and enables collecting the value in the global session ID field from the flows.
<b>multi-party-session-id</b>	Configured the name used by the media monitoring system to track related flows of a media session end to end as a nonkey field and enables collecting the value in the multiparty session field from the flows.

### Command Default

The metadata fields are not configured as nonkey fields.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
15.2(2)S	This command was introduced.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of

a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the global session ID of an end-to-end flow as a nonkey field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# collect metadata global-session-id
```

### Examples

The following example configures the global session ID of an end-to-end flow as a nonkey field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect metadata global-session-id
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect monitor event

To configure the monitor event field as a nonkey field for a flow record, use the **collect monitor event** command in flow record configuration mode. To disable the use of a monitor event field as a nonkey field for a flow record, use the **no** form of this command.

**collect monitor event**

**no collect monitor event**

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

**Command Default** The monitor event field is not configured as a nonkey field for a user-defined flow record.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** Monitor events are recorded using two bits. Bit 1 is not used. Bit 2 indicates that no media application packets were seen, in other words, a Media Stop Event occurred.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the monitor event field as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect monitor event
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect policy performance-monitor

To configure the classification hierarchy of the performance monitor policy as a nonkey field for a flow record, use the **collect policy performance-monitor** command in flow record configuration mode. To disable the use of this nonkey field for a flow record, use the **no** form of this command.

**collect policy performance-monitor classification hierarchy**

**no collect policy performance-monitor classification hierarchy**

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

**Command Default** Classification hierarchy of the performance monitor policy is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release XE 3.8S	This command was introduced.

## Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

Because the mode prompt is the same for Flexible NetFlow and Performance Monitor, the command mode for both products is referred to as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

The following example configures the use of the classification hierarchy of the performance monitor policy as a nonkey field for a Flexible NetFlow flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect policy performance-monitor classification hierarchy
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.





# collect routing

To configure one or more of the routing attributes as a nonkey field for a flow record, use the **collect routing** command in flow record configuration mode. To disable the use of one or more of the routing attributes as a nonkey field for a flow record, use the **no** form of this command.

```
collect routing {{destination| source} {as [[4octet]] [{peer [4-octet]]} | trafficindex} | forwardingstatus|
nextthop address {ipv4| ipv6} [[bgp]] vrf input| vrf output}
```

```
no collect routing {{destination| source} {as [[4octet]] [{peer [4-octet]]} | trafficindex} | forwardingstatus|
nextthop address {ipv4| ipv6} [[bgp]] vrf input| vrf output}
```

## Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
collect routing forwarding-status [reason]
```

```
no collect routing forwarding-status [reason]
```

### Syntax Description

<b>destination</b>	Configures one or more of the destination routing attributes fields as a nonkey field and enables collecting the values from the flows.
<b>source</b>	Configures one or more of the source routing attributes fields as a nonkey field and enables collecting the values from the flows.
<b>as</b>	Configures the autonomous system field as a nonkey field and enables collecting the value in the autonomous system field from the flows.
4-octet	(Optional) Configures the 32-bit autonomous system number as a nonkey field.
<b>peer</b>	(Optional) Configures the autonomous system number of the peer network as a nonkey field and enables collecting the value of the autonomous system number of the peer network from the flows.
<b>traffic-index</b>	Configures the Border Gateway Protocol (BGP) source or destination traffic index as a nonkey field and enables collecting the value of the BGP destination traffic index from the flows.
<b>forwarding-status</b>	Configures the forwarding status as a nonkey field and enables collecting the value of the forwarding status of the packet from the flows.

<b>next-hop address</b>	Configures the next-hop address value as a nonkey field and enables collecting information regarding the next hop from the flows. The type of address (IPv4 or IPv6) is determined by the next keyword entered.
<b>ipv4</b>	Specifies that the <b>next-hop address</b> value is an IPv4 address.
<b>ipv6</b>	Specifies that the <b>next-hop address</b> value is an IPv6 address.
<b>bgp</b>	(Optional) Configures the IP address of the next hop BGP network as a nonkey field and enables collecting the value of the IP address of the BGP next hop network from the flows.
<b>vrf input</b>	Configures the Virtual Routing and Forwarding (VRF) ID for incoming packets as a nonkey field.
<b>reason</b>	Configures the reason for the forwarding status as a nonkey field.
<b>vrf output</b>	Configures the Virtual Routing and Forwarding (VRF) ID for outgoing packets as a nonkey field.

**Command Default** The routing attributes are not configured as a nonkey field.

**Command Modes** flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.4(20)T	This command was modified. The <b>ipv6</b> keyword was added.
15.0(1)M	This command was modified. The <b>vrf input</b> keywords were added.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.

Release	Modification
Cisco IOS XE Release 3.2S	This command was modified. The <b>4-octet</b> keyword was added.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with only the <b>forwarding-status</b> keyword and the addition of the <b>reason</b> keyword.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with only the <b>forwarding-status</b> keyword and the addition of the <b>reason</b> keyword.
Cisco IOS XE Release 3.8S	This command was modified. The <b>vrf output</b> keyword was added for Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode. For Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode. Here we refer to them both as flow record configuration mode.

The Flexible NetFlow and Performance Monitor **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

The **reason** keyword was added and only the **forwarding-status** keyword is available. You must first enter the **flow record type performance-monitor** command.

#### **collect routing source as [peer]**

This command collects the 16-bit autonomous system number based on a lookup of the router's routing table using the source IP address. The optional **peer** keyword provides the expected next network, as opposed to the originating network.

#### **collect routing source as 4-octet [peer 4-octet]**

This command collects the 32-bit autonomous system number based on a lookup of the router's routing table using the source IP address. The optional **peer** keyword provides the expected next network, as opposed to the originating network.

#### **collect routing destination as [peer]**

This command collects the 16-bit autonomous system number based on a lookup of the router's routing table using the destination IP address. The optional **peer** keyword provides the expected next network as opposed to the destination network.

#### **collect routing destination as 4-octet [peer 4-octet]**

This command collects the 32-bit autonomous system number based on a lookup of the router's routing table using the destination IP address. The **peer** keyword will provide the expected next network as opposed to the destination network.

**collect routing destination traffic-index**

This command collects the traffic-index field based on the destination autonomous system for this flow. The traffic-index field is a value propagated through BGP.

This command is not supported for IPv6.

**collect routing source traffic-index**

This command collects the traffic-index field based on the source autonomous system for this flow. The traffic-index field is a value propagated through BGP.

This command is not supported for IPv6.

**collect routing forwarding-status**

This command collects a field to indicate if the packets were successfully forwarded. The field is in two parts and may be up to 4 bytes in length. For the releases specified in the Command History table, only the status field is used:

```

+--+--+--+--+--+--+
| S | Reason  |
| t | codes   |
| a | or      |
| t | flags   |
| u |         |
| s |         |
+--+--+--+--+--+--+
 0 1 2 3 4 5 6 7

```

Status:

00b=Unknown, 01b = Forwarded, 10b = Dropped, 11b = Consumed

**collect routing vrf input**

This command collects the VRF ID from incoming packets on a router. In the case where VRFs are associated with an interface via methods such as VRF Selection Using Policy Based Routing/Source IP Address, a VRF ID of 0 will be recorded. If a packet arrives on an interface that does not belong to a VRF, a VRF ID of 0 is recorded.

**Examples**

The following example configures the 16-bit autonomous system number based on a lookup of the router's routing table using the source IP address as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing source as

```

The following example configures the 16-bit autonomous system number based on a lookup of the router's routing table using the destination IP address as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing destination as

```

The following example configures the value in the traffic-index field based on the source autonomous system for a flow as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing source traffic-index

```

The following example configures the forwarding status as a nonkey field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing forwarding-status

```

The following example configures the VRF ID for incoming packets as a nonkey field for a Flexible NetFlow flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing vrf input
```

### Examples

The following example configures the forwarding status as a nonkey field for a Performance Monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect routing forwarding-status reason
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect routing is-multicast

To configure the use of the is-multicast field (indicating that the IPv4 traffic is multicast traffic) as a nonkey field, use the **collect routing is-multicast** command in flow record configuration mode. To disable the use of the is-multicast field as a nonkey field for a flow record, use the **no** form of this command.

**collect routing is-multicast**

**no collect routing is-multicast**

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

**Command Default** The is-multicast field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	12.4(22)T	This command was introduced.
	12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
	15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the is-multicast field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing is-multicast
```

**Examples**

The following example configures the is-multicast field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect routing is-multicast
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



# collect routing multicast replication-factor

To configure the multicast replication factor value for IPv4 traffic as a nonkey field for a flow record, use the **collect routing multicast replication-factor** command in flow record configuration mode. To disable the use of the multicast replication factor value as a nonkey field for a flow record, use the **no** form of this command.

**collect routing multicast replication-factor**

**no collect routing multicast replication-factor**

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

**Command Default** The multicast replication factor value is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

When the replication-factor field is used in a flow record, it will only have a non-zero value in the cache for ingress multicast traffic that is forwarded by the router. If the flow record is used with a flow monitor in output (egress) mode or to monitor unicast traffic or both, the cache data for the replication factor field is set to 0.

## Examples



### Note

This command is not supported on ASR and ISR platforms.

The following example configures the multicast replication factor value as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect routing multicast replication-factor
```

## Examples

The following example configures the multicast replication factor value as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect routing multicast replication-factor
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect services waas

To configure one of the WAAS services fields as a nonkey field for a flow record, use the **collect services waas** command in flow record configuration mode. To disable the use of this nonkey field for a flow record, use the **no** form of this command.

**collect services waas** {segment| passthrough-reason}

**no collect services waas** {segment| passthrough-reason}

### Syntax Description

<b>segment</b>	Configures the field for the WAAS services segment, as a nonkey field.
<b>passthrough-reason</b>	Configures the field for the WAAS services passthrough reason, as a nonkey field.

### Command Default

WAAS services fields are not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release XE 3.8S	This command was introduced.

### Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

Because the mode prompt is the same for Flexible NetFlow and Performance Monitor, the command mode for both products is referred to as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the use of the WAAS services passthrough-reason as a nonkey field for a performance monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect services waas passthrough-reason
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect timestamp absolute

To configure one of the absolute timestamp fields as a nonkey field for a flow record, use the **collect timestamp absolute** command in flow record configuration mode. To disable the use of one of the absolute timestamp fields as a nonkey field for a flow record, use the **no** form of this command.

**collect timestamp absolute** {first| last}

**no collect timestamp absolute** {first| last}

## Syntax Description

<b>first</b>	Configures the field for the first absolute timestamp, as a nonkey field.
<b>last</b>	Configures the field for the last absolute timestamp, as a nonkey field.

## Command Default

The absolute timestamp fields are not configured as a nonkey field for a user-defined flow record.

## Command Modes

flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

The following example configures the field for the first absolute timestamp, as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect absolute timestamp first
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect timestamp interval

To configure the start time of the monitoring interval as a nonkey field for a flow record, use the **collect timestamp interval** command in flow record configuration mode. To disable the use of the start time of the monitoring interval as a nonkey field for a flow record, use the **no** form of this command.

**collect timestamp interval**

**no collect timestamp interval**

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

**Command Default** The start time of the monitoring interval is not configured as a nonkey field.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures the start time of the monitoring interval as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect timestamp interval
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect timestamp sys-uptime

To configure the system uptime of the first seen or last seen packet in a flow as a nonkey field for a flow record, use the **collect timestamp sys-uptime** command in flow record configuration mode. To disable the use of the first seen or last seen packet in a flow as a nonkey field for a flow record, use the **no** form of this command.

**collect timestamp sys-uptime {first| last}**

**no collect timestamp sys-uptime {first| last}**

### Syntax Description

<b>first</b>	Configures the system uptime for the time the first packet was seen from the flows as a nonkey field and enables collecting time stamps based on the system uptime for the time the first packet was seen from the flows.
<b>last</b>	Configures the system uptime for the time the last packet was seen from the flows as a nonkey field and enables collecting time stamps based on the system uptime for the time the most recent packet was seen from the flows.

### Command Default

The system uptime field is not configured as a nonkey field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Release	Modification
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures time stamps based on the system uptime for the time the first packet was seen from the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect timestamp sys-uptime first
```

The following example configures the time stamps based on the system uptime for the time the most recent packet was seen from the flows as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect timestamp sys-uptime last
```

### Examples

The following example configures the time stamps based on the system uptime for the time the most recent packet was seen from the flows as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect timestamp sys-uptime last
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.





# collect transport

To configure one or more of the transport layer fields as a nonkey field for a flow record, use the **collect transport** command in flow record configuration mode. To disable the use of one or more of the transport layer fields as a nonkey field for a flow record, use the **no** form of this command.

**collect transport** {destination-port| igmp type| source-port}

**no collect transport** {destination-port| igmp type| source-port}

## Syntax Description

<b>destination-port</b>	Configures the destination port as a nonkey field and enables collecting the value of the destination port from the flows.
<b>igmp type</b>	Configures the Internet Group Management Protocol (IGMP) type as a nonkey field and enables collecting the value of the IGMP type from the flows.
<b>source-port</b>	Configures the source port as a nonkey field and enables collecting the value of the source port from the flows.

## Command Default

The transport layer fields are not configured as a nonkey field.

## Command Modes

Flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the transport destination port as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport destination-port
```

The following example configures the transport source port as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport source-port
```

### Examples

The following example configures the transport source port as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport source-port
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect transport event packet-loss counter

To configure the event packet-loss counter field as a nonkey field for a flow record, use the **collect transport event packet-loss counter** command in flow record configuration mode. To disable the use of the event packet-loss counter field as a nonkey field for a flow record, use the **no** form of this command.

**collect transport event packet-loss counter**

**no collect transport event packet-loss counter**

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

**Command Default** The event packet-loss counter field is not configured as a nonkey field for a user-defined flow record.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** The event packet-loss counter is incremented when a lost RTP packet is detected. However, the counter is also incremented when a reorder occurs, in other words, when packets are received out of order.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples** The following example configures event packet-loss counter field as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect transport event packet-loss counter
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

## collect transport icmp ipv4

To configure the internet control message protocol (ICMP) IPv4 type field and the code field as nonkey fields for a flow record, use the **collect transport icmp ipv4** command in flow record configuration mode. To disable the use of the ICMP IPv4 type field and code field as nonkey fields for a flow record, use the **no** form of this command.

**collect transport icmp ipv4** {code| type}

**no collect transport icmp ipv4** {code| type}

### Syntax Description

<b>code</b>	Configures the ICMP code as a nonkey field and enables collecting the value of the ICMP code from the flow.
<b>type</b>	Configures the ICMP type as a nonkey field and enables collecting the value of the ICMP type from the flow.

### Command Default

The ICMP IPv4 type field and the code field are not configured as nonkey fields.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**Examples**

The following example configures the ICMP IPv4 code field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport icmp ipv4 code
The following example configures the ICMP IPv4 type field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport icmp ipv4 type
```

**Examples**

The following example configures the ICMP IPv4 type field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport icmp ipv4 type
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect transport icmp ipv6

To configure the Internet Control Message Protocol (ICMP) IPv6 type field and code field as nonkey fields for a flow record, use the **collect transport icmp ipv6** command in flow record configuration mode. To disable the use of the ICMP IPv6 type field and code field as nonkey fields for a flow record, use the **no** form of this command.

**collect transport icmp ipv6** {code| type}

**no collect transport icmp ipv6** {code| type}

### Syntax Description

<b>code</b>	Configures the ICMP code as a nonkey field and enables collecting the value of the ICMP code from the flow.
<b>type</b>	Configures the ICMP type as a nonkey field and enables collecting the value of the ICMP type from the flow.

### Command Default

The ICMP IPv6 type field and code field are not configured as nonkey fields.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the ICMP IPv6 code field as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport icmp ipv6 code
The following example configures the ICMP IPv6 type field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport icmp ipv6 type
```

### Examples

The following example configures the ICMP IPv6 type field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport icmp ipv6 type
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



# collect transport initiator port

To configure one or more of the transport initiator port field as a nonkey field for a flow record, use the **collect transport initiator port** command in flow record configuration mode. To disable the use of one or more of the transport initiator port field as a nonkey field for a flow record, use the **no** form of this command.

**collect transport initiatorport**

**no collect transport initiatorport**

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

**Command Default** The transport initiator port field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

**Examples** The following example configures the transport initiator port field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport initiator port
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect transport packets

To configure various packet fields as a nonkey field for a flow record, use the **collect transport packets** command in flow record configuration mode. To disable the use of a packet field as a nonkey field for a flow record, use the **no** form of this command.

**collect transport packets** {**lost counter**| **lost rate**| **expected counter**| **out-of-order**| **round-trip-time**}

**no collect transport packets** {**lost counter**| **lost rate**| **expected counter**| **out-of-order**| **round-trip-time**}

### Syntax Description

<b>lost counter</b>	Configures the field that counts the number of lost packets as a nonkey field.
<b>lost rate</b>	Configures the field that counts the rate of lost packets as a nonkey field.
<b>expected counter</b>	Configures the field that counts the number of expected packets as a nonkey field.
<b>out-of-order</b>	Configures the number of out-of-order packets as a nonkey field and enables collecting the values from the flow.
<b>round-trip-time</b>	Configures the field for the packet round-trip-time as a nonkey field.

### Command Default

The packet fields are not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
Cisco IOS XE Release 3.6S	This command was modified. The <b>out-of-order</b> keyword was added into Cisco IOS XE Release 3.6S for Cisco Performance Monitor.

### Usage Guidelines

You can retrieve different transport packet counters for RTP and TCP. The following transport packet counters are available:

- rtp lost counter
- rtp lost rate
- rtp expected counter
- tcp transport round-trip-time
- number of out-of-order packets

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the field that counts the number of lost packets as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect transport packets lost counter
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# collect transport responder port

To configure the transport responder port field as a nonkey field for a flow record, use the **collect transport responder port** command in flow record configuration mode. To disable the use of the transport responder port field as a nonkey field for a flow record, use the **no** form of this command.

**collect transport responderport**

**no collect transport responderport**

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

**Command Default** The transport responder port field is not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)

## Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

## Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

## Examples

### Examples

The following example configures the transport responder port field as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport responder port
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## collect transport rtp jitter

To configure one of the RTP jitter fields as a nonkey field for a flow record, use the **collect transport rtp jitter** command in flow record configuration mode. To disable the use of a jitter field as a nonkey field for a flow record, use the **no** form of this command.

```
collect transport rtp jitter {mean| maximum| minimum}
```

```
no collect transport rtp jitter {mean| maximum| minimum}
```

### Syntax Description

<b>jitter</b>	Configures the RTP jitter field as a nonkey field.
<b>mean</b>	Configures the mean value of the RTP jitter field as a nonkey field.
<b>maximum</b>	Configures the maximum value of the RTP jitter field as a nonkey field.
<b>minimum</b>	Configures the minimum value of the RTP jitter field as a nonkey field.

### Command Default

The RTP jitter field is not configured as a nonkey field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the RTP jitter field as a nonkey field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# collect transport rtp jitter
```

**Related Commands**

Command	Description
flow record type performance-monitor	Creates a flow record for Performance Monitor.

## collect transport tcp

To configure one or more of the TCP fields as a nonkey field for a flow record, use the **collect transport tcp** command in flow record configuration mode. To disable the use of one or more of the TCP fields as a nonkey field for a flow record, use the **no** form of this command.

```
collect transport tcp {acknowledgement-number| destination-port| flags [ack| cwr| ece| fin| psh| rst| syn|
urg]] header-length| maximum-segment-size| sequence-number| source-port| urgent-pointer| window-size|
window-size-average| window-size-maximum| window-size-minimum}
```

```
no collect transport tcp {acknowledgement-number| destination-port| flags [ack| cwr| ece| fin| psh| rst|
syn| urg]] header-length| maximum-segment-size| sequence-number| source-port| urgent-pointer|
window-size| window-size-average| window-size-maximum| window-size-minimum}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
collect transport tcp flags [ack| cwr| ece| fin| psh| rst| syn| urg]
```

```
no collect transport tcp flags [ack| cwr| ece| fin| psh| rst| syn| urg]
```

### Cisco IOS XE Release 3.2SE

```
collect transport tcp flags [ack| cwr| ece| fin| psh| rst| syn| urg]
```

```
no collect transport tcp flags [ack| cwr| ece| fin| psh| rst| syn| urg]
```

### Syntax Description

<b>acknowledgement- number</b>	Configures the TCP acknowledgement number as a nonkey field and enables collecting the value of the TCP acknowledgment number from the flow.
<b>destination-port</b>	Configures the TCP destination port as a nonkey field and enables collecting the value of the TCP destination port from the flow.
<b>flags</b>	Configures one or more of the TCP flags as a nonkey field and enables collecting the values from the flow.
<b>ack</b>	(Optional) Configures the TCP acknowledgment flag as a nonkey field.
<b>cwr</b>	(Optional) Configures the TCP congestion window reduced flag as a nonkey field.
<b>ece</b>	(Optional) Configures the TCP Explicit Congestion Notification echo (ECE) flag as a nonkey field.
<b>fin</b>	(Optional) Configures the TCP finish flag as a nonkey field.

<b>psh</b>	(Optional) Configures the TCP push flag as a nonkey field.
<b>rst</b>	(Optional) Configures the TCP reset flag as a nonkey field.
<b>syn</b>	(Optional) Configures the TCP synchronize flag as a nonkey field.
<b>urg</b>	(Optional) Configures the TCP urgent flag as a nonkey field.
<b>header-length</b>	Configures the TCP header length (in 32-bit words) as a nonkey field and enables collecting the value of the TCP header length from the flow.
<b>maximum-segment-size</b>	Configures the maximum segment size as a nonkey field and enables collecting the values from the flow.
<b>sequence-number</b>	Configures the TCP sequence number as a nonkey field and enables collecting the value of the TCP sequence number from the flow.
<b>source-port</b>	Configures the TCP source port as a nonkey field and enables collecting the value of the TCP source port from the flow.
<b>urgent-pointer</b>	Configures the TCP urgent pointer as a nonkey field and enables collecting the value of the TCP urgent pointer from the flow.
<b>window-size</b>	Configures the TCP window size as a nonkey field and enables collecting the value of the TCP window size from the flow.
<b>window-size-average</b>	Configures the average window size as a nonkey field and enables collecting the values from the flow.
<b>window-size-maximum</b>	Configures the maximum window size as a nonkey field and enables collecting the values from the flow.
<b>window-size-minimum</b>	Configures the minimum window size as a nonkey field and enables collecting the values from the flow.

**Command Default** The TCP fields are not configured as a nonkey field.

**Command Modes** Flow record configuration (config-flow-record)



**Command History**

<b>Release</b>	<b>Modification</b>
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY without the support of the <b>acknowledgement-number</b> , <b>destination-port</b> , <b>header-length</b> , <b>sequence-number</b> , <b>source-port</b> , <b>urgent-pointer</b> , and <b>window-size</b> keywords.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.
Cisco IOS XE Release 3.6S	This command was modified. The <b>maximum-segment-size</b> , <b>window-size-average</b> , <b>window-size-maximum</b> , and <b>window-size-minimum</b> keywords were added into Cisco IOS XE Release 3.6S for Cisco Performance Monitor.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE without the support for the <b>acknowledgement-number</b> , <b>destination-port</b> , <b>header-length</b> , <b>sequence-number</b> , <b>source-port</b> , <b>urgent-pointer</b> , and <b>window-size</b> keywords.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

**collect transport tcp flags ece**

For more information about ECN echo, refer to RFC 3168 *The Addition of Explicit Congestion Notification (ECN) to IP*, at the following URL: <http://www.ietf.org/rfc/rfc3168.txt>.

**Examples**

The following example configures the TCP acknowledgment number as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport tcp acknowledgement-number
```

The following example configures the TCP source port as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport tcp source-port
```

The following example configures the TCP acknowledgment flag as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport tcp flags ack
```

The following example configures the TCP finish flag as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport tcp flags fin
```

The following example configures the TCP reset flag as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport tcp flags rst
```

**Examples**

The following example configures the TCP reset flag as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport tcp flags rst
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# collect transport udp

To configure one or more of the user datagram protocol UDP fields as a nonkey field for a flow record, use the **collect transport udp** command in flow record configuration mode. To disable the use of one or more of the UDP fields as a nonkey field for a flow record, use the **no** form of this command.

**collect transport udp** {destination-port| message-length| source-port}

**no collect transport udp** {destination-port| message-length| source-port}

## Syntax Description

<b>destination-port</b>	Configures the UDP destination port as a nonkey field and enables collecting the value of the UDP destination port fields from the flow.
<b>message-length</b>	Configures the UDP message length as a nonkey field and enables collecting the value of the UDP message length fields from the flow.
<b>source-port</b>	Configures the UDP source port as a nonkey field and enables collecting the value of the UDP source port fields from the flow.

## Command Default

The UDP fields are not configured as nonkey fields.

## Command Modes

Flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The Flexible NetFlow collect commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow. In most cases the values for nonkey fields are taken from only the first packet in the flow.

### Examples

The following example configures the UDP destination port as a nonkey field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport udp destination-port
The following example configures the UDP message length as a nonkey field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport udp message-length
The following example configures the UDP source port as a non-key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# collect transport udp source-port
```

### Examples

The following example configures the UDP source port as a nonkey field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect transport udp source-port
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## debug fm performance-monitor

To enable the display of debugging information for the Performance Monitor component of Feature Manager, use the **debug fm performance-monitor** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

**debug fm performance-monitor** {all| dynamic| event| unusual| verbose| vmr}

**no debug fm performance-monitor** {all| dynamic| event| unusual| verbose| vmr}

### Syntax Description

<b>all</b>	Displays information about adjacency messages on an ANCP server.
<b>dynamic</b>	Displays detailed static configuration information relating to ANCP and dynamic line conditions.
<b>event</b>	Displays information about ANCP protocol events.
<b>unusual</b>	Displays information about ANCP neighbors.
<b>verbose</b>	Displays information about ANCP control packets.
<b>vmr</b>	(Optional) Displays static configuration information for ANCP control packets.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
15.0(1)SY	This command was introduced on the Catalyst 6500 platform.

### Usage Guidelines

This command is available only on the Catalyst 6500 platform.

### Command Default

Debugging for the Performance Monitor component of Feature Manager is disabled.

### Examples

The following example shows how to enable debugging for dynamic policy configuration.

```
Router# debug fm performance dynamic
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show platform hardware acl entry interface</b>	Displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries.
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager performance-monitor</b>	Displays information about the Performance Monitor component of Feature Manager.
<b>show platform software feature-manager team</b>	Displays information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager.

# debug performance monitor

To enable debugging for performance monitor, use the **debug performance monitor** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

**debug performance monitor** {database| dynamic| event| export| flow-monitor| metering| provision| sibling| snmp| tca| timer}

**no debug performance monitor** {database| dynamic| event| export| flow-monitor| metering| provision| sibling| snmp| tca| timer}

## Syntax Description

<b>database</b>	Enables debugging for the flow database.
<b>dynamic</b>	Enables debugging for dynamic monitoring.
<b>event</b>	Enables debugging for performance events.
<b>export</b>	Enables debugging for exporting.
<b>flow-monitor</b>	Enables debugging for flow monitors.
<b>metering</b>	Enables debugging for the metering layer.
<b>provision</b>	Enables debugging for provisioning.
<b>sibling</b>	Enables debugging for sibling management.
<b>snmp</b>	Enables debugging for SNMP.
<b>tca</b>	Enables debugging for Threshold Crossing Alarms (TCA).
<b>timer</b>	Enables debugging for timers.

**Command Default** Debugging for performance monitor is disabled.

**Command Modes** Privileged EXEC

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Examples**

The following example shows how to enable debugging for dynamic monitoring:

```
Router# debug performance monitor dynamic
```

**Related Commands**

Command	Description
flow exporter	Creates a flow exporter.
flow monitor type performance-monitor	Creates a flow monitor.



## description (Performance Monitor)

To configure a description for a flow exporter, flow record, flow monitor, or policy map use the **description** command in the appropriate configuration mode. To remove the description, use the **no** form of this command.

**description** *description*

**no description**

### Syntax Description

<i>description</i>	Text string that describes the flow exporter, flow record, flow monitor, or policy map.
--------------------	---

### Command Default

No description is configured.

### Command Modes

Flow exporter configuration (config-flow-exporter) Flow record configuration (config-flow-record) Flow monitor configuration (config-flow-monitor) Policy configuration (config-pmap)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

The description command is meant solely as a comment to be put in the configuration to help you remember information about the flow exporter, flow record, flow monitor, or policy map, such as which packets are included within the policy map.

### Examples

The following example shows how to configuration a description for a flow record:

```
Router(config)# flow record type performance-monitor
Router(config-flow-record)# description collect the number of IPV4 packet dropped
Router(config-flow-record)# match ipv4
    protocol

Router(config-flow-record)# collect counter
    packets
    dropped
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>flow exporter</b>	Creates a flow exporter.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.
<b>flow monitor type performance-monitor</b>	Creates a flow monitor.
<b>policy-map type performance-monitor</b>	Creates a policy map.

# destination

To configure an export destination for a flow exporter, use the **destination** command in flow exporter configuration mode. To remove an export destination for a flow exporter, use the **no** form of this command.

