# Glossary

| Colored Contents | Represents |
|---|---|
| **BLACK** | Normal DB Activities (Managed Services) |
| **RED** | New Implementations (Professional Services) |

| Support Type | Related Tasks |
|---|---|
| **Full Support** | Covers all **BLACK** + **RED** Colored tasks mentioned in this document.<br><br>**NOTE**: All **RED** colored contents will be executed in Serial manner (one task at a time). If any multiple **RED** colored tasks needed to be executed in parallel will be carried over with additional costs based on the workload proposed. |
| **Normal Support** | Covers ONLY BLACK colored tasks mentioned in this document |

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## Equivalent Work Experience

| Tasks Level | |
|---|---|
| **Level-0** | Freshers |
| **Level-1** | 1-2 years exp |
| **Level-2** | 3-5 years exp |
| **Level-3** | 5+ years exp |
| **Level-4** | 8+ Technology & Leadership exp |
| **ITIL** | Process Expertise |

# Oracle Database Project & Support Services

### Database Health Check (level-1)

a. Instance & listener availability status check,
b. Alert log check.
c. Backup status Check (Re-run to succeed in case of any failures)
d. DR synchronization check
e. Database Space check
f. OS Space check
g. Proactive basic Performance check (i.e.: Invalid objects, table locks, invalid sessions, etc.)

### Database Design, Installation & Configuration. (Level-3)

a. Design OS requirements: Choosing & configuring the appropriate CPU, Memory, storage, and ancillary software
b. Design Database requirements: Creating scalable architectures that allow for expansion
c. Preparing Oracle documentation
d. Designing Oracle database for high-speed, high-volume transactions
e. Conducting design reviews
f. Installation & configuration of all types Database client side & server tools for both windows & Linux.

### Backup & Disaster Recovery Implementation & Management (Level-2)

a. Configure new backups
b. Re-Run failed backups
c. Ensure, all backups (data & archive logs) are stored in a safer remote location to restore consistency.
d. Point in Time Database Recovery from latest backups.
e. Adhoc Database restore based on user requests.
f. Restoring schema objects in case of any human error on end-user data management.

## Standby Database Management (Database Replication) (Level-2 & 3)

a. Architecting & Building a new standby database.
b. Re-sync if in case of any smaller gaps
c. Rebuild the DR setup in case of any bigger gaps or DR database corruption.
d. Periodic database switch test between production and DR environment to ensure the DR database is always ready to be available during any production failover.

### Data Replication

Golden Gate: Data level replication using GoldenGate Tool

a. Heterogeneous (Between various Database technologies)
b. Homogeneous (Between the same technologies)
c. Unidirectional & Bidirectional replication setup
d. Troubleshooting replication gaps
e. Query offloading to reporting instance
f. Business continuity for high-availability solutions
g. Zero downtime migration and upgrade
h. Data warehouse and operational business intelligence
i. Data integration services

Logical Standby: A logical standby is open for user access while applying changes, making it an ideal solution for a reporting database while maintaining its disaster recovery attributes. Primary Benefits follow:

a. Architecting & building Logical Standby Databases
b. Near-zero downtime for database upgrades
c. Offload reporting from the primary database
d. Re-sync if in case of any smaller gaps
e. Rebuild the DR setup in case of any bigger gaps or DR database corruption.
f. Periodic database switch test between production and DR environment to ensure the DR database is always ready to be available during any production failover.
g. Create additional objects to better support reporting operations

## Database User and Security Management (Level-1 & 2)

a. User creation with proper authentication(credentials) & authorization (Privleges).
b. User Mangement in existing setup.
c. Auditing for compliance with data storage rules and regulations.
d. Deploy security fixes in OS & DB level
e. Perform penetration testing and fix the findings
f. Whitelisting the incoming connections to the DB layer
g. Database encryption and setup SSL connectivity to App servers
h. Full audit of role-based security
i. Full audit of fine-grained access control
j. AD (Active Directory) based access to Database users by implementing Oracle Unified Directory

## Database Capacity Planning & Space Management (Level-3)

a. Designing database storage requirements by considering immediate future growth.
b. Performing periodic capacity reviews (daily, Weekly, Monthly, and Quarterly based on customer requirements & send database growth report regularly.
c. Add additional space by taking approval from management.
d. Pro-active housekeeping activities to clear old Archive logs, Audit logs, Trace files, Backup files, Backup logs & Listener logs from the OS database drive, as per customer standards to avoid last-minute space hiccups.

