

Open Source Virtualization (LFS462)

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