



## CHAPTER 13

# Configuring NetFlow

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This chapter describes how to configure the NetFlow feature for Cisco NX-OS.

This chapter includes the following sections:

- [Information About NetFlow, page 13-1](#)
- [Licensing Requirements for NetFlow, page 13-4](#)
- [Prerequisites for NetFlow, page 13-4](#)
- [Configuration Guidelines and Limitations, page 13-4](#)
- [Configuring NetFlow, page 13-5](#)
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- [NetFlow Example Configuration, page 13-16](#)
- [Default Settings, page 13-17](#)
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## Information About NetFlow

NetFlow identifies packet flows for both ingress and egress IP packets and provides statistics based on these packet flows. NetFlow does not require any change to either the packets themselves or to any networking device.

This section includes the following topics:

- [NetFlow Overview, page 13-1](#)
- [High Availability, page 13-3](#)
- [Virtualization Support, page 13-4](#)

## NetFlow Overview

NetFlow uses flows to provide statistics for accounting, network monitoring, and network planning. A flow is a unidirectional stream of packets that arrives on a source interface (or VLAN), and has the same values for the keys. A key is an identified value for a field within the packet. You create a flow using a flow record map to define the unique keys for your flow. Cisco NX-OS supports Flexible NetFlow. You can use common keys, such as source and destination IP addresses, or define your own keys. For more information on the flow record maps, see the [“Flow Record Maps” section on page 13-2](#).

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All key values must match for the packet to count in a given flow. A flow might gather other fields of interest, depending on the export record version that you configure. Flows are stored in the NetFlow cache.

You can export the data that NetFlow gathers for your flow by using an export map and export this data to a remote NetFlow collector. Cisco NX-OS exports a flow as part of a NetFlow export User Datagram Protocol (UDP) datagram under the following circumstances:

- The flow has been inactive or active for too long.
- The flow cache is getting full.
- One of the counters (packets or bytes) has exceeded its maximum value.
- You have forced the flow to export.

For more information on exporter maps, see the [“Exporter Maps” section on page 13-2](#).

You define the size of the data that you want to collect for a flow using a monitor map. The monitor map combines the flow record map and exporter map with the NetFlow cache information. For more information on monitor maps, see the [“Monitor Maps” section on page 13-3](#).

Cisco NX-OS can gather NetFlow statistics in either full or sampled mode. Cisco NX-OS analyzes all packets on the interface or subinterface for full NetFlow mode. For sampled mode, you configure the sampling algorithm and rate that Cisco NX-OS analyzes packets. For more information on sampler maps, see the [“Sampler Maps” section on page 13-3](#).

## Flow Record Maps

A flow record map defines the keys that NetFlow uses to identify packets in the flow as well as other fields of interest that NetFlow gathers for the flow. You can define a flow record map with any combination of keys and fields of interest. Cisco NX-OS supports a rich set of keys including layer 2 and Layer 3 parameters. A flow record also defines the types of counters gathered per flow. You can configure 32-bit or 64-bit packet or byte counters. Cisco NX-OS enables the following match fields when you create a flow record:

- match interface input
- match interface output
- match flow direction

For more information, see the [“Creating a Flow Record” section on page 13-6](#).

## Exporter Maps

An exporter map contains network layer and transport layer details for the NetFlow export packet. You can configure the following information in an exporter map:

- Export destination IP address
- Source interface
- UDP port number (where the collector is listening for NetFlow packets)
- Export format

**Note**

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NetFlow export packets use the IP address that is assigned to the source interface. If the source interface does not have an IP address assigned to it, the exporter will be inactive.

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Cisco NX-OS exports data to the collector whenever a timeout occurs or when the flow is terminated (TCP Fin or Rst received, for example). You can configure the following timers to force a flow export:

- Active timeout—Cisco NX-OS does not remove the cache entries from the cache.
- Inactive timeout—Cisco NX-OS removes the cache entries from the cache.

