



Oracle Cloud DBA

Lear how to stay up to date on this Dbaas era

**Marcel Lamarca
Alexandre Fagundes**

Licences & Systems LAD
& Apps LAD

OCI Database

Partner Enablement LAD Alliance & Channels July, 2023



Nossos Valores

Integridade
e

Compliance

Trabalho
em Equipe

Satisfação
do Cliente

Qualidade

Ética

Inovação

Respeito
Mútuo

Justiça

Comunicação

Como empresa líder em tecnologia, abraçamos a **diversidade** em todas as suas formas. Acreditamos realmente que a **inovação** começa com a **inclusão**. E isso só pode ser alcançado com a cooperação de nossos **parceiros**. Afirmamos nosso **compromisso** em manter um **ambiente respeitoso** e **livre de discriminação** e esperamos isso dos nossos **parceiros de negócios**.

A Oracle espera que seus **parceiros** conduzam os negócios de forma **justa** e **ética**, para cumprir as leis anticorrupção em todo o mundo, para cooperar com os pedidos de informação da Oracle e evitar envolver-se em qualquer atividade que envolva até mesmo a aparência de impropriedade.

É vital que os nossos parceiros sejam aderentes aos valores do **Código de Ética e Conduta Empresarial da Oracle**, que baseia-se e implementa os valores que são essenciais para o nosso sucesso como empresa. Nossos valores são a base de tudo o que fazemos e todos nós devemos viver esses os os dias.



Utilize o QR code para acessar o Código de Ética e Conduta Empresarial da Oracle.



Scan here to
download This
presentation!



SCAN ME



SQL> select * from person where name =

'Marcelo Lamarca'



Father, husband, Cooker and son!

Graduated in Business Administration (FMU-SP)

Oracle DBA

21 years dedicated to study and support Oracle Databases.
12 years working with Exadata (On-Prem, C@C and Cloud Services) .
4 Year working for Oracle do Brasil
About to complete 1 year on Alliances knowledge Team

Oracle Cloud Specialist (OCS)

Exadata Database Machine X9M Certified Implementation Specialist
OCI Foundation 2020
Oracle Autonomous Database Administrator
Oracle Cloud Database Migration and Integration
OCI Cloud Certified Architect Associate 2022
OCI Cloud Certified Architect Professional 2022

Oracle Certified Professional (OCP)

10g, 11g and 12c.

Oracle Certified Specialist (OCE)

Grid/RAC Database Administrator



SQL> select * from person where name = 'Alexandre'



Father, Son, Husband, Cloud Architect

Bachelor of Information Systems

Oracle Applications & Databases Administrator

Certified Cloud Architect

Autonomous Database Cloud Certified Professional

Oracle Cloud Operations Certified Professional
Oracle Cloud Security Certified Professional
Oracle Database Migration/Integration Certified Professional

Last book: "**Database Reliability Engineering: Designing and Operating Resilient Database Systems**" Charity Majors

