

System Health Check Commands

This module describes the system health check commands available on the router. These commands are used to proactively monitor the health of the router.

For detailed information about system health check concepts, configuration tasks, and examples, see the *System Health Check* chapter in the *System Monitoring Configuration Guide for Cisco 8000 Series Routers*.

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healthcheck

To configure the health check cadence and metrics of a system, use the **healthcheck** command in Configuration mode. To disable health check, use the **no** form of this command.

Note Health check service is an optional RPM. You must download and install the package explicitly to use the service.

healthcheck cadence *<cadence-configuration>* {**enable**} {**metric** | **cpu** | **fabric-health** | **filesystem** | **fpd** | **free-mem** | **shared-mem**}
no healthcheck metric *<metric-name>*

Syntax Description

cadence	Collects data about system health for enabled metrics at a configured time interval. The cadence can range from 30 to 1800 seconds.
enable	Enables health check service on the Route Processor (RP).

metric {**cpu** | **fabric-health** | **filesystem** | **fpd** | **free-mem** | **shared-mem**}	Specifies the configurable metrics based on a threshold that applies only to system resources (CPU, free-mem, shared-mem and filesystem).

Command Default

Health check is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

None

Task ID

Task ID	Operations
root-system or diag or cisco-support or monitor or root-lr	read, write

Examples

This example shows how to enable health check service:

```
Router(config)#healthcheck enable
```

This example shows how to configure cadence (in seconds) at which data about system health is collected:

```
Router(config)#healthcheck cadence 30
```

This example shows how to configure the average utilization threshold of CPU metric:

```
Router(config)#healthcheck metric cpu avg-util 15-minute
```

healthcheck metric

To disable the health check for the metrics of a system, use the **healthcheck metric** command in Configuration mode.

healthcheck metric { **cpu** | **fabric-health** | **filesystem** | **fpd** | **free-mem** | **shared-mem** | **platform** | **redundancy** | **interface-counters** | **asic-errors** | **fabric-stats** } **disable**

Syntax Description

cpu	Specifies system health data for cpu configurations
fabric-health	Specifies system health data for fabric configurations
filesystem	Specifies system health data for file-system usage configurations
fpd	Specifies system health data for fpd configurations
free-mem	Specifies system health data for free memory

shared-mem	Specifies system health data for shared memory
platform	Specifies system health data for platform configuration
redundancy	Specifies system health data for redundancy configuration
interface-counters	Specifies system health data for interface counters
asic-errors	Specifies system health data for asic-errors
fabric-stats	Specifies system health data for fabric statistics
disable	Disables the collection of health-check information

Command Default

Health-check for metrics is enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.
Release 7.0.14	Command options for platform and redundancy infrastructure services and counters were added.

Usage Guidelines

None

Task ID

Task ID	Operations
monitor	read, write, execute

Examples

This example shows how to disable health check service for plaform:

```
Router(config)#healthcheck metric platform disable
Router(config)#commit
```

This example shows how to disable health check service for interface-counters:

```
Router(config)#healthcheck metric intf-counters disable
Router(config)#commit
```

show healthcheck metric

To view the detailed information about the utilization and state of each metric used to check the health of the system, use the **show healthcheck metric** command in EXEC mode.

show healthcheck metric cpu | free-mem | shared-mem | filesystem | fpd | fabric-health | platform | redundancy | interface-counters { summary | | detail } | asic-errors { summary | | detail } | fabric-stats { summary | | detail }

Syntax Description

cpu | **free-mem** | **shared-mem** | **filesystem**	Name of the system resource for which the metric is viewed.
fpd | **fabric-health** | **platform** | **redundancy**	Name of the infrastructure service for which the metric is viewed.
interface-counters | **asic-errors** | **fabric-stats**	Name of the counters for which the metric is viewed.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.
Release 7.0.14	Health-check for the platform and redundancy infrastructure services and counters were added.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
monitor	read

Examples

This is sample output from the **show healthcheck metric** command to view the CPU usage:

```
Router#show healthcheck metric cpu
CPU Metric State: Normal
Last Update Time: <date-time>
CPU Service State: Enabled
Number of Active Nodes: 2
Configured Thresholds:
   Minor: 20%
   Severe: 50%
   Critical: 75%
Node Name: 0/RP0/CPU0
    CPU 1 Minute Average Usage: 6%
    CPU 5 Minute Average Usage: 5%
    CPU 15 Minute Average Usage: 5% *
Node Name: 0/0/CPU0
    CPU 1 Minute Average Usage: 4%
    CPU 5 Minute Average Usage: 4%
    CPU 15 Minute Average Usage: 3% *
'*' indicates the traceked average CPU utilization
```

