TATA CONSULTANCY SERVICES

TATA

Boost Your Cloud Journey with TCS and Oracle Database Consolidation

OVERVIEW

Enterprises looking to refresh their technology estate and adopt an agile model can migrate to the cloud seamlessly with TCS's unique approach to Oracle database consolidation. Building on a partnership of more than three decades with Oracle, TCS has developed and implemented numerous global, end-to-end solutions and services on Oracle database technologies. Our rich domain expertise cuts across application development, maintenance and support, migration and upgrades, engineering solutions, consulting services, and infrastructure services. Our unique approach to Oracle database consolidation includes a Rapid Exadata Cloud Fitment assessment, which evaluates database modernisation and consolidation when migrating to the Oracle Exadata Cloud Service or Exadata Cloud@Customer. This allows customers to move from out-of-support or end-of-life infrastructure to the latest, extreme-performance, fault-tolerant hardware, perform an 11gR2/12c to 19c database version upgrade, and qualify for Oracle Premier Support.

CHALLENGES

Database consolidation helps companies address rising capital costs, potential data loss, duplication of testing effort, performance issues, and a shortage of skilled resources. The process allows companies to place multiple databases on a single computing infrastructure, leveraging hundreds of processor cores in a single server to maintain database infrastructure seamlessly. The process applies best practices within an OPEX model, eliminating the high upfront CAPEX costs of hardware refreshes, while providing both a fully elastic on-premises private cloud and a fully elastic public cloud option, unlike any other public cloud vendor today.

SOLUTION

The subscription-based service for the Exadata Cloud machine provides a scalable option, resulting in an optimal load utilisation setup.
The Exadata Cloud Service also allows OCPU scaling (CPU Bursting), enabling companies to grow and later shrink their individual database server OCPU resources to meet their peak or seasonal demands. Organisations that purchase universal credits pay the same low rate for the service whenever they choose to scale services. This provides them with the best of both worlds: low prices based on Oracle's universal credit pricing model, with the flexibility to adjust capacity as business conditions change. Additionally, OCPU scaling activities are performed online with no downtime.

APPROACH

Our unique approach helps clients modernise and consolidate their database rapidly with minimal disruptions.
The TCS approach consists of the following phases.

- **Discovery**: Baselines the inventory and conducts due diligence of the landscape to assess the level and complexity of customisation. This will evaluate the impact on interfacing applications and any potential performance changes resulting from

consolidation and recommend the best course of action. The outcome consists of the DB consolidation criteria, the list of database candidates, stakeholders' sign-off on the candidate list, and the unified plan for the consolidation exercise.

- **Design:** Aims to finalise the sizing and architecture for the target state, along with a POC, integrate the components and interfaces linked with the consolidated databases, and finalise the consolidation methodology from a list of options.

- **Test:** Evaluates the consolidated environment and performs iterative testing, including the integrations, to optimise the downtime window. At least three iterations are performed to ensure that the steps are repeatable and capture the exact time required for each activity during the consolidation process.

- **Transform:** Automates and standardises the migration process and performs the consolidation cutover for the production databases. Initiates the use of consolidation features and tracks resource consumption using the resource manager. The results of the consolidation are seen in the reduced downtime for activities such as provisioning and patching, and reduced effort towards maintenance, upkeep, and security posture controls.

- **Innovate:** Monitors the workload, optimises performance and identifies further opportunities for consolidation wherever possible. The consolidation process is standardised, and additional rationalisation opportunities are assessed to enhance efficiency and reduce the total cost of ownership.

ARCHITECTURE

Oracle databases can be consolidated into pluggable databases that feed into a container database using multi-tenant architecture.
The Oracle multi-tenant option allows 4096 pluggable databases to be managed under a single container database, with a single backup, single disaster recovery configuration, and single clustering configuration.