Oracle E-Business Suite & Database Consultancy Services since 2002



Agenda

Oracle Exadata Cloud

Exadata Smart Scan, HCC and PMEM

OCI DBCS Virtual Machines

OCI DBCS Bare Metal

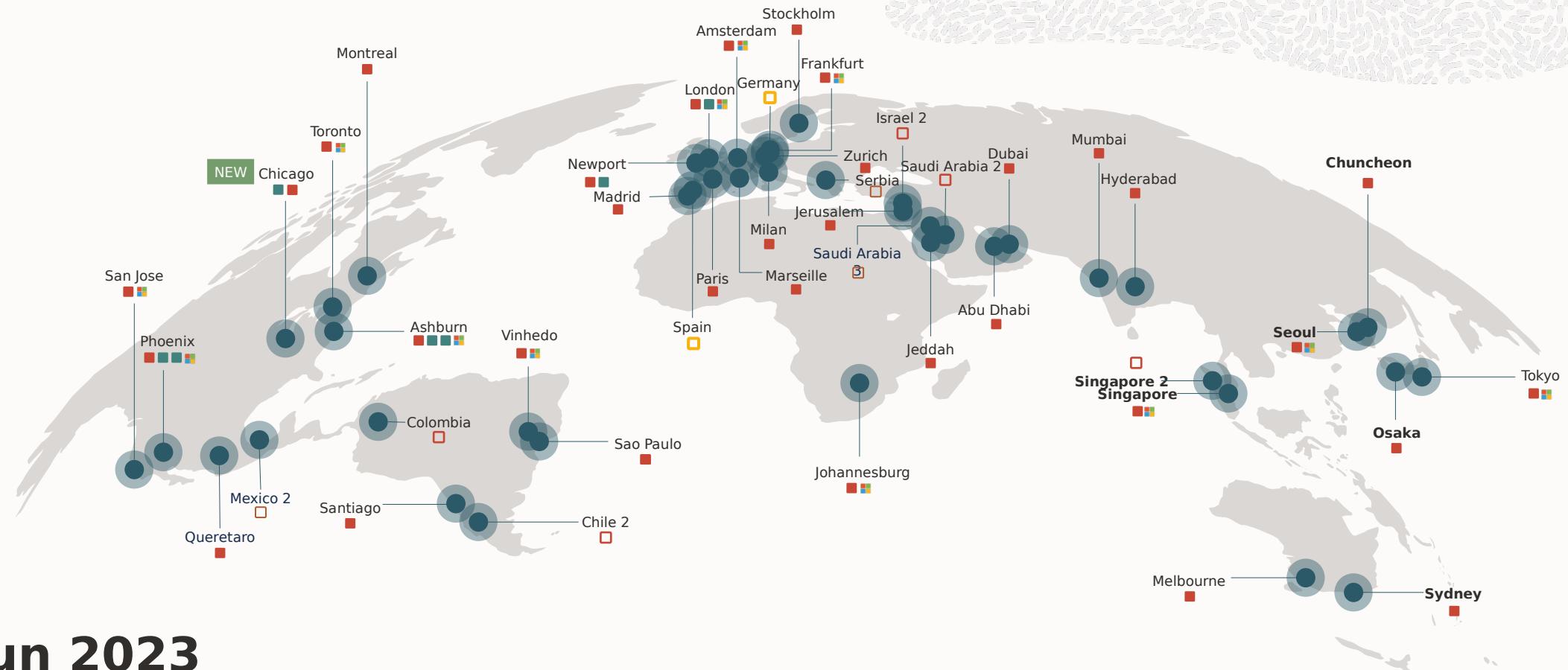
OCI Database Security

OCI MAA

OCI Cloud Region Map



Oracle Cloud Infrastructure Global Locations



Jun 2023

41 regions; 10 more planned

12 Azure Interconnect Regions

- Commercial
- Commercial Planned
- Sovereign Planned
- Government
- Microsoft Interconnect Azure

OCI Database Services



OCI Database Services

Resilient recovery with no data loss is a foundational requirement



ORACLE®

EXADATA

ORACLE®

BARE METAL CLOUD SERVICE

ORACLE®
RAC



Data Safe
in
OCI



Mission critical Cloud database service

- Exadata, RAC, Bare Metal, VM

Complete Lifecycle Automation

- Provisioning, Patching, Backup & Restore

High Availability and Scalability

- RAC & Data Guard
- Dynamic CPU and Storage Scaling

Security

- Infrastructure (IAM, Security Lists, Audit logs)
- Database (TDE, Encrypted RMAN backup / Block volume encryption)

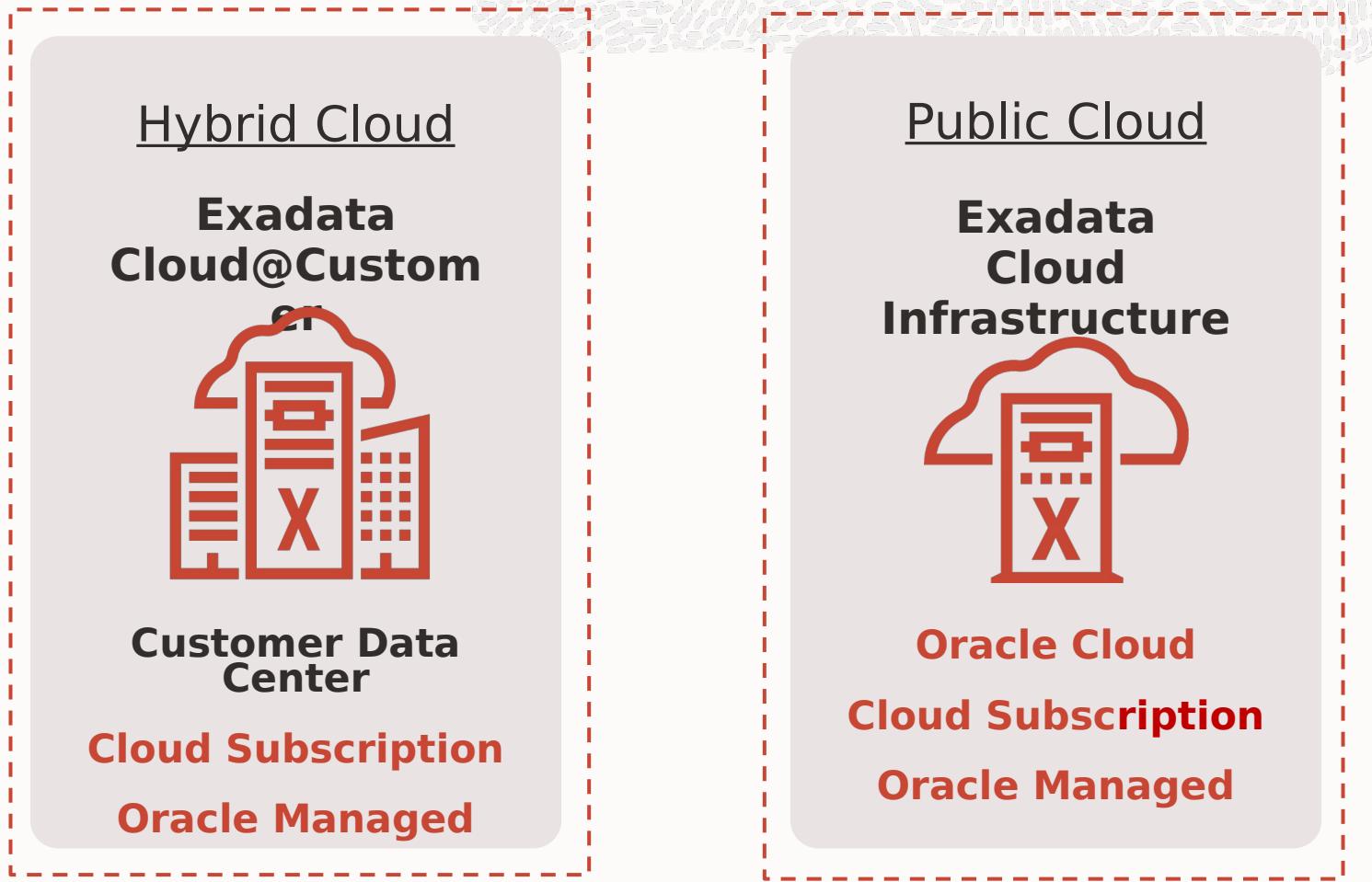
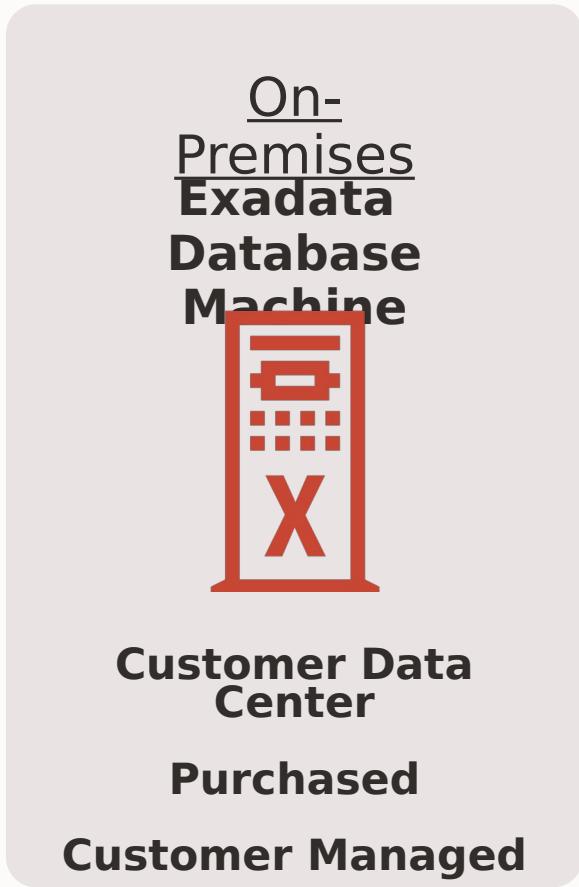
OCI Platform integration