**destination** *{{ip-address| hostname}| vrf vrf-name}*

**no destination**

## Syntax Description

<i>ip-address</i>	IPv4 or IPv6 address of the workstation to which you want to send the NetFlow information.
<i>hostname</i>	Hostname of the device to which you want to send the NetFlow information.
<b>vrf</b> <i>vrf-name</i>	Specifies that the export data packets are to be sent to the named Virtual Private Network (VPN) routing and forwarding (VRF) instance for routing to the destination, instead of to the global routing table.

## Command Default

An export destination is not configured.

## Command Modes

flow exporter configuration (config-flow-exporter)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Flexible Netflow and Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor.

Each flow exporter can have only one destination address or hostname. With Flexible Netflow, you can export to a either an IPv4 or IPv6 address.

When you configure a hostname instead of the IP address for the device, the hostname is resolved immediately and the IP address is stored in the running configuration. If the hostname-to-IP-address mapping that was used for the original domain name system (DNS) name resolution changes dynamically on the DNS server, the router does not detect this, and the exported data continues to be sent to the original IP address, resulting in a loss of data. Resolving the hostname immediately is a prerequisite of the export protocol, to ensure that the templates and options arrive before the data

### Examples

The following example shows how to configure the networking device to export the Flexible NetFlow or Performance Monitor cache entry to a destination system using an IPv4 address:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# destination 10.0.0.4
```

The following example shows how to configure the networking device to export the Flexible NetFlow cache entry to a destination system using an IPv6 address:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# destination 10:0:0:4:4
```

The following example shows how to configure the networking device to export the Flexible NetFlow or Performance Monitor cache entry to a destination system using a VRF named VRF-1:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# destination 172.16.10.2 vrf
VRF-1
```

### Related Commands

Command	Description
<b>flow exporter</b>	Creates a flow exporter.

## dscp (Flexible NetFlow)

To configure a differentiated services code point (DSCP) value for flow exporter datagrams, use the **dscp** command in flow exporter configuration mode. To remove a DSCP value for flow exporter datagrams, use the **no** form of this command.

**dscp** *dscp*

**no dscp**

### Syntax Description

<i>dscp</i>	The DSCP to be used in the DSCP field in exported datagrams. Range: 0 to 63. Default 0.
-------------	---

### Command Default

The differentiated services code point (DSCP) value is 0.

### Command Modes

flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Examples

The following example sets 22 as the value of the DSCP field in exported datagrams:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# dscp
22
```

**Related Commands**

Command	Description
flow exporter	Creates a flow exporter.

# export-protocol

To configure the export protocol for a Flexible NetFlow exporter, use the **export-protocol** command in Flexible NetFlow flow exporter configuration mode. To restore the use of the default export protocol for a Flexible NetFlow exporter, use the **no** form of this command.

```
export-protocol {netflow-v5| netflow-v9| ipfix}
```

```
no export-protocol
```

## Cisco IOS XE Release 3.2SE

```
export-protocol netflow-v9
```

```
no export-protocol
```

### Syntax Description

<b>netflow-v5</b>	Configures Netflow Version 5 export as the export protocol.
<b>netflow-v9</b>	Configures Netflow Version 9 export as the export protocol.
<b>ipfix</b>	Configures IPFIX as the export protocol. The export of extracted fields from NBAR is supported only over IPFIX.

### Command Default

Netflow Version 9 export is used as the export protocol for a Flexible NetFlow exporter.

### Command Modes

Flexible NetFlow flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was modified. Support for the Cisco Performance Monitor was added.
12.2(58)SE	This command was modified. Support for the Cisco Performance Monitor was added.

Release	Modification
15.2(4)M	This command was modified. The <b>ipfix</b> keyword was added in Cisco IOS Release 15.2(4)M.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE without the support for the <b>netflow-v5</b> and <b>ipfix</b> keywords.

### Usage Guidelines

The NetFlow Version 5 export protocol is supported only for flow monitors that use the Flexible NetFlow predefined records.

The export of extracted fields from NBAR is supported only over IPFIX.

### Examples

The following example configures Netflow Version 5 export as the export protocol for a Flexible NetFlow exporter:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# export-protocol netflow-v5
```

### Related Commands

Command	Description
<b>flow exporter</b>	Creates a flow exporter



# exporter

To configure a flow exporter for a flow monitor, use the **exporter** command in the appropriate configuration mode. To remove a flow exporter for a flow monitor, use the **no** form of this command.

**exporter** *exporter-name*

**no exporter** *exporter-name*

## Syntax Description

<i>exporter-name</i>	Name of a flow exporter that was previously configured.
----------------------	---

## Command Default

An exporter is not configured.

## Command Modes

flow monitor configuration (config-flow-monitor) Policy configuration (config-pmap-c) Policy monitor configuration (config-pmap-c-flowmon)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy configuration mode and policy monitor configuration configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

## Usage Guidelines

You must have already created a flow exporter by using the **flow exporter** command before you can apply the flow exporter to a flow monitor with the **exporter** command.

For Performance Monitor, you can associate a flow exporter with a flow monitor while configuring either a flow monitor, policy map, or service policy.

### Examples

The following example configures an exporter for a flow monitor:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# exporter
EXPORTER-1
```

The following example shows one of the ways to configure a flow exporter for Performance Monitor:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class class-4
Router(config-pmap-c)# flow monitor monitor-4
Router(config-pmap-c-flowmon)# exporter exporter-4
```

### Related Commands

Command	Description
<b>flow exporter</b>	Creates a flow exporter.
<b>flow monitor</b>	Creates a flow monitor.
<b>flow monitor type performance-monitor</b>	Creates a flow monitor for Performance Monitor.
<b>policy-map type performance-monitor</b>	Creates a policy map for Performance Monitor
<b>service-policy type performance-monitor</b>	Associates policy map with an interface for Performance Monitor.

# flow monitor type performance-monitor

To configure a flow monitor for Performance Monitor, use the **flow monitor type performance-monitor** command in global configuration mode. To remove flow monitor, use the **no** form of this command.

**flow monitor type performance-monitor** *monitor-name*

**no flow monitor type performance-monitor** *monitor-name*

## Syntax Description

<i>monitor-name</i>	Specifies which flow monitor is being configured.
---------------------	---

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

.Before you configure flow monitor, you should first configure a flow record and an optional flow exporter.



### Note

Performance Monitor does not support NetFlow version 5 configuration.

## Examples

The following example shows how to configure a flow monitor:

```
Router(config)# flow monitor type performance-monitor PM-MONITOR-4
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# flow record type performance-monitor

To configure a flow record for Performance Monitor, use the **flow record type performance-monitor** command in global configuration mode. To remove the flow record, use the **no** form of this command.

**flow record type performance-monitor** *record-name*

**no flow record type performance-monitor** *record-name*

## Syntax Description

<i>record-name</i>	Specifies which flow record is being configured.
--------------------	--

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **collect** command.

## Examples

The following example shows how to configure a flow record:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
```

## Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor.

# flows

To configure the maximum number of flows for each Performance Monitor cache, use the **flows** command in monitor parameters configuration mode. To remove the configuration, use the **no** form of this command.

**flows** *number*

**no flows** *number*

## Syntax Description

<i>number</i>	Specifies the number of flows to collect for the policy.
---------------	--

## Command Default

Number of flows to collect is 8000.

## Command Modes

Monitor parameters configuration (config-pmap-c-mparam)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Examples

The following example shows how to set the number of flows to collect for a Performance Monitor policy to four:

```
Router(config)# policy-map type performance-monitor PM-POLICY-4
Router(config-pamp)# class class-6
Router(config-pmap-c)# monitor parameters
Router(config-pmap-c-mparam)# flows 4
```

## Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

## history (monitor parameters)

To configure the number of historical collections to keep for a Performance Monitor policy, use the **history** command in monitor parameters configuration mode. To remove the configuration, use the **no** form of this command.

**history** *number*

**no history**

### Syntax Description

<i>number</i>	Specifies the number of historical collections to keep for the policy.
---------------	--

### Command Default

Number of historical collections to keep is 10.

### Command Modes

Monitor parameters configuration (config-pmap-c-mparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to set the number of historical collections to keep for a Performance Monitor policy to four:

```
Router(config)# policy-map type performance-monitor PM-POLICY-4
Router(config-pamp)# class class-6
Router(config-pmap-c)# monitor parameters
Router(config-pmap-c-mparam)# history 4
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

# interval duration

To configure the duration of the collection interval for a Performance Monitor policy, use the **interval duration** command in monitor parameters configuration mode. To remove the configuration, use the **no** form of this command.

**interval duration** *duration*

**no interval duration**

## Syntax Description

<i>duration</i>	Specifies the duration of the collection interval for the policy. The range is from one to 120 seconds.
-----------------	---

## Command Default

Duration of the collection interval is 30 seconds.

## Command Modes

Monitor parameters configuration (config-pmap-c-mparam)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T and the interval increment was changed from five seconds to one second.

## Usage Guidelines

You can configure the collection interval in a range of one to 120 seconds, in increments of one second.

## Examples

The following example shows how to set the collection interval for a Performance Monitor policy to twenty:

```
Router(config)# policy-map type performance-monitor PM-POLICY-4
Router(config-pamp)# class class-6
Router(config-pmap-c)# monitor parameters
Router(config-pmap-c-mparam)# interval duration 20
```

## Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

## match access-group

To configure the match criteria for a class map on the basis of the specified access control list (ACL), use the **match access-group** command in QoS class-map configuration or policy inline configuration mode. To remove the ACL match criteria from a class map, use the **no** form of this command.

**match access-group** {*access-group*| **name** *access-group-name*}

**no match** {*access-group*| **name** *access-group-name*}

### Syntax Description

<i>access-group</i>	A numbered ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to the same class. The range is from 1 to 2699.
<b>name</b> <i>access-group-name</i>	Specifies a named ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to the same class. The name can be up to 40 alphanumeric characters.

### Command Default

No match criteria are configured.

### Command Modes

QoS class-map configuration (config-cmap)  
Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.0(17)SL	This command was modified. This command was enhanced to include matching of access lists on the Cisco 10000 series routers.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.4(6)T	This command was modified. This command was enhanced to support the zone-based policy firewall.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.



Release	Modification
12.2SX	This command was integrated into the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

The **match access-group** command specifies a numbered or named ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

A traffic rate is generated for packets that match an access group. In zone-based policy firewalls, only the first packet that creates a session matches the configured policy. Subsequent packets in the flow do not match the filters in the configured policy, but instead match the session directly. The statistics related to subsequent packets are shown as part of the inspect action.

Zone-based policy firewalls support only the **match access-group**, **match class-map**, and **match protocol** commands. If you specify more than one **match** command in a class map, only the last command that you specified will be applied to the class map. The last **match** command overrides the previously entered **match** commands.

The **match access-group** command specifies the numbered access list against whose contents packets are checked to determine if they match the criteria specified in the class map. Access lists configured with the **log** keyword of the **access-list** command are not supported when you configure the match criteria. For more information about the **access-list** command, refer to the *Cisco IOS IP Application Services Command Reference*.

When this command is configured in Cisco IOS Release 15.0(1)M and later releases, the firewall inspects only Layer 4 policy maps. In releases prior to Cisco IOS Release 15.0(1)M, the firewall inspects both Layer 4 and Layer 7 policy maps.

For class-based weighted fair queueing (CBWFQ), you can define traffic classes based on the match criteria that include ACLs, experimental (EXP) field values, input interfaces, protocols, and quality of service (QoS) labels. Packets that satisfy the match criteria for a class constitute the traffic for that class.



#### Note

In zone-based policy firewalls, this command is not applicable for CBWFQ.

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration modes in which you can issue this command.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

To use the **match access-group** command, you must configure the **service-policy type performance-monitor inline** command.

### Supported Platforms Other than Cisco 10000 Series Routers

To use the **match access-group** command, you must configure the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

### Cisco 10000 Series Routers

To use the **match access-group** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish.



#### Note

The **match access-group** command specifies the numbered access list against whose contents packets are checked to determine if they match the criteria specified in the class map. Access lists configured with the **log** keyword of the **access-list** command are not supported when you configure the match criteria.

### Cisco ASR 1000 Series Aggregation Services Routers

Cisco ASR 1000 Series Routers do not support more than 16 match statements per class map. An interface with more than 16 match statements rejects the service policy.

### Examples

The following example shows how to specify a class map named `acl144` and to configure the ACL numbered 144 to be used as the match criterion for that class:

```
Device(config)# class-map acl144
Device(config-cmap)# match access-group 144
```

The following example shows how to define a class map named `c1` and configure the ACL numbered 144 to be used as the match criterion for that class:

```
Device(config)# class-map type inspect match-all c1
Device(config-cmap)# match access-group 144
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

The following example shows how to configure a service policy for the Performance Monitor in policy inline configuration mode. The policy specifies that packets traversing Ethernet interface 0/0 must match ACL 144.

```
Device(config)# interface ethernet 0/0
Device(config-if)# service-policy type performance-monitor inline input
Device(config-if-spolicy-inline)# match access-group name ACL144
Device(config-if-spolicy-inline)# exit
```

### Related Commands

Command	Description
<b>access-list (IP extended)</b>	Defines an extended IP access list.

<b>Command</b>	<b>Description</b>
<b>access-list (IP standard)</b>	Defines a standard IP access list.
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>match access-group</b>	Configures the match criteria for a class map on the basis of the specified ACL.
<b>match class-map</b>	Uses a traffic class as a classification policy.
<b>match input-interface</b>	Configures a class map to use the specified input interface as a match criterion.
<b>match mpls experimental</b>	Configures a class map to use the specified EXP field value as a match criterion.
<b>match protocol</b>	Configures the match criteria for a class map on the basis of the specified protocol.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.

# match any

To configure the match criteria for a class map to be successful match criteria for all packets, use the **matchany** command in class-map configuration or policy inline configuration mode. To remove all criteria as successful match criteria, use the **no** form of this command.

**match any**

**no match any**

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

**Command Default** No match criteria are specified.

**Command Modes** Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

## Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the **service-policytypeperformance-monitorinline** command.

**Examples**

In the following configuration, all packets traversing Ethernet interface 1/1 will be policed based on the parameters specified in policy-map class configuration mode:

```
Router(config)# class-map matchany
Router(config-cmap)# match any
Router(config-cmap)# exit
Router(config)# policy-map policy1
Router(config-pmap)# class class4
Router(config-pmap-c)# police 8100 1500 2504 conform-action transmit exceed-action
set-qos-transmit 4
Router(config-pmap-c)# exit
Router(config)# interface ethernet1/1
Router(config-if)# service-policy output policy1
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that all packets traversing Ethernet interface 0/0 will be matched and monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match any
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>match input-interface</b>	Configures a class map to use the specified input interface as a match criterion.
<b>match protocol</b>	Configures the match criteria for a class map on the basis of the specified protocol.

## match application name

To configure the use of the application name as a key field for a flow record, use the **match application name** command in flow record configuration mode. To disable the use of the application name as a key field for a flow record, use the **no** form of this command.

**match application name**

**no match application name**

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

**Command Default** The application name is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

### Command History

Release	Modification
15.0(1)M	This command was introduced.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the application name as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match application name
```

**Examples**

The following example configures the application name as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match application name
```

**Related Commands**

Command	Description
<b>collect application name</b>	Configures the use of application name as a nonkey field for a Flexible NetFlow flow record.
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match application vendor

To configure the application vendor field as a key field for a flow record, use the **match application vendor** command in flow record configuration mode. To disable the use the application fields as a key field for a flow record, use the **no** form of this command.

**match application vendor**

**no match application vendor**

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

**Command Default** No match criteria are configured.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(3)T	This command was introduced.
	Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the application ID (name) as a key field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# match application name
```



**Examples**

The following example configures the application ID (name) as a key field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match application name
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match application version

To configure the application version field as a key field for a flow record, use the **match application version** command in flow record configuration mode. To disable the use the application fields as a key field for a flow record, use the **no** form of this command.

**match application version**

**no match application version**

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

**Command Default** No match criteria are configured.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	15.2(3)T	This command was introduced.
	Cisco IOS XE Release 3.6S	This command was integrated into Cisco IOS XE Release 3.6S.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the application ID (name) as a key field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# match application name
```

**Examples**

The following example configures the application ID (name) as a key field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match application name
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match connection client

To configure one of the connection client fields as a key field for a flow record, use the **match connection client** command in flow record configuration mode. To disable the use of one of the connection client fields as a nonkey field for a flow record, use the **no** form of this command.

**match connection client** {{{ipv4| ipv6}} address| transport port}

**nomatch connection client** {{{ipv4| ipv6}} address| transport port}

### Syntax Description

<b>ipv4 address</b>	Configures the client connection ipv4 address field, as a nonkey field.
<b>ipv6 address</b>	Configures the client connection ipv6 address field, as a nonkey field.
<b>transport port</b>	Configures the client connection transport port field, as a nonkey field.

### Command Default

The connection client fields are not configured as a key field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the field for the connection client IPv6 address, as a key field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# match connection client ipv6 address
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.



## match connection server

To configure one of the connection server fields as a key field for a flow record, use the **match connection server** command in flow record configuration mode. To disable the use of one of the connection server fields as a nonkey field for a flow record, use the **no** form of this command.

**match connection server** {{{ipv4|ipv6}}address|transport port}

**nomatch connection server** {{{ipv4|ipv6}}address|transport port}

### Syntax Description

<b>ipv4 address</b>	Configures the server connection ipv4 address field, as a nonkey field.
<b>ipv6 address</b>	Configures the server connection ipv6 address field, as a nonkey field.
<b>transport port</b>	Configures the server connection transport port field, as a nonkey field.

### Command Default

The connection server fields are not configured as a key field for a user-defined flow record.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the field for the connection server IPv6 address, as a key field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# match connection server ipv6 address
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.



## match cos

To match a packet on the basis of a Layer 2 class of service (CoS)/Inter-Switch Link (ISL) marking, use the **matchcos** command in class-map configuration or policy inline configuration mode. To remove a specific Layer 2 CoS/ISL marking as a match criterion, use the **no** form of this command.

**match cos** *cos-value* [*cos-value* [*cos-value* [*cos-value*]]]

**no match cos** *cos-value* [*cos-value* [*cos-value* [*cos-value*]]]

### Syntax Description

Supported Platforms Other Than the Cisco 10000 Series Routers	
<i>cos-value</i>	Specific IEEE 802.1Q/ISL CoS value. The <i>cos-value</i> is from 0 to 7; up to four CoS values, separated by a space, can be specified in one <b>matchcos</b> statement.
Cisco 10000 Series Routers	
<i>cos-value</i>	Specific packet CoS bit value. Specifies that the packet CoS bit value must match the specified CoS value. The <i>cos-value</i> is from 0 to 7; up to four CoS values, separated by a space, can be specified in one <b>matchcos</b> statement.

### Command Default

Packets are not matched on the basis of a Layer 2 CoS/ISL marking.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.1(5)T	This command was introduced.
12.0(25)S	This command was integrated into Cisco IOS Release 12.0(25)S.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.



Release	Modification
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and support for the Cisco 7600 series routers was added.
12.4(15)T2	This command was integrated into Cisco IOS Release 12.4(15)T2.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB and support for the Cisco 7300 series router was added.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.
12.2(33)SCF	This command was integrated into Cisco IOS Release 12.2(33)SCF.
3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.
15.1(2)SNG	This command was integrated into Cisco ASR 901 Series Aggregation Services Routers.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policytypeperformance-monitorinline** command.

### Examples

In the following example, the CoS values of 1, 2, and 3 are successful match criteria for the interface that contains the classification policy named `cos`:

```
Router(config)# class-map cos
Router(config-cmap)# match cos 1 2 3
```

In the following example, classes named `voice` and `video-n-data` are created to classify traffic based on the CoS values. QoS treatment is then given to the appropriate packets in the CoS-based-treatment policy map (in this case, the QoS treatment is priority 64 and bandwidth 512). The service policy configured in this example is attached to all packets leaving Fast Ethernet interface 0/0.1. The service policy can be attached to any interface that supports service policies.

```
Router(config)# class-map voice
Router(config-cmap)# match cos 7
Router(config)# class-map video-n-data
Router(config-cmap)# match cos 5
Router(config)# policy-map cos-based-treatment
Router(config-pmap)# class voice
Router(config-pmap-c)# priority 64
Router(config-pmap-c)# exit
Router(config-pmap)# class video-n-data
Router(config-pmap-c)# bandwidth 512
Router(config-pmap-c)# exit
Router(config-pmap)# exit
```

```
Router(config)# interface fastethernet0/0.1
Router(config-if)# service-policy output cos-based-treatment
```

### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of a CoS value of 2 will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match cos 2
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

### Examples

The following example shows how to match traffic classes for the 802.1p domain with packet CoS values:

```
Router> enable
Router# config terminal
Router(config)# class-map cos7
Router(config-cmap)# match cos 2
Router(config-cmap)# exit
```

### Related Commands

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
<b>service-policy</b>	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
<b>set cos</b>	Sets the Layer 2 CoS value of an outgoing packet.
<b>show class-map</b>	Displays all class maps and their matching criteria.

# match connection transaction-id

To configure the transaction ID as a key field for a flow record, use the **match connection transaction-id** command in flow record configuration mode. To disable the use of a transaction ID field as a key field for a flow record, use the **no** form of this command.

**match connection transaction-id**

**no match connection transaction-id**

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

**Command Default** The use of the transaction ID as a key field for a user-defined flow record is not enabled.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE 3.4S	This command was introduced.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

The transaction ID identifies a transaction within a connection. A transaction is a meaningful exchange of application data between two network devices or a client and server. A transaction ID is assigned the first time a flow is reported, so that later reports for the same flow will have the same transaction ID. A different transaction ID is used for each transaction within a TCP or UDP connection. The identifiers are not required to be sequential.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The transaction ID field is used to specify the transaction within the connection, for protocols where multiple transactions are used. The field is composed of the CFT-flow ID/pointer (the most significant bit) and the transaction counter within the connection specified by NBAR (least significant bit).

**Examples**

The following example configures the transaction ID as a key field:

```
Router(config)# flow record RECORD-4
Router(config-flow-record)# match connection transaction-id
```

**Examples**

The following example configures the transaction ID as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match connection transaction-id
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match datalink destination-vlan-id

To configure the use of destination VLAN ID as a key field for a flow record, use the **matchdatalinkdestination-vlan-id** command in flow record configuration mode. To disable the use of destination VLAN ID as a key field for a flow record, use the **no** form of this command.

**match datalink destination-vlan-id**

**no match datalink destination-vlan-id**

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

**Command Default** destination VLAN ID addresses are not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the use of the destination VLAN ID as a key field for a Performance Monitor flow record: :

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match datalink destination-vlan-id output
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match datalink mac

To configure the use of MAC addresses as a key field for a Flexible NetFlow flow record, use the **match datalink mac** command in Flexible NetFlow flow record configuration mode. To disable the use of MAC addresses as a key field for a Flexible NetFlow flow record, use the **no** form of this command.

**match datalink mac** {destination| source} address {input| output}

**no match datalink mac** {destination| source} address {input| output}

### Syntax Description

<b>destination address</b>	Configures the use of the destination MAC address as a key field.
<b>source address</b>	Configures the use of the source MAC address as a key field.
<b>input</b>	Packets received by the router.
<b>output</b>	Packets transmitted by the router.

### Command Default

MAC addresses are not configured as a key field.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

### Command History

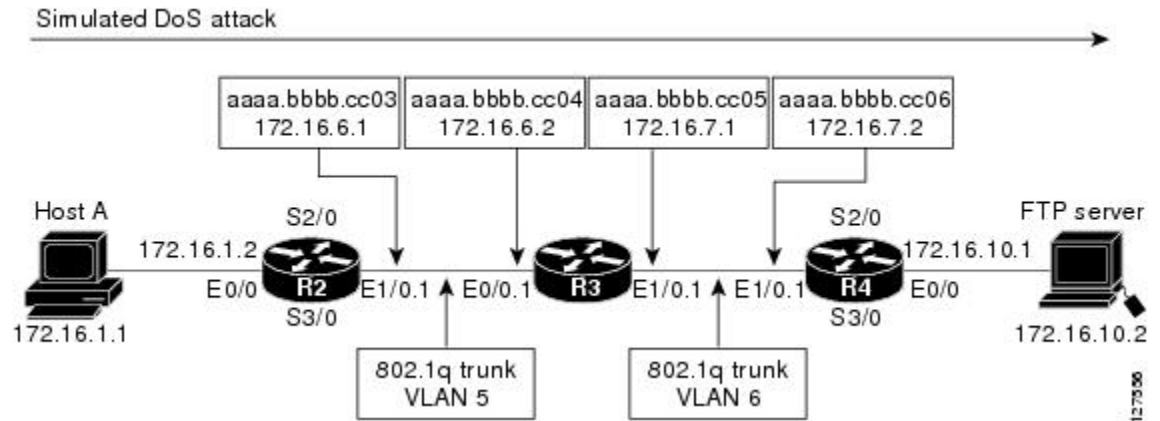
Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

### Usage Guidelines

The **input** and **output** keywords of the **match datalink mac** command are used to specify the observation point that is used by the **match datalink mac** command to create flows based on the unique MAC addresses in the network traffic. For example, when you configure a flow record with the **match datalink mac destination address input** command to monitor the simulated denial of service (DoS) attack in the figure below and apply the flow monitor to which the flow record is assigned in either input (ingress) mode on Ethernet interface

0/0.1 on R3 or output (egress) mode on Ethernet interface 1/0.1 on R3, the observation point is always Ethernet 0/0.1 on R3. The destination MAC address that is used a key field is aaaa.bbbb.cc04.

**Figure 16: Simulated DoS Attack (d)**



When the destination output mac address is configured, the value is the destination mac address of the output packet, even if the monitor the flow record is applied to is input only.

When the destination input mac address is configured, the value is the destination mac address of the input packet, even if the monitor the flow record is applied to is output only.

When the source output mac address is configured, the value is the source mac address of the output packet, even if the monitor the flow record is applied to is input only.

When the source input mac address is configured, the value is the source mac address of the input packet, even if the monitor the flow record is applied to is output only.

## Examples

The following example configures the use of the destination MAC address of packets that are received by the router as a key field for a Flexible NetFlow flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match datalink mac destination address input
```

The following example configures the use of the source MAC addresses of packets that are transmitted by the router as a key field for a Flexible NetFlow flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match datalink mac source address output
```

## Related Commands

Command	Description
<b>flow record</b>	Creates a flow record.

## match datalink source-vlan-id

To configure the use of source VLAN ID as a key field for a flow record, use the **matchdatalinksource-vlan-id** command in flow record configuration mode. To disable the use of source VLAN ID as a key field for a flow record, use the **no** form of this command.

**match datalink source-vlan-id**

**no match datalink source-vlan-id**

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

**Command Default** source VLAN ID addresses are not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the use of the source VLAN ID as a key field for a Performance Monitor flow record: :

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match datalink source-vlan-id output
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match datalink vlan

To configure the use of VLAN as a key field for a flow record, use the **matchdatalinkvlan** command in flow record configuration mode. To disable the use of VLAN as a key field for a flow record, use the **no** form of this command.

**match datalink vlan** {input| output}

**no match datalink vlan** {input| output}

### Syntax Description

<b>input</b>	Packets received by the router.
<b>output</b>	Packets transmitted by the router.

### Command Default

VLAN addresses are not configured as a key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

### Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the use of the VLAN as a key field for a Performance Monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match datalink vlan output
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match destination-address mac

To use the destination MAC address as a match criterion, use the **matchdestination-addressmac** command in class-map configuration or policy inline configuration mode. To remove a previously specified destination MAC address as a match criterion, use the **no** form of this command.

**match destination-address mac** *address*

**no match destination-address mac** *address*

### Syntax Description

<i>address</i>	Destination MAC address to be used as a match criterion.
----------------	--

### Command Default

No destination MAC address is specified.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the `service-policy type performance-monitor inline` command.

