



Traffic Monitoring Commands

This module describes the Cisco IOS XR Software commands to monitor traffic on the router.

For detailed information about monitoring packet drops concepts, configuration tasks, and examples, see the *Traffic Monitoring* chapter in the *System Monitoring Configuration Guide for Cisco 8000 Series Routers*.

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hw-module profile packet-loss-alert

To enable log message alerts for traffic-impacting NPU interrupts, use the **hw-module profile packet-loss-alert** command in the XR Config mode.

hw-module profile packet-loss-alert { **3Min** | **5Min** }

Syntax Description	3Min Specifies a 3 minute duration of packet loss to begin generating log messages. There are atleast 10 error interrupts per minute.				
	5Min Specifies a 5 minute duration of packet loss to begin generating log messages. There are atleast 10 error interrupts per minute.				
Command Default	This feature is disabled by default.				
Command Modes	XR Config mode				
Command History	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Release 24.1.1</td><td>This command was introduced</td></tr></tbody></table>	Release	Modification	Release 24.1.1	This command was introduced
Release	Modification				
Release 24.1.1	This command was introduced				
Usage Guidelines	Only line cards and routers with the Q100, Q200, P100 or G100 based Silicon One ASIC support this feature				

Task ID	Task ID	Operation
	profile	read, write

Example

Execute the **hw-module profile packet-loss-alert** command to enable system log alerts for packet loss:

```
Router# configure
Router(config)# hw-module profile packet-loss-alert 3Min
Router(config)# commit
```

show drops all

To display the packet drops, use the **show drops all** command in the XR EXEC mode.

```
show drops all { commands location | location | ongoing location } { node-id | all }
```

Syntax Description	commands	Displays commands executed.
	location	Specifies location of line-card or route processor.
	ongoing	Shows drops occurring since last executed.

Command Default None

Command Modes XR EXEC mode

Command History	Release	Modification
	Release 7.3.5	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	interface	read
	cisco-support	read

The **show packet drops all location all** command displays packet drops for all nodes on all locations

```
RP/0/RP0/CPU0:ios#show drops all location all
-----
Printing Drop Counters for node 0/RP0/CPU0
-----
```

```

-----
MODULE arp
-----

-----

MODULE mac
-----

-----

MODULE npu_traps
-----

Trap Type                               NPU Trap Punt      Punt Punt Punt
Configured Hardware  Policer Avg-Pkt Packets      Punt Punt Punt
Rate(pps)  Level  Size  Accepted      ID  ID  Dest  VoQ  VLAN  TC  Rate(pps)
-----
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*)      0  4  RPLC_CPU  200  1586  0  67
      134      IFG      64      0              1

-----

MODULE voq_drops
-----

-----

MODULE cef
-----

-----

MODULE fabric
-----

-----

MODULE lpts
-----

-----

MODULE spp
-----

```

The **show packet drops all ongoing location** command displays the packet drops since last executed.

```
RP/0/RP0/CPU0:ios#show drops all ongoing location all
```

```

-----
Printing Drop Counters for node 0/RP0/CPU0
-----

```

```

-----
MODULE arp
-----

```

```

-----
MODULE mac
-----

-----
MODULE npu_traps
-----

-----
MODULE voq_drops
-----

-----
MODULE cef
-----

-----
MODULE fabric
-----

-----
MODULE lpts
-----

-----
MODULE spp
-----

```

show controllers npu stats counters-drop

To display the packets that have been dropped by the NPU, use the **show controllers npu stats counters-drop** command in the XR EXEC mode.

```

show controller npu stats counters-drop { description instance { instance-id location { node-id | path | all } } | all location { node-id | path | all } } | instance { instance-id location { node-id | path | all } } | all location { node-id | path | all } } | latest instance { instance-id location { node-id | path | all } } | all location { node-id | path | all } } } [ output-modifiers { begin line | exclude line | file | include line | utility line } ]

```

Syntax Description

description instance <i>instance-id</i>	Displays the counter description about a given instance.
description instance <i>all</i>	Displays the counter description about all instances.
instance <i>instance-id</i>	Displays NPU information about a given instance.
instance <i>all</i>	Displays NPU information about all instances.

