



## System Health Check

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Monitoring systems in a network proactively helps prevent potential issues and take preventive actions. This chapter describes the tasks to configure and monitor system health check.

- [System Health Check, on page 1](#)
- [Enable Health Check, on page 2](#)
- [Change Health Check Refresh Time, on page 3](#)
- [View Status of All Metrics, on page 3](#)
- [Change Threshold Value for a Metric, on page 6](#)
- [View Health Status of Individual Metric, on page 6](#)
- [Disable Health Check, on page 8](#)

## System Health Check

Proactive network monitoring systems play a pivotal role in averting any issues. NCS 1014 health check service lets you monitor physical characteristics, current processing status, and the currently utilized resources to quickly assess the condition of the device at any time. This service helps to analyze the system health by monitoring, tracking and analyzing metrics that are critical for functioning of the NCS 1014. The system health metrics are thresholds set on the device in order to monitor the usage of CPU and other system resources. The health check service is installed with the NCS 1014 RPM.

You can evaluate the system's health by examining the metric values. If these values cross or approach the set thresholds, it suggests potential problems. By default, metrics for system resources are configured with preset threshold values. You can customize the metrics to be monitored by disabling or enabling metrics of interest based on your requirement.

Each metric is tracked and compared with that of the configured threshold, and the state of the resource is classified accordingly.

The system resources metrics can be in one of these states:

- **Normal:** The resource usage is less than the threshold value.
- **Minor:** The resource usage is more than the minor threshold, but less than the severe threshold value.
- **Severe:** The resource usage is more than the severe threshold, but less than the critical threshold value.
- **Critical:** The resource usage is more than the critical threshold value.

The infrastructure services metrics can be in one of these states:

- **Normal:** The resource operation is as expected.
- **Warning:** The resource needs attention. For example, a warning is displayed when the FPD needs an upgrade.

### Supported System Health Check Metrics

NCS 1014 supports the following system health check metrics:

- communication-timeout
- cpu
- filesystem
- fpd
- free-mem
- hw-monitoring
- lc-monitoring
- pci-monitoring
- platform
- process-resource
- process-status
- shared-mem
- wd-monitoring

## Enable Health Check

To enable health check, perform the following steps:

### Before you begin

Before enabling health check, ensure that:

- An IP address and subnet mask is assigned to the management interface.
- The IP address of the default gateway is configured with a static route.

For more details, see the [Configure Management Interface](#) section of the *Cisco NCS 1014 System Setup and Software Installation Guide*.

### Procedure

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- Step 1** Enter into the configuration mode using the **configuration** command.

**Step 2** Enable health check using the **healthcheck enable** command.

**Example:**

```
RP/0/RP0/CPU0:ios(config)# healthcheck enable
```

**Step 3** Run the **netconf-yang agent ssh** command.

**Example:**

```
RP/0/RP0/CPU0:ios(config)# netconf-yang agent ssh
```

**Step 4** Enable Google Remote Procedure Call (gRPC) using the **grpc local-connection** command.

**Example:**

```
RP/0/RP0/CPU0:ios(config)# grpc local-connection
```

**Step 5** Commit the changes using the **commit** command.

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## Change Health Check Refresh Time

Cadence is the time interval, in seconds, at which the health check status is refreshed. By default, this time is 60 seconds which means that health check status is updated every 60 seconds. You can change this time using the **healthcheck cadence cadence-value** command.

The following example shows to change the health check cadence value to 50 seconds so that health check status is updated every 50 seconds.

```
RP/0/RP0/CPU0:ios(config)#healthcheck cadence 50
```

## View Status of All Metrics

You can view the status of all the supported metrics with the associated threshold and configured parameters in the system. To check the status of all the metrics, perform these steps:

### Procedure

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**Step 1** Run the **show healthcheck status** command.

**Example:**

```
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios#show healthcheck status
Sat Jun 12 02:00:25.204 UTC
```

```
Healthcheck status: Enabled
Time started: 12 Jun 02:00:22.392972
```

```
Collector Cadence: 30 seconds
```

```
METRICS STATS
```

```
System Resource metrics
  cpu
```

```

    Thresholds: Minor: 20%
                Severe: 50%
                Critical: 75%

    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
    platform

    fpd

    Install Custom Metrics
    process-status

    process-resource

    communication-timeout

    pci-monitoring

    hw-monitoring

    wd-monitoring

    lc-monitoring

    Use case
    Use cases are disabled

```

**Step 2** To view the health state of the health check manager, use the **show healthcheck internal states** command.

**Example:**

```

RP/0/RP0/CPU0:ios#show healthcheck internal states
Sat Jun 12 02:00:55.425 UTC

    Internal Structure INFO

    Current state: Enabled

    Reason: Success

    Netconf Config State: Enabled

    Grpc Config State: Enabled

    Nosi state: Initialized

    Appmgr conn state: Connected

