Training: IBM
IBM Z: Technical Overview of HW and SW Mainframe Evolution

TRAINING GOALS:

This course is designed to provide an understanding of today's complex system mainframe environment on the zEnterprise System and System z servers. It is mainly targeted for operators technical support, system programmers, and any others who need to keep current in this mainframe environment. Through lecture and hands-on exercises, you learn how the hardware and operating systems interact.

This course addresses the following topics:

- Mainframes and distributed server comparisons: Why so many servers?
- Mainframe directions: Past, current, and future
- Mainframes: System z introduction and relative performance comparisons
- IBM System z hardware design: Frames, CEC cage, books, models, and MSUs
- System z Capacity on Demand
- Physical/Logical partitioning, server initialization, and CHPIDs
- I/O configuration and HCD overview
- MVS to z/OS software overview
- z/OS Parallel Sysplex
- z/OS enhancements on the zPlatform
- z/Architecture overview and virtual addressing concepts
- System concepts: The big picture
- HMC introduction, groups, and activation profiles
- Determining object status and error conditions
- Activation and operating system interface

Describe and categorize the various servers that are commonly found in data centers

Identify and describe workloads that are commonly used on mainframes and distributed servers

Describe a typical data center with multiple server platforms:

- Why so many servers
- Current concerns and considerations
- Potential future actions

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Identify when the first IBM general purpose mainframe was introduced

Describe several key IT and mainframe strategies introduced in the 2000s

Identify current and future data center trends

Describe why smarter systems are required to meet future requirements

Introduce the zEnterprise System and describe how it can apply to current and future business requirements

Describe the basic functions, characteristics, and terminology of System z servers

Identify the number of CPs and specialty processors available to various System z servers

List relative performance of recent System z servers as compared to previous servers

Identify and list IBM mainframe servers supporting multiple channel subsystems and z/Architecture

Identify key components of the zEnterprise System and their purpose

Describe and compare various System z components:

- Frame layout and cage usage
- Server models, books, memory, and cache structure
- Performance and millions of service units (MSUs)

Describe and compare I/O infrastructure and processor usage across zEC12 to z10 mainframes

- I/O cages, drawers, and technology used
- PU, cache, and book fan-out connectivity

Describe how and what System z physical components are used when processing instructions and performing an I/O operation

Identify System z Capacity on Demand (CoD) options available for planned and unplanned outages

Describe the CoD provisioning architecture and which servers can use it

Describe how logical partitioning is used, resource assignments and initialization activities

Describe mainframe channels, usage, and CHPID assignments

Describe the purpose and use of HCD

Identify mainframe operating systems and their supported mainframe servers:

- Describe how the mainframe OS evolved from the System 360 servers to the current models
- List some of the major enhancements provided by the recent z/OS versions and to what servers

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they apply
- List z/OS coexistence and release support strategy
- Describe the various queues that are used to dispatch work

Describe the difference between a base and Parallel Sysplex

- List Parallel Sysplex main characteristics
- Describe the purpose and use of the coupling facility
- Identify the difference between the following sysplex configurations
  - MULTISYSTEM, MONOPLEX, and XCFLOCAL

Identify and describe the major enhancements provided by the System z software and hardware platform:

- 64-bit architecture, IRD, HiperSockets, MLCSS, MIDAW
- Multiple subchannel sets, zHPF, CPM, HiperDispatch, zDAC
- TEF, RI, DAT2, Flash Express, zAware, and autonomic computing

Identify processor architectural modes and their supported addressing implementations:

- Bimodal, trimodal, address spaces, virtual addressing, and storage usage

Describe the various queues that are used to dispatch work

Use system commands to display active address spaces and identify their current status

Describe the high level interaction between z/OS, CSS and I/O devices during I/O processing

Describe the role of the HMC and SE for System z servers

Identify and change the HMC user interface style

Identify CPC and image objects usage on the HMC

Build and customize user-defined groups

Identify profile types, usage and assign profiles to objects

Use the Details window to determine object status and assignments

Describe how and why unacceptable status conditions and hardware messages are presented to the HMC

Identify the HMC activation process for CPCs and images

Send messages to the operating system

The basic class should consist of lead operators, technical support personnel, system programmers, or

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anyone in the technical field who requires an understanding of how the current hardware and software interact in the large mainframe environment.

CONSPECT:

Day 1

- Welcome
- Introduction and course overview
- Unit 1: Mainframe directions and System z servers
- Unit 2: Server hardware and I/O configuration (part 1)

Day 2

- Review
- Unit 2: Server hardware and I/O configuration (part 2)
- Unit 3: MVS to z/OS overview and processor concepts
- Unit 4: Hardware Management Console basics
- Supporting labs:
  - Exercise 1: Remote access set up
  - Exercise 2 HMC web browser and UI set up
  - Exercise 3: HMC familiarization and lab system activation
  - Exercise 4: Hardware Management Console fundamentals (optional)

REQUIREMENTS:

You should have an understanding of:

- Basic data processing concepts
- I/O concepts

Difficulty level

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