

DATABASES

INTERMEDIATE

5 DAYS

Oracle Database Administration (19c and 23ai)

Five days of core Oracle administration covering instance and database architecture, multitenant containers and pluggable databases, storage and ASM, users and security, undo and redo, RMAN backup and recovery, Flashback, Data Pump, AWR based performance monitoring, patching and upgrades, and Data Guard fundamentals. Delivered across Oracle 19c and 23ai so teams running the long term support release can plan their move to the current one.

Why Oracle Database Administration Training?

Covers both releases teams actually run

19c remains the long term support release in most enterprises while 23ai is the migration target. The course addresses both and the gap between them.

Multitenant treated as the default

Container and pluggable database administration runs through the whole course rather than appearing as an appendix.

Recovery scenarios, not recovery theory

Participants lose datafiles, control files and the entire database, then recover each with RMAN under time pressure.

On-premises and cloud

Includes Oracle Cloud Infrastructure, Exadata and Autonomous Database operational differences where they matter.

What you'll be able to do

- ✓ Explain Oracle instance and database architecture including memory and process structures
- ✓ Administer container and pluggable databases in a multitenant environment
- ✓ Create, configure and manage a database and its initialisation parameters
- ✓ Configure and troubleshoot Oracle networking and listeners
- ✓ Manage tablespaces, segments, extents and storage growth
- ✓ Administer Automatic Storage Management disk groups
- ✓ Implement users, privileges, roles, profiles and auditing
- ✓ Manage undo, redo and transaction behaviour
- ✓ Design and execute an RMAN backup strategy
- ✓ Perform complete and incomplete recovery across multiple failure scenarios
- ✓ Apply Flashback technologies for logical error recovery
- ✓ Move data using Data Pump and external tables
- ✓ Diagnose performance using AWR, ADDM and Automatic Session History
- ✓ Plan patching and major version upgrades to 23ai
- ✓ Explain Data Guard architecture and standard operational tasks

Who this is for

- Database administrators supporting Oracle environments
- Administrators moving to Oracle from another platform
- Infrastructure and platform engineers responsible for Oracle estates
- Application DBAs taking on production responsibility

- Teams planning a migration from 19c to 23ai or to Oracle Cloud

Curriculum

01 Oracle Architecture: Instance and Database

- System Global Area components and their sizing implications
- Program Global Area and per-session memory
- Background processes and what each one is responsible for
- Physical structures: datafiles, control files and redo log files
- Logical structures and their relationship to physical storage
- **Hands-on:** map a running instance's memory and process structures

02 Multitenant: Containers and Pluggable Databases

- CDB and PDB architecture and shared versus local objects
- Creating, cloning, plugging and unplugging pluggable databases
- Common and local users, roles and privileges
- Resource management and isolation between pluggable databases
- Application containers and their use cases
- **Hands-on:** clone a pluggable database and relocate it to another container

03 Database Creation and Configuration

- Installation, Oracle homes and the Optimal Flexible Architecture
- DBCA, scripted creation and templating a standard build
- Initialisation parameters, SPFILE management and parameter scope
- Character set selection and its irreversibility
- Startup and shutdown modes and diagnosing a failed startup
- **Hands-on:** create a database from script and diagnose a deliberate startup failure

04 Oracle Networking and Connectivity

- Listener configuration, registration and service names
- tnsnames, Easy Connect and directory naming
- Shared server versus dedicated server architecture
- Connection pooling, DRCP and service based workload routing
- Diagnosing common connectivity failures
- **Hands-on:** configure services and troubleshoot a set of connection errors

05 Storage Structures and Space Management

- Tablespaces, datafiles, segments, extents and blocks
- Bigfile and smallfile tablespaces and temporary tablespace management
- Automatic Segment Space Management and free space handling
- Segment shrink, reorganisation and reclaiming space
- Growth monitoring, thresholds and capacity forecasting
- **Hands-on:** diagnose a space incident and reclaim capacity without downtime

