



Linux System Administration Fundamentals (IN-200)

Course Description

In this Linux System Administration Fundamentals training, participants will learn:

- Basic System Management: Installation, tools, text files, server connections; user, group, and permissions management; network configuration
- Operating Running Systems: Process management, VMs, package installation, task scheduling, logging, managing partitions, and LVM logical volumes
- Advanced System Administration: Basic kernel management, basic Apache server configuration, boot procedures/troubleshooting

Duration

5 days

Audience

- Red Hat Certified Administrator (RHCSA) certification candidates
- Anyone interested in learning about Red Hat from the ground up
- Linux engineers who are interested in learning more about Red Hat Enterprise Linux
- Junior system administrators who want to deepen their skills
- Administrators currently administering UNIX systems and developers who write software for Linux

Prerequisites

- There are no formal prerequisites for this course; however, the ideal target student has some preliminary Linux knowledge already, because this course focuses on Linux administration rather than on basic Linux usage.



Recommended next course

- Advanced Linux System Administration (IN-300)

Course Topics

Unit 1 - Installing Red Hat Enterprise Linux Server 7

- What you need on your server
- Installing Red Hat Enterprise Linux Server

Unit 2 - Using Essential Tools

- Using man
- Understanding vim
- Editing Text Files with vim
- Understanding Globbing and Wildcards
- Using Globbing and Wildcards
- Understanding I/O Redirection and Pipes
- Using I/O Redirection and Pipes

Unit 3 - Essential File Management Tools

- Understanding Linux File System Layout
- Essential File Management Tasks
- Finding Files
- Understanding Links
- Working with Links
- Working with tar

Unit 4 - Working with Text Files

- Understanding Regular Expressions
- Using Common Text Tools (tail, head, tr, cut, sort)
- Working with grep
- sed and awk Basics

Unit 5 - Connecting to Red Hat Enterprise Linux 7

- Opening Local Shells (Including Virtual Consoles)



- Connecting to a Server with SSH
- Understanding SSH Keys
- Using SSH Keys

Unit 6 - User and Group Management

- Understanding the Need for Users
- Understanding User Properties
- Creating and Managing Users
- Understanding Group Membership
- Creating and Managing Groups
- User and Group Configuration Files
- Managing Password Properties

Unit 7 - Managing Permissions

- Understanding Ownership: Users, Groups and Others
- Changing File Ownership
- Understanding Basic Permissions
- Managing Basic Permissions
- Understanding Special Permissions
- Managing Special Permissions
- Understanding ACLs
- Managing ACLs

Unit 8 - Configuring Networking

- Understanding NIC Naming
- Managing NIC Configuration with the ip Command
- Storing Network Configuration Persistently
- Understanding Network Manager
- Using Network Manager Utilities (nmcli, nm-tool)
- Understanding Routing and DNS
- Configuring Routing and DNS
- Understanding Network Analysis Tools
- Using Network Analysis Tools



Unit 9 - Managing Processes

- Understanding Jobs and Processes
- Managing Shell Jobs
- Getting Process Information with ps
- Understanding Memory Usage
- Understanding Performance Load
- Monitoring System Activity with top
- Sending Signals to Processes
- Understanding Priorities and Niceness
- Changing Process Nice Values

Unit 10 - Working with Virtual Machines

- Introducing KVM Virtualization
- Managing Libvirt and KVM
- Using virsh
- Using virt-manager

Unit 11 - Managing Software

- Understanding Meta Package Handlers
- Setting Up Yum Repositories
- Using rpm Queries

Unit 12 - Scheduling Tasks

- Cron Versus at
- Understanding Cron Configuration Files and Execution Times
- Scheduling with Cron
- Using at

Unit 13 - Configuring Logging

- Understanding Rsyslogd and Journald Logging
- Integrating Rsyslogd and Journald
- Configuring Rsyslog Logging
- Working with Journald
- Configuring logrotate



Unit 14 - Managing Partitions

- Understanding Disk Layout
- Creating Partitions
- Understanding File System Differences
- Making the File System
- Mounting the Partition Manually
- Understanding /etc/fstab
- Mounting Partitions via /etc/fstab
- Understanding Encrypted Partitions
- Creating a LUKS Encrypted Partition
- Dealing with "Enter root password for maintenance mode"

Unit 15 - Managing LVM Logical Volumes

- Why use LVM
- Understanding LVM Setup
- Creating an LVM Logical Volume
- Understanding Device Mapper and LVM Device Names
- Understanding LVM Resize Operations
- Growing an LVM Logical Volume
- Shrinking an LVM Logical Volume

Unit 16 - Basic Kernel Management

- Understanding the Modular Structure of the Kernel
- Working with Kernel Modules
- Modifying Kernel Module Behavior Through modprobe
- Tuning Kernel Behavior Through /proc
- Using sysctl
- Updating the Kernel

Unit 17 - Configuring a Basic Apache Server

- Understanding Apache Configuration Files
- Exploring the httpd.conf File
- Configuring a Simple Web Server
- Introducing Virtual Hosts
- Configuring Virtual Hosts



- Common Errors Working with Virtual Hosts

Unit 18 - Managing and Understanding the Boot Procedure

- Boot Procedure Generic Overview
- Understanding Grub2
- Modifying Grub2 Parameters
- Understanding systemd
- Managing Services in a systemd Environment
- Understanding systemd Targets
- Switching Between systemd Targets
- Managing File System Mounts in a systemd Environment
- Managing Automount in a systemd Environment

Unit 19 - Troubleshooting the Boot Procedure

- Changing Grub Parameters on Boot
- Making Grub Changes Persistent
- Starting the rescue target Mode
- Changing the Root Password