

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 usag
zhouxuser@ubuntuS:~$ free -h
              total        used        free      shared  buff/cache   available
Mem:       4.06G       461M     3.96G      1.06G       620M       4.36G
Swap:      0.00G       0.00G       0.00G
zhouxuser@ubuntuS:~$ sar -r 5 5
Linux 6.0.0-08-generic (ubuntuS) 12/15/2025           _x86_64_          (2 CPU)
01:48:59 up  khmemfree  khmemused  khmemused  khbuffers  khcached  khcommit  khscommit  khscommit  khactive  khinactive  khdirty
01:49:04 AM 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000
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01:49:23 AM 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000
01:49:24 AM 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000
01:49:25 AM 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000 410000000
zhouxuser@ubuntuS:~$ dd if=/dev/zero of=testfile bs=1M count=1024
zhouxuser@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: 00:00:27:04:2d:31
Listening on enp0s3

```

```
vboxuser@ubuntuS:~$ sudo iftop -t -x 10
Interface: enp0s3
IP address is: 10.0.2.15
MAC address is: 08:00:27:84:24:31
HW address is: 08:00:27:84:24:31
Listening on enp0s3
# Host name (port/service IP enabled)          last 2s    last 10s   last 40s  cumulative
Total send rate:                                0b        0b        0b
Total receive rate:                             0b        0b        0b
Total send and receive rate:                   0b        0b        0b
Peak rate (current/recent/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:~$ sudo apt install lycoris
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apt
Suggested packages:
  apt-show-versions  debconf  dpkg-dev  libapt-pkg-perl  libapt-pkg5.0  libapt-pkg5.0-base
The following NEW packages will be installed:
  lycoris
0 upgraded, 1 newly installed, 0 to remove and 50 not upgraded.
Need to get 602 kB of archives.
Get:1 http://gb.archive.ubuntu.com/ubuntu main/lamp lycoris all 3.0.9-1 (226 kB)
Get:2 http://gb.archive.ubuntu.com/ubuntu main/lamp lycoris amd64 menu amd64 2.1.50 (377 kB)
Fetched 602 kB in 0s (922 kB/s)
Selecting previously unselected package lycoris.
Preparing to unpack .../archives/lycoris_3.0.9-1_all.deb ...
Unpacking lycoris (3.0.9-1) ...
Selecting previously unselected package menu.
Preparing to unpack .../archives/menu_2.1.50_amd64.deb ...
Unpacking menu (2.1.50) ...
Setting up lycoris (3.0.9-1)
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for menu (2.1.50) ...
Scanning processes...
Scanning Linux 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:~$ 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.