

RHCE Rapid Track Course

Course Summary

Description

This course is carefully designed to match the topics found in the Red Hat RH299 exam prep course but also features the added benefit of an entire extra day of comprehensive lab exercises and detailed lecture material.

Students learn the Red Hat Enterprise Linux (RHEL) system administration skills needed to pass the Red Hat Certified Engineer (RHCE) exam. This is an accelerated course meant for those students capable of absorbing information at a rapid pace or those students who only need to fill in selected gaps of knowledge because of prior Linux sys-admin experience.

Topics

- Software Management
- Network Management
- Storage Management
- Logical Volume Management (LVM)
- Account Management
- Authentication Management
- Installation, Kickstart and Virtualization
- Boot Management
- Managing SELinux
- Firewall Management
- Network Time Protocol (NTP) Service
- System Monitoring and Logs
- Web (HTTP/HTTPS) Service
- SMTP Service
- Caching-Only DNS Service
- File Sharing With NFS
- File Sharing With CIFS
- File Transfer Protocol (FTP) Service
- Secure Shell (SSH) Service

Prerequisites

Students should already have the RHCSA or equivalent knowledge.

Courses that teach the necessary skills are the GL199 "RHCSA Rapid Track Course" or the GL124 and GL134 training tracks.

Duration

Five days

RHCE Rapid Track Course

Course Outline

- I. Software Management**
 - A. RPM Features
 - B. RPM Architecture
 - C. RPM Package Files
 - D. Working with RPMs
 - E. Installing Source RPM Packages
 - F. Managing Software Dependencies
 - G. Using the YUM command
 - H. YUM package groups
 - I. Updating the Kernel RPM
 - J. Configuring YUM
 - K. Yum Plugins
 - L. YUM Repositories
 - LAB TASKS
 - 1. Managing Software with RPM
 - 2. Using YUM
 - 3. Creating a Custom RPM Repository
- II. Network Management**
 - A. IPv4 Fundamentals
 - B. TCP/UDP Fundamentals
 - C. Linux Network Interfaces
 - D. Ethernet Hardware Tools
 - E. Network Configuration with ip Command
 - F. Configuring Routing Tables
 - G. IP to MAC Address Mapping with ARP
 - H. Starting and Stopping Interfaces
 - I. NetworkManager
 - J. DNS Clients
 - K. DHCP Clients
 - L. system-config-network{tui,cmd}
 - M. Network Diagnostics
 - N. Multiple IP Addresses
 - O. Interface Bonding
 - LAB TASKS
 - 1. Network Discovery
 - 2. Basic Client Networking
 - 3. Multiple IP Addresses Per Network Interface
 - 4. Introduction to Troubleshooting Labs
 - 5. Troubleshooting Practice: Networking
- III. Storage Management**
 - A. Partitioning Disks with fdisk
 - B. Partitioning Disks with parted
 - C. Filesystem Creation
 - D. Mounting Filesystems
 - E. Filesystem Maintenance
 - F. Troubleshooting Incorrect File Permissions
 - G. Resizing Filesystems
 - H. Swap
- I. iSCSI Architecture**
- J. Open-iSCSI Initiator Implementation**
- K. iSCSI Initiator Discovery**
- L. iSCSI Initiator Node Administration**
- M. Mounting iSCSI Targets at Boot**
- N. iSCSI Multipathing Considerations**
- O. Linux Unified Key Setup (LUKS)**
 - LAB TASKS
 - 1. Creating and Managing Filesystems
 - 2. Hot Adding Swap
 - 3. iSCSI Initiator Configuration
 - 4. LUKS-on-disk format Encrypted Filesystem
- IV. Logical Volume Management (LVM)**
 - A. Logical Volume Management
 - B. Implementing LVM
 - C. Creating Logical Volumes
 - D. Manipulating VGs & LVs
 - E. Advanced LVM Concepts
 - F. system-config-lvm
 - LAB TASKS
 - 1. Creating and Managing LVM Volumes
- V. Account Management**
 - A. User and Group Concepts
 - B. User Administration
 - C. Modifying Accounts
 - D. Group Administration
 - E. Password Aging
 - F. SGID and Sticky Bit on Directories
 - G. User Private Group Scheme
 - H. File Access Control Lists
 - I. Manipulating ACLs
 - J. Viewing ACLs
 - K. Backing Up ACLs
 - LAB TASKS
 - 1. File and Directory Ownership and Permissions
 - 2. User and Group Administration
 - 3. User Private Groups
 - 4. Using Filesystem ACLs

RHCE Rapid Track Course

Course Outline (con't)

VI. Authentication Management

- A. Manual DS Client Configuration
- B. system-config-authentication
- C. System Security Services Daemon (SSSD)
- D. AutoFS
- E. AutoFS Configuration
- F. Kerberos Components
- G. Kerberos Principals
- H. Authentication Process
- I. Install krb5.conf on Clients
- J. Client PAM Configuration
- K. Signing In to Kerberos
- L. Viewing Tickets
- M. Removing Tickets
- N. Passwords
- O. Changing Passwords
- P. sudo
- Q. Giving Others Access
 - LAB TASKS
 1. Using LDAP for Centralized User Accounts
 2. Kerberos Client Setup
 3. OpenSSH with Kerberos

VII. Installation, Kickstart and Virtualization

- A. Anaconda: An Overview
- B. Anaconda: Booting the System
- C. Anaconda: Common Boot Options
- D. Anaconda: Loading Anaconda and Packages
- E. Anaconda: Storage Options
- F. Anaconda: Troubleshooting
- G. FirstBoot
- H. A Typical Install
- I. Kickstart
- J. Introducing libvirt
- K. libvirt: Basic Concepts
- L. virsh: Basics
- M. virsh: Common Tasks
- N. virt-install
 - LAB TASKS
 1. Automating Installation with Kickstart
 2. Linux Installation

