



- COURSE CODE:** OWHDPT
- COURSE TITLE:** Oracle Data Warehouse Performance & Tuning
- CURRENCY:** **10g & 11g**
- AUDIENCE:** Database administrators, system administrators and developers
- PREREQUISITES:** Completion of our course Oracle Data Warehouse Design (OWHDWD) or equivalent knowledge.
- DURATION:** 4 days
- SUMMARY:** After reviewing Dimensional Modelling fundamentals, this course focuses on tuning the Oracle DB engine and DW application interfaces with especial emphasis on:
- Star schema design
 - Indexes
 - Materialized views
 - Partitioning
 - DB parameters
- OBJECTIVES:** Upon completion of this course, the participant should understand Oracle DB and application tuning options and how they may be used to optimise data warehousing performance.

1. REVIEW OF DATA WAREHOUSING (DW) TERMS AND CONCEPTS

- The DW environment
- What is a data warehouse?
- What is a data mart?
- What is Business Intelligence (BI)?
- How do OLTP & OLAP differ?
- What is data mining?
- Operational vs. historical data
- What is a star schema?
- What is a snowflake schema?
- Normalization vs. denormalization
- What are hierarchies?
- What is dimensional modelling?
- What is the Data Warehouse Bus Architecture (DWB)?
- What are surrogate keys?
- What is Extract, Transform, Load (ETL)?
- What are Slowly Changing Dimensions (SCD)?
- What is Metadata?
- What are Materialized Views (MVs)?
- How does logical design differ from physical design?

2. PERFORMANCE & TUNING PLANNING

- The Oracle instance
- The database
- The application
- SQL

3. ORACLE PERFORMANCE TOOLS

- Automatic features
- Statistics
- Automatic Workload Repository
- Automatic DB Diagnostic Monitor (ADDM)
- SQL Tuning Advisor
- SQL Access Advisor
- End-to-end application tuning
- V\$Performance views
- Etc.

4. THE COST BASED OPTIMIZER

- Cost defined
- Tablescans
- Table selectivity
- Indexing method
- Cluster factor
- Query transformation
- Sorts

5. HOW TO USE AND TUNE INDEXES

- B*tree indexes
- Bitmap indexes
- Bitmap join indexes
- Star query transformations
- Function-based indexes

6. HOW TO CREATE & TUNE MATERIALIZED VIEWS

- Definition
- REFRESH options
- Partition Change Tracking (PCT)
- Query rewrite options
- SQL Access Advisor
- Size estimation and control

7. HOW TO CREATE & TUNE DIMENSION OBJECTS

- Definition
- Level/attribute clauses
- Rollup
- Join backs

8. SQL TUNING

- Selects
- Aggregates
- Condition and operators
- Joins
- Subqueries
- OLAP queries
- Sorts
- Common Table Expressions
- Multi-insert
- Merge

9. PARALLELISM

- Definition
- Types
- Initialisation and tuning parameters
- Monitoring
- Performance views
- Hints

10. EXTRACT, TRANSFORM & LOAD (ETL)

- Definitions
- Table functions
- Logical extraction
- Physical extraction
- External tables
- Transportable tablespaces
- SQL*Loader vs. External tables
- Multi-insert
- Merge
- Common Table Expression
- CREATE TABLE AS ...
- Built-in Functions
- Change Data Capture (CDC)

11. PARTITIONING & PERFORMANCE

- Definition
- Benefits
- Partition types (and when to use)
- Parallelism

12. HOW TO TUNE HARDWARE

- OLTP vs. data warehouse
- Memory buffers
- Block sizes
- Multi-block reads
- Transactions
- I/O devices
- Tablespaces