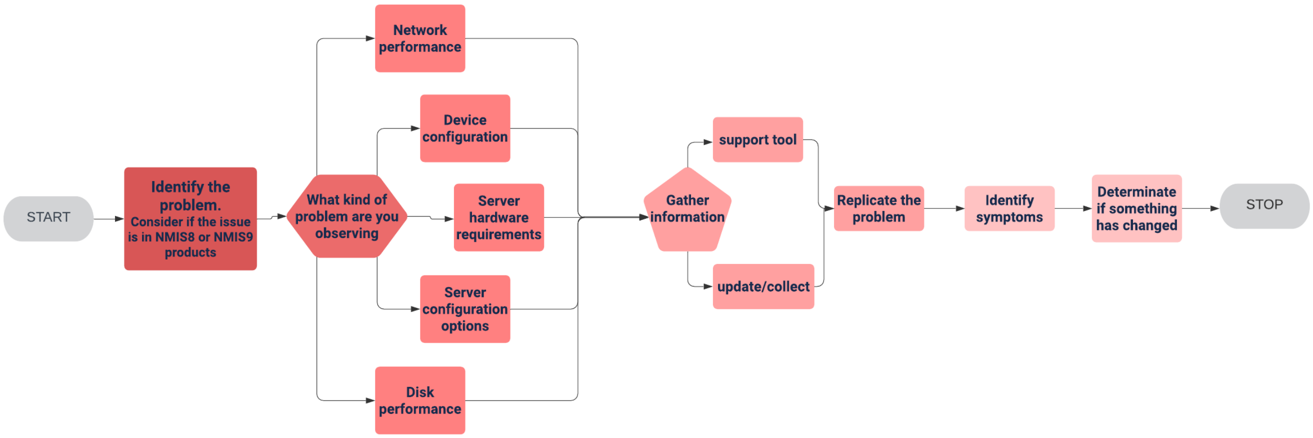
NMIS Device Troubleshooting Process

This page is intended to provide a NMIS Device Troubleshooting Process to Identify bad behaviors in collection for NMIS8/9 products, you can break it down into clear steps that anyone can follow and identify what's wrong with the device collection also if we have Gaps in Graphs for the nodes managed by NMIS.

Device Troubleshooting Process


START
Identify the problem. Consider if the issue is in NMIS8 or NMIS9 products
What kind of problem are you observing
Network performance
Device configuration
Server hardware requirements
Server configuration options
Disk performance
Gather information
support tool
update/collect
Replicate the problem
Identify symptoms
Determinate if something has changed
STOP

1. **Identify the problem.** The first step in troubleshooting a device issue is to identify the problem, you have to consider if the issue is in NMIS8 or NMIS9 products.
    a. Add to the support the case the product version and the servers/devices/models involved.
2. **What kind of problem are you observing**. A device issue can be affected for the next reasons.
    a. **Network performance**, latency in the network, layer 1,2, and 3 issues.
    b. **Device configuration**, connectivity, SNMP configuration, and others.
    c. **Server hardware requirements**, high resource utilization parameters in the server.
    d. **Server configuration options**, missing configuration items for server tunning.
    e. **Disk performance**, slow write/read times for the device collection.
3. **Gather information**, collect all the graphs, images, behaviors that can explain what the problem is.
    a. Collect support tool files The Opmantek Support Tool
        i. Execute the collect command for the support tool

```
#General collection.
/usr/local/nmis8/admin/support.pl action=collect

#If the file is big, we can add the next parameter.
/usr/local/nmis8/admin/support.pl action=collect maxzipsize=900000000

#Device collection.
/usr/local/nmis8/admin/support.pl action=collect node=<node_name>
```

    b. If you are using NMIS8, provide the /usr/local/nmis8/var files
        i. go to /usr/local/nmis8/var directory and collect the next files

```
-rw-rw----   1 nmis   nmis    4292 Apr  5 18:26 <node_name>-node.json
-rw-rw----   1 nmis   nmis    2695 Apr  5 18:26 <node_name>-view.json
```

        ii. obtain update/collect outputs this information will upload to the support case:

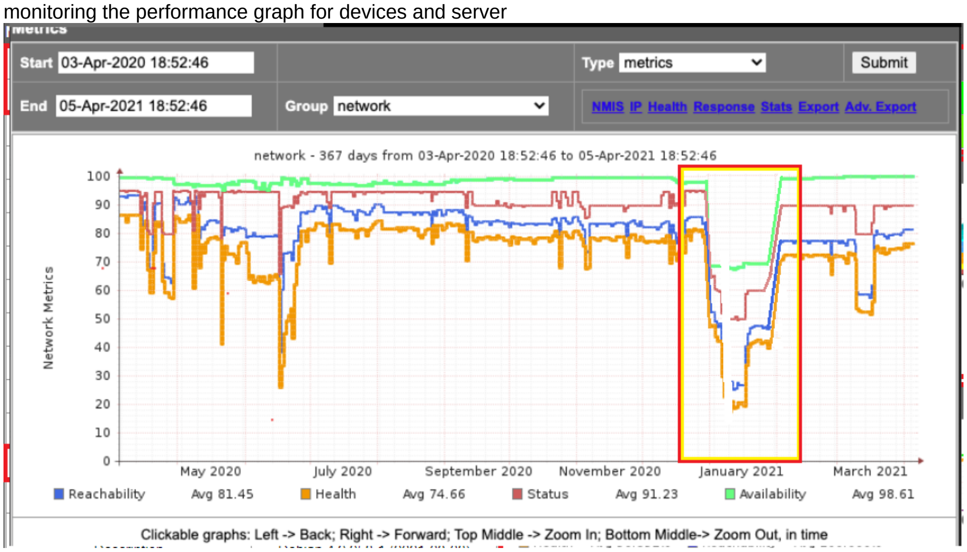
```
/usr/local/nmis8/bin/nmis.pl type=update node=<node_name> model=true debug=9 force=true >
/tmp/node_name_update_$(hostname).log
/usr/local/nmis8/bin/nmis.pl type=collect node=<node_name> model=true debug=9 force=true >
/tmp/node_name_collect_$(hostname).log
```

c. If you are using NMIS9, include the dump files.

```
/usr/local/nmis9/admin/node_admin.pl act=dump

{node=nodeX|uuid=nodeUUID}
file=<MY PATH> everything=1
```

4. **Replicate the problem**. If possible you have to define, what the steps are to replicate the problem.
5. **Identify symptoms**. To this point, you are able to see a specific problem and what the symptoms are.
6. **Determinate if something has changed**, is important to verify with your team if something has changed, a good way to see this behavior is monitoring the performance graph for devices and server



Metrics

Start 03-Apr-2020 18:52:46

Type metrics

Submit

End 05-Apr-2021 18:52:46

Group network

Clickable graphs: Left -> Back; Right -> Forward; Top Middle -> Zoom In; Bottom Middle-> Zoom Out, in time

7. I**t is an individual problem?** verify if this behavior is happening in a single device/server.

Network performance - NMIS Server.

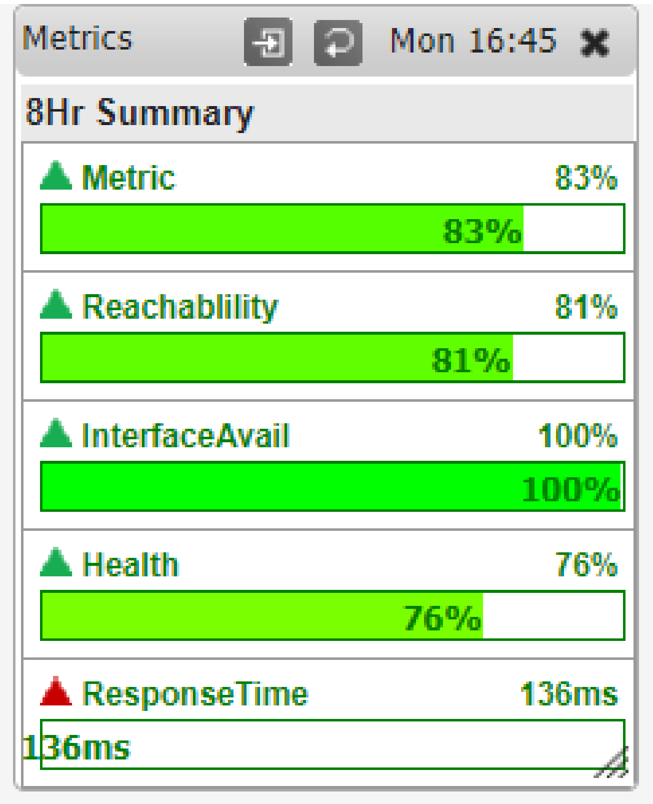
This section is focused on performing the review and validation of the server status in general, we will focus on verifying the historical behavior of the main metrics for the server, it is important to review all the metrics related to the good performance between the server and devices

Verifying Health Metrics

- Metrics are important for the server, NMIS would use Reachability, Availability and Health to represent the network.
- Reachability being the pingability of device,
- Availability being (in the context of network gear) the interfaces which should be up, being up or not, e.g. interfaces which are "no shutdown" (ifAdminStatus = up) should be up, so a device with 10 interfaces of ifAdminStatus = up and ifOperStatus = up for 9 interfaces, the device would be 90% available.

- Health is a composite metric, made up of many things depending on the device, router, CPU, memory. Something interesting here is that part of the health is made up of an inverse of interface utilisation, so an interface which has no utilisation will have a high health component, an interface which is highly utilised will reduce that metric. So the health is a reflection of load on the device, and will be very dynamic.

