TRAINING TERMS

2021-05-10 | 4 days | Virtual Classroom

TRAINING GOALS:

This course gives you the skills and information you need to pass the LFCS exam and work as a professional Linux system administrator.

In this course you’ll learn:

- How to administer, configure and upgrade Linux systems running one of the three major Linux distribution families: Red Hat, SUSE, Debian/Ubuntu.
- How to master the tools and concepts you’ll need to efficiently build and manage an enterprise Linux infrastructure.
- How to use state-of-the-art system administration techniques in real-life scenarios via practical labs.
- And more.

CONSPECT:

- Introduction
  - Linux Foundation
  - Linux Foundation Training
  - Linux Foundation Certifications
  - Laboratory Exercises, Solutions and Resources
  - E-Learning Course: LFS201
  - Distribution Details
  - Labs
- Linux Filesystem Tree Layout
  - One Big Filesystem
  - Data Distinctions
  - FHS Linux Standard Directory Tree
  - root (/) directory
- /bin
- /boot
- /dev
- /etc
- /home
- /lib and /lib64
- /media
- /mnt
- /opt
- /proc
- /sys
- /root
- /sbin
- /srv
- /tmp
- /usr
- /var
- /run
- Labs

- Processes
  - Programs and Processes
  - Process Limits
  - Creating Processes
  - Process States
  - Execution Modes
  - Daemons
  - niceness
  - Libraries
  - Labs

- Signals
  - Signals
  - Types of Signals
  - kill
  - killall and pkill
  - Labs

- Package Management Systems
○ Software Packaging Concepts
○ Why Use Packages?
○ Package Types
○ Available Package Management Systems
○ Packaging Tool Levels and Varieties
○ Package Sources
○ Creating Software Packages
○ Revision Control Systems
○ Available Source Control Systems
○ The Linux Kernel and git
○ Labs

○ RPM
  ○ RPM (Red Hat Package Manager
  ○ Package File Names
  ○ RPM Database and Helper Programs
  ○ Queries
  ○ Verifying Packages
  ○ Installing and Removing Packages
  ○ Updating, Upgrading and Freshening RPM Packages
  ○ Upgrading the Linux Kernel
  ○ rpm2cpio
  ○ Labs

○ dpkg
  ○ DPKG (Debian Package)
  ○ Package File Names and Source
  ○ DPKG Queries
  ○ Installing/Upgrading/Uninstalling
  ○ Labs

○ yum
  ○ Package Installers
  ○ yum
  ○ Queries
  ○ Verifying Packages
  ○ Installing/Removing/Upgrading Packages
  ○ Additional yum Commands
  ○ dnf
- Labs
  - zypper
    - zypper
    - Queries
    - Installing/Removing/Upgrading Packages
  - Additional zypper Commands
    - Labs
- APT
  - APT
  - apt
  - Queries
  - Installing/Removing/Upgrading Packages
  - Cleaning Up
  - Labs
- System Monitoring
  - System Monitoring
  - sar **
  - Network Monitoring
  - System Log Files
    - Labs
- Process Monitoring
  - Process Monitoring
  - ps
  - pstree
  - top
  - Labs
- Memory Monitoring and Usage
  - Memory Monitoring and Tuning
    - /proc/sys/vm
    - vmstat
    - Out of Memory Killer (OOM)
    - Labs
- I/O Monitoring and Tuning
  - I/O Monitoring
    - iostat
    - iotop
- ionice
- Labs

- I/O Scheduling **
  - I/O Scheduling
  - I/O Scheduler Choices
  - Labs

- Linux Filesystems and the VFS
  - Filesystem Basics
  - Filesystem Concepts
  - Virtual Filesystem (VFS)
  - Available Filesystems
  - Journalling Filesystems
  - Special Filesystems
  - Labs

- Disk Partitioning
  - Common Disk Types
  - Disk Geometry
  - Partitioning
  - Partition Tables
  - Naming Disk Devices
  - SCSI Device Names
  - blkid and lsblk
  - Sizing up partitions
  - Backing Up and Restoring Partition Tables
  - Partition table editors
  - fdisk
  - Labs

- Filesystem Features: Attributes, Creating, Checking, Mounting
  - Extended Attributes
  - Creating and formatting filesystems
  - Checking and Repairing Filesystems
  - Mounting filesystems
  - NFS
  - Mounting at Boot and /etc/fstab
  - automount
  - Labs
Filesystem Features: Swap, Quotas, Usage
  - Swap
  - Filesystem Quotas **
  - Filesystem Usage
  - Disk Usage
  - Labs

The Ext2/Ext3/Ext4 Filesystems
  - ext4 Features
    - ext4 Layout and Superblock and Block Groups
  - dumpe2fs
  - tune2fs
  - Labs