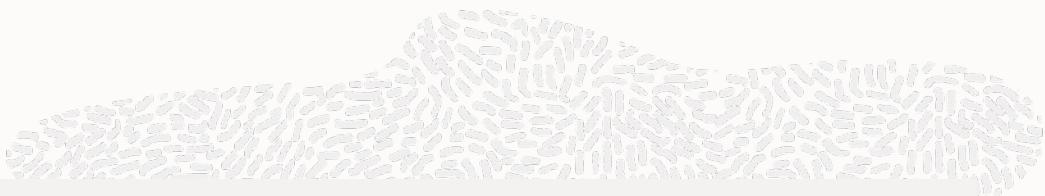
- Tagging, Limits and Usage integration

Oracle Exadata Cloud



Compatible Exadata On-Premises, Hybrid Cloud and Public Cloud





Oracle Database

[Overview](#)

[Autonomous Database](#)

Autonomous Data Warehouse

Autonomous JSON Database

Autonomous Transaction Processing

[Autonomous Dedicated
Infrastructure](#)

[Oracle Base Database \(VM, BM\)](#)

[Exadata on Oracle Public Cloud](#)

[Exadata Cloud@Customer](#)

[External Database](#)

[Data Safe - Database Security](#)

Overview

Security Assessment

User Assessment

Data Discovery

Data Masking

Activity Auditing

[Database Backups](#)

[GoldenGate](#)

[Operator Access Control](#)

Database Cloud Service | Exadata

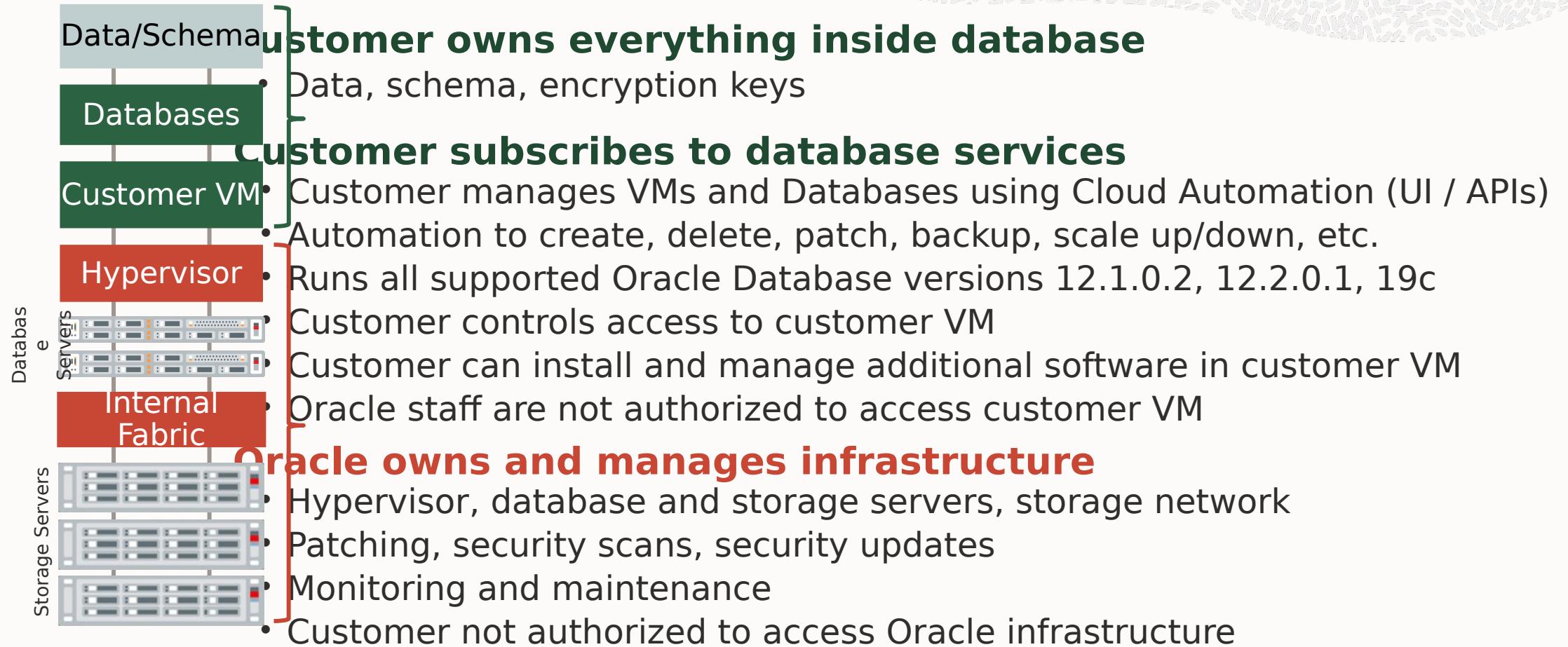
Understanding Oracle Exadata Cloud Service and Cloud at Customer



