



Proxmox Virtualization and Cluster Administration

- 3 Days Course
- Hands-on Labs and Lecture

Course Overview

This comprehensive 3-day course equips systems administrators and IT infrastructure professionals with the knowledge and practical skills required to deploy, manage, and troubleshoot Proxmox Virtual Environment (VE) in enterprise environments. Through interactive lectures and extensive hands-on lab exercises, participants will gain deep insight into the Proxmox hypervisor stack (KVM and LXC), cluster quorum mechanics, advanced storage integration including Ceph, and high-availability operations. Students will leave prepared to design, maintain, and optimize production-grade virtualization clusters and execute effective operational recovery procedures.

Who Should Attend

- Systems Administrators
- Virtualization & Infrastructure Engineers
- Linux Systems Engineers
- Cloud Architects & IT Operations Professionals

What You'll Learn

- Architect and deploy multi-node Proxmox VE clusters with proper quorum and networking.
- Manage hypervisor workloads across both KVM virtual machines and LXC containers.
- Configure and integrate enterprise storage backends, including local storage and distributed Ceph pools.
- Implement and manage High Availability (HA) rules, live migrations, and automated failover behavior.
- Develop robust backup, snapshot, and recovery strategies for system resilience.
- Perform operational health checks, log analyses, and recovery troubleshooting on cluster nodes.

Outline

1. Proxmox Architecture

- Hypervisor stack (KVM and LXC)
- Cluster design and quorum
- Management interface and APIs

2. Installation and Node Configuration

- Proxmox deployment
- Network configuration
- Storage initialization

3. Virtual Machine Management

- VM creation and templates
- CPU and memory allocation
- Live migration

4. Container Management

- LXC containers
- Resource isolation
- Container networking

5. Cluster Operations

- Node clustering
- HA configuration
- Failover behavior

6. Storage Integration

- Local storage types
- Ceph integration
- Backup and snapshot strategy

7. Operational Troubleshooting

- Cluster health checks
- Log analysis
- Recovery procedures

Prerequisites

- Working knowledge of Linux system administration (command line, networking, storage)
- Understanding of core virtualization and networking concepts (VLANs, bridges, subnets)

Next Courses

- Advanced Ceph Storage Architecture & Management
- Enterprise Linux High Availability & Disaster Recovery