match interface (Flexible NetFlow) through ttl (Flexible NetFlow)

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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

input	Configures the input interface as a key field.
physical	(Optional) Configures the physical input interface as a key field and enables collecting the input interface from the flows.
output	Configures the output interface as a key field.
snmp	(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 **physical** and **snmp** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.

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

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 Flexible NetFlow 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

Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

match ipv4 {**dscp**| **precedence**| **protocol**| **tos**}

no match ipv4 {**dscp**| **precedence**| **protocol**| **tos**}

Cisco IOS XE Release 3.2SE

match ipv4 {**protocol**| **tos**| **version**}

match ipv4 {**protocol**| **tos**| **version**}

Syntax Description

dscp	Configures the IPv4 differentiated services code point (DSCP) (part of type of service [ToS]) as a key field.
header-length	Configures the IPv4 header length (in 32-bit words) as a key field.
id	Configures the IPv4 ID as a key field.
option map	Configures the bitmap representing which IPv4 options have been seen as a key field.
precedence	Configures the IPv4 precedence (part of ToS) as a key field.
protocol	Configures the IPv4 protocol as a key field.
tos	Configures the IPv4 ToS as a key field.
version	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.
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.
15.1(3)T	This command was modified for the Cisco Performance Monitor. The **dscp**, **header-length**, **id**, **option map**, **precedence**, **tos**, and **version** keywords were removed.
12.2(58)SE	This command was modified for the Cisco Performance Monitor. The **dscp**, **header-length**, **id**, **option map**, **precedence**, **tos**, and **version** keywords were removed.
12.2(50)SY	This command was modified. The **header-length**, **id**, **option**, **map**, and **version** keywords were not supported in Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was modified. The **dscp**, **header-length**, **id**, **option map**, and **precedence** 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.

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
```

The following example configures the IPv4 DSCP field as a key field for Cisco Performance Monitor:

```
Router(config)# flow record type performance-monitor FLOW-RECORD-1
Router(config-flow-record)# match ipv4 dscp
```

Related Commands

Command	Description
flow record	Creates a flow record.
flow record type performance-monitor	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 Flexible NetFlow 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*]}

Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

match ipv4 destination address

no match ipv4 destination address

Cisco IOS XE Release 3.2SE

match ipv4 destination address

no match ipv4 destination address

Syntax Description

address	Configures the IPv4 destination address as a key field.
mask	Configures the mask for the IPv4 destination address as a key field.
prefix	Configures the prefix for the IPv4 destination address as a key field.
minimum-mask *mask*	(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

Flexible NetFlow 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 modified. Support for this command was implemented on the Gigabit Switch Router (GSR).
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.
15.1(3)T	This command was modified for the Cisco Performance Monitor. The **mask** keyword was removed.
12.2(58)SE	This command was modified for the Cisco Performance Monitor. The **mask** keyword was removed.
12.2(50)SY	This command was modified. The **mask**, **prefix**, and **minimum-mask** keywords were removed.
Cisco IOS XE Release 3.2SE	This command was modified. The **mask**, **prefix**, and **minimum-mask** 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.

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 record FLOW-RECORD-1
Router(config-flow-record)# match ipv4 destination mask minimum-mask 16
```

The following example specifies a 16-bit IPv4 destination address mask as a key field for Cisco Performance Monitor:

```
Router(config)# flow record type performance-monitor FLOW-RECORD-1
Router(config-flow-record)# match ipv4 destination mask minimum-mask 16
```

Related Commands

Command	Description
flow record	Creates a flow record.
flow record type performance-monitor	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

flags	Configures the IPv4 fragmentation flags as a key field.
offset	Configures the IPv4 fragmentation offset as a key field.

Command Default

The IPv4 fragmentation flags and the IPv4 fragmentation offset arenot 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

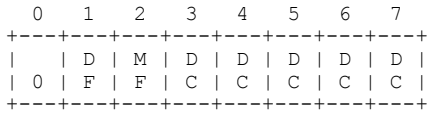
This field matches the "don't fragment" and "more fragments" flags.

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



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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

header size *header-size*	Configures the number of bytes of raw data starting at the IPv4 header, to use as a key field. Range: 1 to 1200
payload size *payload-size*	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

Command	Description
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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 Flexible NetFlow 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*]}

Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

match ipv4 source address

no match ipv4 source address

Cisco IOS XE Release 3.2SE

match ipv4 source address

no match ipv4 source address

Syntax Description

address	Configures the IPv4 source address as a key field.
mask	Configures the mask for the IPv4 source address as a key field.
prefix	Configures the prefix for the IPv4 source address as a key field.
minimum-mask *mask*	(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

Flexible NetFlow 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.
12.2(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.
15.1(3)T	This command was modified for the Cisco Performance Monitor. The **mask** keyword was removed.
12.2(58)SE	This command was modified for the Cisco Performance Monitor. The **mask** keyword was removed.
12.2(50)SY	This command was modified. The **mask**, **prefix**, and **minimum-mask** keywords were removed.
Cisco IOS XE Release 3.2SE	This command was modified. The **mask**, **prefix**, and **minimum-mask** 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.

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.

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
```

The following example specifies a 16-bit IPv4 source address mask as a key field for Cisco Performance Monitor:

```
Router(config)# flow record type performance-monitor FLOW-RECORD-1
Router(config-flow-record)# match ipv4 source mask minimum-mask 16
```

Related Commands

Command	Description
flow record	Creates a flow record.
flow record type performance-monitor	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)

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 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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)

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 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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**}

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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

dscp	Configures the IPv6 differentiated services code point DSCP (part of type of service (ToS)) as a key field.
flow-label	Configures the IPv6 flow label as a key field.
next-header	Configures the IPv6 next header as a key field.
payload-length	Configures the IPv6 payload length as a key field.
precedence	Configures the IPv6 precedence (part of ToS) as a key field.
protocol	Configures the IPv6 protocol as a key field.
tos	Configures the IPv6 ToS as a key field.
traffic-class	Configures the IPv6 traffic class as a key field.
version	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 **flow-label**, **next-header**, **payload-length,traffic-class**, and **version** 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 **dscp**, **flow-label**, **next-header**, **payload-length**, and **precedence** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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*]}

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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

address	Configures the IPv6 destination address as a key field.
mask	Configures the mask for the IPv6 destination address as a key field.
prefix	Configures the prefix for the IPv6 destination address as a key field.
minimum-mask *mask*	(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 **mask**, **prefix**, and **minimum-mask** 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 **mask**, **prefix**, and **minimum-mask** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

flags	Configures the IPv6 fragmentation flags as a key field.
id	Configures the IPv6 fragmentation ID as a key field.
offset	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

header	Configures the length in bytes of the IPv6 header, not including any extension headers as a key field.
payload	Configures the length in bytes of the IPv6 payload, including any extension header as a key field.
total	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

header size *header-size*	Configures the number of bytes of raw data starting at the IPv6 header, to use as a key field. Range: 1 to 1200
payload size *payload-size*	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 **headersize***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 ipv6section payload

This command uses the section of the IPv6 payload indicated by the **payloadsize***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 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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*]}

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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

address	Configures the IPv6 source address as a key field.
mask	Configures the mask for the IPv6 source address as a key field.
prefix	Configures the prefix for the IPv6 source address as a key field.
minimum-mask *mask*	(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 **mask**, **prefix**, and **minimum-mask** 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 **mask**, **prefix**, and **minimum-mask** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	Creates a flow record, and enters Performance Monitor flow record configuration mode.

match mpls label

To configure MPLS label fields as a key field for a flow record, use the **match mpls label** command in flow record configuration mode. To disable the use of the MPLS label fields as a key field for a flow record, use the **no** form of this command.

match mpls {**label 1**| {**details**| **exp**| **ttl**}| **label 2**| {**details**}| **label 3**| {**details**}| **label 4**| {**details**}| **label 5**| {**details**}| **label 6**| {**details**}}

no match mpls {**label 1**| {**details**| **exp**| **ttl**}| **label 2**| {**details**}| **label 3**| {**details**}| **label 4**| {**details**}| **label 5**| {**details**}| **label 6**| {**details**}}

Syntax Description

label 1	Configures the first MPLS label as a nonkey field.
details	Configures the details of the MPLS label as a nonkey field.
exp	Configures the MPLS experimental level field as a nonkey field.
ttl	Configures the time-to-life (TTL) for the MPLS label as a nonkey field.
label 2	Configures the second MPLS label as a nonkey field.
label 3	Configures the third MPLS label as a nonkey field.
label 4	Configures the fourth MPLS label as a nonkey field.
label 5	Configures the fifth MPLS label as a nonkey field.
label 6	Configures the sixth MPLS label as a nonkey field.

Command Default

MPLS label fields are not configured as a key field.

Command Modes

Flow record configuration (config-flow-record)

Command History

Release	Modification
Cisco IOS XE Release 3.9S	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 details of the first MPLS label as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match mpls label 1 details
```

Related Commands

Command	Description
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.

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**]

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match routing vrf input

no match routing vrf input

Syntax Description

destination	Specifies one or more of the destination routing attributes fields as a key field.
source	Specifies one or more of the source routing attributes fields as a key field.
as	Configures the autonomous system field as a key field.
4-octet	(Optional) Configures the 32-bit autonomous system number as a key field.
peer	(Optional) Configures the autonomous system number of the peer network as a key field.
traffic-index	Configures the Border Gateway Protocol (BGP) destination traffic index as a key field.
forwarding-status	Configures the forwarding status of the packet as a key field.
next-hop address	Configures the next-hop address value as a key field. The type of address (IPv4 or IPv6) is determined by the next keyword entered.
ipv4	Specifies that the next-hop address value is an IPv4 address.
ipv6	Specifies that the next-hop address value is an IPv6 address.