latest instance <i>instance-id</i>	Displays the most recent non zero ASIC statistics about a given instance.
latest instance <i>all</i>	Displays the most recent non zero ASIC statistics about all instances.
location <i>node-id</i>	Specifies the node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. Displays the information about a specific node.
location <i>all</i>	Displays information about all nodes.
<i>output-modifiers</i> begin <i>line</i>	Displays information from the line that matches to the given content. For example, if you want to display the running configuration starting from the interface configurations, you can enter as begin interface .
<i>output-modifiers</i> exclude <i>line</i>	Displays information by filtering out lines that contain the given content. For example, if you want to view a configuration but skip all lines that mention "interface", you can enter as exclude interface .
<i>output-modifiers</i> include <i>line</i>	Displays information that includes the content that you have given. For example, if you want to view lines that contain the word "interface" within a configuration, you can enter as include interface .
<i>output-modifiers</i> utility <i>line</i>	Specifies various Unix command-line tools to manipulate or analyze the command's output. For example, if you want to sort the output of a command alphabetically, you can enter as utility sort .

output-modifiers **file**

Saves the information to a specific file.

For example, if you want to save information to a specific file, you can enter as | **file filename vrf vrfname**.

You can save the content in the following locations:

- *filename* - Save the output to a specified filename.
 - *append* - Add the output to the end of an existing file.
 - *config* - Save the output to the device's configuration.
 - *disk0* - Store the output on the device's disk0 storage.
 - *ftp* - Transfer and save the output to an FTP server.
 - *harddisk* - Save the output to the device's internal hard disk.
 - *http* - Send the output to an HTTP server.
 - *https* - Send the output to an HTTPS server.
 - *rootfs* - Save the output to the root file system of the device.
 - *scp* - Securely copy the output to a remote server using SCP.
 - *sftp* - Securely transfer the output to a remote server using SFTP.
 - *tftp* - Transfer the output to a TFTP server.
-

Command Default None

Command Modes XR EXEC mode

Command History	Release	Modification
	Release 7.3.5	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	interface	read

Task ID	Operations
filesystem	read, write
cisco-support	read

Examples

The **show controllers npu stats counters-drop** command displays the NPU statistics for all instance and all locations.

```
Router# show controllers npu stats counters-drop instance all location all
```

```
Statistics Rack: 0, Slot: 0(0x0), Asic instance: 0, Total Counters: 675
```

#	Counter_name	val
0	Fwd drop counter (DSP==1): pkts	0
1	Fwd drop counter (DSP==1): bytes	0
2	RX IFGB0 Port0 drop_counter TC0	0
3	RX IFGB0 Port0 drop_counter TC1	0
4	RX IFGB0 Port0 drop_counter TC2	0
5	RX IFGB0 Port0 drop_counter TC3	0
6	RX IFGB0 Port8 drop_counter TC0	0
7	RX IFGB0 Port8 drop_counter TC1	0
8	RX IFGB0 Port8 drop_counter TC2	0
9	RX IFGB0 Port8 drop_counter TC3	0
10	RX IFGB0 Port16 drop_counter TC0	0
11	RX IFGB0 Port16 drop_counter TC1	0
12	RX IFGB0 Port16 drop_counter TC2	0
13	RX IFGB0 Port16 drop_counter TC3	0
14	RX IFGB 10th fabric link full pkt drop counter ifg0	0
15	RX IFGB0 Port0 partial_drop_counter TC0	0
16	RX IFGB0 Port0 partial_drop_counter TC1	0

The above sample displays only a part of the actual output; the actual output displays more details.

show controllers npu stats traps-all

To display all the trap events statistics within the NPU, use the **show controllers npu stats traps-all** command in the XR EXEC mode.

```
show controller npu stats traps-all { detail instance { instance-id location { node-id | path | all } |
all location { node-id | path | all } } | instance { instance-id location { node-id | path | all } | all
location { node-id | path | all } } | latest instance instance-id location { node-id | path | all } | nonzero
instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } [
output-modifiers { begin line | exclude line | file | include line | utility line } ]
```