The XFS and BTRFS Filesystems **
  - XFS
  - btrfs
  - Labs

Encrypting Disks
  - Filesystem Encryption
  - LUKS
  - cryptsetup
  - Using an Encrypted Partition
  - Mounting at Boot
  - Labs

Logical Volume Management (LVM)
  - Logical Volume Management (LVM)
  - Volumes and Volume Groups
  - Working with Logical Volumes
  - Resizing Logical Volumes
  - LVM Snapshots **
  - Labs

RAID **
  - RAID
  - RAID Levels
  - Software RAID Configuration
  - Monitoring RAIDs
  - RAID Hot Spares
- Labs
  - Kernel Services and Configuration
    - Kernel Overview
    - Kernel Configuration
    - Kernel Boot Parameters
    - sysctl
    - Labs
  - Kernel Modules
    - Kernel Modules
    - Module Utilities
    - modinfo
    - Module Configuration
    - Labs
  - Devices and udev
    - udev and Device Management
    - Device Nodes
    - Rules
    - Labs
  - Virtualization Overview
    - Introduction to Virtualization
    - Hosts and Guests
    - Emulation
    - Hypervisors
    - libvirt
    - QEMU
    - KVM
    - Labs
  - Containers Overview
    - Containers
    - Application Virtualization
    - Containers vs Virtual Machines
    - Docker
    - Docker Commands
    - Labs
  - User Account Management
    - User Accounts
- Management of User Accounts
- Locked Accounts
- Passwords
- /etc/shadow
- Password Management
- Password Aging
- Restricted Shells and Accounts **
- The root Account
- SSH
- Labs

- Group Management
  - Groups
  - Group Management
  - User Private Groups
  - Group Membership
  - Labs

- File Permissions and Ownership
  - File Permissions and Ownership
  - File Access Rights
  - chmod, chown and chgrp
  - umask
  - Filesystem ACLs
  - Labs

- Pluggable Authentication Modules (PAM)
  - PAM (Pluggable Authentication Modules)
  - Authentication Process
  - Configuring PAM
  - LDAP Authentication **
  - Labs

- Network Addresses
  - IP Addresses
  - IPv4 Address Types
  - IPv6 Address Types
  - IP Address Classes
  - Netmasks
  - Hostnames
• Labs

• Network Devices and Configuration
  • Network Devices
  • ip
  • ifconfig
  • Predictable Network Interface Device Names
  • Network Configuration Files
  • Network Manager
  • Routing
  • DNS and Name Resolution
  • Network Diagnostics
  • Labs

• Firewalls
  • Firewalls
  • Interfaces
  • firewalld
  • Zones
  • Source Management
  • Service and Port Management
  • Labs

• System Startup and Shutdown
  • Understanding the Boot Sequence
  • Boot Loaders
  • System Configuration Files in /etc
  • Shutting Down and Rebooting
  • Labs

• GRUB
  • The Grand Unified Boot Loader (GRUB)
  • Interactive Selections with GRUB at Boot
  • Installing GRUB
  • Customizing the GRUB Configuration
  • Labs

• Init, SystemV, Upstart, systemd
  • The init Process
  • Startup Alternatives
  • systemd
- systemctl
- SysVinit Startup
- chkconfig and service
- Upstart
- Labs

- Backup and Recovery Methods
  - Backup Basics
  - Backup vs Archive
  - Backup Methods and Strategies
  - tar
  - Compression: gzip, bzip2 and xz and Backups
  - dd
  - rsync
  - cpio
  - dump and restore
  - mt
  - Backup Programs
  - Labs

- Linux Security Modules
  - Linux Security Modules
  - SELinux
  - AppArmor
  - Labs

- Local System Security
  - Local System Security
  - Creating a Security Policy
  - Updates and Security
  - Physical Security
  - BIOS
  - Bootloader
  - Filesystem Security
  - setuid/setgid bits
  - Labs

- Basic Troubleshooting
  - Troubleshooting Levels
  - Troubleshooting Techniques
Things to Check: Networking
Things to Check: File Integrity
Boot Process Failures
Filesystem Corruption and Recovery
Virtual Consoles
Labs

System Rescue
Rescue Media and Troubleshooting
Using Rescue/Recovery Media
System Rescue and Recovery
Emergency Boot Media
Using Rescue Media
Emergency Mode
Single User Mode
Labs

**REQUIREMENTS:**

This course is designed to provide students with the necessary skills and abilities to work as a professional Linux system administrator. Students should have basic knowledge of Linux and its most common utilities and text editors.

**Difficulty level**

![Difficulty Level](image)

**CERTIFICATE:**

The participants will obtain certificates signed by The Linux Foundation.
This course is excellent preparation for the Linux Foundation Certified System Administration (LFCS) exam.

**TRAINER:**

Certified The Linux Foundation Trainer.