## Export Formats

Cisco NX-OS supports the Version 9 export format for most flows. Version 9, which combines hardware-aggregated flow records and non-aggregated flow records in the same export frame, also supports the following features:

- Immediate Flow Aging—Allows Cisco NX-OS to send flow records when the flow is created. Cisco NX-OS supports this feature in sampled mode to avoid performance degradation on the device.
- Adaptive Flexible NetFlow—Defines how the device behaves as it runs out of system resources reserved for NetFlow.
- Packet Chunk Fields—Copies part of the packet and sends it to the collector. This feature can only be used in sampled mode and can negatively impact the performance of the device.

Cisco NX-OS supports multiple Netflow export destinations— up to 2 destinations per flow monitor.



### Note

Cisco NX-OS supports UDP as the transport protocol for exports to up to four collectors.

You can configure IPv4 to use the Version 5 export format, but you must limit flows using this format to use the keys and fields predefined by the Version 5 export format.

## Monitor Maps

A monitor map references the flow record map and flow exporter map. You apply a monitor map to an interface.

## Sampler Maps

If you are using sampled mode, you use the sampler map to specify the rate at which packets are sampled. On high bandwidth interfaces, applying NetFlow processing to every single packet can result in high CPU utilization. Sampler map configuration is typically geared towards such high speed interfaces. You can configure samples in one of the following options:

- M out of N—For example, 100 out of every 10,000 packets are sampled.
- Time-base—For example, sample a packet every 100 milliseconds.

If you do not associate a sampler map with an interface, NetFlow gathers statistics on every packet that matches the flow keys on that interface.

## High Availability

Cisco NX-OS supports stateless restarts for NetFlow. After a reboot or supervisor switchover, Cisco NX-OS applies the running configuration.

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## Virtualization Support

Cisco NX-OS defines NetFlow flows within a virtual device context (VDC). By default, Cisco NX-OS places you in the default VDC and any flows that you define in this mode are only available for interfaces in the default VDC. See the *Cisco NX-OS Virtual Device Context Configuration Guide* at the following URL:

[http://www.cisco.com/en/US/docs/switches/datacenter/sw/4\\_0/nx-os/virtual\\_device\\_context/configuration/guide/vdc\\_nx-os\\_book.html](http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/virtual_device_context/configuration/guide/vdc_nx-os_book.html)

## Licensing Requirements for NetFlow

The following table shows the licensing requirements for this feature:

Product	License Requirement
NX-OS	NetFlow requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the <i>Cisco NX-OS Licensing Guide</i> at the following URL:  <a href="http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/licensing/configuration/guide/nx-os_licensing.html">http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/licensing/configuration/guide/nx-os_licensing.html</a> .

## Prerequisites for NetFlow

NetFlow has the following prerequisites:

- You must understand the resources required on your device because NetFlow consumes additional memory and CPU resources.

If you configure VDCs, install the Advanced Services license and enter the desired VDC (see to the *Cisco NX-OS Virtual Device Context Configuration Guide* at the following URL:

[http://www.cisco.com/en/US/docs/switches/datacenter/sw/4\\_0/nx-os/virtual\\_device\\_context/configuration/guide/vdc\\_nx-os\\_book.html](http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/virtual_device_context/configuration/guide/vdc_nx-os_book.html)).

## Configuration Guidelines and Limitations

NetFlow has the following configuration guidelines and limitations:

- You must configure a source interface. If you do not configure a source interface, the exporter will remain in a disabled state.
- You can configure a maximum of 2 export destinations per flow monitor.
- You must configure a valid record map name for every flow monitor map.

In Cisco NX-OS, NetFlow map configuration takes place in map-specific submodes.

Use the global configuration mode to create a flow record map and enter the flow record submode:

```
switch(config)# flow record Test
switch(config-flow-record)#
```

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Use the global configuration mode to create a flow exporter map and enter the flow exporter submode:

```
switch(config)# flow exporter ExportTest
switch(config-flow-exporter)#
```

From the flow exporter submode, you can specify the exporter version. If you specify version 9, you enter the flow exporter version submode:

```
switch(config)-flow-exporter# version 9
switch(config-flow-exporter-version-9)#
```

Use the global configuration mode to create a flow monitor map and enter the flow monitor submode:

```
switch(config)# flow monitor MonitorTest
switch(config-flow-monitor)#
```



**Tip**

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From a submode, you can type ? to get a list of all commands available in the submode.