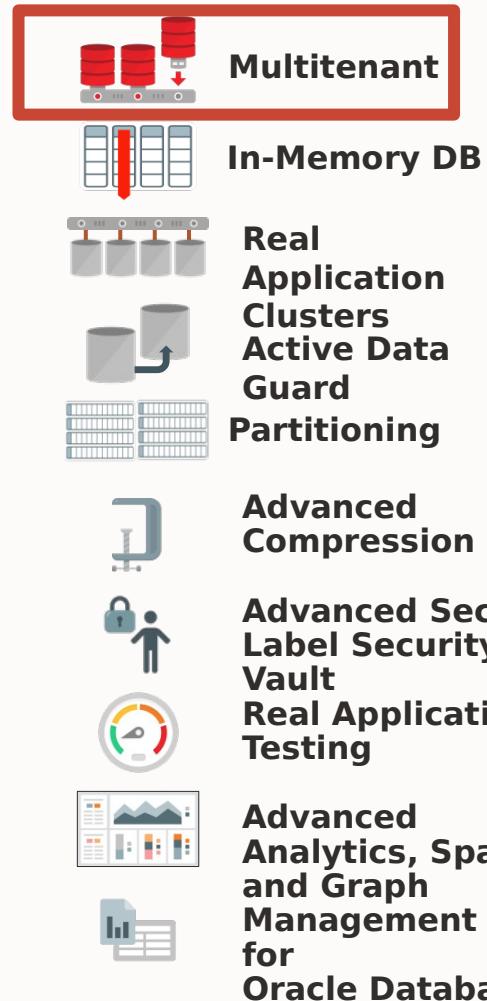
World's Best database machine, provisioning with GI

- As many databases as you want
- No Single Instance allowed. Just RAC!
- Start With 2 cores and Scale Up/Down OCPU's based on your requirement
- Data Guard with and across Ads
- Only Oracle Database Enterprise Editions allowed
- Exadata Cloud X9M Shapes (Base, Quarter, Half and Full Rack)
- Works with Autonomous Database on Dedicated Infrastructure

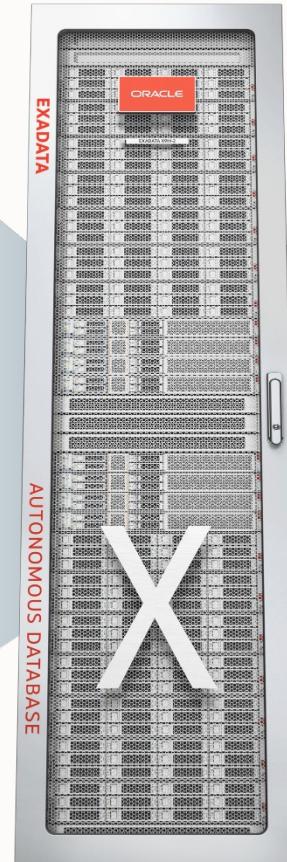
Simple Cloud Management Model in Exadata Cloud



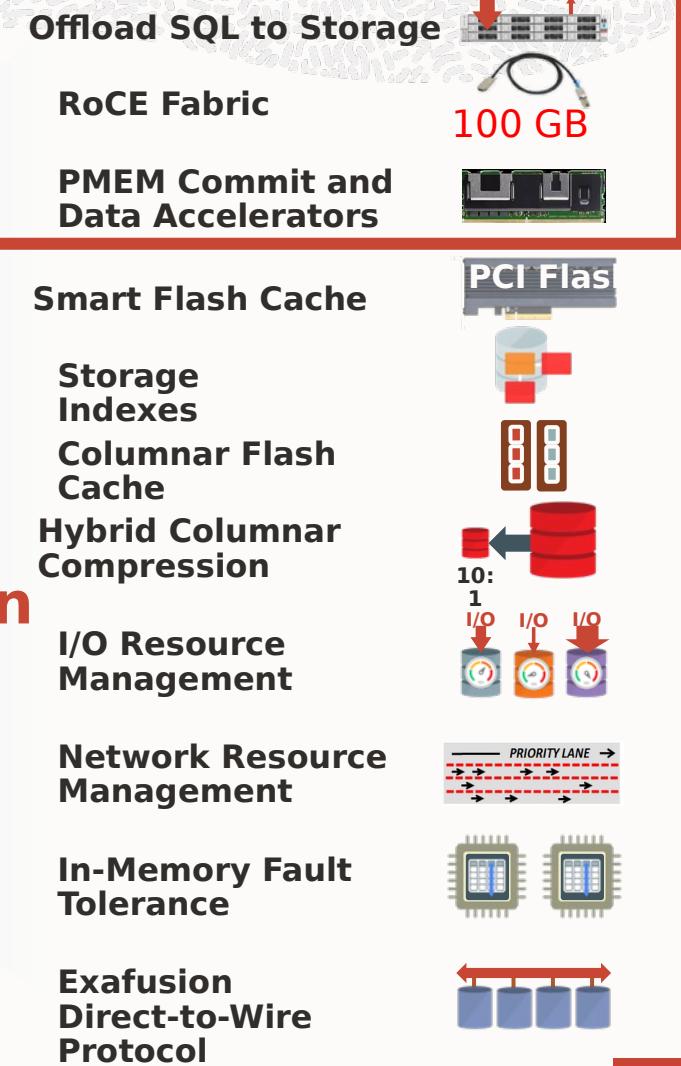
Oracle Exadata Database and Platform Innovations



