

Introduction to Linux (LFS101x)

Course Overview

Develop a good working knowledge of Linux using both the graphical interface and command line, covering the major Linux distribution families.

Linux powers 100% of the world's supercomputers, most of the servers powering the Internet, the majority of financial trades worldwide and a billion Android devices. In short, Linux is everywhere. It appears in many different architectures, from mainframes to server to desktop to mobile and on a staggeringly wide variety of hardware.

Moreover, 80% of hiring managers reported that they will prioritize hiring Linux talent relative to other skills areas in the next six months, and 47% of hiring managers saying they are more likely to hire a candidate with Linux certification.

This course explores the various tools and techniques commonly used by Linux system administrators and end users to achieve their day-to-day work in a Linux environment. It is designed for experienced computer users who have limited or no previous exposure to Linux, whether they are working in an individual or enterprise environment.

Upon completion of this training you should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing you to easily navigate through any of the major Linux distributions. You will be able to continue your progress as either a user, system administrator or developer using the acquired skill set.

Join the 800,000+ students who are already enrolled in this course and start your Linux journey.

Course Instructor



Jerry Cooperstein, PhD has been working with Linux since 1994, developing and delivering training in both the kernel and user space. He has overall responsibility for all training content at The Linux Foundation. During a two decade career in nuclear astrophysics, he developed state-of-the-art simulation software on many kinds of supercomputers and taught at both the undergraduate and graduate level. Cooperstein joined The Linux Foundation in 2009 as the Training Program Director.

Audience

LFS101x - Introduction to Linux is designed for experienced computer users who have limited or no previous exposure to Linux, whether they are working in an individual or enterprise environment.

Prerequisites

No previous Linux experience required for this course. However, the course does assume familiarity with computers and common software, such as would be had from daily computer use.

Course Length

40-60 hours.

Course Learning Objectives

By the end of this course, you should be able to:

- Have a good working knowledge of Linux.
- Navigate through major Linux distributions.
- Understand configurations and graphical interface of Linux.
- Use basic command-line operations.
- Explain common applications of Linux.

Course Outline

Welcome!

- Welcome!

Chapter 1. The Linux Foundation

- Introduction
- The Linux Foundation
- Course Linux Requirements
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 2. Linux Philosophy and Concepts

- Introduction
- Linux History
- Linux Philosophy
- Linux Community
- Linux Terminology
- Linux Distributions
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 3. Linux Basics and System Startup

- Introduction
- The Boot Process
- Kernel, init and Services
- Linux Filesystem Basics
- Linux Distribution Installation
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 4. Graphical Interface

- Introduction
- Graphical Desktop
- Session Management
- Basic Operations
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 5. System Configuration from the Graphical Interface

- Introduction
- System, Display, Date and Time Settings
- Network Manager
- Installing and Updating Software
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 6. Common Applications

- Introduction
- Internet Applications
- Productivity and Development Applications
- Multimedia Applications
- Graphics Editors and Utilities
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 7. Command Line Operations

- Introduction
- Command-Line Mode Options
- Basic Operations
- Working with Files
- Searching for Files
- Installing Software
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 8. Finding Linux Documentation

- Introduction
- Documentation Sources
- The man pages
- GNU Info
- The `--help` Option and `help` Command
- Other Documentation Sources
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 9. Processes

- Introduction

- Introduction to Processes and Process Attributes
- Process Metrics and Process Control
- Listing Processes: ps and top
- Starting Processes in the Future
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 10. File Operations

- Introduction
- Filesystems
- Filesystem Architecture
- Comparing Files and File Types
- Backing Up and Compressing Data
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 11. Text Editors

- Introduction
- Basic Editors: nano and gedit
- More Advanced Editors: vi and emacs
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 12. User Environment

- Introduction
- Accounts, Users and Groups
- Environment Variables
- Recalling Previous Commands
- File Permissions
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 13. Manipulating Text

- Introduction
- cat and echo
- Working with Large and Compressed Files
- sed and awk
- File Manipulation Utilities
- grep and strings
- Miscellaneous Text Utilities
- Knowledge Check (Verified Certificate track only)