- The overall metric of a device is a composite metric made up of weighted values of the other metrics being collected. The formula for this is based is configurable, so you can have weight Reachability to be higher than it currently is, or lower, your choice.



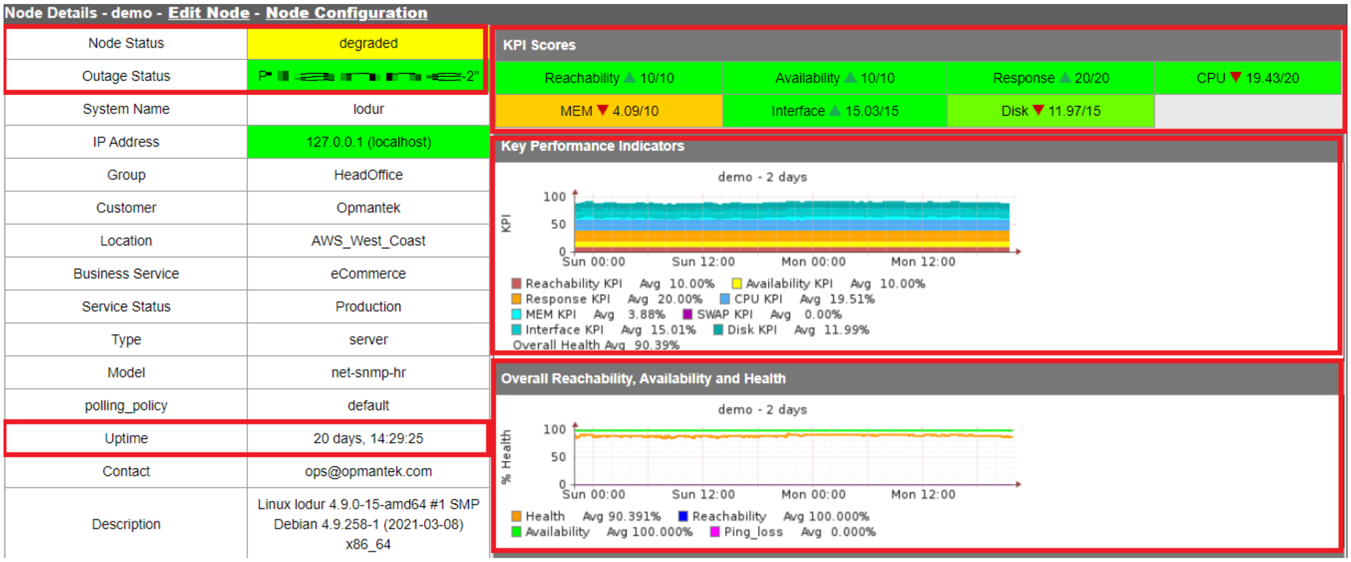
Metrics Mon 16:45

8Hr Summary

▲ Metric	83%
83%	
▲ Reachablility	81%
81%	
▲ InterfaceAvail	100%
100%	
▲ Health	76%
76%	
▲ ResponseTime	136ms
136ms	

For more references go to NMIS Metrics, Reachability, Availability and Health

- It is important to validate the localhost heath, including the overall reachability, availability, and Health you will be able to see data not following the historical data pattern that can give us a clue where the problem can be happening or even if the abnormal behavior has started before a change request In the early hours.



Node Details - demo - Edit Node - Node Configuration

Node Status	degraded
Outage Status	[illegible]-2"
System Name	lodur
IP Address	127.0.0.1 (localhost)
Group	HeadOffice
Customer	Opmantek
Location	AWS_West_Coast
Business Service	eCommerce
Service Status	Production
Type	server
Model	net-snmp-hr
polling_policy	default
Uptime	20 days, 14:29:25
Contact	ops@opmantek.com
Description	Linux lodur 4.9.0-15-amd64 #1 SMP Debian 4.9.258-1 (2021-03-08) x86_64

KPI Scores

Reachability ▲ 10/10	Availability ▲ 10/10	Response ▲ 20/20	CPU ▼ 19.43/20
MEM ▼ 4.09/10	Interface ▲ 15.03/15	Disk ▼ 11.97/15	

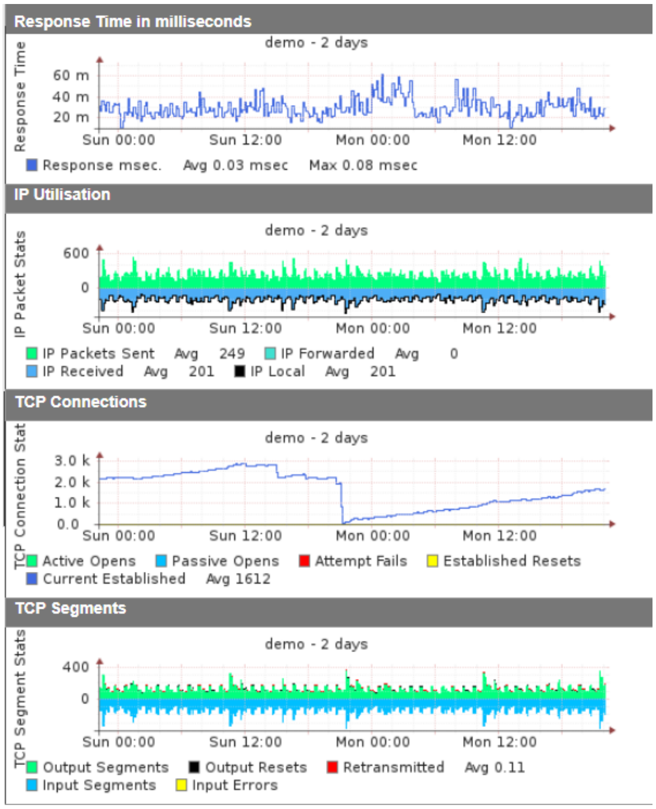
Key Performance Indicators

🟥 Reachability KPI Avg 10.00% 🟨 Availability KPI Avg 10.00%
🟧 Response KPI Avg 20.00% 🟦 CPU KPI Avg 19.51%
🟦 MEM KPI Avg 3.88% 🟪 SWAP KPI Avg 0.00%
🟦 Interface KPI Avg 15.01% 🟦 Disk KPI Avg 11.99%
Overall Health Avg 90.39%

Overall Reachability, Availability and Health

🟧 Health Avg 90.391% 🟦 Reachability Avg 100.000%
🟩 Availability Avg 100.000% 🟪 Ping_loss Avg 0.000%

- Viewing the graphs referring to the network performance as (Response Time in milliseconds, IP Utilization, TCP Connection, TCP Segments) will help us to identify the behavior of the server/network in a period of 2 days, we can modify this period time to see more data if needed.



Device configuration.

It is important to validate if the problem occurs in the network or is something related to the device configuration, in order to identify what's happening we need to validate the next commands from the console server.

1. **Ping test,** The Ping tool is used to test whether a particular host is reachable across an IP network. A Ping measures the time it takes for packets to be sent from the local host to a destination computer and back.

```
ping x.x.x.x #add the ip address you need to reach
```

2. **Traceroute**, is a network diagnostic tool used to track in real-time the pathway taken by a packet on an IP network from source to destination, reporting the IP addresses of all the routers it pinged in between

```
traceroute <ip_Node>  #add the ip address you need to reach
```

3. **MTR,** Mtr(my traceroute) is a command-line network diagnostic tool that provides the functionality of both the ping and traceroute commands

```
sudo mtr -r 8.8.8.8

    [sample results below]

    HOST: endor                       Loss%   Snt   Last   Avg  Best  Wrst StDev
     1. 69.28.84.2                    0.0%    10     0.4   0.4   0.3   0.6   0.1
     2. 38.104.37.141                 0.0%    10     1.2   1.4   1.0   3.2   0.7
     3. te0-3-1-1.rcr21.dfw02.atlas.  0.0%    10     0.8   0.9   0.8   1.0   0.1
     4. be2285.ccr21.dfw01.atlas.cog  0.0%    10     1.1   1.1   0.9   1.4   0.1
     5. be2432.ccr21.mci01.atlas.cog  0.0%    10    10.8  11.1  10.8  11.5   0.2
     6. be2156.ccr41.ord01.atlas.cog  0.0%    10    22.9  23.1  22.9  23.3   0.1
     7. be2765.ccr41.ord03.atlas.cog  0.0%    10    22.8  22.9  22.8  23.1   0.1
     8. 38.88.204.78                  0.0%    10    22.9  23.0  22.8  23.9   0.4
     9. 209.85.143.186                0.0%    10    22.7  23.7  22.7  31.7   2.8
    10. 72.14.238.89                  0.0%    10    23.0  23.9  22.9  32.0   2.9
    11. 216.239.47.103                0.0%    10    50.4  61.9  50.4  92.0  11.9
    12. 216.239.46.191                0.0%    10    32.7  32.7  32.7  32.8   0.1
    13. ???                          100.0    10     0.0   0.0   0.0   0.0   0.0
    14. google-public-dns-a.google.c  0.0%    10    32.7  32.7  32.7  32.8   0.0
```

4. **snmpwalk,** is a Simple Network Management Protocol (SNMP) application present on the Security Management System (SMS) CLI that uses SNMP GETNEXT requests to query a network device for information. An object identifier (OID) may be given on the command line.

```
The following example CLI command will return the IPS temperature information:

Command:snmpwalk -v 2c -c tinapc <IP address> 1.3.6.1.4.1.10734.3.5.2.5.5

Command Explanation:

In this case the CLI command breaks down as following;

snmpwalk                             = SNMP application
-v 2c                                     = specifies what SNMP version to use (1, 2c, 3)
-c tinapc                               = specifies the community string. Note: The IPS has the SNMP
read-only community string of "tinapc"
<IP address>                       = specifies the IP address of the IPS device
1.3.6.1.4.1.10734.3.5.2.5.5 = OID parameter for the IPS temperature information

Results:

SNMPv2-SMI::enterprises.10734.3.5.2.5.5.1.0 = INTEGER: 27
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.2.0 = INTEGER: 50
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.3.0 = INTEGER: 55
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.4.0 = INTEGER: 0
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.5.0 = INTEGER: 85

Results Explanation:

SNMPv2-SMI::enterprises.10734.3.5.2.5.5.1.0 = INTEGER: 27 = The chassis temperature (27° Celsius / 80.6°
Fahrenheit)
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.2.0 = INTEGER: 50 = The major threshold value for chassis
temperature (50° Celsius / 122° Fahrenheit)
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.3.0 = INTEGER: 55 = The critical threshold value of chassis
temperature (55° Celsius / 131° Fahrenheit)
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.4.0 = INTEGER: 0   = The minimum value of the chassis
temperature range ( 0° Celsius / 32° Fahrenheit)
SNMPv2-SMI::enterprises.10734.3.5.2.5.5.5.0 = INTEGER: 85 = The maximum value of the chassis temperature
range (85° Celsius / 185° Fahrenheit)
```

It is important to see that the device is pingable, does not have latency, packet loss, and the SNMP data is been collected.

