

SOLARWINDS TECHNICAL REFERENCE

Enabling NetFlow and NetFlow Data Export (NDE) on Cisco Catalyst Switches

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This technical reference presents procedures for enabling NetFlow and NetFlow Data Export (NDE) on specific Cisco switches as required by Orion NetFlow Traffic Analyzer.

NetFlow and NDE are required by Orion NetFlow Traffic Analyzer. NetFlow collects traffic statistics by monitoring packets that flow through a given network device. These statistics are then stored in a NetFlow table. NetFlow Data Export (NDE) converts the NetFlow table statistics into records and exports the records to Orion NetFlow Traffic Analyzer for analysis and presentation. Orion NetFlow Traffic Analyzer currently supports NetFlow versions 5 and 9.

Unless stated otherwise, this document refers to Cisco Internetwork Operating System (IOS) Releases 12.2(18)SXD and higher. The contents of this technical reference are adapted from original Cisco documentation. This document is not intended as a substitute or replacement for your original Cisco documentation or the advice of your Cisco technical support representative.

Note: Due to significant differences in the availability of the commands required to enable NetFlow and NetFlow Data Export, SolarWinds does not support the use of Cisco IOS versions older than 12.2(18)SXD.

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Introduction

NetFlow is a proprietary network protocol developed by Cisco Systems. NetFlow collects network traffic statistics by monitoring packets flowing through a given network device and storing the statistics in a NetFlow table on the device. NetFlow Data Export (NDE) converts the NetFlow table statistics into records formatted for export to data analysis tools, like Orion NetFlow Traffic Analyzer. Orion NetFlow Traffic Analyzer receives NetFlow data from NetFlow-enabled devices and generates graphical analyses of network traffic and resource use. This technical reference provides the procedures necessary to configure NetFlow and NDE for use with Orion NetFlow Traffic Analyzer.

Note: The contents of this technical reference are adapted from original Cisco documentation. This document is not intended as a substitute or replacement for your original Cisco documentation or the advice of your Cisco technical support representative.

Requirements

Enabling NetFlow and NetFlow Data Export requires the following:

- NetFlow-capable devices.
- An installation of Orion Network Performance Monitor with the NetFlow Traffic Analyzer module.
- Cisco Internetwork Operating System (IOS) Release 12.2(18)SXD and higher.
- Orion NetFlow Traffic Analyzer supports NetFlow versions 5 and 9.

Catalyst 4500 Series

This section is adapted from information available at:
www.cisco.com/en/US/products/hw/switches/ps4324/

The following sections provide the procedures required to enable NetFlow and NetFlow export to Orion NetFlow Traffic Analyzer from the Catalyst 4500 Series.

Enabling NetFlow

The following procedure configures the NetFlow capability of your Catalyst 4500 switch. You must enable and configure NetFlow on your switch before expecting it to interact with Orion NetFlow Traffic Analyzer.

Note: The Catalyst 4500 platform requires a NetFlow Services Card installed to enable NetFlow.

To enable NetFlow:

1. Configure your switch for IP routing as described in the “Configuring IP Services” chapter of the *Cisco IOS IP Application Services Configuration Guide*, found in the Configuration Guides section at:
www.cisco.com/en/US/products/ps6350/tsd_products_support_configure.html
2. Log on to the switch, and then enter global configuration mode.
3. Enter `ip flow ingress infer-fields` to enable NetFlow for IP routing with inferred input/output interfaces and source/destination border gateway protocol (BGP) as information.

Note: You must enable the `infer-fields` option to determine any autonomous system information.

Configuring a NetFlow Destination

The following procedure configures your Orion NetFlow Traffic Analyzer server as a destination for NetFlow data collected by your Catalyst 4500 switch.

To configure the Orion NetFlow Traffic Analyzer server as a NetFlow destination:

1. Log on to the switch and enter global configuration mode.
2. Type `ip flow-export destination {hostname | ip-address} udp-port` to direct exported NetFlow data to Orion NetFlow Traffic Analyzer, as in this example, where Orion NetFlow Traffic Analyzer is hosted on TAHost:

```
ip flow-export destination TAHost 2055
```

Note: If you need to send data to more than one destination, you can specify up to two different destinations using successive calls of this command.

3. Enter `ip flow-export version 5|9 {origin-as | peer-as}` to set the NetFlow version for use with Orion NetFlow Traffic Analyzer.

Notes:

- Select `origin-as` to direct NetFlow to determine the origin BGP autonomous system of both the source and the destination hosts of the flow, as in:

```
ip flow-export version 5|9 origin-as
```

- Select `peer-as` to direct NetFlow to determine the peer BGP autonomous system of both the input and output interfaces of the flow, as in:

```
ip flow-export version 5|9 peer-as
```

4. Type `ip flow-export source interface` to specify the interface that provides the source IP address in the IP header of the NDE packet. The default is the NDE output interface.

Displaying a NetFlow Configuration

Use the following command to confirm your NetFlow configuration.

