Linux System Administration - TTLX2220

Learn How to Install, Configure and Maintain an Enterprise Linux System in a Networked Environment

Duration: 5 Days
Skill Level: Introductory
Available Format: Instructor-Led Online; Instructor-Led, Onsite In Person ; Blended; On Public Schedule

Linux System Administration is a comprehensive, hands-on course designed to provide you with essential skills to manage and maintain a Linux environment. Whether you're new to Linux or looking to deepen your system administration knowledge, this course covers all the practical tasks needed to confidently handle daily operations. You'll begin with setting up a Linux virtual machine and learning key system administration fundamentals, such as navigating the file system, managing user accounts, controlling processes, and utilizing shell scripting for task automation.

What You'll Learn

Overview

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Throughout the course, you'll work through real-world scenarios involving file management, package installation, user and group management, and permissions handling. You'll also explore advanced topics such as working with symbolic and hard links, controlling superuser access with sudo, and managing system backups and software packages. Key networking concepts are covered, including configuring basic

networking commands, testing connectivity, and managing services like Apache for web hosting. By the end of the course, you will be well-equipped to administer Linux systems, implement security measures, and optimize system performance in a networked environment.

This course balances theory with extensive hands-on practice, allowing participants to perform essential administrative tasks and explore tools such as cron, rsyslog, and system monitoring utilities. The agenda also includes managing file sharing services, such as Samba and NFS, and setting up a LAMP server for web hosting, giving you the skills needed to support modern enterprise environments.

Objectives

Guided by an expert instructor in a hands-on lab environment, participants will:

- Install a Linux virtual machine and understand the terminal versus shell.
- Navigate the Linux file system, manage directories, and use command-line tools.
- Edit text files using both graphical editors (gedit, kate) and command-line editors (nano, vi).
- Copy, move, rename, and delete files and directories.
- Differentiate between Linux command types and effectively use command documentation.
- Create and manage both soft and hard links.
- Manage superuser access and handle root privileges with security best practices.
- Add and manage users, groups, and file permissions to control access.
- Utilize piping and I/O redirection for efficient data management.
- Automate administrative tasks using cron and shell scripts.
- Create system backups, manage disks, partitions, and file systems.
- Install and configure basic networking, and set up a LAMP stack for web hosting.

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional Unix, Linux, Scripting, administration, networking, programming, database and other related courses which may be blended with this course for a track that best suits your learning objectives.

Audience

This course is ideal for IT professionals, system administrators, and anyone looking to gain a practical understanding of Linux system administration. It is designed for beginners, though familiarity with basic computer and command-line operations will be beneficial. No prior Linux experience is required.

Labs and exercises are designed to work across multiple distributions, including CentOS, Ubuntu, RHEL, Oracle, and others. You'll gain hands-on experience in areas such as user and group management, software installation, system backups, file system management, networking, and web server configuration, all applicable to a range of Linux environments.

Pre-Requisites

This is an **introductory-level** course, designed for anyone wanting to learn Linux. Attendees should be comfortable working with computers and the command line, but no other specific skills are required to attend.

Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.

1. System Administration Overview
   - System Administration Overview
   - Installing a Linux virtual machine
   - Terminal versus Shell
   - A few simple commands

2. The Linux File System
   - Navigating through the directory tree
   - Parent and current directories
   - Passing command arguments
   - The touch command
   - Making directories

- Combining command options

3. Linux File Editors
   - Graphical editors - gedit and kate
   - The nano editor
   - Saving and exiting vi
   - Command mode
   - Heads or tails?

