Mastering
Linux Engineering

OPENPATH
PATH TO OPENSOURCE

Mastering Linux is a flagship initiative by **OpenPath**, in association with **KV IT-Solutions Pvt. Ltd.,** offering comprehensive and affordable online training in **Linux Operating Systems** and a wide range of **Open-Source Technologies.**

The program is designed specifically for **B.Tech, BCA, MCA,** and **Diploma students** who aspire to build strong careers in **IT infrastructure, system administration, or DevOps.**
Our curriculum focuses on **hands-on learning** through **LIVE INDUSTRIAL PROJECTS,** enabling participants to gain **real-world skills** essential for today's enterprise environments.

Whether you're a beginner or an aspiring **Linux professional,** *Mastering Linux* equips you with the expertise to deploy, manage, and secure enterprise-grade Linux servers confidently.

Key Highlights

1
Comprehensive coverage of Linux system administration and server deployment

2
Hands-on experience with 20+ enterprise-grade services (DNS, Apache, MySQL, Samba, Firewall, etc.)

3
Industry-oriented projects and real-time practical labs

4
Job-ready training for roles such as Linux Engineer, System Administrator, and DevOps Professional

5
Mentorship by industry expert Mr. Vikas Debnath – Founder & Director, *KV IT-Solutions Pvt. Ltd.* and *OpenPath*

Prerequisites

- Basic networking knowledge is recommended to ensure a smooth learning curve.
- New to IT? No problem — we include a free foundational networking course to help you start confidently and bridge any knowledge gaps.

Program Details

Duration	3 Months
Course Fee	₹30,000 (All-Inclusive)
Mode	Hybrid (Online + Practical Labs)
Certification	"Mastering Linux – Industry Ready Certification" by **OpenPath**

Course Curriculum

Our **"Mastering Linux"** program is structured to provide a comprehensive learning journey, starting from foundational Linux concepts to advanced enterprise-level services and security. The curriculum is divided into three core pillars:

1. Foundational Linux Skills

Foundational Linux Skills

Master the core commands, file systems, and system administration essentials that form the bedrock of Linux expertise.

This segment lays the groundwork for all aspiring Linux professionals, covering essential commands, system structure, and fundamental administrative tasks.

- **Linux Concepts & Editors:** Linux overview, open-source vs proprietary, roles of a System Administrator and Linux Engineer, basic networking, VI/VIM editors, installing VirtualBox, VMware & Oracle VM, installing Linux (CLI & GUI).

- **Directory Structure & Remote Connectivity:** Linux hierarchy, root vs normal users, file/directory management, CLI vs Shell, remote tools (PuTTY, MobaXterm, VNC, RDP).

- **Linux Boot Process:** BIOS/UEFI, GRUB, Kernel loading, systemd service management, rescue/single user mode, root password recovery, GRUB security.

- **Mounting File Systems:** Mount points, filesystem types (ext2/3/4, xfs), disk partitioning & formatting, manual/persistent mounts (/etc/fstab), journaling, mount binding, disk tools.

- **Linux Networking:** IP addressing, subnetting, gateway, DNS, static/dynamic IP config, network files & routing tables, Linux as a router, diagnostic tools (ping, netstat, ss, ip, nmcli, ifconfig).

- **User Essentials:** Application vs system users, managing users and groups (/etc/passwd, /etc/shadow), user/group commands (useradd, usermod, passwd, chage, userdel), file ownership (chown, chmod), login environments, default templates.

- **Linux Permissions & Ownership:** User/group/others permissions, octal & symbolic mode, umask, special permissions (SUID, SGID, sticky bit), ACLs, inodes, soft vs hard links.

- **Job Scheduling:** Automation importance, tools (at, cron, anacron, systemd-timers), backup/monitoring scheduling, security in scheduling, practical use-cases.

- **Essential Linux Commands:** Basic commands for file, user, and system management, advanced/monitoring commands (top, htop, ps, kill, lsof), package managers (rpm, yum, dnf), process & service management with systemd.

Enterprise Network Services

Dive deep into deploying and managing critical network services that power modern IT infrastructures.

Learn to configure and manage key network services crucial for enterprise operations, from file sharing to web hosting and database management.

- **NFS Server:** NFS overview (incl. Oracle environments), server/client config, exporting/accessing shared filesystems, centralized storage.

- **LVM – Logical Volume Management:** Understanding LVM (PV, VG, LV), LVM commands (pvcreate, vgcreate, lvcreate, lvresize), flexible disk space management.

- **Telnet & FTP Server:** Basics and configuration, encrypted vs unencrypted protocols, vsftpd server config, user management, security, upload controls, logs, control panel setup.