**Examples**

The following example specifies a class map named `macaddress` and specifies the destination MAC address to be used as the match criterion for this class:

```
Router(config)# class-map macaddress
Router(config-cmap)# match destination-address mac 00:00:00:00:00:00
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface `0/0` that match the specified destination MAC address will be monitored based on the parameters specified in the flow monitor configuration named `fm-2`:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
destination-address mac 00:00:00:00:00:00
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<code>class-map</code>	Creates a class map to be used for matching packets to a specified class.
<code>service-policy type performance-monitor</code>	Associates a Performance Monitor policy with an interface.

## match discard-class

To specify a discard class as a match criterion, use the **matchdiscard-class** command in class-map configuration or policy inline configuration mode. To remove a previously specified discard class as a match criterion, use the **no** form of this command.

**match discard-class** *class-number*

**no match discard-class** *class-number*

### Syntax Description

<i>class-number</i>	Number of the discard class being matched. Valid values are 0 to 7.
---------------------	---

### Command Default

Packets will not be classified as expected.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.2(13)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

A discard-class value has no mathematical significance. For example, the discard-class value 2 is not greater than 1. The value simply indicates that a packet marked with discard-class 2 should be treated differently than a packet marked with discard-class 1.

Packets that match the specified discard-class value are treated differently from packets marked with other discard-class values. The discard-class is a matching criterion only, used in defining per hop behavior (PHB) for dropping traffic.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the `service-policy type performance-monitor inline` command.

#### Examples

The following example shows that packets in discard class 2 are matched:

```
Router(config)# class-map d-class-2
Router(config-cmap)# match discard-class 2
```

#### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria specified by discard-class 2 will be monitored based on the parameters specified in the flow monitor configuration named `fm-2`:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
discard-class 2
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

#### Related Commands

Command	Description
<code>class-map</code>	Creates a class map to be used for matching packets to a specified class.
<code>service-policy type performance-monitor</code>	Associates a Performance Monitor policy with an interface.
<code>set discard-class</code>	Marks a packet with a discard-class value.

## match dscp

To identify one or more differentiated service code point (DSCP), Assured Forwarding (AF), and Certificate Server (CS) values as a match criterion, use the **match dscp** command in class-map configuration or policy inline configuration mode. To remove a specific DSCP value from a class map, use the **no** form of this command.

**match [ip] dscp dscp-value** [*dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value*]

**no match [ip] dscp dscp-value**

### Syntax Description

<b>ip</b>	(Optional) Specifies that the match is for IPv4 packets only. If not used, the match is on both IPv4 and IPv6 packets.  <b>Note</b> For the Cisco 10000 series routers, the <b>ip</b> keyword is required.
<i>dscp-value</i>	The DSCP value used to identify a DSCP value. For valid values, see the "Usage Guidelines."

### Command Default

No match criteria are configured. If you do not enter the **ip** keyword, matching occurs on both IPv4 and IPv6 packets.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.2(13)T	This command was introduced. This command replaces the <b>match ip dscp</b> command.
12.0(28)S	This command was integrated into Cisco IOS Release 12.0(28)S for support in IPv6.
12.0(17)SL	This command was integrated into Cisco IOS Release 12.0(17)SL and implemented on the Cisco 10000 series routers.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1 and introduced on Cisco ASR 1000 Series Routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policy type performance-monitor inline** command.

### DSCP Values

You must enter one or more differentiated service code point (DSCP) values. The command may include any combination of the following:

- Numbers (0 to 63) representing differentiated services code point values
- AF numbers (for example, af11) identifying specific AF DSCPs
- CS numbers (for example, cs1) identifying specific CS DSCPs
- **default** --Matches packets with the default DSCP.
- **ef** --Matches packets with EF DSCP.

For example, if you wanted the DSCP values of 0, 1, 2, 3, 4, 5, 6, or 7 (note that only one of the IP DSCP values must be a successful match criterion, not all of the specified DSCP values), enter the **match dscp 0 1 2 3 4 5 6 7** command.

This command is used by the class map to identify a specific DSCP value marking on a packet. In this context, *dscp-value* arguments are used as markings only and have no mathematical significance. For instance, the *dscp-value* of 2 is not greater than 1. The value simply indicates that a packet marked with the *dscp-value* of 2 is different than a packet marked with the *dscp-value* of 1. The treatment of these marked packets is defined by the user through the setting of Quality of Service (QoS) policies in policy-map class configuration mode.

### Match Packets on DSCP Values

To match DSCP values for IPv6 packets only, the **match protocol ipv6** command must also be used. Without that command, the DSCP match defaults to match both IPv4 and IPv6 packets.

To match DSCP values for IPv4 packets only, use the **ip** keyword. Without the **ip** keyword the match occurs on both IPv4 and IPv6 packets. Alternatively, the **match protocol ip** command may be used with **match dscp** to classify only IPv4 packets.

After the DSCP bit is set, other QoS features can then operate on the bit settings.

The network can give priority (or some type of expedited handling) to marked traffic. Typically, you set the precedence value at the edge of the network (or administrative domain); data is then queued according to the precedence. Weighted fair queueing (WFQ) can speed up handling for high-precedence traffic at congestion points. Weighted Random Early Detection (WRED) can ensure that high-precedence traffic has lower loss rates than other traffic during times of congestion.

### Cisco 10000 Series Routers

The Cisco 10000 series routers support DSCP matching of IPv4 packets only. You must include the **ip** keyword when specifying the DSCP values to use as match criterion.

You cannot use the `set ip dscp` command with the `set ip precedence` command to mark the same packet. DSCP and precedence values are mutually exclusive. A packet can have one value or the other, but not both.

### Examples

The following example shows how to set multiple match criteria. In this case, two IP DSCP value and one AF value.

```
Router(config)#
  class-map map1
Router(config-cmap)#
  match dscp 1 2 af11
```

### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria specified by DSCP value 2 will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
  dscp 2
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

### Related Commands

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>match protocol ip</b>	Matches DSCP values for packets.
<b>match protocol ipv6</b>	Matches DSCP values for IPv6 packets.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
<b>service-policy</b>	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
<b>set dscp</b>	Marks the DSCP value for packets within a traffic class.
<b>show class-map</b>	Displays all class maps and their matching criteria.



# match flow

To configure the flow direction and the flow sampler ID number as key fields for a flow record, use the **match flow** command in Flexible NetFlow flow record configuration or policy inline configuration mode. To disable the use of the flow direction and the flow sampler ID number as key fields for a flow record, use the **no** form of this command.

**match flow** {direction| sampler}

**no match flow** {direction| sampler}

## Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY and 15.1(1)SY

**match flow** {cts {destination| source} group-tag| direction}

**no match flow** {cts {destination| source} group-tag| direction}

### Syntax Description

<b>direction</b>	Configures the direction in which the flow was monitored as a key field.
<b>sampler</b>	Configures the flow sampler ID as a key field.
<b>cts destination group-tag</b>	Configures the CTS destination field group as a key field.
<b>cts source group-tag</b>	Configures the CTS source field group as a key field.

### Command Default

The CTS destination or source field group, flow direction and the flow sampler ID are not configured as key fields.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was modified. Support for this command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was modified. Support for this command was implemented on the Cisco 7200 series routers.

Release	Modification
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was modified. Support for the Cisco Performance Monitor was added.
12.2(50)SY	This command was modified. The <b>cts destination group-tag</b> and <b>cts source group-tag</b> keywords were added. The <b>sampler</b> keyword was removed.
15.1(1)SY	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE without the support for the <b>sampler</b> keyword.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policy type performance-monitor inline** command.

#### match flow direction

This field indicates the direction of the flow. This is of most use when a single flow monitor is configured for input and output flows. It can be used to find and eliminate flows that are being monitored twice, once on input and once on output. This field may also be used to match up pairs of flows in the exported data when the two flows are flowing in opposite directions.

#### match flow sampler

This field contains the ID of the flow sampler used to monitor the flow. This is useful when more than one flow sampler is being used with different sampling rates. The flow exporter **option sampler-table** command will export options records with mappings of the flow sampler ID to the sampling rate so the collector can calculate the scaled counters for each flow.

### Examples

The following example configures the direction the flow was monitored in as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match flow direction
```

The following example configures the flow sampler ID as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match flow sampler
```

The following example configures the CTS destination fields group as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match flow cts destination group-tag
```

The following example configures the CTS source fields group as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match flow cts source group-tag
```

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the flow sampler ID will be monitored based on the parameters specified in the flow monitor configuration named fm2:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match flow sampler
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

#### Related Commands

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>flow exporter</b>	Creates a flow exporter.
<b>flow record</b>	Creates a flow record.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.

# match fr-de

To match packets on the basis of the Frame Relay discard eligibility (DE) bit setting, use the **match fr-de** command in class-map configuration or policy inline configuration mode. To remove the match criteria, use the **no** form of this command.

**match fr-de**

**no match fr-de**

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

**Command Default** Packets are not matched on the basis of the Frame Relay DE bit setting.

**Command Modes** Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

## Command History

Release	Modification
12.0(25)S	This command was introduced for the Cisco 7500 series router.
12.0(26)S	This command was integrated into Cisco IOS Release 12.0(26)S and implemented on the Cisco 7200 series router.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.
12.4(15)T2	This command was integrated into Cisco IOS Release 12.4(15)T2.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB and implemented on the Cisco 7300 series router.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policy type performance-monitor inline** command.

**Examples**

The following example creates a class named match-fr-de and matches packets on the basis of the Frame Relay DE bit setting.

```
Router(config)# class-map match-fr-de
Router(config-cmap)# match fr-de
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the Frame Relay DE bit setting will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
fr-de
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>set fr-de</b>	Changes the DE bit setting in the address field of a Frame Relay frame to 1 for all traffic leaving an interface.

## match fr-dlci

To specify the Frame Relay data-link connection identifier (DLCI) number as a match criterion in a class map, use the **match fr-dlci** command in class-map configuration or policy inline configuration mode. To remove a previously specified DLCI number as a match criterion, use the **no** form of this command.

**match fr-dlci** *dlci-number*

**no match fr-dlci** *dlci-number*

### Syntax Description

<i>dlci-number</i>	Number of the DLCI associated with the packet.
--------------------	--

### Command Default

No DLCI number is specified.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.2(13)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

This match criterion can be used in main interfaces and point-to-multipoint subinterfaces in Frame Relay networks, and it can also be used in hierarchical policy maps.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policy type performance-monitor inline** command.

**Examples**

In the following example a class map named “class1” has been created and the Frame Relay DLCI number of 500 has been specified as a match criterion. Packets matching this criterion are placed in class1.

```
Router(config)# class-map class1
Router(config-cmap)# match fr-dlci 500
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the Frame Relay DLCI number of 500 will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
fr-dlci 500
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>show class-map</b>	Displays all class maps and their matching criteria.
<b>show policy-map interface</b>	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

## match input-interface

To configure a class map to use the specified input interface as a match criterion, use the **match input-interface** command in class-map configuration or policy inline configuration mode. To remove the input interface match criterion from a class map, use the **no** form of this command.

**match input-interface** *interface-name*

**no match input-interface** *interface-name*

### Syntax Description

<i>interface-name</i>	Name of the input interface to be used as match criteria.
-----------------------	---

### Command Default

No match criteria are specified.

### Command Modes

Class-map configuration (config-cmap)

Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.0(17)SL	This command was enhanced to include matching on the input interface.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.



## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.



### Note

With CSCtx62310, the minimum string you must enter to uniquely identify this command is **match input-**. The device no longer accepts **match input** as an abbreviated version of this command.

## Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

To enter policy inline configuration mode, you must first enter the **service-policy type performance-monitor inline** command.

### Supported Platforms Other Than Cisco 10000 Series Routers

For class-based weighted fair queuing (CBWFQ), you define traffic classes based on match criteria including input interfaces, access control lists (ACLs), protocols, quality of service (QoS) labels, and experimental (EXP) field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **match input-interface** command specifies the name of an input interface to be used as the match criterion against which packets are checked to determine if they belong to the class specified by the class map.

To use the **match input-interface** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

### Cisco 10000 Series Routers

For CBWFQ, you define traffic classes based on match criteria including input interfaces, ACLs, protocols, QoS labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

To use the **match input-interface** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish.

## Examples

The following example specifies a class map named ethernet1 and configures the input interface named ethernet1 to be used as the match criterion for this class:

```
Router(config)# class-map ethernet1
Router(config-cmap)# match input-interface ethernet1
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of the input interface named ethernet1 will be monitored based on the parameters specified in the flow monitor configuration named fm-2:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match input-interface ethernet 1
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>match access-group</b>	Configures the match criteria for a class map based on the specified ACL.
<b>match mpls experimental</b>	Configures a class map to use the specified EXP field value as a match criterion.
<b>match protocol</b>	Configures the match criteria for a class map on the basis of the specified protocol.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.

## match interface (Flexible NetFlow)

To configure input and output interfaces as key fields for a flow record, use the **match interface** command in Flexible NetFlow flow record configuration mode. To disable the use of the input and output interfaces as key fields for a flow record, use the **no** form of this command.

```
match interface {input| output}
```

```
no match interface {input| output}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
match interface {input [physical]| output} [snmp]
```

```
no match interface {input [physical]| output} [snmp]
```

#### Syntax Description

<b>input</b>	Configures the input interface as a key field.
<b>physical</b>	(Optional) Configures the physical input interface as a key field and enables collecting the input interface from the flows.
<b>output</b>	Configures the output interface as a key field.
<b>snmp</b>	(Optional) Configures the simple network management protocol (SNMP) index of the input interface as a key field.

#### Command Default

The input and output interfaces are not configured as key fields.

#### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was modified. Support for this command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was modified. Support for this command was implemented on the Cisco 7200 series routers.

Release	Modification
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was modified. The <b>physical</b> and <b>snmp</b> keywords were added.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the input interface as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match interface input
```

The following example configures the output interface as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match interface output
```

The following example configures the output interface as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match interface output
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ip dscp

The **match ip dscp** command is replaced by the **match dscp** command. See the **match dscp** command for more information.

## match ip precedence

The `matchipprecedence` command is replaced by the `match precedence` command. See the `match precedence` command for more information.

## match ip rtp

To configure a class map to use the Real-Time Protocol (RTP) port as the match criterion, use the **match ip rtp** command in class-map configuration or policy inline configuration mode. To remove the RTP port match criterion, use the **no** form of this command.

**match ip rtp** *starting-port-number port-range*

**no match ip rtp**

### Syntax Description

<i>starting-port-number</i>	The starting RTP port number. Values range from 2000 to 65535.
<i>port-range</i>	The RTP port number range. Values range from 0 to 16383.

### Command Default

No match criteria are specified.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.1(2)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.



This command is used to match IP RTP packets that fall within the specified port range. It matches packets destined to all even User Datagram Port (UDP) port numbers in the range from the *starting port number* argument to the *starting port number* plus the *port range* argument.

Use of an RTP port range as the match criterion is particularly effective for applications that use RTP, such as voice or video.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the `service-policy type performance-monitor inline` command.

#### Examples

The following example specifies a class map named `ethernet1` and configures the RTP port number 2024 and range 1000 to be used as the match criteria for this class:

```
Router(config)# class-map ethernet1
Router(config-cmap)# match ip rtp 2024 1000
```

#### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of RTP port number 2024 and range 1000 will be monitored based on the parameters specified in the flow monitor configuration named `fm-2`:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match
ip rtp 2024 1000
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

#### Related Commands

Command	Description
<code>class-map</code>	Creates a class map to be used for matching packets to a specified class.
<code>service-policy type performance-monitor</code>	Associates a Performance Monitor policy with an interface.
<code>ip rtp priority</code>	Reserves a strict priority queue for a set of RTP packet flows belonging to a range of UDP destination ports.
<code>match access-group</code>	Configures the match criteria for a class map based on the specified ACL number.

# match ipv4

To configure one or more of the IPv4 fields as a key field for a flow record, use the **match ipv4** command in flow record configuration mode. To disable the use of one or more of the IPv4 fields as a key field for a flow record, use the **no** form of this command.

**match ipv4** {dscp| header-length| id| option map| precedence| protocol| tos| version}

**no match ipv4** {dscp| header-length| id| option map| precedence| protocol| tos| version}

## Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

**match ipv4 protocol**

**no match ipv4 protocol**

### Syntax Description

<b>dscp</b>	Configures the IPv4 differentiated services code point (DSCP) (part of type of service (ToS)) as a key field.
<b>header-length</b>	Configures the IPv4 header length (in 32-bit words) as a key field.
<b>id</b>	Configures the IPv4 ID as a key field.
<b>option map</b>	Configures the bitmap representing which IPv4 options have been seen as a key field.
<b>precedence</b>	Configures the IPv4 precedence (part of ToS) as a key field.
<b>protocol</b>	Configures the IPv4 protocol as a key field.
<b>tos</b>	Configures the IPv4 ToS as a key field.
<b>version</b>	Configures the IP version from IPv4 header as a key field.

### Command Default

The use of one or more of the IPv4 fields as a key field for a user-defined flow record is not enabled by default.

### Command Modes

flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.

Release	Modification
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor with only the <b>protocol</b> keyword.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor with only the <b>protocol</b> keyword.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.



#### Note

Some of the keywords of the **match ipv4** command are documented as separate commands. All of the keywords for the **match ipv4** command that are documented separately start with **match ipv4**. For example, for information about configuring the IPv4 time-to-live (TTL) field as a key field for a flow record, refer to the **match ipv4 ttl** command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

Only the **protocol** keyword is available. You must first enter the **flow record type performance-monitor** command.

### Examples

The following example configures the IPv4 DSCP field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 dscp
```

### Examples

The following example configures the IPv4 DSCP field as a key field for Cisco Performance Monitor:

```
Router(config)# flow record
d type performance-monitor F
LOW-RECORD-1
Router(config-flow-record)# match ipv4 dscp
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>flow record</b>	Creates a flow record.
<b>flow record type performance-monitor</b>	Creates a flow record for Cisco Performance Monitor.

## match ipv4 destination

To configure the IPv4 destination address as a key field for a flow record, use the **match ipv4 destination** command in flow record configuration mode. To disable the IPv4 destination address as a key field for a flow record, use the **no** form of this command.

```
match ipv4 destination {address| {mask| prefix} [[minimum-mask mask]]}
```

```
no match ipv4 destination {address| {mask| prefix} [[minimum-mask mask]]}
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
match ipv4 destination {address| prefix [[minimum-mask mask]]}
```

```
no match ipv4 destination {address| prefix [[minimum-mask mask]]}
```

#### Syntax Description

<b>address</b>	Configures the IPv4 destination address as a key field.
<b>mask</b>	Configures the mask for the IPv4 destination address as a key field.
<b>prefix</b>	Configures the prefix for the IPv4 destination address as a key field.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. The range is 1 to 32.

#### Command Default

The IPv4 destination address is not configured as a key field.

#### Command Modes

flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was integrated into Cisco IOS Release 12.0(33)S and implemented on the Gigabit Switch Router (GSR).
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.

Release	Modification
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor without the <b>mask</b> keyword.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor without the <b>mask</b> keyword.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

The **mask** keyword is not available. You must first enter the **flow record type performance-monitor** command.

### Examples

The following example configures a 16-bit IPv4 destination address prefix as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 destination prefix minimum-mask 16
```

The following example specifies a 16-bit IPv4 destination address mask as a key field:

```
Router(config)# flow recor
d F
LOW-RECORD-1
Router(config-flow-record)# match ipv4 destination mask minimum-mask 16
```

### Examples

The following example specifies a 16-bit IPv4 destination address mask as a key field for Cisco Performance Monitor:

```
Router(config)# flow recor
d type performance-monitor F
LOW-RECORD-1
Router(config-flow-record)# match ipv4 destination mask minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record.
<b>flow record type performance-monitor</b>	Creates a flow record for Cisco Performance Monitor.

## match ipv4 fragmentation

To configure the IPv4 fragmentation flags and the IPv4 fragmentation offset as key fields for a flow record, use the **match ipv4 fragmentation** command in flow record configuration mode. To disable the use of the IPv4 fragmentation flags and the IPv4 fragmentation offset as key fields for a flow record, use the **no** form of this command.

**match ipv4 fragmentation** {flags| offset}

**no match ipv4 fragmentation** {flags| offset}

### Syntax Description

<b>flags</b>	Configures the IPv4 fragmentation flags as a key field.
<b>offset</b>	Configures the IPv4 fragmentation offset as a key field.

### Command Default

The IPv4 fragmentation flags and the IPv4 fragmentation offset are not configured as key fields.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is

the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

#### match ipv4 fragmentation flags

This field matches the "don't fragment" and "more fragments" flags.

Bit 0: reserved, must be zero

Bit 1: (DF) 0 = May Fragment, 1 = Don't Fragment

Bit 2: (MF) 0 = Last Fragment, 1 = More Fragments

Bits 3-7: (DC) Don't Care, value is irrelevant

```

      0   1   2   3   4   5   6   7
+---+---+---+---+---+---+---+---+
|   | D | M | D | D | D | D | D |
| 0 | F | F | C | C | C | C | C |
+---+---+---+---+---+---+---+---+

```

For more information on IPv4 fragmentation flags, see RFC 791, *Internet Protocol* at the following URL: <http://www.ietf.org/rfc/rfc791.txt>.

#### Examples

The following example configures the IPv4 fragmentation flags as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 fragmentation flags

```

The following example configures the IPv4 offset flag as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 fragmentation offset

```

#### Examples

The following example configures the IPv4 offset flag as a key field:

```

Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 fragmentation offset

```

#### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match ipv4 initiator

To configure one or more of the IPv4 initiator address field as a key field for a flow record, use the **match ipv4 initiator** command in flow record configuration mode. To disable the use of one or more of the IPv4 initiator address field as a key field for a flow record, use the **no** form of this command.

**match ipv4 initiatoraddress**

**no match ipv4 initiatoraddress**

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

**Command Default** The IPv4 initiator address field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the IPv4 initiator address field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 initiator address
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match ipv4 responder

To configure one or more of the IPv4 responder address field as a key field for a flow record, use the **match ipv4 responder** command in flow record configuration mode. To disable the use of one or more of the IPv4 responder address field as a key field for a flow record, use the **no** form of this command.

**match ipv4 responderaddress**

**no match ipv4 responderaddress**

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

**Command Default** The IPv4 responder address field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the IPv4 responder address field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 responder address
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv4 section

To configure a section of an IPv4 packet as a key field for a flow record, use the **match ipv4 section** command in flow record configuration mode. To disable the use of a section of an IPv4 packet as a key field for a flow record, use the **no** form of this command.

**match ipv4 section** {**header size** *header-size*| **payload size** *payload-size*}

**no match ipv4 section** {**header size** *header-size*| **payload size** *payload-size*}

### Syntax Description

<b>header size</b> <i>header-size</i>	Configures the number of bytes of raw data starting at the IPv4 header, to use as a key field. Range: 1 to 1200
<b>payload size</b> <i>payload-size</i>	Configures the number of bytes of raw data starting at the IPv4 payload, to use as a key field. Range: 1 to 1200

### Command Default

A section of an IPv4 packet is not configured as a key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**match ipv4 section header**

This command uses the section of the IPv4 header indicated by the **header size***header-size* keyword and argument as a key field. Only the configured size in bytes will be matched, and part of the payload will also be matched if the configured size is larger than the size of the header.

**Note**


---

This command can result in large records that use a large amount of router memory and export bandwidth.

---

**match ipv4 section payload**

This command uses the section of the IPv4 payload indicated by the **payload size***payload-size* keyword and argument as a key field.

**Note**


---

This command can result in large records that use a large amount of router memory and export bandwidth.

---

**Examples**

The following example configures the first four bytes (the IPv4 version field) as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 section header size 4
```

The following example configures the first 16 bytes from the payload of the IPv4 packets in the flow as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 section payload size 16
```

**Examples**

The following example configures the first 16 bytes from the payload of the IPv4 packets in the flow as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 section payload size 16
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv4 source

To configure the IPv4 source address as a key field for a flow record, use the **match ipv4 source** command in flow record configuration mode. To disable the use of the IPv4 source address as a key field for a flow record, use the **no** form of this command.

```
match ipv4 source {address| {mask| prefix} [[minimum-mask mask]]}
```

```
no match ipv4 source {address| {mask| prefix} [[minimum-mask mask]]}
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

```
match ipv4 source {address| prefix [[minimum-mask mask]]}
```

```
no match ipv4 source {address| prefix [[minimum-mask mask]]}
```

#### Syntax Description

<b>address</b>	Configures the IPv4 source address as a key field.
<b>mask</b>	Configures the mask for the IPv4 source address as a key field.
<b>prefix</b>	Configures the prefix for the IPv4 source address as a key field.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 128.

#### Command Default

The IPv4 source address is not configured as a key field.

#### Command Modes

flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor without the <b>mask</b> keyword.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor without the <b>maskkeyword</b> .

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

The **maskkeyword** is not available. You must first enter the **flow record type performance-monitor** command.  
**match ipv4 source prefix minimum-mask**

The source address prefix field is the network part of the source address. The optional minimum mask allows a more information to be gathered about large networks.

#### **match ipv4 source mask minimum-mask**

The source address mask is the number of bits that make up the network part of the source address. The optional minimum mask allows a minimum value to be configured. This command is useful when there is a minimum mask configured for the source prefix field and the mask is to be used with the prefix. In this case, the values configured for the minimum mask should be the same for the prefix and mask fields.

Alternatively, if the collector knows the minimum mask configuration of the prefix field, the mask field can be configured without a minimum mask so that the true mask and prefix can be calculated.

### Examples

The following example configures a 16-bit IPv4 source address prefix as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 source prefix minimum-mask 16
The following example specifies a 16-bit IPv4 source address mask as a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 source mask minimum-mask 16
```

### Examples

The following example specifies a 16-bit IPv4 source address mask as a key field for Cisco Performance Monitor:

```
Router(config)# flow recor
d type performance-monitor F
LOW-RECORD-1
Router(config-flow-record)# match ipv4 source mask minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record.

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Cisco Performance Monitor.



# match ipv4 total-length

To configure the IPv4 total-length field as a key field for a flow record, use the **match ipv4 total-length** command in flow record configuration mode. To disable the use of the IPv4 total-length field as a key field for a flow record, use the **no** form of this command.

**match ipv4 total-length**

**no match ipv4 total-length**

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

**Command Default** The IPv4 total-length field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the total-length value as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 total-length
```

### Examples

The following example configures the total-length value as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 total-length
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match ipv4 ttl

To configure the IPv4 time-to-live (TTL) field as a key field for a flow record, use the **match ipv4 ttl** command in Flow NetFlow flow record configuration mode. To disable the use of the IPv4 TTL field as a key field for a flow record, use the **no** form of this command.

**match ipv4 ttl**

**no match ipv4 ttl**

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

**Command Default** The IPv4 time-to-live (TTL) field is not configured as a key field.

**Command Modes** Flow NetFlow flow record configuration (config-flow-record)

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was modified. Support for this command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was modified. Support for this command was implemented on the Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures IPv4 TTL as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 ttl
```

The following example configures the IPv4 TTL as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv4 ttl
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6

To configure one or more of the IPv6 fields as a key field for a flow record, use the **match ipv6** command in Flexible NetFlow flow record configuration mode. To disable the use of one or more of the IPv6 fields as a key field for a flow record, use the **no** form of this command.

```
match ipv6 {dscp| flow-label| next-header| payload-length| precedence| protocol| traffic-class| version}
no match ipv6 {dscp| flow-label| next-header| payload-length| precedence| protocol| traffic-class| version}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
match ipv6 {dscp| precedence| protocol| tos}
no match ipv6 {dscp| precedence| protocol| tos}
```

### Cisco IOS XE Release 3.2SE

```
match ipv6 {protocol| traffic-class| version}
no match ipv6 {protocol| traffic-class| version}
```

#### Syntax Description

<b>dscp</b>	Configures the IPv6 differentiated services code point DSCP (part of type of service (ToS)) as a key field.
<b>flow-label</b>	Configures the IPv6 flow label as a key field.
<b>next-header</b>	Configures the IPv6 next header as a key field.
<b>payload-length</b>	Configures the IPv6 payload length as a key field.
<b>precedence</b>	Configures the IPv6 precedence (part of ToS) as a key field.
<b>protocol</b>	Configures the IPv6 protocol as a key field.
<b>tos</b>	Configures the IPv6 ToS as a key field.
<b>traffic-class</b>	Configures the IPv6 traffic class as a key field.
<b>version</b>	Configures the IPv6 version from IPv6 header as a key field.

#### Command Default

The IPv6 fields are not configured as a key field.

#### Command Modes

Flexible Netflow flow record configuration (config-flow-record)

**Command History**

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was modified. The <b>flow-label</b> , <b>next-header</b> , <b>payload-length</b> , <b>traffic-class</b> , and <b>version</b> keywords were removed.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was modified. The <b>dscp</b> , <b>flow-label</b> , <b>next-header</b> , <b>payload-length</b> , and <b>precedence</b> keywords were removed.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Note**

Some of the keywords of the **match ipv6** command are documented as separate commands. All of the keywords for the **match ipv6** command that are documented separately start with **match ipv6**. For example, for information about configuring the IPv6 hop limit as a key field for a flow record, refer to the **match ipv6 hop-limit** command.

**Examples**

The following example configures the IPv6 DSCP field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 dscp
```

The following example configures the IPv6 DSCP field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 dscp
```

#### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6 destination

To configure the IPv6 destination address as a key field for a flow record, use the **match ipv6 destination** command in Flexible Netflow flow record configuration mode. To disable the IPv6 destination address as a key field for a flow record, use the **no** form of this command.

```
match ipv6 destination {address| {mask| prefix} [minimum-mask mask]}
```

```
no match ipv6 destination {address| {mask| prefix} [minimum-mask mask]}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
match ipv6 destination address
```

```
no match ipv6 destination address
```

### Cisco IOS XE Release 3.2SE

```
match ipv6 destination address
```

```
no match ipv6 destination address
```

### Syntax Description

<b>address</b>	Configures the IPv6 destination address as a key field.
<b>mask</b>	Configures the mask for the IPv6 destination address as a key field.
<b>prefix</b>	Configures the prefix for the IPv6 destination address as a key field.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 128.

### Command Default

The IPv6 destination address is not configured as a key field.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.



Release	Modification
12.2(50)SY	This command was modified. The <b>mask</b> , <b>prefix</b> , and <b>minimum-mask</b> keywords were removed.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was modified. The <b>mask</b> , <b>prefix</b> , and <b>minimum-mask</b> keywords were removed.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures a 16-bit IPv6 destination address prefix as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 destination prefix minimum-mask 16
```

The following example specifies a 16-bit IPv6 destination address mask as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 destination mask minimum-mask 16
```

The following example configures a 16-bit IPv6 destination address mask as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 destination mask minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match ipv6 extension map

To configure the bitmap of the IPv6 extension header map as a key field for a flow record, use the **match ipv6 extension map** command in flow record configuration mode. To disable the use of the IPv6 bitmap of the IPv6 extension header map as a key field for a flow record, use the **no** form of this command.

**match ipv6 extension map**

**no match ipv6 extension map**

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

**Command Default** The use of the bitmap of the IPv6 extension header map as a key field for a user-defined flow record is not enabled by default.

**Command Modes** Flow record configuration (config-flow-record)

## Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Bitmap of the IPv6 Extension Header Map

The bitmap of IPv6 extension header map is made up of 32 bits.

0	1	2	3	4	5	6	7
Res	FRA1	RH	FRA0	UNK	Res	HOP	DST
8	9	10	11	12	13	14	15
PAY	AH	ESP	Reserved				
16	17	18	19	20	21	22	23
Reserved							
24	25	26	27	28	29	30	31
Reserved							

```

0 Res Reserved
1 FRA1 Fragmentation header - not first fragment
2 RH Routing header
3 FRA0 Fragment header - first fragment
4 UNK Unknown Layer 4 header
    (compressed, encrypted, not supported)
5 Res Reserved
6 HOP Hop-by-hop option header
7 DST Destination option header
8 PAY Payload compression header
9 AH Authentication Header
10 ESP Encrypted security payload
11 to 31 Reserved

```

For more information on IPv6 headers, refer to RFC 2460 *Internet Protocol, Version 6 (IPv6)* at the following URL: <http://www.ietf.org/rfc/rfc2460.txt>.

### Examples

The following example configures the IPv6 bitmap of the IPv6 extension header map of the packets in the flow as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 extension map

```

### Examples

The following example configures the IPv6 bitmap of the IPv6 extension header map of the packets in the flow as a key field:

```

Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 extension map

```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6 fragmentation

To configure one or more of the IPv6 fragmentation fields as a key field for a flow record, use the **match ipv6 fragmentation** command in flow record configuration mode. To disable the use of the IPv6 fragmentation field as a key field for a flow record, use the **no** form of this command.

