Linux System Administration (RHCSA)

This course is focused on:

- ⇨ System Administration
- ⇨ **RHCSA** Exam Preparation

Course Duration:

- **32 Hours (8 Classes/4Hrs per Class)**

Lesson 01: Introduction to UNIX & LINUX

- History of UNIX and LINUX
- Linux and GNU Project
- Operating System Concept, Kernel, Shell & File
- Identification of various Linux distributors
- Discussion About RHCSA/RHCE Exam
- Planning a Linux Installation
- Partitioning Requirements
- Linux Installation Method

Lesson 02: Getting started with Linux

- The GNOME Desktop Environment
- Introduction to Linux Shell
- Linux Virtual Console/Terminal
- Powering Off, Reboot and Logout System
- Linux Command Syntax, Options, Argument
- Linux Directory & File System introduction
- Navigating Linux Directory Paths
- Command-line File & Directory Management
- Files & Directory handling commands

Lesson 03: Linux Text Processing Tools

- Standard Input, Output and Error Concept
- Redirecting Output to a File
- Constructing and Using Pipelines
- Working with tail, head, cat, less, more, grep
- Linux Text Editor Utilities (vim, gedit, nano)
- Working with Different 'vi/vim' Modes
- Editing, Replacing, Searching with 'vi/vim'
- Familiar with Linux 'find' and 'cut' command

Lesson 04: User and Group Administration

- Users and Groups Introduction
- Linux User Types and Database
- Primary Groups and Supplementary Groups
- Gaining Superuser Access
- Running commands as root with SUDO
- Managing Local User & Group Accounts
- Managing User Passwords

Lesson 05: Linux File Permissions

- Explore Linux File & Directory Types
- Linux File System Permissions
- Viewing File/Directory Permission and Ownership
- Linux User, Group and Other Concept
- Linux Special Permissions SUID, SGID, Sticky bit
- Securing Files with ACLs
- Creating, modifying and deleting ACL's

Lesson 06: Backup, Archive & Recovery

- Linux Archive and Compressed
- Archive Files and Directories
- Extract an Archive Created with 'tar'
- Discuss about **gz, bz2** and **xz** Compression
- Created a Compressed with **gz, bz2** and **xz**
- Extract Compressed tar Archive

Lesson 07: Linux File System Management

- Identifying File Systems and Devices
- Understanding Linux file systems
- Managing MBR Partitions with 'fdisk'
- Managing GPT Partitions with 'gdisk'
- Creating File System (xfs, ext4, vfat)
- Mount Points and /etc/fstab - Details
- Mounting and Un-mounting File Systems
- Working with USB, DVD, ISO, VFAT

Lesson 08: LVM and Swap Management

- Logical Volume Management Concept
- Creating Logical Volumes
- Creating Group Volumes
- Adding a Logical Volume
- Remove Logical Volumes
- Extending a Logical Volume
- Managing Swap Space
- Adding and Enabling Swap Space

Lesson 09: Working with Service and Daemons

- Explain and Controlling the Boot Process
- Working with GRUB version 2
- Introduction to Systemd
- Listing Unit Files with 'systemctl'
- Controlling System Services
- Recovering Root Password
- Troubleshooting 'systemd' boot issue

Lesson 10: Linux Process Management

- What is a process?
- Parent processes and child processes
- Background and Foreground Processes
- Monitoring & Killing Process Activities
- Process Priority and 'nice' concepts
- Details explain of "TOP" command

Lesson 11: Network Management

- Configuring Host Names and Name Regulation
- Understand Network Device Recognition
- Configuring IPv4 Networking
- Working with NetworkManager
- Configuring Networking with nmcli & nmtui
- Working with network Configuration files
- IP Aliasing, MAC Cloning, IPv6 Address

Lesson 12: Linux Package Management

- Software Packages and RPM
- The Linux Package Management system
- Examining RPM Package Files
- RPM Install, Queries and verifying
- Concept of YUM Server and Clients
- Packages Install and Remove with YUM
- Enabling Software Repositories

Lesson 13: Linux Cron Jobs

- Introduction to Linux Scheduling
- Explain cron job file format
- Scheduling Future Linux Tasks
- Running commands at particular times
- Identify various CRON entries and schedules
- Create user based Cron jobs

Lesson 14: Managing SELinux Security

- Introduction to SELinux
- Enabling and Moniroting SELinux
- Changing SELinux Mode
- Working with SELinux Contexts
- Changing SELinux Contexts
- Working with SELinux Booleans