- **Proxy Server:** Concept and benefits, types (forward, reverse, transparent), ACLs (IP, MAC, username filtering), security/content filtering, custom control panel for proxy management.

- **DHCP Server:** Fundamentals (DORA process), dynamic vs static IP config, MAC-based IP reservations, DNS integration, control panel development.

- **DNS Server:** DNS record types (A, AAAA, SOA, NS, CNAME, PTR), internal DNS & caching server setup, master-slave config, DNS utilities, SPF, DKIM, DMARC, domain registration.

- **Apache Web Server:** HTTP vs HTTPS, virtual hosting, SSL certificates, .htaccess security, auth modules, access control, web hosting, Awstats integration, connecting to MySQL/MariaDB.

- **MySQL/MariaDB Server:** Overview & architecture, database management (CLI & PhpMyAdmin), backup, restore, replication (master-master & master-slave), optimization, security.

- **Samba Server:** NetBIOS & CIFS, Samba 3.x for file sharing, Samba 4.x as Active Directory replacement, group policies, RSAT tools, login scripts, cross-platform integration.

- **Mail Server Essentials:** Email concepts (MTA, MDA, MUA, SMTP-Auth, Relay), anti-spam/antivirus integration, mail routing, disclaimers, auto-responders, DNS records (MX, SPF, DKIM, DMARC), header analysis, spam score, aliases, mail filters.

Security & Advanced Administration

Explore robust security practices, automation, and advanced tools required for resilient and scalable Linux environments.

This advanced module focuses on securing Linux systems, managing complex environments, and automating tasks through scripting.

- **Linux Security:** Securing Linux servers, IPTables, Firewalld, TCP Wrappers, server hardening (101 best practices), SELinux basics, SSH hardening, regular updates & kernel patches.

- **WHM & cPanel Administration:** WHM vs cPanel overview, account management, packages, feature lists, WHM interface tour, managing domains, performance tuning, advanced tools (cron, Git, terminal).

- **Centralized Log Server:** Log file types & formats, ELK stack (Elasticsearch, Logstash, Kibana), Graylog, centralized log forwarding & retention, compliance & security monitoring.

- **Advanced Shell Scripting:** Script automation for enterprise systems, variables, functions, control structures, secure scripting, optimization, debugging, real-world scripting tasks.

- **pfSense Firewall:** Introduction to pfSense, installation & configuration, NAT, firewall rules, VPN setup, logging, captive portal, DDNS integration.

- **Zimbra / Carbonio Mail Server:** Architecture (MTA, LDAP, Webmail), installation & domain configuration, IMAP, POP, SMTP setup, backup & restore, performance monitoring & optimization.

- **Samba 4 Domain Controller:** Active Directory implementation in Linux, domain configuration, replication, DNS, adding additional domain controllers, log analysis, advanced administration.

- **Single Sign-On (SSO):** SSO fundamentals & benefits, PAM, NSS, Kerberos, LDAP integration, AD/Samba/LDAP-based authentication, web-based SSO applications, best practices, tools, & utilities.

Why Choose OpenPath for Your Linux Journey?

Choosing the right program is a pivotal decision for your career trajectory in the ever-evolving IT landscape. OpenPath's Mastering Linux program is meticulously designed to offer more than just technical training; it provides a holistic ecosystem of support, expertise, and real-world relevance to ensure your success.

Industry-Driven Training

Our curriculum is not just theoretical; it's forged in the crucible of real-world enterprise system environments. You'll gain practical skills directly applicable to the challenges and demands of modern IT infrastructure.

Mentorship by Senior Professionals

Benefit from direct guidance and insights from senior Linux and DevOps professionals who are actively shaping the industry. Their experience provides invaluable context and advanced problem-solving techniques.

Affordable & Accessible Learning

We are committed to making high-quality, career-defining education accessible. Our learning plans are structured to be both cost-effective and flexible, removing barriers to entry for aspiring IT professionals.

Comprehensive Career Support

Our commitment extends beyond the classroom. We offer dedicated career services, including expert resume building, targeted interview preparation, and active placement assistance to help you seamlessly transition into a rewarding role.

Meet Our Visionary Founder

OpenPath is guided by the profound vision of **Mr. Vikas Debnath**, the esteemed Founder Director of **KV IT-Solutions Pvt. Ltd.** and the driving force behind **OpenPath**. His extensive experience and dedication to fostering talent underpin the philosophy of our programs.

> *"Linux is for everyone — with the right guidance, anyone can master it."*

Mr. Vikas Debnath's unwavering dedication to making Linux knowledge accessible to all is not just a principle, but the very heartbeat of **OpenPath's** curriculum, ensuring every student, regardless of their background, is empowered with unparalleled mentorship and resources to truly excel.

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