bgp	(Optional) Configures the IPv4 address of the BGP next hop as a key field.
vrf input	Configures the virtual routing and forwarding (VRF) ID for incoming packets as a key field.
vrf output	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	**ipv6** keyword was added.
15.0(1)M	This command was modified. The **vrf input** 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 **4-octet** keyword was added.
12.2(50)SY	This command was modified. The **vrf input** 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 **vrf output** 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:

```
    | 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
flow record	Creates a flow record and enters Flexible NetFlow flow record configuration mode.

Command	Description
flow record type performance-monitor	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)

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.

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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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.

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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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**}

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match transport {**destination-port**| **source-port**}

no match transport {**destination-port**| **source-port**}

Syntax Description

destination-port	Configures the transport destination port as a key field.
igmp type	Configures time stamps based on the system uptime as a key field.
source-port	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 **igmp type** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	Creates a flow record, and enters Performance Monitor flow record configuration mode.

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

code	Configures the IPv4 ICMP code as a key field.
type	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

code	Configures the ICMP code as a key field.
type	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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	Creates a flow record, and enters Performance Monitor flow record configuration mode.

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

acknowledgement -number	Configures the TCP acknowledgement number as a key field.
bytes out-of-order	Configures the number of out-of-order bytes as a key field.
destination-port	Configures the TCP destination port as a key field.
flags	Configures one or more of the TCP flags as a key field. If you configure the **flags** keyword you must also configure at least one of the optional keywords for the **flags** keyword.
ack	(Optional) Configures the TCP acknowledgement flag as a key field.
cwr	(Optional) Configures the TCP congestion window reduced flag as a key field.
ece	(Optional) Configures the TCP Explicit Notification Congestion echo (ECE) flag as a key field.
fin	(Optional) Configures the TCP finish flag as a key field.
psh	(Optional) Configures the TCP push flag as a key field.
rst	(Optional) Configures the TCP reset flag as a key field.

syn	(Optional) Configures the TCP synchronize flag as a key field.
urg	(Optional) Configures the TCP urgent flag as a key field.
header-length	Configures the TCP header length (in 32-bit words) as a key field.
maximum-segment-size	Configures the maximum segment size as a key field.
packets out-of-order	Configures the number of out-of-order packets as a key field.
sequence-number	Configures the TCP sequence number as a key field.
source-port	Configures the TCP source port as a key field.
urgent-pointer	Configures the TCP urgent pointer as a key field.
window-size	Configures the TCP window size as a key field.
window-size-average	Configures the average window size as a key field.
window-size-maximum	Configures the maximum window size as a key field.
window-size-minimum	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

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.

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 **bytes out-of-order**, **packets out-of-order**, **maximum-segment-size**, **window-size-average**, **window-size-maximum**, and **window-size-minimum** 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
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	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

destination-port	Configures the UDP destination port as a key field.
message-length	Configures the UDP message length as a key field.
source-port	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
flow record	Creates a flow record.

mode (Flexible NetFlow)

To specify the type of sampling and the packet interval for a Flexible NetFlow sampler, use the **mode** command in Flexible NetFlow sampler configuration mode. To unconfigure the type of sampling and the packet interval for a Flexible NetFlow sampler, use the **no** form of this command.

mode {**deterministic**| **random**} **1 out-of** *window-size*

no mode

Syntax Description

deterministic	Enables deterministic mode sampling for the sampler.
random	Enables random mode sampling for the sampler.
1 out-of *window-size*	Specifies the window size from which to select packets. Range: 2 to 32768.

Command Default

The mode and the packet interval for a sampler are not configured.

Command Modes

Flexible NetFlow sampler configuration (config-sampler)

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 integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

Deterministic Mode

In deterministic mode, packets are chosen periodically based on the configured interval. This mode has less overhead than random mode and can be useful when the router samples traffic that is random in nature.

Random Mode

In random mode, packets are chosen in a manner that should eliminate any bias from traffic patterns and counter any attempt by users to avoid monitoring.

Examples

The following example enables deterministic sampling with a window size of 1000:

```
Router(config)# sampler SAMPLER-1
Router(config-sampler)# mode deterministic 1 out-of 1000
```

The following example enables random sampling with a window size of 1000:

```
Router(config)# sampler SAMPLER-1
Router(config-sampler)# mode random 1 out-of 1000
```

Related Commands

Command	Description
clear sampler	Clears the sampler statistics.
debug sampler	Enables debugging output for samplers.
show sampler	Displays sampler status and statistics.

option (Flexible NetFlow)

To configure optional data parameters for a flow exporter for Flexible NetFlow or the Cisco Performance Monitor, use the **option** command in Flexible NetFlow flow exporter configuration mode. To remove optional data parameters for a flow exporter, use the **no** form of this command.

option {**application-attributes**| **application-table**| **exporter-stats**| **class-qos-table**| **interface-table**| **policy-qos-table**| **sampler-table**| **sub-application-table**| **vrf-table**} [**timeout** *seconds*]

no option {**application-attributes**| **application-table**| **class-qos-table**| **exporter-stats**| **interface-table**| **policy-qos-table**| **sampler-table**| **sub-application-table**| **vrf-table**}

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option {**exporter-stats**| **interface-table**| **sampler-table**| **vrf-table**} [**timeout** *seconds*]

no option {**exporter-stats**| **interface-table**| **sampler-table**| **vrf-table**}

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option {**exporter-stats**| **interface-table**| **sampler-table**} [**timeout** *seconds*]

option {**exporter-stats**| **interface-table**| **sampler-table**} [**timeout** *seconds*]

Syntax Description

application-attributes	Configures the application attributes option for flow exporters.
application-table	Configures the application table option for flow exporters.
class-qos-table	Configures the QoS class table option for flow exporters.
exporter-stats	Configures the exporter statistics option for flow exporters.
interface-table	Configures the interface table option for flow exporters.
policy-qos-table	Configures the QoS policy table option for flow exporters.
sampler-table	Configures the export sampler information option for flow exporters.
sub-application-table	Configures the subapplication table option for flow exporters.
vrf-table	Configures the virtual routing and forwarding (VRF) ID-to-name table option for flow exporters.

timeout *seconds*	(Optional) Configures the option resend time in seconds for flow exporters. The range is from 1 to 86400. The default is 600.

Command Default The optional data parameters are not configured.

Command Modes Flexible NetFlow 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 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.
15.0(1)M	This command was modified. The **application-table** and **vrf-table** keywords were added.
12.2(33)SRE	This command was modified. Support for this command was implemented on 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 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.
12.2(50)SY	This command was modified. The **application-table** keyword was removed.
Cisco IOS XE Release 3.5S	This command was modified. The **application-attributes** keyword was added.
15.2(1)S2	This command was modified. The **sub-application-table** keyword was added.
Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.
15.2(4)M2	This command was modified. The **class-qos-table** and **policy-qos-table** keywords were added.

Release	Modification
15.3(1)T	This command was integrated into Cisco IOS Release 15.3(1)T.
Cisco IOS XE Release 3.2SE	This command was modified. The **application-attributes**, **application-table** , and **vrf-table** keywords were removed.

Usage Guidelines

The **option** command can be used with both Flexible NetFlow and the Cisco Performance Monitor.

Use the **timeout** keyword to alter the frequency at which reports are sent.

option application-attributes

The **option application-attributes** command causes the periodic sending of network-based application recognition (NBAR) application attributes to the collector.

The following application attributes are sent to the collector per protocol:

- Application-Group—Groups applications that belong to the same networking application.
- Category—Provides first-level categorization for each application.
- Encrypted—Specifies whether the application is an encrypted networking protocol.
- P2P-Technology—Specifies whether the application is based on peer-to-peer technology.
- Sub-Category—Provides second-level categorization for each application.
- Tunnel-Technology—Specifies whether the application tunnels the traffic of other protocols.

option application-table

The **option application-table** command enables the periodic sending of an options table that allows the collector to map NBAR application IDs provided in the flow records to application names.

option class-qos-table

The **option class-qos-table** command enables the periodic sending of an options table that allows the collector to map QoS class IDs to class names in the flow records.

option exporter-stats

The **option exporter-stats** command enables the periodic sending of exporter statistics, including the number of records, bytes, and packets sent. This command allows the collector to estimate packet loss for the export records it receives.

option interface-table

The **option interface-table** enables the periodic sending of an options table that allows the collector to map the interface Simple Network Management Protocol (SNMP) indexes provided in flow records to interface names.

option policy-qos-table

The **option policy-qos-table** command enables the periodic sending of an options table that allows the collector to map QoS policy IDs to policy names in the flow records.

option sampler-table

The **option sampler-table** command enables the periodic sending of an options table that provides complete information about 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.

option sub-application-table

The **option sub-application-table** command enables the periodic sending of an options table that allows the collector to map NBAR subapplication tags, subapplication names, and subapplication descriptions provided in the flow records to application IDs.

option vrf-table

The **option vrf-table** command enables the periodic sending of an options table that allows the collector to map the VRF IDs provided in the flow records to VRF names.

Examples

The following example shows how to enable the periodic sending of NBAR application attributes to the collector:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option application-attributes
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map QoS class IDs provided in flow records to class names:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option class-qos-table
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map QoS policy IDs provided in flow records to policy names:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option policy-qos-table
```

The following example shows how to enable the periodic sending of exporter statistics, including the number of records, bytes, and packets sent:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option exporter-stats
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map the interface SNMP indexes provided in flow records to interface names:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option interface-table
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map NBAR application IDs provided in flow records to application names:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option application-table
```

The following example shows how to enable the periodic sending of an options table that details the configuration of each sampler and allows the collector to map the sampler ID provided in any flow record to a configuration that the collector can use to scale up the flow statistics:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option sampler-table
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map the NBAR subapplication tags, subapplication names, and subapplication descriptions provided in flow records to application IDs:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option sub-application-table
```

The following example shows how to enable the periodic sending of an options table that allows the collector to map the VRF IDs provided in flow records to VRF names:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option vrf-table
```

Related Commands

Command	Description
flow exporter	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
flow exporter	Creates a flow exporter.

record

To configure a flow record for a Flexible NetFlow flow monitor, use the **record** command in Flexible NetFlow flow monitor configuration mode. To remove a flow record for a Flexible NetFlow flow monitor, use the **no** form of this command.

record {*record-name*| **netflow-original**| **netflow** {**ipv4**| **ipv6**} *record* **[peer]**}

no record

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record {*record-name*| **platform-original** {**ipv4**| **ipv6**} *record*}

no record

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record *record-name*

no record

Syntax Description

record-name	Name of a user-defined flow record that was previously configured.
netflow-original	Configures the flow monitor to use the Flexible NetFlow implementation of original NetFlow with origin autonomous systems.
netflow ipv4	Configures the flow monitor to use one of the predefined IPv4 records.
netflow ipv6	Configures the flow monitor to use one of the predefined IPv6 records. This keyword is not supported on the Cisco ASR 1000 Series Aggregation Services router.
record	Name of the predefined record. See the table below for a listing of the available records and their definitions.
peer	(Optional) Configures the flow monitor to use one of the predefined records with peer autonomous systems. The **peer** keyword is not supported for every type of Flexible NetFlow predefined record. See the table below.
platform-original ipv4	Configures the flow monitor to use one of the predefined IPv4 records.

platform-original ipv4	Configures the flow monitor to use one of the predefined IPv6 records.

Command Default

A flow record is not configured.

Command Modes

Flexible NetFlow flow monitor configuration (config-flow-monitor)

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.
12.4(20)T	This command was modified. The **ipv6** keyword was added.
12.2(33)SRE	This command was modified. Support for this command was implemented on the Cisco 7300 Network Processing Engine (NPE) series routers.
Cisco IOS XE 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
12.2(50)SY	This command was modified. The **netflow-original** , **netflow ipv4** , and **netflow ipv6** keywords were removed. The **platform-originalipv4**a nd **platform-originalipv4** keywords were added.
Cisco IOS XE Release 3.2SE	This command was modified. The **netflow-original** , **netflow ipv4** , and **netflow ipv6** keywords were removed.

Usage Guidelines

Each flow monitor requires a record to define the contents and layout of its cache entries. The flow monitor can use one of the wide range of predefined record formats, or advanced users may create their own record formats.

Note You must use the **no ip flowmonitor command** to remove a flow monitor from all of the interfaces to which you have applied it before you can modify the parameters for the **record** command for the flow monitor.

The table below describes the keywords and descriptions for the *record* argument.

Table 1: Keywords and Descriptions for the record Argument

Keyword	Description	IPv4 Support	IPv6 Support
as	Autonomous system record.	Yes	Yes
as-tos	Autonomous system and ToS record.	Yes	—
bgp-nexthop-tos	BGP next-hop and ToS record.	Yes	—
bgp-nexthop	BGP next-hop record.	—	Yes
destination	Original 12.2(50)SY platform IPv4/IPv6 destination record.	Yes	Yes
destination-prefix	Destination Prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
destination-prefix-tos	Destination prefix and ToS record.	Yes	—
destination-source	Original 12.2(50)SY platform IPv4/IPv6 destination-source record.	Yes	Yes
full	Original 12.2(50)SY platform IPv4/IPv6 full record.	Yes	Yes
interface-destination	Original 12.2(50)SY platform IPv4/IPv6 interface-destination record.	Yes	Yes
interface-destination-source	Original 12.2(50)SY platform IPv4/IPv6 interface-destination-source record.	Yes	Yes
interface-full	Original 12.2(50)SY platform IPv4/IPv6 interface-full record.	Yes	Yes

Keyword	Description	IPv4 Support	IPv6 Support
interface-source	Original 12.2(50)SY platform IPv4/IPv6 interface-source only record.	Yes	Yes
original-input	Traditional IPv4 input NetFlow.	Yes	Yes
original-output	Traditional IPv4 output NetFlow.	Yes	Yes
prefix	Source and destination prefixes record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
prefix-port	Prefix port record. **Note** The **peer** keyword is not available for this record.	Yes	--
prefix-tos	Prefix ToS record.	Yes	--
protocol-port	Protocol ports record. **Note** The **peer** keyword is not available for this record.	Yes	Yes
protocol-port-tos	Protocol port and ToS record. **Note** The **peer** keyword is not available for this record.	Yes	—
source-prefix	Source autonomous system and prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
source-prefix-tos	Source Prefix and ToS record.	Yes	—

Examples

The following example configures the flow monitor to use the NetFlow original record:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# record netflow-original
```