## Database Performance Tuning: (level 2 & 3)

Tune database performance by analyzing the following data's

Application statistics (transaction volumes, response time)
Database statistics
System statistics
Disk I/O statistics
Network statistics

**Database Tunning**

AWR, ADDM & ASH reports
Top weight reports – such as bottlenecks- that can be tuned
Long-running top SQL in AWR for optimization
Storage configuration
Memory settings for SGA and PGA
Memory consumption/configuration
Various init.ora for config
Disk IO statistics
Transactions throughout
Implementing Table level partitioning for better performance.

**SQL Query Tunning**

- Improve the use of SELECT queries
- Check for indexes
- Work with the smallest data set required
- Remove unnecessary fields and tables
- Remove calculations in your JOIN and WHERE clauses.
- Use wildcards only at the end of a phrase
- SQL profiling – to fix the execution plan
- SQL Hints – To improve the performance and execution
- Run your query during off-peak hours

## Database Patch & Upgrade (Level-2)

a. Apply quarterly patches to keep the database bug free and secure
b. Patching apply includes RU, PSU, CPU, and one-off patches
c. Apply Rolling patches in Cluster Environment for high availability.
d. Patching the database in a Cloud environment.
e. Minor Version upgrades: release upgrades within the same version.
f. Major Version upgrades: Version upgrades to different higher versions.
g. Upgrade database with minimal time window.
h. DBUA and Silent method of Upgrade.
I. Logical standby upgrade in the DR environment

## Database High-Availability Configuration & Management (Level-2 & 3)

a. Configure HA RAC (Real Application cluster). (active-active)
b. Managing ASM (Automatic Storage Management) and Configuration
c. Migrating a single instance to the RAC cluster with ASM storage and vice versa
d. RAC performance tuning and troubleshooting
e. RAC Instance failover and recovery and restore
f. Implementation & Maintenance of Oracle ACFS for ASM high availability.

## Database Refresh (Level-2)

a. Perform DB refresh using RMAN backup/restore.
b. Refresh data using the Export/Import method
c. Refresh data from TAPE (storage) using RMAN
d. Refresh Tables using DB LINK (using CTSA)

## Database Migration: (Level-3)

a. Straight Platform (Between same Operating Systems)
b. Cross Platform (Between different Operating Systems)
c. Homogeneous (Between Same Database Technologies)
d. Heterogeneous (Between different Database Technologies)
e. Zero Downtime Migration: Migrate the database using the Golden Gate replication technique to avoid downtime & logical replication technique
f. Cloud Migration: Migrating database from on-premises to Cloud & vice-versa
g. Migrating database from Exadata
h. Migrating database from one Datacenter to another, using the DR technique

## Vendor & Licensing Management (Level-2)

a. Utilizing our vendor relationships, we increase turn-around speed and get licensing information quickly.
b. We navigate the licensing maze, providing you with all the licensing options available.
c. We regularly work with software vendors to get the “best pricing” for our clients

## Database Continuous Monitoring (Level-1)

a. Implementation of Customised Monitoring using Shell & PowerShell.

a. OEM: Database Availability, Lister, Storage and process, DB performance.

b. Splunk: Monitor the logs and raise on-call alerts to DBAs at the time of an incident.

c. Proactive checks based on the monitoring alerts help DBAs to keep the system healthy.