06 Automatic Storage Management

- ASM instance architecture and disk group concepts
- Redundancy levels, failure groups and rebalancing
- Adding and removing disks online
- ASM Cluster File System and ASM administration tools
- Monitoring rebalance operations and disk group space
- **Hands-on:** create a disk group, add a disk and observe the rebalance

07 Users, Privileges and Access Control

- User creation, authentication methods and default settings
- System and object privileges and privilege analysis
- Roles, secure application roles and privilege grouping
- Profiles, password policies and resource limits
- Least privilege design for application and administrative accounts
- **Hands-on:** implement an access model and run a privilege audit

08 Auditing and Database Security

- Unified auditing configuration and policy design
- Transparent Data Encryption and wallet management
- Data Redaction and Virtual Private Database concepts
- Network encryption and secure listener configuration
- Mapping controls to regulatory and internal audit requirements
- **Hands-on:** implement unified audit policies and produce evidence output

09 Undo, Redo and Transaction Management

- Undo tablespace sizing, retention and guarantee
- Snapshot too old errors and their root causes
- Redo log groups, members and switching behaviour
- Archive log mode, destinations and archive space management
- Long running transactions and their operational impact
- **Hands-on:** size undo for a workload and resolve an archive destination full condition

10 RMAN Backup and Recovery

- RMAN architecture, catalogue and control file repository options
- Full, incremental and cumulative backup strategies
- Block change tracking, compression and encryption
- Fast Recovery Area sizing and retention policy
- Backup validation and cross-checking
- **Hands-on:** configure and execute a complete backup strategy
- Complete recovery from datafile and tablespace loss
- Control file and spfile loss recovery

11 Flashback Technologies

- Flashback Query, Versions Query and Transaction Query
- Flashback Table and Flashback Drop with the recycle bin
- Flashback Database and restore point management
- Flashback Data Archive for long term history
- Choosing between Flashback and RMAN for a given error
- **Hands-on:** recover from a logical error using Flashback in under five minutes

12 Data Movement and Utilities

- Data Pump export and import including parallelism and filtering
- Transportable tablespaces and cross-platform movement
- SQL*Loader and external tables for bulk ingestion
- Network mode Data Pump for direct database to database transfer
- Migration patterns and minimising downtime
- **Hands-on:** migrate a schema between databases using Data Pump over a network link

13 Performance Monitoring and Diagnostics

- Automatic Workload Repository snapshots and report interpretation
- Automatic Database Diagnostic Monitor findings and recommendations
- Active Session History for short-lived problem analysis
- Wait event classes and identifying the dominant bottleneck
- Alert log, trace files and the Automatic Diagnostic Repository
- **Hands-on:** diagnose a performance incident from an AWR report

14 Resource, Space and Job Management

- Database Resource Manager plans and consumer groups
- Scheduler jobs, programs, schedules and chains
- Automatic maintenance tasks and their windows
- Server generated alerts and threshold configuration
- Automatic Indexing and other autonomous features
- **Hands-on:** build a resource plan and a scheduled maintenance job

15 Patching, Upgrades and Oracle 23ai Features

- Release update strategy, OPatch and out-of-place patching
- Pre-upgrade analysis and the upgrade readiness checks
- AutoUpgrade for 19c to 23ai migration
- Fallback options: Flashback, Data Guard and guaranteed restore points
- Post-upgrade validation and optimiser statistics handling
- **Hands-on: run a pre-upgrade assessment and produce an upgrade plan**
- AI Vector Search and the operational impact of vector workloads
- JSON Relational Duality Views

16 Data Guard and Day-Two Operations

- Physical and logical standby architecture
- Protection modes and their durability and latency trade-offs
- Switchover, failover and reinstating a failed primary
- Active Data Guard for read offload and its licensing implications
- Monitoring apply lag and gap resolution
- Operational differences on Exadata, OCI and Autonomous Database
- **Hands-on: capstone covering a switchover, a recovery and a documented runbook**