



# NetFlow Subinterface Support

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## Feature History

Release	Modification
12.2(14)S	This feature was introduced.
12.2(15)T	This feature was integrated into Cisco IOS Release 12.2 T.

This document describes the NetFlow Subinterface Support feature and includes the following sections:

- [Feature Overview, page 1](#)
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## Feature Overview

The NetFlow Subinterface Support feature provides the ability to enable NetFlow on a per-subinterface basis. In a scenario in which your network contains thousands of subinterfaces and you want to collect export records from only a few subinterfaces, you can fine-tune your collection of data to only specified subinterfaces. The result is lower bandwidth requirements for NetFlow Data Export (NDE) and reduced platform requirements for NetFlow data-collection devices.

Using the NetFlow Subinterface Support feature, you can enable NetFlow on selected subinterfaces using the **ip flow ingress** command. If you configure the **ip flow ingress** command on a few selected subinterfaces and then configure the **ip route-cache flow** command on the main interface, enabling the main interface will overwrite the **ip flow ingress** command and data collection will start from the main interface as well as all the subinterfaces. In a scenario in which you configure the **ip flow ingress** command and then configure the **ip route-cache flow** command on the main interface, you can restore subinterface data collection by using the **no ip route-cache flow** command. This configuration will disable data collection from the main interface and restore data collection to the subinterfaces you originally configured with the **ip flow ingress** command.

## What Is NetFlow?

NetFlow allows you to collect traffic flow statistics on your routing devices. NetFlow is based on identifying packet flows for ingress IP packets. It does not involve any connection-setup protocol either between routers or to any other networking device or end station and does not require any change externally—either to the traffic or packets themselves or to any other networking device. NetFlow is completely transparent to the existing network, including end stations and application software and network devices such as LAN switches. Also, NetFlow performs independently on each internetworking device; it need not be operational on each router in the network. Using NDE, you can export data to a remote workstation for data collection and further processing. Network planners can selectively invoke NDE on a router or on a per-subinterface basis to gain traffic performance, control, or accounting benefits in specific network locations.

## Benefits

The NetFlow Subinterface Support feature provides the following benefits:

- Reduced bandwidth requirement—NetFlow subinterface support reduces the bandwidth required between routing devices and NetFlow management workstations.
- Reduced NetFlow workstation requirements—NetFlow subinterfaces support reduces the amount of flows sent to the workstation for processing.

## Related Documents

- [Cisco IOS Command Reference Master Index](#), Release 12.2
- [Cisco IOS Switching Services Command Reference](#), Release 12.2
- [Cisco IOS Switching Services Configuration Guide](#), Release 12.2
- [NetFlow Minimum Prefix Mask for Router-Based Aggregation](#), Cisco IOS Release 12.1(2)T new feature document
- [NetFlow Performance Analysis](#) white paper
- [NetFlow Services Solutions Guide](#)
- [NetFlow ToS-Based Router Aggregation](#), Cisco IOS Release 12.1(4)T new feature document
- [Network Data Analyzer Installation and User Guide](#), Release 3.0
- [Release Notes for FlowCollector](#), Release 3.0
- [Release Notes for Network Data Analyzer](#), Release 3.0
- [Sampled NetFlow](#), Cisco IOS Release 12.0(11)S new feature document

## Supported Platforms

- Cisco 7200 series
- Cisco 7400 series
- Cisco 7500 series

### Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to [cco-locksmith@cisco.com](mailto:cco-locksmith@cisco.com). An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

### Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

## Supported Standards, MIBs, and RFCs

### Standards

None

### MIBs

No new or modified MIBs are supported by this feature.

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to [cco-locksmith@cisco.com](mailto:cco-locksmith@cisco.com). An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

#### RFCs

None

## Prerequisites

We recommend you configure NetFlow on the main interface if you are already collecting data from the majority of its subinterfaces. If NetFlow is not configured on the main interface, NetFlow will perform additional checks for the status of each subinterface that will require more CPU processing time and bandwidth.

## Configuration Tasks

See the following sections for the configuration tasks for the NetFlow Subinterface Support feature. Each task in the list is identified as either required or optional.

- [Enabling NetFlow on a Subinterface, page 4](#) (required)
- [Enabling NetFlow on an Interface, page 5](#) (optional)
- [Managing NetFlow Statistics, page 5](#) (optional)
- [Verifying NetFlow Statistics on a Subinterface, page 5](#) (optional)

## Enabling NetFlow on a Subinterface

To enable NetFlow on a subinterface, use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	Router(config)# <b>interface</b> <i>type/slot.subinterface-number</i>	Selects the subinterface on which to enable NetFlow.
Step 2	Router(config-subif)# <b>ip flow ingress</b>	Enables NetFlow on a subinterface.

