

# Summer Internship Presentation

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on

“RedHat Certified System Administrator (RHCSA)”

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# Introduction

The goal of the Red Hat Certified System Administrator (RHCSA) curriculum is to provide participants with the fundamental knowledge and abilities needed to administer Red Hat Enterprise Linux (RHEL) systems. Important topics covered in this training include network configuration, file permissions, system management, user and group management, and task automation with bash scripting.

The industry-recognized RHCSA certification was selected because of its extensive curriculum that corresponds with the demands of modern IT system administration. It offers a strong foundation for administering RHEL environments, which are frequently utilized in business contexts.

The Red Hat Certified System Administrator (RHCSA) exam is a performance-based test that evaluates a candidate's ability to perform essential system administration tasks on Red Hat Enterprise Linux (RHEL). This hands-on exam ensures that candidates possess practical skills necessary for managing RHEL systems. Study official Red Hat documentation and supplementary guides. Set up a virtual lab environment to practice RHEL commands and configurations. The exam will have 300 marks, and out of that, we have to get 210 marks to be eligible for the certificate.

The RHCSA certification is highly valued in the IT industry because it validates a professional's ability to handle core system administration tasks. With RHEL being a leading operating system in many organizations, having RHCSA certification enhances job prospects and prepares individuals for advanced roles in Linux system administration. The skills gained from this certification are crucial for maintaining system stability, security, and efficiency in diverse IT environments.

# Objectives & Scope

## ❑ Objectives:

- Develop a deep understanding of Red Hat Enterprise Linux (RHEL) architecture and system administration principles.
- Prepare thoroughly for the RHCSA certification exam with mock tests and review sessions.
- To study and explore advanced RHEL topics such as security, networking, virtualization, and cloud integration.
- Building a foundation for further specialization in Linux.
- To prepared for Red Hat Certified System Administrator (RHCSA) exam.

## ❑ Scope:

- Good understanding of essential command-line tools and shell environments.
- Navigating the Linux filesystem, managing files and directories efficiently.
- Configuring local storage using partitions, managing file systems, swap space and LVM (Logical Volume Manager).
- Monitoring and managing system processes, job scheduling.
- Setting up and managing network interfaces, configuring IP addresses.
- Enabling and configuring SELinux, managing policies, and troubleshooting SELinux issues.
- Enhancing professional qualifications with a respected certification, opening opportunities for advancement in the IT field.

# Expected Outcome

- **Hands-on Experience:** The performance based Red Hat Certified System Administrator (RHCSA) exam, which evaluates practical knowledge, will enable us to handle real-world situations with ease.
- **Task Automation:** The ability to automate tasks using bash scripting, crontab, improving efficiency.
- **Improved Security:** The ability to implement and maintain robust security policies, file permissions, and user access control measures, contributing to the overall security.
- **Preparation for Industry Certification:** Completing the RHCSA program prepares candidates to pass the Red Hat Certified System Administrator exam.
- **Enhanced Job Opportunities:** Obtaining the RHCSA certification expands job opportunities in system administration and advanced Linux positions, particularly in settings that utilize Linux.

# Tools & Technology

- **Red Hat Documentation and Resources:** The official documentation, training manuals, and community guides function as resources for studying and enhancing the comprehension of system administration concepts.
- **Virtualization Platforms:** To set up practice labs, technologies like VMware and VirtualBox can be used for simulating RHEL environments.
- **Red Hat Enterprise Linux (RHEL):** The core operating system used in the RHCSA curriculum, RHEL is a leading enterprise Linux distribution. The hands-on experience in configuring, managing, and troubleshooting RHEL systems.

# Methodology

## **1. Access Systems and Get Support**

- Edit Text Files from the Shell Prompt
- Configure SSH Key-based Authentication
- Create a Diagnostics Report
- Detect and Resolve Issues with Red Hat Insights

## **2. Manage Files from the Command Line**

- Describe Linux File System Hierarchy Concepts
- Make Links Between Files
- Match File Names with Shell Expansions

## **3. Manage Local Users and Groups**

- Describe User and Group Concepts
- Gain Superuser Access
- Manage Local User Accounts
- Manage Local Group Accounts
- Manage User Passwords

## **4. Control Access to Files**

- Manage File System Permissions from the Command Line
- Manage Default Permissions and File Access

## **5. Manage SELinux Security**

- Change the SELinux Enforcement Mode
- Control SELinux File Contexts
- Adjust SELinux Policy with Booleans
- Investigate and Resolve SELinux Issues

## **6. Tune System Performance**

- Kill Processes
- Monitor Process Activity
- Adjust Tuning Profiles
- Influence Process Scheduling

## **7. Schedule Future Tasks**

- Schedule Recurring User Jobs
- Schedule Recurring System Jobs

## **8. Install and Update Software Packages**

- Register Systems for Red Hat Support
- Install and Update Software Packages with DNF
- Enable DNF Software Repositories

## **9. Manage Basic Storage**

- Mount and Unmount File Systems
- Add Partitions, File Systems, and Persistent Mounts
- Manage Swap Space

## **10. Manage Storage Stack**

- Create and Extend Logical Volumes
- Lab: Manage Storage Stack

## **11. Control Services and Boot Process**

- Identify Automatically Started System Processes
- Control System Services
- Select the Boot Target
- Reset the Root Password
- Repair File-system Issues at Boot

## **12. Analyse and Store Logs**

- Describe System Log Architecture
- Review Syslog Files
- Review System Journal Entries
- Preserve the System Journal
- Maintain Accurate Time

## **13. Manage Networking**

- Validate Network Configuration
- Configure Networking from the Command Line
- Edit Network Configuration Files
- Configure Hostnames and Name Resolution

## **14. Access Network-Attached Storage**

- Manage Network-Attached Storage with NFS
- Automount Network-Attached Storage

## **15. Manage Network Security**

- Manage Server Firewalls
- Control SELinux Port Labelling

## **16. Run Containers**

- Container Concepts
- Deploy Containers
- Manage Container Storage and Network Resources
- Manage Containers as System Services

## **17. Comprehensive Review**

- Comprehensive Review
- Lab: Fix Boot Issues and Maintain Servers
- Lab: Configure and Manage File Systems and Storage
- Lab: Configure and Manage Server Security
- Lab: Run Containers



# Implementation Details

- **Structured Learning Modules:** The curriculum is divided into focused sections covering key topics like user management, file permissions, network configuration, and task automation.
- **Continuous Assessment:** Periodic evaluations through mock exams, and lab assessments to ensure progress and readiness for the final exam.
- **Performance-Based Exam:** The RHCSA exam is designed to test practical skills, requiring candidates to solve real-world system administration problems within a set time.
- **Marking Scheme:** The exam is scored out of 300 marks, with a minimum of 210 marks required to pass and earn the certification.

# Conclusion

Upon completing the Red Hat Certified System Administrator (RHCSA) certification, we have demonstrated a solid understanding of essential Linux system administration skills, specifically in Red Hat Enterprise Linux environments. This achievement validates our ability to manage user accounts, configure file systems and permissions, implement security measures, and handle basic networking and system services.

Earning the RHCSA certification is a significant professional milestone, showcasing practical knowledge and readiness to manage real-world systems. This certification not only enhances credibility as a Linux system administrator but also opens up new career opportunities and positions us for advanced certifications like the Red Hat Certified Engineer (RHCE). It is a strong foundation for future growth and advancement in the ever-evolving field of IT.

# References

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Thank You!!