

UNIX System Administration

A five-day introduction to administering the UNIX Operating System

Audience

Users of the UNIX operating system who want to develop more in-depth administration skills, World-Wide Web site developers and administrators who are interested in hosting their site under UNIX, other IT personnel and consultants who need to understand UNIX system administration.

Overview

The popularity of the UNIX operating system has increased steadily over the last decade or so. The system's stability and scalability has led to it becoming the system of choice for enterprise-level applications such as hosting mail and World-Wide Web servers and providing database services. At the same time, the growing acceptance of popular, freely available derivations such as Linux and FreeBSD means that UNIX is reaching out to the desktop as never before.

The growth of UNIX means that skilled administrators are in great demand.

Objectives

At the end of this course, the participant will have:

- gained a working knowledge of UNIX configuration, maintenance and tuning
- developed skills to enable him/her to automate many of the day-to-day aspects of running a UNIX system
- developed skills sufficient to enable him/her to administer a UNIX-based user community
- become aware of some of the various security issues surrounding UNIX
- gained the ability to solve system-related problems as they occur
- obtained an appreciation of the widespread UNIX administrator's community and of the resources that are available to support him/her

Subject to the availability of suitable equipment, the course will include a number of practical exercises spread over the five-day period.

Suggested Texts

1. Aileen Frisch, *Essential System Administration 2nd Edition*, O'Reilly 1995.
2. Stephen R. Bourne, *The UNIX System V Environment*, Addison-Wesley, 1987.

Notes

1. since there are many varieties of UNIX, the freely available Intel computer-based version known as 'Linux' will be used as the "reference version" for the course material, although other systems will be regularly introduced
2. this course will not concentrate on any particular UNIX-based applications
3. this course will assume that the participant has had some recent prior exposure to UNIX

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Sample Course Overview

The system administration course will cover the following topics.

Day 1

Introduction

- administrivia
- UNIX history, current status and future
- versions of UNIX
- UNIX architecture and design
- UNIX administration features and foibles
- the system administration task

Configuring the Kernel

- why configure?
- detecting, selecting and describing devices
- system parameters
- testing and recovery from errors
- dynamic configuration

Examining the Bootup Process

- stages
- booting single-user
- boot-time options and configuration scripts

Day 2

Adding Disks/Devices and Dealing With Filesystems

- taking a hardware inventory
- filesystem types
- the UNIX view of devices
- formatting disks
- making a filesystem
- checking filesystem integrity

User Management

- UNIX user facilities
- adding and removing users
- accounts and groups

Accounting and Security

- setuid and setgid executables
- checking the security of an installation
- UNIX accounting facilities
- quota management

Day 3

Backing Up and Restoring Files

- backup strategies
- UNIX tools

Periodic Activity

- UNIX's cron and at commands

Printer Management

- installing local and remote printers

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- print queue management

Day 4

Monitoring and Maintaining a Unix System

- syslog
- CPU and memory performance
- installing applications
- man page maintenance

Automation of Administrative Tasks

- writing shell scripts
- PERL

Network Configuration

- TCP configuration
- NFS and NIS
- PPP for dialup connections

Network Security

- firewalls
- S/Key authentication
- TCP Wrappers
- SSL
- checking system integrity

Day 5

Interworking UNIX

- file sharing with SAMBA

Hosting a World-Wide Web Server

- Apache

The X Window System

- client/Server architecture
- system-level
- user-level configuration

Miscellany

Wrapup