UNIX System Administration

Course Summary

Description

This course focuses on basic- to intermediate-level system administration in the UNIX environment.

Objectives
By the end of this course, students will be able to:

- Learn to configure a system and perform maintenance tasks
- Gain hands-on knowledge about startup, shutdown, backups, filesystem, maintenance, and crisis management
- Learn the steps to successfully install UNIX software updates
- Create accounts for new users and preserve the security of existing accounts
- Perform day-to-day system management for startup, shutdown and backups
- Recover from common system catastrophes like filesystem failures, compromised user accounts and lost files

Topics

- The System Administrator
- A Review of the Shell
- Starting and Stopping in UNIX
- Login Process
- Common Filesystem Directories
- User Maintenance
- Terminal Connectivity

- Special Devices
- Working with the Printer
- Remote Printing
- Maintaining Filesystems
- Using Backups and Restores
- Using at and cron
- Monitoring the System

Prerequisites

To gain the most from this course, students must have experience with the UNIX operating system, including commands and utilities, pipelines, and shell programming and programming experience in a high-level language such as C or Pascal.

Duration

Four days

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Course Outline

I. The System Administrator What is a system administrator?
   A. Superuser
   B. System administration interfaces

II. A Review of the Shell
   A. What is the shell?
   B. How does the shell interpret a command?
   C. Metacharacters and the shell
   D. Filename expansion
   E. Variable manipulation
   F. Command substitution
   G. Input/output redirection
   H. Background processing
   I. Preventing metacharacter interpretation
   J. Executing commands in UNIX

III. Starting and Stopping in UNIX
   A. Boot process and inittab
   B. init - task master
   C. Descendents of init
   D. SAF - service access facility
   E. Shutting the system down

IV. Login Process
   A. Logging in
   B. Processes running during user login
   C. Login scripts
   D. Purpose of login scripts

V. Common Filesystem Directories
   A. Finding file locations
   B. Common directories
   C. Compatibility
   D. New directories
   E. Finding the otherwise unfindable

VI. User Maintenance
   A. Adding a user, useradd
   B. Changing user attributes
   C. Adding a group

   D. Deactivating accounts

VII. Terminal Connectivity
   A. Connecting a terminal using the serial interface
   B. Physical connection
   C. Terminal communication settings
   D. Working with terminal databases

VIII. Special Devices
   A. Character devices
   B. Block devices
   C. Pipes
   D. Where special devices are stored
   E. Major and minor device numbers
   F. Creating device files from scratch

IX. Working with the Printer
   A. Using a printer
   B. Setting up a printer
   C. Administering the printer service
   D. Customizing the print service

X. Remote Printing
   A. Network printing

XI. Maintaining Filesystems
   A. Filesystem hierarchy vs. filesystem
   B. Filesystem integrity

XII. Using Backups and Restores
   A. Backup strategies
   B. dump/restor
   C. Creating archives using cpio
   D. Backing up raw devices

XIII. Using at and cron
   A. at- singular process queuing
   B. What is cron?

XIV. Monitoring the System
   A. Disk space
   B. Security
   C. Process accounting