The following example configures the flow monitor to use a user-defined record named collect-ipv4-data:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# record collect-ipv4-data
```

The following example configures the flow monitor to use the Flexible NetFlow IPv4 destination prefix record:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# record netflow ipv4 destination-prefix
```

The following example configures the flow monitor to use a the Flexible NetFlow IPv6 destination prefix record:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# record netflow ipv6 destination-prefix
```

Related Commands

Command	Description
flow monitor	Creates a flow monitor.

sampler

To create a Flexible NetFlow flow sampler, or to modify an existing Flexible NetFlow flow sampler, and to enter Flexible NetFlow sampler configuration mode, use the **sampler** command in global configuration mode. To remove a sampler, use the **no** form of this command.

sampler *sampler-name*

no sampler *sampler-name*

Syntax Description

sampler-name	Name of the flow sampler that is being created or modified.

Command Default

Flexible NetFlow flow samplers are not configured.

Command Modes

Global configuration (config)

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.
15.1(2)S	This command was modified. A hash collision between the name supplied and any existing name is now possible. If this happens, you can retry, supplying another name.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

Flow samplers are used to reduce the load placed by Flexible NetFlow on the networking device to monitor traffic by limiting the number of packets that are analyzed. You configure a rate of sampling that is 1 out of

a range of 2 to 32,768 packets. For example, a rate of 1 out of 2 results in analysis of 50 percent of the packets sampled. Flow samplers are applied to interfaces in conjunction with a flow monitor to implement sampled Flexible NetFlow.

To enable flow sampling, you configure the record that you want to use for traffic analysis and assign it to a flow monitor. When you apply a flow monitor with a sampler to an interface, the sampled packets are analyzed at the rate specified by the sampler and compared with the flow record associated with the flow monitor. If the analyzed packets meet the criteria specified by the flow record, they are added to the flow monitor cache.

In Cisco IOS Release 15.1(2)S and later releases, a hash collision between the name supplied and any existing name is possible. If this happens, you can retry, supplying another name.

Examples

The following example creates a flow sampler name SAMPLER-1:

```
Router(config)# sampler SAMPLER-1
Router(config-sampler)#
```

The following example shows the output when there is a hash collision between the name supplied and any existing name:

```
Router(config-sampler)# sampler SAMPLER-1
% sampler: Failed to create a new Sampler (Hash value in use).
Router(config)#
```

Related Commands

Command	Description
clear sampler	Clears the flow sampler statistics.
debug sampler	Enables debugging output for flow samplers.
mode	Configures a packet interval for a flow sampler.
show sampler	Displays flow sampler status and statistics.

show flow exporter

To display Flexible NetFlow flow exporter status and statistics, use the **show flow exporter** command in privileged EXEC mode.

show flow exporter [**export-ids** {**netflow-v5**| **netflow-v9**}| **[name]** *exporter-name* [**statistics**| **templates**] [**option application** {**engines**| **table**}]]

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show flow exporter [**export-ids netflow-v9**| **[name]** *exporter-name* [**statistics**| **templates**]]

Syntax Description

export-ids netflow-v5	(Optional) Displays the NetFlow Version 5 export fields that can be exported and their IDs.
export-ids netflow-v9	(Optional) Displays the NetFlow Version 9 export fields that can be exported and their IDs.
name	(Optional) Specifies the name of a flow exporter.
exporter-name	(Optional) Name of a flow exporter that was previously configured.
statistics	(Optional) Displays flow exporter statistics.
templates	(Optional) Displays flow exporter template information.
option application engines	(Optional) Displays the application engines option for flow exporters.
option application table	(Optional) Displays the application table option for flow exporters.

Command Modes

Privileged EXEC (#)

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.

Release	Modification
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.
Cisco IOS XE 3.1S	This command was modified. The **option** and **application** keywords were added.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
15.2.(2)T	This command was modified. The ability to display IPv6 addresses was added.
Cisco IOS XE 3.5S	This command was modified. The ability to display IPv6 addresses was added.
Cisco IOS XE Release 3.2SE	This command was modified. The **export-ids netflow-v5** , **option application engines** , and **option application table** keywords were removed.

Examples

The following example displays the status and statistics for all of the flow exporters configured on a router:

```
Router# show flow exporter

Flow Exporter FLOW-MONITOR-1:
  Description:              Exports to the datacenter
  Export protocol:          NetFlow Version 9
  Transport Configuration:
    Destination IP address: 172.16.10.2
    Source IP address:      172.16.6.2
    Source Interface:       Ethernet0/0
    Transport Protocol:     UDP
    Destination Port:       650
    Source Port:            55864
    DSCP:                   0x3F
    TTL:                    15
    Output Features:        Used

Flow Exporter FLOW-MONITOR-2:
  Description:              Exports to the datacenter
  Export protocol:          NetFlow Version 9
  Transport Configuration:
    Destination IP address: 2222::2/64
    Source IP address:      1111::1/64
    Transport Protocol:     UDP
    Destination Port:       4739
    Source Port:            49936
    DSCP:                   0x0
    TTL:                    255
    Output Features:        Not Used

Options Configuration:
    exporter-stats (timeout 120 seconds)
    interface-table (timeout 120 seconds)
sampler-table (timeout 120 seconds)
```

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

Table 2: show flow exporter Field Descriptions

Field	Description
Flow Exporter	The name of the flow exporter that you configured.
Description	The description that you configured for the exporter, or the default description “User defined”.
Transport Configuration	The transport configuration fields for this exporter.
Destination IP address	The IP address of the destination host.
Source IP address	The source IP address used by the exported packets.
Transport Protocol	The transport layer protocol used by the exported packets.
Destination Port	The destination UDP port to which the exported packets are sent.
Source Port	The source UDP port from which the exported packets are sent.
DSCP	The differentiated services code point (DSCP) value.
TTL	The time-to-live value.

The following example displays the NetFlow Version 9 export IDs for all of the flow exporters configured on a router. This output will vary according to the flow record configured:

```
Router# show flow exporter export-ids netflow-v9

Export IDs used by fields in NetFlow-common export format:
  ip version                                :    60
  ip tos                                    :   194
  ip dscp                                   :   195
  ip precedence                             :   196
  ip protocol                               :     4
  ip ttl                                    :   192
  ip ttl minimum                            :    52
  ip ttl maximum                            :    53
  ip length header                          :   189
  ip length payload                         :   204
  ip section header                         :   313
  ip section payload                        :   314
  routing source as                         :    16
  routing destination as                    :    17
  routing source as peer                    :   129
  routing destination as peer               :   128
  routing source traffic-index              :    92
  routing destination traffic-index         :    93
  routing forwarding-status                 :    89
  routing is-multicast                      :   206
  routing next-hop address ipv4             :    15
```

```
  routing next-hop address ipv4 bgp          :    18
  routing next-hop address ipv6 bgp          :    63
  ipv4 header-length                         :   207
  ipv4 tos                                   :     5
  ipv4 total-length                          :   190
  ipv4 total-length minimum                  :    25
  ipv4 total-length maximum                  :    26
  ipv4 id                                    :    54
  ipv4 fragmentation flags                   :   197
  ipv4 fragmentation offset                  :    88
  ipv4 source address                        :     8
  ipv4 source prefix                         :    44
  ipv4 source mask                           :     9
  ipv4 destination address                   :    12
  ipv4 destination prefix                    :    45
  ipv4 destination mask                      :    13
  ipv4 options                               :   208
  transport source-port                      :     7
  transport destination-port                 :    11
  transport icmp-ipv4 type                   :   176
  transport icmp-ipv4 code                   :   177
  transport igmp type                        :    33
  transport tcp source-port                  :   182
  transport tcp destination-port             :   183
  transport tcp sequence-number              :   184
  transport tcp acknowledgement-number       :   185
  transport tcp header-length                :   188
  transport tcp window-size                  :   186
  transport tcp urgent-pointer               :   187
  transport tcp flags                        :     6
  transport udp source-port                  :   180
  transport udp destination-port             :   181
  transport udp message-length               :   205
  interface input snmp                       :    10
  interface output snmp                      :    14
  interface name                             :    82
  interface description                      :    83
  flow direction                             :    61
  flow exporter                              :   144
  flow sampler                               :    48
  flow sampler algorithm export              :    49
  flow sampler interval                      :    50
  flow sampler name                          :    84
  flow class                                 :    51
  v9-scope system                            :     1
  v9-scope interface                         :     2
  v9-scope linecard                          :     3
  v9-scope cache                             :     4
  v9-scope template                          :     5
  counter flows                              :     3
  counter bytes                              :     1
  counter bytes long                         :     1
  counter packets                            :     2
  counter packets long                       :     2
  counter bytes squared long                 :   198
  counter bytes permanent                    :    85
  counter packets permanent                  :    86
  counter bytes squared permanent            :   199
  counter bytes exported                     :    40
  counter packets exported                   :    41
  counter flows exported                     :    42
  timestamp sys-uptime first                 :    22
  timestamp sys-uptime last                  :    21
```

The following example displays the status and statistics for all of the flow exporters configured on a router:

```
Router# show flow exporter name FLOW-MONITOR-1 statistics

Flow Exporter FLOW-MONITOR-1:
  Packet send statistics:
    Ok 0
    No FIB 0
    Adjacency failure 0
```

```
    Enqueued to process level 488
    Enqueueing failed 0
    IPC failed 0
    Output failed 0
    Fragmentation failed 0
    Encap fixup failed 0
    No destination address 0
  Client send statistics:
    Client: Flow Monitor FLOW-MONITOR-1
      Records added 558
      Packets sent 486 (51261 bytes)
      Packets dropped 0 (0 bytes)
      No Packet available errors 0
```

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

Table 3: show flow exporter name exporter-name statistics Field Descriptions

Field	Description
Flow Exporter	The name of the flow exporter that you configured.
Packet send statistics	The packet transmission statistics for this exporter.
Ok	The number of packets that have been sent successfully.
No FIB	No entry in the Forwarding Information Base (FIB) to forward to.
Adjacency failure	No Cisco Express Forwarding (CEF) adjacency available for forwarding.
Enqueued to process level	Packets that were sent to the processor for forwarding.
Enqueueing failed	Packets that could not be queued for transmission.
IPC failed	Packets for which interprocess communication (IPC) failed.
Output failed	Packets that were dropped because the output queue was full.
Fragmentation failed	Packets that were not able to be fragmented.
Encap fixup failed	Packets that were not able to be encapsulated for transmission on the egress interface.
No destination address	No destination address configured for the exporter.
Client send statistics	Statistics for the flow monitors that are using the exporters.
Client	The name of the flow monitor that is using the exporter.

Field	Description
Records added	The number of flow records that have been added for this flow monitor.
Packets sent	The number of packets that have been exported for this flow monitor.
Packets dropped	The number of packets that were dropped for this flow monitor.
No Packet available error	The number of times that no packets were available to transmit the records.

The following example displays the template format for the exporters configured on the router. This output will vary according to the flow record configured:

```
Router# show flow exporter FLOW_EXPORTER-1 templates

Flow Exporter FLOW-MONITOR-1:
  Client: Flow Monitor FLOW-MONITOR-1
  Exporter Format: NetFlow Version 9
  Template ID    : 256
  Record Size    : 53
  Template layout
  ____________________________________________________________________
  |                Field                  |  Type1 | Offset2 |  Size3 |
  --------------------------------------------------------------------
  | ipv4 source address                   |      8 |       0 |      4 |
  | ipv4 destination address              |     12 |       4 |      4 |
  | interface input snmp                  |     10 |       8 |      4 |
  | flow sampler                          |     48 |      12 |      4 |
  | transport source-port                 |      7 |      16 |      2 |
  | transport destination-port            |     11 |      18 |      2 |
  | ip tos                                |    194 |      20 |      1 |
  | ip protocol                           |      4 |      21 |      1 |
  | ipv4 source mask                      |      9 |      22 |      1 |
  | ipv4 destination mask                 |     13 |      23 |      1 |
  | transport tcp flags                   |      6 |      24 |      1 |
  | routing source as                     |     16 |      25 |      2 |
  | routing destination as                |     17 |      27 |      2 |
  | routing next-hop address ipv4         |     15 |      29 |      4 |
  | interface output snmp                 |     14 |      33 |      4 |
  | counter bytes                         |      1 |      37 |      4 |
  | counter packets                       |      2 |      41 |      4 |
  | timestamp sys-uptime first            |     22 |      45 |      4 |
  | timestamp sys-uptime last             |     21 |      49 |      4 |
  --------------------------------------------------------------------
```

Related Commands

Command	Description
clear flow exporter	Clears the statistics for exporters.
debug flow exporter	Enables debugging output for flow exporters.
flow exporter	Creates a flow exporter.

show flow interface

To display the Flexible NetFlow configuration and status for an interface, use the **show flow interface** command in privileged EXEC mode.

show flow interface [*type number*]

Syntax Description

type	(Optional) The type of interface on which you want to display Flexible NetFlow accounting configuration information.
number	(Optional) The number of the interface on which you want to display Flexible NetFlow accounting configuration information.

Command Modes

Privileged EXEC (#)

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 integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Examples

The following example displays the Flexible NetFlow accounting configuration on Ethernet interfaces 0/0 and 0/1:

```
Router# show flow interface ethernet 1/0

Interface Ethernet1/0
  FNF:  monitor:         FLOW-MONITOR-1
        direction:       Output
```

```
        traffic(ip):     on
Router# show flow interface ethernet 0/0
Interface Ethernet0/0
  FNF:  monitor:         FLOW-MONITOR-1
        direction:       Input
        traffic(ip):     sampler SAMPLER-2#
```

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

Table 4: show flow interface Field Descriptions

Field	Description
Interface	The interface to which the information applies.
monitor	The name of the flow monitor that is configured on the interface.
direction:	The direction of traffic that is being monitored by the flow monitor. The possible values are: • Input—Traffic is being received by the interface. • Output—Traffic is being transmitted by the interface.
traffic(ip)	Indicates if the flow monitor is in normal mode or sampler mode. The possible values are: • on—The flow monitor is in normal mode. • sampler—The flow monitor is in sampler mode (the name of the sampler will be included in the display).

Related Commands

Command	Description
show flow monitor	Displays flow monitor status and statistics.

show flow monitor

To display the status and statistics for a Flexible NetFlow flow monitor, use the **show flow monitor** command in privileged EXEC mode.

show flow monitor [**[name]** *monitor-name* [**cache** [**format** {**csv**| **record**| **table**}]] **[statistics]**]

Syntax Description

name	(Optional) Specifies the name of a flow monitor.
monitor-name	(Optional) Name of a flow monitor that was previously configured.
cache	(Optional) Displays the contents of the cache for the flow monitor.
format	(Optional) Specifies the use of one of the format options for formatting the display output.
csv	(Optional) Displays the flow monitor cache contents in comma separated variables (CSV) format.
record	(Optional) Displays the flow monitor cache contents in record format.
table	(Optional) Displays the flow monitor cache contents in table format.
statistics	(Optional) Displays the statistics for the flow monitor.

Command Modes

Privileged EXEC (#)

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
12.4(20)T	This command was modified. Support for displaying IPv6 data in Flexible NetFlow flow monitor caches was added.
15.0(1)M	This command was modified. Support for displaying virtual routing and forwarding (VRF) and Network Based Application Recognition (NBAR) data in Flexible NetFlow flow monitor caches was added.
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 **cache** keyword uses the table format by default.

The uppercase field names in the display output of the **show flowmonitor** *monitor-name* **cache** command are key fields that Flexible NetFlow uses to differentiate flows. The lowercase field names in the display output of the **show flow monitor** *monitor-name* **cache** command are nonkey fields from which Flexible NetFlow collects values as additional data for the cache.

Examples

The following example displays the status for a flow monitor:

```
Router# show flow monitor FLOW-MONITOR-1

Flow Monitor FLOW-MONITOR-1:
  Description:       Used for basic traffic analysis
  Flow Record:       netflow-original
  Flow Exporter:     EXP-DC-TOPEKA
                     EXP-DC-PHOENIX
  Cache:
    Type:              normal
    Status:            allocated
    Size:              4096 entries / 311316 bytes
    Inactive Timeout:  15 secs
    Active Timeout:    1800 secs
    Update Timeout:    1800 secs
```

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

Table 5: show flow monitor monitor-name Field Descriptions

Field	Description
Flow Monitor	Name of the flow monitor that you configured.
Description	Description that you configured or the monitor, or the default description “User defined”.
Flow Record	Flow record assigned to the flow monitor.
Flow Exporter	Exporters that are assigned to the flow monitor.

Field	Description
Cache	Information about the cache for the flow monitor.
Type	Flow monitor cache type. The possible values are: • immediate—Flows are expired immediately. • normal—Flows are expired normally. • Permanent—Flows are never expired.
Status	Status of the flow monitor cache. The possible values are: • allocated—The cache is allocated. • being deleted—The cache is being deleted. • not allocated—The cache is not allocated.
Size	Current cache size.
Inactive Timeout	Current value for the inactive timeout in seconds.
Active Timeout	Current value for the active timeout in seconds.
Update Timeout	Current value for the update timeout in seconds.

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-1:

```
Router# show flow monitor FLOW-MONITOR-1 cache

  Cache type:                               Normal
  Cache size:                                 4096
  Current entries:                               8
  High Watermark:                               10
  Flows added:                                1560
  Flows aged:                                 1552
    - Active timeout    (  1800 secs)           24
    - Inactive timeout (    15 secs)         1528
    - Event aged                                 0
    - Watermark aged                             0
    - Emergency aged                             0
IP TOS:                      0x00
IP PROTOCOL:                 6
IPV4 SOURCE ADDRESS:         10.10.10.2
IPV4 DESTINATION ADDRESS:    172.16.10.2
TRNS SOURCE PORT:            20
TRNS DESTINATION PORT:       20
INTERFACE INPUT:             Et0/0
FLOW SAMPLER ID:             0
ip source as:                0
ip destination as:           0
ipv4 next hop address:       172.16.7.2
ipv4 source mask:            /0
ipv4 destination mask:       /24
```

```
tcp flags:                0x00
interface output:         Et1/0
counter bytes:            198520
counter packets:          4963
timestamp first:          10564356
timestamp last:           12154104
```

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

Table 6: show flow monitor monitor-name cache Field Descriptions

Field	Description
Cache type	Flow monitor cache type. The possible values are: • Immediate—Flows are expired immediately. • Normal—Flows are expired normally. • Permanent—Flows are never expired.
Cache Size	Number of entries in the cache.
Current entries	Number of entries in the cache that are in use.
High Watermark	Highest number of cache entries seen.
Flows added	Flows added to the cache since the cache was created.
Flows aged	Flows expired from the cache since the cache was created.
Active timeout	Current value for the active timeout in seconds.
Inactive timeout	Current value for the inactive timeout in seconds.
Event aged	Number of flows that have been aged by an event such as using the **force-export** option for the **clear flow monitor** command.
Watermark aged	Number of flows that have been aged because they exceeded the maximum high watermark value.
Emergency aged	Number of flows that have been aged because the cache size was exceeded.
IP TOS	IP type of service (ToS) value.
IP PROTOCOL	Protocol number.
IPV4 SOURCE ADDRESS	IPv4 source address.
IPV4 DESTINATION ADDRESS	IPv4 destination address.

Field	Description
TRNS SOURCE PORT	Source port for the transport protocol.
TRNS DESTINATION PORT	Destination port for the transport protocol.
INTERFACE INPUT	Interface on which the input is received.
FLOW SAMPLER ID	Flow sampler ID number.
ip source as	Border Gateway Protocol (BGP) source autonomous system number.
ip destination as	BGP destination autonomous system number.
ipv4 next hop address	IPv4 address of the next hop to which the packet is forwarded.
ipv4 source mask	IPv4 source address mask.
ipv4 destination mask	IPv4 destination address mask.
tcp flags	Value of the TCP flags.
interface output	Interface on which the input is transmitted.
counter bytes	Number of bytes that have been counted.
counter packets	Number of packets that have been counted.
timestamp first	Time stamp of the first packet in the flow.
timestamp last	Time stamp of the last packet in the flow.

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-1 in a table format:

```
Router# show flow monitor FLOW-MONITOR-1 cache format table

  Cache type:                               Normal
  Cache size:                                 4096
  Current entries:                               4
  High Watermark:                                6
  Flows added:                                  90
  Flows aged:                                   86
    - Active timeout   (  1800 secs)             0
    - Inactive timeout (    15 secs)            86
    - Event aged                                 0
    - Watermark aged                             0
    - Emergency aged                             0
IP TOS  IP PROT  IPV4 SRC ADDR    IPV4 DST ADDR    TRNS SRC PORT  TRNS DST PORT
======  =======  ===============  ===============  =============  ==============
0x00          1  10.251.10.1      172.16.10.2                 0              02
0x00          1  10.251.10.1      172.16.10.2                 0           20484
0xC0         17  172.16.6.1       224.0.0.9                 520            5202
```

```
0x00          6  10.10.11.1       172.16.10.5                25             252
Router#
```

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-IPv6 (the cache contains IPv6 data) in record format:

```
Router# show flow monitor name FLOW-MONITOR-IPv6 cache format record

  Cache type:                               Normal
  Cache size:                                 4096
  Current entries:                               6
  High Watermark:                                8
  Flows added:                                1048
  Flows aged:                                 1042
    - Active timeout   (  1800 secs)            11
    - Inactive timeout (    15 secs)          1031
    - Event aged                                 0
    - Watermark aged                             0
    - Emergency aged                             0
IPV6 FLOW LABEL:            0
IPV6 EXTENSION MAP:         0x00000040
IPV6 SOURCE ADDRESS:        2001:DB8:1:ABCD::1
IPV6 DESTINATION ADDRESS:   2001:DB8:4:ABCD::2
TRNS SOURCE PORT:           3000
TRNS DESTINATION PORT:      55
INTERFACE INPUT:            Et0/0
FLOW DIRECTION:             Input
FLOW SAMPLER ID:            0
IP PROTOCOL:                17
IP TOS:                     0x00
ip source as:               0
ip destination as:          0
ipv6 next hop address:      ::
ipv6 source mask:           /48
ipv6 destination mask:      /0
tcp flags:                  0x00
interface output:           Null
counter bytes:              521192
counter packets:            9307
timestamp first:            9899684
timestamp last:             11660744
```

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

Table 7: show flow monitor monitor-name cache format record Field Descriptions

Field	Description
Cache type	Flow monitor cache type. The possible values are: • Immediate—Flows are expired immediately. • Normal—Flows are expired normally. • Permanent—Flows are never expired.
Cache Size	Number of entries in the cache.
Current entries	Number of entries in the cache that are in use.
High Watermark	Highest number of cache entries seen.
Flows added	Flows added to the cache since the cache was created.

Field	Description
Flows aged	Flows expired from the cache since the cache was created.
Active timeout	Current value for the active timeout in seconds.
Inactive timeout	Current value for the inactive timeout in seconds.
Event aged	Number of flows that have been aged by an event such as using the **force-export** option for the **clear flow monitor** command.
Watermark aged	Number of flows that have been aged because they exceeded the maximum high watermark value.
Emergency aged	Number of flows that have been aged because the cache size was exceeded.
IPV6 FLOW LABEL	Label number for the flow.
IPV6 EXTENSION MAP	Pointer to the IPv6 extensions.
IPV6 SOURCE ADDRESS	IPv6 source address.
IPV6 DESTINATION ADDRESS	IPv6 destination address.
TRNS SOURCE PORT	source port for the transport protocol.
TRNS DESTINATION PORT	Destination port for the transport protocol.
INTERFACE INPUT	Interface on which the input is received.
FLOW DIRECTION	Input or output.
FLOW SAMPLER ID	Flow sampler ID number.
IP PROTOCOL	IP protocol number.
IP TOS	IP ToS number.
ip source as	BGP source autonomous system number.
ip destination as	BGP destination autonomous system number.
ipv6 next hop address	IPv4 address of the next hop to which the packet is forwarded.
ipv6 source mask	IPv6 source address mask.
ipv6 destination mask	IPv6 destination address mask.

Field	Description
tcp flags	Value of the TCP flags.
interface output	Interface on which the input is transmitted.
counter bytes	Number of bytes that have been counted.
counter packets	Number of packets that have been counted.
timestamp first	Time stamp of the first packet in the flow.
timestamp last	Time stamp of the last packet in the flow.

The following example displays the status and statistics for a flow monitor:

```
Router# show flow monitor FLOW-MONITOR-1 statistics

  Cache type:                               Normal
  Cache size:                                 4096
  Current entries:                               4
  High Watermark:                                6
  Flows added:                                 116
  Flows aged:                                  112
    - Active timeout   (  1800 secs)             0
    - Inactive timeout (    15 secs)           112
    - Event aged                                 0
    - Watermark aged                             0
    - Emergency aged                             0
```

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

Table 8: show flow monitor monitor-name statistics Field Descriptions

Field	Description
Cache Type	Flow monitor cache type. The possible values are: • Immediate—Flows are expired immediately. • Normal—Flows are expired normally. • Permanent—Flows are never expired.
Cache Size	Size of the cache.
Current entries	Number of entries in the cache that are in use.
High Watermark	Highest number of cache entries seen.
Flows added	Flows added to the cache since the cache was created.
Flows aged	Flows expired from the cache since the cache was created.

Field	Description
Active Timeout	Current value for the active timeout in seconds.
Inactive Timeout	Current value for the inactive timeout in seconds.
Event aged	Number of flows that have been aged by an event such as using the **force-export** option for the **clear flow monitor** command.
Watermark aged	Number of flows that have been aged because they exceeded the maximum high watermark value.
Emergency aged	Number of flows that have been aged because the cache size was exceeded.

Related Commands

Command	Description
clear flow monitor	Clears the flow monitor.
debug flow monitor	Enables debugging output for flow monitors.

show flow monitor cache aggregate

To display aggregated flow statistics from a flow monitor cache, use the **show flow monitor cache aggregate** command in privileged EXEC mode.

show flow monitor [name] *monitor-name* **cache aggregate** {*options* [*... options*] [**collect** *options* [*... options*]]| **record** *record-name*} [**format** {**csv**| **record**| **table**}]

Syntax Description

name	(Optional) Specifies the name of a flow monitor.
monitor-name	Name of a flow monitor that was previously configured.
options	Fields upon which aggregation is performed; and from which additional data from the cache is displayed when the **collect** keyword is used. You can specify multiple values for the *options* argument. See the "Usage Guidelines" section.
collect	(Optional) Displays additional data from the cache. See the "Usage Guidelines" section.
record *record-name*	Specifies the name of a user-defined flow record or a predefined flow record. See the first table below for a listing of the available predefined records and their definitions.
format	(Optional) Specifies the use of one of the format options for formatting the display output.
csv	Displays the flow monitor cache contents in comma-separated variables (CSV) format.
record	Displays the flow monitor cache contents in record format.
table	Displays the flow monitor cache contents in table format.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced.

Release	Modification
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 integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

Flexible NetFlow—Top N Talkers Support

The **show flow monitor cacheaggregate** command is one of a set of three commands that make up the Flexible NetFlow—Top N Ta lkers Support feature. The Flexible NetFlow—Top N Talkers Support feature is used to manipulate the display output from the Flexible NetFlow cache to facilitate the analysis of network traffic.

The other two commands that make up the Flexible NetFlow—Top N Talkers Support feature are **show flow monitor cache filter** and **show flow monitor cache sort**. The three commands can be used together or on their own, depending on your requirements. For more detailed information about these commands, see the **show flow monitor cache filter** command and the **show flow monitor cache sort** command. For information about how the three commands are used together, refer to the "Configuring Cisco IOS Flexible NetFlow—Top N Talkers Support" module in the *Configuring Cisco IOS Flexible NetFlow Configuration Guide.*

Flow Aggregation

Flow aggregation using the **showflow monitor cache aggregate** command allows you to dynamically display the flow information in a cache using a different flow record than the cache was originally created from. Only the fields in the cache will be available for the aggregated flows.

Note The key and nonkey fields in the flows are defined in the flow record that you assigned to the flow monitor from which the cache data is being aggregated.

Aggregation helps you achieve a higher-level view of the traffic in your network by combining flow data from multiple flows based on the criteria that interest you, for example, displaying flow data for:

- All the HTTP traffic in your network.
- All the traffic being forwarded to a specific Border Gateway Protocol (BGP) next hop.
- Identifying a device that is sending several types of traffic to one or more hosts in your network, perhaps as part of a denial of service (DoS) attack.

Aggregation options Argument

The options that you can use for the *options* argument of the **show flow monitor cache aggregate** command are dependent on the fields that are used for the user-defined flow record that you configured for the flow monitor using the **record** command. To identify the options that you can use, use the **show flow record***record-name* command in privileged EXEC mode, where *record-name* is the name of the record that you configured for the flow monitor.

For example, if you assigned the "NetFlow Original" predefined record to a flow monitor, you use the **show flow record netflow-original** command to display its key (match) and nonkey (collect) fields. The following is partial output from the **show flow record netflow-original** command:

```
flow record netflow-original:
  Description:        Traditional IPv4 input NetFlow with origin ASs
  No. of users:       2
  Total field space:  53 bytes
  Fields:
    match ipv4 tos
    match ipv4 protocol
    match ipv4 source address
    match ipv4 destination address
.
.
.
    collect counter packets
    collect timestamp sys-uptime first
    collect timestamp sys-uptime last
```

The fields from this partial output that you can use for the *option* argument follow the **match** (key fields) and **collect** (nonkey fields) words. For example, you can use the "ipv4 tos" field to aggregate the flows as shown in the first example in the "Examples section.

Cache Data Fields Displayed

By default the data fields from the cache that are shown in the display output of the **show flow monitor cache aggregate** command are limited to the field used for aggregation and the counter fields such as flows, number of bytes, and the number of packets. The following is partial output from the **show flow monitor FLOW-MONITOR-3 cache aggregate ipv4 destination address** command:

```
IPV4 DST ADDR         flows       bytes        pkts
===============  ==========  ==========  ==========
224.192.16.1              2       97340        4867
224.192.18.1              3       96080        4804
224.192.16.4              4       79760        3988
224.192.45.12             3       77480        3874
255.255.255.255           1          52           1
```

Notice that the data contains only the IPv4 destination addresses for which flows have been aggregated and the counter values.

The flow monitor (FLOW-MONITOR-3) referenced by the **show flow monitor FLOW-MONITOR-3 cache aggregate ipv4 destination address** command uses the "NetFlow Original" predefined record, which contains the following key and nonkey fields:

- match ipv4 tos
- match ipv4 protocol
- match ipv4 source address
- match ipv4 destination address
- match transport source-port
- match transport destination-port
- match interface input
- match flow sampler
- collect routing source as
- collect routing destination as

- collect routing next-hop address ipv4
- collect ipv4 source mask
- collect ipv4 destination mask
- collect transport tcp flags
- collect interface output
- collect counter bytes
- collect counter packets
- collect timestamp sys-uptime first
- collect timestamp sys-uptime last

The **collect** keyword is used to include additional cache data in the display output of the **show flow monitor cache aggregate** command. The following partial output from the**show flow monitor FLOW-MONITOR-3 cache aggregate ipv4 destination address collect transport tcp flags** command shows the transport TCP flags data from the cache:

```
IPV4 DST ADDR    tcp flags       flows       bytes        pkts
===============  =========  ==========  ==========  ==========
224.192.16.1     0x00                4      165280        8264
224.192.18.1     0x00                4      158660        7933
224.192.16.4     0x00                3      146740        7337
224.192.45.12    0x00                4      145620        7281
255.255.255.255  0x00                1          52           1
224.0.0.13       0x00                1          54           1
```

You can add cache data fields after the **collect** keyword to show additional data from the cache in the display output of the **show flow monitor cache aggregate** command.

Keywords and Descriptions for the *record* Argument

The table below describes the keywords for the *record* argument.

Table 9: Keywords and Descriptions for the Aggregate record Argument

Keyword	Description	IPv4 Support	IPv6 Support
as	Autonomous system record.	Yes	Yes
as-tos	Autonomous system and ToS record.	Yes	No
bgp-nexthop-tos	BGP next-hop and ToS record.	Yes	No
bgp-nexthop	BGP next-hop record.	No	Yes
destination-prefix	Destination prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes

Keyword	Description	IPv4 Support	IPv6 Support
destination-prefix-tos	Destination prefix and ToS record.	Yes	No
original-input	Traditional IPv4 input NetFlow.	Yes	Yes
original-output	Traditional IPv4 output NetFlow.	Yes	Yes
prefix	Source and destination prefixes record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
prefix-port	Prefix port record. **Note** The **peer** keyword is not available for this record.	Yes	No
prefix-tos	Prefix ToS record.	Yes	No
protocol-port	Protocol ports record. **Note** The **peer** keyword is not available for this record.	Yes	Yes
protocol-port-tos	Protocol port and ToS record. **Note** The **peer** keyword is not available for this record.	Yes	No
source-prefix	Source autonomous system and prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
source-prefix-tos	Source prefix and ToS record.	Yes	No

Examples

The following example aggregates the flow monitor cache data on the destination and source IPv4 addresses:

```
Router# show flow monitor FLOW-MONITOR-1 cache aggregate ipv4 destination address ipv4
source address

Processed 26 flows
Aggregated to 17 flows
IPV4 SRC ADDR    IPV4 DST ADDR         flows       bytes        pkts
===============  ===============  ==========  ==========  ==========
10.251.10.1      172.16.10.2               2     1400828        1364
192.168.67.6     172.16.10.200             1       19096         682
10.234.53.1      172.16.10.2               3       73656        2046
172.30.231.193   172.16.10.2               3       73616        2045
10.10.10.2       172.16.10.2               2       54560        1364
192.168.87.200   172.16.10.2               2       54560        1364
10.10.10.4       172.16.10.4               1       27280         682
10.10.11.1       172.16.10.5               1       27280         682
10.10.11.2       172.16.10.6               1       27280         682
10.10.11.3       172.16.10.7               1       27280         682
10.10.11.4       172.16.10.8               1       27280         682
10.1.1.1         172.16.10.9               1       27280         682
10.1.1.2         172.16.10.10              1       27280         682
10.1.1.3         172.16.10.11              1       27280         682
172.16.1.84      172.16.10.19              2       54520        1363
172.16.1.85      172.16.10.20              2       54520        1363
172.16.6.1       224.0.0.9                 1          52           1
```

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

Table 10: show flow monitor cache aggregate Field Descriptions

Field	Description
IPV4 SOURCE ADDRESS	IPv4 source address.
IPV4 DESTINATION ADDRESS	IPv4 destination address.
flows	Numbers of flows associated with the source/destination IP address combination
bytes	Number of bytes contained in the flows.
packets	Number of packets contained in the flows.

Related Commands

Command	Description
show flow monitor cache filter	Filters the display output of flow records from a flow monitor cache.
show flow monitor cache sort	Sorts the display output of flow records from a flow monitor cache.

show flow monitor cache filter

To filter the display output of statistics from the flows in a flow monitor cache, use the **show flow monitor cache filter** command in privileged EXEC mode.

show flow monitor [name] *monitor-name* **cache filter** *options* [**regexp** *regexp*] [*... options* [**regexp** *regexp*]] [**format** {**csv**| **record**| **table**}]

Syntax Description

name	(Optional) Specifies the name of a flow monitor.
monitor-name	Name of a flow monitor that was previously configured.
options	Fields upon which filtering is performed. You can specify multiple values for the *options* argument. See the "Usage Guidelines" section.
regexp *regexp*	(Optional) Match the field specified with the *options* argument against a regular expression. See the "Usage Guidelines" section.
format	(Optional) Specifies the use of one of the format options for formatting the display output.
csv	Displays the flow monitor cache contents in comma-separated variables (CSV) format.
record	Displays the flow monitor cache contents in record format.
table	Displays the flow monitor cache contents in table format.

Command Modes

Privileged EXEC (#)

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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Release	Modification
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

Flexible NetFlow—Top N Talkers Support

The **show flow monitor cache filter** command is one of a set of three commands that make up the Flexible NetFlow—Top N Talkers Support feature. The Flexible NetFlow—Top N Talkers Support feature is used to manipulate the display output from the Flexible NetFlow cache to facilitate the analysis of network traffic.

The other two commands that make up the Flexible NetFlow—Top N Talkers Support feature are **show flow monitor cache sort** and **show flow monitor cache aggregate**. The three commands can be used together or on their own, depending on your requirements. For more detailed information about these commands, see the **show flow monitor cache sort** command and the **show flow monitor cache aggregate** command. For information about how the three commands are used together, refer to the "Configuring Cisco IOS Flexible NetFlow—Top N Talkers Support" module in the *Configuring Cisco IOS Flexible NetFlow Configuration Guide*.

Filter options Argument

The options that you can use for the *options* argument of the **show flow monitor cache filter** command are dependent on the fields that are used for the record that you configured for the flow monitor using the **record** command. To identify the options that you can use, use the **show flow record** *record-name* command in privileged EXEC mode, where *record-name* is the name of the record that you configured for the flow monitor.

For example, if you assigned the "NetFlow Original" predefined record to a flow monitor, you use the **show flow record netflow-original** command to display its key (match) and nonkey (collect) fields. The following is partial output from the **show** command:

```
flow record netflow-original:
  Description:        Traditional IPv4 input NetFlow with origin ASs
  No. of users:       2
  Total field space:  53 bytes
  Fields:
    match ipv4 tos
    match ipv4 protocol
    match ipv4 source address
    match ipv4 destination address
.
.
.
    collect counter packets
    collect timestamp sys-uptime first
    collect timestamp sys-uptime last
```

The fields from this partial output that you can use for the *option* argument follow the **match** (key fields) and **collect** (nonkey fields) words. For example, you can use the "ipv4 tos" field to filter the flows as shown in the first example in the "Examples" section.

Filtering Criteria

The following are examples of the types of filtering criteria available for the **show flow monitorcache filter** command:

- Perform an exact match on any numerical fields in either decimal or hexadecimal format. For example, these two commands match flows in the flow monitor cache that contain either "0xA001" or "1":
  - **show flow monitor FLOW-MONITOR-1 cache filter transport source-port 0xA001**

    - **show flow monitor FLOW-MONITOR-1 cache filter transport source-port 1**

- Perform a match on a range for any numerical fields in either decimal or hexadecimal format. For example, these two commands match flows in the flow monitor cache that contain either “0xA000 0xB000” or “1 1024”:
    - **show flow monitor FLOW-MONITOR-1 cache filter transport source-port 0xA000 0xB000**
    - **show flow monitor FLOW-MONITOR-1 cache filter transport source-port 1 1024**
- Perform an exact match for any alphanumerical field. For example, this command matches flows in the flow monitor cache having a MAC address of ABCD:0012:01FE:
    - **show flow monitor FLOW-MONITOR-1 cache filter datalink mac source address ABCD:0012:01FE**
- Perform a regular-expression match on any alphanumerical field. For example, this command matches flows in the flow monitor cache having a MAC address that starts with ABCD:
    - **show flow monitor FLOW-MONITOR-1 cache filter datalink mac source address regexp ABCD:***
- Perform a match on flag fields with an implicit <and>. For example, this command matches flows in the flow monitor cache that contain the **urg** and **syn** TCP flags:
    - **show flow monitor FLOW-MONITOR-1 cache filter transport tcp flags urg syn**
- Perform a match against flags that are not present. For example, this command matches flows in the flow monitor cache that contain the **syn** and **rst** TCP flags and do not contain the **urg** and **fin** TCP flags:
    - **show flow monitor FLOW-MONITOR-1 cache filter transport tcp flags syn rst not urg fin**
- Perform an exact match on an IP address field. For example, this command matches flows in the flow monitor cache that contain the source IPv4 address “192.168.0.1”:
    - **show flow monitor FLOW-MONITOR-1 cache filter ipv4 source address 192.168.0.1**
- Perform a prefix match on an IPv4 or IPv6 address field. For example, these two commands match flows in the flow monitor cache that contain either “192.168.0.0 255.255.0.0” or “7:20ac::/64”:
    - **show flow monitor FLOW-MONITOR-1 cache filter ipv4 source address 192.168.0.0 255.255.0.0**
    - **show flow monitor FLOW-MONITOR-1 cache filter ipv6 source address 7:20ac::/64**
- Perform a match on a range of relative time stamps. For example, this command matches flows in the flow monitor cache that were created within the last “500” seconds:
    - **show flow monitor FLOW-MONITOR-1 cache filter timestamp sys-uptime first 0 500 seconds**
- Perform a match on range of the time stamp that is configured (uptime or absolute). For example, this command matches flows in the flow monitor cache that were created between 0800 and 0815, within the last 24 hours:

- **show flow monitor FLOW-MONITOR-1 cache filter timestamp sys-uptime last 08:00:00 08:15:00 t**

- Perform an exact match on an interface. For example, this command matches flows in the flow monitor cache which are received on Ethernet interface 0/0.
  - **show flow monitor FLOW-MONITOR-1 cache filter interface input Ethernet0/0**

- Perform a regular-expression match on an interface. For example, this command matches flows in the flow monitor cache that begin with Ethernet0/ and have either 1, 2, or 3 as the port number:
  - **show flow monitor FLOW-MONITOR-1 cache filter interface input regexp Ethernet0/1**

Regular Expressions

The table below shows the syntax for regular expressions.

Table 11: Syntax for Regular Expressions

Option	Description
*	Match zero or more characters in this position.
?	Match any one character in this position.
|	Match any one character in this position.
(|)	Match one of a choice of characters in a range. For example, aa:(0033|4455):3456 matches either aa:0033:3456 or aa:4455:3456.
[]	Match any character in the range specified, or one of the special characters. For example, [0-9] is all of the digits. [*] is the "*" character, and [[] is the "[" character.

Examples

The following example filters the flow monitor cache data on the source IPv4 address of 10.234.53.1:

```
Router# show flow monitor FLOW-MONITOR-1 cache filter ipv4 source address 10.234.53.1

  Cache type:                               Normal
  Cache size:                                 4096
  Current entries:                              26
  High Watermark:                               26
  Flows added:                                  87
  Flows aged:                                   61
    - Active timeout    (  1800 secs)            0
    - Inactive timeout (    15 secs)           61
    - Event aged                                 0
    - Watermark aged                             0
    - Emergency aged                             0
IPV4 SOURCE ADDRESS:       10.234.53.1
IPV4 DESTINATION ADDRESS:  172.16.10.2
TRNS SOURCE PORT:          0
```