- Summary

Chapter 14. Network Operations

- Introduction
- Network Addresses and DNS
- Networking Configuration and Tools
- Browsers, wget and curl
- Transferring Files
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 15. The Bash Shell and Basic Scripting

- Introduction
- Features and Capabilities
- Syntax
- Constructs
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 16. More on Bash Shell Scripting

- Introduction
- String Manipulation
- The case Statement
- Looping Constructs
- Script Debugging
- Some Additional Useful Techniques
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 17. Printing

- Introduction
- Configuration
- Printing Operations
- Manipulating Postscript and PDF Files
- Knowledge Check (Verified Certificate track only)
- Summary

Chapter 18. Local Security Principles

- Introduction

- Understanding Linux Security
- When Are root Privileges Required?
- sudo, Process Isolation, Limiting Hardware Access and Keeping System Current
- Working with passwords
- Securing the Boot Process and Hardware Resources
- Knowledge Check (Verified Certificate track only)
- Summary

Final Exam (Verified Certificate track only)

edX Platform

If you are using edX for the first time, we strongly encourage you to start by taking a free 'how to use edX' course that the team at edX has made available. In this course, you will learn how to navigate the edX platform, how to connect with other edX learners, how to answer problems on the edX platform, how grades work in edX courses, and how to complete your first course.

Click [here](#) to register for “*DemoX*” and you will be on your way. You will find the edX platform simple and intuitive.

Getting Help

For any **technical issues** with the edX platform (including login problems and issues with the Verified Certificate), please use the **Help** icon located on the upper right side of your screen.

One great way to interact with peers taking this course and resolving any **content-related issues** is via the **Discussion Forums**. These forums can be used in the following ways:

- To discuss concepts, tools, and technologies presented in this course, or related to the topics discussed in the course material.
- To ask questions about course content.
- To share resources and ideas related to Linux.

We strongly encourage you not only to ask questions, but to share with your peers opinions about the course content, as well as valuable related resources. The Discussion Forums will be reviewed periodically by The Linux Foundation staff, but it is primarily a community resource, not an 'ask the instructor' service.

To learn more tips on how to use them, read the following article: "[Getting the Most Out of the edX Discussion Forums](#)".

Course Timing

This course is entirely self-paced; there is no fixed schedule for going through the material. You can go through the course at your own pace, and you will always be returned to exactly where you left off when you come back to start a new session. However, we still suggest you avoid long breaks in between periods of work, as learning will be faster and content retention improved.

The chapters in the course have been designed to build on one another. It is probably best to work through them in sequence; if you skip or only skim some chapters quickly, you may find there are topics being discussed you have not been exposed to yet. But this is all self-paced and you can always go back, so you can thread your own path through the material.

Learning Aids

Besides simple exposition through text and figures, this course uses several additional methods to present the learning material, including videos, Try-It-Yourself, labs and knowledge check questions (Verified Certificate track only).

Audit and Verified Tracks

You can enroll into an audit or a verified track. In an audit track, you will have access to all ungraded course content: course readings, videos, and learning aids, but no certificates are awarded when auditing. You will not be able to access any graded content (knowledge check questions at the end of each chapter, and the final exam).

In order to receive a certificate, you will need to obtain a passing grade (please refer to the “Grading” section below), verify your identity with edX, and pay a fee. Once all edX requirements have been met, you can download your certificate from the Progress tab.

To learn more about audit and verified tracks, visit [edX Help Center > Certificates](#).

Grading (Verified Certificate track only)

At the end of each chapter, you will have a set of graded **knowledge check questions**, that are meant to further check your understanding of the material presented. The grades obtained by answering these knowledge check questions will represent **20%** of your final grade.

The remaining **80%** of your final grade is represented by the score obtained in the **final exam**. The final exam is located at the end of the course and it consists of 30 questions.

You will have a maximum of two attempts to answer each knowledge check and final exam question (other than True/False questions, in which case, you have only one attempt). You are

free to reference your notes, screens from the course, etc., and there is no time limit on how long you can spend on a question. You can always skip a question and come back to it later.

In order to complete this course with a passing grade, you must obtain a passing score (knowledge check and final exam) of minimum 70%.

