Ubuntu Troubleshooting Tools Cheat Sheet

1. Logs and System Messages

journalctl

- **Purpose:** View systemd logs.
- **Switches:**
  - `-xe` → Show recent errors with extra detail.
  - `-b` → Show logs from current boot (`-b -1` for previous boot).
  - `-u SERVICE` → Show logs for a specific service.
  - `--since "YYYY-MM-DD HH:MM"` → Show logs since a given time.

dmesg

- **Purpose:** Kernel messages (drivers, hardware).
- **Switches:**
  - `-T` → Human-readable timestamps.
  - `--level=err,warn` → Show only errors and warnings.

systemctl

- **Purpose:** Manage systemd services.
- **Switches:**
  - `status SERVICE` → Show service status.
  - `restart SERVICE` → Restart a service.
  - `list-units --failed` → Show failed services.

systemd-analyze

- **Purpose:** Analyze boot performance.
- **Switches:**
  - (no switch) → Show total boot time.
  - `blame` → Show slow services.
  - `critical-chain` → Show critical boot chain.

2. Performance and Processes

top

- **Purpose:** Monitor processes and CPU/memory usage.
- **Switches:**
  - `-u USER` → Show processes of a user.
  - `-p PID` → Show a specific process.

htop

- **Purpose:** Interactive process viewer (better than top).
- **Switches:**
  - `-u USER` → Show processes of a user.
  - Function keys (F6, etc.) → Sort/filter.

ps

- **Purpose:** List processes.
- **Switches:**
  - `aux` → Show all processes with details.
  - `-ef` → Full format with parent/child.

vmstat

- **Purpose:** Show memory, CPU, and I/O stats.
- **Switches:**

    - `vmstat 1` → Update every second.
    - `-s` → Memory summary.

iostat

- **Purpose:** Disk and CPU performance.
- **Switches:**
    - `-x 1` → Extended disk stats every second.
    - `-c` → CPU only.

iotop

- **Purpose:** Show I/O usage per process.
- **Switches:**
    - `-o` → Show only active I/O processes.
    - `-b` → Batch mode for logging.

free

- **Purpose:** Show memory and swap usage.
- **Switches:**
    - `-h` → Human-readable (GB/MB).
    - `-m` → Show in MB.

strace

- **Purpose:** Trace system calls.
- **Switches:**
    - `-p PID` → Attach to a process.
    - `-e open,read,write` → Trace specific calls.

3. Disk and Filesystem

df

- **Purpose:** Show disk usage.
- **Switches:**
  - `-h` → Human-readable.
  - `-T` → Show filesystem type.

du

- **Purpose:** Show folder sizes.
- **Switches:**
  - `-h` → Human-readable.
  - `--max-depth=1` → Show only top-level folders.

lsblk

- **Purpose:** Show block devices and partitions.
- **Switches:**
  - `-f` → Show filesystem and UUID.
  - `-o NAME,SIZE,MOUNTPOINT` → Custom columns.

smartctl

- **Purpose:** Check disk health (SMART).
- **Switches:**
  - `-a /dev/sda` → All SMART info.
  - `-H /dev/sda` → Health status only.

fsck

- **Purpose:** Check and repair filesystem.
- **Switches:**
  - `-f` → Force check.
  - `-y` → Auto repair without asking.

4. Networking and DNS

ip

- **Purpose:** Manage network interfaces and routes.
- **Switches:**
  - `ip a` → Show addresses.
  - `ip r` → Show routes.
  - `ip link show` → Show interfaces.

ss

- **Purpose:** Show sockets and ports.
- **Switches:**
  - `-tulpn` → TCP/UDP sockets with PID.
  - `-s` → Summary stats.

ping

- **Purpose:** Test connectivity.
- **Switches:**
  - `-c 4` → Send 4 packets.
  - `-i 0.5` → Interval between packets.

traceroute

- **Purpose:** Show path to destination.
- **Switches:**
  - `-n` → Don’t resolve DNS.
  - `-I` → Use ICMP.

mtr

- **Purpose:** Combine ping + traceroute.
- **Switches:**
  - `-rw` → Report mode, no UI.

tcpdump

- **Purpose:** Capture network packets.
- **Switches:**
  - `-i eth0` → Capture on interface.
  - `port 443` → Filter by port.

dig

- **Purpose:** DNS lookup.
- **Switches:**
  - `dig example.com` → A record.
  - `dig +trace example.com` → Full DNS path.

ethtool

- **Purpose:** Show NIC info.
- **Switches:**
  - `ethtool eth0` → Link status.
  - `-i eth0` → Driver info.

resolvectl

- **Purpose:** Manage DNS with systemd.
- **Switches:**
  - `status` → Show DNS status.
  - `query example.com` → Test DNS query.

5. Boot and Kernel

journalctl -b

- **Purpose:** Show boot logs.
- **Switches:**
  - `-b -0` → Current boot.
  - `-b -1` → Previous boot.

update-initramfs

- **Purpose:** Rebuild initramfs.
- **Switches:**
  - `-u` → Update.
  - `-c` → Create new.

grub

- **Purpose:** Manage bootloader.
- **Switches:**
  - `update-grub` → Rebuild config.
  - `grub-install /dev/sda` → Reinstall GRUB.

lsmod

- **Purpose:** Show kernel modules.
- **Switches:** (none) → List modules.

modprobe

- **Purpose:** Load/unload modules.
- **Switches:**
  - `modprobe MODULE` → Load.
  - `-r MODULE` → Remove.

lspci

- **Purpose:** Show PCI devices.
- **Switches:**
  - `-nn` → Show IDs.
  - `-v` → Verbose.

lsusb

- **Purpose:** Show USB devices.
- **Switches:**
  - `-v` → Verbose.

6. Packages

apt

- **Purpose:** Manage packages.
- **Switches:**
  - `install PACKAGE` → Install.
  - `remove PACKAGE` → Remove.
  - `apt-cache policy PACKAGE` → Show versions.

dpkg

- **Purpose:** Low-level package manager.
- **Switches:**
  - `-l` → List packages.
  - `-s PACKAGE` → Show package status.

snap

- **Purpose:** Manage Snap packages.

- **Switches:**
  - `snap list` → List snaps.
  - `snap services` → Show services.
  - `snap logs NAME` → Show logs.