Polling summary

The OPMANTEK monitoring system has the polling_summary tool, this will help us determine if the server takes a long time to collect the information from the nodes and cannot complete any operation, here we can see how many nodes have a late collection and a summary of the collected and uncollected nodes.

NMIS8

```
/usr/local/nmis8/admin/polling_summary.pl
```

NMIS9

```
/usr/local/nmis9/admin/polling_summary9.pl
```

```
[root@opmantek ~]#  /usr/local/nmis8/admin/polling_summary.pl
node                     attempt   status    ping  snmp  policy     delta  snmp avgdel  poll   update
pollmessage
ACH-AIJ-DI-AL-SA6-0202010001-01 14:10:33  ontime    up    up    default    328    300  422.31  22.40
17.89
ACH-AIJ-RC-ET-08K-01     --:--:--  bad_snmp  up    up    default    ---    300  403.90  10.38  14.58   snmp
never successful
ACH-ANA-RC-ET-08K-01     --:--:--  bad_snmp  up    down  default    ---    300  422.57  11.39  109.09  snmp
never successful
ACH-ATU-RC-ET-08K-01     --:--:--  bad_snmp  up    up    default    ---    300  391.99  0.97   62.88   snmp
never successful
ACH-CAB-DI-AL-SA6-0215010001-01 14:11:21  late      up    up    default    484    300  5543888.62 31.06
74.21   1x late poll
ACH-CAB-DR-AL-P32-01     --:--:--  bad_snmp  up    up    default    ---    300  416.30  103.46 91.28   snmp
never successful
ACH-CAB-GE-GM-G30-01     14:00:54  late      up    down  default    348    300  593.93  6.06   12.53   1x late
poll
ACH-CAB-RC-ET-08K-01     --:--:--  bad_snmp  up    up    default    ---    300  411.74  10.69  7.31    snmp
never successful
ACH-CAB-TT-GM-30T-01     --:--:--  bad_snmp  up    down  default    ---    300  0.00    0.00   180.42  snmp
never successful
ACH-CAR-RC-ET-08K-01     14:10:20  ontime    up    up    default    314    300  9054283.23 11.15
6.47
ACH-CAT-CN-AL-SA6-0212070008-01 14:07:39  late      up    up    default    600    300  27253590.83 12.39
22.23   1x late poll
ACH-CAZ-TT-GM-30T-01     --:--:--  bad_snmp  up    down  default    ---    300  414.85  3.11   165.32  snmp
never successful
ACH-CHM-DR-AL-P32-01     14:05:47  late      up    up    default    456    300  2686074.17 118.55 148.58  1x
late poll
ACH-CHM-GE-GM-G20-01     --:--:--  bad_snmp  up    down  default    ---    300  413.17  4.06   238.92  snmp
never successful
ACH-CHM-RC-ET-09K-01     14:12:30  late      up    up    default    633    300  1983484.93 10.49  13.07   1x
late poll
ACH-CHM-TT-GM-20T-01     --:--:--  bad_snmp  up    down  default    ---    300  412.17  3.61   287.80  snmp
never successful
ACH-COX-RC-ET-09K-01     13:51:14  late      up    up    default    473    300  22141.04 9.54   4.10    1x late
poll
ACH-CSM-RC-ET-08K-01     13:51:09  late      up    up    default    444    300  539117.26 11.25  5.31    1x
late poll
ACH-CSM-TT-GM-20T-01     14:08:34  late      up    down  default    709    300  1739800.92 4.01   229.73  1x
late poll
ACH-HCC-CN-AL-SA6-0212030012-01 13:50:33  ontime    up    up    default    330    300  8131293.53 23.65
23.84
ACH-HCC-RC-ET-08K-01     14:07:56  late      up    up    default    635    300  1802552.50 0.65   1.61    1x
late poll
ACH-HEY-DI-AL-SA6-0211010001-01 13:50:52  late      up    up    default    425    300  571.75  25.46  17.30
1x late poll
ACH-HEY-DR-AL-P32-01     --:--:--  bad_snmp  up    up    default    ---    300  119099.96 106.25 120.92  snmp
never successful
ACH-HEY-GE-GM-G20-01     --:--:--  bad_snmp  up    down  default    ---    300  0.00    0.00   112.37  snmp
never successful
ACH-HEY-RC-ET-09K-01     --:--:--  bad_snmp  up    up    default    ---    300  404.62  11.01  7.49    snmp
never successful
--Snip--
--Snip--
UCA-PUC-DR-AL-P32-01     14:12:04  late      up    up    default    524    300  124010.73 135.20 124.79  1x
late poll
UCA-PUC-GE-GM-G30-01     14:11:20  late      up    down  default    475    300  3868910.82 3.68   236.48  1x
late poll
```

```
UCA-PUC-GE-GM-G30-02     14:12:32  late      up    down  default    644    300  3871900.66 4.05   209.92  1x
late poll
UCA-PUC-RC-ET-09K-01     --:--:--  bad_snmp  up    up    default    ---    300  418.17  10.83  5.76    snmp
never successful
UCA-PUC-TT-GM-30A-01     --:--:--  bad_snmp  up    down  default    ---    300  397.68  4.21   215.65  snmp
never successful
UCA-PUC-TT-GM-30A-02     14:13:03  late      up    down  default    720    300  329362.60 3.39   208.92  1x
late poll
CC_VITATRAC_GT_Z2_MAZATE 14:13:04  demoted   down  down  default    ---    300  0.00    2.22   0.80    s
CC_VITATRAC_GT_Z3_COBAN  14:13:12  late      up    up    default    618    300  4874416.57 1.91   4.46
CC_VITATRAC_GT_Z3_ESCUINTLA 14:13:12  late      up    up    default    604    300  4902673.92 2.17   4.8
CC_VITATRAC_GT_Z7_BODEGA_MATEO 14:15:37  late      up    up    default    642    300  3844049.73 3.25
CC_VITATRAC_GT_Z8_MIXCO  14:15:42  late      up    up    default    634    300  4959081.87 2.47   6.70
CC_VITATRAC_GT_Z9_XELA   14:16:03  late      up    up    default    634    300  3943302.62 8.95   58.61
CC_VITATRAC_GT_ZONA_PRADERA 14:17:47  demoted   up    down  default    711    300  605.21  10.91  10.28
CC_VIVATEX_GT_INTERNET_VILLA_NUEVA 14:18:49  late      up    up    default    979    300  4563376.03 1.2
CC_VOLCAN_STA_MARIA_GT_INTERNET_CRUCE_BARCENAS 14:19:44  late      up    up    default    981    300  44late
poll
nmisslvcc5               14:18:55  late      up    up    default    344    300  376209.90 2.33   1.23

totalNodes=2615 totalPoll=2267 ontime=73 pingOnly=0 1x_late=2190 3x_late=3 12x_late=1 144x_late=0
time=10:10:07 pingDown=354 snmpDown=359 badSnmp=295 noSnmp=0 demoted=348
[root@opmantek ~]#
```

If the values are located in the x_late fields, we need to validate the performance of the server.

Services performance (Daemons)

NMIS is using some important services to make the solution work, sometimes devices stop working due to some of these services are interrupted, It is always a good idea to validate if those are running, to validate this you need to execute the next commands. This in order to provide even more security, as some of these services are crucial for the operation of the operating system. On the other hand, in systems like Unix or Linux, the services are also known as daemons. In this case, it is essential to validate the services that make up the OPMANTEK monitoring system (nmis).

```
service mongod status
service omkd status
service nmisd status
service httpd status
service opchartsd restart
service opeventsd status
service opconfigd status
service opflowd status
service crond status

#if someone of this daemons is stopped, you need to execute same commands with start/restart options.
```

Server hardware requirements.

This section is crucial to identify or resolve device issues, you need to review some considerations depending on the number of nodes you will manage, the number of users that will be accessing the GUI's, how often does your data need to be updated? If updates are required every 5 minutes, then you will need to have the hardware to be able to accomplish these requirements, also the OS Requirements need to be well defined a good rule of thumb is to reserve 1 GB of RAM for the OS by default, High-speed drives for the data (SAN is ideal) with separate storage for mongo database, and temp files. Anywhere between 4-8 cores with a high-performing processor(s), 16-64 GB RAM should be performing well for 1k+ Nodes.