Examples

This is sample output from the **show healthcheck metric platform**:

```
Router#show healthcheck metric platform
Platform Metric State: Normal ==========> Health of the metric
Last Update Time: 25 Jun 05:17:03.508172 =====> Timestamp at which the metric data was
collected
Platform Service State: Enabled =====> Service state of Platform
Number of Racks: 1 ======> Total number of racks in the testbed
Rack Name: 0
Number of Slots: 12
Slot Name: RP0
Number of Instances: 2
Instance Name: CPU0
Node Name 0/RP0/CPU0
Card Type 8800-RP
Card Redundancy State Active
Admin State NSHUT
Oper State IOS XR RUN
```

Examples

This is sample output from the **show healthcheck metric interface-counters**:

```
Router#show healthcheck interface-counters summary
Interface-counters Health State: Normal ==========> Health of the metric
Last Update Time: 25 Jun 05:59:33.965851 =====> Timestamp at which the metric data was
collected
Interface-counters Service State: Enabled =====> Service state of the metric
Interface MgmtEth0/RP0/CPU0/0 =====> Configured interface for healthcheck monitoring
Counter-Names Count Average Consistently-Increasing
-----------------------------------------------------------------------------------------------
output-buffers-failures 0 0 N
Counter-Names =====> Name of the counters
Count =====> Value of the counter collected at "Last Update Time"
Average =====> Average of all values available in buffer
Consistently-Increasing =====> Trend of the counter values, as per data available in buffer
Router#show healthcheck interface-counters detail all
Last Update Time: 25 Jun 06:01:35.217089 =====> Timestamp at which the metric data was
collected
Interface MgmtEth0/RP0/CPU0/0 =====> Configured interface for healthcheck monitoring
Following table displays data for last <x=5> values collected in periodic cadence intervals
-----------------------------------------------------------------------------------------------------------
Counter-name Last 5 values
LHS = Earliest RHS = Latest
-----------------------------------------------------------------------------------------------------------
output-buffers-failures 0 0 0 0 0
parity-packets-received 0 0 0 0 0
```

show healthcheck report

To view the health check report for enabled metrics in the system, use the **show healthcheck report** command in XR EXEC mode.

show healthcheck report

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

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

Task ID

Task ID	Operations
monitor	read

Examples This is sample output from the **show healthcheck report** command:

```
Router#show healthcheck report
Healthcheck report for enabled metrics
cpu
  State: Normal
free-memory
  State: Normal
filesystem
  State: Normal
shared-memory
  State: Normal
fpd
  State: Warning
One or more FPDs are in NEED UPGD state
fabric-health
  State: Normal
```

show healthcheck status

To view the status of health check service and configured parameters for each of the enabled metrics, use the **show healthcheck status** command in XR EXEC mode.

show healthcheck status

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

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

Task ID

Task ID	Operations
monitor	read

Examples

This is sample output from the **show healthcheck status** command:

```
Router#show healthcheck status
Healthcheck status: Enabled

Collector Cadence: 60 seconds

System Resource metrics
  cpu
      Thresholds: Minor: 10%
                  Severe: 20%
                  Critical: 30%

       Tracked CPU utilization: 15 min avg utilization

   free-memory
        Thresholds: Minor: 10%
                    Severe: 8%
                    Critical: 5%

   filesystem
        Thresholds: Minor: 80%
                    Severe: 95%
                    Critical: 99%

   shared-memory
        Thresholds: Minor: 80%
                    Severe: 95%
                    Critical: 99%

Infra Services metrics
   fpd

   fabric-health
```

show healthcheck use-case packet-drop

To view the packet-drop use-case trends, use the **show healthcheck use-case packet-drop** command in XR EXEC mode.

`show healthcheck use-case packet-drop { summary | detail { npu` ***npu*** `| location` ***location*** `} | history { npu` ***npu*** `| location` ***location*** `} }`

Syntax Description

npu *npu*	Specify the npu
location *location*	Specify the slot location

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 24.4.1	This command was modified to introduce the **history** keyword.
Release 7.3.4	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
monitor	read

Examples

This is sample output from the **show healthcheck use-case packet-drop summary** command:

```
Router# show healthcheck use-case packet-drop summary
Mon Jun 5 10:38:25.885 IST
Use Case Name: packet_drop
Timestamp : Mon 2023-06-05 10:38:25 IST
State : Normal
```

