Db2 for z/OS: Systems Administration Training

Duration: **4 Day**

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Overview

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 describes and explains the installation and tailoring of the Db2 system and its attachments, system security, problem determination, system recovery and performance issues.

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

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

What You Will Learn

- 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 tools.

Outline

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 (Db2); Basic Db2 operations; Db2 commands; Db2i commands panel.

Db2 System Installation, Migration & Modification

Definitions; Db2 modes: migration to Db2 10, migration to Db2 11; Installation / Migration steps; DASD storage requirements; Storage estimates: Db2 system, Db2 datasets; Virtual storage requirements; Buffer, Sort & RID pool storage; EDM pool storage; The major Installation / Migration tasks; 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 10, Db2 11; DSNTIPC, DSNTIPC1 - CLIST calculations; The customised jobs; Migration considerations ; Pre-migration queries (DSNTIJPM); Migration compatibility; Migration tasks; Prerequisites & maintenance level of current system; Migration steps; Fallback; Enable New Function Mode jobs; Updating Db2 - using the

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installation CLIST; Updating Db2 - modifying job DSNTIJUZ; Invoking modified parameters; -SET SYSPARM command.

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 IMS attachment.

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; Grouped privileges; Additional administrative privileges; 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 / Db2 External 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.

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.

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.

Db2 Shutdown, Startup & Recovery

Db2 command format; Starting Db2; 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.

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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.

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.

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.