



## Configuring IP-aware Netflow for VRF Ingress

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### Restrictions for IP-aware Netflow for VRF Ingress

- IP-aware VRF ingress Netflow is supported with IPv4, IPv6 and MVPNv4 as CE facing interface
- Supported only on layer 3 interface
- Supported only for ingress traffic on the VRF interface
- Supported only for MPLS L3 VPN VRF interface
- IP aware VRF ingress Netflow on MVPNv6 as CE facing interface is not supported
- Not supported on portchannel, SVI as CE facing interface
- Not supported for egress traffic on the VRF interface
- Not supported on MPLS L2VPN Attachment circuit interface

### Information About IP-aware Netflow for VRF Ingress

This feature enables collecting the virtual routing and forwarding (VRF) ID from incoming packets on a router by applying an input flow monitor having a flow record that collects the VRF ID as a key or a non-key field.

**Table 1: Scale Numbers**

Platform	SDM Template	Max IPv4 Flows	Max IPv6 Flows
3650	Advanced	8k	4k
3850	Advanced	8k	4k

Platform	SDM Template	Max IPv4 Flows	Max IPv6 Flows
9300	Access	16k	8k
9400	Distribution	32k	16k
9500	Access	32k	16k

# How to Configure IP-aware Netflow for VRF Ingress

## Creating a Flow Record

Perform the following task to create a flow record.

Step 1

### SUMMARY STEPS

1. **configure terminal**
2. **flow record** *flow\_record\_name*
3. **description** *description*
4. **match ipv4 version**
5. **match ipv4** {source | destination} *address*
6. **match ipv4 protocol**
7. **match transport** {source-port | destination-port}
8. **match ipv4 tos**
9. **match ipv4 ttl**
10. **match flow direction**
11. **collect counter packets long**
12. **collect counter bytes long**
13. **end**
14. **show flow record**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	<b>flow record</b> <i>flow_record_name</i> <b>Example:</b> Device(config)# <b>flow record</b> flow-record-1	Enters flow record configuration mode.

	Command or Action	Purpose
Step 3	<b>description</b> <i>description</i> <b>Example:</b> Device (config-flow-record) # <b>description</b> flow-record-1	(Optional) Creates a description for the flow record.
Step 4	<b>match ipv4 version</b> <b>Example:</b> Device (config-flow-record) # <b>match ipv4 version</b>	Specifies a match to the IP version from the IPv4 header.
Step 5	<b>match ipv4 {source   destination} address</b>	Specifies a match to the IPv4 source and destination address.
Step 6	<b>match ipv4 protocol</b> <b>Example:</b> Device (config-flow-record) # <b>match ipv4 protocol</b>	Specifies a match to the IPv4 protocol.
Step 7	<b>match transport {source-port   destination-port}</b>	Configures source-port or destination port as a key field for the flow record.
Step 8	<b>match ipv4 tos</b> <b>Example:</b> Device (config-flow-record) # <b>match ipv4 tos</b>	Configures IPv4 ToS as a key field for the flow record.
Step 9	<b>match ipv4 ttl</b> <b>Example:</b> Device (config-flow-record) # <b>match ipv4 ttl</b>	Configures IPv4 TTL as a key field for the flow record.
Step 10	<b>match flow direction</b> <b>Example:</b> Device (config-flow-record) # <b>match flow direction</b>	Specifies a match to the flow identifying fields.
Step 11	<b>collect counter packets long</b> <b>Example:</b> Device (config-flow-record) # <b>collect flow</b> <b>direction</b>	Configures the number of packets seen in a flow as a non-key field and enables collecting the total number of packets from the flow.
Step 12	<b>collect counter bytes long</b> <b>Example:</b> Device (config-flow-record) # <b>collect counter bytes</b> <b>long</b>	Configures the number of bytes seen in a flow as a non-key field and enables collecting the total number of bytes from the flow.
Step 13	<b>end</b> <b>Example:</b> Device (config) # <b>end</b>	Returns to privileged EXEC mode. Alternatively, you can also press <b>Ctrl-Z</b> to exit global configuration mode.

	Command or Action	Purpose
Step 14	<b>show flow record</b> <b>Example:</b> Device # <b>show flow record</b>	Displays information about all the flow records.