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## Configuring NetFlow

To configure NetFlow, follow these steps:

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- Step 1** Enable the Netflow feature (see the [“Enabling the NetFlow Feature”](#) section on page 13-6).
  - Step 2** Define a flow record by specifying keys and fields to the flow (see the [“Creating a Flow Record”](#) section on page 13-6).
  - Step 3** Define an optional flow exporter by specifying export format, protocol, destination and other parameters (see the [“Creating a Flow Exporter”](#) section on page 13-9).
  - Step 4** Define a flow monitor based on the flow record and flow exporter (see the [“Creating a Flow Monitor”](#) section on page 13-11).
  - Step 5** Apply the flow monitor to a source interface, subinterface, VLAN interface (see the [“Applying a Flow to an Interface”](#) section on page 13-13), or a VLAN (see the [“Configuring Bridged NetFlow on a VLAN”](#) section on page 13-14).
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This section includes the following topics:

- [Enabling the NetFlow Feature, page 13-6](#)
- [Creating a Flow Record, page 13-6](#)
- [Creating a Flow Exporter, page 13-9](#)
- [Creating a Flow Monitor, page 13-11](#)
- [Creating a Sampler, page 13-12](#)
- [Applying a Flow to an Interface, page 13-13](#)
- [Configuring Bridged NetFlow on a VLAN, page 13-14](#)
- [Configuring NetFlow Timeouts, page 13-15](#)

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**Note**

If you are familiar with the Cisco IOS CLI, be aware that the Cisco NX-OS commands for this feature might differ from the Cisco IOS commands that you would use.

## Enabling the NetFlow Feature

You must globally enable NetFlow before you can configure any flows.

To enable NetFlow, use the following command in global configuration mode:

Command	Purpose
<b>feature netflow</b>	Enables the NetFlow feature.
<b>Example:</b> switch(config)# feature netflow	

To disable NetFlow and remove all flows, use the following command in global configuration mode:

Command	Purpose
<b>no feature netflow</b>	Disables the NetFlow feature. Default is disabled.
<b>Example:</b> switch(config)# no feature netflow	

## Creating a Flow Record

You can create a flow record and add associate keys and fields to the flow. Cisco NX-OS enables the following match fields when you create a flow record:

- match interface input
- match interface output
- match flow direction

### BEFORE YOU BEGIN

Ensure that you have enabled the NetFlow feature (see the [“Enabling the NetFlow Feature”](#) section on page 13-6).

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **config t**
2. **flow record** *name*
3. **description** *string*
4. **match** *type*
5. **collect** *type*

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6. `show flow record [name]`
7. `copy running-config startup-config`

## DETAILED STEPS

	Command	Purpose
Step 1	<code>confi g t</code>  <b>Example:</b> switch# <code>confi g t</code> switch(config)#	Enters configuration mode.
Step 2	<code>flow record name</code>  <b>Example:</b> switch(config)# <code>flow record Test</code> switch(config-flow-record)#	Creates a flow record and enters flow record configuration mode.
Step 3	<code>description string</code>  <b>Example:</b> switch(config-flow-record)# <code>description Ipv4Flow</code>	(Optional) Describes this flow record as a maximum 63 character string.
Step 4	<code>match type</code>  <b>Example:</b> switch(config-flow-record)# <code>match interface input</code>	Specifies a match key. See the “ <a href="#">Specifying the Match Parameters</a> ” section on page 13-7 for more information on the <i>type</i> argument.
Step 5	<code>collect type</code>  <b>Example:</b> switch(config-flow-record)# <code>collect counter packets</code>	Specifies the collection field. See the “ <a href="#">Specifying the Collect Parameters</a> ” section on page 13-8 for more information on the <i>type</i> argument.
Step 6	<code>show flow record [name]</code>  <b>Example:</b> switch(config-flow-exporter)# <code>show flow record</code>	(Optional) Displays information about NetFlow flow records.
Step 7	<code>copy running-config startup-config</code>  <b>Example:</b> switch(config-flow-exporter)# <code>copy running-config startup-config</code>	(Optional) Saves this configuration change.

