Comprehensive, hands-on training that solves real-world problems

Red Hat System Administration II
Introduction

- Welcome to Class
- Course Objectives and Structure
- Orientation to Classroom Network
- Internationalization
Welcome to Class
Course Objectives and Structure
DAY ONE
- Introduction
- Kickstart
- Regular Expressions
- Vim
- cron and at

DAY TWO
- Process Priorities
- ACLs
- SELinux
- Network Users

DAY THREE
- Partitions and Filesystems
- Logical Volumes
- Access NFS
- Access SMB

DAY FOUR
- Boot Troubleshooting
- Firewalls
- Comprehensive Review

Introduction
Orientation to Classroom Network
Internationalization
## DAY ONE

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### Chapter 1: Automating Installation with Kickstart

- Defining the Anaconda Kickstart System
- Deploying a New Virtual System with Kickstart
Goal:

To automate the installation of Red Hat Enterprise Linux systems with Kickstart.
Objectives:

- Explain Kickstart concepts and architecture.
- Create a Kickstart configuration file.
Defining the Anaconda Kickstart System
Practice: Kickstart File Syntax and Modification
Deploying a New Virtual System with Kickstart
Install Red Hat Enterprise Linux 7.0
Test this media to install Red Hat Enterprise Linux 7.0

Troubleshooting

> yumlinux initrd=initrd.img inst.stage2=http://172.25.0.254/content/rhel7.0/x86_64/dvd quiet ks=http://desktopX.example.com/ks-config/kickstart.cfg
Practice:
Installing a System Using Kickstart
Chapter Test: Automating Installation with Kickstart
Chapter 2: Using Regular Expressions with grep

- Regular Expression Fundamentals
- Matching Text with grep
- Using grep with Logs
Goal:

To write regular expressions using grep to isolate or locate content in text files.
Objectives:

- Create regular expressions to match text patterns
- Use grep to locate content in files
Regular Expressions Fundamentals
Quiz:
Match the Regular Expression
Matching Text with grep
Practice:
Using grep with Logs
Lab: Using Regular Expressions with grep
Chapter 3: Creating and Editing Text Files with vim

- The vim Text Editor
- Basic vim Workflow
- Editing with vim
Goal:

To introduce the vim text editor.
Objectives:

- Explain the three main modes of vim.
- Open, edit, and save text files.
- Use editor shortcuts.
The vim Text Editor
Practice:
vim Modes
Basic vim Workflow
27.0.0.1   localhost localhost.localdomain
::1       localhost6 localhost6.localdomain6
192.168.0.254 instructor.example.com instructor1

"/etc/hosts" 3L, 158c  1,1  All
Practice: Basic vim Workflow
Editing with vim
Practice:
Edit a File with vim
Lab:
Edit a System File with vim
Chapter 4: Scheduling Future Linux Tasks

- Scheduling One-Time Tasks with \texttt{at}
- Scheduling Recurring Jobs with \texttt{cron}
- Scheduling System \texttt{cron} Jobs
- Managing Temporary Files
Goal:

To schedule tasks to automatically execute in the future.
Objectives:

- Schedule one-time tasks with `at`.
- Schedule recurring jobs with `cron`.
- Schedule recurring system jobs.
Scheduling One-Time Tasks with at
Practice:
Scheduling One-Time Tasks with at
Scheduling Recurring Jobs with cron
Practice:
Scheduling Recurring Jobs with cron
Practice:
Scheduling System cron Jobs
Managing Temporary Files
Practice: Managing Temporary Files
Chapter Test: Scheduling Future Linux Tasks
Chapter 5: Managing Priority of Linux Processes

- Process Priorities and "nice" Concepts
- Using nice and renice to Influence Process Priority
Goal:

To influence the relative priorities at which Linux processes run.
Objectives:

- Describe nice levels.
- Set nice levels on new and existing processes.
Process Priority and "nice" Concepts
Quiz:
Process Priority and "nice" Concepts
Using nice and renice to Influence Process Priority
Practice:
Discovering Process Priorities
Lab:
Managing Priority of Linux Processes
Chapter 6: Controlling Access to Files with Access Control Lists

- POSIX Access Control Lists (ACLs)
- Securing Files with ACLs
Goal:

To manage file security using POSIX access control lists (ACLs).
Objectives:

- Describe POSIX access control lists.
- Manage POSIX access control lists.
POSIX Access Control Lists (ACLs)
Quiz: Interpret ACLs
Securing Files with ACLs
Practice:
Using ACLs to Grant and Limit Access
Lab:
Controlling Access to Files with Access Control Lists (ACLs)
Chapter 7: Managing SELinux Security

- Enabling and Monitoring SELinux
- Changing SELinux Modes
- Changing SELinux Contexts
- Changing SELinux Booleans
- Troubleshooting SELinux
To manage the Security Enhanced Linux (SELinux) behavior of a system to keep it secure in case of a network service compromise.
Objectives:

- Explain the basics of SELinux permissions.
- Change SELinux modes with setenforce.
- Change file contexts with semanage and restorecon.
- Manage SELinux booleans with setsebool.
- Examine logs and use sealert to troubleshoot SELinux violations.
Enabling and Monitoring Security Enhanced Linux (SELinux)
Quiz:
SELinux Concepts
Changing SELinux Modes
Practice:
Changing SELinux Modes
Changing SELinux Contexts
Practice: Changing SELinux Contexts
Changing SELinux Booleans
Practice:
Changing SELinux Booleans
Troubleshooting SELinux
Practice:
Troubleshooting SELinux
Lab: Managing SELinux Security
Chapter 8: Connecting to Network-defined Users and Groups

- Using Identity Management Services
Goal:

To configure systems to use central identity management services.
Objective:

• Use centralized identity management services.
Using Identity Management Services
Authentication Configuration

Identity & Authentication  Advanced Options  Password Options

User Account Configuration

User Account Database: LDAP

LDAP Search Base DN: dc=example,dc=com

LDAP Server: classroom.example.com

☐ Use TLS to encrypt connections

 ][ Download CA Certificate...]