All Oracle Database Innovation S



All Exadata Innovation S



Fastest Cloud In Memory, Smart Scan and HCC

Unique: Smart Scan (SQL Offload)

- Data-intensive processing* runs in Exadata Storage, bypassing network bottlenecks and freeing up DB CPUs

Unique: Tiered Flash Cache

- Active data is automatically cached on PCI NVMe Flash, inactive data on low cost, high-capacity disks

Unique: Storage Indexes

- Eliminates I/O not relevant to a particular query

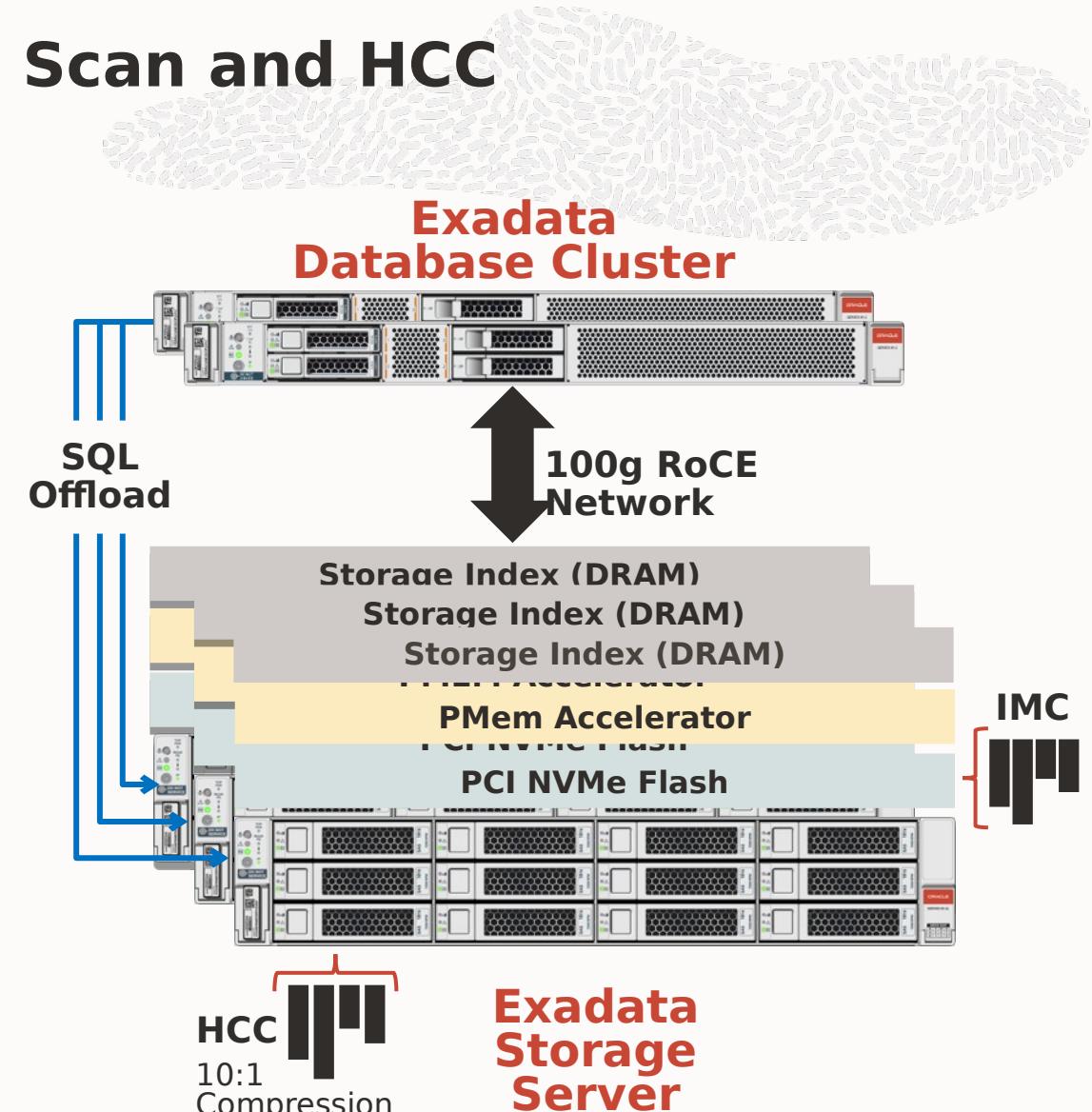
Unique: Hybrid Columnar Compression (HCC)

