Red Hat Enterprise Linux v7 Differences

Course Summary

Description

This is a differences course that 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.

Topics

- Systemd Overview
- Systemd Overview Lab Tasks
- Grub2/Systemd Boot Process
- Grub2/Systemd Boot Process Lab Tasks
- Linux Kernel & Devices
- Linux Kernel & Devices Lab Tasks
- Local Storage Administration
- Local Storage Administration Lab Tasks
- LVM
- LVM Lab Tasks
- Basic Networking
- Basic Networking Lab Tasks
- Advanced Networking

- Advanced Networking Lab Tasks
- Log File Administration
- Log File Administration Lab Tasks
- Other RHEL7 Changes
- Other RHEL7 Changes Lab Tasks
- Container Technology Overview
- Container Technology Overview Lab Tasks
- Docker Fundamentals
- Docker Fundamentals Lab Tasks
- Pre-Installation Considerations
- Installing RHEL7
- Installing RHEL7 Lab Tasks

Audience

This course is intended for system administrators and developers who are comfortable with RHEL6 and wish to update their skills on the new topics.

Prerequisites

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

Duration

Three days

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Course Outline

I. Systemd Overview
   A. System Boot Method Overview
   B. systemd System and Service Manager
   C. systemd Targets
   D. Using systemd
   E. Linux Runlevels Aliases
   F. Legacy Support for SysV init

II. Systemd Overview Lab Tasks
   A. Managing Services With Systemd's systemctl
   B. Creating a systemd unit file
   C. Introduction to Troubleshooting Labs

III. Grub2/Systemd Boot Process
   A. Booting Linux on PCs
   B. GRUB 2
   C. GRUB 2 Configuration
   D. GRUB 2 Security
   E. Boot Parameters
   F. Initial RAM Filesystem
   G. init
   H. Systemd local-fs.target and sysinit.target
   I. Systemd basic.target and multi-user.target
   J. Legacy local bootup script support
   K. System Configuration Files
   L. RHEL7 Configuration Utilities
   M. Shutdown and Reboot

IV. Grub2/Systemd Boot Process Lab Tasks
   A. Boot Process
   B. Booting directly to a bash shell
   C. GRUB Command Line
   D. Basic GRUB Security
   E. Troubleshooting Practice: Boot Process

V. Linux Kernel & Devices
   A. udev
   B. SCSI Devices
   C. USB Architecture

   D. Kernel Modules
   E. Configuring the Kernel via /proc/
   F. Console
   G. Virtual Terminals
   H. Keyboard & locale configuration
   I. Random Numbers and /dev/random
   J. Virtual Machine Guest Tools & Drivers
   K. Virtual Machine Serial Console

VI. Linux Kernel & Devices Lab Tasks
   A. Adjusting Kernel Options
   B. Troubleshooting Practice: Kernel Modules

VII. Local Storage Administration
   A. Partitioning Disks with fdisk & gdisk
   B. Resizing a GPT Partition with gdisk
   C. Partitioning Disks with parted
   D. Filesystem Creation
   E. Persistent Block Devices
   F. Mounting Filesystems
   G. Resizing Filesystems
   H. Filesystem Maintenance
   I. Managing an XFS Filesystem
   J. Swap
   K. Configuring Disk Quotas
   L. Setting Quotas
   M. Viewing and Monitoring Quotas

VIII. Local Storage Administration Lab Tasks
   A. Creating and Managing Filesystems
   B. Setting User Quotas

IX. LVM
   A. Logical Volume Management
   B. Implementing LVM
   C. Creating Logical Volumes
   D. Activating LVM VGs
   E. Exporting and Importing a VG
   F. Examining LVM Components
   G. Changing LVM Components
   H. Advanced LVM Overview
   I. Advanced LVM: Components & Object Tags

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Course Outline (cont'd)

J.   Advanced LVM: Automated Storage Tiering
K.   Advanced LVM: Thin Provisioning
L.   Advanced LVM: Striping & Mirroring
M.   Advanced LVM: RAID Volumes
N.   gnome-disk-utility

X.   LVM Lab Tasks
A.   Creating and Managing LVM Volumes
B.   Troubleshooting Practice: LVM

XI.   Basic Networking
A.   Linux Network Interfaces
B.   Ethernet Hardware Tools
C.   Network Configuration with ip Command
D.   Configuring Routing Tables
E.   Starting and Stopping Interfaces
F.   NetworkManager
G.   Hardware and System Clock

XII.   Basic Networking Lab Tasks
A.   Network Discovery
B.   Basic Client Networking

XIII.   Advanced Networking
A.   Multiple IP Addresses
B.   Interface Aggregation
C.   Interface Bonding
D.   Network Teaming

XIV.   Advanced Networking Lab Tasks
A.   Multiple IP Addresses Per Network Interface
B.   Troubleshooting Practice: Networking

XV.   Log File Administration
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

XVI.   Log File Administration Lab Tasks
A.   Using the systemd Journal
B.   Setting up a Full Debug Logfile
C.   Remote Syslog Configuration
D.   Remote Rsyslog TLS Configuration

XVII.   Other RHEL7 Changes
A.   Determining Service to Process Mapping
B.   Realtime Monitoring of Resources — Cgroups
C.   RHEL7 Rescue Environment
D.   File Sharing via NFS
E.   NFSv4+
F.   SAN Multipathing
G.   Multipath Configuration
H.   Multipathing Best Practices
I.   Approaches to Storing User Accounts
J.   Controlling Login Sessions
K.   PAM Module Types
L.   PAM Order of Processing
M.   Fine Grained Authorizations with Polkit
N.   FirewallD

XVIII.   Other RHEL7 Changes Lab Tasks
A.   Recovering Damaged MBR
B.   Cgroup for Processes
C.   NFS Server Configuration
D.   iSCSI Initiator Configuration
E.   Multipathing with iSCSI

XIX.   Container Technology Overview
A.   Application Management Landscape
B.   Application Isolation
C.   Container Resource Control & Security
D.   Container Types
E.   Container Ecosystem

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Course Outline (cont'd)