This is sample output from the **show healthcheck use-case packet-drop detail** command:

```
Router# show healthcheck use-case packet-drop detail npu all location all
Mon Nov 25 08:35:47.701 UTC
Node: 0/0/CPU0 NPU Instance: 0
Timestamp : Mon 2024-11-25 08:35:29 UTC
Alerts :
1. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
V4_CHECKSUM_ERROR(D*) tolerance: LOW trend: PEAK at 2024-11-25 08:35:26
```

This is sample output from the **show healthcheck use-case packet-drop history** command:

```
Router# show healthcheck use-case packet-drop history npu 0 location 0/0/CPU0
Node: 0/0/CPU0     NPU Instance: 0
Timestamp:
Alerts    :
        1. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*) trend: PEAK at 2023-11-28 07:11:37
        2. npu-drops location: node-name: 0/0/CPU0 npu-id: 0 field-name:
counters.drop.slice[0].ifg[0].ifgb.port_4.rx_undersize_pkt_ severity: ERROR trend: PEAK at
 2023-11-28 07:11:37
        3. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
V4_CHECKSUM_ERROR(D*) trend: PLATEAU at 2023-11-28 07:13:37
        4. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*) trend: PLATEAU at 2023-11-28 07:13:37
        5. npu-drops location: node-name: 0/0/CPU0 npu-id: 0 field-name:
counters.drop.slice[0].ifg[0].ifgb.port_4.rx_undersize_pkt_ severity: ERROR trend: PLATEAU
 at 2023-11-28 07:21:37
        6. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*) trend: PLATEAU at 2023-11-28 07:31:09
        7. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
V4_CHECKSUM_ERROR(D*) trend: PLATEAU at 2023-11-28 07:52:39
        8. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*) trend: PLATEAU at 2023-11-28 07:52:39
        9. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
UNKNOWN_VLAN_OR_BUNDLE_MEMBER(D*) trend: RECOVERY at 2023-11-28 08:04:40
```

```
        10. npu-traps location: node-name: 0/0/CPU0 npu-id: 0 trap-string:
V4_CHECKSUM_ERROR(D*) trend: RECOVERY at 2023-11-28 08:04:40
```

show smart-monitor

To display the health monitoring information, SMART metrics, and raw diagnostic data for all Solid State Drives (SSDs) on the router, use the **show smart-monitor** command in the XR EXEC mode.

show smart-monitor

Syntax Description

smart-monitor	Self-Monitoring, Analysis, and Reporting Technology (SMART) is an integrated monitoring system in storage devices such as SSDs and hard drives. SMART tracks the health of these devices and anticipates hardware failures.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 26.1.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
system	read

Command output fields

Field	Description
Location	Indicates the specific Route Processor (RP) or line card where the disk is physically located.
Disk	The identifier for the drive.
Model & Serial	Manufacturer's model number and unique serial number for the drive.
Health (PASSED)	Overall status of the drive. "PASSED" indicates the drive is operating within normal parameters.
Read_Err (0)	Soft Read Error Rate. A value of 0 means there are no uncorrected read errors reported to the operating system.

Field	Description
Realloc (0)	Reallocated Sectors count. This parameter tracks bad sectors that have been found and remapped. A value of 0 is ideal, as it means no sectors have failed.
E2E_Err (0)	End-to-End Error count. This parameter tracks parity errors occurring in the data path to the media. A value of 0 indicates no data path errors.
Offline (0)	Offline Uncorrectable Sectors count. This parameter shows the total count of uncorrectable errors when reading or writing a sector.
Life (95%)	Life Left metric. A new drive starts at 100%. At 95%, this drive has approximately 95% of its program/erase cycles or reserved blocks remaining.
Used (5%)	Percentage Used. This parameter is a vendor-specific estimate of the percentage of the drive's life that has been consumed. Since Life Left is 95%, the Used value is 5%.