Course Progress and Completion (Verified Certificate track only)

Once you complete the course (including knowledge check questions and final exam), you will want to know if you have passed. You will be able to see your completion status using the **Progress** tab at the top of your screen, which will clearly indicate whether or not you have achieved a passing score.

Professional Certificate Program

Professional Certificate programs are a series of courses designed by industry leaders and top universities to build and enhance critical professional skills needed to succeed in today's most in-demand fields.

To learn more about our Professional Certificates, visit [edX website](#).

About The Linux Foundation

[The Linux Foundation](#) provides a neutral, trusted hub for developers to code, manage, and scale open technology projects. Founded in 2000, The Linux Foundation is supported by more than 1,000 members and is the world's leading home for collaboration on open source software, open standards, open data and open hardware. The Linux Foundation's methodology focuses on leveraging best practices and addressing the needs of contributors, users and solution providers to create sustainable models for open collaboration.

The Linux Foundation hosts Linux, the world's largest and most pervasive open source software project in history. It is also home to Linux creator Linus Torvalds and lead maintainer Greg Kroah-Hartman. The success of Linux has catalyzed growth in the open source community, demonstrating the commercial efficacy of open source and inspiring countless new projects across all industries and levels of the technology stack.

As a result, the Linux Foundation today hosts far more than Linux; it is the umbrella for many critical open source projects that power corporations today, spanning virtually all industry sectors. Some of the technologies we focus on include big data and analytics, networking, embedded systems and IoT, web tools, cloud computing, edge computing, automotive, security, blockchain, and many more.

The Linux Foundation Events

Over 85,000 open source technologists and leaders worldwide gather at Linux Foundation events annually to share ideas, learn and collaborate. Linux Foundation events are the meeting place of choice for open source maintainers, developers, architects, infrastructure managers, and sysadmins and technologists leading open source program offices, and other critical leadership functions.

These events are the best place to gain visibility within the open source community quickly and advance open source development work by forming connections with the people evaluating and creating the next generation of technology. They provide a forum to share and gain knowledge, help organizations identify software trends early to inform future technology investments, connect employers with talent, and showcase technologies and services to influential open source professionals, media, and analysts around the globe.

The Linux Foundation hosts an increasing number of events each year, including:

- Open Source Summit North America, Europe, and Japan
- Embedded Linux Conference North America and Europe
- Open Networking & Edge Summit
- KubeCon + CloudNativeCon North America, Europe, and China
- Automotive Linux Summit
- KVM Forum
- Linux Storage Filesystem and Memory Management Summit
- Linux Security Summit North America and Europe
- Linux Kernel Maintainer Summit
- The Linux Foundation Member Summit
- Open Compliance Summit
- And many more.

To learn more about The Linux Foundation events and to register, click [here](#).

The Linux Foundation Training

The Linux Foundation offers several types of training:

- Classroom
- Online
- On-site
- Events-based.

To get more information about specific courses offered by The Linux Foundation, click [here](#).

The Linux Foundation Certifications

The Linux Foundation certifications give you a way to differentiate yourself in a job market that's hungry for your skills. We've taken a new, innovative approach to open source certification that allows you to showcase your skills in a way that other peers will respect and employers will trust:

- You can take your certification from any computer, anywhere, at any time
- The certification exams are performance-based
- The exams are distribution-flexible
- The exams are up-to-date, testing knowledge and skills that actually matter in today's IT environment.

The Linux Foundation and its collaborative projects currently offer the following certifications:

- [Linux Foundation Certified IT Associate](#) (LFCA)
- [Linux Foundation Certified System Administrator](#) (LFCS)
- [Linux Foundation Certified Engineer](#) (LFCE)
- [Certified Kubernetes Administrator](#) (CKA)
- [Certified Kubernetes Application Developer](#) (CKAD)
- [Certified Kubernetes Security Specialist](#) (CKS)
- [Certified Hyperledger Fabric Administrator](#) (CHFA)
- [Certified Hyperledger Fabric Developer](#) (CHFD)
- [Certified ONAP Professional](#) (COP)
- [Cloud Foundry Certified Developer](#) (CFCD)
- [FinOps Certified Practitioner](#) (FOCP)
- [OpenJS Node.js Application Developer](#) (JSNAD)
- [OpenJS Node.js Services Developers](#) (JSNSD)

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