z/OS UNIX System Services Part 2 - Configuration & Implementation Training

Duration: **3 Day**

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Overview

This course follows on from the course 'UNIX System Services Part 1 - Concepts & Facilities'. It teaches the skills needed to install, configure and implement UNIX System Services in a z/OS environment. The course goes on to describe and explain how to manage the new environment efficiently and effectively, with a specific focus on security.

This course is also available for one-company, on-site presentations and for live presentation over the Internet, via the Virtual Classroom Environment service.

Prerequisites

Attendees should have attended the course **z/OS UNIX System Services Concepts & Facilities Part 1- Concepts & Facilities'**, or have equivalent experience.

What You Will Learn

- plan the installation and implementation of USS
- implement USS
- customise USS
- maintain the HFS environment
- describe the constraints on USS
- apply RACF security to the environment
- manage a USS environment.

Outline

USS Features & Services

UNIX internals overview; The Kernel: LOADxx and the IPL process: Load Unit Address,The LOAD parameter - ddddxxsn,The LOADxx member; The UNIX support in z/OS; Displaying OMVS processes; The UNIX support in z/OS; USS z/OS packaging; z/OS and USS comparative functions; Terminal and workstation support; Special TSO/E commands; Controlling z/OS UNIX - BPXPRMxx parmlib member; Displaying OMVS information; Displaying OMVS information; ulimit - a (shell command); New ISPF panels; The Shell; USS functions; Processes and fork(); fork() and shared storage; spawn() function; Inter-Process Communications functions; Memory mapped files; Threads; Daemon processes; The UNIX file system; The system files - /etc, /dev, /bin and others; Display File systems; Practical exercise.

USS Installation

Steps to install USS; Modes of running USS; WLM support for fork() and spawn(); Prepare for security; RACF profile extensions; Create the root file system; Initialisation shell scripts; Inittab; etc/rc; etc/profile; $HOME/.profile; Customize parmlib members; Controlling USS - BPXPRMxx parmlib member; BPXPRMxx: maximum sizes, miscellaneous, file systems, network; RESOLVER PROC; Dynamically changing the BPXPRMxx options; BPXPRMxx - Individual overrides; FILESYSTYPE buffer parameters;

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USS work; Why USS uses WLM; UNIX Services fork and spawn function calls; USS Service Classes; USS classification rules; Definitions for OMVS subsystem type work; Cataloged procedures used by USS; Customize cataloged procedures; Performance enhancements using the VLF; Completing the preparation for USS; File Security Packet (FSP); Start USS; Running OMVS workload in batch; New JCL keywords; Syntax of new JCL keywords; Initial file system; HFS sharing; Extended file system; Version HFS - an example; System HFS - an example; Applying maintenance to HFS products - requirements; Applying maintenance to HFS products - steps; Applying maintenance to HFS products - Verification/Activation; Practical exercise.

USS File Systems

Using files from UNIX programs; Managing UNIX files in z/OS; The Hierarchical File System; UNIX files and file systems: The Physical File System (PFS), The Logical File System (LFS); Device drivers; Directory structure; The root file system; The root file system z/OS; Shared file system; Mount points; Mounting file systems; Automount facility; Automount setup; Initial file system structure; Path and file names; Lengths of path and file names; Specifying UNIX files in z/OS; File attributes; Accessing HFS files; File administration with TSO/ISPF; Special TSO/E commands; Copying UNIX files with TSO/E; OPUT, OGET, OCOPY and BPXCOPY examples; Character sets and code conversion; EBCDIC code pages; Code translation; Code conversion when copying; Managing HFSs - confighfs; Space management of zFS; Backup/Restore; Copying POSIX files with TSO/E; Backup/Restore using UNIX Utilities; Backup/Restore using TSM.

zFS File System

What is z/OS DFS zFS?; What are zFS file system aggregates?; Distributed File Service required for zFS; Sample Parameter File- IOE.SIOESAMP(IOEFSPRM); zfsadm shell command; zFS utility programs; Defining zFS - action summary; zFS Colony Address space; Allocating zFS aggregates; zfsadm format command; zfsadm format in batch; Growing aggregates; Mounting a zFS file system; Cloning; Migrating from HFS to zFS; BXHWH2Z; Practical exercise.

zFS Performance

zFS cache & performance; IOEPRMxx performance parameters; zFS performance data via an API; zFS performance data - zfsadm query; zFS cache - user & metadata; zFS cache - metadata; zFS cache - transaction & log; zFS cache - vnode 5-16; Directory backing cache; zFS I/O by aggregate; SMF records for USS; RMF reporting for USS; zFS Activity Report; zFS Summary Report; RMF Monitor lll reporting for USS.

USS RACF Security

USS Security with RACF; z/OS UNIX process; RACF profile extensions; OMVS segments; System resource limits; UNIX identity; Kernel security; User definition - superuser; Define regular uids & gids; Switch to superuser mode; UNIXPRIV class; UNIXPRIV class; UNIXPRIV privileges; Controlling usage of shared IDs; SHARED keyword for AU, ALU, AG, ALG; SEARCH enhancement to map UID & GID; Automatic UID/GID assignment; set-uid & set-gid files; Program controlled executables; Enhanced Program Security; Controlling daemons; Defining OMVSKERN as a daemon; Enhanced Program Security & BPX.MAINCHECK; Controlling servers; UNIX level vs z/OS UNIX level security; TTY Group; Started task requirements; Define miscellaneous BPX.* facility profiles; Program attributes - APF & program controlled; File security packet extattr bits; Authorisation required to set extattr bits; What are sanction

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lists?; Setting up sanction lists; Set up users' field level access to OMVS segments; UNIX file security; File access control with Permission Bits; Making the RESTRICTED attribute applicable to UNIX files; The chown command - change file owner; The chmod command - change file mode (permissions); Default file permissions and the umask command; Access Control Lists (ACLs); File access control with Permission Bits and ACLs; ACL inheritance; Authority to create ACLs; getfacl and setfacl commands; getfacl; getfacl - dispay all ACLs for a directory; setfacl - change permission bits; setfacl - change ACL entries; Using the UNIX 'find' command; Overriding UNIXPRIV authority with ACL entries; Authorisation checking - summary; Auditing users & processes; Auditing USS.