## Specifying the Match Parameters

You must configure at least one of the following match parameters for flow record maps:

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Command	Purpose
<b>match flow direction</b>  <b>Example:</b> switch(config-flow-record)# match flow direction	Specifies the flow direction as a key.
<b>match interface</b>  <b>Example:</b> switch(config-flow-record)# match interface	Specifies the interface input or output attribute as a key.
<b>match ip {protocol   tos}</b>  <b>Example:</b> switch(config-flow-record)# match ip protocol	Specifies the IP protocol or ToS fields as keys.
<b>match ipv4 {destination   source} address</b>  <b>Example:</b> switch(config-flow-record)# match ipv4 destination address	Specifies the IPv4 source or destination address as a key.
<b>match transport {destination-port   source-port}</b>  <b>Example:</b> switch(config-flow-record)# match transport destination-port	Specifies the transport source or destination port as a key.

## Specifying the Collect Parameters

You must configure at least one of the following collect parameters for flow record maps:

Command	Purpose
<b>collect counter {bytes   packets} [long]</b>  <b>Example:</b> switch(config-flow-record)# collect counter packets	Collects either packet-based or byte counters from the flow. You can optionally specify that 64-bit counters are used.
<b>collect flow {direction   sampler id}</b>  <b>Example:</b> switch(config-flow-record)# collect flow direction	Collects the direction of the flow or the sampler identifier used for the flow.
<b>collect interface {input   output}</b>  <b>Example:</b> switch(config-flow-record)# collect interface input	Collects the input or output interface attribute.
<b>collect routing {destination   source} as [peer]</b>  <b>Example:</b> switch(config-flow-record)# collect routing destination as	Collects the source or destination AS number of the local device or the peer.

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Command	Purpose
<b>collect routing forwarding-status</b>  <b>Example:</b> <pre>switch(config-flow-record)# collect routing forwarding-status</pre>	Collects the forwarding status of the packet.
<b>collect routing next-hop address ipv4 [bgp]</b>  <b>Example:</b> <pre>switch(config-flow-record)# collect routing next-hop address ipv4</pre>	Collects the next-hop address.
<b>collect timestamp sys-uptime {first   last}</b>  <b>Example:</b> <pre>switch(config-flow-record)# collect timestamp sys-uptime last</pre>	Collects the system up time for the first or last packet in the flow.
<b>collect transport tcp flags</b>  <b>Example:</b> <pre>switch(config-flow-record)# collect transport tcp flags</pre>	Collects the TCP transport layer flags for the packets in the flow.

## Creating a Flow Exporter

You can create a flow export to define the export parameters for a flow.

### BEFORE YOU BEGIN

- Make sure that you have enabled the NetFlow feature (see the [“Enabling the NetFlow Feature” section on page 13-6](#)).
- Make sure that you are in the correct VDC (or use the `switchto vdc` command).
- NX-OS supports multiple Netflow export destinations, up to 2 destinations per flow monitor.

### SUMMARY STEPS

1. `config t`
2. `flow exporter name`
3. `destination {ipv4-address | ipv6-address} [use-vrf name]`
4. `source interface-type number`
5. `version {5 | 9}`
6. `show flow exporter [name]`
7. `copy running-config startup-config`

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## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>flow exporter name</b>  <b>Example:</b> switch(config)# flow exporter ExportTest switch(config-flow-exporter)#	Creates a flow exporter map and enters flow exporter map configuration mode.
Step 3	<b>destination</b> { <i>ipv4-address</i>   <i>ipv6-address</i> } [ <b>use-vrf</b> <i>name</i> ]  <b>Example:</b> switch(config-flow-exporter)# destination 192.0.2.1	Sets the destination IPv4 or IPv6 address for this exporter map. You can optionally configure the VRF to use to reach the NetFlow collector.
Step 4	<b>source</b> <i>interface-type number</i>  <b>Example:</b> switch(config-flow-exporter)# source ethernet 2/1	Specifies the interface to use to reach the NetFlow collector at the configured destination.
Step 5	<b>version</b> {5   9}  <b>Example:</b> switch(config-flow-exporter)# version 9 switch(config-flow-exporter-version-9)#	Specifies the NetFlow export version. Version 9 enters the export version configuration submenu.
Step 6	<b>show flow exporter</b> [ <i>name</i> ]  <b>Example:</b> switch(config-flow-exporter)# show flow exporter	(Optional) Displays information about NetFlow flow exporter maps.
Step 7	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config-flow-exporter)# copy running-config startup-config	(Optional) Saves this configuration change.

