System Alarms

For supported software information, click here.

Versa Operating System^{TM} (VOS^{TM}) devices use CPU and memory from the guest virtual machine (VM) or bare-metal server on which it is installed, and they send system alarms to alert users about CPU and memory utilization issues when CPU or memory utilization exceeds predefined thresholds.

For proper operation of VOS functions, it is recommended that VOS devices have a minimum of four CPU cores and 4 GB RAM. The CPU cores and memory are adequately sized for the intended network services.

The default value for the VOS device memory high-utilization threshold is 70 percent, and the memory exceed threshold is 90 percent.

When the VOS device CPU utilization exceeds 75 percent, the cpuUtilizationHigh alarm is raised, and when it exceeds 95 percent, the cpuUtilizationExceeded alarm is raised.

When you change the low-threshold or high-threshold settings for the CPU utilization, but the CPU load itself does not change, no alarm is generated if a violation of the new threshold value occurs. However, as soon as the CPU load changes, an alarm is generated if the load value violates the new threshold value. Note that this same behavior applies when you change the memory and session utilization on a VOS device. For information about configuring alarm thresholds, see Configure VOS Device Alarms.

CPU Temperature

Description	One or more CPU cores crossed the high temperature threshold (70°C).
Cause	• The temperature of one or more CPUs in the device is greater than 70°C.
Action	• When all the CPU physical core temperatures have reduced to below 70°C, the alarm is cleared.

CPU Utilization

Description	VOS device CPU utilization alarms exceeded the default or configured value: • cpuUtilizationExceeded—VOS device CPU utilization exceeded a hard limit of 95%, and the system becomes unusable. • cpuUtilizationHigh—VOS device CPU utilization exceeded a soft limit system of 75%, and the system may become unstable unless measures are taken to reduce the utilization.
Cause	• A disrupting process is consuming CPU resources.
Action	• If there are multiple CPU utilization alarms, monitor the system carefully. • For a VOS VM device, add more CPU from the host. • Check for processes that are utilizing CPU cycles or memory by executing the related **show** commands in the VOS CLI and the **top –H** Ubuntu host VM shell command. • If a process, such as vsmd, is using all the CPU cycles, contact Versa Networks Customer Support for help with troubleshooting.

Related Commands

• To view CPU and memory health status, issue the **show system load-stats** CLI command.

```
admin@vCPE101-cli> show system load-stats
VSN  CPU  MEM  LOAD
ID   LOAD LOAD FACTOR
---------------------------------------
0    3    18   3
```

• To view CPU utilization in real time, issue the **show process cpu** CLI command.

```
admin@vCPE101-cli> show process cpu
1   |||   3.6%    Tasks: 80, 58 thr; 6 running
2   |||   3.6%    Load average :  0.14 0.28
3   I     0.7%    Uptime: 5 days, 05:35:45
4   II    2.2%
Mem 1111111 Iiii11111111111111  3150/7984MB
Swp                 0/8187MB
```

```
PID  USER   PRI  NI  VIRT   RES   SHR    S  CPU%  MEM%  TIME+     Command
4638 root   20   0   2590M 1297M 51884   R  55.7  16.3  45h21:00  /opt/versa/bin/versa-vsmd -N -
H 2
5389 root   20   0   2590M 1297M 51884   S  16.8  16.3  11h30:29  /opt/versa/bin/versa-vsmd -N -
H 2
5387 root   20   0   2590M 1297M 51884   S  8.1   16.3  11h12:31  /opt/versa/bin/versa-vsmd -N -
H 2
5492 root   20   0   2590M 1297M 51884   R  6.6   16.3  8h20:28   /opt/versa/bin/versa-vsmd -N -
H 2
5491 root   20   0   2590M 1297M 51884   R  1.5   16.3  1h16:14   /opt/versa/bin/versa-vsmd -N -
H 2
4830 root   20   0   46308 19656 4932    S  0.7   0.2   1h47:41   /opt/versa/bin/verso-certd -N
5488 root   20   0   2590M 1297M 51884   R  0.7   16.3  40:07.15  /opt/verso/bin/versa-vsmd -N -
H 2
4798 root   20   0   75284 46984 3424    S  0.7   0.6   44:13.19  /opt/versa/bin/versa-acctmgrd
5303 root   20   0   35172 10960 2676    S  0.7   0.1   26:43.18  /opt/versa/bin/redis-server 127.0.0.
1:6379
```

