



Red Hat Linux System Administration (RRH131)

Course length: 4 days

Course Summary:

This course introduces the complete basic skill set of administering a Red Hat Linux Enterprise System. It is suitable for users of Linux (or UNIX) who want to start building skills in systems administration to a level where they can attach and configure a workstation on an existing network.



Who should attend:

Linux or UNIX users, who understand the basics of Red Hat Linux, that desire further technical training to begin the process of becoming a system administrator.

Course Objectives:

The completion of the course will develop the skills necessary to perform system administration tasks to a level where he/she can install, configure, and attach a new Red Hat Linux workstation to an existing network

At the end of the course, the following objectives will be met:

- Install Red Hat Linux interactively and with Kickstart
- Control common system hardware
- Create and maintain the Linux filesystem
- Configure an NFS client and autofs
- Understand system and service initialization
- Perform user and group administration
- Integrate a workstation with an existing network running common network services
- Configure a workstation as a client to NIS, DNS, and DHCP services
- Administer the Linux printing subsystem
- Automate tasks with at, cron, and anacron
- Maintain and interpret system logs
- Back up filesystems to tape and tar archive
- Install, update, query and remove software packages with RPM
- Upgrade the Linux kernel via RPM
- Configure the X Window System and the GNOME desktop environment
- Perform basic performance, memory, and process management
- Configure basic host security
- Perform basic troubleshooting

Prerequisite:

To get the most out of this course, we recommend that you have taken the following course(s) or have equivalent knowledge:

- *Course RRH033: Red Hat Linux Fundamentals*

Time:

Class time is 9.00am – 4.30/5.00pm

Breaks are scheduled twice daily, one in the morning and another in the afternoon. Lunch is typically 12-1pm. This time may alter based on the trainers' discretion.

Course Material:

Course materials are provided. Our goal is to make sure your class meets your objectives, not ours. Therefore, all of our outlines are treated as guides to help steer the workshop. We may change or alter course topics to best suit the classroom situation.



Lesson Plan:

Lesson 1: Hardware, Device Configuration, and Installation

Hardware Compatibility and Resources
 CPU and Memory Support
 Filesystem Device Nodes
 System and Hotswappable Bus Support
 Laptops
 Block Devices and Filesystem Schemes
 Red Hat Installer Features
 Red Hat Linux Installation
 Partitioning Hard Drives
 Configuring Software RAID at Installation
 Configuring Flexible Filesystems with LVM
 Network Configuration and Firewall Setup
 Package Selection
 Validating the Installation
 Serial Console Installation
 Noprobe Mode
 Driver Disks
 Post-Install Configuration

Lesson 2: Filesystem Management

Creating and Managing Partitions
 Filesystem Basics and Attributes
 Filesystem Creation
 Ext3: Journaling for Ext2 Filesystems
 The Filesystem Hierarchy
 Mount options and configuration
 Connecting to Network Resources with NFS and SMB/CIFS
 Unmounting Filesystems
 The Auto-Mounter
 Swap partitions
 Filesystem Maintenance
 Determining Filesystem Usage
 Adding a Drive

Lesson 3: System Initialization and Services

The Boot Sequence
 BIOS Initialization
 The Boot Loader
 Kernel Initialization
 init Initialization
 Run levels
 Daemon Processes
 The rc.sysinit Script
 System V run levels
 The rc.local Script
 Virtual Consoles
 System Shutdown and Reboot
 Controlling Services



Lesson 4: User Administration

User Policy Considerations
 The User Account Database
 Adding a New User Account
 Modifying/Deleting Accounts
 Password Aging Policies
 Authentication Configuration
 NIS Configuration
 Group Administration
 Switching Accounts
 File Ownership
 Linux File Permission
 SUID / SGID Executables
 The Sticky Bit and Setgid Access Mode
 Default File Permissions
 User Private Groups
 Filesystem Quota Setup and Administration

Lesson 5: Network Configuration

Network Device Recognition
 Network Interfaces
 Address Resolution Protocol
 Bringing Network Interfaces Up and Down
 Interface Configuration Files
 Configuration Utilities
 Multiple NICs
 Binding Multiple IP Addresses
 DHCP/BOOTP
 Allowing User Control of Network Interfaces
 Basic IP Routes
 System Default Route
 IP Forwarding
 Global Network Parameters
 Name Resolution
 DNS Client Configuration
 DNS and Network Diagnostics and Troubleshooting

Lesson 6: System Administration Tools

Using the Alternatives System
 The Print System User Interface
 CUPS Printing System Configuration
 CUPS Queue Management
 Task Automation With at and cron
 Controlling Access to Task Automation
 crontab format
 System crontab Files
 Using tmpwatch
 Configuring, Maintaining and Monitoring System Logs
 Managing the whatis Database
 System Monitoring and Process Control
 Tape Backups
 Archiving with tar, dump/restore, and cpio
 Remote Backups



Lesson 7: RPM, Boot Loaders, and Kickstart

Introduction to the RPM Package Manager
 Installing and Removing Software with RPM
 Installing Kernel Errata
 RPM Queries and Verification
 RPM Utilities and Features
 Red Hat Network in the Enterprise
 Red Hat Network Registration
 The up2date utility
 Remote Administration
 Boot Loader Components
 GRUB and grub.conf
 Starting the Boot Process
 Multiboot Systems
 Configuring a Red Hat Enterprise Linux Network Installation Server
 Using Kickstart to Automate Installation
 The Kickstart Configuration File

Lesson 8: Kernel Services and Configuration

Kernel Modules and Their Configuration
 The /proc filesystem
 /proc/sys configuration with sysctl
 Software RAID Configuration and Recovery
 Flexible Filesystems with LVM
 Using LVM to Create Snapshot Logical Volumes

Lesson 9: The X Window System

The X Protocol
 X Security
 xauth with ssh
 X Modularity
 X Extensibility
 Window Managers
 Display Managers
 XFree86 Startup
 X Server Configuration
 The X Font Server

Lesson 10: Troubleshooting

Basic Troubleshooting Guidelines
 Troubleshooting X
 Troubleshooting Services
 Troubleshooting Networking
 Troubleshooting Boot Problems
 Filesystem Corruption and Recovery
 Recovery Run-levels
 Boot Floppies
 Rescue Environment Utilities
 Rescue Environment Details