- Compressed, columnar format in storage, saving space, reducing I/O, speeding analytic queries

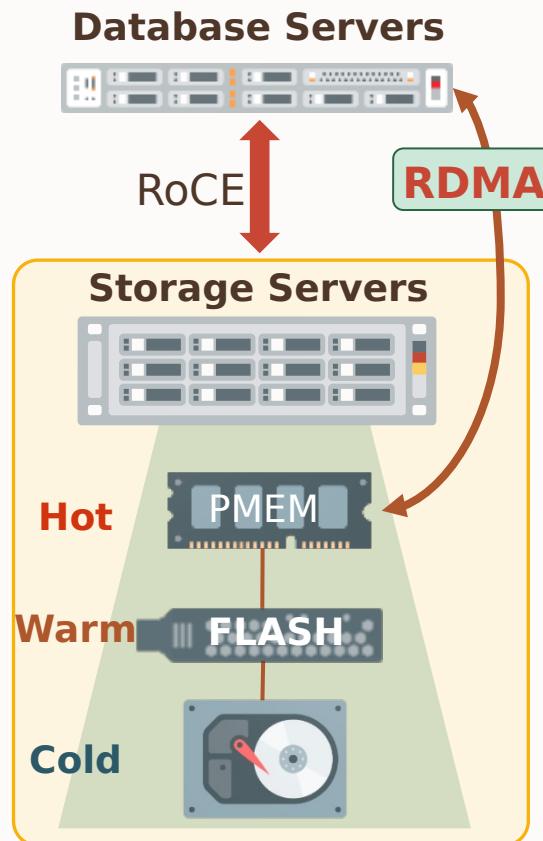
Unique: In-Memory Columnar (IMC)

- Extends In-Memory database performance to higher capacity Flash memory in storage

*Includes long-running SQL queries, backups, decryption, aggregation, data mining



Exadata Architecture - Scale out design with persistent memory



Scale-out system architecture and software

- Oracle RAC across multiple database servers for scaling and high availability
- Smart Scan offload of SQL to parallel intelligent storage servers
- Speeds up queries and scans with local access to data

Database uses RDMA instead of I/O to read PMEM in Smart Storage

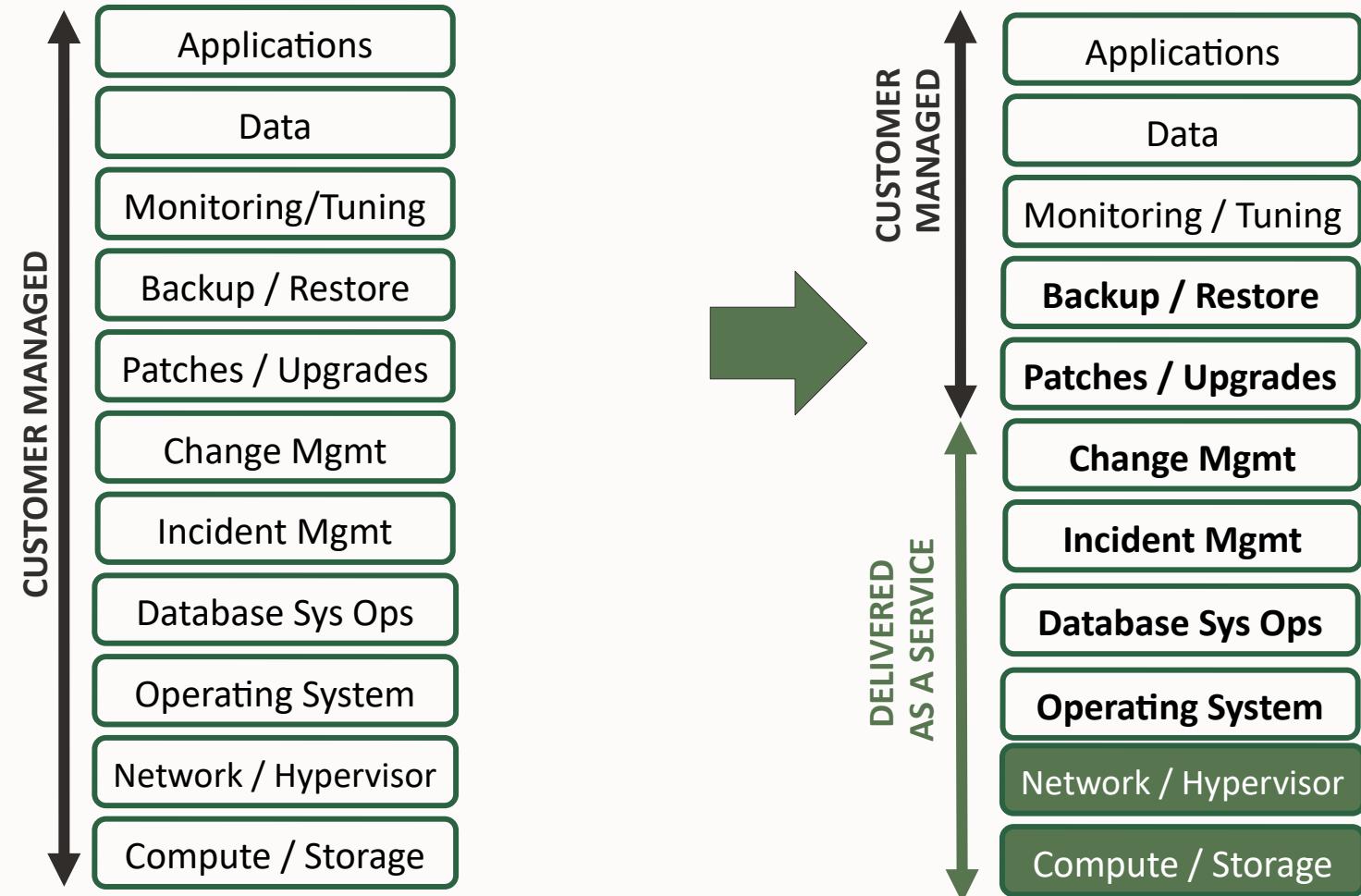
- Bypasses network and I/O software, interrupts, context switches
- Hottest data transparently managed in PMEM
- Automatic redundancy across multiple storage servers
- Speeds up both database reads and commits

