

## BASIC Linux SYSTEM ADMINISTRATION

Duration: 4 days

### *Develop the skills to effectively administer a Linux system.*

#### Course Description:

Linux System Administration is a class for new Linux administrators. Students will be provided with an introduction to the fundamental issues, tasks, tools and strategies in administering most versions and variants of the Linux operating system.

#### Participants will learn...

- Linux system administration overview
- Linux filesystem organization, System administration files and commands
- User, Process, and Print system administration
- Filesystem and storage management, Backup and restore
- Scheduling jobs with at and cron, System startup and shutdown, Performance monitoring and tuning
- Securing Linux systems, Devices and filesystems
- The X Window system
- Network administration tools and topics
- Error messages and troubleshooting

#### Who Needs to Attend:

Technical personnel who have responsibility for installing, operating, administering or managing a Linux system. Technical support staff, programmers, software developers and project managers will all benefit.

#### Prerequisites:

UNIX/Linux Introduction or equivalent experience. UNIX/Linux Shell Programming recommended but not required. Participants should have familiarity with UNIX/Linux commands, directory structure and a text editor.

#### Lab Exercises:

One for each section.

#### Course Content:

##### SECTION 1 - INTRODUCTION AND OVERVIEW

###### Linux operating system features

- Multiuser and multitasking, Hierarchical file system
- User-selectable command language, Graphical user interfaces based on X
- Network communication services, Highly portable kernel and utilities

###### Present versions

- System V Release 4, BSD 4.4, Solaris, AIX, HP-UX, Linux, Others

###### The Open Group standards

##### SECTION 2 - GETTING STARTED WITH Linux

###### Logging in and using the system

- User names and passwords
- Graphical interfaces vs. text interfaces, Command-line syntax: commands, arguments, whitespace, options
- Accessing and searching the online reference manual using **man**

###### Common Desktop Environment

- Front panel and workspace window, Window controls, Workspace menu, OpenWindows, KDE, GNOME

###### CDE applications

- Terminal emulator, Text editor, File manager, Style manager, *Trash can*, *Help viewer*

##### SECTION 3 – THE UNIX FILE SYSTEM

###### Manipulating files

- Copying, moving, linking, removing, Remote file copy and display
- File attributes, The **vi** editor, Controlling access, Comparing, printing

###### The directory hierarchy

- Root, current and home directories, Creating and removing directories, Finding files, Devise special files

##### SECTION 4 - THE KORNSHELL

###### Basic features

- Displaying and using command history; Background jobs; Process status
- Filename "wildcards", Substitutions, Redirection and pipes

###### Advanced features

- Metacharacter suppression, Variables, Environment variables, Aliases, Startup files

##### SECTION 5 - FILTERS AND PIPELINES

###### Concepts and basic filters

- Tool-building philosophy
- Input, output and error streams
- **sort**: sorting, **cat**: catenating, **grep**: searching for patterns, **wc**: counting, **tail**: trimming **sed**: stream editing, **awk**: field processing

###### Using regular expressions

- **egrep**: extended **grep** Searches & substitutions using **sed** and **vi**

###### Advanced filters

##### SECTION 6 - REMOTE ACCESS TOOLS

###### UNIX-to-UNIX

- **rlogin**: remote login, **rcp**: remote copy, **rsh**: remote shell

###### UNIX-to-any

- **telnet**: remote login, **ftp**: remote copy, Sending mail with **mail/mailx**

##### SECTION 7 - SHELL PROGRAMMING

###### Shell scripts in executable files

- Ordinary and special variables, Subshells and exit codes

###### Loops, decisions and I/O

- **for** and **while** loops, **test**, **if/else** and **case** decisions, Reading user input with **read**, Filtering loop and decision I/O, Redirecting error messages to **files**

##### SECTION 8 - ADMINISTRATION FOR USERS

###### Acting as the super-user

- Managing users and groups, System initialization: **init** process, System shutdown: **shutdown** command

- Daemon processes, **cron**

###### Managing file systems

- Backup/restore with **tar** and **cpio**
- Accessing local and remote file systems

##### SECTION 9 - THE X WINDOW SYSTEM

###### X Window System concepts

- Windows, text and graphics, Window managers, X server and client applications
- Network and vendor independence

###### Configuring X applications

- Options: **geometry**, **display**, others; The **DISPLAY** environment variables