**match IPv6 fragmentation** {flags| id| offset}

**no match IPv6 fragmentation** {flags| id| offset}

### Syntax Description

<b>flags</b>	Configures the IPv6 fragmentation flags as a key field.
<b>id</b>	Configures the IPv6 fragmentation ID as a key field.
<b>offset</b>	Configures the IPv6 fragmentation offset value as a key field.

### Command Default

The IPv6 fragmentation field is not configured as a key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible

NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the IPv6 fragmentation flags a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 fragmentation flags
The following example configures the IPv6 offset value a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 fragmentation offset
```

### Examples

The following example configures the IPv6 offset value as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 fragmentation offset
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6 hop-limit

To configure the IPv6 hop limit as a key field for a flow record, use the **match ipv6 hop-limit** command in Flexible NetFlow flow record configuration mode. To disable the use of a section of an IPv6 packet as a key field for a flow record, use the **no** form of this command.

**match ipv6 hop-limit**

**no match ipv6 hop-limit**

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

**Command Default** The use of the IPv6 hop limit as a key field for a user-defined flow record is not enabled by default.

**Command Modes** Flexible NetFlow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples**

The following example configures the hop limit of the packets in the flow as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 hop-limit
```

The following example configures the hop limit of the packets in the flow as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 hop-limit
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6 initiator

To configure one or more of the IPv6 initiator address field as a key field for a flow record, use the **match ipv6 initiator** command in flow record configuration mode. To disable the use of one or more of the IPv6 initiator address field as a key field for a flow record, use the **no** form of this command.

**match ipv6 initiatoraddress**

**no match ipv6 initiatoraddress**

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

**Command Default** The IPv6 initiator address field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the IPv6 initiator address field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 initiator address
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match ipv6 length

To configure one or more of the IPv6 length fields as a key field for a flow record, use the **match ipv6 length** command in flow record configuration mode. To disable the use of the IPv6 length field as a key field for a flow record, use the **no** form of this command.

**match ipv6 length** {header| payload| total}

**no match ipv6 length** {header| payload| total}

### Syntax Description

<b>header</b>	Configures the length in bytes of the IPv6 header, not including any extension headers as a key field.
<b>payload</b>	Configures the length in bytes of the IPv6 payload, including any extension header as a key field.
<b>total</b>	Configures the total length in bytes of the IPv6 header and payload as a key field.

### Command Default

The IPv6 length field is not configured as a key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the length of the IPv6 header in bytes, not including any extension headers, as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 length header
```

### Examples

The following example configures the length of the IPv6 header in bytes, not including any extension headers, as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 length header
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match ipv6 responder

To configure one or more of the IPv6 responder address field as a key field for a flow record, use the **match ipv6 responder** command in flow record configuration mode. To disable the use of one or more of the IPv6 responder address field as a key field for a flow record, use the **no** form of this command.

**match ipv6 responderaddress**

**no match ipv6 responderaddress**

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

**Command Default** The IPv6 responder address field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the IPv6 responder address field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 responder address
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match ipv6 section

To configure a section of an IPv6 packet as a key field for a flow record, use the **match ipv6 section** command in flow record configuration mode. To disable the use of a section of an IPv6 packet as a key field for a flow record, use the **no** form of this command.

**match ipv6 section** {**header size** *header-size*| **payload size** *payload-size*}

**no match ipv6 section** {**header size** *header-size*| **payload size** *payload-size*}

### Syntax Description

<b>header size</b> <i>header-size</i>	Configures the number of bytes of raw data starting at the IPv6 header, to use as a key field. Range: 1 to 1200
<b>payload size</b> <i>payload-size</i>	Configures the number of bytes of raw data starting at the IPv6 payload, to use as a key field. Range: 1 to 1200

### Command Default

A section of an IPv6 packet is not configured as a key.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

#### match ipv6 section header

This command uses the section of the IPv6 header indicated by the **headersizeheader-size** keyword and argument as a key field. Only the configured size in bytes will be matched, and part of the payload will also be matched if the configured size is larger than the size of the header.



**Note** This command can result in large records that use a large amount of router memory and export bandwidth.

#### match ipv6section payload

This command uses the section of the IPv6 payload indicated by the **payloadsizepayload-size** keyword and argument as a key field.



**Note** This command can result in large records that use a large amount of router memory and export bandwidth.

### Examples

The following example configures the first four bytes (the IP version field) from the IPv6 header of the packets in the flows as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 section header size 4
```

The following example configures the first 16 bytes from the payload of the IPv6 packets in the flows as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 section payload size 16
```

### Examples

The following example configures the first 16 bytes from the payload of the IPv6 packets in the flows as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 section payload size 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match ipv6 source

To configure the IPv6 source address as a key field for a flow record, use the **match ipv6 source** command in Flexible NetFlow flow record configuration mode. To disable the use of the IPv6 source address as a key field for a flow record, use the **no** form of this command.

```
match ipv6 source {address| {mask| prefix} [minimum-mask mask]}
```

```
no match ipv6 source {address| {mask| prefix} [minimum-mask mask]}
```

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

```
match ipv6 source address
```

```
no match ipv6 source address
```

### Cisco IOS XE Release 3.2SE

```
match ipv6 source address
```

```
no match ipv6 source address
```

#### Syntax Description

<b>address</b>	Configures the IPv6 source address as a key field.
<b>mask</b>	Configures the mask for the IPv6 source address as a key field.
<b>prefix</b>	Configures the prefix for the IPv6 source address as a key field.
<b>minimum-mask</b> <i>mask</i>	(Optional) Specifies the size, in bits, of the minimum mask. Range: 1 to 128.

#### Command Default

The IPv6 source address is not configured as a key field.

#### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.

Release	Modification
12.2(50)SY	This command was modified. The <b>mask</b> , <b>prefix</b> , and <b>minimum-mask</b> keywords were removed.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was modified. The <b>mask</b> , <b>prefix</b> , and <b>minimum-mask</b> keywords were removed.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures a 16-bit IPv6 source address prefix as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 source prefix minimum-mask 16
```

The following example specifies a 16-bit IPv6 source address mask as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match ipv6 source mask minimum-mask 16
```

The following example configures the 16-bit IPv6 source address mask as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match ipv6 source mask minimum-mask 16
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match metadata

To configure one or more of the metadata fields as a key field for a flow record, use the **match metadata** command in flow record configuration mode. To disable the use the metadata fields as a key field for a flow record, use the **no** form of this command.

**match metadata** {global-session-id| multi-party-session-id}

**no match metadata** {global-session-id| multi-party-session-id}

### Syntax Description

<b>global-session-id</b>	Name used by the media monitoring system to maintain tracking of a flow end to end. The name can be a maximum of 24 alphanumeric characters.
<b>multi-party-session-id</b>	Name used by the media monitoring system to track related flows of a media session end to end. The name can be a maximum of 16 alphanumeric characters.

### Command Default

No match criteria are configured.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
15.2(2)S	This command was introduced.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples**

The following example configures the global session ID of an end-to-end flow as a key field for Flexible Netflow:

```
Router(config)# flow record RECORD-1
Router(config-flow-record)# match metadata global-session-id
```

**Examples**

The following example configures the global session ID of an end-to-end flow as a key field for Performance Monitor:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match metadata global-session-id
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match mpls experimental topmost

To match the experimental (EXP) value in the topmost label header, use the **matchmplsexperimentaltopmost** command in class-map configuration or policy inline configuration mode. To remove the EXP match criterion, use the no form of this command.

**match mpls experimental topmost number**

**no match mpls experimental topmost number**

## Syntax Description

<i>number</i>	Multiprotocol Label Switching (MPLS) EXP field in the topmost label header. Valid values are 0 to 7.
---------------	--

## Command Default

No EXP match criterion is configured for the topmost label header.

## Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

## Command History

Release	Modification
12.2(13)T	This command was introduced.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.
Cisco IOS XE Release 2.3	This command was integrated into Cisco IOS XE Release 2.3.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.
12.2(33)SCF	This command was integrated into Cisco IOS Release 12.2(33)SCF.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

You can enter this command on the input interfaces and the output interfaces. It will match only on MPLS packets.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the **service-policytypeperformance-monitorinline** command.

**Examples**

The following example shows that the EXP value 3 in the topmost label header is matched:

```
Router(config)# class-map mpls exp
Router(config-cmap)# match mpls experimental topmost 3
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of a EXP value of 3 in the topmost label header will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match mpls experimental topmost 3
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>set mpls experimental topmost</b>	Sets the MPLS EXP field value in the topmost MPLS label header at the input or output interfaces.

## match not

To specify the single match criterion value to use as an unsuccessful match criterion, use the **matchnot** command in class-map configuration or policy inline configuration mode. To remove a previously specified source value to not use as a match criterion, use the **no** form of this command.

**match not** *match-criterion*

**no match not** *match-criterion*

### Syntax Description

<i>match-criterion</i>	The match criterion value that is an unsuccessful match criterion. All other values of the specified match criterion will be considered successful match criteria.
------------------------	--

### Command Default

No unsuccessful match criterion is configured.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

The **matchnot** command is used to specify a quality of service (QoS) policy value that is not used as a match criterion. When the **matchnot** command is used, all other values of that QoS policy become successful match criteria.

For instance, if the **matchnotqos-group4** command is issued in QoS class-map configuration mode, the specified class will accept all QoS group values except 4 as successful match criteria.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the **service-policy type performance-monitor inline** command.

**Examples**

In the following traffic class, all protocols except IP are considered successful match criteria:

```
Router(config)# class-map noip
Router(config-cmap)# match not protocol ip
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 for all protocols except IP will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match not protocol ip
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.

## match packet length (class-map)

To specify the Layer 3 packet length in the IP header as a match criterion in a class map, use the **matchpacketlength** command in class-map configuration or policy inline configuration mode. To remove a previously specified Layer 3 packet length as a match criterion, use the **no** form of this command.

**match packet length** {**max** *maximum-length-value* [**min** *minimum-length-value*]} **min** *minimum-length-value* [**max** *maximum-length-value*]

**no match packet length** {**max** *maximum-length-value* [**min** *minimum-length-value*]} **min** *minimum-length-value* [**max** *maximum-length-value*]

### Syntax Description

<b>max</b>	Indicates that a maximum value for the Layer 3 packet length is to be specified.
<i>maximum-length-value</i>	Maximum length value of the Layer 3 packet length, in bytes. The range is from 1 to 2000.
<b>min</b>	Indicates that a minimum value for the Layer 3 packet length is to be specified.
<i>minimum-length-value</i>	Minimum length value of the Layer 3 packet length, in bytes. The range is from 1 to 2000.

### Command Default

The Layer 3 packet length in the IP header is not used as a match criterion.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.2(13)T	This command was introduced.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.2	This command was integrated into Cisco IOS XE Release 2.2 and implemented on the Cisco ASR 1000 Series Routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

This command considers only the Layer 3 packet length in the IP header. It does not consider the Layer 2 packet length in the IP header.

When using this command, you must at least specify the maximum or minimum value. However, you do have the option of entering both values.

If only the minimum value is specified, a packet with a Layer 3 length greater than the minimum is viewed as matching the criterion.

If only the maximum value is specified, a packet with a Layer 3 length less than the maximum is viewed as matching the criterion.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the `service-policy type performance-monitor inline` command.

### Examples

In the following example a class map named "class 1" has been created, and the Layer 3 packet length has been specified as a match criterion. In this example, packets with a minimum Layer 3 packet length of 100 bytes and a maximum Layer 3 packet length of 300 bytes are viewed as meeting the match criteria.

```
Router(config)# class-map match-all class1
Router(config-cmap)# match packet length min 100 max 300
```

### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of a minimum Layer 3 packet length of 100 bytes and a maximum Layer 3 packet length of 300 bytes will be monitored based on the parameters specified in the flow monitor configuration named `fm-2`:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match packet length min 100 max 300
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

### Related Commands

Command	Description
<code>class-map</code>	Creates a class map to be used for matching packets to a specified class.
<code>service-policy type performance-monitor</code>	Associates a Performance Monitor policy with an interface.
<code>show class-map</code>	Displays all class maps and their matching criteria.



Command	Description
<b>show policy-map interface</b>	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

# match policy performance-monitor

To configure the classification hierarchy of the performance monitor policy as a key field for a flow record, use the **match policy performance-monitor** command in flow record configuration mode. To disable the use of this key field for a flow record, use the **no** form of this command.

**match policy performance-monitor classification hierarchy**

**no match policy performance-monitor classification hierarchy**

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

**Command Default** Classification hierarchy of the performance monitor policy is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release XE 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

Because the mode prompt is the same for Flexible NetFlow and Performance Monitor, the command mode for both products is referred to as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the use of the classification hierarchy of the performance monitor policy as a key field for a flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match policy performance-monitor classification hierarchy
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match precedence

To identify IP precedence values to use as the match criterion, use the **matchprecedence** command in class-map configuration or policy inline configuration mode. To remove IP precedence values from a class map, use the **no** form of this command.

```
match [ip] precedence {precedence-criteria1|precedence-criteria2|precedence-criteria3|precedence-criteria4}
```

```
no match [ip] precedence {precedence-criteria1|precedence-criteria2|precedence-criteria3|precedence-criteria4}
```

## Syntax Description

<b>ip</b>	(Optional) Specifies that the match is for IPv4 packets only. If not used, the match is on both IPv4 and IPv6 packets.  <b>Note</b> For the Cisco 10000 series routers, the <b>ip</b> keyword is required.
<i>precedence-criteria1</i> <i>precedence-criteria2</i> <i>precedence-criteria3</i> <i>precedence-criteria4</i>	Identifies the precedence value. You can enter up to four different values, separated by a space. See the “Usage Guidelines” section for valid values.

## Command Default

No match criterion is configured.

## Command Modes

class-map configuration (config-cmap) policy inline configuration (config-if-spolicy-inline)

## Command History

Release	Modification
12.2(13)T	This command was introduced. This command replaces the <b>matchipprecedence</b> command.
12.0(17)SL	This command was integrated into Cisco IOS Release 12.0(17)SL and implemented on the Cisco 10000 series routers.
12.0(28)S	This command was integrated into Cisco IOS Release 12.0(28)S for IPv6.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.

Release	Modification
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.
Cisco IOS XE Release 3.6	This command was implemented on the Cisco ASR 903 Router.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

You can enter up to four matching criteria, a number abbreviation (0 to 7) or criteria names (critical, flash, and so on), in a single match statement. For example, if you wanted the precedence values of 0, 1, 2, or 3 (note that only one of the precedence values must be a successful match criterion, not all of the specified precedence values), enter the **matchprecedence0123** command. The *precedence-criteria* numbers are not mathematically significant; that is, the *precedence-criteria* of 2 is not greater than 1. The way that these different packets are treated depends upon quality of service (QoS) policies, set in policy-map configuration mode.

You can configure a QoS policy to include IP precedence marking for packets entering the network. Devices within your network can then use the newly marked IP precedence values to determine how to treat the packets. For example, class-based weighted random early detection (WRED) uses IP precedence values to determine the probability that a packet is dropped. You can also mark voice packets with a particular precedence. You can then configure low-latency queueing (LLQ) to place all packets of that precedence into the priority queue.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policytypeperformance-monitorinline** command.

#### Matching Precedence for IPv6 and IPv4 Packets on the Cisco 7600 and 10000 and Series Routers

On the Cisco 7600 series and 10000 series routers, you set matching criteria based on precedence values for only IPv6 packets using the **matchprotocol** command with the **ipv6** keyword. Without that keyword, the precedence match defaults to match both IPv4 and IPv6 packets. You set matching criteria based on precedence values for IPv4 packets only using the **ip** keyword. Without the **ip** keyword the match occurs on both IPv4 and IPv6 packets.

#### Precedence Values and Names

The following table lists all criteria conditions by value, name, binary value, and recommended use. You may enter up to four criteria, each separated by a space. Only one of the precedence values must be a successful match criterion. The table below lists the IP precedence values.

**Table 12: IP Precedence Values**

Precedence Value	Precedence Name	Binary Value	Recommended Use
0	routine	000	Default marking value
1	priority	001	Data applications
2	immediate	010	Data applications
3	flash	011	Call signaling

Precedence Value	Precedence Name	Binary Value	Recommended Use
4	flash-override	100	Video conferencing and streaming video
5	critical	101	Voice
6	internet (control)	110	Network control traffic (such as routing, which is typically precedence 6)
7	network (control)	111	

Do not use IP precedence 6 or 7 to mark packets, unless you are marking control packets.

### Examples

#### Examples

The following example shows how to configure the service policy named `priority50` and attach service policy `priority50` to an interface, matching for IPv4 traffic only. In a network where both IPv4 and IPv6 are running, you might find it necessary to distinguish between the protocols for matching and traffic segregation. In this example, the class map named `ipprec5` will evaluate all IPv4 packets entering Fast Ethernet interface `1/0/0` for a precedence value of 5. If the incoming IPv4 packet has been marked with the precedence value of 5, the packet will be treated as priority traffic and will be allocated with bandwidth of 50 kbps.

```
Router(config)# class-map ipprec5
Router(config-cmap)# match ip precedence 5
Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class ipprec5
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fa1/0/0
Router(config-if)# service-policy input priority50
```

#### Examples

The following example shows the same service policy matching on precedence for IPv6 traffic only. Notice that the `match protocol` command with the `ipv6` keyword precedes the `match precedence` command. The `match protocol` command is required to perform matches on IPv6 traffic alone.

```
Router(config)# class-map ipprec5
Router(config-cmap)# match protocol ipv6
Router(config-cmap)# match precedence 5
Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class ipprec5
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fa1/0/0
Router(config-if)# service-policy input priority50
```

#### Examples

The following example shows how to use policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface `0/0` that match the criterion

of a match precedence of 4 will be monitored based on the parameters specified in the flow monitor configuration named fm-2:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match precedence 4
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# end
```

### Related Commands

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>match protocol</b>	Configures the match criteria for a class map on the basis of a specified protocol.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
<b>service-policy</b>	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>set ip precedence</b>	Sets the precedence value in the IP header.
<b>show class-map</b>	Displays all class maps and their matching criteria, or a specified class map and its matching criteria.

# match protocol

To configure the match criterion for a class map on the basis of a specified protocol, use the **matchprotocol** command in class-map configuration or policy inline configuration mode. To remove the protocol-based match criterion from the class map, use the **no** form of this command.

**match protocol** *protocol-name*

**no match protocol** *protocol-name*

## Syntax Description

<i>protocol-name</i>	Name of the protocol (for example, bgp) used as a matching criterion. See the “Usage Guidelines” for a list of protocols supported by most routers.
----------------------	---

## Command Default

No match criterion is configured.

## Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

## Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(13)E	This command was integrated into Cisco IOS Release 12.1(13)E and implemented on Catalyst 6000 family switches without FlexWAN modules.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
12.2(13)T	This command was modified to remove <b>apollo</b> , <b>vines</b> , and <b>xns</b> from the list of protocols used as matching criteria. These protocols were removed because Apollo Domain, Banyan VINES, and Xerox Network Systems (XNS) were removed in this release. The IPv6 protocol was added to support matching on IPv6 packets.
12.0(28)S	This command was integrated into Cisco IOS Release 12.0(28)S for IPv6.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(17a)SX1	This command was integrated into Cisco IOS Release 12.2(17a)SX1.

Release	Modification
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE and implemented on the Supervisor Engine 720.
12.4(6)T	This command was modified. The Napster protocol was removed because it is no longer supported.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2 and implemented on the Cisco 10000 series routers.
12.2(18)ZY	This command was integrated into Cisco IOS Release 12.2(18)ZY. This command was modified to enhance Network-Based Application Recognition (NBAR) functionality on the Catalyst 6500 series switch that is equipped with the Supervisor 32/programmable intelligent services accelerator (PISA) engine.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T and implemented on the Cisco 1700, Cisco 1800, Cisco 2600, Cisco 2800, Cisco 3700, Cisco 3800, Cisco 7200, and Cisco 7300 series routers.
Cisco IOS XE Release 2.2	This command was integrated into Cisco IOS XE Release 2.2 and implemented on the Cisco ASR 1000 Series Routers.
Cisco IOS XE Release 3.1S	This command was modified. Support for more protocols was added.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the `service-policytypeperformance-monitorinline` command.

#### Supported Platforms Other Than Cisco 7600 Routers and Cisco 10000 Series Routers

For class-based weighted fair queueing (CBWFQ), you define traffic classes based on match criteria protocols, access control lists (ACLs), input interfaces, quality of service (QoS) labels, and Experimental (EXP) field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The `matchprotocol` command specifies the name of a protocol to be used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

The `matchprotocolipx` command matches packets in the output direction only.



To use the **matchprotocol** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

To configure NBAR to match protocol types that are supported by NBAR traffic, use the **matchprotocol(NBAR)** command.

#### Cisco 7600 Series Routers

The **matchprotocol** command in QoS class-map configuration configures NBAR and sends all traffic on the port, both ingress and egress, to be processed in the software on the Multilayer Switch Feature Card 2 (MSFC2). For CBWFQ, you define traffic classes based on match criteria like protocols, ACLs, input interfaces, QoS labels, and Multiprotocol Label Switching (MPLS) EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **matchprotocol** command specifies the name of a protocol to be used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

If you want to use the **matchprotocol** command, you must first enter the **class-map** command to specify the name of the class to which you want to establish the match criteria.

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

This command can be used to match protocols that are known to the NBAR feature. For a list of protocols supported by NBAR, see the “Classification” part of the *Cisco IOS Quality of Service Solutions Configuration Guide*.

#### Cisco 10000 Series Routers

For CBWFQ, you define traffic classes based on match criteria including protocols, ACLs, input interfaces, QoS labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **matchprotocol** command specifies the name of a protocol to be used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

The **matchprotocolipx** command matches packets in the output direction only.

To use the **matchprotocol** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish.

If you are matching NBAR protocols, use the **matchprotocol(NBAR)** command.

#### Match Protocol Command Restrictions (Catalyst 6500 Series Switches Only)

Policy maps contain traffic classes. Traffic classes contain one or more **match** commands that can be used to match packets (and organize them into groups) on the basis of a protocol type or application. You can create as many traffic classes as needed.

Cisco IOS Release 12.2(18)ZY includes software intended for use on the Catalyst 6500 series switch that is equipped with a Supervisor 32/PISA engine. For this release and platform, note the following restrictions for using policy maps and **matchprotocol** commands:

- A single traffic class can be configured to match a maximum of 8 protocols or applications.
- Multiple traffic classes can be configured to match a cumulative maximum of 95 protocols or applications.

### Supported Protocols

The table below lists the protocols supported by most routers. Some routers support a few additional protocols. For example, the Cisco 7600 router supports the AARP and DECnet protocols, while the Cisco 7200 router supports the directconnect and PPPOE protocols. For a complete list of supported protocols, see the online help for the **matchprotocol** command on the router that you are using.

**Table 13: Supported Protocols**

Protocol Name	Description
802-11-iapp	IEEE 802.11 Wireless Local Area Networks Working Group Internet Access Point Protocol
ace-svr	ACE Server/Propagation
aol	America-Online Instant Messenger
appleqt	Apple QuickTime
<b>arp</b> *	IP Address Resolution Protocol (ARP)
<b>bgp</b>	Border Gateway Protocol
biff	Biff mail notification
bootpc	Bootstrap Protocol Client
bootps	Bootstrap Protocol Server
<b>bridge</b> *	bridging
<b>cddbp</b>	CD Database Protocol
<b>cdp</b> *	Cisco Discovery Protocol
cifs	CIFS
<b>cisco-fna</b>	Cisco FNATIVE
cisco-net-mgmt	cisco-net-mgmt
cisco-svcs	Cisco license/perf/GDP/X.25/ident svcs

<b>Protocol Name</b>	<b>Description</b>
cisco-sys	Cisco SYSMANT
cisco-tdp	cisco-tdp
cisco-tna	Cisco TNATIVE
<b>citrix</b>	Citrix Systems Metaframe
citriximaclient	Citrix IMA Client
<b>clns *</b>	ISO Connectionless Network Service
<b>clns_es *</b>	ISO CLNS End System
<b>clns_is *</b>	ISO CLNS Intermediate System
clp	Cisco Line Protocol
<b>cmns *</b>	ISO Connection-Mode Network Service
<b>cmp</b>	Cluster Membership Protocol
<b>compressedtcp *</b>	Compressed TCP
creativepartnr	Creative Partner
creativeserver	Creative Server
<b>cuseeme</b>	CU-SeeMe desktop video conference
daytime	Daytime (RFC 867)
dbase	dBASE Unix
dbcontrol_agent	Oracle Database Control Agent
ddns-v3	Dynamic DNS Version 3
<b>dhcp</b>	Dynamic Host Configuration
dhcp-failover	DHCP Failover
<b>directconnect</b>	Direct Connect
discard	Discard port
<b>dns</b>	Domain Name Server lookup

Protocol Name	Description
dnsix	DNSIX Security Attribute Token Map
echo	Echo port
<b>edonkey</b>	eDonkey
<b>egp</b>	Exterior Gateway Protocol
<b>eigrp</b>	Enhanced Interior Gateway Routing Protocol
entrust-svc-handler	Entrust KM/Admin Service Handler
entrust-svcs	Entrust sps/aaas/aams
exec	Remote Process Execution
<b>exchange</b>	Microsoft RPC for Exchange
<b>fasttrack</b>	FastTrack Traffic (KaZaA, Morpheus, Grokster, and so on)
fcip-port	FCIP
<b>finger</b>	Finger
<b>ftp</b>	File Transfer Protocol
ftps	FTP over TLS/SSL
gdoi	Group Domain of Interpretation
giop	Oracle GIOP/SSL
<b>gnutella</b>	Gnutella Version 2 Traffic (BearShare, Shareeza, Morpheus, and so on)
<b>gopher</b>	Gopher
<b>gre</b>	Generic Routing Encapsulation
gtpv0	GPRS Tunneling Protocol Version 0
gtpv1	GPRS Tunneling Protocol Version 1
h225ras	H225 RAS over Unicast
<b>h323</b>	H323 Protocol

<b>Protocol Name</b>	<b>Description</b>
h323callsigalt	H323 Call Signal Alternate
hp-alarm-mgr	HP Performance data alarm manager
hp-collector	HP Performance data collector
hp-managed-node	HP Performance data managed node
hsrp	Hot Standby Router Protocol
<b>http</b>	Hypertext Transfer Protocol
https	Secure Hypertext Transfer Protocol
ica	ica (Citrix)
icabrowser	icabrowser (Citrix)
icmp	Internet Control Message Protocol
ident	Authentication Service
igmpv3lite	IGMP over UDP for SSM
<b>imap</b>	Internet Message Access Protocol
imap3	Interactive Mail Access Protocol 3
imaps	IMAP over TLS/SSL
<b>ip *</b>	IP (version 4)
ipass	IPASS
<b>ipinip</b>	IP in IP (encapsulation)
<b>ipsec</b>	IP Security Protocol (ESP/AH)
ipsec-msft	Microsoft IPsec NAT-T
<b>ipv6 *</b>	IP (version 6)
ipx	IPX
<b>irc</b>	Internet Relay Chat
irc-serv	IRC-SERV

Protocol Name	Description
ircs	IRC over TLS/SSL
ircu	IRCU
isakmp	ISAKMP
iscsi	iSCSI
iscsi-target	iSCSI port
<b>kazaa2</b>	Kazaa Version 2
<b>kerberos</b>	Kerberos
<b>l2tp</b>	Layer 2 Tunnel Protocol
<b>ldap</b>	Lightweight Directory Access Protocol
ldap-admin	LDAP admin server port
ldaps	LDAP over TLS/SSL
<b>llc2 *</b>	llc2
login	Remote login
lotusmtap	Lotus Mail Tracking Agent Protocol
lotusnote	Lotus Notes
<b>mgcp</b>	Media Gateway Control Protocol
microsoft-ds	Microsoft-DS
<b>msexch-routing</b>	Microsoft Exchange Routing
<b>msnmsgr</b>	MSN Instant Messenger
<b>msrpc</b>	Microsoft Remote Procedure Call
<b>msrpc-smb-netbios</b>	MSRPC over TCP port 445
<b>ms-cluster-net</b>	MS Cluster Net
<b>ms-dotnetster</b>	Microsoft .NETster Port
<b>ms-sna</b>	Microsoft SNA Server/Base