To display the NetFlow configuration:

1. Enter privileged EXEC mode on your switch.
2. Type `show ip flow export` to display statistics and cache contents for your NetFlow configuration.

For more information, consult your Cisco technical support representative or www.cisco.com.

Catalyst 6500 and 7600 Series

This section is adapted from information available at:

www.cisco.com/en/US/products/hw/switches/ps708/ (Catalyst 6500 Series)

www.cisco.com/en/US/products/hw/routers/ps368/ (7600 Series)

The following sections provide the procedures required to enable NetFlow and NetFlow Data Export (NDE) on Catalyst 6500 Series switches and the 7600 Series.

Notes:

- You must enable NetFlow on every monitored Multilayer Switch Feature Card (MSFC) Layer 3 interface to support NetFlow Data Export from both the Policy Feature Card (PFC) and the MSFC.
- You must enable NDE on the MSFC to support NDE on the PFC.

Enabling NetFlow and NetFlow Data Export (NDE) on the Multilayer Switch Feature Card (MSFC)

The MSFC maintains a table of NetFlow data representing software-routed data flows through the device. The following procedure for enabling NetFlow and NDE on the MSFC should be performed on every monitored Layer 3 interface.

To enable NetFlow and NDE on the MSFC:

1. Log on to the device, and then enter global configuration mode.
2. Enter `interface {vlan vlan_ID} | {type slot/port} | {port-channel port_channel_number}` to select a Layer 3 interface to configure.

Notes:

- `type` may be any of the following: ethernet, fastethernet, gigabitethernet, Or tengigabitethernet
- `type` may also be any of the following, if the device is running Supervisor Engine 2: ge-wan, pos, Or atm.
- For more information, see the following Cisco IOS Command References:
 - o Catalyst 6500 Series switches: www.cisco.com/en/US/products/hw/switches/ps708/
 - o 7600 Series: www.cisco.com/en/US/products/hw/routers/ps368/

3. Type `ip flow ingress` to enable NetFlow.
4. Type `exit` to exit interface configuration mode and return to global configuration mode.
5. Enter `ip flow-export source {{vlan vlan_ID} | {type slot/port} | {port-channel number} | {loopback number}}` to configure the interface used as the source of the NDE packets containing statistics from the MSFC.
6. Repeat this procedure for each additional interface on which you want to enable NetFlow and NDE.
7. Enter `end` to exit global configuration mode and return to privileged EXEC mode.
8. Enter `ip flow-export source {{vlan vlan_ID} | {type slot/port} | {port-channel number} | {loopback number}}` to configure the interface used as the source of the NDE packets containing statistics from the MSFC.

Note: You must select an interface configured with an IP address.

Enabling NetFlow and NetFlow Data Export (NDE) on the Policy Feature Card (PFC)

The PFC maintains a table of NetFlow data representing hardware-routed data flows through the device. The procedure for enabling NetFlow and NDE on the PFC is as follows:

To enable NetFlow and NDE on the PFC:

1. Log on to the device, and then enter global configuration mode.
2. Enter `mls netflow` to enable NetFlow on the PFC.
3. Enter `mls nde sender version 5|9` to enable NDE from the PFC and configure the NDE version.

Notes:

- Orion NetFlow Traffic Analyzer accepts data in NetFlow version 5 and version 9 formats.
- NDE from the PFC uses the source interface configured for the MSFC. For further information, please consult your documentation or your Cisco technical support representative.

Configuring the NDE Destination

The following procedure sets the destination for NDE data streams. Provide the IP address and UDP port number you have or plan to specify when you install Orion NetFlow Traffic Analyzer. Export redundancy is available with the NetFlow Multiple Export Destinations feature. This feature allows for the designation of multiple destinations for NDE data streams by successively calling the following function for different destinations. Multiple destinations establishes backup for all NDE streams.

To configure the destination IP address and UDP port to receive the NDE stream:

1. Log on to the device, and enter global configuration mode.
2. Enter `ip flow-export destination ip_address udp_port_number` with the appropriate IP address and UDP port for your installation of Orion NetFlow Traffic Analyzer. For example, enter:
`ip flow-export destination 12.36.43.7 2055`

Notes:

- NetFlow Multiple Export Destinations—To configure redundant NDE data streams you can enter the `ip flow-export destination` command twice and configure a different destination in each command.
- Configuring two destinations increases the RP CPU utilization, as you are exporting the data records twice.
- The destination address and UDP port number are saved in NVRAM and are preserved if NDE is disabled and re-enabled or if the device is power cycled.

Displaying the NDE Address and Port Configuration

After configuring NDE successfully, verify your configuration with the following procedure:

To display the NDE address and port configuration:

1. Enter privileged EXEC mode on your device.
2. Type `show mls nde` to display the NDE configuration.
3. Enter `show ip flow export` to display the NDE source interface configuration.

For more information, consult your Cisco technical support representative or www.cisco.com.