

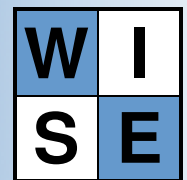
COURSE CODE: DWUXOR
COURSE TITLE: Oracle to DB2 for LUW Transition Fundamentals
CURRENCY: Up to DB2 for LUW V9.7
AUDIENCE: DBAs, system administrators.
PREREQUISITES: Oracle DB concepts or its equivalent.
DURATION: 4 days (incorporating hands-on workshop)
SUMMARY: This course is designed specifically for the IT technical specialist who is migrating to DB2 from an Oracle DB environment. The course is DBA-oriented but does not include the elaborate details one would expect in our comprehensive 'Database Administration' (DWUDBA) presentation. For example, the workshop includes details on backup/recovery but, due to time constraints, summarises other commands and utilities such as RUNSTATS, EXPORT, IMPORT db2look, table and table space recovery, etc.

To assist clear thinking with regards DB2 objects vs. Oracle objects, terminology differences are supplied at the beginning of each major unit, where useful, e.g.:

Oracle	DB2
Instance	Instance
Database	Database
Initialization File	Database Manager Configuration File
Table spaces	Table spaces
Data blocks	Pages
Extents	Extents
Datafiles	DMS containers

OBJECTIVES: Upon completion of this presentation, the participant should understand:

- DB2 product family and environment
- A broad range of DB2 commands and utilities (especially backup and recovery)
- DB2's storage, partitions, table spaces, buffer pools, etc.
- DB2 security features
- DB2 locking & concurrency facilities
- DB2 processes
- DB2 SQL facilities
- Etc.



1. DB2 UDB PRODUCT SUMMARY

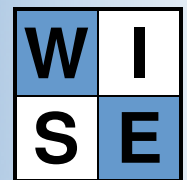
- Enterprise Server Edition (ESE)
- Data Warehouse Edition (DWE)
- Workgroup Server Unlimited Edition (WSUE)
- Workgroup Server Edition (WSE)
- Personal Edition (PE)
- Developer's Edition
- Personal Developer's Edition (PDE)
- DB2 Express
- DB2 Everyplace
- DB2 Connect
- Parallelism
- Single Partition on a Single CP
- Single Partition with Multiple CPs
- Massively Parallel Processing System
- Cluster of SMPs
- Processor Considerations

2. REVIEW OF DB2'S OBJECTS, ARCHITECTURE & PROCESSES

- Relationship between Database Objects
- Table Spaces & Tables in a Database
- DB Physical Directories & Files
- DB2 Container Concepts
- Table Spaces & Containers
- DMS Table Space Structure
- DB2 Architecture Overview
- Why is it Useful to Understand DB2 Processes?
- Log Process
- Insert Process
- Update Process

3. DB2 LIMITS & DATA TYPES

- Oracle vs. DB2 terminology comparison
- Datalink Values
- Datetime Values
- Character Strings
- Numeric Values
- String Representations of Dates
- String Representations of Times
- Identifier Length Limits
- Numeric Limits
- String Limits
- Datetime Limits
- Database Manager Limits
- Database Manager Page Size Specific Limits



4. DB2 REGISTRY VARIABLES

- Oracle vs. DB2 terminology comparison
- Definition
- New Registry Variables
- **Workshop**

5. DATABASE MANAGER CONFIGURATION PARAMETERS

- Oracle vs. DB2 terminology comparison
- Definitions
- Configurable – Online DBM Configuration Parameters
- **Workshop**

6. DATABASE CONFIGURATION PARAMETERS

- Oracle vs. DB2 terminology comparison
- Definitions
- Configurable Online DB Configuration Parameters
- **Workshop**

7. AUTONOMIC COMPUTING – OVERVIEW

- Oracle vs. DB2 terminology comparison
- Definitions
- Health Monitor & Health Center
- Memory Tracker
- DB2 instance:
 - ⇒ Definition
 - ⇒ Creation
 - ⇒ Design
 - ⇒ Dropping
 - ⇒ Start/stop
- **Workshop**

8. DATABASE CREATION & MAINTENANCE

- Oracle vs. DB2 terminology comparison
- Create Database Syntax & Autoconfigure
- Create Database via Wizard
- Configuration Advisor
- Database integrity – INSPECT command
- **Workshop**