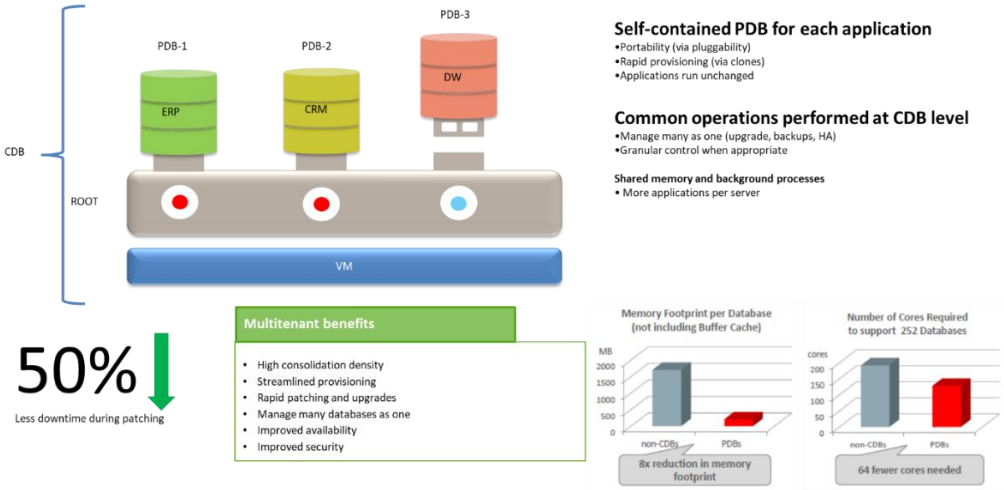

Figure 1: Oracle database consolidation using multi-tenant architecture

Multiple databases can be consolidated using one of these methods:

- Multiple databases per physical server, virtual machine, or cluster
- Oracle multi-tenant
- Schema consolidation

These methods can be applied individually or combined to consolidate databases onto physical or virtual machines.

MIGRATION METHODOLOGY

One Exadata Cloud Service instance can deploy several databases, enabling high database consolidation.

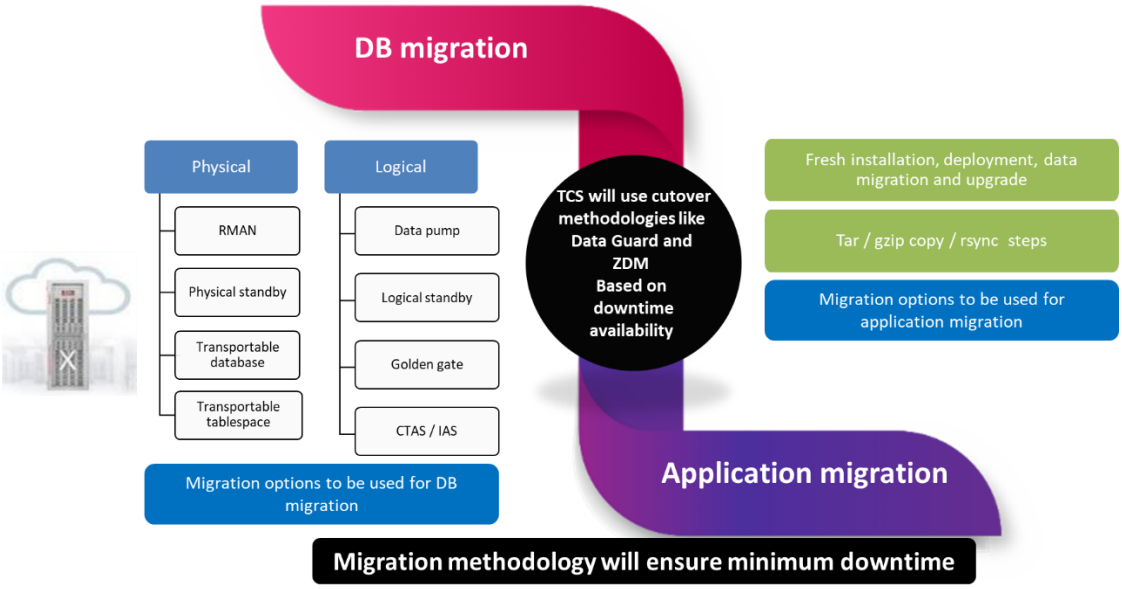

Figure 2: Migration methodology database options

To ensure consistent performance in a highly consolidated environment, Oracle Exadata provides unique end-to-end prioritisation and resource management capabilities spanning database servers, network and storage.

