

# Node Health Report

- [Node Health Report](#)
- [opReports 3.5.1 and newer include improvements to memory related fields in the Node Health Report](#)

## Node Health Report

The Node Health report display health-related attributes for all selected nodes for a given period. Attributes displayed are: Status, Device, Availability, Interface Availability, %CPU, 95th% CPU, Max %CPU, CPU Exc., %Mem Free, 95th% Mem Used, Max %Mem Used, %Mem Util, %IO/VIR Mem Free, 95th% IO Mem Used, Max %IO Mem Used, %IO/VIR Mem Util. As of version 3.1.4 when this report is exported to XLSX and CSV formats the following columns of information are also displayed: Group, %IO Mem Free.

The report also includes two columns with the detected (abnormal) Conditions and the recommended Actions.

If you pass this report the option `exceptions=true`, then only nodes with exceptional conditions present are shown; the default is to show all nodes.

Below shows the outcome of a default Node Health Report or where `exceptions=false`. The full report can be viewed by downloading the ZIP file [HERE](#)

|                                                                          |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
|--------------------------------------------------------------------------|----------------|--------------|------------------------|------|-----------|----------|----------|-----------|----------------|---------------|-----------|-------------------|------------------------|-----------------------|-------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| opReports 3.1.4 Views -                                                  |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   | Modules - Help - User: nimis -                                                  |                                                                                                         |
| Node Health Report                                                       |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   | View report as ZIP                                                              |                                                                                                         |
| Info CSV HTML XLSX ZIP Email Delete                                      |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
| Coverage: 7 day(s), from 2018-07-09T19:20:56 to 2018-07-16T19:20:56 AEST |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   | Generated: 2018-07-16T19:21:31 AEST                                             |                                                                                                         |
| Branches                                                                 |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
| Cloud                                                                    |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
| Status                                                                   | Device         | Availability | Interface Availability | %CPU | 95th% CPU | Max %CPU | CPU Exc. | %Mem Free | 95th% Mem Used | Max %Mem Used | %Mem Util | %IO/Swap Mem Free | 95th% IO/Swap Mem Used | Max %IO/Swap Mem Used | %IO/Swap Mem Util | Conditions                                                                      | Actions                                                                                                 |
|                                                                          | vietna-server1 | 100.000      | 100.000                | 2.70 | 3.12      | 86.72    | 96       | 84.76     | 16.41          | 17.30         | 15.24     | N/A               | N/A                    | N/A                   | N/A               |                                                                                 |                                                                                                         |
| Surfers_Paradise                                                         |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
|                                                                          | go-router1     | 99.951       | 100.000                | 5.20 | 13.39     | 22.87    | 2        | 53.60     | 44.30          | 56.35         | 46.40     | 67.73             | 12.26                  | 12.31                 | 12.27             | 1: Device has low availability                                                  | 1: Investigate causes for low availability                                                              |
|                                                                          | go-switch1     | 99.953       | 63.245                 | 5.26 | 6.00      | 10.45    | 0        | 57.82     | 42.16          | 42.26         | 42.18     | 31.97             | 67.83                  | 68.55                 | 68.03             | 1: Device has low availability<br>2: Device has very low interface availability | 1: Investigate causes for low availability<br>2: Investigate causes for very low interface availability |
| USA_West_Coast                                                           |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
|                                                                          | meatball       | 99.951       | 100.000                | N/A  | N/A       | N/A      | N/A      | N/A       | N/A            | N/A           | N/A       | N/A               | N/A                    | N/A                   | N/A               | 1: Device has low availability                                                  | 1: Investigate causes for low availability                                                              |
|                                                                          | midgard        | 99.945       | 63.235                 | 5.30 | 6.00      | 10.44    | 0        | 57.82     | 42.16          | 42.24         | 42.18     | 31.97             | 67.83                  | 68.55                 | 68.03             | 1: Device has low availability<br>2: Device has very low interface availability | 1: Investigate causes for low availability<br>2: Investigate causes for very low interface availability |
| Brisbane                                                                 |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
| Surfers_Paradise                                                         |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
|                                                                          | bne-router1    | 99.941       | 100.000                | 5.15 | 13.41     | 22.17    | 1        | 53.58     | 44.30          | 57.54         | 46.42     | 67.73             | 12.26                  | 12.31                 | 12.27             | 1: Device has low availability                                                  | 1: Investigate causes for low availability                                                              |
|                                                                          | bne-server1    | 99.924       | 100.000                | 6.46 | 18.09     | 84.94    | 132      | 35.05     | 73.02          | 75.66         | 64.95     | 96.00             | 5.91                   | 6.10                  | 4.00              | 1: Device has low availability                                                  | 1: Investigate causes for low availability                                                              |
|                                                                          | bne-switch1    | 99.953       | 63.252                 | 5.16 | 5.98      | 10.07    | 0        | 57.82     | 42.16          | 42.25         | 42.18     | 31.97             | 67.83                  | 68.55                 | 68.03             | 1: Device has low availability<br>2: Device has very low interface availability | 1: Investigate causes for low availability<br>2: Investigate causes for very low interface availability |
| Charlotte                                                                |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |
| USA_East_Coast                                                           |                |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |                                                                                 |                                                                                                         |