You can optionally configure the following parameters for flow exporters:

Command	Purpose
<b>description</b> <i>string</i>  <b>Example:</b> switch(config-flow-exporter)# description ExportV9	Describes this flow exporter map as a maximum 63-character string.

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Command	Purpose
<b>dscp</b> <i>value</i>  <b>Example:</b> switch(config-flow-exporter)# dscp 0	Specifies the differentiated services codepoint value. The range is from 0 to 63.
<b>transport udp</b> <i>number</i>  <b>Example:</b> switch(config-flow-exporter)# transport udp 200	Specifies the UDP port to use to reach the NetFlow collector. The range is from 0 to 65535.

You can optionally configure the following parameters in flow exporter version configuration submode:

Command	Purpose
<b>option</b> { <b>exporter-stats</b>   <b>interface-table</b>   <b>sampler-table</b> } <b>timeout</b> <i>seconds</i>  <b>Example:</b> switch(config-flow-exporter-version-9)# option exporter-stats timeout 1200	Sets the exporter resend timer. The range is from 1 to 86400 seconds.
<b>template data</b> <b>timeout</b> <i>seconds</i>  <b>Example:</b> switch(config-flow-exporter-version-9)# template data timeout 1200	Sets the template data resend timer. The range is from 1 to 86400 seconds.

## Creating a Flow Monitor

You can create a flow monitor and associate it with a flow record and a flow exporter.

### BEFORE YOU BEGIN

Ensure that you have enabled the NetFlow feature (see the [“Enabling the NetFlow Feature”](#) section on page 13-6).

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **config t**
2. **flow monitor** *name*
3. **description** *string*
4. **exporter** *name*
5. **record** *name*
6. **show flow monitor** [*name*]
7. **copy running-config startup-config**

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## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>flow monitor name</b>  <b>Example:</b> switch(config)# flow monitor MonitorTest switch(config-flow-monitor)#	Creates a flow monitor map and enters flow monitor map configuration mode.
Step 3	<b>description string</b>  <b>Example:</b> switch(config-flow-monitor)# description Ipv4Monitor	(Optional) Describes the flow monitor map with an alphanumeric string up to 63 characters.
Step 4	<b>exporter name</b>  <b>Example:</b> switch(config-flow-monitor)# exporter Exportv9	Associates a flow exporter map with this flow monitor map.
Step 5	<b>record name</b>  <b>Example:</b> switch(config-flow-monitor)# record IPv4Flow	Associates a flow record map with this flow monitor map.
Step 6	<b>show flow monitor [name]</b>  <b>Example:</b> switch(config-flow-monitor)# show flow monitor	(Optional) Displays information about NetFlow flow monitor maps.
Step 7	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config-flow-monitor)# copy running-config startup-config	(Optional) Saves this configuration change.

## Creating a Sampler

You can create a sampler to define the NetFlow sampling rate for a flow.

### BEFORE YOU BEGIN

Ensure that you have enabled the NetFlow feature (see the “[Enabling the NetFlow Feature](#)” section on page 13-6).

