BMC Mainframe: Db2 for z/OS - Systems Administration

COURSE ABSTRACT

COURSE CODE
» MGRS-DBZA-2021

APPLICABLE VERSIONS
» Not Applicable

DELIVERY METHOD 🌐
» Instructor-led Training (ILT)

COURSE DURATION 🌐
» 4 Days

PREREQUISITES
» A working knowledge of TSO/ISPF and a basic understanding of SQL and Db2 objects (databases, tables, indexes, etc.) used in Db2 system.

RECOMMENDED TRAININGS
» NA

Course Overview

The course is developed and delivered by © RSM Technology.

Designed for Systems Programmers and Systems Administrators, this course is the definitive Db2 for z/OS systems administration course.

It comprises all the information required to understand and manage Db2 system functions. The course also describes and explains the migration and tailoring of the Db2 system and its attachments, system security, problem determination, system recovery and performance issues.

Target Audience

» System Programmers
» Technical DBAs
» Technical Support Personnel

Learner Objectives

» Describe the address space structure and components of a Db2 subsystem
» Understand the Db2 installation process
» Identify Db2 functions that best suit the requirements of their site implement security for the Db2 system
» Understand and implement Db2 system and data recovery and restart procedures
» Understand the control and use Db2 trace information to perform system and application tuning
» Understand the basic problem determination tool

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COURSE ACTIVITIES

» Classroom Presentations

» Demonstration

BMC MAINFRAME INFRASTRUCTURE AND PLATFORMS LEARNING PATH

» https://www.bmc.com/education/courses/find-courses.html#filter/%7B%22type%22%3A%22edu-specific-types-159150236%22%7D

CERTIFICATION PATHS 🌐

» This course is not part of a BMC Certification Path.

DISCOUNT OPTIONS 🌐

» Have multiple students? Contact us to discuss hosting a private class for your organization

» **Contact us for additional information** 🌐

Course Modules

Db2 System Architecture
» Architecture overview
» Working Storage Areas
» Buffer, Sort, RID & EDM pools
» Buffer Pools - 64 bit addressing
» EDM pool
» Sort pool
» RID pool
» Db2 Attachments
» System data sets & databases
» Db2 objects
» Object characteristics
» SQL overview
» DB2 Interactive (DB2I)
» Basic Db2 operations
» Db2 commands
» DB2I commands panel.
» This segment examines the major components of the Db2 system

Db2 Installation and Migration Planning
» DASD storage requirements
» Storage estimates (Db2 system)
» Storage estimates (Db2 datasets)
» DASD requirements - user data

» DASD requirements - user indexes
» Virtual storage requirements
» Buffer, Sort & RID pool storage
» EDM pool storage
» DSCBs and working storage
» Real storage estimation
» Planning for data sharing.
» This segment identifies the major tasks involved in planning for the installation and/or migration of a Db2 subsystem

Db2 System Installation & Migration Overview
» Definitions
» Db2 modes (Db2 11)
» Db2 Function Levels (Db2 12)
» Installation / Migration step
» The major Installation / Migration tasks
» Additional tasks and jobs
» Loading Db2 libraries (the SMP/E process)
» The installation CLIST
» Invoking the installation CLIST
» Updating the CLIST defaults (DSNTIJXZ)
» DSNTIPA1 - Installation CLIST Main Panel
» DSNTIP0A - data sharing options (Type INSTALL)

» DSNTIP0B - data sharing options (Type MIGRATE)
» Installation CLIST Panels (Db2 12 for z/OS)
» Optional Installation Panels
» DSNTIPC, DSNTIPC1 - CLIST calculations
» The customised jobs
» Jobs DSNTIJUx - Define parameters.
» This segment describesand explains the major tasks involved in the installation and/or migration of a Db2 subsystem

Db2 System Migration & Modification
» Migration considerations
» Pre-migration queries (DSNTIJPM)
» Migration compatibility
» Migration tasks
» Prerequisites & maintenance level of current system
» Integrity of current system
» Back-up current system
» Migration steps
» Other migration tasks
» Fallback
» Enabling New Function Mode (ENFM) jobs
» Activate (change Function Level) jobs
» Updating Db2 - using the installation CLIST

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» Updating Db2 - modifying the generated job(s)
» Invoking modified parameters
» -SET SYSPARM command
» This segment describe and explains the tasks involved in migration and modification of a Db2 subsystem

Connecting to Db2
» Db2 Attachments
» Db2 connections (Attachments)
» Universal Language Interface Module (DSNULI)
» DSNULI entry points
» TSO Attachment
» Job DSNTIJVC - Build the CLIST library
» Make libraries available to TSO
» Connect DB2I panels to main panel
» Invoking TSO Attachment
» CICS Attachment
» CICS / Db2 connection
» Defining Db2CONN
» Defining Db2ENTRY
» Defining Db2TRAN
» Controlling CICS Attachment
» IMS Attachment
» IMS Subsystem Member (SSM)
» Subsystem Member relationships
» Resource Translation Table (RTT)
» Controlling the IMS attachment
» IMS Subsystem Member (SSM)
» Subsystem Member relationships
» Resource Translation Table (RTT)
» Controlling the IMS attachment
» Distributed Data Facility
» VTAM components
» Enabling TCP/IP communication
» Communications tables
» Distributed security
» Introduces the various attachment facilities and how they are set up and invoked

