

Out Of Resource Handling Commands

This module describes the Cisco IOS XR Software commands to configure graceful handling of out of resource situations for system monitoring on the router.

For detailed information about graceful handling of out of resource concepts, configuration tasks, and examples, see the *Graceful Handling of Out of Resource Situations* chapter in the *System Monitoring Configuration Guide for Cisco NCS 5500 Series Routers*.

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oor hw

To configure threshold values to handle Out of Resource (OOR) situations, use the **oor hw** command in XR Config mode. To remove the **oor hw** configuration file, use the **no** form of this command.

oor hw threshold { **red** | **yellow** } *threshold-value*

Syntax Description

threshold	Enables the threshold values of OOR states.
red	Specifies the OOR state, **Red**.
yellow	Specifies the OOR state, **Yellow**.
threshold-value	Specifies the threshold value for OOR state.

Command Default

The default threshold values for **Red** and **Yellow** OOR states are 95% and 80% respectively.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.1.1	This command was introduced.

Task ID

Task ID	Operations
config-services	read, write

Examples

This example shows how to enable threshold values for OOR states:

```
Router(config)#oor hw threshold red 90
Router(config)#oor hw threshold yellow 75
Router(config)#commit
```

hw-module profile qos free-buffer-int-threshold

To configure threshold limits for Traffic Manager (TM) buffers, use the **hw-module profile qos free-buffer-int-threshold** command in the XR Config mode.

hw-module profile qos free-buffer-int-threshold *set-value* *clear-value*

Syntax Description

set-value	Configure the value at which the router should set the interrupt for TM free buffers. Range: 0 - 100
clear-value	Configure the value at which the router should clear the interrupt for TM free buffers. Range: 0 - 100

Command Default

These thresholds are not enabled by default.

If only *set-value* is configured then *clear-value* defaults to 100.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

You must reload all locations to enable the threshold values for free buffers.

The *set-value* should be configured lower than the *clear-value* .

Task ID

Task ID	Operation
qos	read, write

The following example shows how to enable the wred-stats mode.

```
Router#config
Router(config)#hw-module profile qos free-buffer-int-threshold 50 75
Router(config)#commit
Router(config)#exit
Roueter#reload location all
```

show controllers npu resources

To display the usage of Open Forwarding Abstraction (OFA) resources, use the **show controllers npu resources** command in the XR EXEC mode. OFA is an infrastructure layer which provides an abstraction interface for networking hardware.

show controllers npu resources { **fec** | **ecmpfec** | **encap** | **encapAC** | **encapPWE** | **encaptunnels** | **encapARP** | **all** } **location** { **all** *location-id* }

Syntax Description

all	Displays the usage of all the OFA hardware resources with respect to a single or all locations.
fec	Displays the usage of Forward Equivalence Class (FEC) hardware resources for a single location or all locations.
ecmpfec	Displays the usage of Equal Cost Multi-Path (ECMP) FEC hardware resources for a single location or all locations.
encap	Displays the usage of Egress Encapsulation Database (EEDB) hardware resources for a single location or all locations.
encapAC	Displays the usage of Egress Encapsulation Database (EEDB) for attachment circuit (AC) encapsulation for a single location or all locations.
encapPWE	Displays the usage of Egress Encapsulation Database (EEDB) for pseudowire encapsulation for a single location or all locations.
encaptunnels	Displays the usage of Egress Encapsulation Database (EEDB) for tunnel encapsulation for a single location or all locations.
encapARP	Displays the usage of Egress Encapsulation Database (EEDB) for Address Resolution Protocol (ARP) encapsulation for a single location or all locations.
location *location-id*	Displays the usage of a single or all resource type with respect to a specified location.
location all	Displays the usage of a single or all resource type for all locations.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.8.1	The following optional keywords were introduced: • **encapAC** • **encapPWE** • **encaptunnels** • **encapARP**
Release 7.6.1	Keyword **encap** was introduced.
Release 7.5.1	Keywords **fec** and **ecmpfec** were introduced.
Release 7.1.1	This command was introduced.