## Creating a Flow Exporter

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

### SUMMARY STEPS

1. **configure terminal**
2. **flow exporter** *flow\_exporter\_name*
3. **description** *description*
4. **destination** { *hostname* | *ipv4-address* | *ipv6-address* }
5. **source** *interface-type interface-name*
6. **end**
7. **show flow exporter**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
Step 2	<b>flow exporter</b> <i>flow_exporter_name</i> <b>Example:</b> Device(config)# <b>flow exporter</b> flow-exporter-1	Enters flow exporter configuration mode.
Step 3	<b>description</b> <i>description</i> <b>Example:</b> Device(config-flow-exporter)# <b>description</b> flow-exporter-1	(Optional) Creates a description for the flow exporter.
Step 4	<b>destination</b> { <i>hostname</i>   <i>ipv4-address</i>   <i>ipv6-address</i> } <b>Example:</b> Device (config-flow-exporter)# <b>destination</b> 10.10.1.1	Specifies the hostname, IPv4 or IPv6 address of the system to which the exporter sends data.
Step 5	<b>source</b> <i>interface-type interface-name</i> <b>Example:</b> Device (config-flow-exporter)# <b>destination</b> 10.10.1.1	Specifies the local interface from which the exporter will use the IP address as the source IP address for exported datagrams.

	Command or Action	Purpose
Step 6	<b>end</b> <b>Example:</b> Device(config)# <b>end</b>	Returns to privileged EXEC mode. Alternatively, you can also press <b>Ctrl-Z</b> to exit global configuration mode.
Step 7	<b>show flow exporter</b> <b>Example:</b> Device # <b>show flow exporter</b>	Displays information about all the flow exporters.

## Creating a Flow Monitor

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

### SUMMARY STEPS

1. **configure terminal**
2. **flow monitor** *monitor-name*
3. **description** *description*
4. **record** *record-name*
5. **exporter** *exporter-name*
6. **cache type normal** {*timeout* | *active* | *inactive*} | **type normal**
7. **end**
8. **show flow monitor**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
Step 2	<b>flow monitor</b> <i>monitor-name</i> <b>Example:</b> Device (config)# <b>flow monitor</b> flow-monitor-1	Creates a flow monitor and enters flow monitor configuration mode.
Step 3	<b>description</b> <i>description</i> <b>Example:</b> Device (config-flow-monitor)# <b>description</b> flow-monitor-1	(Optional) Creates a description for the flow monitor.
Step 4	<b>record</b> <i>record-name</i> <b>Example:</b> Device (config-flow-monitor)# <b>record</b> flow-record-1	Specifies the name of a record that was created previously.

	Command or Action	Purpose
<b>Step 5</b>	<b>exporter</b> <i>exporter-name</i> <b>Example:</b> Device (config-flow-monitor) # <b>exporter</b> flow-exporter-1	Specifies the name of an exporter that was created previously.
<b>Step 6</b>	<b>cache type normal</b> {timeout   active   inactive}   <b>type normal</b>	(Optional) Specifies to configure flow cache parameters.
<b>Step 7</b>	<b>end</b> <b>Example:</b> Device(config) # <b>end</b>	Returns to privileged EXEC mode. Alternatively, you can also press <b>Ctrl-Z</b> to exit global configuration mode.
<b>Step 8</b>	<b>show flow monitor</b> <b>Example:</b> Device # <b>show flow monitor</b>	Displays information about all the flow monitors.

## Applying Flow Monitor to an Interface

### SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface-type interface-name*
3. **no switchport**
4. **vrf forwarding** *vrf-name*
5. {ip | ipv6} **flow-monitor** *monitor-name* **input**
6. **end**
7. **show flow interface**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	<b>interface</b> <i>interface-type interface-name</i>	Specifies an interface and enters interface configuration mode.
<b>Step 3</b>	<b>no switchport</b> <b>Example:</b> Device (config-if) # <b>description</b> no switchport	For physical ports only, enters Layer 3 mode.
<b>Step 4</b>	<b>vrf forwarding</b> <i>vrf-name</i>	Associates the VRF with the Layer 3 interface.
<b>Step 5</b>	{ip   ipv6} <b>flow-monitor</b> <i>monitor-name</i> <b>input</b>	Associates a flow monitor to the interface for input packets.

	Command or Action	Purpose
Step 6	<b>end</b> <b>Example:</b> Device(config)# <b>end</b>	Returns to privileged EXEC mode. Alternatively, you can also press <b>Ctrl-Z</b> to exit global configuration mode.
Step 7	<b>show flow interface</b> <b>Example:</b> Device # <b>show flow interface</b>	Displays the status of NetFlow (enabled or disabled) on the specified interface.