Syntax Description		
	detail instance <i>instance-id</i>	Displays detailed information about a given instance.
	detail instance <i>all</i>	Displays detailed information about all instances.
	instance <i>instance-id</i>	Displays NPU information about a given instance.
	instance <i>all</i>	Displays NPU information about all instances.
	latest instance <i>instance-id</i>	Displays the most recent hardware statistics about a given instance.
	nonzero instance <i>instance-id</i>	Displays information about a given instance by excluding traps with both zero packets accepted and zero packets dropped.
	nonzero instance <i>all</i>	Displays information about all instances by excluding traps with zero packets accepted and zero packets dropped.
	location <i>node-id</i>	Specifies the node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. Displays the information about a specific node.
	location <i>all</i>	Displays information about all nodes.
	<i>output-modifiers</i> begin <i>line</i>	Displays information from the line that matches to the given content. For example, if you want to display the running configuration starting from the interface configurations, you can enter as begin interface .
	<i>output-modifiers</i> exclude <i>line</i>	Displays information by filtering out lines that contain the given content. For example, if you want to view a configuration but skip all lines that mention "interface", you can enter as exclude interface .

<i>output-modifiers</i> include <i>line</i>	<p>Displays information that includes the content that you have given.</p> <p>For example, if you want to view lines that contain the word "interface" within a configuration, you can enter as include interface.</p>
<i>output-modifiers</i> utility <i>line</i>	<p>Specifies various Unix command-line tools to manipulate or analyze the command's output.</p> <p>For example, if you want to sort the output of a command alphabetically, you can enter as utility sort.</p>
<i>output-modifiers</i> file	<p>Saves the information to a specific file.</p> <p>For example, if you want to save information to a specific file, you can enter as file filename vrf vrfname.</p> <p>You can save the content in the following locations:</p> <ul style="list-style-type: none"> • <i>WORD</i> - Save the output to a specified filename. • <i>append</i> - Add the output to the end of an existing file. • <i>config</i> - Save the output to the device's configuration. • <i>disk0</i> - Store the output on the device's disk0 storage. • <i>ftp</i> - Transfer and save the output to an FTP server. • <i>harddisk</i> - Save the output to the device's internal hard disk. • <i>http</i> - Send the output to an HTTP server. • <i>https</i> - Send the output to an HTTPS server. • <i>rootfs</i> - Save the output to the root file system of the device. • <i>scp</i> - Securely copy the output to a remote server using SCP. • <i>sftp</i> - Securely transfer the output to a remote server using SFTP. • <i>tftp</i> - Transfer the output to a TFTP server.

Command Default None

Command Modes XR EXEC mode

show controllers npu stats traps-all

Command History	Release	Modification
	Release 7.3.5	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	interface	read
	filesystem	read, write
	cisco-support	read

Examples

The **show controllers npu stats traps-all** command displays packets that are locally processed and packets that are dropped by the CPU.

```
Router# show controllers npu stats traps-all instance all location 0/RP0/CPU0
```

Trap Type	NPU ID	Trap ID	TrapStats ID	Policer	Packet Accepted	Packet Dropped
RxTrapMimSaMove (CFM_DOWM_MEP_DMM)	0	6	0x6	32037	0	0
RxTrapMimSaUnknown (RCY_CFM_DOWN_MEP_DMM)	0	7	0x7	32037	0	0
RxTrapAuthSaLookupFail (IPMC default)	0	8	0x8	32033	0	0
RxTrapSaMulticast	0	11	0xb	32018	0	0
RxTrapArpMyIp	0	13	0xd	32001	0	0
RxTrapArp	0	14	0xe	32001	11	0
RxTrapDhcpv4Server	0	18	0x12	32022	0	0
RxTrapDhcpv4Client	0	19	0x13	32022	0	0
RxTrapDhcpv6Server	0	20	0x14	32022	0	0
RxTrapDhcpv6Client	0	21	0x15	32022	0	0
RxTrapL2Cache_LACP	0	23	0x17	32003	0	0
RxTrapL2Cache_LLDP1	0	24	0x18	32004	0	0
RxTrapL2Cache_LLDP2	0	25	0x19	32004	1205548	0
RxTrapL2Cache_LLDP3	0	26	0x1a	32004	0	0

The above sample displays only a part of the actual output; the actual output displays more details.