```
TRNS DESTINATION PORT:     2048
INTERFACE INPUT:           Et0/0.1
FLOW SAMPLER ID:           0
IP TOS:                    0x00
IP PROTOCOL:               1
ip source as:              0
ip destination as:         0
ipv4 next hop address:     172.16.7.2
ipv4 source mask:          /0
ipv4 destination mask:     /24
tcp flags:                 0x00
interface output:          Et1/0.1
counter bytes:             24724
counter packets:           883
timestamp first:           16:03:56.007
timestamp last:            16:27:07.063
IPV4 SOURCE ADDRESS:       10.234.53.1
IPV4 DESTINATION ADDRESS:  172.16.10.2
TRNS SOURCE PORT:          20
TRNS DESTINATION PORT:     20
INTERFACE INPUT:           Et0/0.1
FLOW SAMPLER ID:           0
IP TOS:                    0x00
IP PROTOCOL:               6
ip source as:              0
ip destination as:         0
ipv4 next hop address:     172.16.7.2
ipv4 source mask:          /0
ipv4 destination mask:     /24
tcp flags:                 0x00
interface output:          Et1/0.1
counter bytes:             35320
counter packets:           883
timestamp first:           16:03:56.267
timestamp last:            16:27:07.323
IPV4 SOURCE ADDRESS:       10.234.53.1
IPV4 DESTINATION ADDRESS:  172.16.10.2
TRNS SOURCE PORT:          21
TRNS DESTINATION PORT:     21
INTERFACE INPUT:           Et0/0.1
FLOW SAMPLER ID:           0
IP TOS:                    0x00
IP PROTOCOL:               6
ip source as:              0
ip destination as:         0
ipv4 next hop address:     172.16.7.2
ipv4 source mask:          /0
ipv4 destination mask:     /24
tcp flags:                 0x00
interface output:          Et1/0.1
counter bytes:             35320
counter packets:           883
timestamp first:           16:03:56.327
timestamp last:            16:27:07.363
Matched 3 flows
```

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

Table 12: show flow monitor monitor-name cache filter Field Descriptions

Field	Description
Cache type	Flow monitor cache type. The possible values are: • Immediate—Flows are expired immediately. • Normal—Flows are expired normally. • Permanent—Flows are never expired.
Cache Size	Number of entries in the cache.
Current entries	Number of entries in the cache that are in use.
High Watermark	Highest number of cache entries seen.
Flows added	Flows added to the cache since the cache was created.
Flows aged	Flows expired from the cache since the cache was created.
Active timeout	Current value for the active timeout in seconds.
Inactive timeout	Current value for the inactive timeout in seconds.
Event aged	Number of flows that have been aged by an event such as using the **force-export** option for the **clear flow monitor** command.
Watermark aged	Number of flows that have been aged because they exceeded the maximum high watermark value.
Emergency aged	Number of flows that have been aged because the cache size was exceeded.
IPV4 SOURCE ADDRESS	IPv4 source address.
IPV4 DESTINATION ADDRESS	IPv4 destination address.
TRNS SOURCE PORT	source port for the transport protocol.
TRNS DESTINATION PORT	Destination port for the transport protocol.
INTERFACE INPUT	Interface on which the input is received.
FLOW DIRECTION	Input or output.
FLOW SAMPLER ID	Flow sampler ID number.

Field	Description
IP PROTOCOL	IP protocol number.
IP TOS	IP ToS number.
ip source as	BGP source autonomous system number.
ip destination as	BGP destination autonomous system number.
ipv4 next hop address	IPv4 address of the next hop to which the packet is forwarded.
ipv4 source mask	IPv4 source address mask.
ipv4 destination mask	IPv4 destination address mask.
tcp flags	Value of the TCP flags.
interface output	Interface on which the input is transmitted.
counter bytes	Number of bytes that have been counted.
counter packets	Number of packets that have been counted.
timestamp first	Time stamp of the first packet in the flow.
timestamp last	Time stamp of the last packet in the flow.

Related Commands

Command	Description
show flow monitor cache aggregate	Displays aggregated flow records of flows in a flow monitor cache.
show flow monitor cache sort	Sorts the display output of flow records from a flow monitor cache.

show flow monitor cache sort

To sort the display output of statistics from the flows in a flow monitor cache, use the **show flow monitor cache sort** command in privileged EXEC mode.

show flow monitor [name] *monitor-name* **cache sort** *options* [**top** [*number*]] [**format** {**csv**| **record**| **table**}]

Syntax Description

name	(Optional) Specifies the name of a flow monitor.
monitor-name	Name of a flow monitor that was previously configured.
options	Fields upon which aggregation can be performed. See the “Usage Guidelines” section.
top	(Optional) Limits the display output to the 20 highest volume flows (top talkers) unless overridden by the specification of a value for the *number* argument.
number	(Optional) Overrides the default value of top talkers to display.
format	(Optional) Specifies the use of one of the format options for formatting the display output.
csv	Displays the flow monitor cache contents in comma-separated variables (CSV) format.
record	Displays the flow monitor cache contents in record format.
table	Displays the flow monitor cache contents in table format.

Command Modes

Privileged EXEC (#)

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.

Release	Modification
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

Flexible NetFlowNetFlow—Top N Talkers Support

The **show flow monitor cache sort** command is one of a set of three commands that make up the Flexible NetFlow—Top N Talkers Support feature. The Flexible NetFlow—Top N Talkers Support feature is used to manipulate the display output from the Flexible NetFlow cache to facilitate the analysis of network traffic.

The other two commands that make up the Flexible NetFlow—Top N Talkers Support feature are **show flow monitor cache filter** and **show flow monitor cache aggregate**. The three commands can be used together or on their own, depending on your requirements. For more detailed information about these commands, see the **show flow monitor cache filter** command and the **show flow monitor cache aggregate** command. For information about how the three commands are used together, refer to the "Configuring Cisco IOS Flexible NetFlow—Top N Talkers Support" module in the *Configuring Cisco IOS Flexible NetFlow Configuration Guide.*

Flow Sorting

The flow sorting function of the Flexible NetFlow—Top N Talkers Support feature sorts flow data from the Flexible NetFlow cache based on the criteria that you specify, and displays the data. You can also use the flow sorting function of the Flexible NetFlow—Top N Talkers Support feature to limit the display output to a specific number of entries (Top N Talkers) by using the **top** keyword.

Sort options Argument

The options that you can use for the *options* argument of the **show flow monitor cache filter** command are dependent on the fields that are used for the record that you configured for the flow monitor using the **record** command. To identify the options that you can use, use the **show flow record** *record-name* command in privileged EXEC mode, where *record-name* is the name of the record that you configured for the flow monitor.

For example, if you assigned the "NetFlow Original" predefined record to a flow monitor, you use the **show flow record netflow-original** command to display its key (match) and nonkey (collect) fields. The following is partial output from the **show** command:

```
flow record netflow-original:
  Description:        Traditional IPv4 input NetFlow with origin ASs
  No. of users:       2
  Total field space:  53 bytes
  Fields:
    match ipv4 tos
    match ipv4 protocol
    match ipv4 source address
    match ipv4 destination address
.
.
.
    collect counter packets
    collect timestamp sys-uptime first
    collect timestamp sys-uptime last
```

The fields from this partial output that you can use for the *option* argument follow the **match** (key fields) and **collect** (nonkey fields) words. For example, you can use the "ipv4 tos" field to sort the flows as shown in the first example in the "Examples" section.

Examples

The following example sorts the flow monitor cache data on the IPv4 ToS value and limits the display output to the top two flows:

```
Router# show flow monitor FLOW-MONITOR-3 cache sort ipv4 tos top 2

Processed 17 flows
Aggregated to 17 flows
Showing the top 2 flows
IPV4 SOURCE ADDRESS:       10.1.1.1
IPV4 DESTINATION ADDRESS:  224.192.16.1
TRNS SOURCE PORT:          0
TRNS DESTINATION PORT:     3073
INTERFACE INPUT:           Et0/0
FLOW SAMPLER ID:           0
IP TOS:                    0x55
IP PROTOCOL:               1
ip source as:              0
ip destination as:         0
ipv4 next hop address:     0.0.0.0
ipv4 source mask:          /24
ipv4 destination mask:     /0
tcp flags:                 0x00
interface output:          Null
counter bytes:             33680
counter packets:           1684
timestamp first:           18:39:27.563
timestamp last:            19:04:28.459

IPV4 SOURCE ADDRESS:       10.1.1.1
IPV4 DESTINATION ADDRESS:  224.192.16.1
TRNS SOURCE PORT:          0
TRNS DESTINATION PORT:     0
INTERFACE INPUT:           Et0/0
FLOW SAMPLER ID:           0
IP TOS:                    0x55
IP PROTOCOL:               1
ip source as:              0
ip destination as:         0
ipv4 next hop address:     0.0.0.0
ipv4 source mask:          /24
ipv4 destination mask:     /0
tcp flags:                 0x00
interface output:          Et3/0.1
counter bytes:             145040
counter packets:           7252
timestamp first:           18:42:34.043
timestamp last:            19:04:28.459
```

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

Table 13: show flow monitor monitor-name cache sort Field Descriptions

Field	Description
IPV4 SOURCE ADDRESS	IPv4 source address.
IPV4 DESTINATION ADDRESS	IPv4 destination address.
TRNS SOURCE PORT	source port for the transport protocol.
TRNS DESTINATION PORT	Destination port for the transport protocol.
INTERFACE INPUT	Interface on which the input is received.

Field	Description
FLOW DIRECTION	Input or output.
FLOW SAMPLER ID	Flow sampler ID number.
IP PROTOCOL	IP protocol number.
IP TOS	IP ToS number.
ip source as	BGP source autonomous system number.
ip destination as	BGP destination autonomous system number.
ipv4 next hop address	IPv4 address of the next hop to which the packet is forwarded.
ipv4 source mask	IPv4 source address mask.
ipv4 destination mask	IPv4 destination address mask.
tcp flags	Value of the TCP flags.
interface output	Interface on which the input is transmitted.
counter bytes	Number of bytes that have been counted.
counter packets	Number of packets that have been counted.
timestamp first	Time stamp of the first packet in the flow.
timestamp last	Time stamp of the last packet in the flow.

Related Commands

Command	Description
show flow monitor cache aggregate	Displays aggregated flow records of flows in a flow monitor cache.
show flow monitor cache filter	Filters the display output of flow records from a flow monitor cache.

show flow record

To display the status and statistics for a Flexible NetFlow flow record, use the **show flow record** command in privileged EXEC mode.

show flow record [**[name]** *record-name*| **netflow-original**| **netflow** {**ipv4**| **ipv6**} *record* **[peer]**]

Cisco Catalyst 6500 Switches in Cisco IOS Release 12.2(50)SY

show flow record [**[name]** *record-name*| **platform-original** {**ipv4**| **ipv6**} *record*]

Cisco IOS XE Release 3.2SE

show flow record [**[name]** *record-name*]

Syntax Description

name	(Optional) Specifies the name of a flow record.
record-name	(Optional) Name of a user-defined flow record that was previously configured.
netflow-original	(Optional) Specifies the Flexible NetFlow implementation of original NetFlow with origin autonomous systems.
netflow ipv4	(Optional) Configures the flow monitor to use one of the IPv4 predefined records.
netflow ipv6	(Optional) Configures the flow monitor to use one of the IPv6 predefined records.
record	(Optional) Name of the predefined record. See the first table below for a listing of the available records and their definitions.
peer	(Optional) Configures the flow monitor to use one of the predefined records with peer autonomous systems. The **peer** keyword is not supported for every type of Flexible NetFlow predefined record. See the first table below.
platform-original ipv4	Configures the flow monitor to use one of the predefined IPv4 records.
platform-original ipv6	Configures the flow monitor to use one of the predefined IPv6 records.

Command Modes

Privileged EXEC (#)

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.
12.4(20)T	This command was modified. The **ipv6** keyword was added.
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 **netflow-original**, **netflow ipv4**, and **netflow ipv6** keywords were removed. The **platform-originalipv4** and **platform-originalipv6** keywords were added.
Cisco IOS XE Release 3.2SE	This command was modified. The **netflow-original**, **netflow ipv4**, and **netflow ipv6** keywords were removed.

Usage Guidelines

The table below describes the keywords and descriptions for the *record* argument.

Table 14: Keywords and Descriptions for the record Argument

Keyword	Description	IPv4 Support	IPv6 Support
as	Autonomous system record.	Yes	Yes
as-tos	Autonomous system and Type of Service (ToS) record.	Yes	—
bgp-nexthop-tos	BGP next-hop and ToS record.	Yes	—
bgp-nexthop	BGP next-hop record.	—	Yes

Keyword	Description	IPv4 Support	IPv6 Support
destination	Original platform IPv4/IPv6 destination record.	Yes	Yes
destination-prefix	Destination prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
destination-prefix-tos	Destination prefix and ToS record.	Yes	—
destination-source	Original platform IPv4/IPv6 destination-source record.	Yes	Yes
full	Original platform IPv4/IPv6 full record.	Yes	Yes
interface-destination	Original platform IPv4/IPv6 interface-destination record.	Yes	Yes
interface-destination-source	Original platform IPv4/IPv6 interface-destination-source record.	Yes	Yes
interface-full	Original platform IPv4/IPv6 interface-full record.	Yes	Yes
interface-source	Original platform IPv4/IPv6 interface-source only record.	Yes	Yes
original-input	Traditional IPv4 input NetFlow.	Yes	Yes
original-output	Traditional IPv4 output NetFlow.	Yes	Yes

Keyword	Description	IPv4 Support	IPv6 Support
prefix	Source and destination prefixes record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
prefix-port	Prefix port record. **Note** The **peer** keyword is not available for this record.	Yes	—
prefix-tos	Prefix ToS record.	Yes	
protocol-port	Protocol ports record. **Note** The **peer** keyword is not available for this record.	Yes	Yes
protocol-port-tos	Protocol port and ToS record. **Note** The **peer** keyword is not available for this record.	Yes	—
source	Original platform IPv4/IPv6 source only record.	Yes	Yes
source-prefix	Source autonomous system and prefix record. **Note** For IPv6, a minimum prefix mask length of 0 bits is assumed.	Yes	Yes
source-prefix-tos	Source prefix and ToS record.	Yes	—

Examples

The following example displays the status and statistics for the original Flexible NetFlow record:

```
Router# show flow record FLOW-RECORD-1 platform-original ipv4 destination

flow record FLOW_RECORD-1:
  Description: Flow Record for IPv4 traffic
```

```
No. of users:       3
Total field space:  53 bytes
Fields:
  match interface input
  match transport destination-port
  match transport source-port
  match ipv4 destination address
  match ipv4 source address
  match ipv4 protocol
  match ipv4 tos
  collect counter bytes
  collect counter packets
  collect timestamp sys-uptime last
  collect timestamp sys-uptime first
  collect ipv4 destination mask
  collect ipv4 source mask
  collect routing destination as
  collect routing source as
  collect transport tcp flags
  collect routing next-hop address ipv4
  collect interface output
```

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

Table 15: show flow record netflow-original Field Descriptions

Field	Description
Description	Description that you configured for the record, or the default description “User defined.”
No. of users	Number of monitors in the configuration that use the flow record.
Total field space	Number of bytes required to store these fields for one flow.
Fields	The fields that are included in this record. For more information about the fields, refer to the **match** and **collect** commands.

Related Commands

Command	Description
record	Configures a flow record for a flow monitor.

show platform flow

To display information for Flexible NetFlow platform parameters. use the **showplatformflow**command in privileged EXEC mode.

show platform flow [**aging**| {**export**| **usage**| **table-contention** {**aggregate**| **detailed**| **summary**}} [*instance*| *module*]| {**ip**| **ipv6**} [*count*| *destination*| *instance*| *module*| *multicast*| *protocol*| *source*]| {**layer2**| **mpls**} [*count*| *instance*| *module*]]

Syntax Description

aging	(Optional) Displays the Flexible NetFlow parameter aging information.
export	(Optional) Displays the Flexible NetFlow parameter export information.
usage	(Optional) Displays the Flexible NetFlow table usage information.
table-contention	(Optional) Displays the Flexible NetFlow table contention information.
aggregate	(Optional) Displays the Flexible NetFlow table contention aggregate information.
detailed	(Optional) Displays the Flexible NetFlow table contention detailed information.
summary	(Optional) Displays theFlexible NetFlow table contention summary information.
ip	(Optional) Displays the Flexible NetFlow IP entry information.
ipv6	(Optional) Displays the Flexible NetFlow IPv6 entry information.
count	Total number of entries.
destination	(Optional) Information on entries with destination address.
instance	(Optional) Platform instance information.
module	(Optional) Platform module information.
multicast	(Optional) Flexible NetFlow multicast entry information.

protocol	(Optional) Flexible NetFlow Layer 4 protocol information.
source	(Optional) Information on entries with source address.
layer2	(Optional) Displays the Flexible NetFlow Layer 2 entry information.
mpls	(Optional) Displays the Flexible NetFlow MPLS entry information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SY	This command was introduced.

Examples

The following example displays Flexible NetFlow parameter export information:

```
Router# show platform flow export
Yielding NDE is enabled.
Supervisor CPU threshold = 25
Linecard CPU threshold   = 25

Module  3:
----------
No of flows read and exported = 0
No of flows discarded         = 0
No of capture+purge requests  = 1695104
No of purge-only requests     = 19

Module  5:
----------
No of flows read and exported = 0
No of flows discarded         = 0
No of capture+purge requests  = 1695158
No of purge-only requests     = 0
lionel#
```

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

Table 16: show platform flow export Field Descriptions

Field	Description
Supervisor CPU threshold	The platform (supervisor) CPU utilization threshold (in percent) up to which NetFlow export is permitted. The number and complexity of flow records to be exported is the prime cause of CPU use in NetFlow. The CPU Friendly NetFlow Export feature (also known as Yielding NetFlow Data Export, or Yielding NDE) monitors CPU use for both the supervisor and line cards according to user-configured thresholds and dynamically adjusts the rate of export as needed.
Linecard CPU threshold	The line-card CPU utilization threshold (in percent) up to which NetFlow export is permitted. The number and complexity of flow records to be exported is the prime cause of CPU use in NetFlow. The CPU Friendly NetFlow Export feature (also known as Yielding NetFlow Data Export, or Yielding NDE) monitors CPU use for both the supervisor and line cards according to user-configured thresholds and dynamically adjusts the rate of export as needed.
No of flows read and exported	Number of Flexible NetFlow flows processed and exported.
No of flows discarded	Number of Flexible NetFlow flows discarded.
No of capture+purge requests	Number of Flexible NetFlow flow capture and purge requests.
No of purge-only requests	Number of Flexible NetFlow flow purge requests.

Related Commands

Command	Description
flow hardware	Configures Flexible NetFlow hardware parameters.
flow platform	Configures Flexible NetFlow platform parameters.

show sampler

To display the status and statistics for a Flexible NetFlow sampler, use the **show sampler** command in privileged EXEC mode.

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

Syntax Description

name	(Optional) Specifies the name of a flow sampler.
sampler-name	(Optional) Name of a sampler that was previously configured.

Command Modes

Privileged EXEC (#)

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 integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Examples

The following example displays the status and statistics for all of the flow samplers configured:

```
Router# show sampler

Sampler SAMPLER-1:
  ID:             1
  Description:    User defined
  Type:           random
  Rate:           1 out of 3
  Samples:        189
  Requests:       23243
  Users (2):
    flow monitor FLOW-MONITOR-1 (ip,Et0/0,Input) 65 out of 10786
```

```
    flow monitor FLOW-MONITOR-2 (ipv6,Et0/0, Input) 124 out of 12457
Sampler sampler-2:
  ID:             2
  Description:    User defined
  Type:           deterministic
  Rate:           1 out of 100
  Samples:        1
  Requests:       124
  Users (1):
    flow monitor FLOW-MONITOR-1 (ip,Et0/0,Input) 1 out of 124
```

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

Table 17: show sampler Field Descriptions

Field	Description
ID	ID number of the flow sampler. This is used to identify the sampler at the collector.
Description	Description that you configured for the flow sampler, or the default description "User defined."
Type	Sampling mode that you configured for the flow sampler. • deterministic—Deterministic mode of sampling. • random—Random mode of sampling.
Rate	Window size (for packet selection) that you configured for the flow sampler. Range: 2 to 32768.
Samples	Number of packets sampled since the flow sampler was configured or the router was restarted. This is equivalent to the number of times a positive response was received when the sampler was queried to determine if the traffic needed to be sampled. Refer to the explanation of the "Requests" field in this table.
Requests	Number of times the flow sampler was queried to determine if the traffic needed to be sampled.
Users	Interfaces on which the flow sampler is configured.

Related Commands

Command	Description
clear sampler	Clears the flow sampler statistics.
debug sampler	Enables debugging output for flow samplers.
sampler	Creates a flow sampler.

source (Flexible NetFlow)

To configure the source IP address interface for all of the packets sent by a Flexible NetFlow flow exporter, use the **source** command in Flexible NetFlow flow exporter configuration mode. To remove the source IP address interface for all of the packets sent by a Flexible NetFlow flow exporter, use the **no** form of this command.

source *interface-type interface-number*

no source

Syntax Description

interface-type	Type of interface whose IP address you want to use for the source IP address of the packets sent by a Flexible NetFlow flow exporter.
interface-number	Interface number whose IP address you want to use for the source IP address of the packets sent by a Flexible NetFlow flow exporter.

Command Default

The IP address of the interface over which the Flexible NetFlow datagram is transmitted is used as the source IP address.

Command Modes

Flexible NetFlow 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 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.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

Usage Guidelines

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 is used by the destination system to determine from which router the Flexible NetFlow data is arriving. If your network has two or more paths that can be used to send Flexible NetFlow 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 datagrams from the same router, but with different source IP addresses. When the destination system receives Flexible NetFlow datagrams from the same router with different source IP addresses, the destination system treats the Flexible NetFlow datagrams as if they were being sent from different routers. To avoid having the destination system treat the Flexible NetFlow datagrams as if they were being sent from different routers, you must configure the destination system to aggregate the Flexible NetFlow datagrams it receives from all of the possible source IP addresses in the router into a single Flexible NetFlow 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 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 Flexible NetFlow 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 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 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
flow exporter	Creates a flow exporter.

statistics packet

To collect protocol distribution statistics and size distribution statistics for a Flexible NetFlow flow monitor, use the **statisticspacket** command in Flexible NetFlow flow monitor configuration mode. To disable collecting protocol distribution statistics and size distribution statistics for a Flexible NetFlow flow monitor, use the **no** form of this command.

statistics packet {**protocol**| **size**}

no statistics packet {**protocol**| **size**}

Syntax Description

protocol	Collects packet protocol distribution statistics.
size	Collects packet size distribution statistic.

Command Default

The collection of protocol distribution statistics and size distribution statistics for a Flexible NetFlow flow monitor is not enabled by default.

Command Modes

Flexible NetFlow flow monitor configuration (config-flow-monitor)

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 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Examples

The following example enables the collection of protocol distribution statistics for flow monitors:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# statistics packet protocol
```

The following example enables the collection of size distribution statistics for flow monitors:

```
Router(config)# flow monitor FLOW-MONITOR-1
Router(config-flow-monitor)# statistics packet size
```

Related Commands

Command	Description
flow monitor	Creates a flow monitor.

template data timeout

To configure the template resend timeout for a flow exporter, use the **template data timeout** command in Flexible NetFlow 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

seconds	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

Flexible NetFlow 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 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.
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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
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.

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.

transport (Flexible NetFlow)

To configure the transport protocol for a flow exporter for Flexible NetFlow or Performance Monitor, use the **transport** command in Flexible NetFlow 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

udp *udp-port*	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

Flexible NetFlow 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 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.
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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
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.

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
flow exporter	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 Flexible NetFlow 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

ttl	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

Flexible NetFlow 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 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.
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.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
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.

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
flow exporter	Creates a flow exporter.