

GL254: Red Hat Enterprise Linux Systems Administration III



Days: 4

Prerequisites: Students should have skill equal to those taught in the GL124 "Red Hat Enterprise Linux Systems Admin I" and GL134 "Red Hat Enterprise Linux Systems Admin I" courses. Also these prerequisite skills are taught in the GL120 "Linux Fundamentals" and GL250 "Enterprise Linux Systems Administration" courses.

Audience: IT Professionals

Description: This GL254 course is designed to follow an identical set of topics as the Red Hat® RH254, RH255 RHCE exam prep courses with the added benefit of very comprehensive lab exercises and detailed lecture material. The Red Hat Enterprise Linux (RHEL) system administration topics covered in this course along with the GL199 course cover the certification objects of the Red Hat Certified Engineer (RHCE) exam. This course builds upon a foundation of core Linux systems administration principles and skills. Students will advance their Linux systems administration knowledge. The course will focus on helping students optimize system administration skills using automation techniques and deploy commonly used network services. Once this course is completed students will know how to deploy critical network services in a secure fashion.

OUTLINE:

I. LINUX KERNEL & DEVICES

- Hardware Discovery Tools
- Kernel Hardware Info – `/sys/`
- `/sys/` Structure
- `udev`
- Managing Linux Device Files
- List Block Devices
- SCSI Devices
- USB Devices
- USB Architecture
- Kernel Modules
- Configuring Kernel Components and Modules
- Handling Module Dependencies
- Configuring the Kernel via `/proc/`
- Console
- Virtual Terminals
- Keyboard & locale configuration
- Serial Ports
- Random Numbers and `/dev/random`

LAB TASKS

- Adjusting Kernel Options
- Introduction to Troubleshooting Labs
- Troubleshooting Practice: Kernel Modules

II. CONTROL SERVICES AND DAEMONS

- `systemd` System and Service Manager
- `systemd` Targets
- Using `systemd`
- Legacy Support for SysV init

LAB TASKS

- Managing Services With `Systemd`'s `systemctl`
- Creating a `systemd` unit file
- Troubleshooting Practice: Boot Process

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Systems Administration III

III. MANAGE IPV6 NETWORKING

- IPv6

LAB TASKS

- Configuring IPv6

IV. CONFIGURE LINK AGGREGATION AND BRIDGING

- Interface Aggregation
- Interface Bonding
- Network Teaming
- Interface Bridging

V. CONTROL NETWORK PORT SECURITY

- SELinux Security Framework
- SELinux Modes
- SELinux Commands
- Choosing an SELinux Policy
- SELinux Booleans
- Permissive Domains
- SELinux Policy Tools
- FirewallD

LAB TASKS

- Firewall Configuration
- FirewallD

VI. MANAGE DNS FOR SERVERS

- Server Roles
- Resolving Names
- Resolving IP Addresses
- Basic BIND Administration
- Configuring the Resolver
- Testing Resolution
- BIND Configuration Files
- named.conf Syntax
- named.conf Options Block
- Creating a Site-Wide Cache
- rndc Key Configuration
- Address Match Lists & ACLs
- Restricting Queries

LAB TASKS

- Configuring a Slave Name Server
- Use rndc to Control named

VII. CONFIGURE EMAIL DELIVERY

- SMTP
- SMTP Terminology
- SMTP Architecture
- SMTP Commands
- SMTP Extensions
- SMTP Session
- Postfix Features
- Postfix Architecture
- Postfix Components
- Postfix Configuration
- master.cf
- main.cf
- Configuration Commands

LAB TASKS

- Configuring Postfix
- Postfix Virtual Host Configuration
- Postfix Network Configuration

VIII. PROVIDE BLOCK-BASED STORAGE

- Remote Storage Overview
- Remote Block Device Protocols
- iSCSI Architecture
- Open-iSCSI Initiator Implementation
- iSCSI Initiator Discovery
- iSCSI Initiator Node Administration
- Mounting iSCSI Targets at Boot
- iSCSI Multipathing Considerations

LAB TASKS

- iSCSI Initiator Configuration

IX. PROVIDE FILE-BASED STORAGE

- Remote Filesystem Protocols
- File Sharing via NFS
- NFSv4+
- NFS Clients
- NFS Server Configuration
- Implementing NFSv4
- Accessing Windows/Samba Shares from Linux

LAB TASKS

- NFS Server Configuration

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Systems Administration III

X. CONFIGURE MARIADB DATABASES

- Popular SQL Databases
- MariaDB
- MariaDB Installation and Security
- MariaDB User Account Management

LAB TASKS

- Installing and Securing MariaDB

XI. PROVIDE APACHE HTTPD WEB SERVICES

- HTTP Operation
- Apache Architecture
- Apache Configuration Files
- httpd.conf – Server Settings
- httpd.conf – Main Configuration
- HTTP Virtual Servers
- Virtual Hosting DNS Implications
- httpd.conf – VirtualHost Configuration
- Port and IP based Virtual Hosts
- Name-based Virtual Host
- TLS Using mod_ssl.so
- Dynamic HTTP Content

LAB TASKS

- Apache Architecture
- Apache Content
- Configuring Virtual Hosts
- Using TLS Certificates with Apache
- CGI Scripts in Apache

XII. WRITE BASH SCRIPTS

- Shell Script Strengths and Weaknesses
- Example Shell Script
- Positional Parameters
- Input & Output
- Comparisons with test
- Exit Status
- Conditional Statements
- Flow Control: case
- The for Loop
- The while and until Loops

LAB TASKS

- Writing a Shell Script

XIII. CONFIGURE THE SHELL ENVIRONMENT

- Shells
- Identifying the Shell
- Changing the Shell
- Configuration Files
- Script Execution
- Shell Prompts
- Bash: Bourne-Again Shell
- Bash: Configuration Files
- Bash: Command Line History
- Bash: Command Editing
- Bash: Command Completion
- Bash: prompt

LAB TASKS

- Linux Shells
- Bash History
- Aliases
- Bash Login Scripts

XIV. LINUX CONTAINERS PREVIEW

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

LAB TASKS

- Container Concepts LXC
- Container Concepts Systemd