

Flexible NetFlow Output Features on Data Export

This feature enables sending export packets using Quality of Service (QoS) and encryption.

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Prerequisites for Flexible NetFlow Output Features on Data Export

- The networking device must be running a Cisco release that supports Flexible NetFlow.

IPv4 Traffic

- The networking device must be configured for IPv4 routing.
- One of the following must be enabled on your router and on any interfaces on which you want to enable Flexible NetFlow: Cisco Express Forwarding or distributed Cisco Express Forwarding.

IPv6 Traffic

- The networking device must be configured for IPv6 routing.
- One of the following must be enabled on your router and on any interfaces on which you want to enable Flexible NetFlow: Cisco Express Forwarding IPv6 or distributed Cisco Express Forwarding.

Information About Flexible NetFlow Output Features on Data Export

Flow Exporters

Flow exporters are created as separate components in a router's configuration. Exporters are assigned to flow monitors to export the data from the flow monitor cache to a remote system such as a NetFlow collector. Flow monitors can support more than one exporter. Each exporter can be customized to meet the requirements of the flow monitor or monitors in which it is used and the NetFlow collector systems to which it is exporting data.

Benefits of Flexible NetFlow Flow Exporters

Flexible NetFlow allows you to configure many different flow exporters, depending on your requirements. Some of the benefits of Flexible NetFlow flow exporters are as follows:

- Using flow exporters, you can create an exporter for every type of traffic that you want to analyze so that you can send each type of traffic to a different NetFlow collector. Original NetFlow sends the data in a cache for all of the analyzed traffic to a maximum of two export destinations.
- Flow exporters support up to ten exporters per flow monitor. Original NetFlow is limited to only two export destinations per cache.
- Flow exporters can use both TCP and UDP for export.
- Depending on your release, flow exporters can use class of service (CoS) in the packets that are sent to export destinations to help ensure that the packets are given the correct priority throughout the network. Original NetFlow exporters do not use CoS in the packets that are sent to export destinations.
- Depending on your release, flow exporter traffic can be encrypted.

How to Configure Flexible NetFlow Output Features on Data Export

Restrictions

Each flow exporter supports only one destination. If you want to export the data to multiple destinations, you must configure multiple flow exporters and assign them to the flow monitor. Flow exporters are added to flow monitors to enable data export from the flow monitor cache.



Note Only the keywords and arguments required for the Flexible NetFlow commands used in these tasks are explained in these tasks. For information about the other keywords and arguments available for these Flexible NetFlow commands, refer to the *Cisco IOS Flexible NetFlow Command Reference* .

Configuring the Flow Exporter

Perform this required task to configure the flow exporter.

Note Each flow exporter supports only one destination.

You can export to a destination using either an IPv4 or IPv6 address.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **flow exporter** *exporter-name*
4. **description** *description*
5. **destination** {*ip-address* | *hostname*} [**vrf** *vrf-name*]
6. **dscp** *dscp*
7. **source** *interface-type interface-number*
8. **output-features**
9. **template data timeout** *seconds*
10. **transport udp** *udp-port*
11. **ttl** *seconds*
12. **end**
13. **show flow exporter** *exporter-name*
14. **show running-config flow exporter** *exporter-name*

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**flow exporter** *exporter-name* **Example:** `Device(config)# flow exporter EXPORTER-1`	Creates the flow exporter and enters Flexible NetFlow flow exporter configuration mode. • This command also allows you to modify an existing flow exporter.

	Command or Action	Purpose
Step 4	**description** *description* **Example:** `Device(config-flow-exporter)# description Exports to the datacenter`	(Optional) Configures a description to the exporter that will appear in the configuration and the display of the **show flow exporter** command.
Step 5	**destination** {*ip-address* | *hostname*} [**vrf** *vrf-name*] **Example:** `Device(config-flow-exporter)# destination 172.16.10.2`	Specifies the IP address or hostname of the destination system for the exporter. **Note** You can export to a destination using either an IPv4 or IPv6 address.
Step 6	**dscp** *dscp* **Example:** `Device(config-flow-exporter)# dscp 63`	(Optional) Configures differentiated services code point (DSCP) parameters for datagrams sent by the exporter. • The range for the *dscp* argument is from 0 to 63. Default: 0.
Step 7	**source** *interface-type interface-number* **Example:** `Device(config-flow-exporter)# source ethernet 0/0`	(Optional) Specifies the local interface from which the exporter will use the IP address as the source IP address for exported datagrams.
Step 8	**output-features** **Example:** `Device(config-flow-exporter)# output-features`	(Optional) Enables sending export packets using quality of service (QoS) and encryption.
Step 9	**template data timeout** *seconds* **Example:** `Device(config-flow-exporter)# template data timeout 120`	(Optional) Configures resending of templates based on a timeout. • The range for the *seconds* argument is 1 to 86400 (86400 seconds = 24 hours).
Step 10	**transport udp** *udp-port* **Example:** `Device(config-flow-exporter)# transport udp 650`	Specifies the UDP port on which the destination system is listening for exported datagrams. • The range for the *udp-port* argument is from 1 to 65536.
Step 11	**ttl** *seconds* **Example:** `Device(config-flow-exporter)# ttl 15`	(Optional) Configures the time-to-live (TTL) value for datagrams sent by the exporter. • The range for the *seconds* argument is from 1 to 255.
Step 12	**end** **Example:**	Exits flow exporter configuration mode and returns to privileged EXEC mode.

