

Cheat Sheet for comprehensive Oracle Database Administration 2019 Certified Professional

Database Installation and Configuration

Pre-Installation Checklist

- **Hardware Requirements:** Ensure sufficient CPU, memory, and disk space.
- **Operating System:** Verify compatibility with Oracle Database.
- **Oracle Prerequisites:** Install required packages and libraries.
- **Environment Variables:** Set `ORACLE_HOME`, `ORACLE_SID`, `PATH`, and `LD_LIBRARY_PATH`.

Installation Steps

- **Run `runInstaller`:** Execute Oracle Universal Installer.
- **Select Installation Type:** Choose between `Enterprise Edition`, `Standard Edition`, etc.
- **Specify Oracle Base:** Define the base directory.
- **Create Database:** Optionally create a database during installation.
- **Run Root Scripts:** Execute root.sh and oraInstRoot.sh scripts.

Database Creation and Management

Creating a Database

- **DBCA (Database Configuration Assistant):**
 - `dbca -silent -createDatabase -templateName General_Purpose.dbc`
- **Manual Creation:**
 - `CREATE DATABASE db_name`
 - Define `CONTROLFILE`, `LOGFILE`, `DATAFILE`, etc.

Managing Database Instances

- **Starting and Stopping:**
 - `sqlplus / as sysdba`
 - `STARTUP` / `SHUTDOWN IMMEDIATE`
- **Mounting and Opening:**

- `STARTUP MOUNT`
- `ALTER DATABASE OPEN`

Backup and Recovery

Backup Strategies

- **Full Backup:** `RMAN> BACKUP DATABASE;`
- **Incremental Backup:** `RMAN> BACKUP INCREMENTAL LEVEL 0 DATABASE;`
- **Archivelog Backup:** `RMAN> BACKUP ARCHIVELOG ALL;`

Recovery Techniques

- **Complete Recovery:** `RMAN> RECOVER DATABASE;`
- **Point-in-Time Recovery:** `RMAN> RECOVER DATABASE UNTIL TIME 'YYYY-MM-DD:HH24:MI:SS';`
- **Flashback Database:** `FLASHBACK DATABASE TO TIMESTAMP TO_TIMESTAMP('YYYY-MM-DD HH24:MI:SS', 'YYYY-MM-DD HH24:MI:SS');`

Performance Tuning

Monitoring and Diagnostics

- **AWR Reports:** `@?/rdbms/admin/awrrpt.sql`
- **ASH Reports:** `@?/rdbms/admin/ashrpt.sql`
- **SQL Monitoring:** `SELECT * FROM V\$SQL_MONITOR;`

Tuning SQL Queries

- **Explain Plan:** `EXPLAIN PLAN FOR SELECT * FROM employees WHERE department_id = 10;`
- **SQL Tuning Advisor:** `EXEC DBMS_SQLTUNE.CREATE_TUNING_TASK;`
- **Index Optimization:** `CREATE INDEX idx_emp_dept ON employees(department_id);`

Security and Auditing

User Management

- **Creating Users:** `CREATE USER username IDENTIFIED BY password;`
- **Granting Privileges:** `GRANT CONNECT, RESOURCE TO username;`
- **Role Management:** `CREATE ROLE role_name; GRANT role_name TO username;`

Auditing

- **Fine-Grained Auditing:** `DBMS_FGA.ADD_POLICY`
- **Standard Auditing:** `AUDIT SELECT TABLE BY username;`
- **Unified Auditing:** `AUDIT POLICY policy_name;`

High Availability and Clustering

RAC (Real Application Clusters)

- **Configuration:**
 - Shared Storage: ASM or NFS
 - Network Configuration: Public and Private Interconnects
- **Management:**
 - `srvctl add database -d db_name -o \$ORACLE_HOME`
 - `srvctl start database -d db_name`

Data Guard

- **Primary and Standby Configuration:**
 - `ALTER DATABASE ADD STANDBY LOGFILE;`
 - `ALTER SYSTEM SET LOG_ARCHIVE_DEST_2='SERVICE=standby_db';`
- **Switchover and Failover:**
 - `ALTER DATABASE COMMIT TO SWITCHOVER TO STANDBY;`
 - `ALTER DATABASE COMMIT TO SWITCHOVER TO PRIMARY;`

Advanced Features

Automatic Storage Management (ASM)

- **Creating Disk Groups:** `CREATE DISKGROUP dg_name NORMAL REDUNDANCY;`
- **Mounting Disk Groups:** `ALTER DISKGROUP dg_name MOUNT;`
- **Managing ASM:** `ASMCMD` command-line tool

Partitioning

- **Range Partitioning:**

```
CREATE TABLE sales (  
    sale_id NUMBER,  
    sale_date DATE  
)  
PARTITION BY RANGE (sale_date) (  

```

```
    PARTITION p1 VALUES LESS THAN (TO_DATE('2023-01-01', 'YYYY-MM-DD')),
    PARTITION p2 VALUES LESS THAN (TO_DATE('2024-01-01', 'YYYY-MM-DD'))
);
```

- List Partitioning:

```
CREATE TABLE customers (
    customer_id NUMBER,
    region VARCHAR2(50)
)
PARTITION BY LIST (region) (
    PARTITION p_north VALUES ('NORTH'),
    PARTITION p_south VALUES ('SOUTH')
);
```

Miscellaneous Tips and Tricks

SQL*Plus Shortcuts

- **Clear Screen:** `CLEAR SCREEN`
- **Set Linesize and Pagesize:** `SET LINESIZE 120 PAGESIZE 24`
- **Autotrace:** `SET AUTOTRACE ON`

Oracle Enterprise Manager (OEM)

- **Accessing OEM:** `https://hostname:port/em`
- **Monitoring:** Use OEM for real-time monitoring and alerts.
- **Automation:** Schedule jobs and tasks through OEM.

Troubleshooting

- **Alert Log:** Check
`\$ORACLE_BASE/diag/rdbms/db_name/instance_name/trace/alert_instance_name.log`
- **Trace Files:** Analyze trace files in
`\$ORACLE_BASE/diag/rdbms/db_name/instance_name/trace/`
- **SQL Tuning:** Use `DBMS_SQLTUNE` package for detailed SQL analysis.

Conclusion

This cheat sheet provides a comprehensive overview of essential Oracle Database Administration tasks, focusing on installation, configuration, backup, recovery, performance

tuning, security, high availability, and advanced features. Utilize these tips and tricks to efficiently manage and optimize your Oracle Database environment.

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