Authentication Configuration

Authentication Method: Kerberos password

Realm: EXAMPLE.COM

KDCs: classroom.example.com

Admin Servers: classroom.example.com

☐ Use DNS to resolve hosts to realms

☐ Use DNS to locate KDCs for realms

Revert  Cancel  Apply
Practice:
Connecting to a Central LDAP and Kerberos Server
Lab: Connecting to Network-defined Users and Groups
Chapter 9: Adding Disks, Partitions, and Filesystems to a Linux System

- Adding Partitions, Filesystems, and Persistent Mounts
- Adding and Enabling Swap Space

Day Three

Partitions and Filesystems

- Logical Volumes
- Access NFS
- Access SMB
Goal:

To create and manage disks, partitions, and filesystems from the command line.
Objectives:

- Manage simple partitions and filesystems.
- Manage swap space.
Adding Partition, Filesystem, and Persistent Mount
Practice: Adding Partition, Filesystem, Persistent Mount
Managing Swap Space
Practice:
Adding and Enabling Swap Space
Lab:
Adding Filesystem, Swap, and Persistent Mount
Chapter 10: Managing Logical Volume Management Storage

- Logical Volume Management Concepts
- Managing Logical Volumes
- Extending Logical Volumes
Goal:

To manage logical volumes from the command line.
Objectives:

- Describe logical volume management components and concepts.
- Manage logical volumes.
- Extend logical volumes.
1. Partition physical storage

2. Create physical volume (PV)

3. Create volume group (VG)

4. Create logical volume (LV)

Unused Space
Quiz:
Logical Volume Management Concepts
Managing Logical Volumes
Practice: Adding a Logical Volume
Extending Logical Volumes
Practice:
Extending a Logical Volume
Lab: Managing Logical Volume Management (LVM) Storage
Chapter 11: Accessing Network Storage with Network File System (NFS)

- Mounting Network Storage with NFS
- Automounting Network Storage with NFS
Goal:

To use autofs and the command line to mount and unmount network storage with NFS.
Objectives:

- Mount, access and unmount network storage with NFS
- Automount and access network storage with NFS
Mounting Network Storage with NFS
Practice:
Mounting and Unmounting NFS
Automounting Network Storage with NFS
Practice: Automounting NFS
Lab: Accessing Network Storage with Network File System (NFS)
Chapter 12: Accessing Network Storage with SMB

- Accessing Network Storage with SMB
Goal:

To use autofs and the command line to mount and unmount SMB file systems.
Objective:

- Mount, automount, and unmount SMB file systems.
Accessing Network Storage with SMB
Practice: Mounting a SMB File System
Lab: Accessing Network Storage with SMB
Chapter 13: Controlling and Troubleshooting the Red Hat Enterprise Linux Boot Process

- The Red Hat Enterprise Linux Boot Process
- Repairing Common Boot Issues
- Repairing File System Issues at Boot
- Repairing Boot Loader Issues
Goal:

To troubleshoot the Red Hat Enterprise Linux boot process.
Objectives:

- Describe the Red Hat Enterprise Linux boot process.
- Repair common boot issues.
- Repair file system issues at boot.
- Repair bootloader problems.
The Red Hat Enterprise Linux Boot Process
Practice:
Selecting a Boot Target
Repairing Common Boot Issues
Repairing Common Boot Issues
Repairing File System Issues at Boot
Practice:
Repairing Boot Problems
Repairing Boot Loader Issues
Practice:
Repairing a Boot Loader Problem
Lab:
Controlling and Troubleshooting the Red Hat Enterprise Linux Boot Process
Chapter 14:
Limiting Network Communication with firewalld

- Limiting Network Communication
Goal:

To configure a basic firewall.
Objective:

- Configure a basic firewall using firewalld, firewallconfig, and firewall-cmd.
Limiting Network Communication
A firewall zone defines the level of trust for network connections, interfaces and source addresses bound to the zone. The zone combines services, ports, protocols, masquerading, port/packet forwarding, icmp filters and rich rules. The zone can be bound to interfaces and source addresses.

Here you can define which services are trusted in the zone. Trusted services are accessible from all hosts and networks that can reach the machine from connections, interfaces and sources bound to this zone.
Practice:
Limiting Network Communication
Lab: Limiting Network Communication
Chapter 15: Comprehensive Review

- Red Hat System Administration II Comprehensive Review
Goal:

To practice and demonstrate knowledge and skills learned in Red Hat System Administration II.
Objective:

- Review course chapters to reinforce knowledge and skills.
Red Hat System Administration II
Comprehensive Review
Comprehensive Review of System Administration II