9. TABLE SPACE CREATION & MAINTENANCE

- Oracle vs. DB2 terminology comparison
- Definitions
- Create Tablespace Syntax
- Alter Tablespace Syntax
- Table Space Management:
 - ⇒ Adding Space: DMS Table Space
 - ⇒ Dropping Container: DMS Table Space
 - ⇒ Table Space's Container Tag
 - ⇒ Performance & Best Practices
 - ⇒ SMS vs. DMS Table Space
 - ⇒ Tables per Table Space/ Table Spaces per Table
 - ⇒ Table Space Container Options
 - ⇒ Number of Containers
 - ⇒ Container Size
 - ⇒ Page Size
 - ⇒ Extent Size
 - ⇒ Prefetch Size
- **Workshop**

10. TABLE CREATION & MAINTENANCE

- Oracle vs. DB2 terminology comparison
- Definitions
- Create Table Syntax
- Alter Table Syntax
- Range-Clustered Tables (RCTs)
 - ⇒ RCT Definition
 - ⇒ RCT Examples
 - ⇒ When to Consider RCTs
 - ⇒ Some Advantages of RCTs
 - ⇒ How RCTs Work
 - ⇒ RCT Key Specification and Recommendation
 - ⇒ RCT vs. Regular Tables – a Comparative Summary
- Volatile Tables
- Temporary Tables in SMS Table Spaces
- Materialized Query Tables (MQTs)
 - ⇒ MQT Overview
 - ⇒ MQT Create/Populate Concepts
 - ⇒ MQT Scenario
- **Workshop**

11. INDEX CREATION & MAINTENANCE

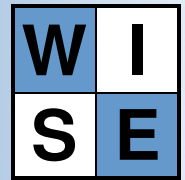
- Oracle vs. DB2 terminology comparison
- Index Structure
- Columns that Benefit from an Index
- When to Consider Clustering
- Composite Key Usage
- Create Index New Syntax
- Online Index Reorg
- Rename Index
- Good Index Housekeeping
- Index Performance & Good Practices
- SYSCAT.INDEXES – Snippet
- SYSSTAT.INDEXES – Snippet
- Multidimensional Clustering (MDC)
 - ⇒ MDC Concepts and Terms
 - ⇒ MDC: Dimension
 - ⇒ MDC: Slice
 - ⇒ MDC: Cell
 - ⇒ MDC Overview
 - ⇒ MDC Block Index
 - ⇒ Create MDC Table Examples
 - ⇒ MDC Table Layout 39
 - ⇒ MDC Table with Block Indexes
 - ⇒ What Happens During Deletes and Updates?
 - ⇒ MDC Table Design for Performance

12. DATA INTEGRITY SUMMARY

- Overview
- Entity & Referential Integrity
- How DB2 Supports R.I
- Referential Integrity & Insert
- Referential Integrity & Update
- Referential Integrity & Delete
- User-defined Integrity
- Referential Integrity Examples

13. I/O MEMORY MANAGEMENT

- Oracle vs. DB2 terminology comparison
- Big-Block Reads – Sequential Prefetch
- Asynchronous Page Cleaners
- Direct I/O Support
- Catalog & Authentication Caching



14. UTILITIES & COMMANDS

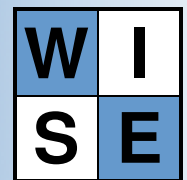
- Oracle vs. DB2 terminology comparison
- Load Utility
- Load Using the Control Center
- Import vs. Load
- Load Examples
- Load Query
- Load Query Example
- DB2 Cross Loader option
- Backup Utility
- Utility Throttling
- Rollforward DB Utility
- Instance/Database Quiesce
- Reorg – General
- Reorg Planning
- Reorg Examples
- DB2 INSPECT, REORG(CONVERT) & Type 2 Indexes
- Runstats planning
- Runstats – V8 Specifics
- Runstats Examples
- Rebind Utility & Flush Package Cache Command
- Data Maintenance Summary
- Online Maintenance
- **Workshop (mainly backup & recovery)**

15. COMMAND LINE PROCESSOR (CLP)

- Oracle vs. DB2 terminology comparison
- CLP Customisation – General
- DB2 Registry Variables Considerations
- Setting the DB2_CLPPROMPT Registry Variable
- CLP Historical Tracking
- Editing CLP Commands in History

16. DB2 LOGGING

- Oracle vs. DB2 terminology comparison
- Mirror Log Path
- Reducing Amount of Data Logged
- Logging & Configuration Parameters
 - ⇒ Primary Logs
 - ⇒ Secondary Logs
 - ⇒ Log File Size
 - ⇒ Log Buffer
 - ⇒ Number of Commits to Group
 - ⇒ New Log Path
 - ⇒ Logretain
 - ⇒ Userexit