Using top/htop command

The top command shows all running processes in the server. It shows you the system information and the processes information just like up-time, average load, tasks running, no. of users logged in, no. of CPU processes, RAM utilization and it lists all the processes running/utilized by the users in your server.

```
top
```

```
top - 12:50:01 up 62 days, 22:56,  5 users,  load average: 4.76, 8.03, 4.34
Tasks: 412 total,   1 running, 411 sleeping,   0 stopped,   15 zombie
Cpu(s):  6.8%us,  3.8%sy,  0.2%ni, 74.4%id, 28.2%wa,  0.1%hi,  0.5%si,  0.0%st
Mem:  20599548k total, 18622368k used,  1977180k free,   375212k buffers
Swap:  6669720k total,  3536428k used,  3133292k free, 10767256k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+
COMMAND
26306 root      20   0  478m 257m 1900 S  3.9  1.3   0:08.21 nmis.
pl
15522 root      20   0  626m 373m 2776 S  2.0  1.9  71:45.09 opeventsd.
pl
27285 root      20   0 15280 1444  884 R  2.0  0.0   0:00.01
top
    1 root      20   0 19356  308  136 S  0.0  0.0   1:07.65
init
    2 root      20   0     0    0    0 S  0.0  0.0   0:02.14
kthreadd
    3 root      RT   0     0    0    0 S  0.0  0.0  17359:19 migration
/0
    4 root      20   0     0    0    0 S  0.0  0.0 252:25.86 ksoftirqd
/0
    5 root      RT   0     0    0    0 S  0.0  0.0   0:00.00 stopper
/0
    6 root      RT   0     0    0    0 S  0.0  0.0   2233:33 watchdog
/0
    7 root      RT   0     0    0    0 S  0.0  0.0 340:35.60 migration
/1
    8 root      RT   0     0    0    0 S  0.0  0.0   0:00.00 stopper
/1
    9 root      20   0     0    0    0 S  0.0  0.0   5:23.87 ksoftirqd
/1
   10 root      RT   0     0    0    0 S  0.0  0.0 214:57.35 watchdog/1
```

1.First line: Time and Load

The very first line of the top command indicates in the order below.

```
top - 12:50:01 up 62 days, 22:56,  5 users,  load average: 4.76, 8.03, 4.34
```

- current time (12:50:01)
- uptime of the machine (up 62 days, 22:56)
- users sessions logged in (5 users)
- **average load on the system (load average: 4.76, 8.03, 4.34) the 3 values refer to the last minute, five minutes and 15 minutes ####### This is not good for the manager if we have high values**

2. Second Row: task

The second row provides you the following information.

```
Tasks: 412 total,   1 running, 411 sleeping,   0 stopped,   15 zombie
```

- Total Processes running (412 total)
- Running Processes (1 running)
- Sleeping Processes (411 sleeping)
- Stopped Processes (0 stopped)
- **Processes waiting to be stopped from the parent process (15 zombies) ####### This is not good for the manager**
  Zombie Process: A process that has completed execution, but still has an entry in the process table. This entry still needs to allow the parent process to read its child exit status.

3. CPU section.

```
Cpu(s):  6.8%us,  3.8%sy,  0.2%ni, 74.4%id, 28.2%wa,  0.1%hi,  0.5%si,  0.0%st
```

- User processes of CPU in percentage(6.8%us)
- System processes of CPU in percentage(3.8%sy)

- Priority upgrade *nice* of CPU in percentage(0.2%ni)
- Percentage of the CPU not used (74.4%id)
- **Processes waiting for I/O operations of CPU in percentage(28.2%wa) ####### This is not good for the server performance.**
- Serving hardware interrupts of CPU in percentage(0.1% hi — Hardware IRQ
- Percentage of the CPU serving software interrupts (0.0% si — Software Interrupts

The amount of CPU 'stolen' from this virtual machine by the hypervisor for other tasks (such as running another virtual machine) will be 0 on desktop and server without Virtual machine. (0.0%st — Steal Time)

4. Memory

These rows will provide you the information about RAM usage. It shows you total memory in use, free, buffers cached.

```
Mem:  20599548k total, 18622368k used,  1977180k free,   375212k buffers
```

```
Swap:  6669720k total,  3536428k used,  3133292k free, 10767256k cached
```

5. Process List

There is the last row to discuss CPU usage which was running currently

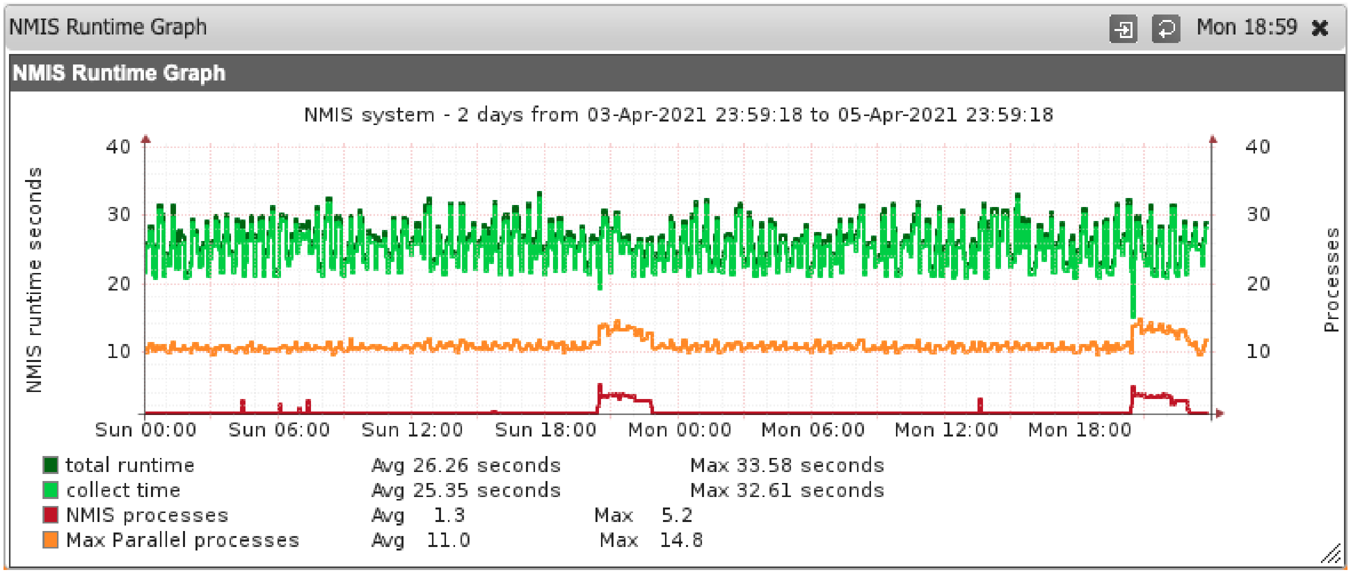
```
  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+
COMMAND
26306 root      20   0  478m 257m 1900 S  3.9  1.3   0:08.21 nmis.
pl
15522 root      20   0  626m 373m 2776 S  2.0  1.9  71:45.09 opeventsd.
pl
27285 root      20   0 15280 1444  884 R  2.0  0.0   0:00.01
top
```

- **PID** – ID of the process(26306)
- **USER** – The user that is the owner of the process (root)
- **PR** – priority of the process (20)
- **NI** – The "NICE" value of the process (0)
- **VIRT** – virtual memory used by the process (478m)
- **RES** – physical memory used from the process (3.3g)
- **SHR** – shared memory of the process (1900)
- **S** – indicates the status of the process: S=sleep R=running Z=zombie (S)
- **%CPU** – This is the percentage of CPU used by this process (3.9)####### **This is not good for the server performance.**
- **%MEM** – This is the percentage of RAM used by the process (1.3)####### **This is not good for the server performance.**
- **TIME+** –This is the total time of activity of this process (0:08.21)####### **This is not good for the server performance.**
- **COMMAND** – And this is the name of the process (exim)

It is important to monitor this commando to see if the server is working properly executing all the internal processes need.

Server configuration options.

In order to tell the server, how to manage the devices configured we need to validate that all the configuration items are well set, you can see the server performances while collecting information going to the section, system>Host Diagnostics> NMIS Runtime Graph



```
🟩 total runtime           Avg 26.26 seconds       Max 33.58 seconds
🟩 collect time            Avg 25.35 seconds       Max 32.61 seconds
🟥 NMIS processes          Avg   1.3          Max   5.2
🟧 Max Parallel processes  Avg  11.0          Max  14.8
```

if the total runtime/collect time is too high, we need to adjust the collect parameters depending on the manager version you are using.

NMIS 8 Processes

The main NMIS 8 process is called from different cron jobs to run different operations: collect, update, summary, clean jobs, etc. As an example:

```
* * * * * root /usr/local/nmis8/bin/nmis.pl type=collect abort_after=60 mthread=true ignore_running=true;
```

The cron configuration can be found in /etc/crond.d/nmis.

For a collect or an update, the main thread is set up by default to fork worker processes to perform the requested operations using threads and improving performance. One of each operation will run every minute (by default), and will process as many nodes as the collect polling cycle is set up to process.

Configurations that affect performance

There are some important configurations that affect performace:

- **abort_after**: From NMIS 8.6.8G there is a new command line option, abort_after, that prevents the main thread to run for a long time, preventing it to collide with the next cron job. By default, this parameter is 60 seconds, as the cron job is set to run every 60 minutes by default.