This example displays the health monitoring information, SMART metrics, and raw diagnostic data for the Solid State Drives (SSDs) at a specific hardware location on the router.

```
Router#show smart-monitor
Thu Aug 28 23:28:13.940 UTC

SMART Monitor Info for Location: node0_RP0_CPU0

Disk   Model              Serial      Health  Read_Err  Realloc  E2E_Err  Offline  Life
Used
-------------------------------------------------------------------------------------------------
nvme0  SRMP8480GF1S1B73C  STP26040GJR  PASSED    0         0        0        0      95%
5%

Raw SMART data for nvme0:
----------------------------------------
smartctl 7.4 2023-08-01 r5530 [x86_64-linux-6.6.69-yocto-standard] (local build)
Copyright (C) 2002-23, Bruce Allen, Christian Franke, www.smartmontools.org

[node0_RP0_CPU0:~]$smartctl -a /dev/sda1
smartctl 7.4 2023-08-01 r5530 [x86_64-linux-6.6.84-yocto-standard] (local build)
Copyright (C) 2002-23, Bruce Allen, Christian Franke, www.smartmontools.org

=== START OF INFORMATION SECTION ===
Model Family:     Intel S3520 Series SSDs
Device Model:     INTEL SSDSCKJB150G7
Serial Number:    PHDW72440104150A
LU WWN Device Id: 5 5cd2e4 14e0e1aac
Firmware Version: N2010121
User Capacity:    150,039,945,216 bytes [150 GB]
Sector Sizes:     512 bytes logical, 4096 bytes physical
Rotation Rate:    Solid State Device
Form Factor:      M.2
TRIM Command:     Available, deterministic, zeroed
Device is:        In smartctl database 7.3/5528
```

```
ATA Version is:   ACS-3 T13/2161-D revision 5
SATA Version is:  SATA 3.1, 6.0 Gb/s (current: 6.0 Gb/s)
Local Time is:    Fri Jan 16 17:46:18 2026 UTC
SMART support is: Available - device has SMART capability.
SMART support is: Enabled

=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED

General SMART Values:
Offline data collection status:  (0x02) Offline data collection activity
                                        was completed without error.
                                        Auto Offline Data Collection: Disabled.
Self-test execution status:      (   0) The previous self-test routine completed
                                        without error or no self-test has ever
                                        been run.
Total time to complete Offline
data collection:                 (  23) seconds.
Offline data collection
capabilities:                    (0x79) SMART execute Offline immediate.
                                        No Auto Offline data collection support.
                                        Suspend Offline collection upon new
                                        command.
                                        Offline surface scan supported.
                                        Self-test supported.
                                        Conveyance Self-test supported.
                                        Selective Self-test supported.
SMART capabilities:            (0x0003) Saves SMART data before entering
                                        power-saving mode.
                                        Supports SMART auto save timer.
Error logging capability:        (0x01) Error logging supported.
                                        General Purpose Logging supported.

Short self-test routine
recommended polling time:        (   1) minutes.
Extended self-test routine
recommended polling time:        (   2) minutes.
Conveyance self-test routine
recommended polling time:        (   2) minutes.
SCT capabilities:              (0x003d) SCT Status supported.
                                        SCT Error Recovery Control supported.
                                        SCT Feature Control supported.
                                        SCT Data Table supported.

SMART Attributes Data Structure revision number: 1
Vendor Specific SMART Attributes with Thresholds:
ID# ATTRIBUTE_NAME          FLAG     VALUE WORST THRESH TYPE      UPDATED  WHEN_FAILED
RAW_VALUE
  5 Reallocated_Sector_Ct   0x0032   100   100   000    Old_age   Always       -       0
  9 Power_On_Hours          0x0032   100   100   000    Old_age   Always       -       66495

 12 Power_Cycle_Count       0x0032   100   100   000    Old_age   Always       -       17115
170 Available_Reservd_Space 0x0033   100   100   010    Pre-fail  Always       -       0
171 Program_Fail_Count      0x0032   100   100   000    Old_age   Always       -       0
172 Erase_Fail_Count        0x0032   100   100   000    Old_age   Always       -       0
174 Unsafe_Shutdown_Count   0x0032   100   100   000    Old_age   Always       -       5967
175 Power_Loss_Cap_Test     0x0033   100   100   010    Pre-fail  Always       -       18660
 (17132 839)
183 SATA_Downshift_Count    0x0032   100   100   000    Old_age   Always       -       0
184 End-to-End_Error_Count  0x0033   100   100   090    Pre-fail  Always       -       0
187 Uncorrectable_Error_Cnt 0x0032   100   100   000    Old_age   Always       -       0
190 Case_Temperature        0x0022   084   083   000    Old_age   Always       -       16
(Min/Max 14/19)
192 Unsafe_Shutdown_Count   0x0032   100   100   000    Old_age   Always       -       5967
194 Drive_Temperature       0x0022   100   100   000    Old_age   Always       -       25
```

```
197 Pending_Sector_Count    0x0012   100   100   000    Old_age   Always       -       0
199 CRC_Error_Count         0x003e   100   100   000    Old_age   Always       -       137
225 Host_Writes_32MiB       0x0032   100   100   000    Old_age   Always       -
3036753
226 Workld_Media_Wear_Indic 0x0032   100   100   000    Old_age   Always       -
102400
227 Workld_Host_Reads_Perc  0x0032   100   100   000    Old_age   Always       -       4
228 Workload_Minutes        0x0032   100   100   000    Old_age   Always       -
3132873606
232 Available_Reservd_Space 0x0033   100   100   010    Pre-fail  Always       -       0
233 Media_Wearout_Indicator 0x0032   083   083   000    Old_age   Always       -       0
234 Thermal_Throttle_Status 0x0032   100   100   000    Old_age   Always       -       0/0
241 Host_Writes_32MiB       0x0032   100   100   000    Old_age   Always       -
3036753
242 Host_Reads_32MiB        0x0032   100   100   000    Old_age   Always       -
1979969
243 NAND_Writes_32MiB       0x0032   100   100   000    Old_age   Always       -
4804894

SMART Error Log Version: 1
No Errors Logged

SMART Self-test log structure revision number 1
Num  Test_Description    Status                  Remaining  LifeTime(hours)
LBA_of_first_error
# 1  Extended offline    Completed without error       00%        47         -
# 2  Extended offline    Completed without error       00%        46         -
# 3  Extended offline    Completed without error       00%        40         -

SMART Selective self-test log data structure revision number 1
 SPAN  MIN_LBA  MAX_LBA  CURRENT_TEST_STATUS
    1        0        0  Not_testing
    2        0        0  Not_testing
    3        0        0  Not_testing
    4        0        0  Not_testing
    5        0        0  Not_testing
Selective self-test flags (0x0):
  After scanning selected spans, do NOT read-scan remainder of disk.
If Selective self-test is pending on power-up, resume after 0 minute delay.
--------------------------------------------------------------------------------
```

