z/OS Internals

Course Summary

Description

This course provides a detailed examination of z/OS for systems programmers. Topics include an introduction to computer systems hardware and an exploration of z/OS architecture, system services and functions, storage management mechanisms, and I/O processes. Each section will also explore the associated control block structures associated with the z/OS operations being looked at.

Topics

- Introduction to Computer Systems Architecture
- z/OS Architecture
- System Initialization (IPL)
- System Services and Functions

- Real storage management
- I/O Processing
- z/OS Exploitation Opportunities
- z/OS Workload Management

Audience

Experienced systems programmers with a need for a more detailed understanding of z/OS functions.

Prerequisites

Due to the technical nature of this material, the student should have several years experience in the z/OS environment.

Duration

Five days

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Course Outline

I. Introduction to Computer Systems Architecture
   A. Examine processor architecture and its role in supporting z/OS facilities.
   B. Introduction to storage hierarchy: L1 – L4 cache memories and various architectural enhancements to enable processors to achieve their rated speeds.
   C. Review of processor power ratings and their associated metrics.

II. z/OS Architecture
   A. Interrupt handling and SVC functions
   B. Address space structure
   C. Cross memory services
   D. Logical partitioning (LPAR)

III. System Initialization (IPL)
   A. IPL process details
   B. IPL Program functions
   C. Nuclear Initialization Program
   D. Master Scheduler Initialization

IV. System Services and Functions
   A. Role of z/OS Dispatcher
   B. Task management
   C. Resource serialization
   D. Recovery/Termination management
   E. Virtual Lookaside Facility (VLF)
   F. Storage Management Mechanisms

V. Real storage management
   A. Central storage usage and "above the bar" usage
   B. Virtual storage management:
   C. Paging/Swapping mechanisms
   D. Auxiliary storage management

VI. I/O Processing
   A. Introduction to DASD hardware functions:
   B. CKD, ECKD, and FBA devices
   C. Parallel Access Volumes (PAV)
   D. Volume Affinity
   E. Disk arrays (RAID)
   F. Components of I/O operation:
   G. Introduction to channel command processing
   H. Access method services
   I. Caching mechanisms

VII. z/OS Exploitation Opportunities
   A. Dataspaces/Hiperspaces
   B. Access register usage
   C. Batchpipes
   D. Hiperbatch/DLF
   E. Batch LSR
   F. Parallel sysplex
   G. Data buffering

VIII. z/OS Workload Management
   A. Metrics associated with performance objectives
   B. Basic control mechanisms of WLM