<b>Protocol Name</b>	<b>Description</b>
<b>ms-sql</b>	Microsoft SQL
<b>ms-sql-m</b>	Microsoft SQL Monitor
<b>mysql</b>	MySQL
n2h2server	N2H2 Filter Service Port
ncp	NCP (Novell)
net8-cman	Oracle Net8 Cman/Admin
<b>netbios</b>	Network Basic Input/Output System
netbios-dgm	NETBIOS Datagram Service
netbios-ns	NETBIOS Name Service
netbios-ssn	NETBIOS Session Service
<b>netshow</b>	Microsoft Netshow
netstat	Variant of systat
<b>nfs</b>	Network File System
<b>nntp</b>	Network News Transfer Protocol
<b>novadigm</b>	Novadigm Enterprise Desktop Manager (EDM)
<b>ntp</b>	Network Time Protocol
oem-agent	OEM Agent (Oracle)
oracle	Oracle
oracle-em-vp	Oracle EM/VP
oraclenames	Oracle Names
orasrv	Oracle SQL*Net v1/v2
<b>ospf</b>	Open Shortest Path First
<b>pad *</b>	Packet assembler/disassembler (PAD) links
<b>pcanywhere</b>	Symantec pcANYWHERE

Protocol Name	Description
pcanywheredata	pcANYWHEREdata
pcanywherestat	pcANYWHEREstat
<b>pop3</b>	Post Office Protocol
pop3s	POP3 over TLS/SSL
pppoe	Point-to-Point Protocol over Ethernet
pptp	Point-to-Point Tunneling Protocol
<b>printer</b>	Print spooler/lpd
pwdgen	Password Generator Protocol
qmtip	Quick Mail Transfer Protocol
radius	RADIUS & Accounting
<b>rcmd</b>	Berkeley Software Distribution (BSD) r-commands (rsh, rlogin, rexec)
rdb-dbs-disp	Oracle RDB
realmedia	RealNetwork's Realmedia Protocol
realsecure	ISS Real Secure Console Service Port
<b>rip</b>	Routing Information Protocol
router	Local Routing Process
<b>rsrb *</b>	Remote Source-Route Bridging
rsvd	RSVD
<b>rsvp</b>	Resource Reservation Protocol
rsvp-encap	RSVP ENCAPSULATION-1/2
rsvp_tunnel	RSVP Tunnel
rtc-pm-port	Oracle RTC-PM port
rtelnet	Remote Telnet Service
<b>rtp</b>	Real-Time Protocol



<b>Protocol Name</b>	<b>Description</b>
<b>rtsp</b>	Real-Time Streaming Protocol
r-winsoc	remote-winsoc
<b>secure-ftp</b>	FTP over Transport Layer Security/Secure Sockets Layer (TLS/SSL)
<b>secure-http</b>	Secured HTTP
<b>secure-imap</b>	Internet Message Access Protocol over TLS/SSL
<b>secure-irc</b>	Internet Relay Chat over TLS/SSL
<b>secure-ldap</b>	Lightweight Directory Access Protocol over TLS/SSL
<b>secure-nntp</b>	Network News Transfer Protocol over TLS/SSL
<b>secure-pop3</b>	Post Office Protocol over TLS/SSL
<b>secure-telnet</b>	Telnet over TLS/SSL
send	SEND
shell	Remote command
<b>sip</b>	Session Initiation Protocol
sip-tls	Session Initiation Protocol-Transport Layer Security
<b>skinny</b>	Skinny Client Control Protocol
sms	SMS RCINFO/XFER/CHAT
<b>smtp</b>	Simple Mail Transfer Protocol
<b>snapshot</b>	Snapshot routing support
<b>snmp</b>	Simple Network Protocol
snmptrap	SNMP Trap
<b>socks</b>	Sockets network proxy protocol (SOCKS)
<b>sqlnet</b>	Structured Query Language (SQL)*NET for Oracle
sqlserv	SQL Services
sqlsrv	SQL Service

Protocol Name	Description
<b>sqlserver</b>	Microsoft SQL Server
<b>ssh</b>	Secure shell
sshell	SSLshell
ssp	State Sync Protocol
<b>streamwork</b>	Xing Technology StreamWorks player
stun	cisco Serial Tunnel
<b>sunrpc</b>	Sun remote-procedure call (RPC)
<b>syslog</b>	System Logging Utility
syslog-conn	Reliable Syslog Service
tacacs	Login Host Protocol (TACACS)
tacacs-ds	TACACS-Database Service
tarantella	Tarantella
tcp	Transport Control Protocol
<b>telnet</b>	Telnet
telnets	Telnet over TLS/SSL
<b>tftp</b>	Trivial File Transfer Protocol
time	Time
timed	Time server
tr-rsrb	cisco RSRB
tto	Oracle TTC/SSL
udp	User Datagram Protocol
uucp	UUCPD/UUCP-RLOGIN
<b>vdolive</b>	VDOLive streaming video
<b>vofr</b> *	Voice over Frame Relay

Protocol Name	Description
vqp	VLAN Query Protocol
webster	Network Dictionary
who	Who's service
wins	Microsoft WINS
x11	X Window System
xdmcp	XDM Control Protocol
<b>xwindows *</b>	X-Windows remote access
ymsg	Yahoo! Instant Messenger

\* This protocol is not supported on the Catalyst 6500 series switch that is equipped with a Supervisor 32/PISA engine.

## Examples

The following example specifies a class map named ftp and configures the FTP protocol as a match criterion:

```
Router(config)# class-map ftp
Router(config-cmap)
#
  match protocol ftp
```

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 for the IP protocol will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match protocol ip
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

## Related Commands

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>match access-group</b>	Configures the match criteria for a class map based on the specified ACL.

Command	Description
<b>match input-interface</b>	Configures a class map to use the specified input interface as a match criterion.
<b>match mpls experimental</b>	Configures a class map to use the specified value of the experimental field as a match criterion.
<b>match precedence</b>	Identifies IP precedence values as match criteria.
<b>match protocol (NBAR)</b>	Configures NBAR to match traffic by a protocol type known to NBAR.
<b>match qos-group</b>	Configures a class map to use the specified EXP field value as a match criterion.

## match qos-group

To identify a specific quality of service (QoS) group value as a match criterion, use the **match qos-group** command in class-map configuration or policy inline configuration mode. To remove a specific QoS group value from a class map, use the **no** form of this command.

**match qos-group** *qos-group-value*

**no match qos-group** *qos-group-value*

### Syntax Description

<i>qos-group-value</i>	The exact value from 0 to 99 used to identify a QoS group value.
------------------------	--

### Command Default

No match criterion is specified.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
11.1CC	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series routers.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1 and implemented on Cisco ASR 1000 Series Routers.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

The **matchqos-group** command is used by the class map to identify a specific QoS group value marking on a packet. This command can also be used to convey the received Multiprotocol Label Switching (MPLS) experimental (EXP) field value to the output interface.

The *qos-group-value* argument is used as a marking only. The QoS group values have no mathematical significance. For instance, the *qos-group-value* of 2 is not greater than 1. The value simply indicates that a packet marked with the *qos-group-value* of 2 is different than a packet marked with the *qos-group-value* of 1. The treatment of these packets is defined by the user through the setting of QoS policies in QoS policy-map class configuration mode.

The QoS group value is local to the router, meaning that the QoS group value that is marked on a packet does not leave the router when the packet leaves the router. If you need a marking that resides in the packet, use IP precedence setting, IP differentiated services code point (DSCP) setting, or another method of packet marking.

This command can be used with the **random-detectdiscard-class-based** command.

**Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE**

You must first enter the **service-policytypeperformance-monitorinline** command.

**Examples**

The following example shows how to configure the service policy named priority50 and attach service policy priority50 to an interface. In this example, the class map named qosgroup5 will evaluate all packets entering Fast Ethernet interface 1/0/0 for a QoS group value of 5. If the incoming packet has been marked with the QoS group value of 5, the packet will be treated with a priority level of 50.

```
Router(config)#
class-map qosgroup5
Router(config-cmap)
#
  match qos-group 5
Router(config)#

exit
Router(config)#

policy-map priority50
Router(config-pmap)#

  class qosgroup5
Router(config-pmap-c)#

    priority 50
Router(config-pmap-c)#

  exit
Router(config-pmap)#

exit
Router(config)#

interface fastethernet1/0/0
Router(config-if)#

  service-policy output priority50
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of a QoS value of 4 will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match qosgroup 4
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.
<b>policy-map</b>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
<b>random-detect discard-class-based</b>	Bases WRED on the discard class value of a packet.
<b>service-policy</b>	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
<b>set precedence</b>	Specifies an IP precedence value for packets within a traffic class.
<b>set qos-group</b>	Sets a group ID that can be used later to classify packets.

## match routing

To configure one or more of the routing fields as a key field for a flow record, use the **match routing** command in flow record configuration mode. To disable the use of one or more of the routing fields as a key field for a flow record, use the **no** form of this command.

**match routing** {destination| source} [as [4-octet| peer [4-octet]]] traffic-index| forwarding-status| next-hop address {ipv4| ipv6} [bgp] vrf input| vrf output]

**no match routing** {destination| source} [as [4-octet| peer [4-octet]]] traffic-index| forwarding-status| next-hop address {ipv4| ipv6} [bgp] vrf input| vrf output]

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

**match routing vrf input**

**no match routing vrf input**

#### Syntax Description

<b>destination</b>	Specifies one or more of the destination routing attributes fields as a key field.
<b>source</b>	Specifies one or more of the source routing attributes fields as a key field.
<b>as</b>	Configures the autonomous system field as a key field.
<b>4-octet</b>	(Optional) Configures the 32-bit autonomous system number as a key field.
<b>peer</b>	(Optional) Configures the autonomous system number of the peer network as a key field.
<b>traffic-index</b>	Configures the Border Gateway Protocol (BGP) destination traffic index as a key field.
<b>forwarding-status</b>	Configures the forwarding status of the packet as a key field.
<b>next-hop address</b>	Configures the next-hop address value as a key field. The type of address (IPv4 or IPv6) is determined by the next keyword entered.
<b>ipv4</b>	Specifies that the next-hop address value is an IPv4 address.
<b>ipv6</b>	Specifies that the next-hop address value is an IPv6 address.



<b>bgp</b>	(Optional) Configures the IPv4 address of the BGP next hop as a key field.
<b>vrf input</b>	Configures the virtual routing and forwarding (VRF) ID for incoming packets as a key field.
<b>vrf output</b>	Configures the virtual routing and forwarding (VRF) ID for outgoing packets as a key field.

**Command Default** The use of one or more of the routing fields as a key field for a user-defined flow record is disabled.

**Command Modes** Flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.4(20)T	<b>ipv6</b> keyword was added.
15.0(1)M	This command was modified. The <b>vrf input</b> keywords were added.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS Release XE 3.2S	This command was modified. The <b>4-octet</b> keyword was added.
12.2(50)SY	This command was modified. The <b>vrf input</b> keywords are the only keywords supported in Cisco IOS Release 12.2(50)SY.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.
Cisco IOS XE Release 3.8S	This command was modified. The <b>vrf output</b> keywords were added.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command; however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**match routing source as [peer]**

This command matches the 16-bit autonomous system number based on a lookup of the router's routing table using the source IP address. The optional **peer** keyword provides the expected next network, as opposed to the originating network.

**match routing source as [peer [4-octet ]]**

This command matches the 32-bit autonomous system number based on a lookup of the router's routing table using the source IP address. The optional **peer** keyword provides the expected next network, as opposed to the originating network.

**match routing destination as [peer]**

This command matches the 16-bit autonomous system number based on a lookup of the router's routing table using the destination IP address. The **peer** keyword provides the expected next network, as opposed to the destination network.

**match routing destination as [peer [4-octet ]]**

This command matches the 32-bit autonomous system number based on a lookup of the router's routing table using the destination IP address. The **peer** keyword provides the expected next network, as opposed to the destination network.

**match routing destination traffic-index**

This command matches the traffic-index field based on the destination autonomous system for this flow. The traffic-index field is a value propagated through BGP.

This command is not supported for IPv6.

**match routing source traffic-index**

This command matches the traffic-index field based on the source autonomous system for this flow. The traffic-index field is a value propagated through BGP.

This command is not supported for IPv6.

**match routing forwarding-status**

This command matches a field to indicate if the packets were successfully forwarded. The field is in two parts and may be up to 4 bytes in length. For the releases specified in the Command History table, only the status field is used:

```
+---+---+---+---+---+---+
  | S | Reason |
```

```

| t | codes |
| a | or     |
| t | flags  |
| u |        |
| s |        |
+--+--+--+--+--+--+--+
 0 1 2 3 4 5 6 7

```

Status:

00b=Unknown, 01b = Forwarded, 10b = Dropped, 11b = Consumed

#### match routing vrf input

This command matches the VRF ID from incoming packets on a router. In the case where VRFs are associated with an interface via methods such as VRF Selection Using Policy Based Routing/Source IP Address, a VRF ID of 0 will be recorded. If a packet arrives on an interface that does not belong to a VRF, a VRF ID of 0 is recorded.

#### match routing vrf output

This command matches the VRF ID from outgoing packets on a router.

### Examples

The following example configures the source autonomous system as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing source as

```

The following example configures the destination autonomous system as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing destination as

```

The following example configures the BGP source traffic index as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing source traffic-index

```

The following example configures the forwarding status as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing forwarding-status

```

The following example configures the VRF ID for incoming packets as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing vrf input

```

The following example configures the VRF ID for outgoing packets as a key field:

```

Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing vrf output

```

### Examples

The following example configures the VRF ID for incoming packets as a key field:

```

Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match routing vrf input

```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record and enters Flexible NetFlow flow record configuration mode.

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record and enters Performance Monitor flow record configuration mode.

# match routing is-multicast

To configure the use of the is-multicast field (indicating that the IPv4 traffic is multicast traffic) as a key field for a flow record, use the **match routing is-multicast** command in flow record configuration mode. To disable the use of the is-multicast field as a key field for a flow record, use the **no** form of this command.

**match routing is-multicast**

**no match routing is-multicast**

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

**Command Default** The is-multicast field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Release	Modification
12.4(22)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

**Examples** The following example configures the is-multicast field as a key field for a flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing is-multicast
```

**Examples**

The following example configures the is-multicast field as a key field for a Performance Monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match routing multicast replication-factor
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match routing multicast replication-factor

To configure the multicast replication factor value for IPv4 traffic as a key field for a flow record, use the **match multicast replication-factor** command in flow record configuration mode. To disable the use of the multicast replication factor value as a key field for a flow record, use the **no** form of this command.

**match routing multicast replication-factor**

**no match routing multicast replication-factor**

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

**Command Default** The multicast replication factor value is not configured as a key field.

**Command Modes** Flow record configuration(config-flow-record)

Command History	Release	Modification
	12.4(22)T	This command was introduced.
	12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
	15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

When the replication-factor field is used in a flow record, it will only have a non-zero value in the cache for ingress multicast traffic that is forwarded by the router. If the flow record is used with a flow monitor in output (egress) mode or to monitor unicast traffic or both, the cache data for the replication factor field is set to 0.

**Note**


---

This command is not supported on ASR and ISR platforms.

---

**Examples**

The following example configures the multicast replication factor value as a key field for a flow record:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match routing multicast replication-factor
```

**Examples**

The following example configures the multicast replication factor value as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match routing multicast replication-factor
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match source-address mac

To use the source MAC address as a match criterion, use the **matchsource-addressmac** command in class-map configuration or policy inline configuration mode. To remove a previously specified source MAC address as a match criterion, use the **no** form of this command.

**match source-address mac** *address-source*

**no match source-address mac** *address-source*

### Syntax Description

<i>address-source</i>	The source source MAC address to be used as a match criterion.
-----------------------	--

### Command Default

No match criterion is configured.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB and implemented on the Cisco 10000 series.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

This command can be used only on an input interface with a MAC address; for example, Fast Ethernet and Ethernet interfaces.

This command cannot be used on output interfaces with no MAC address, such as serial and ATM interfaces.

### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the `service-policy type performance-monitor inline` command.

#### Examples

The following example uses the MAC address `mac 0.0.0` as a match criterion:

```
Router(config)# class-map matchsrcmac
Router(config-cmap)
#
match source-address mac 0.0.0
```

#### Examples

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the specified MAC source address will be monitored based on the parameters specified in the flow monitor configuration named `fm-2`:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match source-address mac 0.0.0
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

#### Related Commands

Command	Description
<code>class-map</code>	Creates a class map to be used for matching packets to a specified class.
<code>service-policy type performance-monitor</code>	Associates a Performance Monitor policy with an interface.

## match services waas

To configure one of the WAAS services fields as a key field for a flow record, use the **match services waas** command in flow record configuration mode. To disable the use of this key field for a flow record, use the **no** form of this command.

**match services waas segment**

**no match services waas segment**

### Syntax Description

<b>segment</b>	Configures the field for the WAAS services segment, as a key field.
----------------	---

### Command Default

WAAS services fields are not configured as a key field.

### Command Modes

Flow record configuration (config-flow-record)

### Command History

Release	Modification
Cisco IOS XE Release XE 3.8S	This command was introduced.

### Usage Guidelines

You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the use of the WAAS services segment as a key field for a performance monitor flow record:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# collect services waas segment
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match transport

To configure one or more of the transport fields as a key field for a flow record, use the **match transport** command in Flexible NetFlow flow record configuration mode. To disable the use of one or more of the transport fields as a key field for a flow record, use the **no** form of this command.

**match transport** {destination-port| igmp type| source-port}

**no match transport** {destination-port| igmp type| source-port}

### Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

**match transport** {destination-port| source-port}

**no match transport** {destination-port| source-port}

#### Syntax Description

<b>destination-port</b>	Configures the transport destination port as a key field.
<b>igmp type</b>	Configures time stamps based on the system uptime as a key field.
<b>source-port</b>	Configures the transport source port as a key field.

#### Command Default

The transport fields are not configured as a key field.

#### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

#### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was modified. Support for this command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was modified. Support for this command was implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
12.2(50)SY	This command was modified. The <b>igmp type</b> keyword combination was removed.

Release	Modification
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the destination port as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport destination-port
```

The following example configures the source port as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport source-port
```

The following example configures the source port as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport source-port
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match transport destination-port

To configure the destination port as a key field for a flow record, use the **match transport destination-port** command in flow record configuration mode. To disable the use of the destination port as a key field for a flow record, use the **no** form of this command.

**match transport destination-port**

**no match transport destination-port**

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

**Command Default** The use of the destination port as a key field for a user-defined flow record is not enabled by default.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the destination port as a key field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# match transport destination-port
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record.

## match transport icmp ipv4

To configure the ICMP IPv4 type field and the code field as key fields for a flow record, use the **match transport icmp ipv4** command in Flexible NetFlow flow record configuration mode. To disable the use of the ICMP IPv4 type field and code field as key fields for a flow record, use the **no** form of this command.

```
match transport icmp ipv4 {code| type}
```

```
no match transport icmp ipv4 {code| type}
```

### Syntax Description

<b>code</b>	Configures the IPv4 ICMP code as a key field.
<b>type</b>	Configures the IPv4 ICMP type as a key field.

### Command Default

The ICMP IPv4 type field and the code field are not configured as key fields.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was modified. Support for this command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was modified. Support for this command was implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples**

The following example configures the IPv4 ICMP code field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport icmp ipv4 code
```

The following example configures the IPv4 ICMP type field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport icmp ipv4 type
```

The following example configures the IPv4 ICMP type field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport icmp ipv4 type
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.



## match transport icmp ipv6

To configure the internet control message protocol ICMP IPv6 type field and the code field as key fields for a flow record, use the **match transport icmp ipv6** command in Flexible NetFlow flow record configuration mode. To disable the use of the ICMP IPv6 type field and code field as key fields for a flow record, use the **no** form of this command.

```
match transport icmp ipv6 {code| type}
```

```
no match transport icmp ipv6 {code| type}
```

### Syntax Description

<b>code</b>	Configures the ICMP code as a key field.
<b>type</b>	Configures the ICMP type as a key field.

### Command Default

The ICMP IPv6 type field and the code field are not configured as key fields.

### Command Modes

Flexible Netflow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was modified. Support for this command was implemented on for the Cisco 7200 and Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.5S	This command was modified. Support for the Cisco Performance Monitor was added.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible

NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A Flow Record requires at least one key field before it can be used in a Flow Monitor. The Key fields differentiate Flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the IPv6 ICMP code field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport icmp ipv6 code
```

The following example configures the IPv6 ICMP type field as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport icmp ipv6 type
```

The following example configures the IPv6 ICMP type field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport icmp ipv6 type
```

### Related Commands

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match transport initiator

To configure one or more of the transport initiator port field as a key field for a flow record, use the **match transport initiator** command in flow record configuration mode. To disable the use of one or more of the transport initiator port field as a key field for a flow record, use the **no** form of this command.

**match transport initiatorport**

**no match transport initiatorport**

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

**Command Default** The transport initiator port field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the transport initiator port field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport initiator port
```

Related Commands	Command	Description
	<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

# match transport responder

To configure one or more of the transport responder port field as a key field for a flow record, use the **match transport responder** command in flow record configuration mode. To disable the use of one or more of the transport responder port field as a key field for a flow record, use the **no** form of this command.

**match transport responderport**

**no match transport responderport**

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

**Command Default** The transport responder port field is not configured as a key field.

**Command Modes** Flow record configuration (config-flow-record)

Command History	Release	Modification
	Cisco IOS XE Release 3.8S	This command was introduced.

**Usage Guidelines** You must first enter the **flow record type performance-monitor** command before you can use this command. This command cannot be used with Flexible NetFlow.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the transport responder port field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport responder port
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match transport rtp ssrc

To configure the SSRC field in RTP packet header as a key field for a flow record, use the **match transport rtp ssrc** command in flow record configuration mode. To disable the use of the SSRC field as a key field for a flow record, use the **no** form of this command.

**match transport rtp ssrc**

**no match transport rtp ssrc**

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

**Command Default** The use of the SSRC field in RTP packet header as a key field for a user-defined flow record is not enabled by default.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The SSRC field in RTP packet header is used to identify a different stream source which is using the same protocol and source and destination IP address and port.

**Examples** The following example configures the SSRC field in RTP packet header as a key field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# match transport rtp ssrc
```

### Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record.

# match transport source-port

To configure the source port as a key field for a flow record, use the **match transport source-port** command in flow record configuration mode. To disable the use of the source port as a key field for a flow record, use the **no** form of this command.

**match transport source-port**

**no match transport source-port**

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

**Command Default** The use of the source port as a key field for a user-defined flow record is not enabled by default.

**Command Modes** flow record configuration (config-flow-record)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Usage Guidelines** A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples** The following example configures the source port as a key field:

```
Router(config)# flow record type performance-monitor PM-RECORD-4
Router(config-flow-record)# match transport source-port
```

## Related Commands

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record.

# match transport tcp

To configure one or more of the TCP fields as a key field for a flow record, use the **match transport tcp** command in flow record configuration mode. To disable the use of a TCP field as a key field for a flow record, use the **no** form of this command.

```
match transport tcp {acknowledgement-number| bytes out-of-order| destination-port| flags {[ack]|
[cwr]| [ece]| [fin]| [psh]| [rst]| [syn]| [urg]}}| header-length| maximum-segment-size| packets out-of-order|
sequence-number| source-port| urgent-pointer| window-size| window-size-average| window-size-maximum|
window-size-minimum }
```

```
no match transport tcp {acknowledgement-number| bytes out-of-order| destination-port| flags {[ack]|
[cwr]| [ece]| [fin]| [psh]| [rst]| [syn]| [urg]}}| header-length| maximum-segment-size| packets out-of-order|
sequence-number| source-port| urgent-pointer| window-size| window-size-average| window-size-maximum|
window-size-minimum }
```

## Syntax Description

<b>acknowledgement -number</b>	Configures the TCP acknowledgement number as a key field.
<b>bytes out-of-order</b>	Configures the number of out-of-order bytes as a key field.
<b>destination-port</b>	Configures the TCP destination port as a key field.
<b>flags</b>	Configures one or more of the TCP flags as a key field. If you configure the <b>flags</b> keyword you must also configure at least one of the optional keywords for the <b>flags</b> keyword.
<b>ack</b>	(Optional) Configures the TCP acknowledgement flag as a key field.
<b>cwr</b>	(Optional) Configures the TCP congestion window reduced flag as a key field.
<b>ece</b>	(Optional) Configures the TCP Explicit Notification Congestion echo (ECE) flag as a key field.
<b>fin</b>	(Optional) Configures the TCP finish flag as a key field.
<b>psh</b>	(Optional) Configures the TCP push flag as a key field.
<b>rst</b>	(Optional) Configures the TCP reset flag as a key field.

<b>syn</b>	(Optional) Configures the TCP synchronize flag as a key field.
<b>urg</b>	(Optional) Configures the TCP urgent flag as a key field.
<b>header-length</b>	Configures the TCP header length (in 32-bit words) as a key field.
<b>maximum-segment-size</b>	Configures the maximum segment size as a key field.
<b>packets out-of-order</b>	Configures the number of out-of-order packets as a key field.
<b>sequence-number</b>	Configures the TCP sequence number as a key field.
<b>source-port</b>	Configures the TCP source port as a key field.
<b>urgent-pointer</b>	Configures the TCP urgent pointer as a key field.
<b>window-size</b>	Configures the TCP window size as a key field.
<b>window-size-average</b>	Configures the average window size as a key field.
<b>window-size-maximum</b>	Configures the maximum window size as a key field.
<b>window-size-minimum</b>	Configures the minimum window size as a key field.

**Command Default**

The use of one or more of the TCP fields as a key field for a user-defined flow record is not enabled by default.

**Command Modes**

Flow record configuration (config-flow-record)

**Command History**

<b>Release</b>	<b>Modification</b>
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.



Release	Modification
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.
Cisco IOS XE Release 3.6S	This command was modified. The <b>bytes out-of-order</b> , <b>packets out-of-order</b> , <b>maximum-segment-size</b> , <b>window-size-average</b> , <b>window-size-maximum</b> , and <b>window-size-minimum</b> keywords were added into Cisco IOS XE Release 3.6S for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

### Examples

The following example configures the TCP acknowledgement flag as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport tcp flags ack
The following example configures the TCP finish flag as a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport tcp flags fin
The following example configures the TCP reset flag as a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport tcp flags rst
The following example configures the transport destination port as a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport tcp destination-port
The following example configures the transport source port as a key field:
```

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport tcp source-port
```

**Examples**

The following example configures the IPv4 ICMP type field as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport tcp source-port
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
<b>flow record type performance-monitor</b>	Creates a flow record, and enters Performance Monitor flow record configuration mode.

## match transport udp

To configure one or more of the user datagram protocol UDP fields as a key field for a Flexible NetFlow flow record, use the **match transport udp** command in Flexible NetFlow flow record configuration mode. To disable the use of a UDP field as a key field for a Flexible NetFlow flow record, use the **no** form of this command.

**match transport udp** {destination-port| message-length| source-port}

**no match transport udp** {destination-port| message-length| source-port}

### Syntax Description

<b>destination-port</b>	Configures the UDP destination port as a key field.
<b>message-length</b>	Configures the UDP message length as a key field.
<b>source-port</b>	Configures the UDP source port as a key field.

### Command Default

The UDP fields are not configured as a key field.

### Command Modes

Flexible NetFlow flow record configuration (config-flow-record)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

**Examples**

The following example configures the UDP destination port as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport udp destination-port
```

The following example configures the UDP message length as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport udp message-length
```

The following example configures the UDP source port as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match transport udp source-port
```

**Examples**

The following example configures the UDP source port as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match transport udp source-port
```

**Related Commands**

Command	Description
<b>flow record</b>	Creates a flow record.

## match vlan

To define the VLAN match criteria, use the `match vlan` command in class-map configuration or policy inline configuration mode. To remove the match criteria, use the **no** form of this command.

**match vlan** {*vlan-id*|*vlan-range*|*vlan-combination*}

**no match vlan**

### Syntax Description

<i>vlan-id</i>	The VLAN identification number. Valid range is from 1 to 4094; do not enter leading zeros.
<i>vlan-range</i>	A VLAN range. For example, 1 - 3.
<i>vlan-combination</i>	A combination of VLANs. For example, 1 - 3 5 - 7.

### Command Default

No match criterion is configured.

### Command Modes

Class-map configuration (config-cmap) Policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
12.2(4)JA	This command was introduced.
12.4(2)T	This command was integrated into Cisco IOS Release 12.4(2)T.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor. Support was added for policy inline configuration mode.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command.

Use the **match vlan** command to specify which fields in the incoming packets are examined to classify the packets. Only the IP access group or the MAC access group matching the Ether Type/Len field are supported.

#### Cisco Performance Monitor in Cisco IOS Release 15.1(3)T and 12.2(58)SE

You must first enter the **service-policy type performance-monitor inlined** command.

**Examples**

The following example uses the VLAN ID as a match criterion:

```
Router(config)# class-map matchsrcmac
Router(config-cmap)# match vlan 2
```

**Examples**

The following example shows how to use the policy inline configuration mode to configure a service policy for Performance Monitor. The policy specifies that packets traversing Ethernet interface 0/0 that match the criteria of a VLAN ID of 2 will be monitored based on the parameters specified in the flow monitor configuration named **fm-2**:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# match vlan 2
Router(config-if-spolicy-inline)# flow monitor fm-2
Router(config-if-spolicy-inline)# exit
```

**Related Commands**

Command	Description
<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>service-policy type performance-monitor</b>	Associates a Performance Monitor policy with an interface.

