RHCSA Exam Prep

Course Summary

Description

Students seeking training to prepare themselves for the RHCSA certification should attend this course. This course is taught in a rapid pace format designed to help quickly identify and fill gaps in system administration knowledge. Focus includes managing users and groups, software, printers, and local storage. It also includes an introduction to security, virtualization and the deployment of common network services.

Topics

- Accessing the Command Line
- Managing Files from The Command Line
- Configure and Secure Openssh Service
- Managing Local Linux Users and Groups
- Controlling Access to Files with Linux File System Permissions
- Control Access to Files with FACLs
- Manage SELinux Security
- Installing and Updating Software Packages
- Controlling Services and Daemons
- Managing Red Hat Enterprise Linux Networking

- Analyzing and Storing Logs
- Managing Storage and File Systems
- Scheduling System Tasks
- Mounting Network File Systems
- Limiting Network Communication with Firewalld
- Virtualization and Kickstart
- Understand and Use Essential Tools
- Create, View And Edit Text Files
- Comprehensive Review Lab Tasks

Prerequisites

Students should already have experience administering Linux systems and must be comfortable navigating the filesystem, editing files and running common commands from the shell.

Duration

Five days

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Course Outline

I.   Accessing the Command Line
   A. Components of a Distribution
   B. Red Hat Linux Products
   C. Logging In
   D. Running Programs
   E. Interacting with Command Line
   F. Desktop Environments
   G. GNOME
   H. got root?
   I.   Switching User Contexts
   J. sudo
   • LAB TASKS
      1. Login and Discovery
      2. Switching Users with su

II. Managing Files from The Command Line
   A. Managing Files Graphically
   B. Drag and drop with Nautilus
   C. Physical UNIX File Structure
   D. Unix/Linux Filesystem Features
   E. Navigating the Filesystem
   F. Displaying Directory Contents
   G. Directory Manipulation
   H. File Manipulation
   I.   Deleting and Creating Files
   J. Filesystem Links
   • LAB TASKS
      1. Navigating Directories and Listing Files
      2. Manipulating Files and Directories

III. Configure and Secure Openssh Service
   A. Secure Shell
   B. ssh and sshd Configuration
   C. Accessing Remote Shells
   D. Transferring Files
   E. Alternative sftp Clients
   F. SSH Key Management
   • LAB TASKS
      1. Introduction to ssh and scp

IV. Managing Local Linux Users and Groups
   A. User and Group Concepts
   B. User Administration
   C. Modifying Accounts
   D. Password Aging
   E. Group Administration
   F. system-config-authentication
   G. System Security Services Daemon (SSSD)
   • LAB TASKS
      1. User and Group Administration

      2. Using LDAP for Centralized User Accounts

V. Controlling Access to Files with Linux File System Permissions
   A. File Ownership
   B. File and Directory Permissions
   C. SUID and SGID on files
   D. SGID and Sticky Bit on Directories
   E. Changing File Permissions
   • LAB TASKS
      1. File and Directory Ownership and Permissions

VI. Control Access to Files with FACLs
   A. User Private Group Scheme
   B. Alternatives to UPG
   C. File Access Control Lists
   D. Manipulating FACLs
   E. Viewing FACLs
   F. Backing up FACLs
   • LAB TASKS
      1. User Private Groups
      2. Using Filesystem ACLs

VII. Manage SELinux Security
   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

VIII. Monitor and Manage Linux Processes
   A. What is a Process?
   B. Process States
   C. Viewing Processes
   D. Managing Processes
   E. Tuning Process Scheduling
   F. System Status – CPU
   G. System Status – I/O
   H. System Status – Memory
   • LAB TASKS
      1. Process Management Basics

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Course Outline (con't)

IX. Installing and Updating Software Packages
- A. Managing Software
- B. RPM Features
- C. RPM Architecture
- D. RPM Package Files
- E. Working with RPMs
- F. Querying and Verifying with RPM
- G. Managing Software Dependencies
- H. Using the Yum command
- I. YUM package groups
- J. Updating the Kernel RPM
- K. Dealing With RPM & Yum Digest Changes
- L. YUM Repositories
- M. YUM Repository Groups
- N. Yum Plugins & RHN Subscription Manager
- • LAB TASKS
  - 1. Managing Software with RPM
  - 2. Querying the RPM Database
  - 3. Using Yum

X. Controlling Services and Daemons
- A. systemd System and Service Manager
- B. systemd Targets
- C. Using systemd
- D. Legacy Support for SysV init
- E. Booting Linux on PCs
- F. GRUB 2
- G. GRUB 2 Configuration
- H. GRUB 2 Security
- I. Boot Parameters
- J. Initial RAM Filesystem
- K. init
- L. Linux Runlevels Aliases
- M. Systemd local-fs.target and sysinit.target
- N. Systemd basic.target and multi-user.target
- O. Legacy local bootup script support
- P. System Configuration Files
- Q. RHEL7 Configuration Utilities
- R. Shutdown and Reboot
- • LAB TASKS
  - 1. Boot Process
  - 2. GRUB Command Line
  - 3. Basic GRUB Security
  - 4. Managing Services With Systemd's systemctl
  - 5. Troubleshooting Practice: Boot Process

