

- COURSE CODE:** DWUDPT
- COURSE TITLE:** DB2 for LUW Database Performance & Tuning
- CURRENCY:** V9 – V9.7
- AUDIENCE:** System Administrators and Database Administrators.
- PREREQUISITES:** Completion of our course 'DB2 for LUW Database Administration' (DWUDBA) or equivalent knowledge.
- DURATION:** 4 days
- SUMMARY:** This presentation is designed to help Database Administrators to optimally design, size, implement, maintain, monitor and tune the RDBMS for the Linux/UNIX/Windows environment.
- OBJECTIVES:** Upon completion of this presentation, the participant should understand the following as they relate to the optimal performance of IBM DB2 database for LUW:
- How to optimally size the RDBMS
 - How to determine server requirements
 - How to optimise the disk subsystem
 - How to optimise physical database design
 - How to optimise the use of utilities
 - How to optimise SQL
 - How to organise and implement performance, monitoring and tuning
 - How to optimise the use of database and table partitioning
 - How to interpret and use Snapshot and Event Monitors

1. REVIEW OF RDBMS CONCEPTS

- Definition
- Logging
- Components
- Structured Query Language (SQL)
- Data Availability
- Parallelism

2. WORKLOAD CONSIDERATIONS

- Transactional
- Decision Support Systems (DSS)

3. THE DB2 ENVIRONMENT

- The instance
- The database
- Memory structure
- Processes
- Parallel databases
- Partitions
- Optimizer

4. SYSTEM DESIGN & SIZING

- Techniques
- CPU
- Memory
- Disk
- Workshop

5. SERVER DESIGN & TUNING

- Table space page size
- DB manage configuration parameters
- DB parameters
- Buffer pool size
- I/O servers
- Asynchronous page cleaners
- Change page threshold
- Sort heap size
- Statement heap size
- Database heap size
- Catalog cache size
- Log buffer size
- Maximum (application agents, locks, etc.)
- Workshop -- tuning exercises

6. INDEX DESIGN & PERFORMANCE

- When/when not to use
- When to use parallelism
- Index dataset placement and performance
- When to use clustered indexes
- When to reorganise indexes
- How to manage free-space (PCTFREE)
- When to use V8.1's type-2 index
- The role of the multi-dimensional clustering (MDC) table use of index
- Workshop --tuning exercises

7. LOCK MANAGEMENT

- Concurrency
- Isolation levels
- Lock types
- Deadlocks
- Waits
- Escalation
- Timeouts

8. MULTI-DIMENSIONAL CLUSTERING (MDC) TABLES

- When to consider
- How to organise
- How to index
- How to partition
- Logging considerations
- Table space considerations
- SQL considerations

9. PARTITIONING

- Advantages
- Database
- Table
- Indexes
- Management options
- Parallelism

10. SNAPSHOT MONITOR

- Switches
- Capturing snapshot data
- Accessing and interpreting monitor data
- How to use administrative views
- How to use table functions
- Buffer pool tuning
- Sort tuning
- Locking and concurrency



11. EVENT MONITORS

- Types
- When to use
- How to use

12. HEALTH MONITOR

- Indicators
- Database
- Tablespace
- Sorts
- Maintenance
- Logging
- Locking and concurrency
- Memory

13. TUNING SQL & COMMANDS

- SQL EXPLAIN facility -- how to analyse
- How to use the monitor switches
- Configuration parameters affecting SQL
- The optimizer and query rewrite
- Data access methods
- Predicate types
- Join methods
- How to control sorts
- LIST, DESCRIBE, DISPLAY commands, etc.
- Workshop -- tuning exercises