## Configuration Examples for IP-aware Netflow for VRF Ingress

The **show flow interface** command displays information about Netflow on the specified interface. :

```
Interface TenGigabitEthernet1/0/36
FNF: monitor: v4vrfingress
direction: Input
traffic(ip): on
FNF: monitor: v6vrfingress
direction: Input
traffic(ipv6): on
```

The **show flow monitor *flow-monitor-name* cache** command displays the contents of the cache for the flow monitor.

```
Cache type:                               Normal (Platform cache)
Cache size:                               10000
Current entries:                           100

Flows added:                              100
Flows aged:                                0

IPV4 SOURCE ADDRESS:                      108.3.20.100
IPV4 DESTINATION ADDRESS:                  108.2.20.100
TRNS SOURCE PORT:                          0
TRNS DESTINATION PORT:                     0
FLOW DIRECTION:                            Input
IP VERSION:                                4
IP TOS:                                     0x20
IP PROTOCOL:                               255
IP TTL:                                     64
counter bytes long:                        2956000
counter packets long:                       2000
```

The **show flow exporter** command displays information about all the flow exporters. :

```
Flow Exporter v4vrfingress:
Description:                               User defined
Export protocol:                           NetFlow Version 9
Transport Configuration:
Destination type:                           IP
```

```

Destination IP address: 15.15.15.16
Source IP address:      15.15.15.15
Source Interface:       TenGigabitEthernet1/0/1
Transport Protocol:     UDP
Destination Port:       9995
Source Port:            52319
DSCP:                   0x0
TTL:                    255
Output Features:        Used
Flow Exporter v6vrfingress:
Description:             User defined
Export protocol:         NetFlow Version 9
Transport Configuration:
  Destination type:      IP
  Destination IP address: 15.15.15.16
  Source IP address:     15.15.15.15
  Source Interface:       TenGigabitEthernet1/0/1
  Transport Protocol:     UDP
  Destination Port:       9995
  Source Port:            50881
  DSCP:                   0x0
  TTL:                    255
  Output Features:        Used

```

The **show platform software fed switch active fnf monitors-dump** displays Netflow monitors dump.

```

FNF Monitors
=====
Monitor (0x7f4afc031748):
  profile_id(c461d4fe) ref_ct(1) wdavc_monitor(0)
  wdavc_monitor_create_requested(False)
  wdavc_remote_monitoring_remote_caching(0) flags(0x0000) is_wireless(No)
  is_etta_over_fnf No ettaOrBaseProfile(00000000) etta_refcnt(0)
  field(113) size(16) param(0) flags(1) offset(0)
  field(114) size(16) param(0) flags(1) offset(16)
  field(118) size(2) param(0) flags(1) offset(32)
  field(119) size(2) param(0) flags(1) offset(34)
  field(156) size(1) param(0) flags(1) offset(36)
  field(181) size(8) param(0) flags(0) offset(37)
  field(42) size(1) param(0) flags(1) offset(45)
  field(46) size(1) param(0) flags(1) offset(46)
  field(43) size(1) param(0) flags(1) offset(47)
  field(47) size(1) param(0) flags(1) offset(48)
Monitor (0x7f4afc029338):
  profile_id(74c02ab0) ref_ct(1) wdavc_monitor(0)
  wdavc_monitor_create_requested(False)
  wdavc_remote_monitoring_remote_caching(0) flags(0x0000) is_wireless(No)
  is_etta_over_fnf No ettaOrBaseProfile(00000000) etta_refcnt(0)
  field(93) size(4) param(0) flags(1) offset(0)
  field(94) size(4) param(0) flags(1) offset(4)
  field(118) size(2) param(0) flags(1) offset(8)
  field(119) size(2) param(0) flags(1) offset(10)

```



```
field(156) size(1) param(0) flags(1) offset(12)
field(177) size(8) param(0) flags(0) offset(13)
field(181) size(8) param(0) flags(0) offset(21)
field(42) size(1) param(0) flags(1) offset(29)
field(43) size(1) param(0) flags(1) offset(30)
field(46) size(1) param(0) flags(1) offset(31)
field(47) size(1) param(0) flags(1) offset(32)
```

## Feature History and Information for IP-aware Netflow for VRF Ingress

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.

Release	Modification
Cisco IOS XE Fuji 16.8.1a	This feature was introduced.

