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RH124 - Course Overview

Presentation

Objective: To prepare for the RH124 Certification.
Public: Linux Technicians and Administrators.
Prerequisites: Have worked with Red Hat Enterprise Linux for at least 2 years.
Learning method: Alternating between a clear and precise teaching scenario and practical work based on concrete cases and examples.
Assessments: Assessments using self-correcting tests.

Programme

- **RH124 - Course Overview**
  - Presentation
  - Programme

- **RH12401 - File Hierarchy System**
  - Contents
  - LAB #1 - Linux File Hierarchy System
    - 1.1 - File Types
    - 1.2 - The mount command
    - 1.3 - The umount command
    - 1.4 - The /etc/fstab file
      - Mount Options
  - LAB #2 - Unix File System
    - 2.1 - Superblock

- 2.2 - Inodes
- 2.3 - Data blocks
- 2.4 - Physical links
- 2.5 - Symbolic links

- **RH12402 - The VIsual Editor**
  - Contents
  - Presentation
  - LAB #1 - Creating, Opening and Closing files with VI
    - 1.1 - Commands
    - 1.2 - Creating a new file with VI
    - 1.3 - Opening a file in read-only mode using view
    - 1.4 - Opening a file in read-write mode using VI
  - LAB #2 - The set Command
    - 2.1 - Commands
    - 2.2 - Turning on line numbering using set
  - LAB #3 - Moving around within the file
    - 3.1 - Commands
  - LAB #4 - Inserting Text
    - 4.1 - Commands
    - 4.2 - Inserting text
  - LAB #5 - Searching for Text
    - 5.1 - Commands
    - 5.2 - Searching for and replacing text
  - LAB #6 - Deleting Text
    - 6.1 - Commands
    - 6.2 - Deleting lines
  - LAB #7 - Copy, Cut and Paste
    - 7.1 - Commands
    - 7.2 - Copying, Cutting and pasting text
  - LAB #8 - Configuring a Personalised Interface

- **RH12403 - Help and Documentation**
  - LAB #1 - Help with Commands
    - 1.1 - Help on External Commands

- 1.2 - Help on Built-In Commands
- LAB #2 - The man command
  - 2.1 - The mandb and whatis commands
  - 2.2 - The apropos command
- LAB #3 - The info command

- **RH12404 - Basic Shell Commands and Text Manipulation Tools**
  - LAB #1 - Use of Basic Shell Commands
    - 1.1 - The stty Command
    - 1.2 - The date command
    - 1.3 - The who Command
    - 1.4 - The df Command
    - 1.5 - The free Command
    - 1.6 - The whoami Command
    - 1.7 - The pwd Command
    - 1.8 - The cd Command
    - 1.9 - The ls Command
    - 1.10 - The lsof Command
    - 1.11 - The touch Command
    - 1.12 - The echo Command
    - 1.13 - The cp Command
    - 1.14 - The file Command
    - 1.15 - The cat Command
    - 1.16 - The mv Command
    - 1.17 - The mkdir Command
    - 1.18 - The rmdir Command
    - 1.19 - The rm Command
    - 1.20 - The sort Command
    - 1.21 - The more Command
    - 1.22 - The less Command
    - 1.23 - The find Command
    - 1.24 - The su Command
    - 1.25 - The updatedb and locate Commands
    - 1.26 - The whereis Command

- 1.27 - The which Command
- 1.28 - The uptime Command
- 1.29 - The w Command
- 1.30 - The uname Command
- 1.31 - The du Command
- 1.32 - The clear Command
- 1.33 - The exit Command
- 1.34 - The logout Command
- 1.35 - The sleep Command
- 1.36 - The wall Command
- 1.37 - The seq Command
- 1.38 - The screen Command
- LAB #2 - Switches and Arguments
- LAB #3 - Regular Expressions
  - BREs
  - EREs
- Manipulating Text Files
  - Text-search Utilities
    - The grep Command
    - The egrep Command
    - The fgrep Command
    - LAB #4 - Using grep, egrep and fgrep
  - The Stream EDitor SED
    - LAB #5 - Using sed
  - The Text Processor AWK
    - Presentation
    - Field Separation
    - Conditions
      - A regular expression applied to a record
      - A regular expression applied to a field
      - Comparisons
      - Logical Operators
      - Built-in Variables
    - Awk Scripts