## Enabling NetFlow on an Interface

To enable NetFlow on an interface, use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	Router(config)# <b>interface</b> <i>type/slot</i>	Selects the interface on which to enable NetFlow.
Step 2	Router(config-if)# <b>ip route-cache flow</b>	Enables NetFlow on a main interface.

## Managing NetFlow Statistics

You can display and clear NetFlow statistics. NetFlow statistics consist of IP packet size distribution, IP flow switching cache information, and flow information such as the protocol, total flow, flows per second, and so on. The resulting information can be used to determine information about your router traffic. To manage NetFlow statistics, use the following commands in privileged EXEC mode as needed:

Command	Purpose
Router# <b>show ip cache flow</b>	Displays the NetFlow statistics.
Router# <b>clear ip flow stats</b>	Clears the NetFlow statistics.

## Verifying NetFlow Statistics on a Subinterface

To display NetFlow statistics on a subinterface, use the following commands in global configuration mode:

Command	Purpose
Router# <b>show ip cache flow</b>	Displays NetFlow statistics on an interface.
Router# <b>show ip interface</b>	Displays the usability status of interfaces configured for IP.

## Monitoring and Maintaining NetFlow Subinterfaces

To view the configured NetFlow subinterface, use the following **show** commands in EXEC mode as needed:

Command	Purpose
Router# <b>show ip cache flow</b>	Displays the cache configuration.
Router# <b>show ip flow export</b>	Displays the cache flow statistics.
Router# <b>show ip interface</b>	Displays the usability status of interfaces configured for IP.

# Configuration Examples

This section provides the following configuration examples:

- [Enabling NetFlow on a Subinterface Example](#)
- [Enabling NetFlow on an Interface Example](#)

## Enabling NetFlow on a Subinterface Example

The following configuration example shows how to configure NetFlow on Fast Ethernet subinterface 6/3.0:

```
Router(config)# interface FastEthernet6/3.0  
Router(config-subif)# ip flow ingress
```

## Enabling NetFlow on an Interface Example

```
Router(config)# interface 6/3  
Router(config-if)# ip route-cache flow
```

# Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

- [ip flow ingress](#)
- [show ip interface](#)

# ip flow ingress

To configure NetFlow on a subinterface, use the **ip flow ingress** command in subinterface configuration mode. To disable NetFlow on a subinterface, use the **no** form of this command.

**ip flow ingress**

**no ip flow ingress**

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

**Defaults** This command is not configured by default.

**Command Modes** Subinterface configuration

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2 T.

**Usage Guidelines** If you configure the **ip flow ingress** command on a few selected subinterfaces and then configure the **ip route-cache flow** command on the main interface, enabling the main interface will overwrite the **ip flow ingress** command and data collection will start from the main interface as well as all the subinterfaces. In a scenario in which you configure the **ip flow ingress** command and then configure the **ip route-cache flow** command on the main interface, you can restore subinterface data collection by using the **no ip route-cache flow** command. This configuration will disable data collection from the main interface and restore data collection to the subinterfaces you originally configured with the **ip flow ingress** command.

**Examples** The following example shows how to configure NetFlow on a Fast Ethernet subinterface 6/3.0:

```
Router(config)# interface FastEthernet6/3.0
Router(config-subif)# ip flow ingress
```

Related Commands	Command	Description
	<b>ip route-cache flow</b>	Enables NetFlow for IP routing.
	<b>show ip cache flow</b>	Displays a summary of NetFlow statistics.
	<b>show ip interface</b>	Displays the usability status of interfaces configured for IP.

# show ip interface

To display the usability status of interfaces configured for IP, use the **show ip interface** command in EXEC mode.

```
show ip interface [type number]
```

## Syntax Description

<i>type</i>	(Optional) Interface type.
<i>number</i>	(Optional) Interface number.

## Command Modes

EXEC

## Command History

Release	Modification
10.0	This command was introduced.
12.0(3)T	This command was expanded to include the status of <b>ip wccp redirect out</b> and <b>ip wccp redirect exclude add in</b> commands.
12.2(14)S	This command was expanded to display the status of NetFlow on a subinterface.
12.2(15)T	The command output enhancements introduced in Cisco IOS Release 12.2(14)S were integrated into Cisco IOS Release 12.2(15)T.

## Usage Guidelines

The Cisco IOS software automatically enters a directly connected route in the routing table if the interface is usable. A usable interface is one through which the software can send and receive packets. If the software determines that an interface is not usable, it removes the directly connected routing entry from the routing table. Removing the entry allows the software to use dynamic routing protocols to determine backup routes to the network, if any.