  Also, this option needs to always have also the option mthreads=true.

  ```
  nmis8/bin/nmis.pl type=collect abort_after=60 mthread=true ignore_running=true;
  ```

- **max_thread**: The other important configuration option is max_thread, that will prevent the number of children of the main process to grow too big. Considerations:
  - If the collect operation has a lot of nodes to process, the number of children won't reach the limit instantly. While the main thread is forking, the children complete their jobs and will exit. Also, the main process will wait for them to change their state so the number will increase slowly.
  - NMIS can have more than one instance of the main process running, and the number of children could be higher than max_threads, as the limit is only per instance.
- **sort_due_nodes:** When NMIS decides what to poll it can do so in a pseudo-random order which is the default, if your server is overloaded you will likely see some nodes never getting polled, hence pseudo-random, so for heavily loaded servers, enable sort_due_nodes, in the NMIS configuration add with the value set to 1.
- **Reference**, NMIS 8 - Configuration Options for Server Performance Tuning

CROND file configuration (NMIS) and Config.nmis

Here we will proceed to verify the data collection configuration towards the devices, so we validate the Collect, maxthreads and mthread parameters.

In the NMIS Cron file we see the following:

Crond NMIS

```
######################################################
# NMIS8 Config
######################################################

# Run Full Statistics Collection
*/5 * * * *     root     /usr/local/nmis8/bin/nmis.pl type=collect maxthreads=100 mthread=true
*/5 * * * *     root     /usr/local/nmis8/bin/nmis.pl type=services mthread=true
# ######################################################

# Optionally run a more frequent Services-only Collection
# */3 * * * *   root     /usr/local/nmis8/bin/nmis.pl type=services mthread=true

######################################################

# Run Summary Update every 2 minutes
*/2 * * * *     root     /usr/local/nmis8/bin/nmis.pl type=summary
```

We proceed to verify that the mthread value is activated and that the maxthreads has the same value in the Config.nmis file

Sección Config.nmis

```
    'nmis_group' => 'nmis',
    'nmis_host' => 'nmissTest_OMK.omk.com',
    'nmis_host_protocol' => 'http',
    'nmis_maxthreads' => '100',
    'nmis_mthread' => 'false',
    'nmis_summary_poll_cycle' => 'false',
    'nmis_user' => 'nmis',
```

We can see that the mthread value is deactivated and that the maxthreads value does correspond to the same one declared in the nmis cron, so we proceed to activate it and perform an update and collect to the node.

Update_Collect

```
/usr/local/nmis8/bin/nmis.pl type=update node=<Name_Node> force=true

/usr/local/nmis8/bin/nmis.pl type=collect node=<Name_Node> force=true
```

Note: If these values declared in the cron and in the Conf.nmis file do not work, it is recommended to do the following:

Example Crond

```
# Ejemplo 1:
/usr/local/nmis8/bin/nmis.pl type=collect abort_after=300 mthread=true maxthreads=100 ignore_running=true

# Ejemplo 2
/usr/local/nmis8/bin/nmis.pl type=collect abort_after=240 mthread=true maxthreads=100 ignore_running=true
```

The value of the maxthreads parameter (it is recommended to try between 50, 80 and 100) must be the same in both files (cron nmis and conf.nmis)

Apply the Update and Collect commands at the end of each test and verify the behavior in the NMIS GUI, this consists of reviewing the NMIS Runtime Graph, Network_summary and Polling_summary.

Configuration items for omk products

In low memory environments lowering the number of omkd workers provides the biggest improvement instability, even more than tuning mongod.conf does. The default value is 10, but in an environment, with low user concurrency, it can be decreased to 3-5.

```
omkd_workers
```

Setting also omkd_max_requests, will help to have the threads restart gracefully before they get too big.

```
omkd_max_requests
```

Process size safety limiter: if a max is configured and it's >= 256 mb and we're on linux, then run a process size check every 15 s and gracefully shut down the worker if over size.

```
omkd_max_memory
```

Process maximum number of concurrent connections, defaults to 1000:

```
omkd_max_clients
```

The performance logs are really useful for debugging purposes, but they also can affect performance. So, it is recommended to turn them off when they are not necessary:

```
omkd_performance_logs => false
```

NMIS8

NMIS 8 - Configuration Options for Server Performance Tuning

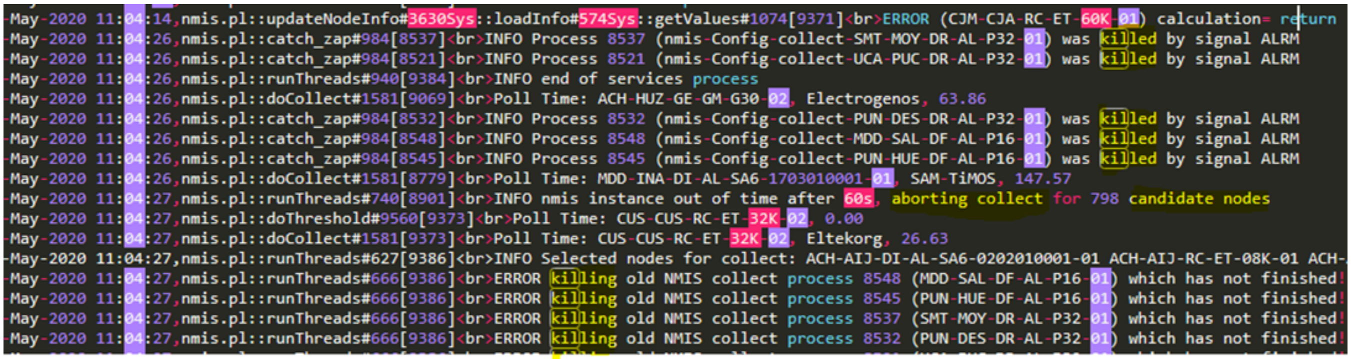
NIMS9

NMIS 9 - Configuration Options for Server Performance Tuning

Disk performance review.

This section is dedicated to identifying when the server is not writing all the data for the devices, this can have as a result graph with interruptions, so this causes level 2 problems (Severe impact - Unreliable production system) or even in some occasions level 1 (Critical for the business, complete loss of service, loss of data) to the client, so it is essential to determine what is happening and provide a diagnosis.

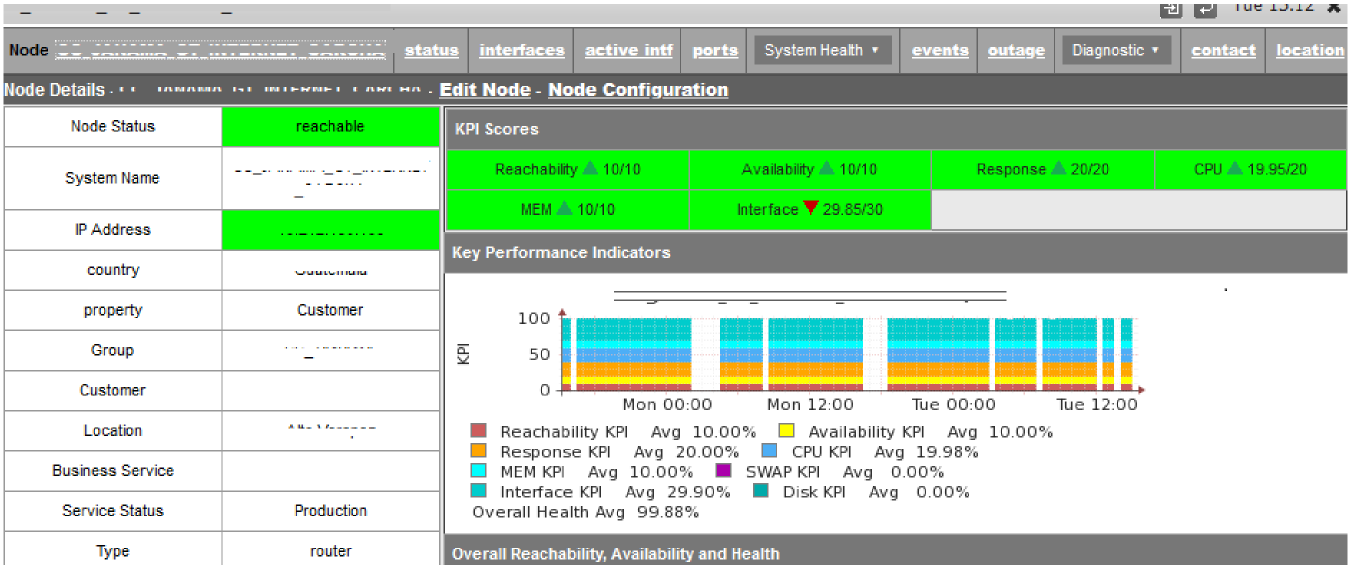
Server status at Service level.
The monitoring service is affected slowly when accessing the GUI, and its main impact is centered on the failure to execute collect and updates to the nodes, the CPUs are saturated and the monitoring system executes the collection of information every minute or 5 minutes, the system being overloaded is forced to kill the processes affecting the storage of the information of the nodes in the RRD's files



```
-May-2020 11:04:14,nmis.pl::updateNodeInfo#3630Sys::loadInfo#574Sys::getValues#1074[9371]<br>ERROR (CJM-CJA-RC-ET-60K-01) calculation= return
-May-2020 11:04:26,nmis.pl::catch_zap#984[8537]<br>INFO Process 8537 (nmis-Config-collect-SMT-MOY-DR-AL-P32-01) was killed by signal ALRM
-May-2020 11:04:26,nmis.pl::catch_zap#984[8521]<br>INFO Process 8521 (nmis-Config-collect-UCA-PUC-DR-AL-P32-01) was killed by signal ALRM
-May-2020 11:04:26,nmis.pl::runThreads#940[9384]<br>INFO end of services process
-May-2020 11:04:26,nmis.pl::doCollect#1581[9069]<br>Poll Time: ACH-HUZ-GE-GM-G30-02, Electrogenos, 63.86
-May-2020 11:04:26,nmis.pl::catch_zap#984[8532]<br>INFO Process 8532 (nmis-Config-collect-PUN-DES-DR-AL-P32-01) was killed by signal ALRM
-May-2020 11:04:26,nmis.pl::catch_zap#984[8548]<br>INFO Process 8548 (nmis-Config-collect-MDD-SAL-DF-AL-P16-01) was killed by signal ALRM
-May-2020 11:04:26,nmis.pl::catch_zap#984[8545]<br>INFO Process 8545 (nmis-Config-collect-PUN-HUE-DF-AL-P16-01) was killed by signal ALRM
-May-2020 11:04:26,nmis.pl::doCollect#1581[8779]<br>Poll Time: MDD-INA-DI-AL-SA6-1703010001-01, SAM-TiMOS, 147.57
-May-2020 11:04:27,nmis.pl::runThreads#740[8901]<br>INFO nmis instance out of time after 60s, aborting collect for 798 candidate nodes
-May-2020 11:04:27,nmis.pl::doThreshold#9560[9373]<br>Poll Time: CUS-CUS-RC-ET-32K-02, 0.00
-May-2020 11:04:27,nmis.pl::doCollect#1581[9373]<br>Poll Time: CUS-CUS-RC-ET-32K-02, Eltekorg, 26.63
-May-2020 11:04:27,nmis.pl::runThreads#627[9386]<br>INFO Selected nodes for collect: ACH-AIJ-DI-AL-SA6-0202010001-01 ACH-AIJ-RC-ET-08K-01 ACH-
-May-2020 11:04:27,nmis.pl::runThreads#666[9386]<br>ERROR killing old NMIS collect process 8548 (MDD-SAL-DF-AL-P16-01) which has not finished!
-May-2020 11:04:27,nmis.pl::runThreads#666[9386]<br>ERROR killing old NMIS collect process 8545 (PUN-HUE-DF-AL-P16-01) which has not finished!
-May-2020 11:04:27,nmis.pl::runThreads#666[9386]<br>ERROR killing old NMIS collect process 8537 (SMT-MOY-DR-AL-P32-01) which has not finished!
-May-2020 11:04:27,nmis.pl::runThreads#666[9386]<br>ERROR killing old NMIS collect process 8532 (PUN-DES-DR-AL-P32-01) which has not finished!
```

