Course Outline

z/OS UNIX Systems Services Introduction

Course Summary

Description

This course provides users with a general understanding of the UNIX system and teaches the basic skills for using it, as well as how UNIX is set up, accessed and used on z/OS. Emphasis is on providing hands-on practical experience with the basic UNIX facilities on an z/OS operating system.

Objectives

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

- Understand the additional mainframe capabilities that can be enabled by deploying Z/OS UNIX applications, such as Java, web and e-mail serving, and disk and printer serving.
- Function proficiently as a UNIX end-user on a generic UNIX platform
- Use the additional end-user capabilities of Z/OS UNIX, such as access from TSO, ISPF, and Batch
- Understand the architecture and systems management issues specific to z/OS UNIX, and understand their impact on security management, backup & recovery, and performance tuning.

Topics

- Intro to z/OS UNIX System Services
- UNIX Essentials
- Accessing UNIX System Services
- z/OS UNIX System Operation
- z/OS UNIX System Administration
- z/OS UNIX Application Development

Audience

This course is intended for those interested in gaining an understanding of z/OS's UNIX System Services, its commands and file structures.

Prerequisites

The student should have basic end-user knowledge of Windows as well as knowledge of z/OS.

Duration

Four days

Course Outline

z/OS UNIX Systems Services Introduction

Course Outline

I. Introduction to z/OS UNIX System Services
- A. UNIX history
- B. Standards Organizations
- C. Standards
- D. z/OS UNIX® system services
- E. z/OS UNIX release history
- F. z/OS UNIX vs. S/390 Linux
- G. IBM products exploiting USS - TCP/IP
- H. IBM products exploiting USS - Java
- I. IBM products exploiting USS – Web
- J. IBM WebSphere Overview
- K. IBM products exploiting USS - Notes
- L. IBM products exploiting USS - Print
- M. z/OS UNIX serving PC files
- N. Third-party USS products
- O. Navigating the USS documentation
- P. Getting more USS help online

II. UNIX Essentials
- A. UNIX Command Overview
  1. File Mgmt
  2. File & Text Mgmt
  3. System Process Mgmt
  4. Storage Mgmt, TCP/IP
  5. Printing, Programming
- B. Logging In
- C. The Shell Prompt
- D. Changing your Password
- E. Logging Out
- F. Getting some files
- G. Commands, Switches, and Arguments
- H. Reading the Manual: the man cmd
- I. Userid, UID, Group, GID
- J. Understanding UNIX Permissions
- K. The UNIX File System
  1. Home and Working Directory
  2. Commands to List Contents of A File
  3. Head and tail Commands
  4. Copying and Moving Files
  5. Finding Files
  6. Deleting Files
  7. UNIX Filenames
  8. File Management Lab
  9. Creating Directories
  10. Removing Directories
  11. Copying Files Between Directories
  12. UNIX File Security: Permissions
  13. Working with Permissions
  14. Changing Permissions
  15. UNIX Directory Permissions
  16. Lab: chmod
  17. File/Dir Permissions - umask
  18. Changing File Ownership
  19. Under the covers of the File System
  20. Linking files
  21. Hard vs. Symbolic Links
  22. Linking to a file - ln
- L. UNIX Text Editors
  1. Editing Files with vi
  2. Modes
  3. Insert Mode
  4. Scrolling
  5. Editing
  6. Repeat n
  7. File cmds
  8. exrc
  9. vi: Lab
  10. vi: Regular Expressions
  11. vi: Searching for Text
  12. vi: Search Lab
  13. vi: Text Substitution
  14. vi: Text Substitution Lab
- M. The Shell
  1. Shell Variables
  2. Useful Shell Variables
  3. Command-line Editing
  4. Startup Script
  5. Shell Variables: Lab
  6. Redirection to & from Files
  7. Pipes
  8. Wildcards
  9. Wildcard Lab
  10. Command Alias
  11. Shell Scripts
  12. Shell Scripts - Example
  13. Shell Scripts - Exit Status
- N. UNIX Process Management
  1. the ps cmd
  2. Background
  3. Kill
  4. UNIX Process Mgmt Lab
  5. Job Control in the Shell
- O. UNIX Power Tools
  1. UNIX Power Tools: sort
  2. Archiving Files
  3. Compressing files