Db2 Security Administration
» Security overview

» Address space authorisation
» Protected access profiles
» Permitting RACF access
» Protecting Db2 datasets
» Security management (Db2 or RACF)
» Security strategy (Transaction Manager or Db2)
» Security management (centralised or decentralised)
» Traditional Db2 security mechanism
» Security terminology
» Authorisation id
» Maintaining security
» Data Control Language
» Administrative authorities
» Additional administrative authorities
» Explicit & implicit privileges
» Ownership considerations
» Level of access
» Using VIEWs
» Multi-Level Security overview
» Security labels
» Row level granularity
» Multi-Level Security and SELECT
» Multi-Level Security and INSERT
» Multi-Level Security and UPDATE
» Multi-Level Security and DELETE
» Multi-Level Security and utilities
» Row and column access
» Row permissions
» Column masks
» Db2 security using RACF profiles
» RACF / Db2External Security Module
» Installation
» Mapping Db2 authorisation checks
» Scope of RACF classes
» Multi-subsystem scope classes
» Single subsystem scope classes
» Customisation
» Db2 objects and RACF classes
» Profiles.

» Covers the system security requirements and the SQL syntax to maintain Db2 security

Db2 Logging
» Db2 Logging
» Db2 log processing
» Unit Of Recovery
» Two-phase commit protocol
» Active Log parameters
» Checkpoint parameters
» Checkpoint records
» Logging commands - SET LOG
» Logging commands - DISPLAY
» Logging commands - ARCHIVE. Describes the Db2 logging strategy and the components involved

Db2 Data Recovery
» Backup & recovery components
» Invoking online utilities using Db2i
» Invoking utilities - dataset names
» Invoking utilities - control statements
» Controlling utilities using Db2i
» COPY utility
» COPYTOCOPY
» MERGECOPY utility
» QUIESCE utility
» RECOVER utility
» Point-In- Time recovery
» REBUILD INDEX utility
» REPORT utility
» MODIFY utility
» Other online utilities
» Stand-alone utilities (service aids)
» Catalog & directory recovery
» Catalog & directory point in time recovery
» P-I-T recovery implications.
» Discusses the utilities available to backup and restore Db2 application and system data

Db2 System Recovery
» Db2 command format
» Starting Db2

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» Integrity - normal termination
» Integrity - abnormal termination
» Log Initialisation
» Current Status Rebuild
» Forward Log Recovery
» Backward Log Recovery
» Processing log records
» In-doubt resolution
» Deferred restart: effect on committed UORs, effect on in-flight UORs
» Delaying backout of long running tasks
» Effect of delaying backout
» Conditional restart: Control Record, log Truncation / limit restart, bypass backout / cold start
» Conditional restart implications
» Maintaining data integrity with conditional restart
» Stopping Db2
» BACKUP SYSTEM utility
» BACKUP SYSTEM control data
» RESTORE SYSTEM utility
» Restoring to a point in time.
» Examines the utilities to backup and recover the entire system and discusses the normal and specialised Db2 start-up processes

Db2 Monitoring & Control
» Db2 commands
» Controlling the Db2 subsystem
» Controlling the IRLM
» Controlling the TSO Attachment
» Controlling the CICS Attachment

» Controlling the IMS Attachment
» Issuing commands using Db2 Interactive
» Controlling Distributed Data Facility
» Controlling logging
» Controlling buffer pools
» Controlling data sharing
» Controlling utilities
» Controlling Resource Limit Facility
» Controlling databases
» Controlling threads
» Controlling procedures
» Controlling functions
» Db2 traces
» Trace classes
» Controlling traces.
» Describes the Db2 traces available, and their use in basic system and application tuning, and general control of the Db2 system

Problem Determination
» Basic code structure
» Db2 subcomponents
» Db2 control block structure
» Db2 page sets
» Page set structure
» Index structure
» Index keys and pointers
» Data navigation
» RIDs, map ids, pointers and holes
» Row headers
» Row data format
» Versions and system pages

» OBDREC entries
» Version examples
» Identifying and handling problems
» Basic dump analysis
» Diagnosis tools: traces, utilities
» Possible problem areas
» Active log out of space
» Active log I/O errors
» Archive log I/O errors
» BSDS errors
» Forced single BSDS mode
» Recovering BSDS
» Data errors
» Down level datasets.
» Covers the Db2 messages and tools available to handle various problem scenarios

Performance Overview
» What is 'performance'?
» Performance objectives
» Workload categories
» Service Level Agreements
» Performance factors
» System parameters
» EDM pool size
» Buffer pool sizes
» Buffer pool thresholds
» Buffer pool development
» Database design factors
» Application design factors
» Db2 traces

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