Node View in NMIS:

You will be able to visualize device graphs with gaps, this is an example of how to recognize this behavior.



Node Details - [redacted] - **Edit Node** - **Node Configuration**

Node Status	reachable
System Name	[redacted]
IP Address	[redacted]
country	[redacted]
property	Customer
Group	[redacted]
Customer	
Location	[redacted]
Business Service	
Service Status	Production
Type	router

KPI Scores

Reachability ▲ 10/10	Availability ▲ 10/10	Response ▲ 20/20	CPU ▲ 19.95/20
MEM ▲ 10/10	Interface ▼ 29.85/30		

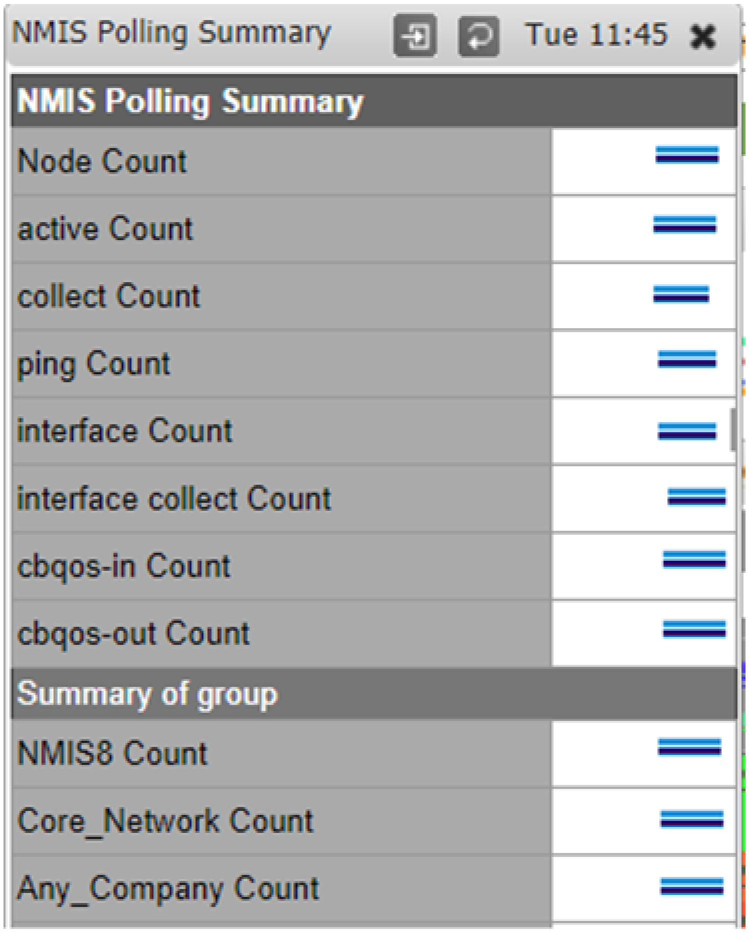
Key Performance Indicators

🟥 Reachability KPI Avg 10.00% 🟨 Availability KPI Avg 10.00%
🟧 Response KPI Avg 20.00% 🟦 CPU KPI Avg 19.98%
🟦 MEM KPI Avg 10.00% 🟪 SWAP KPI Avg 0.00%
🟦 Interface KPI Avg 29.90% 🟦 Disk KPI Avg 0.00%
Overall Health Avg 99.88%

Overall Reachability, Availability and Health

NMIS Polling Summary (menu: System> Host Diagnostics> NMIS Polling Summary)

The Polling Summary option that NMIS is providing is very useful since in it we can see the details of the collection time of the nodes, active nodes, collected nodes, etc. These values must be according to the number of monitored nodes, likewise, the collection time must be within the range of minutes configured in the nmis crond.



NMIS Polling Summary	
Node Count	[redacted]
active Count	[redacted]
collect Count	[redacted]
ping Count	[redacted]
interface Count	[redacted]
interface collect Count	[redacted]
cbqos-in Count	[redacted]
cbqos-out Count	[redacted]
Summary of group	
NMIS8 Count	[redacted]
Core_Network Count	[redacted]
Any_Company Count	[redacted]

Files system

It is important to validate that the file systems are free, if we have a FS full the tool will stop to work:

echo -e "\n \e[31m Información de espacio en el disco \e[0m" && df -h && echo -e "\n\n \e[31m Información de uso de RAM \e[0m" && free -m && echo -e "\n\n \e[31m Detalle de discos \e[0m" && fdisk -l

Resultado:

```
[root@opmantek ~]# echo -e "\n \e[31m Información de espacio en el disco \e[0m" && df -h && echo -e "\n\n \e
[31m Información de uso de RAM \e[0m" && free -m && echo -e "\n\n \e[31m Detalle de discos \e[0m" && fdisk -l

  Información de espacio en el disco

Filesystem            Size  Used Avail Use% Mounted on
/dev/mapper/vg_nmis64-lv_root
                       59G  2.7G   54G   5% /
tmpfs                 3.9G     0  3.9G   0% /dev/shm
/dev/sda1             477M  109M  343M  25% /boot
/dev/mapper/vg_nmis64_data-lv_data
                      321G   11G  295G   4% /data
/dev/mapper/vg_nmis64-lv_var
                      147G  1.5G  138G   2% /var

  Información de uso de RAM
             total       used       free     shared    buffers     cached
Mem:          7984       6891       1093          0        216       1077
-/+ buffers/cache:       5596       2387
Swap:         4071       1589       2482

  Detalle de discos
Disk /dev/sda: 536.9 GB, 536870912000 bytes
255 heads, 63 sectors/track, 65270 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x0008cec3

Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          64      512000   83  Linux
Partition 1 does not end on cylinder boundary.
/dev/sda2              64        5222    41430016   8e  Linux LVM
/dev/sda3            5222       42570   299997810   8e  Linux LVM
/dev/sda4           42570       65256   182225295   8e  Linux LVM

Disk /dev/sdb: 42.9 GB, 42949672960 bytes
255 heads, 63 sectors/track, 5221 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/mapper/vg_nmis64-lv_root: 64.4 GB, 64432898048 bytes
255 heads, 63 sectors/track, 7833 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/mapper/vg_nmis64-lv_swap: 4269 MB, 4269801472 bytes
255 heads, 63 sectors/track, 519 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

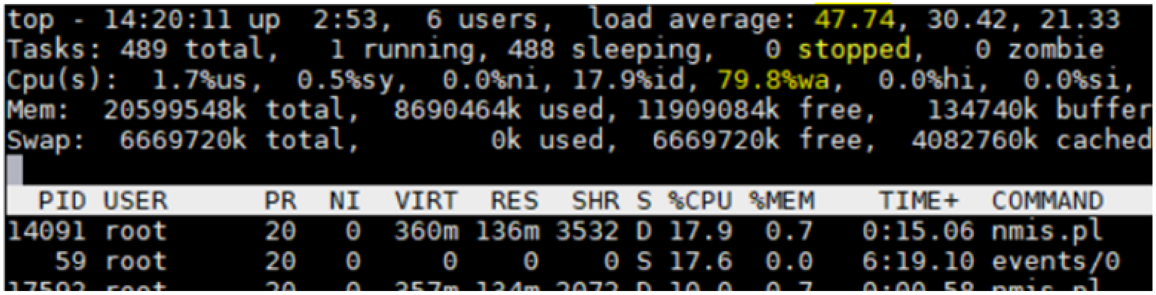
Disk /dev/mapper/vg_nmis64_data-lv_data: 350.1 GB, 350140497920 bytes
255 heads, 63 sectors/track, 42568 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