show controllers npu stats voq

To display statistics related to the Virtual Output Queues (VOQs) on the NPU, use the **show controllers npu stats voq** command in the XR EXEC mode.

```
show controller npu stats voq { base voq-base number { instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | src-slice slice-id instance { instance-id location { node-id | path | all } } | all location { node-id | path | all } } } | ingress interface { voq-Interface-handle-number instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | CEM R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | EH R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Fi R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Fo R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | FH R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Gi R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Hu R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Mg R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | PTP R/S/I/P instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | Te R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | TF R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | TH R/S/I/P/B instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } | all instance { instance-id location { node-id | path | all } | all location { node-id | path | all } } } } [ output-modifiers { begin line | exclude line | file | include line | utility line } ]
```

Syntax Description

base <i>voq-base number</i>	Specifies the voq-base number.
src-slice <i>slice-id</i> instance	Specifies the slice id.
ingress interface <i><voq-Interface handle number></i>	Specifies voq-Interface handle number.
ingress interface <i>CEM</i>	Specifies circuit emulation interface.
ingress interface <i>EH</i>	Specifies 800 Gigabit ethernet interface type.
ingress interface <i>Fi</i>	Specifies 50 Gigabit ethernet interface type.
ingress interface <i>Fo</i>	Specifies 40 Gigabit ethernet interface type.
ingress interface <i>FH</i>	Specifies 400 Gigabit ethernet interface type.
ingress interface <i>Gi</i>	Specifies Gigabit ethernet interface type.
ingress interface <i>Hu</i>	Specifies 100 Gigabit ethernet interface type.
ingress interface <i>Mg</i>	Specifies ethernet interface type.
ingress interface <i>PTP</i>	Specifies ethernet interface type.
ingress interface <i>Te</i>	Specifies 10 Gigabit ethernet interface type.

ingress interface <i>TF</i>	Specifies 25 Gigabit ethernet interface type.
ingress interface <i>TH</i>	Specifies 200 Gigabit ethernet interface type.
ingress interface <i>all</i>	Specifies all interface type.
<i>R/S/I/P/B</i>	Specifies the Rack/Slot/Instance/Port/Breakout of the voq.
location <i>node-id</i>	Specifies the node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. Displays the information about a specific node.
location <i>all</i>	Displays information about all nodes.
<i>output-modifiers</i> begin <i>line</i>	<p>Displays information from the line that matches to the given content.</p> <p>For example, if you want to display the running configuration starting from the interface configurations, you can enter as begin interface.</p>
<i>output-modifiers</i> exclude <i>line</i>	<p>Displays information by filtering out lines that contain the given content.</p> <p>For example, if you want to view a configuration but skip all lines that mention "interface", you can enter as exclude interface.</p>
<i>output-modifiers</i> include <i>line</i>	<p>Displays information that includes the content that you have given.</p> <p>For example, if you want to view lines that contain the word "interface" within a configuration, you can enter as include interface.</p>
<i>output-modifiers</i> utility <i>line</i>	<p>Specifies various Unix command-line tools to manipulate or analyze the command's output.</p> <p>For example, if you want to sort the output of a command alphabetically, you can enter as utility sort.</p>

output-modifiers file

Saves the information to a specific file.

For example, if you want to save information to a specific file, you can enter as | **file filename vrf vrfname**.

You can save the content in the following locations:

- *filename* - Save the output to a specified filename in VRF.
- *append* - Add the output to the end of an existing file.
- *config* - Save the output to the device's configuration.
- *disk0* - Store the output on the device's disk0 storage.
- *ftp* - Transfer and save the output to an FTP server.
- *harddisk* - Save the output to the device's internal hard disk.
- *http* - Send the output to an HTTP server.
- *https* - Send the output to an HTTPS server.
- *rootfs* - Save the output to the root file system of the device.
- *scp* - Securely copy the output to a remote server using SCP.
- *sftp* - Securely transfer the output to a remote server using SFTP.
- *tftp* - Transfer the output to a TFTP server.

