**Document Generated: 11/15/2026**

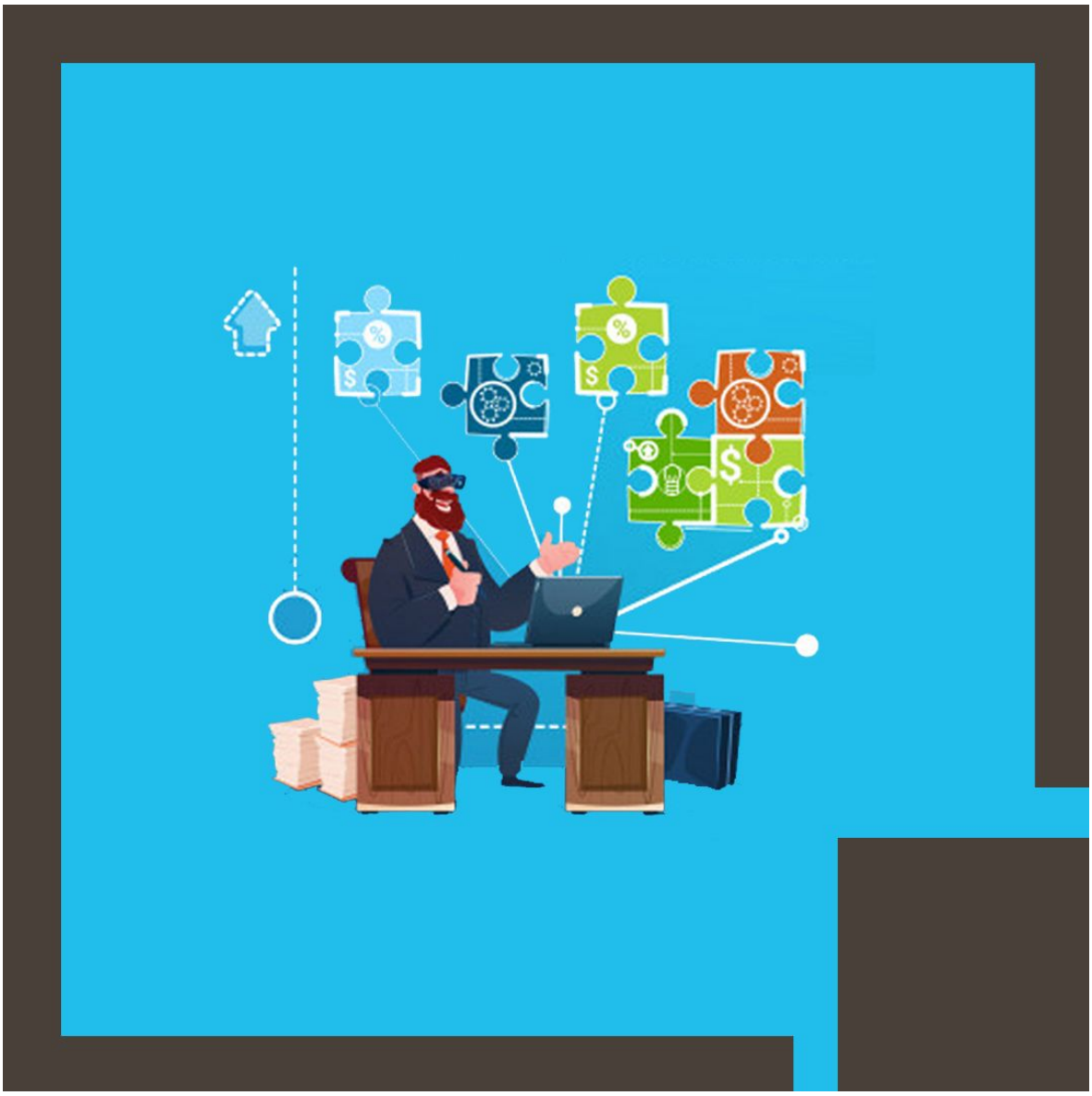
**Learning Style: Virtual Classroom**

**Technology: Linux Foundation**

**Difficulty: Intermediate**

**Course Duration: 4 Days**

# Open Source Virtualization (LFS462)



## About this course:

In this course, you will teach Kernel-based Virtual Machine (KVM) which emphasis libvirt, Xen, and QEMU. After completion of this course, you have the knowledge of how these and other connected open source components may be compiled to develop a virtual Information Technology infrastructure. This course emphasis on securing the administering solutions, virtual infrastructure, and practical deployment skills. Additionally, this course provides a detailed overview of using containers. The lab exercises in this course focused on deployment, integration with networking infrastructure, snapshots and virtual images, device pass-through, VM creation and maintenance, and more.

Open Source Virtualization involves an in-depth exploration into Kernel-based Virtual Machine (KVM) and Xen, use and deployment of containers, hypervisor virtualization technologies in the open-source ecosystem. This course helps you to understand the technical knowledge of the components to create and manage a modern virtual Information Technology infrastructure.

