



esxtop & vscsiStats

v1.1

esxtop modes: Interactive view data realtime. Batch **-b** piped to csv. Replay **-R** view vm-support log. Only root can run esxtop. csv files from batch mode can also be replayed in perfmon or excel. **resxtop:** can run remotely on vMA or CLI installation. No replay mode with resxtop.

Interactive screens: **c** CPU, **m** memory, **d** disk adapter, **u** disk device, **v** disk vm, **n** network, **i** interrupts. **commands:** **h** help, **q** quit, **f** add fields, **o** order, **s** set refresh delay (default 5 secs, min 2 secs), **space** refresh now, **w** save to default, **v** only VMs

Display	Metric	Threshold	Explanation (Some metrics need fields added with extra character)
CPU	%RDY	10 x vCPU	Too many vCPUs, excessive vSMP or limit set (see %MLMTD)
CPU	%CSTP	100	Excessive vSMP usage. Reduce vCPUs to up scheduling opportunity.
CPU	%MLMTD	0	World is being throttled, maybe limit set on CPU.
CPU	%SWPWT	1	VM waiting on swapped pages from disk, maybe host overcommitted or mem limit.
CPU	TIMER/S	h 1000	High timer-interrupt rate, reduce in guest if possible. Increases with vCPUs.
Mem	MCTLSZ	i 1	> 0, VMs forces to use balloon driver, maybe host overcommitted or memory limit.
Mem	SWCUR	j 1	> 0, host previously swapped mem page, maybe host overcommitted or mem limit.
Mem	SWR/s	j 1	> 0, host actively reading swap(vswp), maybe host overcommitted or mem limit.
Mem	SWW/s	f 1	> 0, host actively writing to swap(vswp), maybe host overcommitted or mem limit.
Mem	N%L	f < 80	VM's mem > CPU's local mem. Uses remote mem via interconnect, not NUMA.
Network	%DRPTX	1	Dropped tx packets, HW overworked, maybe network utilization.
Network	%DRPRX	1	Dropped rx packets, HW overworked, maybe network utilization.
Disk	GAVG	h 25	Look at DAVG and KAVG as the sum of both is GAVG.
Disk	DAVG	h 25	Disk latency most likely caused by array.

Display	Metric	Threshold	Explanation (Some metrics need fields added with extra character)
Disk	KAVG	h 5	Disk latency caused by VMkernel, usually means queuing, see QUED
Disk	QUED	f 1	Queue maxed out, maybe queue depth too low, see vendor settings.
Disk	ABRTS/s	k 1	Storage not responding, maybe failed paths or array not taking IO.
Disk	RESETS/s	k 1	Number of commands reset per second.

vscsiStats: monitors IO of VM's virtual SCSI controllers.

- 1) Change to appropriate directory: `cd /usr/lib/vmware/bin`
 - 2) Reset the stats: `sudo ./vscsiStats -r`
 - 3) List VMs (worldgroup) & disks (handle): `sudo ./vscsiStats -l`
 - 4) Start stat collection: `sudo ./vscsiStats -s -w <worldgroup_id>`
 - 5) View stats: `sudo ./vscsiStats -w worldgroup_id -p all`
 - 6) Stop stat collection: `sudo ./vscsiStats -x`
- Can specify disk instead of whole VM with **-i handle_id** after **-w** option.
Specifies the stats to use: **-p** all, **ioLength**, **seekDistance**, **outstandingIOs**, **latency**, **interarrival**.
Can export the stats using command 5) above appended with **-c > /tmp/outputfile.csv**

Run vscsiStats in top mode - <http://communities.vmware.com/message/1437426>

- Links:** <http://communities.vmware.com/docs/DOC-9279> - Interpreting esxtop Statistics
<http://www.yellow-bricks.com/esxtop> - Yellow Brick's esxtop values/thresholds
<http://communities.vmware.com/docs/DOC-10095> - Using vscsiStats for Storage Performance
http://www.vmware.com/pdf/Perf_Best_Practices_vSphere4.0.pdf - Performance best practices
<http://communities.vmware.com/docs/DOC-10352> - Performance Troubleshooting vSphere/ESX4
http://www.vmware.com/pdf/vsphere4/r40_u1/vsp_40_u1_resource_mgmt.pdf - Resource Guide

vReference.com by Forbes Guthrie  Thresholds by yellow-bricks.com