

vSphere 6 ESXTOP quick Overview for Troubleshooting

ESXTOP Command overview

For changing to the different views type:

m	Memory	i	Interrupts	v	Disk VM
c	CPU	d	Disk Adapter	p	Power states
n	Network	u	Disk Device	x	vsan

f	for add/remove fields	o	change field order
V	show only virtual machine instances	k	kill a world
2	highlight a row scrolling down	e	expand/rollup (where available)
8	highlight a row scrolling up		

spacebar: refresh screen
s 2: refresh screen every two seconds

Network n – Fields: A B C D E F K L

PORT-ID	UPLINK	UP	SPEED	FDUPLX	USED-BY	TEAM-PNIC	DNAME	%DRPTX	%DRPRX
16777218	Y	Y	1000	Y	vmnic0	-	vSwitch0	0.00	0.00
16777219	Y	Y	1000	Y	vmnic2	-	vSwitch0	0.00	0.00
33554508	N	-	-	-	1098259:LABVM01	vmnic1	vSwitch1	0.00	0.00
33554509	N	-	-	-	1096171:LABVM02	vmnic1	vSwitch1	0.00	0.00

Used-by/Team-PNIC: provide information what physical NIC a VM is actually using.

%DRPTX, %DRPRX: Dropped Packages transmitted/Dropped Packages received. Values larger 0 are a sign for high network utilization

Memory m – Fields: B D J K Q

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10:15:09am up 33 days 23:51, 402 worlds, 13 VMs, 18 vCPUs; MEM overcommit avg: 0.00, 0.00, 0.00
PHMEM /MB: 65525 total: 1530 vmk, 44433 other, 19561 free
VMKMEM/MB: 65202 managed: 1266 minfree, 4963 rsvd, 60238 ursvd, high state
NUMA /MB: 32757 ( 8367), 32767 (10554)
PSHARE/MB: 20166 shared, 6164 common: 14002 saving
SWAP /MB: 0 curr, 0 rclmgt: 0.00 r/s, 0.00 w/s
ZIP /MB: 0 zipped, 0 saved
MEMCTL/MB: 0 curr, 0 target, 37419 max
    
```

GID	NAME	MCTLSZ	MCTLTGT	MCTLMAX	SWCUR	SUTGT	SWR/s	SWW/s	CACHESZ	CACHEUSD	ZIP/s	UNZIP/s
949816	LABVM01	0.00	0.00	5323.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1233985	LABVM02	0.00	0.00	5324.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
941153	LABVM03	0.00	0.00	3992.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
955149	LABVM04	0.00	0.00	2662.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
952352	LABVM05	0.00	0.00	2661.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
949815	LABVM06	0.00	0.00	2495.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

average memory overcommitment for the last one, five and 15 minutes

MCTLSZ: Amount of guest physical memory (MB) the ESXi Host is reclaiming by balloon driver. A reason for this is memory overcommitment.

SWCUR: Memory (in MB) that has been swapped by VMKernel. Possible cause: memory overcommitment.

SWR/s, SWW/s: Rate at which the ESXi Host is writing to or reading from swapped memory. Possible cause: memory overcommitment.

Memory State:

- high enough free memory available (normal TPS cycles)
- clear <100% of minFree: ESXi actively calls TPS to collapse pages
- soft <64% of minFree: Host reclaims memory by balloon driver + TPS
- hard <32% of minFree: Host starts to swap, compress + TPS / no more ballooning
- low <16% of minFree: ESXi blocks VMs from allocating more RAM +

How to calculate minFree: minFree depends on the host memory configuration: for the first 28 GB RAM minFree = 899 MB + 1% from the remaining RAM
Eg. a host with 100 GB RAM: 899 MB + 720 MB (1% of 72 GB RAM) = minFree 1619MB

CACHEUSD: Memory (in MB) compressed by ESXi Host

ZIP/s: Values larger 0 indicate that the host is actively compressing memory.

UNZIP/s: Values larger 0 indicate that the host is accessing compressed memory. Reason: memory overcommitment.

CPU c – Fields: D F

%USED: CPU Core cycles used by a VM. High values are an indicator for VMs causing performance problems on ESXi Hosts.

%SYS: Percentage of time spent by system to process interrupts and to perform other system activities on behalf of the world. Possible cause: maybe caused by high I/O VM

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9:15:39am up 33 days 22:51, 401 worlds, 13 VMs, 18 vCPUs; CPU load average: 0.21, 0.17, 0.20
PCPU USED(%): 14 14 28 13 39 12 32 60 45 70 4.4 5.3 AVG: 28
PCPU UTIL(%): 13 13 25 12 36 11 29 56 41 64 4.3 4.5 AVG: 26
    
```

