

■ Detailed Prerequisites Roadmap for DevOps

1. Computer Science & Operating System Basics

Topics:

- Processes, threads, scheduling
- Context switching, system calls
- Memory management (heap, stack, paging, swapping)
- File systems (ext4, XFS, NTFS)
- Disk partitioning & mounting
- Boot process in Linux

Resources:

- Operating System Concepts (Silberschatz)
- FreeCodeCamp OS basics (YouTube)
- Linux Foundation OS primers

2. Linux Fundamentals

Topics:

- Commands: ls, cd, cp, mv, rm, find, grep, awk, sed
- File permissions, ownership, sudo, sticky bits
- Processes & Services (ps, top, htop, kill, systemctl)
- Package management (apt, yum, dnf)
- User management (adduser, usermod, groups)
- Logs (/var/log, journalctl)
- Storage (LVM, RAID basics, mounting disks)
- Networking commands (ping, curl, wget, netstat, ss, nc, traceroute, dig)

Resources:

- Linux Journey (interactive)
- OverTheWire Bandit (practice)
- KodeKloud Linux for Beginners

3. Networking Basics

Topics:

- OSI & TCP/IP Models
- IP addressing: IPv4, IPv6, CIDR, subnetting
- TCP vs UDP
- Routing basics (default gateway, static routes)
- ARP, DHCP, DNS, NAT, VPNs
- DNS records (A, CNAME, MX, TXT, PTR)
- HTTP vs HTTPS, SSL/TLS handshake
- Firewalls (iptables, firewalld, UFW)
- Troubleshooting tools: ping, traceroute, dig, nslookup, tcpdump, curl

Resources:

- FreeCodeCamp Networking Full Course (YouTube)
- Cisco Packet Tracer
- Book: Computer Networking – A Top-Down Approach

4. Programming & Scripting (Python + Bash)

Bash:

- Variables, loops, conditionals, functions

- Automation scripts
- Cron jobs & scheduling

Python:

- Basics: variables, loops, functions, OOP
- File I/O & JSON/YAML parsing
- REST API calls with requests library
- Automation examples: AWS/GCP/K8s APIs
- Log parsing

Resources:

- The Linux Command Line (free book)
- Automate the Boring Stuff with Python (book)
- FreeCodeCamp Python Crash Course

5. Version Control (Git)

Topics:

- Git init, clone, add, commit, push, pull
- Branching & merging strategies
- Rebasing vs merging
- Tags, releases, versioning
- Resolving conflicts
- Git workflows: Gitflow, trunk-based

Resources:

- Atlassian Git Tutorials
- Git Immersion
- Practice with GitHub repos

6. Cloud Fundamentals

Topics:

- IaaS vs PaaS vs SaaS
- Cloud networking: VPC, subnets, internet/NAT gateways
- Shared responsibility model
- IAM basics: users, groups, policies
- Compute basics: VMs, scaling
- Storage basics: block, object, file

Resources:

- AWS Cloud Practitioner Essentials
- GCP Cloud Digital Leader
- Azure Fundamentals

7. Security Basics

Topics:

- Principle of least privilege
- Linux hardening: firewalls, SELinux, fail2ban
- Network security: WAF, IDS/IPS, VPNs
- Secrets management
- Hashing vs encryption vs encoding
- Symmetric vs Asymmetric encryption
- SSL/TLS certificates

Resources:

- OWASP Top 10
- KodeKloud DevSecOps labs
- Practical Linux Security Cookbook

8. Soft Skills & Problem Solving

Topics:

- Troubleshooting methodology
- Explaining tech simply
- STAR method for interviews

Resources:

- The Phoenix Project (book)
- Mock interviews with peers

Suggested Timeline (4 Weeks)

- Week 1 → Linux + OS basics + Git
- Week 2 → Networking + Bash scripting
- Week 3 → Python automation + Security basics
- Week 4 → Cloud fundamentals + soft skills