Results - 19µs IO latency from Database to PMEM in Storage

World's Only Shared Persistent Memory Optimized for Database

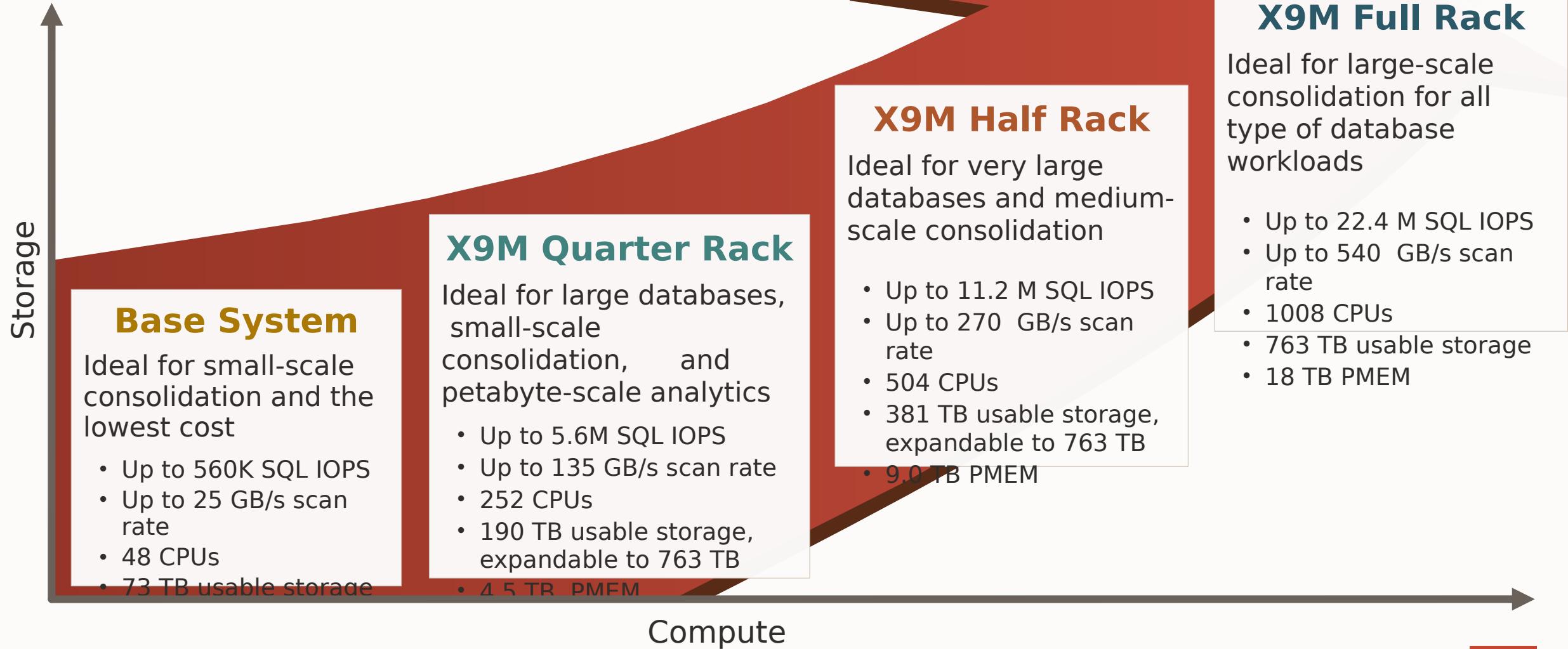
Automation Eliminates DBA Responsibilities and Lowers Costs

Same per-hour consumption cost per core with less management increases value
Traditional IT **Exa Cloud/DBCS**

