# Linux Troubleshooting drills: CPU, Memory and logs

Environment basics:

- Uname –a command displays systems information about kernel and hardware.

```
rohan@MSI:/mnt/c/Users/rohan$ uname -a
Linux MSI 6.6.87.2-microsoft-standard-WSL2 #1 SMP PREEMPT_DYNAMIC Thu Jun  5 18:30:46 UTC 2025 x86_64 x86_64 x86_64 GNU/Linux
```

- Cat /etc/os/release command displays information about your Linux distribution.

```
rohan@MSI:/mnt/c/Users/rohan$ cat /etc/os-release
PRETTY_NAME="Ubuntu 24.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.3 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
```

File system sanity:

- Mkdir /tmp/runbook-demo command creates temporary directory and runbook-demo folder inside tmp. This is a simple, safe command perfect for creating a temporary workspace.

```
rohan@MSI:/mnt/c/Users/rohan$ cd /tmp
rohan@MSI:/tmp$ cd runbook-demo/
rohan@MSI:/tmp/runbook-demo$ ls
hosts-copy
rohan@MSI:/tmp/runbook-demo$ cd ..
rohan@MSI:/tmp$ ls
runbook-demo
snap-private-tmp
systemd-private-deee22e53c374a80976cdb8c00dc3665-systemd-logind.service-745pp0
systemd-private-deee22e53c374a80976cdb8c00dc3665-systemd-resolved.service-FuL8AO
systemd-private-deee22e53c374a80976cdb8c00dc3665-systemd-timesyncd.service-PFskCA
systemd-private-deee22e53c374a80976cdb8c00dc3665-wsl-pro.service-QkpXE1
rohan@MSI:/tmp$ cd runbook-demo/
rohan@MSI:/tmp/runbook-demo$ ls
hosts-copy
rohan@MSI:/tmp/runbook-demo$
```

- cp /etc/hosts /tmp/runbook-demo/hosts-copy && ls -l /tmp/runbook-demo commands are two commands combined. It is used for common troubleshooting/testing patterns.

```
rohan@MSI:/mnt/c/Users/rohan$ cp /etc/hosts /tmp/runbook-demo/hosts-copy && ls -l /tmp/runbook-demo
total 4
-rw-r--r-- 1 rohan rohan 403 Jan 30 09:03 hosts-copy
```

CPU/ Memory:

- Ps –o pid command is used to list the process ID (PID) of running processes, showing only the PID column. The – o flag specifies custom output format, and pid is the field for process ID.

```
rohan@MSI:/mnt/c/Users/rohan$ ps -o pid
    PID
    388
   1277
```

- Free –h command is used to display amounts of free and used memory in the system. -h show all output fields automatically scaled to shortest three digits unit and display the units of print out.

```
rohan@MSI:/mnt/c/Users/rohan$ free -h
               total        used        free      shared  buff/cache   available
Mem:           7.4Gi       520Mi       6.9Gi       3.5Mi       191Mi       6.9Gi
Swap:          2.0Gi          0B       2.0Gi
```

Disk /IO:

- Df –h command is used to report file system space usage. -h print sizes in powers of 1024.

```
rohan@MSI:/mnt/c/Users/rohan$ df -h
Filesystem      Size  Used Avail Use% Mounted on
none            3.8G     0  3.8G   0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
none            3.8G  4.0K  3.8G   1% /mnt/wsl
drivers         151G   89G   62G  60% /usr/lib/wsl/drivers
/dev/sdd       1007G  2.1G  954G   1% /
none            3.8G   84K  3.8G   1% /mnt/wslg
none            3.8G     0  3.8G   0% /usr/lib/wsl/lib
rootfs          3.8G  2.7M  3.8G   1% /init
none            3.8G  516K  3.8G   1% /run
none            3.8G     0  3.8G   0% /run/lock
none            3.8G     0  3.8G   0% /run/shm
none            3.8G   96K  3.8G   1% /mnt/wslg/versions.txt
none            3.8G   96K  3.8G   1% /mnt/wslg/doc
C:\             151G   89G   62G  60% /mnt/c
D:\             310G  153G  157G  50% /mnt/d
tmpfs           763M   20K  763M   1% /run/user/1000
```

- vmstat command is used to report virtual memory statistics.

```
rohan@MSI:/mnt/c/Users/rohan$ vmstat
procs -----------memory---------- ---swap-- -----io---- -system-- -------cpu-------
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st gu
 0  0      0 7233812   7508 191048    0    0    59     4   65    0  0  0 100  0  0  0
```

Network:

