

Week 6: Performance Evaluation and Analysis

Overview

In Week 6, I evaluated the performance of the Linux server under different workloads using the applications installed in Week 3. This phase helped identify system bottlenecks, monitor resource usage, and apply optimisation strategies.

1. Baseline Performance Testing

Before running workloads, I measured the server's idle performance to have a comparison for load testing.

Commands:

```
# CPU and memory usage
top -bn1 | head -n 10
free -h
```

```
# Disk I/O performance
iostat -dx
```

```
# Network performance
ifstat -t 1 1
```

Explanation:

These commands provide a baseline measurement of CPU, RAM, disk, and network usage.

```
uboxuser@ubuntuS:~$ free -h
              total        used        free      shared  buff~cache     available
Mem:          4.0Gi          461Mi          3.5Gi          1.0Mi          650Mi          4.3Gi
Swap:          0B              0B              0B
uboxuser@ubuntuS:~$ sar -r 5 5
Linux 6.0.0-00-generic (ubuntuS)
12/15/2025      _x86_64_      (2 CPU)
11:48:59 AM kbmemfree kbavail kbmemused %memused kbbuffers kbwached kbcommit %commit kbactive kbinactive kbdirty
11:49:04 AM 41244000 40944000 11770000 0.29 147344 1000000 2776000 0.32 1000000 1176000 0
11:49:09 AM 41244000 40944000 11770000 0.29 147344 1000000 2776000 0.32 1000000 1176000 0
11:49:15 AM 41244000 40944000 11770000 0.29 147344 1000000 2776000 0.32 1000000 1176000 0
11:49:20 AM 41244000 40944000 11770000 0.29 147344 1000000 2776000 0.32 1000000 1176000 0
11:49:25 AM 41244000 40944000 11770000 0.29 147344 1000000 2776000 0.32 1000000 1176000 0
kbswpin: 0 kbswpout: 0
uboxuser@ubuntuS:~$ dd if=/dev/zero of=testfile bs=1M count=1024
1024+0 records in
1024+0 records out
1048576 bytes transferred by dd
uboxuser@ubuntuS:~$ sudo iftop -t -s 10
interface: enp0s3
IP address is: 10.0.2.15
IPv6 address is: fd17:625c:f037:2:a00:27ff:fe84:2d31
MAC address is: 08:00:27:84:2d:31
Listening on enp0s3
```

```
vboxuser@ubuntuS:~$ sudo iftop -t -2 10
interface: eth0/3
IP address: 10.0.2.15
IPv6 address: fe80::f372:a00:27ff:fe04:2431
MAC address: 08:00:27:04:24:31
Listening on eth0/3
```

#	Host name (port/service if enabled)	Iast 2s	Iast 10s	Iast 40s cumulative
Total send rate:				
		0b	0b	0b
Total receive rate:				
		0b	0b	0b
Total send and receive rate:				
		0b	0b	0b
Peak rate (sent/received/total):				
		0b	0b	0b
Cumulative (sent/received/total):				
		0b	0b	0b

```
vboxuser@ubuntuS:~$
vboxuser@ubuntuS:~$ uptime
02:03:35 up 7:05, 1 user, load average: 0.00, 0.03, 0.12
vboxuser@ubuntuS:~$ renice -n -5 -p <PID>
-bash: syntax error near unexpected token `newline'
vboxuser@ubuntuS:~$ sync;echo 3 | sudo tee /proc/sys/vm/drop_caches
3
vboxuser@ubuntuS:~$ tail -f /var/log/syslog
tail: cannot open '/var/log/syslog' for reading: Permission denied
tail: no files remaining
vboxuser@ubuntuS:~$
```

```
vboxuser@ubuntuS:~$ free -h
```

	total	used	free	shared	buff/cache	available
Mem:	4.8Gi	461Mi	3.9Gi	1.0Mi	620Mi	4.3Gi
Swap:	0B	0B	0B			

```
vboxuser@ubuntuS:~$
vboxuser@ubuntuS:~$ sudo apt install lynx -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  xss
Suggested packages:
  xss-l10n xss-docs xss-tripwire xss-hain xss-ncu xss-110n xss-1 xss-cii-tools xss-kits
The following NEW packages will be installed:
  lynx xss
0 upgraded, 2 newly installed, 0 to remove and 50 not upgraded.
Need to get 602 kB of archives.
After this operation, 3,200 kB of additional disk space will be used.
Get:1 http://gb.archive.ubuntu.com/ubuntu noble/universe amd64 lynx all 3.0.9-1 (226 kB)
Get:2 http://gb.archive.ubuntu.com/ubuntu noble/universe amd64 xss amd64 2.1.50 (377 kB)
Fetched 602 kB in 0s (2,741 kB/s)
Selecting previously unselected package lynx.
(Reading database ... 4965 files and directories currently installed.)
Preparing to unpack .../archives/lynx_3.0.9-1_all.deb ...
Unpacking lynx (3.0.9-1) ...
Selecting previously unselected package xss.
Preparing to unpack .../archives/xss_2.1.50_amd64.deb ...
Unpacking xss (2.1.50) ...
Setting up lynx (3.0.9-1) ...
Created symlink /etc/systemd/system/timers.target.wants/lynx.timer → /usr/lib/systemd/system/lynx.timer.
lynx.service is a disabled or a static unit, not starting it.
Setting up xss (2.1.50) ...
Processing triggers for install-info (2.1.3build2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning time images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
vboxuser@ubuntuS:~$
vboxuser@ubuntuS:~$ stress --vm 2 --vm-bytes 512M --timeout 60
stress: info: [2489] dispatching hogs: 0 cpu, 0 io, 2 vm, 0 hdd
stress: info: [2489] successful run completed in 60s
vboxuser@ubuntuS:~$
```

e without any additional load.