## max-dropout (policy RTP)

To configure the maximum dropout metric for a Performance Monitor policy, use the **max-dropout** command in policy RTP configuration mode. To remove the configuration, use the **no** form of this command.

**max-dropout** *number*

**no max-dropout** *number*

### Syntax Description

<i>number</i>	Specifies the maximum number of packets to ignore ahead of the current packet in terms of sequence number.
---------------	--

### Command Default

Maximum number of dropouts is 5.

### Command Modes

policy RTP configuration (config-pmap-c-mrtp) policy inline RTP configuration (config-spolicy-inline-mrtp)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to set the maximum RTP dropout, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
Router(config-pmap-c-mrtp)# max-dropout 20
```

The following example shows how to set the maximum RTP dropout, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
Router(config-spolicy-inline-mrtp)# max-dropout 20
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor,.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.





## max-reorder (policy RTP)

To configure the maximum reorder metric for a Performance Monitor policy, use the **max-reorder** command in policy RTP configuration mode. To remove the configuration, use the **no** form of this command.

**max-reorder** *number*

**no max-reorder** *number*

### Syntax Description

<i>number</i>	Specifies the maximum number of packets to ignore ahead of the current packet in terms of sequence number.
---------------	--

### Command Default

Maximum number of reorders is 5.

### Command Modes

policy RTP configuration (config-pmap-c-mrtp) policy inline RTP configuration (config-spolicy-inline-mrtp)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to set the maximum RTP reorder, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
Router(config-pmap-c-mrtp)# max-reorder 20
```

The following example shows how to set the maximum RTP reorder, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
Router(config-spolicy-inline-mrtp)# max-reorder 20
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor,.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.



# min-sequential (policy RTP)

To configure the minimum number of packets in a sequence used to classify an RTP flow, use the **min-sequential** command in policy RTP configuration mode. To remove the configuration, use the **no** form of this command.

**min-sequential** *number*

**no min-sequential** *number*

## Syntax Description

<i>number</i>	Specifies the minimum number of sequential packets required to identify a stream as being an RTP flow.
---------------	--

## Command Default

min-sequential is 5.

## Command Modes

policy RTP configuration (config-pmap-c-mrtp) policy inline RTP configuration (config-spolicy-inline-mrtp)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Examples

The following example shows how to set the minimum number of packets in a sequence used to classify an RTP flow, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
Router(config-pmap-c-mrtp)# min-sequential 20
```

The following example shows how to set the minimum number of packets in a sequence used to classify an RTP flow, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
Router(config-spolicy-inline-mrtp)# min-sequential 20
```

## Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

Command	Description
service-policy type performance-monitor	Associates a policy with an interface.

# monitor metric ip-cbr

To configure IP-CBR monitor metrics for a Performance Monitor policy, use the **monitor metric ip-cbr** command in policy configuration mode. To remove the configuration, use the **no** form of this command.

**monitor metric ip-cbr**

**no monitor metric ip-cbr**

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

**Command Modes** policy RTP configuration (config-pmap-c) policy inline RTP configuration (config-if-spolicy-inline)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Examples** The following example shows how to set the layer 3 transmission rate to 10 gbps, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric ip-cbr
Router(config-pmap-c-mipcbr)# rate layer3 10 gbps
```

The following example shows how to set the layer 3 transmission rate to 10 gbps, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric ip-cbr
Router(config-spolicy-inline-mipcbr)# rate layer3 10 gbps
```

## Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## monitor metric rtp

To configure RTP monitor metrics for a Performance Monitor policy, use the **monitor metric rtp** command in policy configuration mode. To remove the configuration, use the **no** form of this command.

**monitor metric rtp**

**no monitor metric rtp**

### Syntax Description

This command has no arguments or keywords.

### Command Modes

policy configuration (config-pmap-c) policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to set the RTP monitor metrics, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
```

The following example shows how to set the RTP monitor metrics, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

# monitor parameters

To configure monitor parameters for a Performance Monitor policy, use the **monitor parameters** command in policy configuration mode. To remove the configuration, use the **no** form of this command.

**monitor parameters**

**no monitor parameters**

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

**Command Modes** Policy configuration (config-pmap-c)  
Policy inline configuration (config-if-spolicy-inline)

Command History	Release	Modification
	15.1(3)T	This command was introduced.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

**Examples** The following example shows how to set the amount of time wait for a response when collecting data to 20 seconds, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor parameters
Router(config-pmap-c-mparam)# timeout 20
```

The following example shows how to set the amount of time wait for a response when collecting data to 20 seconds, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor parameters
Router(config-spolicy-inline-mparam)# timeout 20
```

## Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## option (Flexible NetFlow)

To configure options data parameters for a flow exporter for Flexible NetFlow or Performance Monitor, use the **option** command in flow exporter configuration mode. To remove options for a flow exporter, use the **no** form of this command.

**option** {*application-table*| *exporter-stats*| *interface-table*| *sampler-table*| *vrf-table*} [*timeout seconds*]

**no option** {*application-table*| *exporter-stats*| *interface-table*| *sampler-table*| *vrf-table*}

### Syntax Description

<b>application-table</b>	Configures the application table option for flow exporters.
<b>exporter-stats</b>	Configures the exporter statistics option for flow exporters.
<b>interface-table</b>	Configures the interface table option for flow exporters.
<b>sampler-table</b>	Configures the export sampler information option for flow exporters.
<b>vrf-table</b>	Configures the virtual routing and forwarding (VRF) ID-to-name table option for flow exporters.
<b>timeout</b> <i>seconds</i>	(Optional) Configures the option resend time in seconds for flow exporters. Range: 1 to 86400. Default 600.

### Command Default

The timeout is 600 seconds. All other options data parameters are not configured.

### Command Modes

flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.



Release	Modification
15.0(1)M	This command was modified. The <b>application-table</b> and <b>vrf-table</b> keywords were added in Cisco IOS Release 15.0(1)M.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor.

#### option application-table

This command causes the periodic sending of an options table, which will allow the collector to map the Network Based Application Recognition (NBAR) application IDs provided in the flow records to application names. The optional timeout can alter the frequency at which the reports are sent.

#### option exporter-stats

This command causes the periodic sending of the exporter statistics, including the number of records, bytes, and packets sent. This command allows your collector to estimate packet loss for the export records it is receiving. The optional timeout alters the frequency at which the reports are sent.

#### option interface-table

This command causes the periodic sending of an options table, which will allow the collector to map the interface SNMP indexes provided in the flow records to interface names. The optional timeout can alter the frequency at which the reports are sent.

#### option sampler-table

This command causes the periodic sending of an options table, which details the configuration of each sampler and allows the collector to map the sampler ID provided in any flow record to a configuration that it can use to scale up the flow statistics. The optional timeout can alter the frequency at which the reports are sent.

#### option vrf-table

This command causes the periodic sending of an options table, which will allow the collector to map the VRF IDs provided in the flow records to VRF names. The optional timeout can alter the frequency at which the reports are sent.

### Examples

The following example causes the periodic sending of the exporter statistics, including the number of records, bytes, and packets sent:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# option exporter-stats
```

The following example causes the periodic sending of an options table, which allows the collector to map the interface SNMP indexes provided in the flow records to interface names:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# option interface-table
```

The following example causes the periodic sending of an options table, which details the configuration of each sampler and allows the collector to map the sampler ID provided in any flow record to a configuration that it can use to scale up the flow statistics:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# option sampler-table
```

The following example causes the periodic sending of an options table, which allows the collector to map the NBAR application IDs provided in the flow records to application names:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# option application-table
```

The following example causes the periodic sending of an options table, which allows the collector to map the VRF IDs provided in the flow records to VRF names:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# option vrf-table
```

#### Related Commands

Command	Description
<b>flow exporter</b>	Creates a flow exporter.

# output-features

To enable sending export packets for Flexible NetFlow or Performance Monitor using quality of service (QoS) or encryption, use the **output-features** command in flow exporter configuration mode. To disable sending export packets using QoS or encryption, use the **no** form of this command.

**output-features**

**no output-features**

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

**Command Default** If QoS or encryption is configured on the router, neither QoS or encryption is run on Flexible NetFlow or Performance Monitor export packets.

**Command Modes** flow exporter configuration (config-flow-exporter)

Command History	Release	Modification
	12.4(20)T	This command was introduced.
	15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
	12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines** This command can be used with both Flexible NetFlow and Performance Monitor. If the router has the output feature quality of service (QoS) or encryption configured, the **output-features** command causes the output features to be run on Flexible NetFlow or Performance Monitor export packets.

**Examples** The following example configures the use of QoS or encryption on Flexible NetFlow or Performance Monitor export packets:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# output-features
```

Related Commands	Command	Description
	<b>flow exporter</b>	Creates a flow exporter.

# platform performance-monitor rate-limit

To set the rate limit for the Performance Monitor component of Feature Monitor, use the **platform performance-monitor rate-limit** command in global configuration mode. To return to the default value for the rate limit, use the **no** form of this command.

**platform performance-monitor rate-limit pps** *number*

**no platform performance-monitor rate-limit pps** *number*

## Syntax Description

<b>pps</b> <i>number</i>	Specifies the rate limit in packets per second.
--------------------------	---

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.0(1)SY	This command was introduced.

## Usage Guidelines

This command is available only on the Catalyst 6500 platform.

## Examples

The following example shows the how to set the rate limit for the Performance Monitor component of Feature Monitor.

```
Router(config)# platform performance-monitor rate-limit pps 2000
```

## Related Commands

Command	Description
<b>show platform hardware acl entry interface</b>	Displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries.
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager performance-monitor</b>	Displays information about the Performance Monitor component of Feature Manager.

Command	Description
<b>show platform software feature-manager tcam</b>	Displays information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager.

# policy-map type performance-monitor

To configure a policy for Performance Monitor, use the **policy-map type performance-monitor** command in global configuration mode. To remove the policy, use the **no** form of this command.

**policy-map type performance-monitor** *policy-name*

**no policy-map type performance-monitor** *policy-name*

## Syntax Description

<i>policy-name</i>	Specifies the name of the Performance Monitor policy to create or edit.
--------------------	---

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If you do not have an existing flow monitor, you can still configure a flow policy by using the **flow monitor inline** command to create a new flow monitor.

## Examples

The following example shows how to configure a Performance Monitor policy.

```
Router(config)# policy-map type performance-monitor PM-POLICY-4
```

## Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor.
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

# rate layer3

To configure a Layer 3 transmission rate for a Performance Monitor policy, use the **rate layer3** command in policy IP-CBR configuration mode. To remove the configuration, use the **no** form of this command.

**rate layer3** {*rate-byte* {**bps**|**kpbs**|**mbps**|**gbps**}|**packet**}

**no rate layer3** {*rate-byte* {**bps**|**kpbs**|**mbps**|**gbps**}|**packet**}

## Syntax Description

<i>rate-byte</i>	Rate in Bps, kBps, mBps, or gBps. The range is from 1 to 65535.
<b>bps</b>	Specifies that the rate is in bytes per second.
<b>kpbs</b>	Specifies that the rate is in kilobytes per second.
<b>mbps</b>	Specifies that the rate is in megabytes per second. The default is 100.
<b>gbps</b>	Specifies that the rate is in gigabytes per second.
<b>packet</b>	Use the rate specified in the packet.

## Command Default

The Layer 3 transmission rate is 100 mbps.

## Command Modes

Policy IP-CBR configuration (config-pmap-c-mipcbr) Policy inline IP-CBR configuration (config-spolicy-inline-mipcbr)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Examples

The following example shows how to set the Layer 3 transmission rate to 10 gbps, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric ip-cbr
Router(config-pmap-c-mipcbr)# rate layer3 10 gbps
```

The following example shows how to set the Layer 3 transmission rate to 10 gbps, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric ip-cbr
Router(config-spolicy-inline-mipcbr)# rate layer3 10 gbps
```

#### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.



## react (policy)

To configure threshold parameters for a Performance Monitor policy, use the **react** command in policy configuration mode. To disable all threshold monitoring or to disable individual monitored elements, use the **no** form of this command.

```
react ID {media-stop| mrv| rtp-jitter-average| transport-packets-lost-rate}
```

```
no react ID {media-stop| mrv| rtp-jitter-average| transport-packets-lost-rate}
```

### Syntax Description

<i>ID</i>	ID for react configuration. The range is 1 to 65535.
<b>media-stop</b>	A reaction occurs when no traffic is found for the flow.
<b>mrv</b>	A reaction occurs when the MRV value violates the threshold. MRV is a fixed-point percentage, calculated by dividing the difference between the actual rate and the expected rate, by the expected rate.
<b>rtp-jitter-average</b>	A reaction occurs when the average jitter value violates the threshold.
<b>transport-packets-lost-rate</b>	A reaction occurs when the rate at which transport packets are lost violates the threshold. This rate is calculated by dividing the number of lost packets by the expected packet count.

### Command Default

Service policy threshold monitoring is disabled.

### Command Modes

policy configuration (config-pmap-c) policy inline configuration (config-if-spolicy-inline)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

You can configure multiple **react** commands for a Performance Monitor policy.

**Examples**

The following example shows how to specify that SNMP MIB variables will receive an alarm or notification, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# react 2000 rtp-jitter-average
Router(config-pmap-c-react)# action snmp
```

The following example shows how to specify that SNMP MIB variables will receive an alarm or notification, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# react 2000 rtp-jitter-average
Router(config-spolicy-inline-react)# action snmp
```

**Related Commands**

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

# record (Performance Monitor)

To associate a flow record with a flow monitor for Performance Monitor, use the **record** command in the appropriate Performance Monitor configuration mode. To remove the association, use the **no** form of this command.

**record** {*record-name*| **default-rtp**| **default-tcp**}

**no record** {*record-name*| **default-rtp**| **default-tcp**}

## Syntax Description

<i>record-name</i>	Specifies which flow record is being associated.
<b>default-rtp</b>	Specifies that the default RTP flow record is being associated.
<b>default-tcp</b>	Specifies that the default TCP flow record is being associated.

## Command Modes

Flow monitor configuration (config-flow-monitor) Monitor configuration (config-pmap) Policy monitor configuration (config-pmap-c-flowmon)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

You can associate a flow record with a flow monitor for Performance Monitor while configuring either a flow monitor, policy map, or service policy.

## Examples

The following example shows how to configure a flow record:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class class-4
Router(config-pmap-c)# flow monitor inline
Router(config-pmap-c-flowmon)# record record-4
```

## Related Commands

Command	Description
<b>flow monitor type performance-monitor</b>	Creates a flow monitor.

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy map.
<b>service-policy type performance-monitor</b>	Associates policy map with an interface.

## rename (policy)

To rename a policy for Performance Monitor, use the **rename** command in the policy configuration mode.

**rename** *policy-name*

### Syntax Description

<i>policy-name</i>	The new name for the policy.
--------------------	------------------------------

### Command Modes

Policy configuration (config-pmap)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to rename a policy:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# rename policy-20
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy map.

## service-policy type performance-monitor

To configure the association of a Performance Monitor policy to an interface, use the **service-policy type performance-monitor** command in interface configuration mode. To remove the association, use the **no** form of this command.

**service-policy type performance-monitor** {{input| output} *policy-name*| inline {input| output}}

**no service-policy type performance-monitor** {{input| output} *policy-name*| inline {input| output}}

### Syntax Description

<b>input</b>	Associate the Performance Monitor policy to the incoming interface.
<b>output</b>	Associate the Performance Monitor policy to the outgoing interface.
<i>policy-name</i>	Specifies which Performance Monitor policy to associate to an interface.
<b>inline</b>	Enters inline mode to configure a new flow monitor for the Performance Monitor policy.

### Command Modes

interface configuration (config-if)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(2)S	This command was modified. The keyword <b>inline</b> is not supported.

### Usage Guidelines

If you do not have an existing flow policy, you can still associate a flow policy to an interface by using the **inline** option to create a new flow policy.

### Examples

The following example shows how to configure an association of a Performance Monitor policy to an interface for the input direction.

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor input PM-POLICY-4
```

**Related Commands**

Command	Description
<b>flow record type performance-monitor</b>	Creates a flow record for Performance Monitor.

# show flow record type

To display the configuration for a flow record, use the **show flow record type** command in privileged EXEC mode.

```
show flow record type {mace [[name] flow-record-name] | performance-monitor [name] [default-rtp]
default-tcp record-name}
```

## Syntax Description

<b>mace</b>	Displays Measurement, Aggregation, and Correlation Engine (MACE) metrics for the flow record.
<b>name</b>	(Optional) Displays the configuration for a specific MACE flow record if it is used with the <b>mace</b> keyword. Displays the configuration for a specific performance monitor flow record if it is used with the <b>performance-monitor</b> keyword.
<i>flow-record-name</i>	(Optional) Name of the user-defined MACE flow record that was previously configured.
<b>performance-monitor</b>	Displays configuration for the flow record of type performance monitor.
<b>default-rtp</b>	(Optional) Displays the Video Monitoring (VM) default Real-time Transport Protocol (RTP) record.
<b>default-tcp</b>	(Optional) Displays the VM default TCP record.
<i>record-name</i>	(Optional) Name of the user-defined performance monitor that was previously configured.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(4)M	This command was introduced.

## Usage Guidelines

Use the **show flow record type** command to display the status and statistics for various flow record types. If you chose to use the **name** keyword in the command, you must use either the **default-rtp** or **default-tcp** keywords, or use the *record-name* argument to complete the command.



**Note**

You need to configure a flow record of type MACE using the **flow record type mace** command in order for the output of the **show flow record type mace** command to display information about the configured flow record.

**Note**

You need to configure a flow record of type performance monitor using the **flow record type performance-monitor** command in order for the output of the **show flow record type performance-monitor** command to display information about the configured flow record.

**Examples**

The following is sample output from the **show flow record type mace** command:

```
Router# show flow record type mace macel
flow record type mace macel:
  Description:      User defined
  No. of users:    0
  Total field space: 164 bytes
  Fields:
    collect art all
```

The following is sample output from the **show flow record type performance-monitor** command:

```
Router# show flow record type performance-monitor p1
flow record type performance-monitor p1:
  Description:      User defined
  No. of users:    0
  Total field space: 4 bytes
  Fields:
    collect application media bytes rate
```

The table below describes the significant fields shown in the above examples.

**Table 14: show flow record type Field Descriptions**

Field	Description
Description	Provides a description for this flow record.
No. of users	Indicates how many times a particular flow record has been used under a flow monitor.
Total field space	Displays the size of the record in bytes.
Fields	Displays the names of the fields that are configured.

**Related Commands**

Command	Description
<b>flow record</b>	Configures the status and statistics for an Flexible NetFlow flow record.
<b>flow record type mace</b>	Configures a flow record for MACE.

Command	Description
flow record type performance monitor	Configures a flow record for performance monitor.

## show performance monitor aggregate

To display the cumulative statistics collected by Performance Monitor during the specified number of most recent intervals, use the **show performance monitor aggregate** command in privileged EXEC mode.

**show performance monitor aggregate** [**interface** *interface name* [[*filter* ]]] **policy** *policy map name* **class** *class map name* [[*filter* ]]*filter*]

### Syntax Description

<b>interface</b> <i>interface name</i>	Show statistics for the specified interface. If no interface is specified, show statistics for all interfaces associated with a performance-monitor policy-map.
<b>policy</b> <i>policy map name</i>	Show statistics only for the specified policy.
<b>class</b> <i>class map name</i>	Show statistics only for the specified class.
<b>ip</b>	Show statistics for an IP flow.
<b>tcp</b>	Show statistics for a TCP flow.
<b>udp</b>	Show statistics for a UDP flow.
<i>source-addr source-prefix</i>	Show statistics for the specified flow source.
<b>any</b>	Show statistics for any flow source.
<i>dst-addr dst-prefix</i>	Show statistics for the specified flow destination.
<b>any</b>	Show statistics for any flow destination.
<b>eq</b>	Show statistics only for the specified source port number.
<b>lt</b>	Show statistics only for source port numbers less than the specified number.
<b>gt</b>	Show statistics only for source port numbers greater than the specified number.
<b>range</b>	Show statistics only for source port number. within the specified range.
<i>min</i>	Minimum value for the range for which to show statistics.
<i>max</i>	Maximum value for the range for which to show statistics.

<b>any</b>	Show statistics for any destination IP address.
<b>ssrc</b> <i>ssrc-number</i>	Show statistics for the specified Synchronization Source.
<b>ssrc any</b>	Show statistics for all Synchronization Sources (SSRCs).
<b>network</b> <i>mask</i>	Show statistics for the specified network.

**Command Modes**

Privileged EXEC (#)

**Command History**

Release	Modification
15.3(1)T	This command was introduced.

**Usage Guidelines**

This command displays the cumulative statistics for the specified number of most recent intervals. The number of intervals is configured using the **history** command. The default settings for this commands is 10 of the most recent collection intervals. The duration of collection intervals is specified by the **interval duration** command.

When you use the **interface** keyword, the output will usually be empty. This is because flows are not associated with an interface in these releases unless there is a user-defined record that includes the **match interface** command.

If no flow policy or interface is specified, statistics for all flow policies and interfaces are shown.

In the command syntax, the *filter* argument = **ip** {*source-addr source-prefix* | **any**} {*dst-addr dst-prefix* | **any**} | **{tcp | udp}** {*source-addr source-prefix* | **any**} **{[eq|lt|gt number| range min max| ssrc {ssrc-number | any} | {dst-addr dst-prefix | any} eq|lt|gt number| range min max| ssrc {ssrc-number | any}]}**

**Examples**

The following example shows the output for this command:

**Note**

If the same policy is applied on the same input and output interface, the display shows a single flow for the input and output interfaces and the interface name and direction for the flow are not displayed.

```
Router # show performance monitor aggregate
```

```
Codes: * - field is not configurable under flow record
       NA - field is not applicable for configured parameters
       UR - field is unreportable for configured parameters
```

```
Match: ipv4 source address = 10.1.1.2, ipv4 destination address = 20.1.1.2, transport
source-port = 20001, transport destination-port = 10000, transport rtp ssrc = 10000, ip
protocol = 17,
Monitor: FM_RTP
```

```

routing forwarding-status                : Forward
transport packets expected counter      : 1481
transport packets lost counter          : 0
transport packets lost rate             ( % ) : 0.00
transport round-trip-time samples       : 0
transport round-trip-time sum           (msec) : NA
transport round-trip-time               (msec) : NA
transport event packet-loss counter     : 0
transport rtp jitter mean                (usec) : 102258
transport rtp jitter minimum            (usec) : 89000
transport rtp jitter maximum            (usec) : 137000
interface input                          : Et0/0
interface output                         : Et0/1
counter bytes                            : 65164
counter packets                          : 1481
counter bytes rate                       : 217
application media bytes counter          : 23696
application media bytes rate             : 78
application media packets counter        : 1481
application media packets rate           : 4
application media event                  : Normal
monitor event                            : false
counter bytes rate per-flow              : 21
counter bytes rate per-flow min          : 217
counter bytes rate per-flow max         : 218
counter packets rate per-flow            : 0
application media bytes rate per-flow min : 78
application media bytes rate per-flow max : 79
transport event packet-loss counter min  : 0
transport event packet-loss counter max  : 0
transport packets lost counter min       : 0
transport packets lost counter max       : 0
transport round-trip-time min            (msec) : NA
transport round-trip-time max            (msec) : NA
application media bytes rate per-flow    : 7
transport rtp payload-type               : 31
transport packets lost rate min          ( % ) : 0.00
transport packets lost rate max          ( % ) : 0.00
ip dscp                                  : 0x00
ip ttl                                    : 59

```

The table below describes the significant fields shown in the display.

**Table 15: show performance monitor aggregate Field Descriptions**

Field	Description
history bucket number	Number of the bucket of historical data collected.

Field	Description
routing forwarding-status reason	

Field	Description
	<p>Forwarding status is encoded using eight bits with the two most significant bits giving the status and the six remaining bits giving the reason code.</p> <p>Status is either unknown (00), Forwarded (10), Dropped (10) or Consumed (11).</p> <p>The following list shows the forwarding status values for each status category.</p> <p><b>Unknown</b></p> <ul style="list-style-type: none"> <li>• 0</li> </ul> <p><b>Forwarded</b></p> <ul style="list-style-type: none"> <li>• Unknown 64</li> <li>• Forwarded Fragmented 65</li> <li>• Forwarded not Fragmented 66</li> </ul> <p><b>Dropped</b></p> <ul style="list-style-type: none"> <li>• Unknown 128,</li> <li>• Drop ACL Deny 129,</li> <li>• Drop ACL drop 130,</li> <li>• Drop Unroutable 131,</li> <li>• Drop Adjacency 132,</li> <li>• Drop Fragmentation &amp; DF set 133,</li> <li>• Drop Bad header checksum 134,</li> <li>• Drop Bad total Length 135,</li> <li>• Drop Bad Header Length 136,</li> <li>• Drop bad TTL 137,</li> <li>• Drop Policer 138,</li> <li>• Drop WRED 139,</li> <li>• Drop RPF 140,</li> <li>• Drop For us 141,</li> <li>• Drop Bad output interface 142,</li> <li>• Drop Hardware 143,</li> </ul> <p><b>Consumed</b></p> <ul style="list-style-type: none"> <li>• Unknown 192,</li> <li>• Terminate Punt Adjacency 193,</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• Terminate Incomplete Adjacency 194,</li> <li>• Terminate For us 195</li> </ul>
transport packets expected counter	Number of packets expected.
transport packets lost counter	Number of packets lost.
transport round-trip-time (msec)	Number of milliseconds required to complete a round trip.
transport round-trip-time sum (msec)	Total number of milliseconds required to complete a round trip for all samples.
transport round-trip-time samples	Total number of samples used to calculate a round trip times
transport event packet-loss counter	Number of loss events (number of contiguous sets of lost packets).
interface input	Incoming interface index.
interface output	Outgoing interface index.
counter bytes	Total number of bytes collected for all flows.
counter packets	Total number of IP packets sent for all flows.
counter bytes rate	Average number of packets or bits (as configured) processed by the monitoring system per second during the monitoring interval for all flows.
application media bytes counter	Number of IP bytes from by media applications received for a specific media stream.
application media bytes rate	Average media bit rate (bps) for all flows during the monitoring interval.
application media packets counter	Number of IP packets produced from media applications received for a specific media stream.
application media event	Bit 1 is not used. Bit 2 indicates that no media application packets were seen, in other words, a Media Stop Event occurred.
monitor event	Bit 1 indicates that one of the thresholds specified by a react statement for the flow was crossed at least once in the monitoring interval. Bit 2 indicates that there was a loss-of-confidence in measurement.



**Related Commands**

Command	Description
show performance monitor history	Displays historical sets of statistics collected by Performance Monitor.

# show performance monitor cache

To display the content of the cache for Performance Monitor, use the **show performance monitor cache** command in privileged EXEC mode.

**show performance monitor cache** [*policy policy map name class class map name*] [*interface interface name*]

## Syntax Description

<b>policy</b> <i>policy map name</i>	Show statistics only for the specified policy.
<b>class</b> <i>class map name</i>	Show statistics only for the specified class.
<b>interface</b> <i>interface name</i>	Show statistics for the specified interface.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no flow policy or interface is specified, all for all flow policies and interfaces are shown.

## Examples

The following example shows the output for this command:

```
Router # show performance monitor cache
MMON Metering Layer Stats:
  static pkt cnt: 3049
  static cce sb cnt: 57
  dynamic pkt cnt: 0
  Cache type: Permanent
  Cache size: 2000
  Current entries: 8
  High Watermark: 9
  Flows added: 9
  Updates sent ( 1800 secs) 0
IPV4 SRC ADDR  IPV4 DST ADDR  IP PROT  TRNS SRC PORT  TRNS DST PORT
ipv4 ttl ipv4 ttl min ipv4 ttl max  ipv4 dscp bytes long perm pktslong perm user space vm
=====
10.1.1.1      10.1.2.3      17      4000      1967
0
1 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```



**Table 16: show performance monitor cache Field Descriptions**

Field	Description
static pkt cnt	Number static packets collected in this cache.
static cce sb cnt	Number of CCE SBs.
dynamic pkt cnt	Number of dynamic packets in this cache
Cache type	Type fo cache.
Cache size	Maximum number of entries that can be collected in this cache.
Current entries	Current number of entries collected in this cache.
High Watermark	Highest number of entries collected in this cache.
Flows added	Number of flows added for this cache.
Updates sent	Number of updates sent for this cahe.
IPV4 SRC ADDR	IP address of the source of the flow.
IPV4 DST ADDR	IP adres of the destiation of the flow.
IP PROT	IP protocil used by the flow.
TRNS SRC PORT	Port number used by the source of the flow.
TRNS DST PORT	Port number used by the destiantion of flow.
ipv4 ttl	IPv4 time-to-live (TTL).
ipv4 ttl min	Miniumum IPv4 time-to-live (TTL).
ipv4 ttl max	Maximum IPv4 time-to-live (TTL).
ipv4 dscp	IPv4 differentiated services code point (DCSP).
bytes long perm	Number of long perm bytes.
pkts long perm	Number of long perm packets.
user space vm	User space VM.