- ‘ss’ command is used for another utility to investigate sockets. “-tupln” - t show TCP connections, ‘-u’ show UDP connection, ‘-p’ show the process using each socket, ’-l’ show only listening socket, ‘-n’ show numerical addresses.

```
rohan@MSI:/mnt/c/Users/rohan$ ss -tulpn
Netid       State        Recv-Q       Send-Q             Local Address:Port             Peer Address:Port      Process
udp         UNCONN       0            0                     127.0.0.54:53                  0.0.0.0:*
udp         UNCONN       0            0                  127.0.0.53%lo:53                  0.0.0.0:*
udp         UNCONN       0            0                 10.255.255.254:53                  0.0.0.0:*
udp         UNCONN       0            0                     127.0.0.1:323                  0.0.0.0:*
udp         UNCONN       0            0                         [::1]:323                     [::]:*
tcp         LISTEN       0            4096               127.0.0.53%lo:53                  0.0.0.0:*
tcp         LISTEN       0            4096                  127.0.0.54:53                  0.0.0.0:*
tcp         LISTEN       0            1000              10.255.255.254:53                  0.0.0.0:*
```

- Netstat command is used to print network connections, routing tables, interface statistics, masquerade connections, and multicast membership. ‘-t’ show TCP connections, ‘-u’ show UDP connection, ‘-p’ show the process using each socket, ’-l’ show only listening socket, ‘-n’ show numerical addresses.

```
rohan@MSI:/mnt/c/Users/rohan$ netstat -tulpn
(No info could be read for "-p": geteuid()=1000 but you should be root.)
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN      -
tcp        0      0 127.0.0.54:53           0.0.0.0:*               LISTEN      -
tcp        0      0 10.255.255.254:53       0.0.0.0:*               LISTEN      -
udp        0      0 127.0.0.54:53           0.0.0.0:*                           -
udp        0      0 127.0.0.53:53           0.0.0.0:*                           -
udp        0      0 10.255.255.254:53       0.0.0.0:*                           -
udp        0      0 127.0.0.1:323           0.0.0.0:*                           -
udp6       0      0 ::1:323                 :::*                                -
```

Logs:

- Journalctl –u <service> -n 50 journalctl is a Linux command used to view and manage system logs maintained by the systemd-journald service. It provides a centralized and efficient way to access and analyze log data

```
rohan@MSI:/mnt/c/Users/rohan$ journalctl -u cron -n 50
Jan 28 08:17:02 MSI CRON[1359]: (root) CMD (cd / && run-parts --report /etc/cron.hourly)
Jan 28 08:17:02 MSI CRON[1358]: pam_unix(cron:session): session closed for user root
Jan 28 08:45:52 MSI systemd[1]: Stopping cron.service - Regular background program processing daemon...
Jan 28 08:45:52 MSI systemd[1]: cron.service: Deactivated successfully.
Jan 28 08:45:52 MSI systemd[1]: Stopped cron.service - Regular background program processing daemon.
-- Boot 68efd9fbe2184482a91c766818e3838e --
Jan 28 10:57:29 MSI systemd[1]: Started cron.service - Regular background program processing daemon.
Jan 28 10:57:29 MSI (cron)[177]: cron.service: Referenced but unset environment variable evaluates to an empty string: EXTRA_OPTS
Jan 28 10:57:29 MSI cron[177]: (CRON) INFO (pidfile fd = 3)
Jan 28 10:57:29 MSI cron[177]: (CRON) INFO (Running @reboot jobs)
Jan 28 11:17:03 MSI CRON[664]: pam_unix(cron:session): session opened for user root(uid=0) by root(uid=0)
Jan 28 11:17:03 MSI CRON[665]: (root) CMD (cd / && run-parts --report /etc/cron.hourly)
Jan 28 11:17:03 MSI CRON[664]: pam_unix(cron:session): session closed for user root
Jan 28 13:34:04 MSI systemd[1]: Stopping cron.service - Regular background program processing daemon...
Jan 28 13:34:04 MSI systemd[1]: cron.service: Deactivated successfully.
Jan 28 13:34:04 MSI systemd[1]: Stopped cron.service - Regular background program processing daemon.
-- Boot 100e0dd8aabe4f1bbdfa457959b0b79b --
Jan 28 13:38:55 MSI systemd[1]: Started cron.service - Regular background program processing daemon.
Jan 28 13:38:55 MSI (cron)[168]: cron.service: Referenced but unset environment variable evaluates to an empty string: EXTRA_OPTS
Jan 28 13:38:55 MSI cron[168]: (CRON) INFO (pidfile fd = 3)
Jan 28 13:38:55 MSI cron[168]: (CRON) INFO (Running @reboot jobs)
Jan 28 14:03:59 MSI systemd[1]: Stopping cron.service - Regular background program processing daemon...
Jan 28 14:03:59 MSI systemd[1]: cron.service: Deactivated successfully.
Jan 28 14:03:59 MSI systemd[1]: Stopped cron.service - Regular background program processing daemon.
-- Boot 1a21eb8edea34dd8960a9b9882e6a962 --
Jan 29 07:57:01 MSI systemd[1]: Started cron.service - Regular background program processing daemon.
```