



Mohammad Tarique 

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# Diagnosing Linux Performance Issues step by step.



## *\$uptime*

```
[motarique@masternode ~]$ uptime  
10:15:30 up 42 days, 2:00, 2 users, load average: 0.45, 0.38, 0.40
```

**What to Check:** System load averages over the last 1, 5, and 15 minutes.

**Red Flags:** Load averages significantly higher than the number of CPU cores. For a single-core system, a load average of 1.00 indicates full utilization; anything above that indicates overloading.



***\$dmesg | tail***

```
[motarique@masternode ~]$ dmesg | tail  
[872345.123456] ERROR: CPU0: Core temperature above threshold!
```

**What to Check:** The most recent system messages, which can include errors, warnings, or informational messages.

**Red Flags:** Hardware errors, driver issues, or any critical system errors.



## \$vmstat 1

```
[motarique@masternode ~]$ vmstat 1
procs -----memory----- ---swap-- -----io----- -system-- -----cpu-----
r  b   swpd   free   buff  cache   si   so    bi    bo    in   cs  us  sy  id  wa  st
1  0       0 123456  7890 123456   0    0    10    20   300  400  5   2  90   3   0
```

**What to Check:** Real-time system performance metrics, including CPU, memory, swap, and I/O.

**Red Flags:** High swap usage (si and so columns) indicates memory pressure. Consistently high values in the wa column indicate I/O wait, which can be a sign of disk issues. Low values in the id column indicate high CPU usage.



## *\$mpstat -P ALL 1*

```
[motarique@masternode ~]$ mpstat -P ALL 1
CPU    %usr   %nice    %sys %iowait  %irq   %soft  %steal  %guest  %gnice   %idle
all     15.0    0.0     5.0    1.0     0.0    1.0    0.0     0.0     0.0    78.0
```

**What to Check:** CPU utilization for each processor.

**Red Flags:** Consistently high %usr and %sys values across all CPUs can indicate CPU bottlenecks.



## *\$pidstat 1*

```
[motarique@masternode ~]$ pidstat 1
```

UID	PID	%usr	%system	%guest	%CPU	CPU	Command
1000	12345	15.0	5.0	0.0	20.0	1	MyApp

**What to Check:** CPU, memory, and I/O metrics for each process.

**Red Flags:** Processes with unusually high CPU or memory usage.



## *iostat -xz 1*

```
[motarique@masternode ~]$ iostat -xz 1
```

Device:	rrqm/s	wrqm/s	r/s	w/s	rkB/s	wkB/s	avgrq-sz	avgqu-sz	await	r_await	w_await	svctm	%util
sda	0.00	5.00	5.00	5.00	100.00	100.00	40.00	0.02	2.00	2.00	2.00	1.00	10.0

**What to Check:** Disk I/O statistics, including read/write rates and device utilization.

**Red Flags:** High %util values indicate the disk is being fully utilized. High await values indicate processes are waiting too long for I/O operations to complete.



## `$free -m`

```
[motarique@masternode ~]$ free -m
```

	total	used	free	shared	buff/cache	available
Mem:	16000	5000	8000	100	3000	14000
Swap:	8000	0	8000			

**What to Check:** Memory usage, including used, free, and available memory.

**Red Flags:** Low available memory. High swap usage, which indicates the system is running out of physical memory.





***\$sar -n DEV 1***

```
[motarique@masternode ~]$ sar -n DEV 1
```

IFACE	rxpck/s	txpck/s	rxkB/s	txkB/s
eth0	100.00	100.00	50.00	50.00

**What to Check:** Network statistics, including packets sent/received.

**Red Flags:** High error rates or dropped packets can indicate network issues.



***\$sar -n TCP,ETCP 1***

```
[motarique@masternode ~]$ sar -n TCP,ETCP 1
active/s  passive/s  iseg/s  oseg/s
10.00    5.00      100.00  100.00
```

**What to Check:** TCP connection statistics.

**Red Flags:** High numbers of retransmitted packets can indicate network congestion or other issues.



# *Stop*

```
[motarique@masternode ~]$ top
PID  USER      PR  NI   VIRT   RES    SHR  S  %CPU  %MEM    TIME+  COMMAND
1234  motarique  20   0 123456M  7890M  1234  S   15.0   5.0   0:01.23  MyApp
```

**What to Check:** Real-time system monitor showing processes and their resource usage.

**Red Flags:** Processes consuming a high percentage of CPU or memory.  
Zombie processes that aren't being cleared.



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Are there any other Linux commands or tools you swear by for performance monitoring?



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