**Related Commands**

Command	Description
<b>show performance monitor historical</b>	Displays historical sets of statistics collected by Performance Monitor.

# show performance monitor clock rate

To display information about clock rates for performance monitor classes, use the **show performance monitor clock rate** command in privileged EXEC mode.

**show performance monitor clock rate** [*policy policy map name class class map name*]

## Syntax Description

<b>policy</b> <i>policy map name</i>	Show statistics only for the specified policy.
<b>class</b> <i>class map name</i>	Show statistics only for the specified class.

## Command Modes

privileged EXEC

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

You must have at least one active session before clock information can be displayed.

## Examples

The following example displays performance monitor clock rate information:

```
Router# show performance monitor clock rate
Load for five secs: 6%/2%; one minute: 5%; five minutes: 5% Time source is NTP, 17:41:35.508
EST Wed Feb 16 2011
RTP clock rate for Policy: all-apps-w-mask, Class: IPTV
Payload type      Clock rate(Hz)
pcmu      (0 )      8000
gsm       (3 )      8000
g723      (4 )      8000
dvi4      (5 )      8000
dvi4-2    (6 )      16000
lpc       (7 )      8000
pcma      (8 )      8000
g722      (9 )      8000
l16-2     (10 )     44100
l16       (11 )     44100
qcelp     (12 )      8000
cn        (13 )      8000
mpa       (14 )     90000
g728      (15 )      8000
dvi4-3    (16 )     11025
dvi4-4    (17 )     22050
g729      (18 )      8000
celb      (25 )     90000
jpeg      (26 )     90000
nv        (28 )     90000
h261      (31 )     90000
```

```

mpv      (32 )    90000
mp2t     (33 )    90000
h263     (34 )    90000
default  (   )    90000
RTP clock rate for Policy: all-apps, Class: telepresence-CS4
Payload type      Clock rate(Hz)
pcmu      (0 )    8000
gsm       (3 )    8000
g723      (4 )    8000
dvi4      (5 )    8000
dvi4-2    (6 )   16000
lpc       (7 )    8000
pcma      (8 )    8000
g722      (9 )    8000
l16-2    (10 )   44100
l16       (11 )   44100
qcelp     (12 )    8000
cn        (13 )    8000
mpa       (14 )   90000
g728      (15 )    8000
dvi4-3    (16 )   11025
dvi4-4    (17 )   22050
g729      (18 )    8000
celb      (25 )   90000
jpeg      (26 )   90000
nv        (28 )   90000
h261      (31 )   90000
mpv       (32 )   90000
mp2t      (33 )   90000
h263      (34 )   90000
          (96 )   48000
          (112)  90000
default   (   )   90000
RTP clock rate for Policy: all-apps, Class: IPVS-traffic-rtp
Payload type      Clock rate(Hz)
pcmu      (0 )    8000
gsm       (3 )    8000
g723      (4 )    8000
dvi4      (5 )    8000
dvi4-2    (6 )   16000
lpc       (7 )    8000
pcma      (8 )    8000
g722      (9 )    8000
l16-2    (10 )   44100
l16       (11 )   44100
qcelp     (12 )    8000
cn        (13 )    8000
mpa       (14 )   90000
g728      (15 )    8000
dvi4-3    (16 )   11025
dvi4-4    (17 )   22050
g729      (18 )    8000
celb      (25 )   90000
jpeg      (26 )   90000
nv        (28 )   90000
h261      (31 )   90000
mpv       (32 )   90000
mp2t      (33 )   90000
h263      (34 )   90000
          (96 )   30000
default   (   )   90000

```

The table below describes the significant fields shown in the display.

**Table 17: show performance monitor clock Field Descriptions**

Field	Description
Payload type	The values for the payload type and their associated type numbers are celb (25), cn (13), dvi4 (5) (8000 Hz as described in RFC 3551, RTP Profile for Audio and Video Conferences with Minimal Control ), dvi4-2 (6) (8000 Hz as described in RFC 3551), dvi4-3 (16) (DVI4 Dipol 11025 Hz), dvi4-4 (17) DVI4 Dipol 22050 Hz), g722 (9), g723 (4), g728 (15), g729 (18), gsm (3), h261 (31), h263 (34), jpeg (26), l16 (11) (L16 channel 1), l16-2 (10) (L16 channel 2), lpc (7), mp2t (33), mpa (14), mpv (32), nv (28), pcma (8), pcmu (0), qcelp (12).
Clock rate(Hz)	Clock rate in cycles per sec (Hz).

**Related Commands**

Command	Description
<b>clock-rate</b>	Configure the rate for the RTP packet time-stamp clock.



# show performance monitor clients

To display information about clients for performance monitor, use the **show performance monitor clients** command in privileged EXEC mode.

**show performance monitor clients** {**detail** {*client-ID*| **all**}| **list**}

## Syntax Description

<b>detail</b> <i>client-ID</i>	Show detailed information for the specified clients.
<b>detail all</b>	Show detailed information for all clients.
<b>list</b>	Show a list of clients.

## Command Modes

privileged EXEC

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

You must have Cisco Mediatrace configured and at least one active session before client information can be displayed.

## Examples

The following example displays a list of performance monitor clients:

```
Router# show performance monitor clients list
Dynamic Video Monitor Client database list:
Total number of active clients: 1
ID name age(secs) flow(src,dst,src-port, dst-port)
1 Mediatrace-158244661 7498 10.10.10.1 1000 10.10.12.2 2000 17
The tables below describes the significant fields shown in the display.
```

The following example displays details for all performance monitor clients:

```
Router# show performance monitor clients detail all
Client name for ID 1 : Mediatrace-131419052
Type: Mediatrace
Age: 443 seconds
Monitor Object: _MMON_DYN_-class-map-69
Flow spec: (dvmc-acl#47) 10.10.130.2 1000 10.10.132.2 2000 17
monitor parameters
interval duration 60
timeout 2
history 1
```

## show performance monitor clients

```

flows 100
monitor metric rtp
  min-sequential 10
  max-dropout 5
  max-reorder 5
  clock-rate 112 90000
  clock-rate default 90000
  ssrc maximum 20
monitor metric ip-cbr
  rate layer3 packet 20
Flow record: dvmc_fnf_fdef_47
  Key fields:
    ipv4 source address
    ipv4 destination address
    transport source-port
    transport destination-port
    ip protocol
  Non-key fields:
    monitor event
    application media event
    routing forwarding-status
    ip dscp
    ip ttl
    counter bytes rate
    application media bytes rate
    transport rtp jitter mean
    transport packets lost counter
    transport packets expected counter
    transport event packet-loss counter
    transport packets lost rate
    timestamp interval
    counter packets dropped
    counter bytes
    counter packets
    application media bytes counter
    application media packets counter
Monitor point: MMON_DYN_policy-map-70 GigabitEthernet0/3 output
Classification Statistic:
  matched packet: 545790
  matched byte: 64403220

```

The tables below describes the significant fields shown in the display.

**Table 18: show performance monitor clients list Field Descriptions**

Field	Description
Total number of active clients	Number of active clients.
ID	ID of the client.
Name	Name of the client.
Age(secs)	Number seconds the client has been active.
Flow (src)	IP address of the source of the flow.
Flow(dst)	IP address of the destination of the flow.
Flow(src-port)	Port number of the source of the flow.
Flow(dst-port)	Port number of the destination of the flow.

**Table 19: show performance monitor clients detail all Field Descriptions**

Field	Description
Client name for ID <i>number</i>	Name and ID of the client.
Type	Type of client
Age	Number seconds the client has been active.
Monitor Object: <i>_MMON_DYN_-class-map-69</i>	Name of flow monitor and class map used by this client.
Flow spec: (dvmc-acl#47) 10.10.130.2 1000 10.10.132.2 2000 17	Source and destination IP addresses and ports of the flow and the code for flow protocol.
monitor parameters	Settings for the monitor parameters.
monitor metric rtp	Settings for the monitor metric RTP parameters.
monitor metric ip-cbr	Settings for the monitor metric IP-CBR parameters.
Flow record: <i>dvmc_fnf_fdef_47</i>	Name of the flow used by the client.
Key fields:	Key fields defined for the flow used by the client.
Non-key fields:	Non-key fields defined for the flow used by the client.
Monitor point: <i>_MMON_DYN_-policy-map-70</i> GigabitEthernet0/3 output	Name of the policy map and interface used by this client.
Matched packet:	Number of packets matched to criteria defined by the flow record for the client.
Matched byte:	Number of bytes matched to criteria defined by the flow record for the client.

**Related Commands**

Command	Description
<b>show performance monitor historical</b>	Displays historical sets of statistics collected by Performance Monitor.

# show performance monitor history

To display historical sets of statistics collected by Performance Monitor, use the **flow performance monitor history** command in privileged EXEC mode.

**show performance monitor history** [**intervals** {**all**|*num*}] [**policy** *policy map name* **class** *class map name*]  
[**interface** *intf*] [*filter* ]

## Syntax Description

<b>intervals</b>	Show statistics only for the specified intervals.
<b>all</b>	Show statistics for all intervals.
<i>num</i>	Show statistics only for the specified number of intervals.
<b>policy</b> <i>policy map name</i>	Show statistics only for the specified policy.
<b>class</b> <i>class map name</i>	Show statistics only for the specified class.
<b>interface</b> <i>intf</i>	Show statistics for the specified interface.
<b>any</b>	Show statistics for any network.
<b>network</b> <i>mask</i>	Show statistics for the specified network.
<b>eq</b>	Show statistics only for values equal to the specified number.
<b>lt</b>	Show statistics only for values less than the specified number.
<b>gt</b>	Show statistics only for values greater than the specified number.
<b>range</b>	Show statistics only for the specified range.
<i>min</i>	Show statistics only for the specified class.
<i>max</i>	Show input statistics for the interface.

## Command Modes

Privileged EXEC (#)

**Command History**

Release	Modification
15.1(3)T	This command was introduced.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T with a change to the behavior of the <b>interface</b> keyword.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S with a change to the behavior of the <b>interface</b> keyword.

**Usage Guidelines**

If no flow policy or interface is specified, statistics for all flow policies and interfaces are shown.

For the Cisco IOS Release 15.2(2)T and Cisco IOS XE Release 3.5S, when you use the **interface** keyword, the output will usually be empty. This is because flows are not associated with an interface in these releases unless there is a user-defined record that includes the **match interface** command.

The *filter* argument in the syntax = `{[any network mask]}[eq lt|gt number|range min max]}[any network mask]}[eq lt|gt number|range min max]}`

**Examples**

The following example shows the output for the **show performance monitor history** command:

**Note**

If the same policy is applied on the same input and output interface, the display shows a single flow for the input and output interfaces and the interface name and direction for the flow are not displayed.

```
Router # show performance monitor history
Codes: * - field is not configurable under flow record
      NA - field is not applicable for configured parameters
      UR - field is unreportable for configured parameters

Match: ipv4 source address = 10.1.1.2, ipv4 destination address = 20.1.1.2, transport
source-port = 20001, transport destination-port = 10000, transport rtp ssrc = 10000, ip
protocol = 17,
Monitor: FM_RTP

start time                               13:58:30

=====
*history bucket number                    : 1
routing forwarding-status                  : Forward
transport rtp flow count                   : 1
transport packets expected counter         : 148
transport packets lost counter             : 0
transport packets lost rate                ( % ) : 0.00
transport round-trip-time samples          : 0
transport round-trip-time sum              (msec) : NA
transport round-trip-time                  (msec) : NA
transport tcp flow count                   : 0
transport event packet-loss counter        : 0
transport rtp jitter mean                  (usec) : 102061
transport rtp jitter minimum               (usec) : 99000
transport rtp jitter maximum               (usec) : 111000
interface input                            : Et0/0
interface output                           : Et0/1
counter flows                              : 1
```

## show performance monitor history

```

counter bytes : 6512
counter packets : 148
counter bytes rate : 217
application media bytes counter : 2368
application media bytes rate : 78
application media packets counter : 148
application media packets rate : 4
application media event : Normal
monitor event : false
counter bytes rate per-flow : 217
counter bytes rate per-flow min : 217
counter bytes rate per-flow max : 217
counter packets rate per-flow : 4
application media bytes rate per-flow min : 78
application media bytes rate per-flow max : 78
transport event packet-loss counter min : 0
transport event packet-loss counter max : 0
transport packets lost counter min : 0
transport packets lost counter max : 0
transport round-trip-time min (msec) : NA
transport round-trip-time max (msec) : NA
application media bytes rate per-flow : 78
transport rtp payload-type : 31
transport packets lost rate min ( % ) : 0.00
transport packets lost rate max ( % ) : 0.00
ip dscp : 0x00
ip ttl : 59

```

The table below describes the significant fields shown in the display.

**Table 20: show performance monitor history Field Descriptions**

Field	Description
history bucket number	Number of the bucket of historical data collected.

Field	Description
routing forwarding-status reason	

Field	Description
	<p>Forwarding status is encoded using eight bits with the two most significant bits giving the status and the six remaining bits giving the reason code.</p> <p>Status is either unknown (00), Forwarded (10), Dropped (10) or Consumed (11).</p> <p>The following list shows the forwarding status values for each status category.</p> <p><b>Unknown</b></p> <ul style="list-style-type: none"> <li>• 0</li> </ul> <p><b>Forwarded</b></p> <ul style="list-style-type: none"> <li>• Unknown 64</li> <li>• Forwarded Fragmented 65</li> <li>• Forwarded not Fragmented 66</li> </ul> <p><b>Dropped</b></p> <ul style="list-style-type: none"> <li>• Unknown 128,</li> <li>• Drop ACL Deny 129,</li> <li>• Drop ACL drop 130,</li> <li>• Drop Unroutable 131,</li> <li>• Drop Adjacency 132,</li> <li>• Drop Fragmentation &amp; DF set 133,</li> <li>• Drop Bad header checksum 134,</li> <li>• Drop Bad total Length 135,</li> <li>• Drop Bad Header Length 136,</li> <li>• Drop bad TTL 137,</li> <li>• Drop Policer 138,</li> <li>• Drop WRED 139,</li> <li>• Drop RPF 140,</li> <li>• Drop For us 141,</li> <li>• Drop Bad output interface 142,</li> <li>• Drop Hardware 143,</li> </ul> <p><b>Consumed</b></p> <ul style="list-style-type: none"> <li>• Unknown 192,</li> <li>• Terminate Punt Adjacency 193,</li> </ul>



Field	Description
	<ul style="list-style-type: none"> <li>• Terminate Incomplete Adjacency 194,</li> <li>• Terminate For us 195</li> </ul>
transport packets expected counter	Number of packets expected.
transport packets lost counter	Number of packets lost.
transport round-trip-time (msec)	Number of milliseconds required to complete a round trip.
transport round-trip-time sum (msec)	Total number of milliseconds required to complete a round trip for all samples.
transport round-trip-time samples	Total number of samples used to calculate a round trip times
transport event packet-loss counter	Number of loss events (number of contiguous sets of lost packets).
interface input	Incoming interface index.
interface output	Outgoing interface index.
counter bytes	Total number of bytes collected for all flows.
counter packets	Total number of IP packets sent for all flows.
counter bytes rate	Average number of packets or bits (as configured) processed by the monitoring system per second during the monitoring interval for all flows.
counter client bytes	Number of bytes sent by the client.
counter server bytes	Number of bytes sent by the server.
counter client packets	Number of packets sent by the client.
counter servers packets	Number of packets sent by the server.
transport tcp window-size-maximum	Maximum size of the TCP window.
transport tcp window-size-minimum	Minimum size of the TCP window.
transport tcp window-size-average	Average size of the TCP window.
transport tcp maximum-segment-size	Maximum TCP segment size.

Field	Description
application media bytes counter	Number of IP bytes from by media applications received for a specific media stream.
application media bytes rate	Average media bit rate (bps) for all flows during the monitoring interval.
application media packets counter	Number of IP packets produced from media applications received for a specific media stream.
application media event	Bit 1 is not used. Bit 2 indicates that no media application packets were seen, in other words, a Media Stop Event occurred.
monitor event	Bit 1 indicates that one of the thresholds specified by a react statement for the flow was crossed at least once in the monitoring interval. Bit 2 indicates that there was a loss-of-confidence in measurement.

The following example shows the output for the **show performance monitor history interval all** command:

```

Device # show performance monitor history interval all

Codes: * - field is not configurable under flow record
      NA - field is not applicable for configured parameters
      UR - field is unreportable for configured parameters

Match: ipv6 flow-label = 10, ipv6 source address = 2013::1A1A:1A01, ipv6 destination address
      = 2013::101:101, transport source-port = 12345, transport destination-port = 80, ip protocol
      = 17,
Monitor: ipv6_flows

start time          08:19:20  08:19:10  08:19:00  08:18:50  08:18:40  08:18:30
08:18:20  08:18:10
=====
*****
*history bucket number : 1      2      3      4      5      6      7
                        8
ipv6 next-header       : 0      0      0      0      0      0      0
                        0
ipv6 payload-length   : 16     16     16     16     16     16
16                    16
transport icmp ipv6 type : 0      0      0      0      0      0      0
                        0
interface input       : Fa1/0  Fa1/0  Fa1/0  Fa1/0  Fa1/0  Fa1/0
Fa1/0  Fa1/0
interface output     : Fa1/7  Fa1/7  Fa1/7  Fa1/7  Fa1/7  Fa1/7
Fa1/7  Fa1/7
flow direction       : Output  Output  Output  Output  Output  Output
Output  Output
counter flows        : 1      1      1      1      1      1      1
                        1
counter bytes long   : 560    560    560    560    560    560
560    560
counter packets      : 10     10     10     10     10     10
10     10
counter bytes rate   : 56     56     56     56     56     56
56     56
counter packets rate : 1      1      1      1      1      1      1
                        1
application media

```

```

bytes counter long      : 0      0      0      0      0      0      0
0
application media packets
counter long           : 10     10     10     10     10     10
10      10

```

The following example shows the output for the **show performance monitor history interval all | include monitor** command:

```

Router # show performance monitor history interval all | include monitor
monitor event          : true      true      true
monitor event          : true      true      true
monitor event          : true      true      true
monitor event          : true      true      true
monitor event          : true
monitor event          : true
monitor event          : true
monitor event          : true
monitor event          : true

```

### Related Commands

Command	Description
<b>show performance monitor status</b>	Displays statistics collected by Performance Monitor.

## show performance monitor status

To display the cumulative statistics collected by Performance Monitor during the specified number of most recent intervals, use the **show performance monitor status** command in privileged EXEC mode.

**show performance monitor status** [**interface** *interface name* [[*filter* ]]] [**policy** *policy map name* **class** *class map name* [[*filter* ]]] [*filter*]

### Syntax Description

<b>interface</b> <i>interface name</i>	Show statistics for the specified interface. If no interface is specified, show statistics for all interfaces associated with a performance-monitor policy-map.
<b>policy</b> <i>policy map name</i>	Show statistics only for the specified policy.
<b>class</b> <i>class map name</i>	Show statistics only for the specified class.
<b>ip</b>	Show statistics for an IP flow.
<b>tcp</b>	Show statistics for a TCP flow.
<b>udp</b>	Show statistics for a UDP flow.
<i>source-addr source-prefix</i>	Show statistics for the specified flow source.
<b>any</b>	Show statistics for any flow source.
<i>dst-addr dst-prefix</i>	Show statistics for the specified flow destination.
<b>any</b>	Show statistics for any flow destination.
<b>eq</b>	Show statistics only for the specified source port number.
<b>lt</b>	Show statistics only for source port numbers less than the specified number.
<b>gt</b>	Show statistics only for source port numbers greater than the specified number.
<b>range</b>	Show statistics only for source port number. within the specified range.
<i>min</i>	Minimum value for the range for which to show statistics.
<i>max</i>	Maximum value for the range for which to show statistics.

<b>any</b>	Show statistics for any destination IP address.
<b>ssrc</b> <i>ssrc-number</i>	Show statistics for the specified Synchronization Source.
<b>ssrc any</b>	Show statistics for all Synchronization Sources (SSRCs).
<b>network</b> <i>mask</i>	Show statistics for the specified network.

**Command Modes**

Privileged EXEC (#)

**Command History**

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T with a change to the behavior of the <b>interface</b> keyword.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S with a change to the behavior of the <b>interface</b> keyword.
Cisco IOS XE Release 3.8S	This command was modified. TCP filter metrics were added in the TCP flow statistic.

**Usage Guidelines**

This command displays the cumulative statistics for the specified number of most recent intervals. The number of intervals is configured using the **history** command. The default settings for this commands is 10 of the most recent collection intervals. The duration of collection intervals is specified by the **interval duration** command.

For the Cisco IOS Release 15.2(2)T and Cisco IOS XE Release 3.5S, when you use the **interface** keyword, the output will usually be empty. This is because flows are not associated with an interface in these releases unless there is a user-defined record that includes the **match interface** command.

If no flow policy or interface is specified, statistics for all flow policies and interfaces are shown.

In the command syntax, the *filter* argument = {**ip** {*source-addr source-prefix* | **any**} {*dst-addr dst-prefix* | **any**} | {**tcp** | **udp**} {*source-addr source-prefix* | **any**} {[**eq** | **lt** | **gt** *number*] **range** *min max* | **ssrc** {*ssrc-number* | **any**} | {*dst-addr dst-prefix* | **any**} **eq** | **lt** | **gt** *number*] **range** *min max* | **ssrc** {*ssrc-number* | **any**}}

**Examples**

The following example shows the output for this command:

**Note**

If the same policy is applied on the same input and output interface, the display shows a single flow for the input and output interfaces and the interface name and direction for the flow are not displayed.

```

Device # show performance monitor status
Codes: * - field is not configurable under flow record
        NA - field is not applicable for configured parameters
        UR - field is unreportable for configured parameters

Match: ipv6 source address = 2001::211:91, ipv6 source prefix = 2001::211:0, ipv6 destination
       address = 2000::201:84, ipv6 destination prefix = 2000::201:0, transport source-port =
51195, transport destination-port = 3500, transport rtp ssrc = 0, ip protocol = 17,
Monitor: ipv6_video_flows

routing forwarding-status           : Forward
ipv6 source mask                    : /112
ipv6 destination mask               : /112
transport packets expected counter  : NA
transport packets lost counter      : NA
transport packets lost rate         ( % ) : NA
transport round-trip-time           (msec) : NA
transport round-trip-time sum       (msec) : NA
transport round-trip-time samples   : NA
transport event packet-loss counter : NA
transport rtp jitter mean           (usec) : NA
transport rtp jitter minimum        (usec) : NA
transport rtp jitter maximum        (usec) : NA
interface input                     : Gi0/1
interface output                    : Gi0/2
counter bytes                       : 6880
counter packets                     : 5
application media bytes counter     : 6680
application media bytes rate        : 668
application media packets counter   : 5
application media packets rate      : 0
application media event             : Normal
monitor event                       : false
transport tcp sequence-number       : 0
transport bytes out-of-order        : 0
transport packets out-of-order      : 0
transport tcp window-size minimum   : 0
transport tcp window-size maximum   : 0
transport tcp window-size sum       : 0
transport tcp window-size average   : 0
transport tcp maximum-segment-size  : 0
transport rtp payload-type          : 255
ip dscp                             : 0x1A
ip ttl                              : 62

```

The table below describes the significant fields shown in the display.

**Table 21: show performance monitor status Field Descriptions**

Field	Description
history bucket number	Number of the bucket of historical data collected.

Field	Description
routing forwarding-status reason	

Field	Description
	<p>Forwarding status is encoded using eight bits with the two most significant bits giving the status and the six remaining bits giving the reason code.</p> <p>Status is either unknown (00), Forwarded (10), Dropped (10) or Consumed (11).</p> <p>The following list shows the forwarding status values for each status category.</p> <p><b>Unknown</b></p> <ul style="list-style-type: none"> <li>• 0</li> </ul> <p><b>Forwarded</b></p> <ul style="list-style-type: none"> <li>• Unknown 64</li> <li>• Forwarded Fragmented 65</li> <li>• Forwarded not Fragmented 66</li> </ul> <p><b>Dropped</b></p> <ul style="list-style-type: none"> <li>• Unknown 128,</li> <li>• Drop ACL Deny 129,</li> <li>• Drop ACL drop 130,</li> <li>• Drop Unroutable 131,</li> <li>• Drop Adjacency 132,</li> <li>• Drop Fragmentation &amp; DF set 133,</li> <li>• Drop Bad header checksum 134,</li> <li>• Drop Bad total Length 135,</li> <li>• Drop Bad Header Length 136,</li> <li>• Drop bad TTL 137,</li> <li>• Drop Policer 138,</li> <li>• Drop WRED 139,</li> <li>• Drop RPF 140,</li> <li>• Drop For us 141,</li> <li>• Drop Bad output interface 142,</li> <li>• Drop Hardware 143,</li> </ul> <p><b>Consumed</b></p> <ul style="list-style-type: none"> <li>• Unknown 192,</li> <li>• Terminate Punt Adjacency 193,</li> </ul>



Field	Description
	<ul style="list-style-type: none"> <li>• Terminate Incomplete Adjacency 194,</li> <li>• Terminate For us 195</li> </ul>
transport packets expected counter	Number of packets expected.
transport packets lost counter	Number of packets lost.
transport round-trip-time (msec)	Number of milliseconds required to complete a round trip.
transport round-trip-time sum (msec)	Total number of milliseconds required to complete a round trip for all samples.
transport round-trip-time samples	Total number of samples used to calculate a round trip times
transport event packet-loss counter	Number of loss events (number of contiguous sets of lost packets).
interface input	Incoming interface index.
interface output	Outgoing interface index.
counter bytes	Total number of bytes collected for all flows.
counter packets	Total number of IP packets sent for all flows.
counter bytes rate	Average number of packets or bits (as configured) processed by the monitoring system per second during the monitoring interval for all flows.
application media bytes counter	Number of IP bytes from by media applications received for a specific media stream.
application media bytes rate	Average media bit rate (bps) for all flows during the monitoring interval.
application media packets counter	Number of IP packets produced from media applications received for a specific media stream.
application media event	Bit 1 is not used. Bit 2 indicates that no media application packets were seen, in other words, a Media Stop Event occurred.
monitor event	Bit 1 indicates that one of the thresholds specified by a react statement for the flow was crossed at least once in the monitoring interval. Bit 2 indicates that there was a loss-of-confidence in measurement.

**show performance monitor status**

<b>Field</b>	<b>Description</b>
transport bytes out-of-order	Total number of TCP bytes not in order.
transport packets out-of-order	Total number of TCP packets not in order.
transport tcp window-size minimum	Minimum size of the TCP window.
transport tcp window-size maximum	Maximum size of the TCP window.
transport tcp window-size average	Average size of the TCP window.
transport tcp maximum-segment-size	Maximum TCP segment size.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show performance monitor history</b>	Displays historical sets of statistics collected by Performance Monitor.

# show platform hardware acl entry interface

To display information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries, use the **show platform hardware acl entry interface** command in privileged EXEC mode.

```
show platform hardware acl entry interface interface-type interface-number {security} {in|out} {ip|ipv6} [detail]
```

## Syntax Description

<i>interface-type interface-name</i>	Show information about access control list (ACL) ternary content addressable memory (TCAM) interface entries for the specified interface.
<b>security</b>	Display security information.
<b>in</b>	Display entries for the inbound interface.
<b>out</b>	Display entries for the outbound interface.
<b>ip</b>	Show statistics for an IP flow.
<b>ipv6</b>	Show statistics for an IP v6 flow.
<b>detail</b>	Display detailed information about the entries.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.0(10SY)	This command was introduced.

## Usage Guidelines

This command is available only on the Catalyst 6500 platform.

This command is used primarily for troubleshooting purposes. It displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries. If no interface is specified, information for all and interfaces are shown.

Cisco IOS-based switches support the wire-rate ACL with use of the TCAM. Enabling ACLs and policies does not decrease the switching or routing performance of the switch as long as the ACLs are fully loaded in the TCAM.

To implement the various types of ACLs in hardware, the Cisco IOS-based switches use hardware lookup tables (TCAM) and various hardware registers in the Supervisor Engine. When a packet arrives, the switch performs a hardware table lookup (TCAM lookup) and decides to either permit or deny the packet.

**Examples**

The following example shows detailed IP information for the specified interface:

```
Router # show platform hardware acl entry interface FastEthernet 1/1 security in ip detail
mls_if_index:2000400A dir:0 feature:0 proto:0
```

```
pass#0 features
UAPRSF: U-urg, A-ack, P-psh, R-rst, S-syn, F-fin
MLGFI: M-mpls_plus_ip_pkt, L-L4_hdr_vld, G-gpid_present, F-global_fmt_match, I-ife/ofe
's' means set; 'u' means unset; '-' means don't care
```

I	INDEX	LABEL	FS	ACOS	AS	IP_SA	SRC_PORT	IP_DA	RSLT
DST_PORT	F	FF	L4PROT	TCP-F:UAPRSF	MLGFI	OtherL4OPs			
			CNT						

```
fno:0
```

```
tcam:B, bank:0, prot:0 Aces
```

```
I V 16375 2049 0 0 0 0.0.0.0 - 0.0.0.0
- 0 0 0 - ----- 0x0000000800000038
10331192<-
I M 16375 0x1FFF 0 0x00 0x000 0.0.0.0 - 0.0.0.0
- 0 0 0x0
```

The table below describes the significant fields shown in the display.