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **config t**
2. **sampler name**

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3. **description** *string*
4. **mode** *samples out-of packets*
5. **show sampler** [*name*]
6. **copy running-config startup-config**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>sampler</b> <i>name</i>  <b>Example:</b> switch(config)# sampler SampleTest switch(config-flow-sampler)#	Creates a sampler map and enters flow sampler map configuration mode.
Step 3	<b>description</b> <i>string</i>  <b>Example:</b> switch(config-flow-sampler)# description Samples	(Optional) Describes the sampler map with an alphanumeric string up to 63 characters.
Step 4	<b>mode</b> <i>samples out-of packets</i>  <b>Example:</b> switch(config-flow-sampler)# mode 1 out-of 100	Defines the number of samples to take per the number of packets received. The samples range is from 1 to 64. The packets range is from 1 to 8192 packets.
Step 5	<b>show sampler</b> [ <i>name</i> ]  <b>Example:</b> switch(config-flow-sampler)# show sampler	(Optional) Displays information about NetFlow sampler maps.
Step 6	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config-flow-sampler)# copy running-config startup-config	(Optional) Saves this configuration change.

## Applying a Flow to an Interface

You can apply a flow monitor map and an optional sampler map to an interface.

### BEFORE YOU BEGIN

Ensure that you have enabled the NetFlow feature (see the “[Enabling the NetFlow Feature](#)” section on [page 13-6](#)).

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **config t**

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2. **interface** *interface-type number*
3. **ip flow monitor** *name* {**input** | **output**} [**sampler name**]
4. **show flow interface** [*interface-type number*]
5. **copy running-config startup-config**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>interface</b> <i>interface-type number</i>  <b>Example:</b> switch(config)# interface ethernet 2/1 switch(config-if)#	Enters interface configuration mode. The interface type can be Ethernet, port channel, mgmt, VLAN interface, or a subinterface.
Step 3	<b>ip flow monitor</b> <i>name</i> { <b>input</b>   <b>output</b> } [ <b>sampler name</b> ]  <b>Example:</b> switch(config-if)# ip flow monitor MonitorTest input	Associates a flow monitor map and an optional sampler map to the interface for input or output packets.
Step 4	<b>show flow interface</b> [ <i>interface-type number</i> ]  <b>Example:</b> switch(config-if)# show flow interface	(Optional) Displays information about NetFlow on an interface.
Step 5	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config-if)# copy running-config startup-config	(Optional) Saves this configuration change.

## Configuring Bridged NetFlow on a VLAN

You can apply a flow monitor map and an optional sampler map to a VLAN.

### BEFORE YOU BEGIN

Ensure that you have enabled the NetFlow feature (see the “[Enabling the NetFlow Feature](#)” section on page 13-6).

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **config t**
2. **vlan** *vlan-id*
3. **ip flow monitor** *name* {**input** | **output**} [**sampler name**]

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#### 4. copy running-config startup-config

### DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>vlan <i>vlan-id</i></b>  <b>Example:</b> switch(config)# vlan 30 switch(config-vlan)#	Enters VLAN configuration mode. The vlan-id range is from 1 to 3967, or from 4048 to 4093
Step 3	<b>ip flow monitor <i>name</i> {input   output} [sampler <i>name</i>]</b>  <b>Example:</b> switch(config-vlan)# ip flow monitor MonitorTest input	Associates a flow monitor map and an optional sampler map to the VLAN for input or output packets.
Step 4	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config-vlan)# copy running-config startup-config	(Optional) Saves this configuration change.

## Configuring NetFlow Timeouts

You can optionally configure global NetFlow timeouts that apply to all flows.

To configure NetFlow timeout parameters, use the following commands in global configuration mode:

Command	Purpose
<b>flow timeout active <i>seconds</i></b>  <b>Example:</b> switch(config)# flow timeout active 90	Sets the active timeout value. The range is from 60 to 4092 seconds.
<b>flow timeout aggressive threshold <i>percent</i></b>  <b>Example:</b> switch(config)# flow timeout aggressive threshold 90	Sets the percentage that you want the NetFlow table to be before aggressive aging starts. The range is from 50 to 99 percent.
<b>flow timeout fast <i>seconds</i> <i>threshold</i> <i>packets</i></b>  <b>Example:</b> switch(config)# flow timeout fast 40 threshold 1200	Sets the fast timeout value and the number of packets in a flow before aging begins. The fast timeout range is from 32 to 512 seconds. The packets range is from 1 to 4000.