	Command or Action	Purpose
	`Device(config-flow-exporter)# end`	
Step 13	**show flow exporter** *exporter-name* **Example:** `Device# show flow exporter FLOW_EXPORTER-1`	(Optional) Displays the current status of the specified flow exporter.
Step 14	**show running-config flow exporter** *exporter-name* **Example:** `Device# show running-config flow exporter FLOW_EXPORTER-1`	(Optional) Displays the configuration of the specified flow exporter.

Displaying the Current Status of a Flow Exporter

To display the current status of a flow exporter, perform the following optional task.

SUMMARY STEPS

1. **enable**
2. **show flow exporter** [**export-ids {netflow-v5**| **netflow-v9**} | [**name**] *exporter-name* [**statistics** | **templates**]]

DETAILED STEPS

Procedure

Step 1 **enable**

The **enable** command enters privileged EXEC mode (enter the password if prompted).

Example:

```
Device> enable
Device#
```

Step 2 **show flow exporter** [**export-ids {netflow-v5**| **netflow-v9**} | [**name**] *exporter-name* [**statistics** | **templates**]]

The **show flow exporter**command shows the current status of the flow exporter that you specify.

Example:

```
Device# show flow exporter EXPORTER-1
Flow Exporter EXPORTER-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:       GigabitEthernet1/0/0
```

```
    Transport Protocol:     UDP
    Destination Port:       650
    Source Port:            55864
    DSCP:                   0x3F
    TTL:                    15
    Output Features:        Used
  Options Configuration:
    exporter-stats (timeout 120 seconds)
    interface-table (timeout 120 seconds)
    sampler-table (timeout 120 seconds)
```

Verifying the Flow Exporter Configuration

To verify the configuration commands that you entered, perform the following optional task.

SUMMARY STEPS

1. **enable**
2. **show running-config flow exporter** *exporter-name*

DETAILED STEPS

Procedure

Step 1 **enable**

The **enable** command enters privileged EXEC mode (enter the password if prompted).

Example:

```
Device> enable
Device#
```

Step 2 **show running-config flow exporter** *exporter-name*

The **show running-config flow exporter** command shows the configuration commands of the flow exporter that you specify.

Example:

```
Device# show running-config flow exporter EXPORTER-1
Building configuration...
Current configuration:
!
flow exporter EXPORTER-1
 description Exports to the datacenter
 destination 172.16.10.2
 source GigabitEthernet1/0/0
 dscp 63
 ttl 15
 transport udp 650
 template data timeout 120
 option exporter-stats timeout 120
 option interface-table timeout 120
```

```
 option sampler-table timeout 120
!
end
```

Configuring and Enabling Flexible NetFlow with Data Export

You must create a flow monitor to configure the types of traffic for which you want to export the cache data. You must enable the flow monitor by applying it to at least one interface to start exporting data. To configure and enable Flexible NetFlow with data export, perform this required task.

Each flow monitor has a separate cache assigned to it. Each flow monitor requires a record to define the contents and layout of its cache entries. The record format can be one of the predefined record formats, or an advanced user may create his or her own record format using the **collect** and **match**commands in Flexible NetFlow flow record configuration mode.



Note You must remove a flow monitor from all of the interfaces to which you have applied it before you can modify the **record** format of the flow monitor.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **flow monitor** *monitor-name*
4. **record** {*record-name* | **netflow-original** | **netflow** {**ipv4** | **ipv6** *record* [**peer**] }]
5. **exporter** *exporter-name*
6. **exit**
7. **interface** *type number*
8. {**ip** | **ipv6**} **flow monitor** *monitor-name* {**input** | **output**}
9. **end**
10. **show flow monitor** [[**name**] *monitor-name* [**cache** [**format** {**csv** | **record** | **table**}]][**statistics**]]

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:**	Enters global configuration mode.

