



Red Hat Enterprise Linux v7 Differences

Course No. GL280 3 Day Instructor-led, Hands-on

Introduction

This three day, instructor-led course, covers the focuses on the new technologies and features that made their appearance in Red Hat Enterprise Linux v7. It is intended for system administrators and developers who are comfortable with RHEL6 and wish to update their skills on the new topics.

The notable new features covered in this course include the new system and service manager Systemd, the GRUB2 boot manager, new Dracut the reworked and standardized /etc configuration files, UDEV changes, storage enhancements such as Automated Storage Tiering, Thin Provisioning, Device Mapper dm-raid target, and the XFS filesystem. Other new networking features are covered such as the systemd-udev NIC naming scheme, nmcli, and the new Network Teaming system. Additional new management and monitoring tools are covered such as the new polkit javascript authorization system, the new cgroups architecture, FirewallD and the systemd journal, and new advanced input and output modules for rsyslog.

Finally, an overview of the Linux container ecosystem and an excellent introduction to Docker is included in this course.

At Course Completion

After completing this course, students will be able to:

- Create complex calendars that include fiscal calculations
- Build regular and secure FTP jobs
- Build jobs graphically with integrated business views
- Manage maintenance of "outage windows" on critical application servers
- Create custom views in the scheduling console
- Best practices for Job Events and Actions

Prerequisites:

This course requires an advanced knowledge of Red Hat Enterprise Linux System Administration v6 or earlier. These skills are taught in the GL250 "Enterprise Linux Systems Administration" and GL120 "Linux Fundamentals" courses.

Course Outline:

Module 1: Systemd Overview

- System Boot Method Overview
- systemd System and Service Manager
- systemd Targets

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- Using systemd
- Linux Runlevels Aliases
- Legacy Support for SysV init

Lab Tasks

- Managing Services With Systemd's systemctl
- Creating a systemd unit file
- Introduction to Troubleshooting Labs

Module 2: GRUB2/Systemd Boot Process

- Booting Linux on PCs
- GRUB 2
- GRUB 2 Configuration
- GRUB 2 Security
- Boot Parameters
- Initial RAM Filesystem
- init
- Systemd local-fs.target and sysinit.target
- Systemd basic.target and multi-user.target
- Legacy local bootup script support
- System Configuration Files
- RHEL7 Configuration Utilities
- Shutdown and Reboot

Lab Tasks

- Boot Process
- Booting directly to a bash shell
- GRUB Command Line
- Basic GRUB Security
- Troubleshooting Practice: Boot Process

Module 3: Linux Kernel & Devices

- udev
- SCSI Devices
- USB Architecture
- Kernel Modules
- Configuring the Kernel via /proc/
- Console
- Virtual Terminals
- Keyboard & locale configuration
- Random Numbers and /dev/random
- Virtual Machine Guest Tools & Drivers
- Virtual Machine Serial Console

Lab Tasks

- Adjusting Kernel Options
- Troubleshooting Practice: Kernel Modules

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Module 4: Local Storage Administration

- Partitioning Disks with fdisk & gdisk
- Resizing a GPT Partition with gdisk
- Partitioning Disks with parted
- Filesystem Creation
- Persistent Block Devices
- Mounting Filesystems
- Resizing Filesystems
- Filesystem Maintenance
- Managing an XFS Filesystem
- Swap
- Configuring Disk Quotas
- Setting Quotas
- Viewing and Monitoring Quotas

Lab Tasks

- Creating and Managing Filesystems
- Setting User Quotas

Module 5: LVM

- Logical Volume Management
- Implementing LVM
- Creating Logical Volumes
- Activating LVM VGs
- Exporting and Importing a VG
- Examining LVM Components
- Changing LVM Components
- Advanced LVM Overview
- Advanced LVM: Components & Object Tags
- Advanced LVM: Automated Storage Tiering
- Advanced LVM: Thin Provisioning
- Advanced LVM: Striping & Mirroring
- Advanced LVM: RAID Volumes
- gnome-disk-utility

Lab Tasks

- Creating and Managing LVM Volumes
- Troubleshooting Practice: LVM

Module 6: Basic Networking

- Linux Network Interfaces
- Ethernet Hardware Tools
- Network Configuration with ip Command
- Configuring Routing Tables
- Starting and Stopping Interfaces
- NetworkManager
- Hardware and System Clock

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Lab Tasks

- Network Discovery
- Basic Client Networking

Module 7: Advanced Networking

- Multiple IP Addresses
- Interface Aggregation
- Interface Bonding
- Network Teaming

Lab Tasks

- Multiple IP Addresses Per Network Interface
- Troubleshooting Practice: Networking

Module 8: Log File Administration

- System Logging
- systemd Journal
- systemd Journal's journalctl
- Secure Logging with Journal's Log Sealing
- gnome-system-log
- Rsyslog
- /etc/rsyslog.conf

Lab Tasks

- Using the systemd Journal
- Setting up a Full Debug Logfile
- Remote Syslog Configuration
- Remote Rsyslog TLS Configuration

Module 9: Other RHEL7 Changes

- Determining Service to Process Mapping
- Realtime Monitoring of Resources — Cgroups
- RHEL7 Rescue Environment
- File Sharing via NFS
- NFSv4+
- SAN Multipathing
- Multipath Configuration
- Multipathing Best Practices
- Approaches to Storing User Accounts
- Controlling Login Sessions
- PAM Module Types
- PAM Order of Processing
- Fine Grained Authorizations with Polkit
- FirewallD



Lab Tasks

- Recovering Damaged MBR
- Cgroup for Processes
- NFS Server Configuration
- iSCSI Initiator Configuration
- Multipathing with iSCSI

Module 10: Container Technology Overview

- Application Management Landscape
- Application Isolation
- Container Resource Control & Security
- Container Types
- Container Ecosystem

Lab Tasks

- Container Concepts

Module 11: Docker Fundamentals

- Installing Docker
- Docker Control Socket
- Creating a New Container
- Listing Containers
- Viewing Container Operational Details
- Running Commands in an Existing Container
- Interacting with a Running Container
- Stopping, Starting, and Removing Containers

Lab Tasks

- Docker Basics

Module 12: Pre-Installation Considerations

- Pre-Installation Considerations
- Hardware Compatibility
- Multi-OS Booting
- Partition Considerations
- Filesystem Planning
- Selecting a Filesystem

Module 13: Installing RHEL7

- Anaconda: An Overview
- Anaconda: Booting the System
- Anaconda: Common Boot Options
- Anaconda: Loading Anaconda and Packages
- Anaconda: Storage Options
- Anaconda: Troubleshooting
- FirstBoot
- Kickstart
- Network Booting with PXE
- A Typical Install

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Lab Tasks

- Linux Installation
- Automating Installation with Kickstart

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