4. Copying, Moving, and Deleting Files
   - Copying one file
   - Copying multiple directories
   - Moving multiple files
   - Renaming files
   - Removing directories

5. Linux Command Types
   - The four categories of linux commands
   - What does the command do?
   - The info page
   - Helpful apropos command
   - The /usr/share/doc directory

6. Hard versus Soft Links
   - Displaying file inode number
   - Creating soft links
   - Creating hard links

7. Superusers and the Root Login
   - Accessing the root user
   - The dash difference
   - Setting the root password

8. Controlling the Population:
   - The /etc/passwd file
   - Adding users
   - Modifying user attributes
   - Defining the skeleton
   - Changing the defaults

- Adding group members
- Primary versus secondary groups
- Changing file permissions

9. Piping and I/O Redirection
   - Linux pipes
   - Redirecting standard output
   - Redirecting standard error
   - Redirecting standard input

10. Analyzing and Manipulating Files
    - Viewing file size
    - Counting characters, words, and lines
    - Sorting files
    - Searching for patterns
    - The stream editor
    - Text processing with awk

11. Find/Locate Files
    - The locate command
    - Updating the file database
    - The find command

12. Managing and Identifying Software Packages
    - How to download packages
    - How to install packages
    - How to remove packages
    - How to show package information
    - Listing all packages
    - Patching your system

13. Controlling Processes:
    - What is a process?
    - Parent process versus child process
    - Foreground versus background processes
    - Sending signals to processes
    - Setting priorities for new processes
    - The /proc directory

14. The Power of Sudo
    - Examples of privileged commands
    - Granting access with sudo
    - Group privileges
    - Listing user privileges
    - visudo versus /etc/sudoers

15. Basic Networking
    - Testing network connectivity
    - The ip command
    - The nmcli command
    - Checking your IP address
    - Flying with traceroute
    - Breaking your DNS
    - Changing your hostname

16. Shell Scripting Overview
    - The PATH variable
    - Reading user input
    - Passing arguments to scripts
    - Using the if condition
    - Using the for loop
    - Using the while loop
    - Bash script functions

17. Controlling Processes: cron and crontab
    - Our first cron job
    - Run every five minutes
    - Automating system patching
    - Running a job once

18. System Backups
    - Creating an archive
    - Extracting archive files
    - Compressing with gzip
    - Compressing with bzip2
    - Compressing with xz
    - Measuring performance

19. Creating Aliases
    - Your first alias
    - One alias for multiple commands
    - Listing all aliases
    - Creating a permanent alias
    - Removing an alias

20. File and Disk Management Tools
    - Where are your devices?
    - Where is your hard disk?
    - Adding disks to your virtual machine
    - Creating new disk partitions
    - Creating new filesystems
    - Mounting filesystems
    - Unmounting filesystems
    - Corrupting and fixing filesystems
    - Creating logical volumes

21. LAMP Server Basics
    - Installing Apache and Updating the Firewall
    - Installing MySQL
    - Installing PHP
    - Creating a Virtual Host for your Website
    - Testing PHP Processing on your Web Server
    - Testing Database Connection from PHP

BONUS TOPICS / Time Permitting

22. The Samba File Sharing Facility
    - Installing Samba
    - Setting Samba's Global Options
    - Creating Users
    - Configuring the Samba Shares
    - Logging Into the Samba Server

23. Networked File Systems (NFS)
    - Downloading and Installing the Components
    - Creating the Share Directories on the Host
    - Configuring the NFS Exports on the Host Server

- Adjusting the Firewall on the Host
- Creating Mount Points and Mounting Directories on the Client
- Testing NFS Access
- Mounting the Remote NFS Directories at Boot
- Unmounting an NFS Remote Share

Related Courses

TTLX2103	Introduction to Linux / Linux Essentials
TTLX2104	Intermediate Linux | Shell, Bash, Text Manipulation, Multitasking & More
TTLX2220	Linux System Administration

All applicable course software, digital courseware files or course notes, labs, data sets and solutions, live coaching support channels, CodeCoach.AI anytime tutor access, and rich extended learning and post training resources are provided for you in our "easy access, single source, no install required" online **Learning Experience Platform (LXP)**, remote lab and content environment. Access periods vary by course. We'll collaborate with you to ensure your team is set up and ready to go well in advance of the class. Please inquire about set up details and options for your specific course of interest.

For More Information

Please contact us or call 844-475-4559 toll free for more information about our training services (instructor-led, self-paced or blended), coaching and mentoring services, public course enrollment or questions, partner programs, courseware licensing options and more.