Linux & Cloud

Why the internet runs on penguins 🐧

Linux is Everywhere

- Powers most servers and cloud VMs
- Runs on everything from Raspberry Pi to supercomputers
- Built for multitasking, networking, containers, and automation

Market Snapshot

- **All TOP500 supercomputers run Linux**
- **Most public cloud workloads** run on Linux (VMs and containers)
- **Android** (Linux-based) dominates mobile OS usage

Reason to care: skills here translate directly to cloud jobs.

Why Linux dominates the cloud

- **Open & modular**: choose minimal images, swap components
- **Kernel superpowers**: cgroups, namespaces → containers
- **Automation-first**: SSH, systemd, cloud-init, Ansible
- **Ecosystem**: Kubernetes, Docker, Terraform, eBPF, WireGuard

Containers & Kubernetes

- A **container** = process + filesystem + isolation (no full VM)
- **Kubernetes** schedules containers on Linux nodes
- Images are **tiny** (e.g., Alpine, distroless) → fast, cheap

> Linux features (cgroups, namespaces, overlayfs) make this possible.

Common cloud distros

- **Ubuntu Server** (sane defaults, huge ecosystem)
- **Debian** (stable, minimal)
- **Amazon Linux** (AWS-tuned)
- **Fedora CoreOS** (immutable, great for clusters)

Pick minimal where you can; add only what you need.

DEMO TIME

Because demos *always* work

Useful one-liners

```
# Quick system facts
uname -a && lsb_release -a || cat /etc/os-release

# Who/where/what
whoami && hostname -I && df -h && free -m

# Firewall open 80 (Ubuntu with ufw)
sudo ufw allow 80/tcp && sudo ufw enable
```

Key takeaways

- Linux is the **language of the cloud**
- Learn the **basics + containers** → unlock Kubernetes
- Practice with **cheap VMs** & tear them down after

Q&A

Ask me about containers, kubernetes, or other cloud things