- The printf function
- Control Statements
  - if
  - for
  - while
  - do-while
- LAB #3 - Using awk
  - LAB 7 - Other Useful Commands
    - 7.1 - The expand Command
    - 7.2 - La Commande unexpand
    - 7.3 - The cut command
    - 7.4 - The uniq Command
    - 7.5 - The tr Command
    - 7.6 - The paste Command
    - 7.7 - The split Command
    - 7.8 - The diff Command
    - 7.9 - The cmp Command
    - 7.10 - The patch Command
    - 7.11 - The strings Command
    - 7.12 - The comm Command
    - 7.13 - The head Command
    - 7.14 - The tail Command
  - LAB #8 - Use the grep, tr and cut commands to extract your IPv4 address from the output of ifconfig
  - LAB #9 - Use the grep, awk and sed commands to extract your IPv4 address from the output of ip

- **RH12405 - The Command Line**
  - The Shell
  - LAB #1 - The /bin/bash Shell
    - 1.1 - Shell Internal and External Commands
    - 1.2 - Aliases
    - 1.3 - Defining a user's shell
    - 1.4 - The Prompt
    - 1.5 - Recalling commands
    - 1.6 - Generating file name endings

- 1.7 - The interactive shell
    - Character *
    - Character ?
    - Character [ ]
- 1.8 - The extglob option
    - ?(expression)
    - *(expression)
    - +(expression)
    - @(expression)
    - !(expression)
    - Escape characters
  - 1.9 - Return Codes
  - 1.10 - Redirections
  - 1.11 - Pipes
  - 1.12 - Command substitution
  - 1.13 - Command chaining
  - 1.14 - Displaying shell variables
    - Main variables
    - Internationalization and Localization Variables
    - Special variables
  - 1.15 - The env command
  - 1.16 - Bash Shell options
    - Examples
        - noclobber
        - noglob
        - nounset

- **RH12406 - User Management**
  - Overview
    - /etc/nsswitch.conf
    - Querying databases
    - The /etc/group and /etc/gshadow files
    - The /etc/passwd and /etc/shadow files
  - Commands

- Groups
  - groupadd
  - groupdel
  - groupmod
  - newgrp
  - gpasswd
- Users
  - useradd
  - userdel
  - usermod
  - passwd
  - chage
- Configuration
- LAB #1 - Managing Users and Groups
- LAB #2 - Forcing complex passwords with PAM
  - Using Complex Passwords
  - Configuration
- su and su -
- sudo

- **RH12407 - Package Management**
  - LAB #1 - The rpm command
    - 1.1 - Configuration
    - 1.2 - Using the rpm command
  - LAB #2 - The dnf command
    - 2.1 - Overview
    - 2.2 - Configuration
    - 2.3 - Repositories
    - 2.4 - Searching for Packages
    - 2.5 - Getting Package Information and Downloading Packages
    - 2.6 - Installing a package
    - 2.7 - Updating Packages
    - 2.8 - Deleting packages
    - 2.9 - The dnf history

- 2.10 - The Application Stream Repository
  - LAB #3 - Shared Libraries
    - 3.1 - Introduction
      - Storage
      - ld-linux.so.2
    - 3.2 - The ldd command
    - 3.3 - The /etc/ld.so.conf file
    - 3.4 - The ldconfig command

- **RH12408 - Managing File Permissions**
  - Presentation
  - Preparation
  - LAB #1 - Simple Unix File Permissions
    - 1.1 - Changing File Permissions
      - The chmod Command
        - Symbolic Mode
        - Octal mode
      - The umask command
    - 1.2 - Changing the owner or group
      - The chown command
      - The chgrp command
  - LAB #2 - Extended Unix File Permissions
    - 2.1 - SUID/SGID bit
    - 2.2 - Inheritance Flag
    - 2.3 - Sticky bit

- **RH12409 - Archiving and Compression**
  - Types of Backup
    - Full Backup
    - Differential Backup
    - Incremental Backup
    - Decremental Backup
  - Classic Backup Tools
    - Preparation
    - The Tar Command

- Overview
- LAB #1 - Working with the tar command
- The GPL tar command and compression
  - The cpio command
    - Overview
    - LAB #2 - Working with the cpio command
  - The dd command
    - Overview
    - LAB #3 - Working with the dd command
  - The dump and restore commands
    - Overview
- Advanced Backup Tools
  - Unidirectional Backup Tools
  - Multidirectional Backup Tools
  - Partition Backup Tools
- LAB #4 - What to Backup First
  - Package List Backup
  - Backing up the System Hard Disk Structure
  - Backing up the System Hard Disk Mounting Points
  - Boot Loader Backup
    - GRUB Legacy
    - GRUB 2 with BIOS
    - GRUB 2 with EFI
  - User Directories Backups
- The Rsync Command
  - Overview
  - LAB #5 - Working with the rsync command
- Compression
  - The gzip command
    - Overview
    - LAB #6 - Working with the gzip command
  - The bzip2 command
    - Overview
    - LAB #7 - Working with the bzip2 command