NAME	%USED	%RUN	%SYS	%WAIT	%VMWAIT	%RDY	%IDLE	%OVRLP	%CSTP	%MLMTD	%SWPWT
LABVM01	188.45	171.50	2.02	405.92	0.09	0.06	21.31	0.63	0.00	0.00	0.00
LABVM02	88.57	81.82	0.47	495.55	0.00	0.12	110.70	0.16	0.00	0.00	0.00
LABVM03	11.76	10.66	0.22	566.07	0.33	0.75	180.99	0.14	0.00	0.00	0.00
LABVM04	8.14	7.39	0.11	569.76	0.00	0.33	185.26	0.05	0.00	0.00	0.00

%VMWAIT: percentage of time a VM was waiting for some VMkernel activity to complete (such as I/O) before it can continue. Includes %SWPWT and "blocked", but not IDLE Time (as %WAIT does). Possible cause: Storage performance issue | latency to a device in the VM configuration eg. USB device, serial pass-through device or parallel pass-through device

%RDY: Percentage of time a VM was waiting to be scheduled. If you note values between five and ten percent take care. Possible reasons: too many vCPUs, too many vSMP VMs or a CPU limit setting (check %MLMTD)

Note: for SMP VMs with multiple vCPUs ESXTOP accumulate %rdy for all vCPUs, resulting in higher values. If you want to see the values for each dedicated vCPU, press "e" to Expand/Rollup CPU statistics and insert the GID of the VM you want to analyse.

CPU load average for the last one, five and 15 minutes

%CSTP: This value is interesting if you are using vSMP virtual machines. It shows the percentage of time a ready to run VM has spent in co-deschedule state. If value is >3 decrease the number of vCPUs from the VM concerned.

%MLMTD: Counter showing percentage of time a ready to run vCPU was not scheduled because of a CPU limit setting. Remove limit for better performance.

%SWPWT: Counter showing how long a VM has to wait for swapped pages read from disk. A reason for this could be memory overcommitment. Pay attention if %SWPWT is >5!

Disk d – Fields: A B G J

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9:33:14am up 33 days 23:09, 405 worlds, 13 VMs, 18 vCPUs; CPU load average: 0.12, 0.12, 0.14
    
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ADAPTR	PATH	DAVG/cmd	KAVG/cmd	GAVG/cmd	QAVG/cmd	FCMDS/s	FREAD/s	FWRITE/s	FMBRD/s	FMBWR/s	FRESV/s	ABRTS/s	RESETS/s
vmhba0	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba1	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba2	-	1.57	0.01	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba3	-	0.76	0.01	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba32	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DAVG: Latency at the device driver level
Indicator for storage performance troubles

KAVG: Latency caused by VMKernel
Possible cause: Queuing (wrong queue depth parameter or wrong failover policy)

GAVG: GAVG = DAVG + KAVG

ABRTS/s: Commands aborted per second
If the storage system has not responded within 60 seconds VMs with an Windows Operating System will issue an abort.

Resets/s: number of commands reset per second

NUMA m (change to memory view) – Fields: D G

NAME	NN	NMIG	NRMEM	NLMEM	N%L	GST	NDO	OVD	ND0	GST	ND1	OVD	ND1
LABVM01	1	0	27.97	8164.03	99	27.97	31.47	8164.03	34.93				
LABVM02	0	0	49.91	6094.09	99	6094.09	27.37	49.91	23.90				
LABVM03	0	0	12.49	4083.51	99	4083.51	23.80	12.49	12.74				
LABVM04	0	0	0.13	4095.87	99	4095.87	17.14	0.13	15.59				

NNM: Numa Node where the VM is located

NRMEM: VM Memory (in MB) located at remote Node

NLMEM: VM Memory (in MB) located at local Node

N%L: Percentage of VM Memory located at the local NUMA Node. If this value is less than 80 percent the VM will experience performance issues.

VSAN x

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8:37:58am up 6:37, 445 worlds, 0 VMs, 0 vCPUs; CPU load average: 0.01, 0.01, 0.01
VSAN Enabled? Y
    
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ROLE	READS/s	MBREAD/s	AVGLAT	SDLAT	WRITES/s	MBWRITE/s	AVGLAT	SDLAT	RECOVR/s	MBRECOVR/s	AVGLAT	SDLAT
ROLE	READS/s	Name of VSAN DOM Role.	MBREAD/s	Megabytes read per second.	WRITES/s	Megabytes write per second.	AVGLAT	Average latency in millisecs for read, write and recovery write.	RECOVR/s	Number of recovery write operations completed per second.	MBRECOVR/s	Megabytes written per second for recovery

ROLE READS/s Name of VSAN DOM Role. MBREAD/s Megabytes read per second. WRITES/s Megabytes write per second. AVGLAT Average latency in millisecs for read, write and recovery write.

MNWRITE/s Megabytes written per second.
RECOVR/s Number of recovery write operations completed per second.
MBRECOVR/s Megabytes written per second for recovery
SDLAT Standard deviation of latency in millisecs for read, write and recovery write.
AVGLAT Average latency in millisecs for read, write and recovery write.