XI. Managing Red Hat Enterprise Linux Networking
- A. IPv4 Fundamentals
- B. TCP/UDP Fundamentals
- C. Linux Network Interfaces
- D. Ethernet Hardware Tools
- E. Network Configuration with ip Command
- F. Starting and Stopping Interfaces
- G. Configuring Routing Tables
- H. IP to MAC Address Mapping with ARP
- I. DNS Clients
- J. DHCP Clients
- K. Network Diagnostics
- L. NetworkManager
- • LAB TASKS
  - 1. Network Discovery
  - 2. Basic Client Networking
  - 3. Introduction to Troubleshooting Labs
  - 4. Troubleshooting Practice: Networking

XII. Analyzing and Storing Logs
- A. System Logging
- B. systemd Journal
- C. systemd Journal's journactl
- D. Secure Logging with Journal's Log Sealing
- E. gnome-system-log
- F. Rsyslog
- G. /etc/rsyslog.conf
- H. Log Management
- I. Log Anomaly Detector
- • LAB TASKS
  - 1. Using the systemd Journal
  - 2. Setting up a Full Debug Logfile
  - 3. Remote Syslog Configuration
  - 4. Remote Rsyslog TLS Configuration

XIII. Managing Storage and File Systems
- A. Partitioning Disks with fdisk & gdisk
- B. Resizing a GPT Partition with gdisk
- C. Partitioning Disks with parted
- D. Mounting Filesystems
- E. Mounting Filesystems
- F. Persistent Block Devices
- G. Managing an XFS Filesystem
- H. Filesystem Table (/etc/fstab)
- I. Filesystem Creation
- J. Filesystem Maintenance
- K. Swap
- L. Logical Volume Management
- M. Implementing LVM
- N. Creating Logical Volumes
- O. Manipulating VGs & LVs

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Course Outline (con't)

P. Advanced LVM Concepts
Q. gnome-disk-utility
- LAB TASKS
  1. Creating and Managing Filesystems
  2. Hot Adding Swap
  3. Creating and Managing LVM Volumes

XIV. Scheduling System Tasks
A. Automating Tasks
B. at/batch
C. cron
D. The crontab Command
E. crontab Format
F. /etc/cron.*/ Directories
G. Anacron
- LAB TASKS
  1. Creating and Managing User Cron Jobs
  2. Adding System cron Jobs

XV. Mounting Network File Systems
A. File Sharing via NFS
B. NFSv4+
C. NFS Clients
D. NFS
E. NFS Server Configuration
F. Accessing Windows/Samba Shares from Linux
G. AutoFS
H. AutoFS Configuration
- LAB TASKS
  1. Using autofs
  2. NFS Server Configuration

XVI. Limiting Network Communication with Firewalld
A. Netfilter: Stateful Packet Filter Firewall
B. Netfilter Concepts
C. Using the iptables Command
D. Netfilter Rule Syntax
E. Targets
F. Common match_specs
G. Connection Tracking
H. FirewallD
- LAB TASKS
  1. Securing Services with Netfilter
  2. FirewallD

XVII. Virtualization and Kickstart
A. Introducing libvirt
B. libvirt: Basic Concepts
C. libvirt: Storage Architecture
D. libvirt: Network Architecture
E. libvirt: Graphical Tools
F. libvirt: Command Line Tools
G. virsh: Basics
H. virsh: Common Tasks
I. virt-install
J. Virtual Machine Guest Tools & Drivers
K. libguestfs and guestfish
L. Kickstart
M. Anaconda: An Overview
N. Anaconda: Booting the System
O. Anaconda: Common Boot Options
P. Anaconda: Loading Anaconda and Packages
Q. Anaconda: Storage Options
R. Anaconda: Troubleshooting
- LAB TASKS
  1. Installing a Virtual Machine

XVIII. Understand and Use Essential Tools
A. Use of Appendix
B. Red Hat Online Documentation
C. Getting Help within the Graphical Desktop
D. Gathering System Info
E. Help from Commands and Documentation
F. Getting Help with man & info
G. Communication Channels
H. File Redirection
I. Piping Commands Together
J. The gedit Text Editor
K. Archives with tar
L. Archives with cpio
M. The gzip Compression Utility
N. The bzip2 Compression Utility
O. The XZ Compression Utility
P. The PKZIP Archiving/Compression format
Q. Searching Inside Files
R. The Streaming Editor
S. Regular Expression Overview
T. Regular Expressions
U. RE Character Classes
V. Regex Quantifiers
W. RE Parenthesis
X. Text Editing
Y. Learning Vim
Z. Basic vi
AA. Intermediate vi

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Course Outline (con't)

- LAB TASKS
  1. Help with Commands
  2. Archiving and Compression
  3. Pattern Matching with Regular Expressions
  4. Extended Regular Expressions
  5. Using Regular Expressions with sed
  6. Text Editing with Vim

XIX. Create, View And Edit Text Files
   A. Producing File Statistics
   B. Replacing Text Characters
   C. Text Sorting
   D. Duplicate Removal Utility
   E. Extracting Columns of Text
   F. Combining Files and Merging Text
   G. Comparing File Changes

XX. Comprehensive Review Lab Tasks
   A. Understand and Use Essential Tools
   B. Operate Running Systems
   C. Configure Local Storage and Filesystems
   D. Users, Groups and File Permissions
   E. Maintenance and Recovery