



Configuring IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow

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This document contains information about and instructions for configuring the Flexible Netflow - IPv4 Multicast Statistics Support feature. Prior to the introduction of the Flexible Netflow - IPv4 Multicast Statistics Support feature, Flexible NetFlow was capable of analyzing IPv4 multicast traffic, but was not capable of reporting the number of replicated bytes or the number of replicated packets in multicast flows. The Flexible Netflow - IPv4 Multicast Statistics Support feature adds the capability of reporting the number of replicated bytes and the number of replicated packets in multicast flows to Flexible NetFlow.

NetFlow is a Cisco IOS technology that provides statistics on packets flowing through a networking device. NetFlow is the standard for acquiring IP operational data from IP networks. NetFlow provides network and security monitoring, network planning, traffic analysis, and IP accounting.

Flexible NetFlow improves on original NetFlow by adding the capability to customize the traffic analysis parameters for your specific requirements. Flexible NetFlow makes it easier to create more complex configurations for traffic analysis and data export through the use of reusable configuration components.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the [“Feature Information for IPv4 Multicast Statistics Support”](#) section on page 8.

Use Cisco Feature Navigator to find information about platform support and Cisco IOS, Catalyst OS, and Cisco IOS XE software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Contents

- [Prerequisites for Configuring IPv4 Multicast Statistics Support, page 2](#)
- [Restrictions for Configuring IPv4 Multicast Statistics Support, page 2](#)
- [Information About IPv4 Multicast Statistics Support, page 3](#)
- [How to Configure IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow, page 3](#)
- [Configuration Examples for IPv4 Multicast Statistics Support, page 6](#)
- [Where to Go Next, page 7](#)
- [Additional References, page 7](#)
- [Feature Information for IPv4 Multicast Statistics Support, page 8](#)

Prerequisites for Configuring IPv4 Multicast Statistics Support

The following prerequisites must be met before you can configure multicast support for Flexible NetFlow:

- You are familiar with the information in the “[Cisco IOS Flexible NetFlow Overview](#)” module.
- You are familiar with the information in the “[Customizing Cisco IOS Flexible NetFlow Flow Records and Flow Monitors](#)” module.
- The networking device is running a Cisco IOS release that supports the Flexible Netflow - IPv4 Multicast Statistics Support feature. See the “[Cisco IOS Flexible NetFlow Features Roadmap](#)” module for a list of Cisco IOS software releases that support the Flexible Netflow - IPv4 Multicast Statistics Support feature.
- The networking device is configured for IPv4 unicast routing and IPv4 multicast routing.
- One of the following is enabled on your networking device and on any interfaces on which you want to enable Flexible NetFlow: Cisco Express Forwarding (CEF), distributed CEF (dCEF).

Restrictions for Configuring IPv4 Multicast Statistics Support

The following restrictions apply to configuring multicast support for Flexible NetFlow:

IPv4 traffic

- 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 and/or to monitor unicast traffic, the cache data for the replication factor field is set to 0.

IPv6 traffic

- Traffic monitoring for multicast statistics is not supported.

Information About IPv4 Multicast Statistics Support

The Flexible Netflow - IPv4 Multicast Statistics Support feature adds the capability of reporting the number of replicated bytes and the number of replicated packets in multicast flows to Flexible NetFlow. You can capture the packet-replication factor for a specific flow as well as for each outgoing stream.

You can use the The Flexible Netflow - IPv4 Multicast Statistics Support feature to identify and count multicast packets on the ingress side or the egress side (or both sides) of a networking device. Multicast ingress accounting provides information about the source and how many times the traffic was replicated. Multicast egress accounting monitors the destination of the traffic flow.

How to Configure IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow

To configure the Flexible Netflow - IPv4 Multicast Statistics Support feature, perform the following task.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **flow record** *flow-record-name*
4. **description** *string*
5. **match routing is-multicast**
6. Add key fields for the record as required using other **match** commands.
7. **collect counter** { **bytes replicated** [long] | **packets replicated** [long] }
8. **collect routing multicast replication-factor**
9. Add non-key fields for the record as required using other **collect** commands.
10. **flow monitor** *monitor-name*
11. **description** *string*
12. **record** *record-name*
13. **interface** *type number*
14. **ip flow monitor** *monitor-name* [**multicast** | **unicast**] { **input** | **output** }
15. Repeat Steps 13 and 14 to activate a flow monitor on any other interfaces in the networking device over which you want to monitor traffic.
16. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	flow record <i>flow-record-name</i> Example: Router(config)# flow record FLOW-RECORD-2	Creates a flow record and enters flow record configuration mode. <ul style="list-style-type: none">This command also allows you to modify an existing flow record. For example, to modify the configuration of a flow record named “record-name”, use the flow record <i>record-name</i> command and argument in global configuration mode.
Step 4	description <i>string</i> Example: Router(config-flow-record)# description Used for IPv4 multicast traffic analysis	(Optional) Creates a description for the flow record.
Step 5	match routing is-multicast Example: Router(config-flow-record)# match routing is-multicast	Configures IPv4 multicast destination addresses (indicating that the IPv4 traffic is multicast traffic) as a key field for the flow record.
Step 6	Add key fields for the record as required using other match commands.	For information about the other match commands that are available to configure key fields, refer to the Cisco IOS Flexible NetFlow Command Reference .
Step 7	collect counter { bytes replicated [long] packets replicated [long]} Example: Router(config-flow-record)# collect counter packets replicated	Configures the number of bytes or packets multiplied by the multicast replication factor (number of interfaces the multicast traffic is forwarded over) as a non-key field. Default: Uses a 32-bit counter. The long keyword configures a 64-bit counter.
Step 8	collect routing multicast replication-factor Example: Router(config-flow-record)# collect routing multicast replication-factor	Configures the multicast replication factor (number of interfaces over which multicast traffic is forwarded) as a non-key field.
Step 9	Add non-key fields for the record as required using other collect commands.	For information about the other collect commands that are available to configure non-key fields, refer to the Cisco IOS Flexible NetFlow Command Reference .