```
Disk identifier: 0x00000000

Disk /dev/mapper/vg_nmis64-lv_var: 160.3 GB, 160314687488 bytes
255 heads, 63 sectors/track, 19490 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

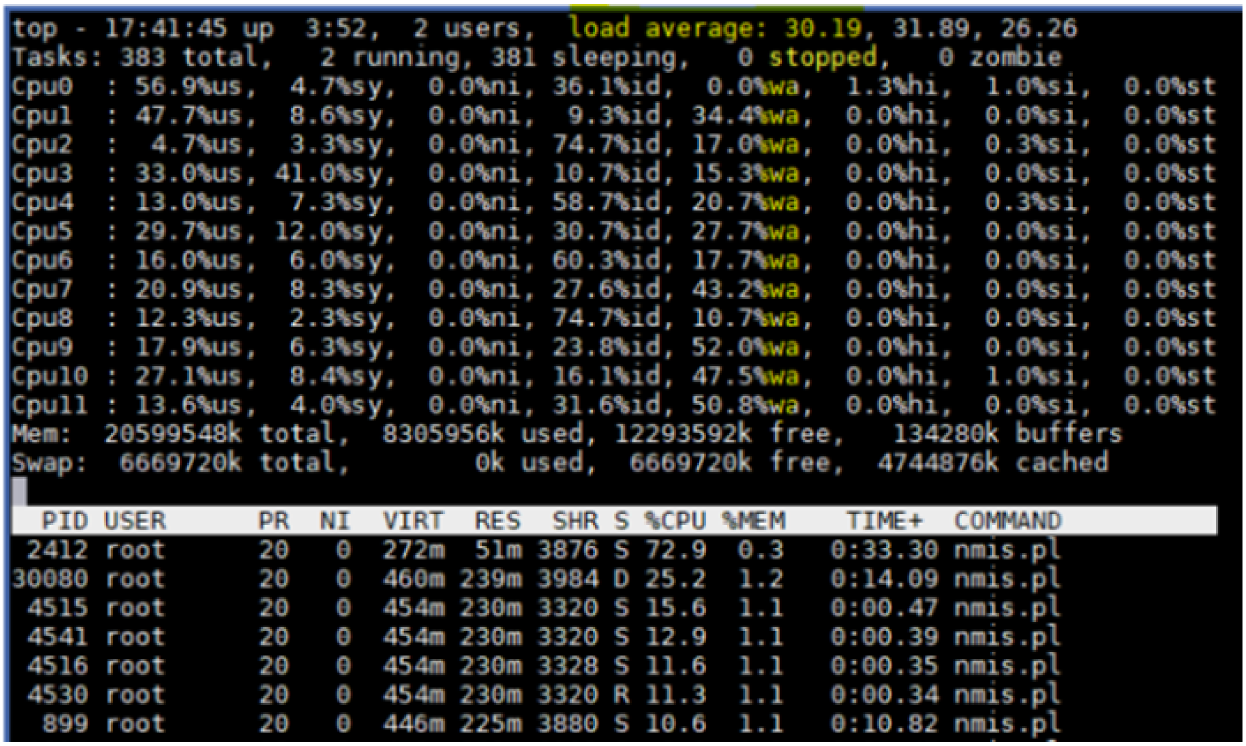
[root@opmantek ~]#
```

%wa- It is important to review the load average and iowait, if we see this values are high that represents problems for the server



```
top - 14:20:11 up  2:53,  6 users,  load average: 47.74, 30.42, 21.33
Tasks: 489 total,   1 running, 488 sleeping,   0 stopped,   0 zombie
Cpu(s):  1.7%us,  0.5%sy,  0.0%ni, 17.9%id, 79.8%wa,  0.0%hi,  0.0%si,
Mem:  20599548k total,  8690464k used, 11909084k free,   134740k buffer
Swap:  6669720k total,        0k used,  6669720k free,  4082760k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
14091 root      20   0  360m 136m 3532 D 17.9  0.7   0:15.06 nmis.pl
   59 root      20   0     0    0    0 S 17.6  0.0   6:19.10 events/0
```



```
top - 17:41:45 up  3:52,  2 users,  load average: 30.19, 31.89, 26.26
Tasks: 383 total,   2 running, 381 sleeping,   0 stopped,   0 zombie
Cpu0  : 56.9%us,  4.7%sy,  0.0%ni, 36.1%id,  0.0%wa,  1.3%hi,  1.0%si,  0.0%st
Cpu1  : 47.7%us,  8.6%sy,  0.0%ni,  9.3%id, 34.4%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu2  :  4.7%us,  3.3%sy,  0.0%ni, 74.7%id, 17.0%wa,  0.0%hi,  0.3%si,  0.0%st
Cpu3  : 33.0%us, 41.0%sy,  0.0%ni, 10.7%id, 15.3%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu4  : 13.0%us,  7.3%sy,  0.0%ni, 58.7%id, 20.7%wa,  0.0%hi,  0.3%si,  0.0%st
Cpu5  : 29.7%us, 12.0%sy,  0.0%ni, 30.7%id, 27.7%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu6  : 16.0%us,  6.0%sy,  0.0%ni, 60.3%id, 17.7%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu7  : 20.9%us,  8.3%sy,  0.0%ni, 27.6%id, 43.2%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu8  : 12.3%us,  2.3%sy,  0.0%ni, 74.7%id, 10.7%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu9  : 17.9%us,  6.3%sy,  0.0%ni, 23.8%id, 52.0%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu10 : 27.1%us,  8.4%sy,  0.0%ni, 16.1%id, 47.5%wa,  0.0%hi,  1.0%si,  0.0%st
Cpu11 : 13.6%us,  4.0%sy,  0.0%ni, 31.6%id, 50.8%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:  20599548k total,  8305956k used, 12293592k free,   134280k buffers
Swap:  6669720k total,        0k used,  6669720k free,  4744876k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 2412 root      20   0  272m  51m 3876 S 72.9  0.3   0:33.30 nmis.pl
30080 root      20   0  460m 239m 3984 D 25.2  1.2   0:14.09 nmis.pl
 4515 root      20   0  454m 230m 3320 S 15.6  1.1   0:00.47 nmis.pl
 4541 root      20   0  454m 230m 3320 S 12.9  1.1   0:00.39 nmis.pl
 4516 root      20   0  454m 230m 3328 S 11.6  1.1   0:00.35 nmis.pl
 4530 root      20   0  454m 230m 3320 R 11.3  1.1   0:00.34 nmis.pl
  899 root      20   0  446m 225m 3880 S 10.6  1.1   0:10.82 nmis.pl
```

List of processes with uninterruptible sleep state.

The ps command provides us with information about the processes of a Linux or Unix system.
Sometimes tasks can hang, go into a closed-loop, or stop responding. For other reasons, or they may continue to run, but gobble up too much CPU or RAM time, or behave in an equally antisocial manner. Sometimes tasks need to be removed as a mercy to everyone involved. The first step. Of course, it is to identify the process in question.

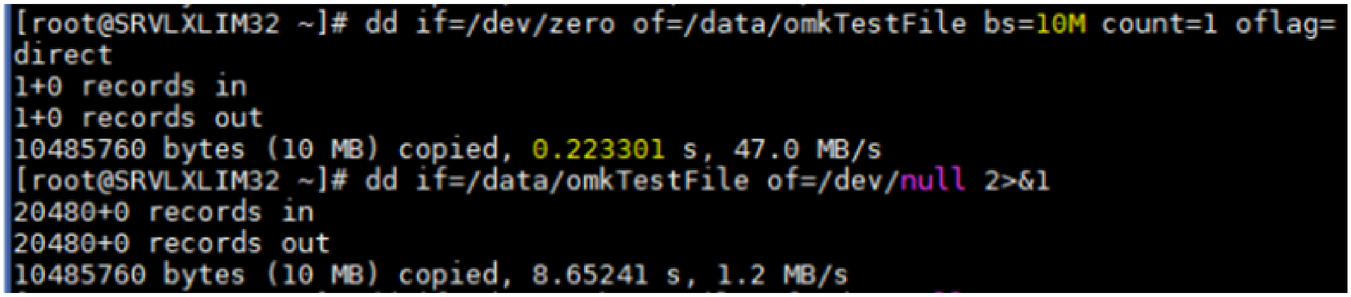
Processes in a "D" or uninterruptible sleep state are usually waiting on I/O.

```
[root@8/
root     13417  0.6  0.8 565512 306812 ?       D    10:38   0:37  \_ opmantek.pl webserver             -
root     17833  9.8  0.0      0     0 ?        Z    12:19   0:00      \_ [opeventsd.pl] <defunct>
root     17838 10.3  0.0      0     0 ?        Z    12:19   0:00      \_ [opeventsd.pl] <defunct>
root     17842 10.6  0.0      0     0 ?        Z    12:19   0:00      \_ [opeventsd.pl] <defunct>nmisslvcc5 log]
# ps -auxf | egrep " D| Z"
Warning: bad syntax, perhaps a bogus '-'? See /usr/share/doc/procps-3.2.8/FAQ
root      1563  0.1  0.0      0     0 ?        D    Mar17  10:47  \_ [jbd2/dm-2-8]
root      1565  0.0  0.0      0     0 ?        D    Mar17   0:43  \_ [jbd2/dm-3-8]
root      1615  0.3  0.0      0     0 ?        D    Mar17  39:26  \_ [flush-253:2]
root      1853  0.0  0.0  29764   736 ?        D<sl Mar17   0:04 auditd
root     17898  0.0  0.0 103320   872 pts/5    S+   12:20   0:00  |       \_ egrep  D| Z
apache   17856 91.0  0.2 205896 76212 ?        D    12:19   0:01  |   \_ /usr/bin/perl /usr/local/nmis
```

Test Disk I/O Performance With dd Command

The dd command is very sensitive regarding the parameters it handles since it can cause serious problems on your server, OMK uses this command to obtain and measure server performance and latency, so with this, we determine that the writing speed and reading of the disc.