Command Default	None
------------------------	------

Command Modes	XR EXEC mode
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Command History	Release	Modification
	Release 7.3.5	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
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Task ID	Task ID	Operations
	interface	read

Task ID	Operations
filesystem	read, write
cisco-support	read

Examples

The **show controllers npu stats voq** command displays packets that are processed on the NPU and dropped in the interface VoQs.

```
Router# show controllers npu stats voq ingress interface hundredGigE 0/0/0/16 instance all
location 0/RP0/CPU0
```

```
Interface Name      = Hu0/0/0/16
Interface Handle    = f0001b0
Location           = 0/RP0/CPU0
Asic Instance      = 0
VOQ Base           = 10288
Port Speed(kbps)   = 100000000
Local Port         = local
VOQ Mode           = 8
Shared Counter Mode = 2
-----
ReceivedPkts      ReceivedBytes    DroppedPkts      DroppedBytes
-----
TC_{0,1} = 114023724      39908275541      113945980        39881093000
TC_{2,3} = 194969733      68239406550      196612981        68814543350
TC_{4,5} = 139949276      69388697075      139811376        67907466750
TC_{6,7} = 194988538      68242491778      196612926        68814524100
```

show spp node-counters

To display the node counters for the Software Packet Path (SPP), use the **show spp node-counters** command in the XR EXEC mode.

```
show spp node-counters { location { node-id | path | all } } [ output-modifiers ] [ output-modifiers
{ begin line | exclude line | file | include line | utility line } ]
```

Syntax Description

location <i>node-id</i>	Specifies the node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. Displays the information about a specific node.
location <i>all</i>	Displays information about all nodes.
<i>output-modifiers</i> begin line	Displays information from the line that matches to the given content. For example, if you want to display the running configuration starting from the interface configurations, you can enter as begin interface .

<i>output-modifiers</i> exclude <i>line</i>	<p>Displays information by filtering out lines that contain the given content.</p> <p>For example, if you want to view a configuration but skip all lines that mention "interface", you can enter as exclude interface.</p>
<i>output-modifiers</i> include <i>line</i>	<p>Displays information that includes the content that you have given.</p> <p>For example, if you want to view lines that contain the word "interface" within a configuration, you can enter as include interface.</p>
<i>output-modifiers</i> utility <i>line</i>	<p>Specifies various Unix command-line tools to manipulate or analyze the command's output.</p> <p>For example, if you want to sort the output of a command alphabetically, you can enter as utility sort.</p>

output-modifiers **file**

Saves the information to a specific file.

For example, if you want to save information to a specific file, you can enter as | **file filename vrf vrfname**.

You can save the content in the following locations:

- *filename* - Save the output to a specified filename in VRF.
- *append* - Add the output to the end of an existing file.
- *config* - Save the output to the device's configuration.
- *disk0* - Store the output on the device's disk0 storage.
- *ftp* - Transfer and save the output to an FTP server.
- *harddisk* - Save the output to the device's internal hard disk.
- *http* - Send the output to an HTTP server.
- *https* - Send the output to an HTTPS server.
- *rootfs* - Save the output to the root file system of the device.
- *scp* - Securely copy the output to a remote server using SCP.
- *sftp* - Securely transfer the output to a remote server using SFTP.
- *tftp* - Transfer the output to a TFTP server.

Command Default None

Command Modes XR EXEC mode

Command History	Release	Modification
	Release 6.0.1	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID Operations
	transport read

Task ID Operations

optical read

Examples

The **show spp node-counters** command displays the node counters for the SPP on a particular node or location.

```
Router# show spp node-counters location 0/0/CPU0
fretta/classify
    forwarded to spp clients:          10006
    forwarded NPU packet to NetIO:    10006
    dropped in classify node:         22
    Fwded to CoPP sampler:            2
    PUNT ARP:                          2
    PUNT IFIB:                         10006
    IFIB IPv4_STACK:                  10000
    IFIB RAWIP6_FM:                   6
-----
client/inject
    pkts injected into spp:           10002
    NetIO->NPU injected into spp:     10002
    NetIO->NPU PROTO ARP:             2
    NetIO->NPU PROTO IPV4:           10000
-----
socket/rx
    ether raw pkts:                   10030
-----
socket/tx
    ce pkts:                           10002
-----
client/punt
    punted to client:                 10008
-----
```

The above sample displays only a part of the actual output; the actual output displays more details.

```
show spp node-counters
```