	Command or Action	Purpose
Step 10	<p>flow monitor <i>monitor-name</i></p> <p>Example: Router(config)# flow monitor FLOW-MONITOR-2</p>	<p>Creates a flow monitor and enters Flexible NetFlow flow monitor configuration mode.</p> <ul style="list-style-type: none"> This command also allows you to modify an existing flow monitor. For example, to modify the configuration of a flow monitor named “monitor-name”, use the flow monitor <i>monitor-name</i> command in global configuration mode.
Step 11	<p>description <i>string</i></p> <p>Example: Router(config-flow-monitor)# description Used for IPv4 multicast traffic analysis</p>	(Optional) Creates a description for the flow monitor.
Step 12	<p>record <i>record-name</i></p> <p>Example: Router(config-flow-monitor)# record FLOW-RECORD-2</p>	Specifies the record for the flow monitor.
Step 13	<p>interface <i>type number</i></p> <p>Example: Router(config)# interface ethernet 0/0</p>	Specifies an interface and enters interface configuration mode.
Step 14	<p>ip flow monitor <i>monitor-name</i> [multicast unicast] {input output}</p> <p>Example: Router(config-if)# ip flow monitor FLOW-MONITOR-2 input</p>	Activates the flow monitor that was created previously by assigning it to the interface to analyze traffic. To monitor only multicast traffic, use the multicast keyword. Default: Unicast traffic and multicast traffic are monitored.
Step 15	Repeat Steps 13 and 14 to activate a flow monitor on any other interfaces in the networking device over which you want to monitor traffic.	—
Step 16	<p>end</p> <p>Example: Router(config-if)# end</p>	Exits flow interface configuration mode and returns to privileged EXEC mode.

Examples

The following output from the **show flow monitor** command shows four multicast flows and three unicast flows:

```
Router# show flow monitor FLOW-MONITOR-2 cache

Cache type:                               Normal
Cache size:                               4096
Current entries:                           8
High Watermark:                           8

Flows added:                              4074
Flows aged:                                4066
```

```

- Active timeout ( 1800 secs)          46
- Inactive timeout ( 15 secs)         4020
- Event aged                          0
- Watermark aged                      0
- Emergency aged                      0

```

```

IP IS MULTICAST  IPV4 DST ADDR      pkts rep
=====
Yes              224.192.16.1          16642
Yes              224.192.65.1          16621
No               10.1.4.2              0
No               10.1.2.2              0
No               10.1.3.2              0
Yes              224.0.0.13            0
No               255.255.255.255      0
Yes              224.0.0.1             0

```

Configuration Examples for IPv4 Multicast Statistics Support

This section contains the following configuration example:

- [Configuring IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow: Example, page 6](#)

Configuring IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow: Example

This example configures the following:

- IPv4 multicast destination addresses (indicating that the IPv4 traffic is multicast traffic) as a key field.
- The destination IPv4 address as a key field.
- The replicated packet count as a non-key field.
- The replication factor as a non-key field.
- The flow monitor to monitor only multicast traffic.

This sample starts in global configuration mode:

```

!
flow record FLOW-RECORD-2
 match routing is-multicast
 match ipv4 destination address
 collect counter packets replicated
 collect routing multicast replication-factor
 exit
!
flow monitor FLOW-MONITOR-2
 record FLOW-RECORD-2
 exit
!
interface Ethernet0/0
 no shut
 ip address 10.1.1.2 255.255.255.0
 ip flow monitor FLOW-MONITOR-2 multicast input
!
end

```

Where to Go Next

If you want to configure data export for Flexible NetFlow, refer to the [“Configuring Data Export for Cisco IOS Flexible NetFlow with Flow Exporters”](#) module.