VIII. Boot Management

- A. Booting Linux on PCs
- B. GRUB Configuration
- C. Boot Parameters
- D. Configuring the Kernel via /proc/
- E. Initial ramdisk
- F. /sbin/init
- G. /etc/inittab
- H. /etc/rc.d/rc.sysinit
- I. Runlevel Implementation
- J. System Configuration Files
- K. Typical SysV Init Script
- L. The /etc/rc.local File
- M. Shutdown and Reboot
 - LAB TASKS
 1. Boot Process
 2. Troubleshooting Practice: Boot Process

IX. Managing SELinux

- A. SELinux Security Framework
- B. SELinux Modes
- C. SELinux Commands
- D. Choosing an SELinux Policy
- E. SELinux Booleans
- F. Permissive Domains
- G. SELinux Policy Tools
- H. SELinux Troubleshooting
- I. SELinux Troubleshooting Continued
 - LAB TASKS
 1. Exploring SELinux Modes
 2. SELinux File Contexts

X. Firewall Management

- A. RHEL6 Firewall
- B. Netfilter Concepts
- C. Using the iptables Command
- D. Common match_specs
- E. Connection Tracking
 - LAB TASKS
 1. Securing Services with Netfilter

XI. Network Time Protocol (NTP) Service

- A. Managing Network-Wide Time
- B. Continual Time Sync with NTP
- C. Configuring NTP Clients
- D. Useful NTP Commands
 - LAB TASKS
 1. NTP Client Configuration

RHCE Rapid Track Course

Course Outline (con't)

XII. System Monitoring and Logs

- A. System Status - Memory
- B. System Status - I/O
- C. System Status - CPU
- D. Performance Trending with sar
- E. System Logging
- F. /etc/rsyslog.conf
- LAB TASKS
 - 1. Remote Syslog Configuration
 - 2. System Activity Reporter

XIII. Web (HTTP/HTTPS) Service

- A. Apache Architecture
- B. Adding Modules to Apache
- C. Apache Configuration Files
- D. httpd.conf - Server Settings
- E. httpd.conf - Main Configuration
- F. SSL Using mod_ssl.so
- G. Virtual Hosting DNS Implications
- H. httpd.conf - VirtualHost Configuration
- I. Name-based Virtual Host
- J. Apache Logging
- K. Delegating Administration
- L. Directory Protection
- M. Directory Protection with AllowOverride
- N. Common Uses for .htaccess
- O. Dynamic HTTP Content
- P. Configuring CGI
- LAB TASKS
 - 1. Apache Architecture
 - 2. Apache Content
 - 3. Using SSL Certificates with Apache
 - 4. Configuring Virtual Hosts
 - 5. Using .htaccess Files
 - 6. CGI Scripts in Apache

XIV. SMTP Service

- A. Postfix Features
- B. Postfix Components
- C. Postfix Configuration
- D. master.cf
- E. main.cf
- F. Postfix Map Types
- G. Postfix Pattern Matching
- H. Virtual Domains
- I. Configuration Commands
- J. Management Commands
- K. Postfix, Relaying and SMTP AUTH
- L. SMTP AUTH Server and Relay Control

- LAB TASKS
 - 1. Configuring Postfix
 - 2. Postfix Network Configuration
 - 3. Postfix Virtual Host Configuration

XV. Caching-Only DNS Service

- A. Naming Services
- B. The Domain Name Space
- C. Delegation and Zones
- D. Server Roles
- E. Resolving Names
- F. Resolving IP Addresses
- G. Restricting Queries
- H. Basic BIND Administration
- I. Configuring the Resolver
- J. Testing Resolution
- K. Creating a Site-Wide Cache
- L. SOA - Start of Authority
- M. A & PTR - Address & Pointer Records
- N. NS - Name Server
- O. CNAME & MX - Alias & Mail Host
- LAB TASKS
 - 1. Caching-only DNS

XVI. File Sharing With NFS

- A. File Sharing via NFS
- B. NFSv4
- C. NFS Clients
- D. NFS Server Configuration
- E. Implementing NFSv4
- LAB TASKS
 - 1. NFS Server Configuration

XVII. File Sharing With CIFS

- A. Samba Daemons
- B. Accessing Windows/Samba Shares from Linux
- C. Samba Utilities
- D. Samba Configuration Files
- E. The smb.conf File
- F. Mapping Users
- G. Share Authentication
- H. User-Level Access
- I. Samba Account Database
- J. User Share Restrictions
- LAB TASKS
 - 1. Samba Share-Level Access
 - 2. Samba User-Level Access
 - 3. Samba Group Shares

RHCE Rapid Track Course

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XVIII. File Transfer Protocol (FTP) Service

- A. The FTP Protocol
- B. Active Mode FTP
- C. Passive Mode FTP
- D. vsftpd
- E. Anonymous FTP with vsftpd
- LAB TASKS
 - 1. Configuring vsftpd

XIX. Secure Shell (SSH) Service

- A. Secure Shell
- B. ssh and sshd Configuration
- C. Accessing Remote Shells
- D. Transferring Files
- E. SSH Key Management
- F. ssh-agent
- G. OpenSSH and Kerberos
- H. X Access Control
- I. Remote X Access (historical/insecure approach)
- J. Remote X Access (modern/secure approach)
- LAB TASKS
 - 1. Introduction to ssh and scp
 - 2. SSH Key-based User Authentication
 - 3. Using ssh-agent
 - 4. Kerberos Client Setup
 - 5. OpenSSH with Kerberos