**Table 22: show platform hardware acl entry interface Field Descriptions**

Field	Description
I	Type, which is either V(Value), M(Mask), and R(Result).
Index	Number of the flow monitored on the interface.
Label	Label for the flow.
FS	FS
ACOS	ACOS
AS	AS
IP_SA	IP address of the flow's source.
SRC_Port	Port number of the flow's source.
IP_DA	IP address of the flow's destination.
DST_Port	Port number of the flow's destination.
F	F
FF	FF

Field	Description
L4Prot	Protocol used by the flow.
TCP-F	TCP-F
UAPRSF	U-urg A-ack P-psh R-rst S-syn F-fin
MLGFI	M-mpls_plus_ip_pkt L-L4_hdr_vld G-gpid_present F-global_fmt_match I-ife/ofe
OtherL4Ops	Other level 4 operations.
RSLT	Result.
CNT	Count.

**Related Commands**

Command	Description
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager performance-monitor</b>	Displays information about the Performance Monitor component of Feature Manager.
<b>show platform software feature-manager team</b>	Displays information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager.

# show platform software ccm

To display information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries, use the **show platform software ccm** command in privileged EXEC mode.

**show platform software ccm** {*class-group* *class-group-ID*| **interface** *interface-type**interface-number*}

## Syntax Description

<b>class-group</b> <i>class-group-ID</i>	Show information about Cisco CallManager entries for the specified class group.
<b>interface</b> <i>interface-type interface-name</i>	Show information about Cisco CallManager entries for the specified interface.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.0(1)SY	This command was introduced on the Catalyst 6500 platform.

## Usage Guidelines

This command is available only on the Catalyst 6500 platform.

This command is used primarily for troubleshooting purposes. It displays information about dynamic and static policies for one or all interfaces. If no interface is specified, information for all and interfaces are shown.

## Examples

This command displays information about Cisco CallManager entries on inbound and outbound traffic on an interface:

```
Router # show platform software ccm interface FastEthernet 2/3 in
Target-Class : id 0xA0000000, dir CCM_INPUT, if_type 1, if_info 0x14823998
Class-Group List: 0xA0000001
```

```
b1-cs217#sh platform software ccm interface fastEthernet 2/3 out
Target-Class : id 0xA0000002, dir CCM_OUTPUT, if_type 1, if_info 0x14823998
Class-Group List: 0xA0000001
```

The table below describes the significant fields shown in the display.

**Table 23: show platform software ccm interface Field Descriptions**

Field	Description
Target-Class	Class being monitored.
dir	Direction of traffic being monitored.
if_type	Type of interface being monitored.
if_info	ID information about the interface.
Class-Group List	ID number of the class group list.

This command displays information about Cisco CallManager entries on inbound and outbound traffic for a class group:

```
Router # show platform software ccm class-group A0000001

Class-group      : video-flow-test, id 0xA0000001
Target input    : 0xA0000000
Target Output   : 0xA0000002
  Class         : video-flow, id 0xA98681, type 1
    Filter      : type MATCH_NUMBERED_ACCESS_GROUP, id 0xF0000002
    Filter params : ACL Index: 101 LinkType: 7

    Feature     : PERFORMANCE_MONITOR
    Params      :
      Feature Object : 0x54224218
        Name       :
        Meter context : 0x54264440
        Sibling     : 0x0
        Dynamic     : FALSE
      Feature Object : 0x54221170
        Name       :
        Meter context : 0x54263858
        Sibling     : 0x0
        Dynamic     : FALSE
  Intf List     : 0xA0000000 0xA0000002
Class          : class-default, id 0xADA3F1, type 39
  Filter       : type MATCH_ANY, id 0xF0000003
  Filter params : any

  Feature      : FEATURE_EMPTY
  Params       :
    Feature Object : 0x1741629C
      Name       :
      Meter context : 0x0
      Sibling     : 0x0
      Dynamic     : FALSE
  Intf List    : 0xA0000000 0xA0000002
```

The table below describes the significant fields shown in the display.

**Table 24: show platform software ccm class-group Field Descriptions**

Field	Description
Class-Group	Name and ID of the class group being monitored.
Target Input	ID of the target input .

Field	Description
Target Output	ID of the target output .
Class	Name, ID, and type of one of the classes being monitored.
Filter	Type and ID of the filter for one of the classes being monitored.
Filter params	Filter parameters for one of the classes being monitored.
Feature	Name of the feature being monitored for one of the classes.
Params	Parameters for various feature objects being monitored for one of the classes.

**Related Commands**

Command	Description
<b>show performance monitor history</b>	Displays historical sets of statistics collected by Performance Monitor.
<b>show performance monitor status</b>	Displays recent statistics collected by Performance Monitor.



# show platform software feature-manager performance-monitor

To display the cumulative statistics collected by Performance Monitor during the specified number of most recent intervals, use the **show platform software feature-manager performance-monitor** command in privileged EXEC mode.

**show platform software feature-manager performance-monitor** {**all**| **handle ip** *ip-address*| **interface** *interface-type interface-number*| **rdt-indices**}

## Syntax Description

<b>all</b>	Show information about dynamic and static policies for all interfaces.
<b>counters</b>	Show information about counters.
<b>interface</b> <i>interface-type interface-name</i>	Show information about dynamic and static policies for the specified interface.
<b>rdt-indices</b>	Show information about mappings of the egress interface to RDT.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.0(1)SY	This command was introduced.

## Usage Guidelines

This command is available only on the Catalyst 6500 platform.

This command is used primarily for troubleshooting purposes. It displays information about dynamic and static policies for one or all interfaces. If no interface is specified, information for all and interfaces are shown.

## Examples

The following example shows the output for this command for a specific interface. It is similar to the output for the **show platform software feature-manager performance-monitor all** command:

```
Router # show platform software feature-manager performance-monitor interface FastEthernet
2/3

Interface: FastEthernet2/3
Policy: video-flow-test          Group ID: A0000001
-----
Feature: VM Ingress L3
=====
DPort  - Destination Port  SPort  - Source Port    Pro   - Protocol
RFTCM  - R-Recirc. Flag        MRLCS  - M-Multicast Flag Res   - VMR Result
        - F-Fragment flag          - R-Reflexive flag Prec  - Drop Precedence
```

## show platform software feature-manager performance-monitor

```

- T-Trailing Fragments      - L-Layer 3 only      GrpId - Qos Group Id
- C-From CPU                - C-Capture Flag     Adj.  - Adj. Index
- M-L2 Lookup Miss         - S-RPF suppress     Pid   - NF Profile Index
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|      |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 V      224.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      240.0.0.0      0.0.0.0      0      0      0 00000  0  0
PERMIT_RESULT

2 V      0.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      0.0.0.0      0.0.0.0      0      0      0 00000  0  0
L3_DENY_RESULT

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|      |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 V      0.0.0.0      10.10.10.0   0      0      17 -----  0  ---C-
M      0.0.0.0      255.255.255.0 0      0      255 00000  0  0
PERMIT_RESULT

2 V      0.0.0.0      10.10.20.0   0      0      17 -----  0  ---C-
M      0.0.0.0      255.255.255.0 0      0      255 00000  0  0
PERMIT_RESULT

3 V      0.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      0.0.0.0      0.0.0.0      0      0      0 00000  0  0
L3_DENY_RESULT

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|      |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 V      0.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      0.0.0.0      0.0.0.0      0      0      0 00000  0  0
PERMIT_RESULT

Interface: FastEthernet2/3
Policy: video-flow-test      Group ID: A0000001
-----
Feature: VM Egress L3
=====
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|      |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 V      224.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      240.0.0.0      0.0.0.0      0      0      0 00000  0  0
PERMIT_RESULT

2 V      0.0.0.0      0.0.0.0      0      0      0  -----  0  -----
M      0.0.0.0      0.0.0.0      0      0      0 00000  0  0
L3_DENY_RESULT

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|      |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 V      0.0.0.0      10.10.10.0   0      0      17 -----  0  -----
M      0.0.0.0      255.255.255.0 0      0      255 00000  0  0
PERMIT_RESULT Adjacency: 0x5512D8F4

2 V      0.0.0.0      10.10.20.0   0      0      17 -----  0  -----
M      0.0.0.0      255.255.255.0 0      0      255 00000  0  0

```

```

PERMIT_RESULT Adjacency: 0x5512D8F4
 3 V      0.0.0.0      0.0.0.0    0    0    0  -----  0  -----
  M      0.0.0.0      0.0.0.0    0    0    0 00000    0    0
L3_DENY_RESULT
+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|          |Stats Id|
+-----+-----+-----+-----+-----+-----+-----+-----+

 1 V      0.0.0.0      0.0.0.0    0    0    0  -----  0  -----
  M      0.0.0.0      0.0.0.0    0    0    0 00000    0    0
PERMIT_RESULT Adjacency: 0x5512D8F4

```

```

Adjacency: 0x5512D8F4
  FeatureId: 0x84  AdjId: 0xFFFFFFFF  Flags: RecirculationAdj|
  Cause: 0x0  Priority: 0xC

```

The table below describes the significant fields shown in the display.

**Table 25: show platform software feature-manager performance-monitor Field Descriptions**

Field	Description
Interface	Interface being monitored.
Policy	Policy being monitored.
Group ID	ID of the access control list.
Feature	Name of the feature used on the specified interface.
Index	Number of the flow monitored on the interface.
T	Type, which is either V(Value), M(Mask), and R(Result).
Dest IP Addr	IP address of the flow's destination.
Source IP Addr	IP address of the flow's source.
DPort	Port number of the flow's destination.
SPort	Port number of the flow's source.
Pro	Protocol used by the flow.
RFTCM	R— Recirculation flag F — Fragment flag T — Trailing Fragments C — From CPU M — Level 2 lookup miss

Field	Description
Prec	Drop Precedence.
MRLCS	M — Multicast flag R — Reflexive flag L — Layer 3 only C — Capture flag S — RPF suppress
Pid	NF Profile Index.
Stats Id	Type of status.

The following example shows the output for this command for counters:

```
Router # show platform software feature-manager performance-monitor counters

General Counters
-----+-----+
Number of times video monitoring enabled           : 2
Number of times ingress handler registered         : 1
Number of times egress handler registered          : 1

  Ingress Packet Counters
  -----+-----+
Packets dropped in handler due to NULL block/packet/dbus : 0
Packets seen by vm interrupt handler                : 165246090
Packets ingress interface locate failure            : 0
Packets accepted by vm interrupt handler            : 165246090
Packets consumed by clone path                      : 165246090
Packets hits on static policy on Routed port/L2 Vlan : 165246090
Packets hits on static policy on switched port      : 0
Packets hits on static policy on L3 Vlan            : 0
Packets hits on dynamic policy on Routed port/L2 Vlan : 0
Packets hits on dynamic policy on switched port     : 0
Packets hits on dynamic policy on L3 Vlan           : 0
Packets rate-limited at interrupt handler           : 0
Packets TTL decrements at ingress handler           : 5121

  Egress Packet Counters
  -----+-----+
Packets dropped in handler due to NULL block/packet/dbus : 0
Packets seen by vm interrupt handler                  : 3288018307
Packets egress interface locate failure               : 0
Packets accepted by vm interrupt handler              : 3288018307
Packets consumed by clone path                       : 3288018307
Packets hits on static policy                        : 3288018307
Packets hits on static policy on L2 Vlan interface   : 0
Packets hits on dynamic policy on L2 Vlan interface : 0
Packets hits on dynamic policy                       : 0
Packets rate-limited at interrupt handler             : 0
Packets TTL decrements at egress handler              : 3288018307

  CEF Path Counters
  -----+-----+
Number of failures due to null packet                 : 0
Number of failures due to null ingress interface      : 0
Number of failures due to null egress interface       : 0
Number of packets seen in ingress cef path           : 0
```

```

Number of packets seen in egress cef path           : 0
Number of null feature objects in ingress cef path : 0
Number of null feature objects in egress cef path  : 0

```

Other Features Check

```

-----+-----+
Router Index Counter           : 0
Bridge Index Counter          : 0
CPU region LTL counter        : 0

```

The following example shows the output for this command for RDT indices:

```
Router # show platform software feature-manager performance-monitor rdt-indices
```

```
Flags: D - Dynamic, S - Static
```

```

-----+-----+-----+-----+-----+-----+-----+
| Index | RDT FID | RDT IDX | Vlan | L3 IDB | Flags | Next Ptr |
-----+-----+-----+-----+-----+-----+-----+
      14 0x000F0001 0x090E      0 0x52CA34F4      S 0x00000000

```

The table below describes the significant fields shown in the display.

**Table 26: show platform software feature-manager performance-monitor rdt-indices Field Descriptions**

Field	Description
Index	Number of the flow monitored on the interface.
RDT FID	RDT Feature ID.
RDT IDX	RDT index.
Vlan	Number of the virtual LAN
L3 IDB	Level 3 IDB.
Flags	Flags.
Next Ptr	Next Ptr.

### Related Commands

Command	Description
<b>show platform hardware acl entry interface</b>	Displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries.
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager tcam</b>	Displays information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager.

# show platform software feature-manager tcam

To display information about dynamic ternary content addressable memory (TCAM) entries for the Performance Monitor component of Feature Manager, use the **show platform software feature-manager tcam** command in privileged EXEC mode.

**show platform software feature-manager tcam dynamic performance-monitor** {**handle ip** *ip-address* | **interface** *interface-type interface-number*}

## Syntax Description

<b>handle ip</b> <i>ip-address</i>	Displays host-specific dynamic TCAM entries in the Feature Manager database.
<b>interface</b> <i>interface-type interface-name</i>	Displays interface-specific dynamic TCAM entries in the Feature Manager database.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.0(10SY)	This command was introduced.

## Usage Guidelines

This command is available only on the Catalyst 6500 platform.

This command is used primarily for troubleshooting purposes. It displays information about dynamic TCAM entries for the Performance Monitor component of Feature Manager for one or all interfaces or hosts. If no interface or host is specified, information for all and interfaces are shown.

## Examples

The following example shows dynamic TCAM entries for the specified host:

```
Router # show platform software feature-manager tcam dynamic performance-monitor handle ip
10.1.1.0
-----
HANDLE           Feature ID   No of entries   MD5
-----
10.1.1.0         VM Ingress L3   2
```

The table below describes the significant fields shown in the display.

**Table 27: show platform software feature-manager tcam dynamic performance-monitor handle ip Field Descriptions**

Field	Description
Handle	IP address of the flow's source.

Field	Description
Feature ID	Name of the feature used on the specified host.
No of entries	Number of dynamic TCAM entries for the Performance Monitor component of Feature Manager
MD5	MD5 checksum.

The following example shows dynamic TCAM entries for the specified interface:

```
Router # show platform software feature-manager tcam dynamic performance-monitor interface
FastEthernet 2/26
```

No Dynamic entries found on interface FastEthernet2/26 in ingress direction

```
-----
Dynamic feature ID :VM EGRESS L3      Direction : Egress
Interface          : Fa2/26
=====
HANDLE      160.0.0.4      No of entries      2 Protocol      IP
+-----+-----+-----+-----+-----+-----+-----+-----+
| Indx|T|  Dest Ip Addr | Source Ip Addr|DPort|SPort|Pro|RFTCM|Prec|MRLCS|Pid|
|-----+-----+-----+-----+-----+-----+-----+-----+
|-----+-----+-----+-----+-----+-----+-----+-----+
1 V      10.10.20.2      10.10.10.2      0      0  17 --T--      0 ---C-
M 255.255.255.255 255.255.255.255 0      0 255 00100      0  0
PERMIT_RESULT

2 V      10.10.20.2      10.10.10.2 10000  1000  17 -----      0 ---C-
M 255.255.255.255 255.255.255.255 65535 65535 255 00000      0  0
PERMIT_RESULT
```

**Table 28: show platform software feature-manager tcam dynamic performance-monitor interface Field Descriptions**

Field	Description
Dynamic feature ID	Name of the feature used on the specified host.
Direction	Direction of the flows being monitored.
Interface	Direction of the flows being monitored.
Handle	IP address of the flow's source.
No of entries	Number of dynamic TCAM entries for the Performance Monitor component of Feature Manager
Protocol	Protocol used by the interface.
Index	Number of the flow monitored on the interface.
T	Type, which is either V(Value), M(Mask), and R(Result).
Dest IP Addr	IP address of the flow's destination.

Field	Description
Source IP Addr	IP address of the flow's source.
DPort	Port number of the flow's destination.
SPort	Port number of the flow's source.
Pro	Protocol used by the flow.
RFTCM	R— Recirculation flag F — Fragment flag T — Trailing Fragments C — From CPU M — Level 2 lookup miss
Prec	Drop Precedence.
MRLCS	M — Multicast flag R — Reflexive flag L — Layer 3 only C — Capture flag S — RPF suppress
Pid	NF Profile Index.
Stats Id	Type of status.

**Related Commands**

Command	Description
<b>show platform hardware acl entry interface</b>	Displays information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) interface entries.
<b>show platform software ccm</b>	Displays information about ternary content addressable memory (TCAM) Cisco CallManager (CCM) entries.
<b>show platform software feature-manager performance-monitor</b>	Displays information about the Performance Monitor component of Feature Manager.



# show policy-map type performance-monitor

To display policy-map statistics for Performance Monitor, use the **show policy-map type performance-monitor** command in privileged EXEC mode.

**show policy-map type performance-monitor** [*interface interface-name*] [*class class-name*] [*input|output*]

## Syntax Description

<b>interface</b> <i>interface-name</i>	Show statistics for the specified interface. If no interface is specified, show statistics for all interface associated with a performance-monitor policy-map.
<b>class</b> <i>class-name</i>	Show statistics only for the specified class.
<b>input</b>	Show input statistics for the interface.
<b>output</b>	Show output statistics for the interface.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

If no interface or class is specified, statistics for all interfaces and classes associated with a performance-monitor policy-map are shown.

## Examples

The following example shows the output for this command for one Flow Policy::

```
Router # show policy-map type performance-monitor
Policy Map type performance-monitor PM-POLICY-4
Class PM-CLASS-4
  flow monitor PM-MONITOR-4
  record PM-RECORD-4
  exporter PM-EXPORTER-4
  monitor parameters
    interval duration 30
    timeout 10
    history 10
    flows 8000
  monitor metric rtp
    min-sequential 5
    max-dropout 5
    max-reorder 5
```

```

clock-rate default 90000
ssrc maximum 5

```

The table below describes the significant fields shown in the display.

**Table 29: show policy-map type performance-monitor Field Descriptions**

Field	Description
Policy Map type performance-monitor	Name of the Performance Monitor Flow Policy.
flow monitor	Name of the Performance Monitor Flow Monitor.
record	Name of the Performance Monitor Flow Record.
exporter	Name of the Performance Monitor Flow Exporter.
monitor parameter	Parameters for the Flow Policy.
interval duration	The configured duration of the collection interval for the policy.
timeout	The configured amount of time wait for a response when collecting data for the policy.
history	The configured number of historical collections to keep for the policy.
flows	The configured number of flows to collect for the policy.
monitor metric rtp	RTP metrics for the Flow Policy.
min-sequential	The configured minimum number of packets in a sequence used to classify an RTP flow.
max-dropout	The configured maximum number of packets to ignore ahead of the current packet in terms of sequence number.
max-reorder	The configured maximum number of packets to ignore behind the current packet in terms of sequence number.
clock-rate default	The configured clock rate for the RTP packet timestamp clock that is used to calculate the packet arrival latency.
ssrc maximum	The configured maximum number of SSRCs that can be monitored within same flow (as defined by the protocol, source/destination address, source/destination port). The range is from 1 to 50.

**Related Commands**

Command	Description
policy-map type performance-monitor	Creates a policy for Performance Monitor.

## source (Flexible NetFlow)

To configure the source IP address interface for all of the packets sent by a flow exporter for Flexible NetFlow or Performance Monitor, use the **source** command in flow exporter configuration mode. To remove the source IP address interface for all of the packets sent by a flow exporter, use the **no** form of this command.

**source** *interface-type interface-number*

**no source**

### Syntax Description

<i>interface-type</i>	Type of interface whose IP address you want to use for the source IP address of the packets sent by a flow exporter.
<i>interface-number</i>	Interface number whose IP address you want to use for the source IP address of the packets sent by a flow exporter.

### Command Default

The IP address of the interface over which the Flexible NetFlow or Performance Monitor datagram is transmitted is used as the source IP address.

### Command Modes

flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

**Usage Guidelines**

This command can be used with both Flexible NetFlow and Performance Monitor.

The benefits of using a consistent IP source address for the datagrams that NetFlow sends include the following:

- The source IP address of the datagrams exported by Flexible NetFlow or Performance Monitor is used by the destination system to determine from which router the Flexible NetFlow or Performance Monitor data is arriving. If your network has two or more paths that can be used to send Flexible NetFlow or Performance Monitor datagrams from the router to the destination system and you do not specify the source interface from which the source IP address is to be obtained, the router uses the IP address of the interface over which the datagram is transmitted as the source IP address of the datagram. In this situation the destination system might receive Flexible NetFlow or Performance Monitor datagrams from the same router, but with different source IP addresses. When the destination system receives Flexible NetFlow or Performance Monitor datagrams from the same router with different source IP addresses, the destination system treats the datagrams as if they were being sent from different routers. To avoid having the destination system treat the datagrams as if they were being sent from different routers, you must configure the destination system to aggregate the datagrams it receives from all of the possible source IP addresses in the router into a single flow.
- If your router has multiple interfaces that can be used to transmit datagrams to the destination system, and you do not configure the **source** command, you will have to add an entry for the IP address of each interface into any access lists that you create for permitting Flexible NetFlow or Performance Monitor traffic. Creating and maintaining access lists for permitting Flexible NetFlow traffic from known sources and blocking it from unknown sources is easier when you limit the source IP address for Flexible NetFlow datagrams to a single IP address for each router that is exporting traffic.

**Caution**

The interface that you configure as the **source** interface must have an IP address configured, and it must be up.

**Tip**

When a transient outage occurs on the interface that you configured with the **source** command, the Flexible NetFlow or Performance Monitor exporter reverts to the default behavior of using the IP address of the interface over which the datagrams are being transmitted as the source IP address for the datagrams. To avoid this problem, use a loopback interface as the source interface because loopback interfaces are not subject to the transient outages that can occur on physical interfaces.

**Examples**

The following example shows how to configure Flexible NetFlow or Performance Monitor to use a loopback interface as the source interface for NetFlow traffic:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# source loopback 0
```

**Related Commands**

Command	Description
<b>flow exporter</b>	Creates a flow exporter.



## ssrc maximum

To configure the SSRC maximum metrics for a Performance Monitor policy, use the **ssrc maximum** command in policy RTP configuration mode. To remove the configuration, use the **no** form of this command.

**ssrc maximum** *number*

**no monitor ssrc maximum** *number*

### Syntax Description

<i>number</i>	Specifies the maximum number of SSRCs that can be monitored within same flow (as defined by the protocol, source/destination address, source/destination port). The range is from 1 to 50.
---------------	--

### Command Default

Maximum number of SSRC sessions is 10.

### Command Modes

Policy RTP configuration (config-pmap-c-mrtp) Policy inline RTP configuration (config-spolicy-inline-mrtp)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Usage Guidelines

It is not recommended that you limit the maximum number of SSRCs that can be monitored within same flow by using the **ssrc maximum** keyword. The flow engine will not learn new SSRC sessions once the maximum number is met until a discovered flow is removed. Setting the value high will help to avoid the unexpected denial-of-service attacks.

### Examples

The following example shows how to set the SSRC maximum, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor metric rtp
Router(config-pmap-c-mrtp)# ssrc maximum 40
```

The following example shows how to set the SSRC maximum, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor metric rtp
Router(config-spolicy-inline-mrtp)# ssrc maximum 40
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.



# template data timeout

To configure the template resend timeout for a flow exporter, use the **template data timeout** command in flow exporter configuration mode. To remove the template resend timeout for a flow exporter, use the **no** form of this command.

**template data timeout** *seconds*

**no template data timeout**

## Syntax Description

<i>seconds</i>	Configures resending of templates based on the timeout value in seconds, that you enter. Range: 1 to 86400. Default 600.
----------------	--

## Command Default

The default template resend timeout for a flow exporter is 600 seconds.

## Command Modes

flow exporter configuration (config-flow-exporter)

## Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	Support for this command was added for Cisco 7200 series routers in Cisco IOS Release 12.2(33)SRC.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

## Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor.

**Examples**

The following example configures resending templates based on a timeout of 1000 seconds:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# template data timeout 1000
```

**Related Commands**

Command	Description
flow exporter	Creates a flow exporter.

## threshold value (policy-react and policy-inline-react)

To configure the threshold that determines whether alarms are sent for a Performance Monitor policy, use the **threshold value** command in policy configuration mode and policy inline react configuration mode. To remove the threshold setting, use the **no** form of this command.

**threshold value** {*ge number*| *gt number*| *le number*| *lt number*| **range** *rng-start rng-end*}

**no threshold value** {*ge number*| *gt number*| *le number*| *lt number*| **range** *rng-start rng-end*}

### Syntax Description

<b>ge</b> <i>number</i>	Send alarms if the value is greater than or equal to threshold.
<b>gt</b> <i>number</i>	Send alarms if the value is greater than threshold.
<b>le</b> <i>number</i>	Send alarms if the value is less than or equal to threshold.
<b>lt</b> <i>number</i>	Send alarms if the value is less than threshold.
<b>range</b> <i>rng-start rng-end</i>	Send alarms if the value is within the specified range of the threshold.

### Command Default

no thresholds are set.

### Command Modes

Policy react configuration (config-pmap-c-react) Policy inline react configuration (config-spolicy-inline-react)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to specify that alarms are sent if a value exceeds a threshold of 20, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# react 2000 rtp-jitter-average
Router(config-pmap-c-react)# threshold gt 20
```

The following example shows how to specify that alarms are sent if a value exceeds a threshold of 20, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# react 2000 rtp-jitter-average
Router(config-spolicy-inline-react)# threshold gt 20
```

#### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.
<b>service-policy type performance-monitor</b>	Associates a policy with an interface.

## timeout (monitor parameters)

To configure the amount of time to wait before a stopped flow is removed from the Performance Monitor database, use the **monitor parameters** command in monitor parameters configuration mode. To remove the configuration, use the **no** form of this command.

**timeout** *number*

**no timeout**

### Syntax Description

<b>timeout</b> <i>number</i>	Specifies the number of intervals before a stopped flow is removed from the database.
------------------------------	---

### Command Default

Timeout is 10 intervals.

### Command Modes

Monitor parameters configuration (config-pmap-c-mparam) Inline monitor parameters configuration (config-spolicy-inline-mparam)

### Command History

Release	Modification
15.1(3)T	This command was introduced.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE.

### Examples

The following example shows how to set the amount of time wait for a response when collecting data to 20 intervals, while configuring a policy-map:

```
Router(config)# policy-map type performance-monitor policy-4
Router(config-pmap)# class PM-CLASS-4
Router(config-pmap-c)# monitor parameters
Router(config-pmap-c-mparam)# timeout 20
```

The following example shows how to set the amount of time wait for a response when collecting data to 20 intervals, while associating a service-policy with an interface:

```
Router(config)# interface ethernet 0/0
Router(config-if)# service-policy type performance-monitor inline input
Router(config-if-spolicy-inline)# monitor parameters
Router(config-spolicy-inline-mparam)# timeout 20
```

### Related Commands

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

Command	Description
<b>policy-map type performance-monitor</b>	Creates a policy for Performance Monitor.

## transport (Flexible NetFlow)

To configure the transport protocol for a flow exporter for Flexible NetFlow or Performance Monitor, use the **transport** command in flow exporter configuration mode. To remove the transport protocol for a flow exporter, use the **no** form of this command.

**transport udp** *udp-port*

**no transport**

### Syntax Description

<b>udp</b> <i>udp-port</i>	Specifies User Datagram Protocol (UDP) as the transport protocol and the UDP port number.
----------------------------	---

### Command Default

Flow exporters use UDP on port 9995.

### Command Modes

flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor.

**Examples**

The following example configures UDP as the transport protocol and a UDP port number of 250:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# transport udp 250
```

**Related Commands**

Command	Description
<code>flow exporter</code>	Creates a flow exporter.



## ttl (Flexible NetFlow)

To configure the time-to-live (TTL) value for a flow exporter for Flexible NetFlow or Performance Monitor, use the **ttl** command in flow exporter configuration mode. To remove the TTL value for a flow exporter, use the **no** form of this command.

**ttl** *ttl*

**no** *ttl*

### Syntax Description

<i>ttl</i>	Time-to-live (TTL) value for exported datagrams. Range: 1 to 255. Default 255.
------------	--

### Command Default

Flow exporters use a TTL of 255.

### Command Modes

flow exporter configuration (config-flow-exporter)

### Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.0(33)S	This command was implemented on the Cisco 12000 series routers.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC and implemented on the Cisco 7200 series routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE for the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
15.1(3)T	This command was integrated into Cisco IOS Release 15.1(3)T for Cisco Performance Monitor.
12.2(58)SE	This command was integrated into Cisco IOS Release 12.2(58)SE for Cisco Performance Monitor.

### Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor.

**Examples**

The following example specifies a TTL of 15:

```
Router(config)# flow exporter FLOW-EXPORTER-1
Router(config-flow-exporter)# ttl 15
```

**Related Commands**

Command	Description
<code>flow exporter</code>	Creates a flow exporter.