To create a Node Health Report showing **exceptions only**, click the box that the arrow points to in the image below.

## Create On-Demand Report



**Report Description**

**Report Type**

**Node Selection**

**Start Date/Time**  ? **End Date/Time**  ?

**From Hours**  **To Hours**  **Days**

**Formats** ☒ HTML ☒ CSV ☒ XLSX

**Report Name**  ?

**Node Name Display**  ?

**Interface Display**  ?

**Include Embedded Graphs** ☒

**Custom Report Title**  ?

**Exceptions Report** ☐ Exceptions Only (Health Report)

**WAN Report Level**

**Show Util Thresholds** ☒ **Show only Util** ☐

**Utilisation Threshold**  % **Min Over-Threshold Count**

**Show 95th Percentile**  ?

**Authorised Viewers**  ?

A Node Health Report using the same devices where *exceptions=true* looks similar to the image below. The full report can be viewed by downloading the ZIP file [HERE](#)

| opReports 3.1.4 Views - Modules - Help - User: nmio -                    |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
|--------------------------------------------------------------------------|--------------|--------------|------------------------|------|-----------|----------|----------|-----------|----------------|---------------|-----------|-------------------|------------------------|-----------------------|-------------------|
| Node Health Exception Report                                             |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Coverage: 7 day(s), from 2018-07-09T19:48:53 to 2018-07-16T19:48:53 AEST |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Generated: 2018-07-16T19:49:11 AEST                                      |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Branches                                                                 |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Cloud                                                                    |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| No devices with exceptions in group Branches and location Cloud.         |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Surfers_Paradise                                                         |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Status                                                                   | Device       | Availability | Interface Availability | %CPU | 95th% CPU | Max %CPU | CPU Exc. | %Mem Free | 95th% Mem Used | Max %Mem Used | %Mem Util | %IO/Swap Mem Free | 95th% IO/Swap Mem Used | Max %IO/Swap Mem Used | %IO/Swap Mem Util |
|                                                                          | go-router1   | 99.951       | 100.000                | 5.20 | 13.39     | 22.87    | 2        | 53.60     | 44.30          | 58.35         | 46.40     | 87.73             | 12.26                  | 12.31                 | 12.27             |
|                                                                          | go-switch1   | 99.953       | 63.245                 | 5.26 | 6.00      | 10.45    | 0        | 57.82     | 42.16          | 42.26         | 42.18     | 31.97             | 67.83                  | 68.55                 | 68.03             |
| USA_West_Coast                                                           |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Status                                                                   | Device       | Availability | Interface Availability | %CPU | 95th% CPU | Max %CPU | CPU Exc. | %Mem Free | 95th% Mem Used | Max %Mem Used | %Mem Util | %IO/Swap Mem Free | 95th% IO/Swap Mem Used | Max %IO/Swap Mem Used | %IO/Swap Mem Util |
|                                                                          | meatball     | 99.951       | 100.000                | N/A  | N/A       | N/A      | N/A      | N/A       | N/A            | N/A           | N/A       | N/A               | N/A                    | N/A                   | N/A               |
|                                                                          | midgard      | 99.945       | 63.235                 | 5.30 | 6.00      | 10.44    | 0        | 57.82     | 42.16          | 42.24         | 42.18     | 31.98             | 67.83                  | 68.55                 | 68.02             |
| Brisbane                                                                 |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Surfers_Paradise                                                         |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Status                                                                   | Device       | Availability | Interface Availability | %CPU | 95th% CPU | Max %CPU | CPU Exc. | %Mem Free | 95th% Mem Used | Max %Mem Used | %Mem Util | %IO/Swap Mem Free | 95th% IO/Swap Mem Used | Max %IO/Swap Mem Used | %IO/Swap Mem Util |
|                                                                          | bne-router1  | 99.941       | 100.000                | 5.15 | 13.41     | 22.17    | 1        | 53.58     | 44.30          | 57.54         | 46.42     | 87.73             | 12.26                  | 12.31                 | 12.27             |
|                                                                          | bne-server1  | 99.924       | 100.000                | 8.47 | 18.15     | 84.94    | 135      | 35.03     | 73.09          | 75.66         | 64.97     | 96.00             | 5.91                   | 6.10                  | 4.00              |
|                                                                          | bne-switch1  | 99.953       | 63.252                 | 5.15 | 5.98      | 10.07    | 0        | 57.82     | 42.16          | 42.25         | 42.18     | 31.97             | 67.83                  | 68.55                 | 68.03             |
| Charlotte                                                                |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| USA_East_Coast                                                           |              |              |                        |      |           |          |          |           |                |               |           |                   |                        |                       |                   |
| Status                                                                   | Device       | Availability | Interface Availability | %CPU | 95th% CPU | Max %CPU | CPU Exc. | %Mem Free | 95th% Mem Used | Max %Mem Used | %Mem Util | %IO/Swap Mem Free | 95th% IO/Swap Mem Used | Max %IO/Swap Mem Used | %IO/Swap Mem Util |
|                                                                          | char-router1 | 99.894       | 99.999                 | 5.22 | 13.20     | 22.73    | 3        | 53.60     | 44.29          | 58.15         | 46.40     | 87.73             | 12.26                  | 12.31                 | 12.27             |