Task ID

Task ID	Operations
interface	read
cisco-support	read

The **show controllers npu resources** command displays Out of Resource (OOR) state.

```
Router# show controllers npu resources encap location 1/0/CPU0
HW Resource Information For Location: 0/1/CPU0
HW Resource Information
Name : encap
Asic Type : Jericho

NPU-0
OOR Summary
Red Threshold : 95 %
Yellow Threshold : 80 %


OFA Table Information
(May not match HW usage)
ipnh : 9
ip6nh : 0
mplsnh : 10984
llnh : 0
srv6nh : 0
ipvrf : 1
mplsmdtbud : 0
iptunnelencap : 0
tep : 0

Current Hardware Usage
Name: encap


Name: bank_0
Estimated Max Entries : 4096
Total In-Use : 2394 (58 %)
```

```
OOR State : Green
OOR State Change Time : 2021.Apr.16 00:22:36 WIB
Bank Info : phase=2 extended=no

--More--
Name: bank_1
Estimated Max Entries : 4096
Total In-Use : 12 (0 %)
OOR State : Green
Bank Info : phase=8 extended=no


Name: bank_2
Estimated Max Entries : 4096
Total In-Use : 9 (0 %)
OOR State : Green
Bank Info : phase=4 extended=no


Name: bank_3
Estimated Max Entries : 4096
Total In-Use : 2 (0 %)
OOR State : Green
OOR State Change Time : 2021.May.02 11:37:03 WIB
Bank Info : phase=2 extended=no


Name: bank_4
Estimated Max Entries : 4096
Total In-Use : 0 (0 %)
OOR State : Green
Bank Info : phase=0 extended=no


Name: bank_5
Estimated Max Entries : 4096
Total In-Use : 0 (0 %)
OOR State : Green
Bank Info : phase=0 extended=no


Name: bank_6
Estimated Max Entries : 4096
Total In-Use : 4096 (100 %)
OOR State : Red
OOR State Change Time : 2021.Apr.24 19:39:09 WIB
Bank Info : phase=1 extended=no


Name: bank_7
Estimated Max Entries : 4096
Total In-Use : 3 (0 %)
OOR State : Green
Bank Info : phase=4 extended=no


Name: bank_8
Estimated Max Entries : 4096
Total In-Use : 4096 (100 %)
OOR State : Red
OOR State Change Time : 2021.Apr.28 02:56:28 WIB
Bank Info : phase=1 extended=no
```

```
Name: bank_9
Estimated Max Entries : 4096
Total In-Use : 2477 (60 %)
OOR State : Green
```

View the encapsulation specific resource details using the respective keyword in the show command. For example, to view the resource details for attachment circuits, use the **show controllers npu resources encapAC** command:

```
Router# show controllers npu resources encapAC location 0/RP0/CPU0
HW Resource Information
    Name                            : encap_AC
    Asic Type                       : Jericho Two

NPU-0
OOR Summary
        Red Threshold               : 95 %
        Yellow Threshold            : 80 %


OFA Table Information
(May not match HW usage)
        ip6nh                       : 0
        ipmctxintf                  : 0
        l2intf                      : 0
        l2port                      : 0

Current J2 Hardware Usage

   Cluster Bank Pair: EEDB_S1_L1
    Max-Entries                     : 98304
    Total In-use                    : 18

    Logical_phase                   : 8 (Encap_Ac)
        Cluster Bank
           Bank Size                : S1
           Estimated Max Entries    : 98304
           OOR State                : Green
           Total In-Use             : 18

           EEDB Bank:
             Estimated Max Entries  : 8192
             OOR State              : Green
             Total In-Use           : 0

    Logical_phase                   : 2 (Encap_NativeArp)
        Cluster Bank
           Bank Size                : L1
           Estimated Max Entries    : 81920
           OOR State                : Green
           Total In-Use             : 0

           EEDB Bank:
             Estimated Max Entries  : 30720
             OOR State              : Green
             Total In-Use           : 0
```

show controllers npu resources qos

To view the QoS utilization of some packet processing and traffic management resources, use the **show controllers npu resources qos** command in the XR EXEC mode.

show controllers npu resources qos [**all** | **connectors** | **egq-profile** | **egress-qos-map** | **policer** | **rate-class-profile** | **voq**] **instance** { *num* | **all** } **location** { **all** *location-id* }