Course Summary (cont')

P. TCP/IP Networking
1. Two Similar Packet Delivery Systems
2. Packet Routing
3. Network Physical Layer, IP Layer
4. TCP/IP Port Numbers
5. TCP/IP Services
6. TCP/IP Diagnostic Commands
7. TCP/IP Applications
8. rsh, rexec
9. ftp
10. get & put, mget & mput
11. (client) & ftpd (server)
12. Example FTP Session
13. Mail
14. Write
15. wall
16. talk
17. Scheduling Work w/ cron & at
18. at
19. cron
20. cron table

III. Accessing UNIX System Services

A. Accessing UNIX System Services
B. Accessing USS with Telnet/Rlogin
1. Moving Data
2. Pro's and Con's of using Telnet/Rlogin
C. Using OMVS to access z/OS
1. OMVS & UNIX Differences
2. Using OMVS
3. OMVS Subcommands
4. Other Useful Subcommands
5. "Thinking OMVS"
6. OMVS Lab1
7. Customizing OMVS
8. Entering a Long Shell Command
9. Suppressing the NewLine
10. OMVS Lab2
11. Recovering from Hung Application
12. Pro's and Con's of using OMVS
D. Using the Irish Commands
1. Moving Data HFS <-> MVS (TSO)
2. OGET Example
3. OPUT Example
4. OCOPY Example
5. OCOPY Example, Using JCL
6. OPUT Lab
E. Issuing Unix commands from TSO
F. OSHELL: Issue UNIX cmds from TSO
G. Using the ISPF Shell - Topics
1. File Mgmt using the ISPF Shell
2. PDS -> HFS using the ISPF Shell
3. System Admin using the ISPF Shell
4. ISHELL Lab
5. Pro's and Con's of using ISHELL
H. Issue UNIX cmds from BATCH JCL
1. BPXBATCH Example: Shell Script
2. BPXBATCH Example: Shell Cmd
3. Pro's and Con's of USS access via Batch
I. Using the UNIX ISPF editor (OEDIT)

IV. z/OS UNIX Operation

A. Operator Tools & Interfaces
B. Console Commands D A
C. Console Commands D OMVS
D. Console Commands SETOMVS
E. Console Commands SET OMVS
F. USS Operator Issues
G. USS Operator Issues - JES2 Hot Start
H. UNIX Operation using ISPF Shell

V. z/OS UNIX System Administration

A. USS architecture
1. Kernel processes
2. User processes
3. Daemon processes
4. Dubbing
B. SYS1.PARMLIB
C. BPXPRMxx Wizard
D. USS startup
E. File systems
F. Hierarchical File System (HFS)
1. Creating a HFS dataset
2. Sharing HFS's
3. Mounting HFS dataset
4. Network File System
5. Distributed File System
6. Temporary File System
7. Mounting a File System
8. File system maintenance
9. Backup
10. Restore
11. Extended attributes

External links

Course Summary (cont')

G. Security
   1. Adding on OMVS segment
   2. SAF "Facility" classes
   3. Superuser overview

H. Tuning tips
   1. General UNIX
   2. RMF Reports
   3. BPXPRM
   4. ESQA
   5. UID/GID
   6. V2.7/filecache
   7. STEPLIBs
   8. File System
   9. Shell variables
   10. Using LPA

VI. z/OS Intro to UNIX Application Development

A. Development Tools
B. Daemons & Fork - Overview
C. Daemons & Fork - Flowchart
D. Daemons & fork - Example
E. Daemons & fork - Demo
F. Processes, Addr Spaces, Threads
G. Processes, Addr Spaces, Threads
H. Fork vs Spawn
I. Some z/OS UNIX Porting Difficulties