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Command	Purpose
<b>flow timeout inactive</b> <i>seconds</i>  <b>Example:</b> switch(config)# flow timeout inactive 900	Sets the inactive timeout value. The range is from 15 to 4092 seconds.
<b>flow timeout session</b>  <b>Example:</b> switch(config)# flow timeout session	Enables TCP session aging.

## Verifying NetFlow Configuration

To verify NetFlow configuration information, use these commands:

Command	Purpose
<b>show flow exporter</b> [ <i>name</i> ]	Displays information about NetFlow flow exporter maps.
<b>show flow interface</b> [ <i>interface-type number</i> ]	Displays information about NetFlow interfaces.
<b>show flow monitor</b> [ <i>name</i> ] [ <b>cache</b> [ <b>detailed</b> ]]	Displays information about NetFlow flow monitor maps.
<b>show flow record</b> [ <i>name</i> ]	Displays information about NetFlow flow record maps.
<b>show flow timeout</b>	Displays information about NetFlow timeouts.
<b>show hardware flow aging</b> [ <b>vdc</b> <i>vdc_id</i> ] [ <b>detail</b> ] [ <b>module</b> <i>module</i> ]	Displays information about NetFlow aging flows in hardware.
<b>show hardware flow entry address</b> <i>table-address type</i> { <i>ip</i>   <i>ipv6</i> } [ <b>module</b> <i>module</i> ]	Displays information about NetFlow table entries in hardware.
<b>show hardware flow ip</b> [ <b>interface</b> <i>type number</i>   <b>monitor</b> <i>monitor_name</i>   <b>profile</b> <i>profile-id</i>   <b>vdc</b> <i>vdc_id</i>   <b>vlan</b> <i>vlan_id</i> ] [ <b>detail</b> ] [ <b>module</b> <i>module</i> ]	Displays information about NetFlow IPv4 flows in hardware.
<b>show hardware flow sampler</b> [ <b>all</b>   <b>count</b>   <b>index</b> <i>number</i>   <b>name</b> <i>sampler-name</i>   <b>vdc</b> <i>vdc_id</i> ] [ <b>detail</b> ] [ <b>module</b> <i>module</i> ]	Displays information about NetFlow sampler in hardware.
<b>show hardware flow utilization</b> [ <b>module</b> <i>module</i> ]	Displays information about NetFlow table utilization in hardware.
<b>show sampler</b> [ <i>name</i> ]	Displays information about NetFlow sampler maps.

## NetFlow Example Configuration

This example creates a flow and applies it to an interface:

```
feature netflow
flow exporter ee
version 9
```

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```
flow record rr
match ipv4 source address
match ipv4 destination address
collect counter bytes
collect counter packets
flow monitor foo
record rr
exporter ee
interface Ethernet2/45
ip flow monitor foo output
ip address 10.20.1.1/24
no shutdown
```

## Default Settings

Table 13-1 lists the default settings for NetFlow parameters.

**Table 13-1**      *Default NetFlow Parameters*

Parameters	Default
Accounting cache size	8K
Egress and Ingress cache size	512K

## Additional References

For additional information related to implementing NetFlow, see the following sections:

- [Related Documents, page 13-18](#)
- [Standards, page 13-18](#)
- [MIBs, page 13-18](#)

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## Related Documents

Related Topic	Document Title
NetFlow CLI commands	<i>Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 4.0</i> at the following URL: <a href="http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/system_management/command/reference/sm_cmd_ref.html">http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/system_management/command/reference/sm_cmd_ref.html</a>
VDCs and VRFs	<i>Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 4.0</i> at the following URL: <a href="http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/virtual_device_context/configuration/guide/vdc_nx-os_book.html">http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/virtual_device_context/configuration/guide/vdc_nx-os_book.html</a>
Cisco NetFlow Overview	<a href="http://cisco.com/en/US/products/ps6601/products_ios_protocol_group_home.html">http://cisco.com/en/US/products/ps6601/products_ios_protocol_group_home.html</a>

## Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

## MIBs

MIBs	MIBs Link
<ul style="list-style-type: none"> <li>CISCO-NETFLOW-MIB</li> </ul>	To locate and download MIBs, go to the following URL: <a href="http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml">http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml</a>