SOLUTION CAPABILITIES

With more computing and storage resources and extreme scale-out capability, companies can consolidate additional mixed database workloads on less infrastructure with an Exadata Cloud.

Granular scalability of database and storage servers lowers infrastructure costs by enabling companies to properly size their hardware configuration to match their workload requirements. Infrastructure managed by Oracle and built-in automation for common lifecycle tasks simplifies the overall management of the system and databases. Companies also only pay for the processing power they require by elastically scaling database cores online.

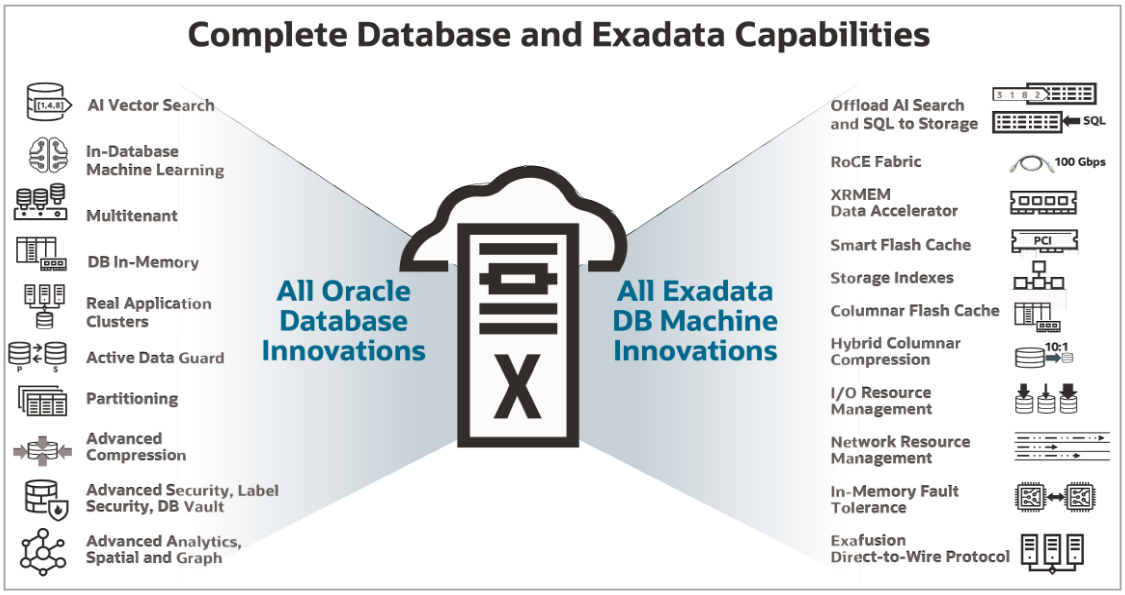

Figure 3. Complete database and Exadata Cloud capabilities

Oracle Exadata Database Service delivers proven Oracle AI Database capabilities on a purpose-built, optimised Oracle Exadata infrastructure. Built-in cloud automation, elastic scaling, security, and fast performance for all Oracle AI Database workloads helps companies simplify management and reduce costs. With Exadata Database Service, you have the choice and flexibility of running Oracle databases on uniquely optimised platforms in Oracle Cloud Infrastructure, multicloud environments at AWS, Azure, and Google Cloud, and your own data centre with Exadata Cloud@Customer.

CONCLUSION

Modernise, refresh, and give your infrastructure an intelligent upgrade.
Transform your databases to achieve more with TCS's approach to Oracle Cloud Database Migration service.

- Evaluate database modernisation and consolidation with a Rapid Exadata Cloud Fitment Assessment.
- Lift and shift databases to Oracle Exadata Cloud Service or Exadata Cloud@Customer
- Move from out of support/end of lifecycle infrastructure to the latest extreme performance fault-tolerant hardware
- Perform 11gR2 /12c to 19c database version upgrade along with the cloud move and qualify for premier support.
- Consolidate and rationalise database instances with multi-tenant architecture.
- Enable business continuity with DR setup and failover on cloud as per RTO/RPO requirements

To learn more about TCS' unique approach to Oracle Database Consolidation, visit our page.
https://www.tcs.com/what-we-do/services/enterprise-solutions/tcs-oracle-partnership