## Course Objective:

This course is designed to handle and resolve the issues that commonly arise in the enterprise world. In this course, you will study how containers, Xen, and KVM can be utilized in business environments. Additionally, the practical lab helps the candidates to obtain a real world experience of usual virtualization issues and how to deal with them.

After completion of this training, candidates have the knowledge and skills to:

- Understand how to assemble Kernel-based Virtual Machine and other components into an efficient and robust virtual Information Technology infrastructure
- Know the function of Xen and KVM perform in the virtualization ecosystem

## Prerequisite:

The Open Source Virtualization course is intended for technical IT professionals engaged in developing an efficient, reliable, and open virtualization infrastructure with Kernel-based Virtual Machine. Candidates are required to have the skills covered in the lower-level Linux Foundation System Administration courses. Also, they are expected to have the knowledge of Linux command line usage, text file editing, and shell scripting.

## Course Outline:

1. Introduction
    - Linux Foundation
    - Linux Foundation Training
    - Laboratory Exercises, Solutions and Resources
    - Distribution Details
    - Registration
    - Labs

2. Virtualization Overview
    - Virtualization Terminology
    - Host versus Guest
    - Virtual Machine Monitor
    - Emulation
    - Software versus Hardware Virtualization
    - Hypervisor Types
    - Instruction Translation and Caching
    - Paravirtualization
    - Virtual Machine Image File
    - Linux Containers
    - Xen Hypervisor
    - Labs
3. KVM Quick-Start
    - Verifying your Linux Kernel has KVM
    - Validating your Hardware for KVM
    - Obtaining and Installing KVM and QEMU
    - Verifying libvirt installation
    - Building Upstream QEMU
    - libvirt
    - qemu-img and Virtual Disk Files
    - virt-install
    - Pausing and Restoring the Guest
    - Managing VMs with GUIs
    - The QEMU Command Line
    - The QEMU Monitor
    - virt-manager
    - Labs
4. KVM Architecture and Relationship with Linux
    - Brief History of KVM
    - Controlling KVM Using Linux Commands
    - Obtaining KVM
    - Labs
5. Running KVM Using QEMU
    - What is QEMU?
    - Running KVM Using QEMU
    - Machine Commands
    - Starting Guest Networking
    - Dumping Network Traffic with QEMU
    - Guest-to-Host Communication using Virtio
    - QEMU Tracing
    - Managing Storage With QEMU
    - Managing Virtual Storage with libguestfs
    - Using Host Physical Storage
    - Using Host Physical Networking
    - Graphics
    - BIOS
    - USB Pass-through
    - Labs
6. libvirt

    - Architecture
    - libvirt Access Control
    - virsh
    - libvirt XML
    - Open vSwitch
    - Labs
7. Hardware Support
    - I/O Provisioning
    - Labs
8. Tuning for Performance
    - Measuring Performance
    - netperf
    - fio
    - Memory Testing with Stream
    - SPECVirt Tuning
    - Labs
9. KVM Security
    - Review – libvirt Access Control
    - Host Security Concerns
    - libvirt-sandbox
    - sVirt
    - Security Updates
    - Labs
10. Xen Hypervisor Architecture
    - Domain Types
    - Toolstack Choices
    - Virtualization Modes
    - Labs
11. Installing and Configuring Xen
    - Preparing the Host
    - Getting the Software
    - Verifying dom0
    - Toolstack Selection
    - Installing domU
    - Persistent Xen Configuration
    - Connections to domU
    - Labs
12. Administration of Xen domains
    - Debugging Xen Issues
    - Backup and Restore
    - Live Migration
    - NUMA Features
    - PCI Pass-through
    - USB Device Pass-through
    - Troubleshooting
    - Labs
13. Xen Performance and Tuning
    - Domain Resource Usage
    - Xen Scheduler Options
    - I/O Benchmark Testing

- Boot Options for dom0
- Labs

14. Xen Security
    - Domain Type Considerations
    - Xen Security Modules
    - FLASK
    - Virtual Trusted Platform Module
    - pvgrub
    - Network Security
    - Labs
15. Working with Linux Containers
    - Container Basics
    - Docker
    - Rocket
    - Kubernetes
    - LXD Container Hypervisor
    - OCI
    - lxc command line tools
    - Labs

## Credly Badge:




**Display your Completion Badge And Get The Recognition You Deserve.**

Add a completion and readiness badge to your Linkedin profile, Facebook page, or Twitter account to validate your professional and technical expertise. With badges issued and validated by Credly, you can:

- Let anyone verify your completion and achievement by clicking on the badge
- Display your hard work and validate your expertise
- Display each badge's details about specific skills you developed.

Badges are issued by QuickStart and verified through Credly.

Find Out More or See List Of Badges