```
[root@SRVLXLIM32 ~]# dd if=/dev/zero of=/data/omkTestFile bs=10M count=1 oflag=direct
1+0 records in
1+0 records out
10485760 bytes (10 MB) copied, 0.980106 s, 15.0 MB/s
[root@SRVLXLIM32 ~]# dd if=/data/omkTestFile of=/dev/null 2>&1
20480+0 records in
20480+0 records out
10485760 bytes (10 MB) copied, 6.23595 s, 1.7 MB/s
[root@SRVLXLIM32 ~]#
```



```
[root@SRVLXLIM32 ~]# dd if=/dev/zero of=/data/omkTestFile bs=10M count=1 oflag=
direct
1+0 records in
1+0 records out
10485760 bytes (10 MB) copied, 0.223301 s, 47.0 MB/s
[root@SRVLXLIM32 ~]# dd if=/data/omkTestFile of=/dev/null 2>&1
20480+0 records in
20480+0 records out
10485760 bytes (10 MB) copied, 8.65241 s, 1.2 MB/s
```

Parameters:
0.0X s to be correct.
0.X s, there is a warning (and there would be issue)
X.0 s would be critical (and there would be a problem).

Please note that one gigabyte was written for the test and 47 MB/s was the performance and the time it took to write the block was 0.223301 seconds from the server for this test.

Where:

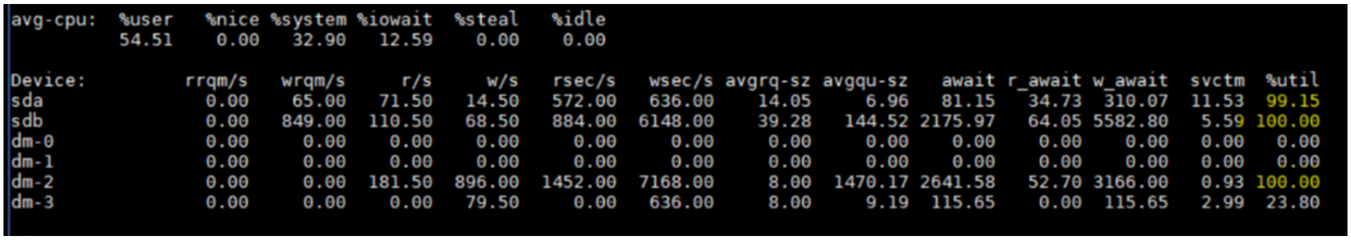
- if=/dev/zero (if=/dev/input.file) : The name of the input file you want dd the read from.
- of=/data/omkTestFile (of=/path/to/output.file) : The name of the output file you want dd write the input.file to.
- bs=10M (bs = block-size): set the size of the block you want dd to use. Note that Linux will need free RAM space. If your test system doesn't have enough RAM available, use a smaller parameter for bs (like 128MB or 64MB, etc. or you can even test with 1, 2, or even 3 gigabytes).
- count=1 (count=number-of-blocks): The number of blocks you want dd to read.
- oflag=dsync (oflag=dsync) : Use synchronized I/O for data. Do not skip this option. This option get rid of caching and gives you good and accurate results
- conv=fdatasyn: Again, this tells dd to require a complete “sync” once, right before it exits. This option is equivalent to oflag=dsync.

Viewing disk usage information

This command helps us to monitor the load of an input and output device, observing the time that the devices are active in relation to the average of their transfer rates. It can also be used to compare activity between disks.

Using 100% iowait / Utilization indicates that there is a problem and in most cases a big problem that can even lead to data loss. Essentially, there is a bottleneck somewhere in the system. Perhaps one of the drives is preparing to die / fail.

OMK recommends executing the command in the following way, since this gives a better scenario than what happens with the disks.
Example: the command shows 5 samples made every 3 seconds, what we want is that at least 3 of the samples reflect data within the stable range for the server, otherwise this indicates that there is a problem with the disks.



```
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          54.51    0.00   32.90   12.59    0.00    0.00

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
sda               0.00    65.00   71.50   14.50   572.00   636.00    14.05     6.96   81.15   34.73  310.07  11.53  99.15
sdb               0.00   849.00  110.50   68.50   884.00  6148.00    39.28   144.52 2175.97   64.05 5582.80   5.59 100.00
dm-0              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
dm-1              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
dm-2              0.00     0.00  181.50  896.00  1452.00  7168.00     8.00  1470.17 2641.58   52.70 3166.00   0.93 100.00
dm-3              0.00     0.00    0.00   79.50     0.00   636.00     8.00     9.19  115.65    0.00  115.65   2.99  23.80
```

```
[root@opmantek ~]# iostat -xtc 3 5
Linux 2.6.32-754.28.1.el6.x86_64 (opmantek)     04/05/2021      _x86_64_        (8 CPU)

04/05/2021 09:23:40 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          12.47    0.00    0.73   10.53    0.00   86.72

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await
svctm  %util
sda               0.00     0.00    4.50   35.50   148.00   452.00    15.00   110.98 4468.74   274.22 5000
0.60    100.00
sdb               0.00    42.50    0.00    6.50     0.00   392.00    60.31     0.13   20.00    0.00   20
0.34    92.12
dm-0              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.65    56.00
dm-1              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.86    10.50
dm-2              0.00     0.00    4.50   52.00   140.00   416.00     9.84   149.56 5229.59   274.22 5658
0.21    25.03
dm-3              0.00     0.00    0.00    0.50     0.00     4.00     8.00    66.00    0.00    0.00    0
0.45    14.40


04/05/2021 09:23:43 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          18.17    0.00    5.29    6.31    0.00   76.82

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await
svctm  %util
sda               0.00    50.00    9.50   19.00   596.00   260.00    30.04   130.41 2569.47  283.11 3712
0.60    92.36
sdb               0.00    36.50    0.50   59.00     8.00   764.00    12.97    25.34  425.82   18.00  429
0.25    78.82
dm-0              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.23    92.45
dm-1              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.86    88.93
dm-2              0.00     0.00    8.00  163.50   440.00  1308.00    10.19   240.76  966.94  337.38  997
0.37    68.28
dm-3              0.00     0.00    0.00   33.00     0.00   264.00     8.00    48.31    0.00    0.00    0
0.18    12.75

04/05/2021 09:23:46 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           2.50    0.00    1.21   11.37    0.00   75.56

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await
svctm  %util
sda               0.00     0.00    9.50   18.00   268.00   220.00    17.75   112.91 1763.73  143.42 2618
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```
0.85    100.00
sdb               0.00    10.00    2.00    1.50   112.00    92.00    58.29     0.01    3.86    6.25    0
0.94     97.54
dm-0              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.45     75.39
dm-1              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.78     24.96
dm-2              0.00     0.00   13.50   11.50   552.00    92.00    25.76   185.21 3029.96  101.85 6467
0.25     67.18
dm-3              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.86     43.91

04/05/2021 09:23:49 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           12.10    0.00    7.21    9.17    0.00   87.92

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await
svctm  %util
sda               0.00    55.50    7.00   44.00    92.00   488.00    11.37   110.52  929.20  139.86 1054
0.75    89.54
sdb               0.00    65.00    0.50   34.00     4.00   792.00    23.07     0.83   24.09    1.00   24
0.55    93.61
dm-0              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.14    99.99
dm-1              0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0
0.36    78.98
dm-2              0.00     0.00    7.00  242.50    84.00  1940.00     8.11   179.44  240.22  137.36  243
0.75    25.30
dm-3              0.00     0.00    0.00    5.00     0.00    40.00     8.00     1.30  305.90    0.00  305
0.23    45.12

04/05/2021 09:23:52 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           9.50    0.00    11.21    19.30    0.00   92.92

Device:         rrqm/s   wrqm/s     r/s     w/s   rsec/s   wsec/s avgrq-sz avgqu-sz   await r_await w_await
svctm  %util
sda               0.16   114.34    7.02  191.18   132.04  2444.27    13.00     3.60   18.18   81.41   15
0.14    99.99
sdb               0.03   205.87    2.36   70.03    31.22  2207.55    30.92     5.81   80.25   53.76   81
0.94    97.54
dm-0              0.00     0.00    0.10    1.01    11.77     8.07    17.90     0.84  755.10   72.31  822
0.60    98.36
dm-1              0.00     0.00    0.09    0.13     0.74     1.03     8.00     0.22  985.66  153.25 1580
0.47    94.48
dm-2              0.00     0.00    9.25  575.59   129.18  4604.83     8.09     6.09    9.74   74.24    8
0.61    82.37
dm-3              0.00     0.00    0.12    4.74    21.57    37.89    12.24     2.52  518.00  131.58  527
0.23    93.15

[root@opmantek ~]#
```

This problem was solved with moving the MV to an environment with solid state disks, the client validated that the MV was using mechanical disks (HDD), so a clone of a laboratory MV does not work since it is presented the same Problem, when replacing HDD disks to solid state disks, the MV and the monitoring services stabilize, the RAM memory, CPU and disk utilization is normal, this according to the nodes that the monitoring system is monitoring .