If the interface can provide two-way communication, the line protocol is marked “up.” If the interface hardware is usable, the interface is marked “up.”

If you specify an optional interface type, you will see only information on that specific interface.

If you specify no optional arguments, you will see information on all the interfaces.

When an asynchronous interface is encapsulated with PPP or Serial Line Internet Protocol (SLIP), IP fast switching is enabled. A **show ip interface** command on an asynchronous interface encapsulated with PPP or SLIP displays a message indicating that IP fast switching is enabled.

## Examples

The following is sample output from the **show ip interface** command:

```
Router# show ip interface

Ethernet0 is up, line protocol is up
  Internet address is 192.195.78.24, subnet mask is 255.255.255.240
  Broadcast address is 255.255.255.255
  Address determined by non-volatile memory
  MTU is 1500 bytes
  Helper address is not set
```

```

Secondary address 131.192.115.2, subnet mask 255.255.255.0
Directed broadcast forwarding is enabled
Multicast groups joined: 224.0.0.1 224.0.0.2
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachable are always sent
ICMP mask replies are never sent
IP fast switching is enabled
IP fast switching on the same interface is disabled
IP Flow switching is enabled
IP CEF switching is enabled
IP Subif flow switching turbo vector
IP multicast fast switching is enabled
IP route-cache flags are Fast, Flow init, CEF, Ingress Flow
IP SSE switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
Probe proxy name replies are disabled
WCCP Redirect outbound is enabled
    WCCP Redirect exclude is disabled

```

Table 1 describes the significant fields shown in the display.

**Table 1** *show ip interface Field Descriptions*

Field	Description
Ethernet0 is up	If the interface hardware is usable, the interface is marked “up.” For an interface to be usable, both the interface hardware and line protocol must be up.
line protocol is up	If the interface can provide two-way communication, the line protocol is marked “up.” For an interface to be usable, both the interface hardware and line protocol must be up.
Internet address and subnet mask	IP Internet address and subnet mask of the interface.
Broadcast address	Displays the broadcast address.
Address determined by...	Indicates how the IP address of the interface was determined.
MTU	Displays the MTU value set on the interface.
Helper address	Displays a helper address, if one has been set.
Secondary address	Displays a secondary address, if one has been set.
Directed broadcast forwarding	Indicates whether directed broadcast forwarding is enabled.
Multicast groups joined	Indicates the multicast groups this interface is a member of.
Outgoing access list	Indicates whether the interface has an outgoing access list set.
Inbound access list	Indicates whether the interface has an incoming access list set.
Proxy ARP	Indicates whether Proxy Address Resolution Protocol (ARP) is enabled for the interface.
Security level	Specifies the IP Security Option (IPSO) security level set for this interface.

**Table 1** *show ip interface Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Split horizon	Indicates that split horizon is enabled.
ICMP redirects	Specifies whether redirect messages will be sent on this interface.
ICMP unreachable	Specifies whether unreachable messages will be sent on this interface.
ICMP mask replies	Specifies whether mask replies will be sent on this interface.
IP fast switching	Specifies whether fast switching has been enabled for this interface. It is generally enabled on serial interfaces, such as this one.
IP route-cache flags Fast, Flow init, CEF, Ingress Flow	Specifies whether NetFlow has been enabled on an interface. Displays “Flow init” to specify that NetFlow is enabled on the interface. Displays “Ingress Flow” to specify that NetFlow is enabled on a subinterface using the <b>ip flow ingress</b> command. Specifies “Flow” to specify that NetFlow is enabled on a main interface using the <b>ip route-cache flow</b> command.
IP SSE switching	Specifies whether IP silicon switching engine (SSE) is enabled.
Router Discovery	Specifies whether the discovery process has been enabled for this interface. It is generally disabled on serial interfaces.
IP output packet accounting	Specifies whether IP accounting is enabled for this interface and what the threshold (maximum number of entries) is.
TCP/IP header compression	Indicates whether compression is enabled or disabled.
Probe proxy name	Indicates whether HP Probe proxy name replies are generated.
WCCP Redirect outbound is enabled	Indicates the status of whether packets received on an interface are redirected to a cache engine. Displays “enabled” or “disabled.”
WCCP Redirect exclude is disabled	Indicates the status of whether packets targeted for an interface will be excluded from being redirected to a cache engine. Displays “enabled” or “disabled.”

# Glossary

**flow**—A series of packets that has the same source IP address, destination IP address, protocol, TOS byte, and source and destination ports if applicable.

**NetFlow**—A Cisco IOS acceleration and accounting feature for maintaining per-flow data.

**subinterface**—A logical network layer interface over a physical interface.