## Database Process Implementation, Documentation & Orientation (ITIL)

- Introducing best-fit processes for database administration using ITIL global standards.
- Deriving & implementing new processes & periodically reviewing existing processes, in Incident Management, Problem Management, Change Management & Release management.
- Can Manage ITIL portfolio by supplying, Incident Manager, Problem Manager, Change Manager, Release Manager.
- Documenting the SOP (Standard Operating Procedures) for end-to-end database administration portfolio for your various environments Prod, QA & Development.
- Also we educate your IT / Non-IT staffs for the Process & SOP structured.

## Database Status Reporting to IT Management (Level 1)

1. **Backup Status Report:** (Daily/Weekly/Monthly/Quarterly) backup status reports for end-to-end database environment.
2. **Daily Status Check Report:** Services Availability Status, Storage Status & Standby Sync status, HA Availability Status.
3. **Performance Status Report:** Periodic database Locking, Blocking, Inactive sessions status.
4. **Capacity Growth Report:** Periodic database storage growth (Daily/Weekly/Monthly/Quarterly) for Production databases.
5. **Others:** Other Database related report as the customers customized requirements.

## Cloud ‘Database as Service’ support (Level-2 & 3)

End to End Database Consultation, Administration & Management in all Cloud Technologies (as well as in Hybrid Model)

We are expertise in supporting below cloud environments

### Cloud We Support

Azure aws ORACLE CLOUD Google Cloud

SpeedCloud

Also we are in Technical Partnership with **SpeedCloud** cloud company and provide special discounted rates for our customers on our Techno-partner **SpeedCloud** cloud platform.

Our Database Support in cloud includes: -

- **Rehost patterns** (from on-perm database to self managed* in Amazon EC2, Azure VM, Compute Engine in GCC etc.)
- **Re-platform patterns** (from on-perm database to cloud DBaaS*)
- **Re-architect patterns** (from on-perm one database Technology to other open-source or cloud-native database Technologies)
- Setup monitoring of DBs using cloud native tools. (Eg: Cloud watch)
- Setup and manage DB in muti, hybrid cloud environment like AWS, AZURE & GCC along with On-Perm

- **Database Consulting in Cloud Infra**
    - Start with a comprehensive plan and a governance framework
    - Run the right database in the right cloud
    - Use data services that support multi-cloud environments
    - Exploit managed database services, or DBaaS
    - Consider database portability across multiple clouds
    - Optimize data access for applications and end users
    - Connect cloud networks to reduce data latency

- **Cloud Security**
    - Define standards, security, and compliance policies. Cloud database vendors rarely enforce more than the most obvious weaknesses in the out-of-the-box installations of their platforms
    - Run vulnerability assessments. Since databases are often an organization's largest repository of sensitive information, they should be evaluated to not only search for potential vulnerabilities but also to ensure they fulfill any relevant regulatory compliance requirements
    - Understand user privilege and access. As people change roles or leave an organization, user privileges are often not kept up-to-date, and, as a result, organizations lack a full understanding of who has access to sensitive data.
    - Use data analytics to mitigate risks. Remediating high-risk vulnerabilities and misconfigurations within your databases not only reduces your risk of compromise, but it also narrows the scope of any required compensating controls you might need, such as exploit monitoring.
    - Respond to policy violations in real time. For vulnerabilities that cannot be remediated or patched in a timely manner, real-time database activity monitoring (DAM) can be an appropriate compensating control.
    - Database encryption
    - Data Masking
    - Multi-Factor Authentication (MFA)

- **Cloud Database Migration**

    - Migrate your existing database platform from On-premises datacenter to any cloud Technologies includes (AWS, Azure, Google Cloud, Oracle Cloud & other 3rd party cloud services) & Vice versa, Cloud to  On-premises datacenter
    - New database design and implementation in Cloud platform.
    - Cloud database integration with other cloud services as per your business functional requirements.

- **Cloud Database Performance Tuning**

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**DBaaS* (Database as a service),** Managed database service that are fully managed by the vendor, which could be a cloud platform provider or another database vendor that runs its cloud DBMS on a platform provider's infrastructure

**Self-managed database*:** This is an infrastructure as a service (IaaS) environment, in which the database runs in a virtual machine on a system operated by a cloud provider