use-case

To configure a system healthcheck use-case, use the **use-case** command in the healthcheck configuration mode.

Prior to Cisco IOS XR Release 24.1.1:

use-case { **asic-reset** { **disable** | **drop-tolerance** *drop-tolerance-value* } | **packet-drop** { **disable** | **drop-tolerance** *drop-tolerance-value* } }

From Cisco IOS XR Release 24.1.1 onwards:

use-case { **asic-reset** { **disable** | **drop-tolerance** *drop-tolerance-value* } | **packet-drop** { **disable** | **window-size** *window-size-value* | **tolerance** { **high** | **medium** | **low** } *drop-tolerance-value* } }

Syntax Description

asic-reset	Specify ASIC reset system healthcheck use-case

disable	Disable ASIC reset or packet-drop use-case. By default the use-case is enabled.
drop-tolerance *drop-tolerance-value*	Configure packet-drop tolerance value Default value: 10 Range for *drop-tolerance-value*: 0 - 100 This option is removed from Release 24.1.1 onwards
packet-drop	Specify packet-drop system healthcheck use-case
window-size *window-size-value*	Configure the number of cadence intervals to alert you of packet-drops. Default value: 10 Range for *window-size-value*: 5-20 This option is available from Release 24.1.1 onwards
tolerance { **high** | **medium** | **low** } *drop-tolerance-value*	Specify the NPU trap tolerance level and the drop-tolerance value. Range for *drop-tolerance-value*: 0-1000000 This option is available from Release 24.1.1 onwards

Command Default

Health check use-case is enabled.

Command Modes

healthcheck configuration mode

Command History

Release	Modification
Release 24.1.1	**window-size** and **tolerance** keywords are introduced **drop-tolerance** keyword is removed
Release 7.3.3 / Release 7.5.4	This command was introduced

Usage Guidelines

System Health check and use-cases are not part of the base package and you must explicitly install the '*xr-healthcheck'*optional package to use this service.

Task ID

Task ID	Operations
root-system or diag or cisco-support or monitor or root-lr	read, write

Example

This example shows you how to configure the ASIC reset use-case:

```
Router(config)# healthcheck
Router(config-healthcheck)# use-case asic-reset drop-tolerance 10
Router(config-healthcheck)# enable
```

This example shows you how to configure the packet-drop use-case prior to Cisco IOS XR Release 24.1.1:

```
Router(config)# healthcheck
Router(config-healthcheck)# use-case packet-drop drop-tolerance 10
Router(config-healthcheck)# enable
```

This example shows you how to configure the packet-drop use-case from Cisco IOS XR Release 24.1.1 onwards:

```
Router# conf t
Router(config)# healthcheck
Router(config-healthcheck)# use-case packet-drop window-size 5
Router(config-healthcheck)# use-case packet-drop tolerance high 100
Router(config-healthcheck)# enable
Router(config-healthcheck)# commit
```