Syntax Description

all	Displays the usage of the traffic management and packet processing hardware resources with respect to a single or all locations.
connectors	Displays the usage of the number of NPU connectors or Fabric Access Processors (FAP) for a single location or all locations.
egq-profile	Displays the usage of egress queue maps for a single location or all locations. They are consumed when you create egress policies with priority marking.
egress-qos-map	Displays the usage of resources used in creating traffic class and drop precedence (or discard class) maps for egress traffic.
policer	The number of policers that are allocated and that you can create. The total number of policer banks is inversely proportional to the class map size.
rate-class-profile	Displays the usage of rate profile pool for a single location or all locations. Interfaces with different line rates and policies with significantly differing shaper and queue lengths use rate profiles.
voq	Displays the usage of the number of Virtual Output Queues (VOQs) used at a global level from a common pool for a single location or all locations.
instance *number*	Displays the usage of a single or all resource types with respect to a specific ASIC number or instance to which the interface is mapped.
instance *all*	Displays the usage of a single or all resource types for all ASIC numbers or instances.
location *location-id*	Displays the usage of a single or all resource types with respect to a specified location.
location all	Displays the usage of a single or all resource types for all locations.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.11.1	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 controllers npu resources qos** command displays usage of packet processing and traffic management resources.

```
Router#show controllers npu resources qos all instance all location 0/0/CPU0

========================================================================
QoS TM Connectors Information For Location: 0/0/CPU0

System information for NPU 0:
Core 0:
                             Used(   %)       Free      Total   Reserved      Per Interface
 Consumption
    Normal Connector Set:        384(  0%)      59008      59392       6144
              16
   Lowrate connector Set:          0(  0%)          0          0

Core 1:
                             Used(   %)       Free      Total   Reserved      Per Interface
 Consumption
    Normal Connector Set:        384(  0%)      59008      59392       6144
              16
   Lowrate connector Set:          0(  0%)          0          0

========================================================================
QoS TM Rate Profile Information:
Note: - This is a global resource and shared across all LCs

                                Used(   %)       Free      Total     Reserved    Highest
Used
                                   3(  5%)         56         59            5
  3

========================================================================
QoS TM EGQ Profile Information For Location: 0/0/CPU0

System information for NPU 0:
Core 0:
                                Used(   %)       Free      Total
                                   8(100%)          0          8

Core 1:
                                Used(   %)       Free      Total
                                   8(100%)          0          8

========================================================================
```

```
QoS PP Policer Banks Information For Location: 0/0/CPU0

System information for NPU 0:
Core 0:
                                Used(   %)       Free      Total       Class-map size
      Policer Banks info:          0(  0%)        218        218                   32

Core 1:
                                Used(   %)       Free      Total       Class-map size
      Policer Banks info:          0(  0%)        218        218                   32

======================================================================
QoS PP Egress QoS Map Information For Location: 0/0/CPU0

System information for NPU 0:      Used(   %)       Free      Total
         L2 Profile Pool:             0(  0%)         14         14
         L3 Profile Pool:             0(  0%)          3          3

======================================================================
QoS VOQ Information For Location: 0/0/CPU0

Note:- This is a global resources shared by all NPUs

                                Used(   %)       Free      Total
               VOQ info:        175(  1%)      11984      12159
```

show grid pool

To display the utilization of banks in the NPU resources, use the **show grid pool** command in the XR EXEC mode.

show grid pool { *pool-id* | **all** } [**bank** { *bank-id* | **all** }]

Syntax Description

pool-id	Displays the utilization of pool in the NPU resource. Range: 0 - 16
bank-id	Displays the utilization of bank in the specified pool Range: 0 - 255

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.5.3	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

Examples

The following example shows how to check the utilization of resources in the bank:

```
Router# show grid pool 1 bank all
Tue Jul 26 11:44:24.960 UTC
Bank Ptr : 0x308ca4bd50
Bank ID : 0
Pool : RIF (id 1)
Bank Start : -1
Bank End : -1
Max Bank Size : 1
Max Resource Pages : 1
Available resource IDs : 1 (100.000% free)
Alarm state : Green
Bank statistics: Success Error (since last clear)
Resource IDs reserved 0 0 0 0
Resource IDs returned 0 0 0 0
Bank Ptr : 0x308ca4bdb8
Bank ID : 1
Pool : RIF (id 1)
Bank Start : 6
Bank End : 8192
Max Bank Size : 8187
```

```
Max Resource Pages : 256
Available resource IDs : 8119 (99.169% free)
Alarm state : Green
HW Resources:
RIF_VSI
Bank statistics: Success Error (since last clear)
Resource IDs reserved 986 0 986 0
Resource IDs returned 918 0 918 0
Client : vlan-fib
Resource IDs reserved 933 0 933 0
Resource IDs returned 865 0 865 0
current usage : 68
Client : ip-tunnel
Resource IDs reserved 32 0 32 0
Resource IDs returned 32 0 32 0
current usage : 0
Client : redirectvrf
Resource IDs reserved 1 0 1 0
Resource IDs returned 1 0 1 0
current usage : 0
Client : l2vpn-mgr
Resource IDs reserved 20 0 20 0
Resource IDs returned 20 0 20 0
current usage : 0
```

Table 1: Show grid pools field descriptions

Field	Description
Bank Ptr	Banks memory address
Bank ID	Banks unique bank ID
Pool ID	Banks resource pool name and ID
Bank Start	Banks starting index
Bank End	Banks ending index
Max Bank Size	Banks total capacity
Max Resource Pages	Banks total page capacity