

LINUX-BASED NETWORKING

MENTORS



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OVERVIEW

- 5-week intensive bootcamp for 6th–8th semester students.
- Tracks: Cybersecurity, DevOps, Network & Systems Programming
- Focus: Linux system administration & networking
- Mix of theory + labs + projects
- Prepares for roles:
 - Linux System Admin
 - Network Engineer
 - DevOps Engineer
 - Cybersecurity Analyst

GOALS

- Master Linux OS, CLI, and file system
- Configure & manage networking services (SSH, DNS, DHCP, FTP, Web)
- Strengthen network security (iptables, UFW, fail2ban)
- Automate tasks with Bash scripting
- Build virtual network environments (namespaces, VLANs, bridges)
- Capstone project: secure multi-service Linux network

STRUCTURE

- Duration: 5 weeks (1 module/week)
- Class Length: 3 hours/session
- Format: Theory, Demos, Labs, Q&A
- Tools: Linux distros, VirtualBox/VMware, Bash, networking tools (ip, nmap, tcpdump, etc.)
- Deliverables: Slides, lab files, bash scripts, configs, final project

REQUIREMENTS

- Software/Tools: Linux (Ubuntu/CentOS), VirtualBox/VMware
- Accounts: GitHub, (optional) Wireshark/Google Drive
- Prerequisites:
 - Linux CLI basics
 - IP addressing & subnets
 - Basic scripting

Week 1: Linux Fundamentals

- History of Linux & distros
- Boot process & file system layout
- CLI commands, permissions, user management
- OSI & TCP/IP basics, IPv4 vs IPv6
- Networking commands: ip, ping, traceroute, netstat
- Hands-on: static IP, users, DNS resolver

Week 2: Network Services

- SSH setup & hardening
- FTP servers (vsftpd, proftpd)
- DNS (BIND9), DHCP (isc-dhcp-server)
- Web servers
- Mail server
- Hands-on: secure SSH, host webpage, custom DNS zone

Week 3: Firewalls & Security

- Firewall concepts (iptables, nftables, ufw)
- NAT & port forwarding
- Brute-force protection with fail2ban
- SELinux & AppArmor overview
- Hands-on: configure ufw, fail2ban, NAT rules

Week 4: Advanced Networking & Automation

- VLANs & bonding
- Network namespaces
- Virtual networking (bridged, NAT, host-only)
- Bash scripting: loops, automation, cron jobs
- Hands-on: VLAN config, namespaces, automated network checks

Week 5: Capstone Project

- Deploy DHCP + DNS + Web Server
- Configure firewall & NAT
- Automation scripts (monitoring, backup)
- Deliverables:
 - Network diagram
 - Config files
 - Bash scripts
 - Demo video/report

Expected Outcomes

- Strong Linux networking & sysadmin foundation
- Hands-on experience with real-world tools
- Confidence in configuring, securing, and automating networks
- Portfolio project to showcase skills

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**Thanks for
being with us**