- To view CPU utilization per process, issue the **top –H** command from Ubuntu host.

```
> top -H
top - 23:07:09 up 5 days, 5:38, 1 user, load overage: 0.22, 0.28, 0.31
Threads: total, running, sleeping, stopped, zombie
%Cpu(s): us, sy, ni, id, wa, hi, si, st
KiB Mem: total, used, free, buffers
KiB Swap: total, used, free. cached Mem
PID  USER   PR NI  VIRT    RES    SHR   S %CPU %MEM  TIME+     COMMAND
5387 root   20 0  2653004 1.267g 51884 S  8.3  16.3 672:45.64 worker -0
5388 root   20 0  2653004 1.267g 51884 S  8.3  16.3 689:32.24 worker -1
5492 root   20 0  2653004 1.2679 51884 S  7.0  16.3 500:38.65 ipsec-control
4830 root   20 0  46308   19656  4932  S  1.7  0.2  107:44.02 versa-certd
5491 root   20 0  2653004 1.267g 51884 S  1.0  16.3 76:16.02  ctrl -data -0
4638 root   20 0  2653004 1.267g 51884 S  0.7  16.3 51:53.04  versa-vsmd
5488 root   20 0  2653004 1.267g 51884 S  0.7  16.3 40:07.97  versa-timer
4798 root   20 0  75284   47076  3424  S  0.3  0.6  44:13.65  versa-acctmgrd
5490 root   20 0  0       0      0     S  0.3  0.0  16:28.49  kni_single
19565 admin 20 0  149916  5080   3792  S  0.3  0.1  0:00.15   sshd
1 root      20 0  33920   4356   2624  S  0.0  0.1  0:01.42   init
2 root      20 0  0       0      0     S  0.0  0.0  0:00.00   kthreadd
3 root      20 0  0       0      0     S  0.0  0.0  0:12.26   ksoftirqd/0
5 root      0  -20 0      0      0     S  0.0  0.0  0:00.00   kworker/0:0H
7 root      20 0  0       0      0     S  0.0  0.0  2:38.73   rcu_sched
8 root      20 0  0       0      0     S  0.0  0.0  0:31.13   rcuos/0
9 root      20 0  0       0      0     S  0.0  0.0  0:33.91   rcuos/1
10 root     20 0  0       0      0     5  0.0  0.0  0:35.85   rcuos/2
```

Device Disk Error

Description	Bad blocks were detected on the disk.

Cause	• Disk usage • Hardware issues • Software errors
Action	• Check the disk for software errors, using tools like **fsck**. • Replace the disk if there are physical damages.

Disk Utilization

Description	VOS device disk utilization exceeded the default or configured value: • diskUtilizationExceeded—VOS device disk utilization exceeded a hard limit of 90%, and the system becomes unusable. • diskUtilizationHigh—VOS device disk utilization crossed a soft limit of 70%, and the system becomes unstable unless countermeasures are taken to reduce the disk usage.
Action	• Monitor the system carefully if there are multiple disk utilization alarms.

Memory Utilization

The memory utilization alarm is raised when the VOS device memory utilization exceeds the default/configured value.

Description	VOS device memory utilization exceeded the default or configured value: • memUtilizationExceeded—VOS device memory utilization exceeded a hard limit of 90%, and the system becomes unusable. • memUtilizationHigh—VOS device memory utilization crossed a soft limit of 70%, and the system

	becomes unstable unless countermeasures are taken to reduce the memory usage.
Action	• If there are multiple memory utilization alarms, monitor the system carefully. • For a VOS VM device, add more memory from the host.

Related Commands

- To view CPU and memory health status, issue the **show system load-stats** CLI command.

```
admin@vCPE101-cli> show system load-stats
VSN   CPU   MEM   LOAD
ID    LOAD  LOAD  FACTOR
-----------------------------------------
0     3     18    3
```

- To view memory utilization alarms, issue the **show alarms | match Memory** CLI command.

```
admin@VNF1-cli>  show alarms | grep Memory
rfd    memoryUtilization  2017-08-0lT06:43:42-0 (null):  Memory Utilization (79%) has crossed soft limit
rfd    memoryUtilization  2017-08-0lT06:43:42-0 (null):  Memory Utilization (64%) is back to normal
rfd    memoryUtilization  2017-08-06T00:27:47-0 (null):  Memory Utilization (94%) has crossed soft limit
rfd    memoryUtilization  2017-08-06T00:36:10-0 (null):  Memory Utilization (30%) is back to normal
rfd    memoryUtilization  2017-08-11T06:32:25-0 (null):  Memory Utilization (76%) has crossed soft limit
rfd    memoryUtilization  2017-08-1lT06:32:25-0 (null):  Memory Utilization (61%) is back to normal
rfd    memoryUtilization  2017-08-18T06:44:14-0 (null):  Memory Utilization (75%) has crossed soft limit
rfd    memoryUtilization  2017-08-20T00:27:02-0 (null):  Memory Utilization (95%) has crossed hard limit,
system may become unusable
rfd    memoryUtilization  2017-08-20T00:27:12-0 (null):  Memory Utilization (93%) has crossed soft limit
rfd    memoryUtilization  2017-08-27T00:28:56-0 (null):  Memory Utilization (92%) has crossed soft limit
```

Supported Software Information

Releases 20.2 and later support all content described in this article.

Additional Information

Configure VOS Device Alarms