



Introduction to OpenStack

Overview

- This online self-paced introductory course helps you kickstart your **OpenStack** journey. By taking this course, you will learn about the origins of **OpenStack**, how to deploy **OpenStack** (using **DevStack** and **PackStack**), how to deploy a virtual machine from **Horizon**, how to manage **OpenStack** from the command line, as well as how to scale out your **OpenStack** cloud by adding SDN, object storage, compute nodes, high availability, and more.

Audience

- This course is perfect for IT professionals seeking a high-level overview of **OpenStack**, and who want to find out if **OpenStack** cloud solutions are a valid solution to meet the IT needs of their organization. This course also helps anyone who wants to set up a small-scale **OpenStack** test environment to gain experience working with **OpenStack**.

Prerequisites

- Experience with Linux is recommended.

Course Outline

Session 1. Welcome & Introduction

- Welcome to LFS152x
- Before You Begin
- Syllabus and Grading
- Course Formatting
- Course Timing
- Course Progress & Completion
- Guidelines to Discussions
- Learning Aids
- A Word from the Instructor
- Course Learning Objectives
- The Linux Foundation
- The Linux Foundation Events
- The Linux Foundation Training

Session 1. From Virtualization to Cloud Computing

Introduction & Learning Objectives

- Introduction
- Introduction (continued)
- Learning Objectives

From Virtualization to Cloud Computing

- What Is Virtualization?
- Benefits of Virtualization
- How Does Virtualization Work?
- Virtualization Limitations
- What Are Containers?
- What Are Containers (continued)
- How Do Containers Work?
- Container Components
- Docker Containers
- More on Containers: Components and How They Work
- Benefits of Containers
- What Are the Differences between Containers and Virtualization?
- Container Limitations
- What Is Cloud Computing?
- Why Is It Called Cloud Computing?
- Which Are the Different Types of Cloud Computing?
- What Can We Do with Cloud Computing?
- Benefits of Cloud Computing
- IaaS Service Models
- Using IaaS Cloud Computing
- Is IaaS Cloud Computing for Everyone?
- Solutions for IaaS Cloud Computing
- What Is so Special about OpenStack?

Knowledge Check

Learning Objectives (Review)

- Learning Objectives (Review)

- Summary

Session 2. Understanding OpenStack

Introduction & Learning Objectives

- Introduction
- Learning Objectives

Understanding OpenStack

- The Origins of OpenStack
- The Role of the OpenStack Foundation
- Contributing to the OpenStack Project
- Core OpenStack Projects
- Core OpenStack Projects (continued)
- Core OpenStack Projects: Nova
- Core OpenStack Projects: Neutron
- Core OpenStack Projects: Swift
- Core OpenStack Projects: Glance
- Core OpenStack Projects: Cinder
- Core OpenStack Projects: Keystone
- Behind the Core OpenStack Projects
- Behind the Core OpenStack Projects: the RESTful API
- Other OpenStack Projects: Horizon
- Other OpenStack Projects: Ceilometer
- Other OpenStack Projects: Heat
- Other OpenStack Projects: Trove
- Other OpenStack Projects: Sahara
- Other OpenStack Projects: Ironic
- Other OpenStack Projects: Zaqr
- Other OpenStack Projects: Manila
- Other OpenStack Projects: Designate
- Other OpenStack Projects: Barbican
- Other OpenStack Projects: Magnum
- Other OpenStack Projects: Murano
- Other OpenStack Projects: Congress

Knowledge Check

Learning Objectives (Review)

- Learning Objectives (Review)
- Summary

Session 3. Deploying OpenStack (PackStack and DevStack)

Introduction & Learning Objectives

- Introduction
- Learning Objectives

Deploying OpenStack (PackStack and DevStack)

- Understanding OpenStack Deployment
- Understanding OpenStack Node Role Types
- Understanding DevStack
- Setting Up an Ubuntu-Based Lab Environment with DevStack
- Deploying OpenStack on Ubuntu with DevStack
- Deploying OpenStack on Ubuntu with DevStack (continued)
- Understanding OpenStack on CentOS
- Understanding OpenStack on CentOS (continued)
- Setting Up a CentOS-Based Lab Environment
- Deploying OpenStack on CentOS with PackStack
- Deploying OpenStack on CentOS with PackStack (continued)

Knowledge Check

Learning Objectives (Review)

- Learning Objectives (Review)
- Summary

Session 4. Deploying a Virtual Machine from Horizon

Introduction & Learning Objectives

- Introduction
- Learning Objectives

Deploying a Virtual Machine from Horizon

- Logging into Horizon
- Services, Tenants, and Users
- Creating a Tenant and a User in Horizon
- What Is Needed to Deploy an Instance from Horizon
- Deploying an Instance from Horizon
- Configuring Software Defined Networking
- Configuring Software Defined Networking (continued)
- Deploying an Instance from Horizon: Next Steps
- Deploying an Instance from Horizon (continued)
- Connecting to the Instance
- Adding Storage to the Instance

Knowledge Check

Learning Objectives (Review)

- Learning Objectives
- Summary

Session 5. Managing OpenStack from the Command Line

Introduction & Learning Objectives

- Introduction
- Learning Objectives

Managing OpenStack from the Command Line

- Credential Files and Variables
- Command Line Uniformity
- OpenStack Command Line Tools
- Getting a Glance Image
- Configuring Basic Networking
- Configuring Basic Networking (continued)
- Creating a Security Group and SSH Keys
- Booting the Instance
- Accessing the Instance
- Troubleshooting Networking
- Troubleshooting Networking (continued)

Knowledge Check

Learning Objectives (Review)

- Learning Objectives (Review)
- Summary

Session 6. Scaling Out Your OpenStack

Introduction & Learning Objectives

- Introduction
- Learning Objectives

Scaling Out Your OpenStack

- OpenStack Scalability and Elasticity

- Scaling Out with Software Defined Networking
- Scaling Out with Object Storage
- Adding Compute Nodes
- Adding Compute Nodes (continued)
- Understanding the Need for High Availability

Knowledge Check

Learning Objectives (Review)

- Learning Objectives (Review)
- Summary

Session 7. What's Next?

Introduction & Learning Objectives

- Introduction
- Learning Objectives

What's Next?

- The Linux Foundation OpenStack Courses
- The Linux Foundation OpenStack Courses (continued)
- Certified OpenStack Administrator

Learning Objectives (Review)

- Learning Objectives (Review)
- Summary

Final Exam

Before You Begin Your Final Exam

Final Exam