Lesson 15: Using Virtualized Systems

- Virtualization Introduction
- System Virtualization in Linux
- Installing a New Virtual Machine
- Managing Virtual Machine
- Virtual Machine Clone, Snapshot

Linux Server & Network Administration (RHCE)

This course is focused on:

- ⇨ Server Administration
- ⇨ Network Administration
- ⇨ **RHCE** Exam Preparation

Course Duration:

- **32 Hours (8 Classes/4Hrs per Class)**

Lesson 01: Configuring OpenSSH Service

- What is the OpenSSH Secure Shell (SSH)?
- SSH Host Keyes (Public and Private)
- Configuring SSH Key-based Authentication
- Password less SSH Login
- Customizing SSH Service Configuration
- Restricting SSH Logins
- Putty and Open SSH Clients
- Secure Copy Through 'scp'

Lesson 02: Firewall, NAT & Port Forwarding

- Netfilter and Firewall concepts
- Managing & Configure Firewall Settings
- Default Configuration of Firewalld zones
- Working with Rich Rules
- Working with Custom Rules
- Masquerading and Port Forwarding
- Managing SELinux port Labeling
- Limiting Network Communication

Lesson 03: IPv6, Bridge, NIC Teaming

- IPv6 Introduction
- Types of IPv6 Address
- Configure IPv6 Address
- Load Balancing Algorithm Concepts
- Configure NIC Teaming
- Linux Software Bridge Introduction
- Configure Linux Software Bridge

Lesson 04: Providing Remote Block Storage

- Storage concept (DAS/SAN/NAS)
- Introduction to iSCSI
- iSCSI Component Terminology
- iSCSI Target Overview
- iSCSI Target Configuration
- iSCSI Initiator Introduction
- Accessing iSCSI Storage
- Providing Block-based Storage

Lesson 05: NFS , Samba(SMB) & Auto-mount

- Concept of File and Block Based Storage system
- Introduction to NFS and CIFS
- Configuring and Exporting NFS File Systems
- SELinux Labeling in NFS
- Mounting and Un-mounting NFS
- Automounting Network Storage with NFS
- SMB File Sharing with Samba
- Preparing Directories and Samba Users
- Explore Samba Configuration files
- Performing Multiuser SMB Mount
- Accessing Network Storage with SMB

Lesson 06: DNS Server Configure

- The Doman Name System
- Anatomy of DNS Lookups
- DNS Resource Record Types
- Familiar with BIND/Unbound related files
- Forward zone and Reverse zone details
- Configuring Caching Name server
- DNS Response Codes
- DNS Server Debugging/ Troubleshooting

Lesson 07: Apache HTTPD Web Service

- Discuss about "How web Server works?"
- Pre-requisite (DNS) configuration of Web Server
- Configuring Apache HTTPD Server
- Configure Name-based Virtual Hosting
- Configuring HTTPS Web Server
- Working with Self Sign Certificate
- Configuring a TLS-enabled Virtual Host
- Configuring a Dynamic Web Application

Lesson 08: Configuring Email Server

- SMTP and POP3 theory
- MTA, MDA, MUA Concept
- Configure Postfix server as a MTA
- Configure Postfix as a null client
- Working with Dovecot
- Implement POP3/IMAP services
- Implement webmail using Squirrel Mail

Lesson 09: Configuring MariaDB Database

- Introduction of Database Management System
- Types of Database Management System
- Installing and Configuring MariaDB Database
- Working with MariaDB Databases
- MariaDB Command Line Introduction
- Managing Database Users and Access Rights
- Creating and Restoring a MariaDB Database

Lesson 10: Linux Scripting with Bash

- Introduction to Shell Scripting
- Creating and Executing First Shell Script
- Working with Shell Variables
- Passing Arguments to the Bash Script
- Executing Shell Commands with Bash
- Reading User Input in Bash Shell
- Working with Bash Loops
- Working with Bash Statement
- Bash Conditional and Control Structures
- Working with Login and Non-Login shells
- System information through bash scripts

Lesson 11: Mixed Topics

- Overview of System Log Files
- Monitor Log Files with 'tail'
- Preserving the 'systemd' Journal
- MTR, Traceroute, TCP dumps, nmap concept
- Working with PXE Boot/Kickstart
- Configuring IP Forwarding
- Working with LDAP Client and Server
- Configuring and Monitoring Chronyd & NTP
- Port monitoring with netstat