If you want to configure flow sampling to reduce the CPU overhead of analyzing traffic, refer to the [“Using Cisco IOS Flexible NetFlow Flow Sampling to Reduce the CPU Overhead of Analyzing Traffic”](#) module.

If you want to configure any of the predefined records for Flexible NetFlow, refer to the [“Configuring Cisco IOS Flexible NetFlow with Predefined Records”](#) module.

Additional References

The following sections provide references related to Flexible NetFlow.

Related Documents

Related Topic	Document Title
Overview of Flexible NetFlow	“Cisco IOS Flexible NetFlow Overview”
Flexible NetFlow Feature Roadmap	“Cisco IOS Flexible NetFlow Features Roadmap”
Emulating original NetFlow with Flexible NetFlow	“Getting Started with Configuring Cisco IOS Flexible NetFlow”
Configuring flow exporters to export Flexible NetFlow data.	“Configuring Data Export for Cisco IOS Flexible NetFlow with Flow Exporters”
Configuring flow sampling to reduce the overhead of monitoring traffic with Flexible NetFlow	“Using Cisco IOS Flexible NetFlow Flow Sampling to Reduce the CPU Overhead of Analyzing Traffic”
Configuring Flexible NetFlow using predefined records	“Configuring Cisco IOS Flexible NetFlow with Predefined Records”
Using Flexible Netflow Top N Talkers to Analyze Network Traffic	“Using Cisco IOS Flexible Netflow Top N Talkers to Analyze Network Traffic”
Configuration commands for Flexible NetFlow	<i>Cisco IOS Flexible NetFlow Command Reference</i>

Standards

Standard	Title
There are no standards associated with this feature.	—

MIBs

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

RFCs

RFC	Title
RFC #3954	<i>Cisco Systems NetFlow Services Export Version 9</i>

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	http://www.cisco.com/techsupport

Feature Information for IPv4 Multicast Statistics Support

Table 1 lists the features in this module and provides links to specific configuration information. Only features that were introduced or modified in Cisco IOS Release 12.2(1) or Cisco IOS Releases 12.2(1) or 12.0(3)S or a later release appear in the table.

For information on a feature in this technology that is not documented here, see the “[Cisco IOS Flexible NetFlow Features Roadmap](#)” or [other available documentation for your Cisco IOS release](#).

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS, Catalyst OS, and Cisco IOS XE software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

**Note**

Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for Flexible Netflow - IPv4 Multicast Statistics Support

Feature Name	Releases	Feature Information
Flexible NetFlow	12.4(9)T	<p>Flexible NetFlow is introduced.</p> <p>Information about the Flexible NetFlow feature is included in the following sections:</p> <ul style="list-style-type: none"> • How to Configure IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow, page 3 <p>The following commands were introduced or modified: cache (Flexible NetFlow), clear flow exporter, clear flow monitor, clear sampler, collect counter, collect flow, collect interface, collect ipv4, collect ipv4 destination, collect ipv4 fragmentation, collect ipv4 section, collect ipv4 source, collect ipv4 total-length, collect ipv4 ttl, collect routing, collect timestamp sys-uptime, collect transport, collect transport icmp ipv4, collect transport tcp, collect transport udp, debug flow exporter, debug flow monitor, debug flow record, debug sampler, description (Flexible NetFlow), destination, dscp (Flexible NetFlow), exporter, flow exporter, flow monitor, flow record, ip flow monitor, match flow, match interface (Flexible NetFlow), match ipv4, match ipv4 destination, match ipv4 fragmentation, match ipv4 section, match ipv4 source, match ipv4 total-length, match ipv4 ttl, match routing, match transport, match transport icmp ipv4, match transport tcp, match transport udp, mode (Flexible NetFlow), option (Flexible NetFlow), record, sampler, show flow exporter, show flow interface, show flow monitor, show flow record, show sampler, source (Flexible NetFlow), statistics packet, template data timeout, transport (Flexible NetFlow).</p>

Table 1 Feature Information for Flexible Netflow - IPv4 Multicast Statistics Support (continued)

Feature Name	Releases	Feature Information
Flexible Netflow - IPv4 Multicast Statistics Support	12.4(22)T	<p>The Flexible Netflow - IPv4 Multicast Statistics Support feature adds the capability of reporting the number of replicated bytes and the number of replicated packets in multicast flows to Flexible NetFlow.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Prerequisites for Configuring IPv4 Multicast Statistics Support, page 2 • Restrictions for Configuring IPv4 Multicast Statistics Support, page 2 • Information About IPv4 Multicast Statistics Support, page 3 • How to Configure IPv4 Multicast Statistics Support for Cisco IOS Flexible NetFlow, page 3 • Configuration Examples for IPv4 Multicast Statistics Support, page 6 <p>The following commands were introduced or modified: collect counter, collect routing is-multicast, collect routing multicast replication-factor, match routing is-multicast, match routing multicast replication-factor, ip flow monitor, ipv6 flow monitor.</p>

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