Linux System Administration

Duration: 35 hours

Prerequisites: Experience with common UNIX/Linux user-level commands, such as for moving, copying and editing files. The UNIX/Linux Fundamentals course provides a solid foundation.

Course Description: This hands-on Linux administration course teaches students how to install, configure and maintain an Enterprise Linux system in a networked environment. Students will learn to perform basic administrative tasks such as adding and managing users, creating and maintaining file systems, developing and implementing a security policy, as well as performing software installation and package management. Additionally, students will perform Linux network-related tasks, to include installing and supporting SSH, NFS, Samba, and the Apache Web server. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

Although the labs include installing and configuring a CentOS Red Hat Enterprise Linux system (students can choose version 6 or 7), much of the course content also applies to SuSE, Ubuntu, Oracle and other current versions of mainstream Linux distributions. Labs include adding and deleting users, backing up and restoring the system, adding/deleting software, automating the scheduling of tasks, creating file systems, managing remote access, and installing and tuning Samba and Apache, as well as working with modern system logging utilities such as rsyslog. Class participants will also discuss common security issues, and be introduced to several tools, such as PAM modules, that can help secure the operating environment. Upon completion of this course, students will be prepared to competently maintain a Linux system in a networked business environment.

Students Will Learn

- About Linux and System Administration
- Linux System Installation
- Linux Print Services
- X Windows System Administration
- Managing Hardware
- Managing Software
- Linux Boot Process
- Managing Users and Groups
- Setting User Environments
- Linux File Permissions
- Delegating and Limiting Access Rights on the System
- Bourne Shell Programming (Optional Study)
- System Processes
- Working with System Logs
- System Backups
- Network File Systems
- Name and IP Services
- NIS (Optional Study)
- Web Servers
- Using SSH
- System Security
- Troubleshooting the System
- The Linux Kernel

Related Bootcamps

System Administration Overview

- UNIX, Linux and Open Source
- Duties of the System Administrator
- Superusers and the Root Login
- Sharing Superuser Privileges with Others (`su` and `sudo` Commands)
- TCP/IP Networking Fundamentals
- Online Help

Installation and Configuration

- Planning: Hardware and Software Considerations
- Site Planning
- Installation Methods and Types
- Installation Classes
- Partitions
- Logical Volume Manager - LVM
- File System Overview
- Swap Partition Considerations
- Other Partition Considerations
- The Linux Boot Loader: `grub`
- Software Package Selection
- Adding and Configuring Peripherals
- Printers
- Graphics Controllers
- Basic Networking Configuration
- Booting to Recovery Mode

Booting and Shutting Down Linux

- Boot Sequence
- The `systemd` Daemon
- The `systemctl` Command
- Targets vs. Run Levels
- Modifying a Target
- Service Unit Scripts
- Changing System States
- Booting into Rescue Mode
- Shutdown Commands

Managing Software and Devices

- Identifying Software Packages
- Using `rpm` to Manage Software
- Using `yum` to Manage Software
- Installing and Removing Software
- Identifying Devices
- Displaying Device and System Information (PCI, USB)
- Plug and Play Devices
- Device Configuration Tools

Managing Users and Groups

- Setting Policies
- User File Management
- The `/etc/passwd` file
- The `/etc/shadow` file
- The `/etc/group` file
- The `/etc/gshadow` file
- Adding Users
- Modifying User Accounts
- Deleting User Accounts
- Working with Groups
- Setting User Environments
- Login Configuration Files

The Linux File System

- Filesystem Types
- Conventional Directory Structure
- Mounting a File System
- The `/etc/fstab` File
- Special Files (Device Files)
- Inodes
- Hard File Links
- Soft File Links
- Creating New File Systems with `mkfs`
- The `lost+found` Directory
- Repairing File Systems with `fsck`
- The Journaling Attribute
- File and Disk Management Tools

Linux File Security

- File Permissions
- Directory Permissions
- Octal Representation
- Changing Permissions
- Setting Default Permissions
- Access Control Lists (ACLs)
- The `getfacl` and `setfacl` commands
- SUID Bit
- SGID Bit
- The Sticky Bit

Working with the Linux Kernel

- Linux Kernel Components
- Types of Kernels
- Kernel Configuration Options
- Recompiling the Kernel

System Backups

- Backup Concepts and Strategies
- User Backups with the `tar` Command
- System Backup Options
- The `xfsdump` and `xfsrestore` Commands

Basic Networking

- Networking Services Overview
- NetworkManager Introduction
- Network Configuration Files Locations and Formats
- Enabling and Restarting Network Services with systemtcl
- Configuring Basic Networking Manually
- Configuring Basic Networking with NetworkManager

Introduction to System Security

- Security Overview
- Maintaining System Security
- Server Access
- Physical Security
- Network Security
- Security Tools
- Port Probing with `nmap`
- Intrusion Detection and Prevention
- PAM Security Modules
- Scanning the System

Controlling Processes

- Characteristics of Processes
- Parent-Child Relationship
- Examining Running Processes
- Background Processes
- Controlling Processes
- Signaling Processes
- Killing Processes
- Automating Processes
- `cron` and `crontab`
- `at` and `batch`
- System Processes (Daemons)

Shell Scripting Overview

- Shell Script Fundamentals
- Bash Shell Syntax Overview
- Shell Script Examples

Troubleshooting the System

- Common Problems and Symptoms
- Troubleshooting Steps
- Repairing General Boot Problems
- Repairing the GRUB 2 Boot Loader
- Hard Drive Problems
- Restoring Shared Libraries
- System Logs and `rsyslogd`

LAMP Server Basics

- LAMP Overview
- Configuring the Apache Web Server
- Common Directives
- Apache Virtual Hosting
- Configuring an Open Source Database
  - MySQL
  - MariaDB
- PHP Basics
- Perl CGI Scripting

The Samba File Sharing Facility

- Configure Samba for Linux to Linux/UNIX File Sharing
- Configure Samba for Linux to Windows File Sharing
- Use the `smbclient` Utility to Transfer Files
- Mount/Connect Samba Shares to Linux and Windows Clients

- Maintaining File Integrity
- Using Firewalls
- Introduction to `firewalld`

Networked File Systems (NFS)

- Using NFS to Access Remote File Systems
- Configuring the NFS Server
- Configuring the NFS Client
- Exporting File Systems from the NFS Server to the NFS Client

Track	Duration	Price
Linux System Administrator	70 hours	$1,790
UNIX Software Developer	98 hours	$2,685

Contact Us

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