The formulas used for calculation of the reporting conditions can be tuned and adjusted by the user:

The section `opreport_rules` (in `conf/opCommon.nmis` in `opReports 3.x`, or `opReports.nmis` in version 2.x) defines the threshold values for the following conditions:

**Device Availability = Condition: "Device has LOW or VERY LOW availability"**

Action: Investigate causes for low availability

Formula used for Calculation:

- Very Low device availability less than 99.9
- Low device availability less than 99.999

**Interface Availability = Condition: "Device has LOW or VERY LOW interface availability"**

Action: Investigate causes for low interface availability

Formula used for Calculation:

- Very Low interface availability less than 80
- Low interface availability less than 95

**CPU Utilisation = Condition: "Device has VERY HIGH, HIGH or MODERATE CPU utilisation"**

Action: Investigate causes for CPU utilisation

Formula used for Calculation:

- Very High CPU utilisation: greater than 30%
- High CPU utilisation: greater than 20%
- Moderate CPU utilisation: greater than 12%

If the node has multiple CPUs then the utilisation measure is averaged over all CPUs.

**CPU Exceptions**

The count of times the CPU utilisation exceeded the "CPU Exception Threshold" of 20%. If the node has multiple CPUs then this is the sum of the exception counts of all CPUs.

**Memory Utilisation = Condition: "Device has VERY LOW or LOW main memory free"**

Action: Investigate causes for free low main memory

Formula used for Calculation:

- Very Low free main memory less than 10
- Low free main memory less than 25

**IO or Virtual Memory Utilisation = Condition: "Device has VERY LOW or LOW IO or Virtual memory free"**

Action: Investigate causes for low free IO or Virtual memory

Formula used for Calculation:

- Very Low free main memory less than 10
- Low free main memory less than 25

## opReports 3.5.1 and newer include improvements to memory related fields in the Node Health Report

`/path/to/omk/conf/opCommon.json` has a new setting with default being `/opreports/on_invalid_hrcachemem_use_only_hrmem=0`.

- With `/path/to/omk/conf/opCommon.json` set at `opreports/opreports/on_invalid_hrcachemem_use_only_hrmem=1`, `opReports` attempts to detect situations where invalid `hrCacheMemUsed` and `hrCacheMemSize` values are being reported that would cause the memory related fields in the Node Health Report to return as negative values.
  - In such a case (detect memory related fields in the Node Health Report would negative values), `hrCacheMemUsed` and `hrCacheMemSize` will not be used in the calculation of memory related fields and a suitable entry to this effect will be logged in `opReports.log`.
  - This issue has been detected in docker instances where `hrCacheMemUsed` and `hrCacheMemSize` values were that of the docker host and not that of the docker instance itself.
- With `/path/to/omk/conf/opCommon.json` set at `opreports/opreports/on_invalid_hrcachemem_use_only_hrmem=0`:
  - In such a case (detect memory related fields in the Node Health Report would negative values), affected memory related fields will return **N/A** and a suitable entry to this effect will be logged in `opReports.log`.