- The xz command
  - Overview
  - LAB #8 - Working with the xz command
- Other utilities

- **RH12410 - Process Management**
  - Overview
  - Process Types
  - Lab #1 - Process commands
    - 1.1 - The ps command
    - 1.2 - The pgrep command
    - 1.3 - The pstree command
    - 1.4 - The top command
    - 1.5 - The fg, bg and jobs commands
    - 1.6 - The wait command
    - 1.7 - The nice command
    - 1.8 - The renice command
    - 1.9 - The nohup command
    - 1.10 - The kill command
    - 1.11 - The pkill command

- **RH12411 - Managing Logs**
  - Overview
  - The dmesg Command
  - LAB #1 - Security Monitoring
    - 1.1 - The last Command
    - 1.2 - The lastlog Command
    - 1.3 - The lastb Command
    - 1.4 - The /var/log/secure File
    - 1.5 - Audit Event Management
      - The /var/log/audit/audit.log File
      - auditd
      - auditctl
      - audispd
      - Viewing audit Events

- The aureport Command
- The ausearch Command
- The /var/log/messages File
- Applications
- LAB #2 - rsyslog
  - 2.1 - Priorities
  - 2.2 - Facilities
  - 2.3 - /etc/rsyslog.conf
    - Modules
    - Global Directives
    - Rules
      - Facility.Priority
      - Facility!Priority
      - Facility=Priority
      - Using the * Wildcard
      - n Facilities with Identical Priorities
      - n Selectors with Identical Actions
- LAB #3 - The logger Command
- LAB #4 - The logrotate Command
- LAB #5 - Logging with journald
  - 5.1 - Viewing Logs
  - 5.2 - Application Specific Messages
  - 5.3 - Boot Messages
  - 5.4 - Priority Specific Messages
  - 5.5 - Messages from a Specific Date or Time Range
  - 5.6 - Real Time Messages
  - 5.7 - Searching with Key Words
- LAB #6 - The NTP Server
  - 6.1 - Overrview
  - 6.2 - The chronyd Service
  - 6.2 - The /etc/chrony.conf File

- **RH12412 - Service and Daemon Management**
  - Systemd

- LAB #1 - The systemctl command
- LAB #2 - Configuration Files
    - 2.1 - Default Configuration Files
    - 2.2 - Overriding the Default Configuration Files
- LAB #3 - The systemd-analyze command
- LAB #4 - Systemd Targets
    - 4.1 - Checking target dependencies
    - 4.2 - The Default Target
- LAB #5 - Managing Services
    - 5.1 - Managing Single Instances
    - 5.2 - Managing Multiple Instances
    - 5.3 - Prohibiting Service Status Changes

- **RH12413 - Network Management**
    - Understanding IPv4
        - TCP headers
        - UDP Headers
        - Fragmentation and Re-encapsulation
        - Addressing
        - Subnet Masks
        - VLSM
        - Ports and Sockets
        - The /etc/services File
        - Ethernet Address Resolution
    - Understanding IPv6
        - Overview
        - IPv6 addresses
        - Subnet Masks
        - IPv6 Reserved Addresses
        - Link-local Addresses
        - DHCPv6
    - Configuring the Network
        - The nmcli Command
    - LAB #1 - Network Configuration

- 1.1 - Connections and Profiles
- 1.2 - Name Resolution
- 1.3 - Adding a Second IP Address to a Profile
- 1.4 - The hostname Command
- 1.5 - The ip Command
- 1.6 - Manually Enabling/Disabling an Interface
- 1.7 - Static Routing
  - The ip Command
  - Enable Routing on the Server
- LAB #2 - Network diagnostics
  - 2.1 - ping
  - 2.2 - netstat -i
  - 2.3 - traceroute
  - 2.4 - tracepath
- LAB #3 - Remote Connections
  - 3.1 - Telnet
  - 3.2 - wget
  - 3.3 - ftp
  - 3.4 - SSH
    - Overview
      - SSH-1
      - SSH-2
    - Password Authentication
    - Asymmetric key Authentication
    - Server Configuration
    - Client Configuration
    - SSH Tunnels
  - 3.5 - SCP
    - Overview
    - Usage
  - 3.6 - Setting up Asymmetric Keys