	Command or Action	Purpose
	`Device# configure terminal`	
Step 3	**flow monitor** *monitor-name* **Example:** `Device(config)# flow monitor FLOW-MONITOR-1`	Creates a flow monitor and enters Flexible NetFlow flow monitor configuration mode. • This command also allows you to modify an existing flow monitor.
Step 4	**record** {*record-name* | **netflow-original** | **netflow** {**ipv4** | **ipv6** *record* [**peer**] }] **Example:** `Device(config-flow-monitor)# record netflow ipv4 original-input`	Specifies the record for the flow monitor.
Step 5	**exporter** *exporter-name* **Example:** `Device(config-flow-monitor)# exporter EXPORTER-1`	Specifies the name of an exporter that you created previously.
Step 6	**exit** **Example:** `Device(config-flow-monitor)# exit`	Exits Flexible NetFlow flow monitor configuration mode and returns to global configuration mode.
Step 7	**interface** *type number* **Example:** `Device(config)# interface GigabitEthernet 0/0/0`	Specifies an interface and enters interface configuration mode.
Step 8	{**ip** | **ipv6**} **flow monitor** *monitor-name* {**input** | **output**} **Example:** `Device(config-if)# ip flow monitor FLOW-MONITOR-1 input`	Activates the flow monitor that you created previously by assigning it to the interface to analyze traffic.
Step 9	**end** **Example:** `Device(config-if)# end`	Exits interface configuration mode and returns to privileged EXEC mode.
Step 10	**show flow monitor** [[**name**] *monitor-name* [**cache** [**format** {**csv** | **record** | **table**}]][**statistics**]] **Example:** `Device# show flow monitor FLOW-MONITOR-2 cache`	(Optional) Displays the status and statistics for a Flexible NetFlow flow monitor. This will verify data export is enabled for the flow monitor cache.

Configuration Examples for Flexible NetFlow Output Features on Data Export

Example: Configuring Sending Export Packets Using QoS

The following example shows how to enable QoS on Flexible Netflow export packets.



Note The Flexible NetFlow export packets are transmitted using QoS on Ethernet interface 0/1 (the interface on which the destination is reachable) to the destination host (IP address 10.0.1.2).

This sample starts in global configuration mode:

```
!
flow record FLOW-RECORD-1
 match ipv4 source address
 collect counter packets
!
flow exporter FLOW-EXPORTER-1
 destination 10.0.1.2
 output-features
 dscp 18
!
flow monitor FLOW-MONITOR-1
 record FLOW-RECORD-1
 exporter FLOW-EXPORTER-1
 cache entries 1024
!
ip cef
!
class-map match-any COS3
!
policy-map PH_LABS_FRL_64k_16k_16k_8k_8k
 class COS3
  bandwidth percent 2
  random-detect dscp-based
  random-detect exponential-weighting-constant 1
  random-detect dscp 18 200 300 10
!
interface Ethernet 0/0
 ip address 10.0.0.1 255.255.255.0
 ip flow monitor FLOW-MONITOR-1 input
!
interface Ethernet 0/1
 ip address 10.0.1.1 255.255.255.0
 service-policy output PH_LABS_FRL_64k_16k_16k_8k_8k
!
```

The following display output shows that the flow monitor is exporting data using output feature support that enables the exported data to use QoS:

```
Device# show flow monitor FLOW-MONITOR-1
Flow Exporter FLOW-EXPORTER-1:
  Description:              User defined
```

```
Tranport Configuration:
  Destination IP address: 10.0.1.2
  Source IP address:      10.0.0.1
  Transport Protocol:     UDP
  Destination Port:       9995
  Source Port:            56750
  DSCP:                   0x12
  TTL:                    255
  Output Features:        Used
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Flexible NetFlow conceptual information and configuration tasks	*Flexible NetFlow Configuration Guide*
Flexible NetFlow commands	*Cisco IOS Flexible NetFlow Command Reference*

Standards/RFCs

Standard	Title
No new or modified standards/RFCs are supported by this feature.	—

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Flexible NetFlow—Output Features on Data Export

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Flexible NetFlow—Output Features on Data Export

Feature Name	Releases	Feature Information
Flexible NetFlow—Output Features on Data Export	12.4(20)T Cisco IOS XE Release 3.1S	Enables sending export packets using QoS and encryption. The following command was introduced: **output-features**.