Advanced HP-UX Systems Administration

Course Summary

Description

This course will teach the commands and methods needed to setup and manage advanced features in a UNIX system. The course will also use a problem solving approach in the lab exercises to teach system managers the proper application of advanced features.

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

- Implement networking features for the system and its users
- Define name service capabilities
- Use advanced options and setups for the shell command interpreters.

Topics

- Review of System Concepts for Systems Administrators
- Advanced Network Features
- File Transfer Capabilities
- Advanced Network File System (NFS) Features
- Using and Configuring Samba
- Name Services
- Configuring Remote Printers
- Tape Device Access Through TCP/IP
- Maintaining System Integrity
- Security Concepts for System Administrators
- System Security Features Updating
- Managing of System Users
- File System Security
- Using UNIX Log Files
- Network Security
- Performance Basics
- CPU Management
- I/O Management
- Network Management
- NFS Performance
- X-window basics and implementation
- Modification of Performance Parameters
- Summaries

Prerequisites

It is assumed that the student has experience with interactive UNIX systems with user-level commands, basic shell or Perl scripting techniques, and essential systems administrator functions.

Duration

Five days

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Course Outline

I. Review of System Concepts for Systems Administrators
- A. Process concepts
- B. Shell command usage and review

II. Advanced Network Features
- A. Review of network basic setup
- B. Subnet addressing
- C. Using arp (address resolution protocol)
- D. Network statistics
- E. Controlling the inetd process
- F. Miscellaneous network commands/tools
- G. DHCP setup – client and server

III. File Transfer Capabilities
- A. The ftp utility
  1. setup
  2. file capabilities
  3. trivial ftp and anonymous ftp setups

IV. Advanced Network File System (NFS) Features
- A. Review of basic NFS setup
- B. Advanced capabilities of server setup
- C. Advanced capabilities in client setup
- D. Using the automount feature

V. Using and Configuring Samba
- A. Reasons for using samba features
- B. Selecting a server host
- C. Defining client hosts

VI. Name Services
- A. Capabilities of DNS
- B. BIND configurations
- C. Configuring the resolver
- D. Configuring the named process
- E. Cache initialization
- F. Using nslookup to obtain information

VII. Configuring Remote Printers
- A. Printer setup databases (and control)
- B. Remote printer usage

VIII. Tape Device Access through TCP/IP
- A. Using data dump (dd)
- B. Combining tar with dd
- C. Remote file system dumping

IX. Maintaining System Integrity
- A. Specifying auditing events
- B. Improving shell performance
- C. Using the error report facility

X. Security Concepts for System Administrators
- A. Overview of issues related to UNIX security
- B. System administrator functions related to security

XI. System Security Features Updating
- A. Security levels in a UNIX system
- B. Rebuilding the UNIX kernel with auditing

XII. Managing of System Users
- A. Using the root account securely
- B. Password issues
  1. changing
  2. encryption
  3. ging and expirations
  4. shadow files
- C. Groups

XIII. File System Security
- A. File permissions review
- B. Special permissions: SUID,SGID,Sticky Bits
- C. Device files
- D. Using chown and chgrp
- E. Backups

XIV. Using UNIX Log Files
- A. Users
  1. lastlog,utmp,wtmp,pacct,syslog
- B. System
  1. shutdownlog
  2. sulog/messages

XV. Network Security
- A. Proper maintenance of the /etc/hosts file
- B. Using the "r" commands
- C. The restricted shell
- D. NFS security implications

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Course Outline (cont'd)

XVI. Performance Basics
- A. Factors affecting system performance
- B. Performance metrics
- C. Virtual system caching
- D. Effects of Computer Architecture

XVII. Memory Management
- A. Memory usage by the kernel
- B. Process creation
- C. Buffer Cache (and allocation control)
- D. Shared Memory / Page Caching
- E. Paging and Swapping
- F. Monitoring Tools

XVIII. CPU Management
- A. Software priorities concepts
- B. Impact of the nice parameter
- C. Priority boosting
- D. Differences in hardware implementations
- E. Monitoring tools

XIX. I/O Management
- A. Breakdown of Disk I/O
- B. Measuring Disk I/O
- C. File system structure concepts
- D. File system caching
- E. Name Lookup Caching
- F. Monitoring tools

XX. Network Management
- A. TCP/IP Layers
- B. Socket controls
- C. Controlling network services
- D. Setting network buffer values
- E. Monitoring tools

XXI. NFS Performance
- A. RPC Performance Considerations
- B. Impact of NFS Blocking and Caching Sizes
- C. Optimizing NFS Servers and Clients
- D. Monitoring tools

XXII. X-window basics and implementation
- A. Client-server communications
- B. Optimizing a system with X
- C. Reducing xterm memory usage
- D. Monitoring tools

XXIII. Modification of Performance Parameters
- A. SUN Solaris
- B. HP-UX
- C. IBM AIX

XXIV. Summaries
- A. Memory management
- B. CPU management
- C. I/O management
- D. Network management
- E. User program management

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