```

```
Nosi lib state: Not ready  
Nosi client: Valid client
```

**Step 3** To view the health state for each enabled metric, use the **show healthcheck report** command.

**Example:**

```
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios#show healthcheck report  
Sat Jun 12 02:02:54.417 UTC  
  
Healthcheck report  
Last Update Time: 12 Jun 02:02:46.955241  
METRICS REPORT  
  
cpu  
  State: Normal  
  
free-memory  
  State: Normal  
  
filesystem  
  State: Normal  
  
shared-memory  
  State: Normal  
  
platform  
  State: Warning  
  Reason: One or more devices are not in operational state  
  
fpd  
  State: Warning  
  Reason: One or more FPDs are not in CURRENT state  
  
process-status  
  State: Normal  
  
process-resource  
  State: Normal  
  
communication-timeout  
  State: Normal  
  
pci-monitoring  
  State: Normal  
  
hw-monitoring  
  State: Normal  
  
wd-monitoring  
  State: Normal  
  
lc-monitoring  
  State: Normal
```

In the above output, the state of the FPD shows a warning message that indicates an FPD upgrade is required.

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# Change Threshold Value for a Metric

You can customize the health check threshold value for a metric using the following command:

**healthcheck metric** *metric-name* **threshold** *threshold-value*

## Example to Change Preset Metric Value

The following example shows to change the threshold value of CPU metric to 25%.

```
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios(config)#healthcheck metric cpu minor threshold 25%
```

# View Health Status of Individual Metric

You can view the health status of a system resource or infrastructure service metric in the system.

## Procedure

Run the **show healthcheck metric** *metric-name* command.

### Example:

The following example shows how to obtain the health-check status for the *filesystem* metric:

```
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios#show healthcheck metric filesystem
Sat Jun 12 02:01:32.432 UTC
Filesystem Metric State: Normal
Last Update Time: 12 Jun 02:01:04.446619
Filesystem Service State: Enabled
Number of Active Nodes: 1
Configured Thresholds:
  Minor: 80%
  Severe: 95%
  Critical: 99%

Node Name: 0/RP0/CPU0
Partition Count: 5

Partition Name: tftp:
  Partition Access Attribute: rw
  Partition Type: network
  Partition Size: 0
  Partition Free Bytes: 0
  Partition Free Space in %: 0

Partition Name: disk0:
  Partition Access Attribute: rw
  Partition Type: flash-disk
  Partition Size: 20024897536
  Partition Free Bytes: 19978481664
  Partition Free Space in %: 99

Partition Name: /misc/config
```

```
Partition Access Attribute: rw
Partition Type: flash
Partition Size: 151314698240
Partition Free Bytes: 146903269376
Partition Free Space in %: 97

Partition Name: harddisk:
Partition Access Attribute: rw
Partition Type: harddisk
Partition Size: 150114078720
Partition Free Bytes: 144962641920
Partition Free Space in %: 96

Partition Name: ftp:
Partition Access Attribute: rw
Partition Type: network
Partition Size: 0
Partition Free Bytes: 0
Partition Free Space in %: 0
```

**Example:**

The following example shows how to obtain the health-check status for the *platform* metric:

```
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios#show healthcheck metric platform
Sat Jun 12 02:01:51.922 UTC
Platform Metric State: Warning
Last Update Time: 12 Jun 02:01:38.650003
Platform Service State: Enabled
Number of Racks: 1

Rack Name: 0
Number of Slots: 5

Slot Name: RP0
Number of Instances: 1

Instance Name: CPU0
Node Name 0/RP0/CPU0
Card Type NCS1K14-CNTLR-K9
Card Redundancy State Active
Admin State NSHUT,NMON
Oper State IOS XR RUN

Slot Name: PM1
Number of Instances: 0

Node Name 0/PM1
Card Type NCS1K4-AC-PSU-2
Card Redundancy State None
Admin State NSHUT,NMON
Oper State OPERATIONAL

Slot Name: FT1
Number of Instances: 0

Node Name 0/FT1
Card Type NCS1K14-FAN
Card Redundancy State None
Admin State NSHUT,NMON
Oper State OPERATIONAL

Slot Name: FT2
Number of Instances: 0
```

```

Node Name 0/FT2
Card Type NCS1K14-FAN
Card Redundancy State None
Admin State NSHUT,NMON
Oper State OPERATIONAL

Slot Name: 2
Number of Instances: 1

Instance Name: NXR0
Node Name 0/2/NXR0
Card Type NCS1K4-1.2T-K9
Card Redundancy State None
Admin State NSHUT,NMON
Oper State CARD FAILED

```

## Disable Health Check

You can disable health check service or disable health check for an individual metric. By default, health check of all the metrics is enabled.

### Disable Health Check Service

To disable health check service, use the following command:

**no healthcheck enable**



**Note** When the health check service is enabled, other configuration changes are not permitted. Disable the service before committing configuration changes.

The following example shows to disable the health check service.

```

RP/0/RP0/CPU0:#configure
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios(config)#no healthcheck enable
RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios(config)#commit

```

### Disable Health Check for a Metric

To disable health check for an individual metric, use the following command:

**healthcheck metric *metric-name* disable**

### Example to Disable Health Check of a Metric

The following example shows to disable the free memory (*free-mem*) metric.

```

RP/0/RP0/CPU0:RP/0/RP0/CPU0:ios(config)#healthcheck metric free-mem disable

```