16. DB2 LOGGING, cont'd.

- Log File Sequencing
- Log History File Contents
- Log History File – Garbage Collection
- V8 Logging Enhancements
- Problem Determination Logs
- Interpreting the Administration Logs
- SQLCA Interpretation
- Administration Log – Examples
- The db2diag.log Introduction
- Diaglevel Settings
- Finding db2diag.log
- How to Interpret db2diag.log
- Module Naming Conventions
- Common Engine Components
- **Workshop**

17. INTRODUCTION TO GUI TOOLS

- Oracle vs. DB2 terminology comparison
- Basic Concepts
- Control Center
- Control Center Related Tasks
- Useful Toolbar Icons
- What DB2 Objects May be Administered?
- z/OS & OS/390 DB2 Objects via the Control Center
- Replication Center
- Replication Functions
- Data Warehouse Center
- Command Center
- Task Center
- Information Catalog Center
- Health Center
- Journal
- License Center
- Development Center
- Information Center
- Memory Visualizer
- SQL Assist
- Visual Explain
- Configuration Assistant

18. INTRODUCTION TO THE DEVELOPMENT CENTER

- Oracle vs. DB2 terminology comparison
- What is the Development Center
- Using the Development Center
- Understanding Projects
- Using the Launchpad to:
 - ⇒ Create/Open Project
 - ⇒ Add Database Connection
 - ⇒ Create object
- Create New Stored Procedure
- Editing a Procedure
- Importing a Procedure
- Debugging a Procedure

19. SNAPSHOT MONITORING VIA TABLE FUNCTION

- Oracle vs. DB2 terminology comparison
- Snapshot Monitoring
- Instance & Database Level Monitor Switches
- Sample Output
- Sample Snapshot Commands
- Snapshot Functions

20. SYSTEM CATALOG & VIEWS

- Oracle vs. DB2 terminology comparison
- System Catalog architecture

21. DB2 EXPLAIN FACILITIES

- EXPLAIN Tables & their Relationships
- Command-Line Tools
- EXPLAIN Table Format Tool (db2exfmt)
- EXPLAIN Output Information
- Visual Explain Overview
- Operators & Operands in Visual Explain
- Explain Tables Descriptions
- Visual Explain Terms (e.g., Access Plan, Clustering, Dynamic SQL, etc.)
- Visual Explain Operator Summary
- Sample Query to be Tuned
- Explain Tables & their Relationships
- How to Create Snapshots – for Dynamic SQL
- How to Create Snapshots – for Static SQL
- Display Options
- Visual Explain Tuning Scenario

22. LOCKING & CONCURRENCY

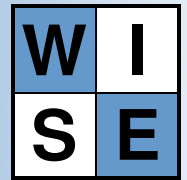
- Locking Concepts
- Without Locking: Loss Updates
- With Locking: No Loss Updates
- Reading Uncommitted Data
- Locking Schemes
- Table Lock Modes
- Lock Compatibility
- Isolation Level – Which One?
- Lock Table Statement
- Lock Conversion
- Locking Summary

23. DATABASE PARTITIONING

- Oracle vs. DB2 terminology comparison
- Database Partitioning Feature (DPF)
- Partition Groups
- Online Load
- List Partitions Table Feature
- Identity & Sequence Support in a Partitioned Database Environment

24. DB2 PERFORMANCE & OPTIMISATION SUMMARY

- Tuning DB2 & its Databases
- Keep RUNSTATS Current
- Exploit the Design Advisor
- Use the Configuration Advisor
- Indexes & Performance
- Table space & Performance
- Buffer Pools & Performance
- Logging & Performance
- SQL Statements & Performance
- Sorts/Sort Avoidance & Performance
- Registry Variables & Performance
- DB/DBM Configuration Parameters & Performance
- Application Locking & Performance
- Partition Database & Performance



25. INTRODUCTION TO SECURITY

- Accessing DB2
- Controlling Data Access
- Privileges, Authorities & Authorisations
- Hierarchy of Authorities
- Database Privileges
- Implicit Schema
- Table & View Privileges
- Schema Objects Privileges
- Authority & Privilege Scenario
- Grant Examples
- Revoke Examples

26. SQL (DML) SUMMARY

- General Select Syntax
- Creating Tables (DDL)
- Views
- Alias
- Select Statement
- Fetch First Clause
- Correlation Names
- NULL Considerations
- Use of Quotes – Double or Single
- Basic Predicates
- Quantified Predicate
- BETWEEN
- EXISTS
- IN
- LIKE
- LIKE with Escape Character
- Precedence Rules
- CAST Expression
- VALUE
- CASE Expressions
- Insert
- Update
- Delete
- Column Functions
- Scalar Functions
- GROUP BY & HAVING
- Subqueries
- Table Functions
- Common Table Expressions (CTEs)