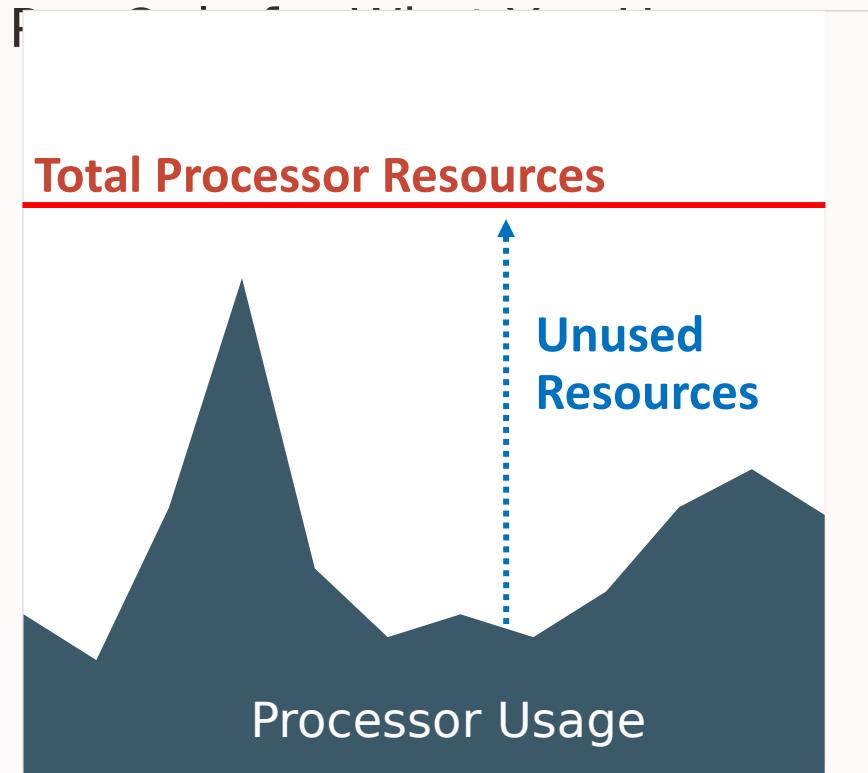


Exadata Cloud X9M Flexible Shapes

Available in high-performance, cost-effective shapes to match enterprise needs



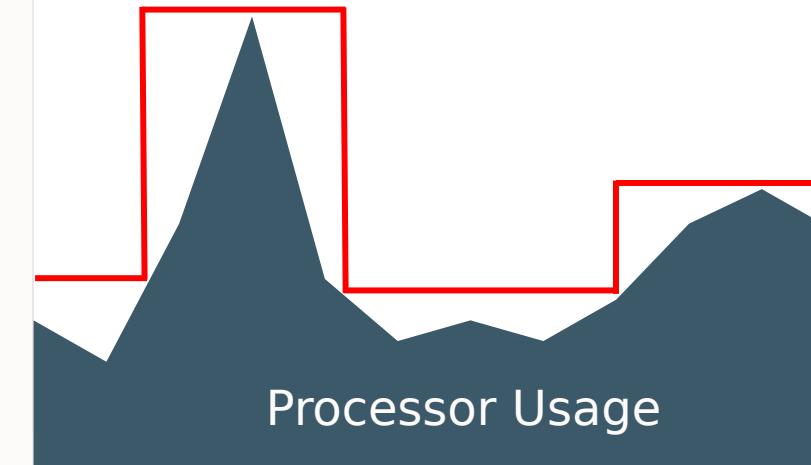
Online, Elastic Scaling with Exadata Cloud@Customer



On-Premises – Static

Purchase server processors and software licenses for **highest projected peak load**

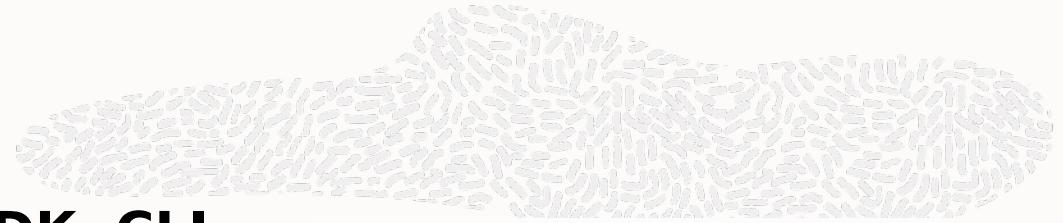
Manually Scaled vCPUs



Exadata Cloud – Elastic

Adjust enabled vCPUs to match **actual workload** via APIs and web UI - vCPUs are charged per second

Cloud Automation for Common Lifecycle Tasks



Oracle Cloud Web base UI, REST APIs, SDK, CLI, Terraform

- Scale OCPUs
- Create Database Homes and Databases
- Schedule Infrastructure Maintenance
- Update Operating System, Grid Infrastructure, and Databases
- Backup and recovery
- Enable Data Guard

Create Database

Database name: X8MDB1

Database version: 19c

PDB name Optional:

Database Home:
 Select an existing Database Home Create a new Database Home
This DB system has no Database Homes for your selected database version. A new Database Home will be created.

Database Home display name: X8MDBHome1

Create administrator credentials

Scale VM Cluster

Configure the VM cluster

Specify OCPU count per virtual machine ①: 10

Requested OCPU count for the Exadata VM cluster READ-ONLY: 40

Current allocation: 10. Minimum allocation: 0. Available OCPUs (including the current allocation): 50.

Current Exadata storage READ-ONLY: 150.528 TB

Create Backup

Name:

If you previously used RMAN or dbrcli to configure backups and then you switch to using the Console or the API for backups, a new backup configuration is created and associated with your database. This means that you can no longer rely on your previously configured unmanaged backups to work.

Enable Data Guard

Data Guard association details

Protection mode: Maximum Performance

Transport type: Read-Only
Sync

Select Peer VM Cluster

Peer region: Read-Only ①
US East (Ashburn)

Exadata Cloud Command Line Interface

What's a Exadata Cloud Dbaas tool?



SCAN ME

```
[oracle@exacc6-vm01c02 ~]$ dbaascli database status --dbname demobkp
DBAAS CLI version 22.2.1.1.0
Executing command database status
Database Status:
Instance demobkp1 is running on node exacc6-vm01c02. Instance status: Open.
Instance demobkp2 is not running on node exacc6-vm02c02

Database name: demobkp
Oracle Database 19c EE Extreme Perf Release 19.0.0.0.0 - Production
```

[Click Here](#)

Oracle Multitenant

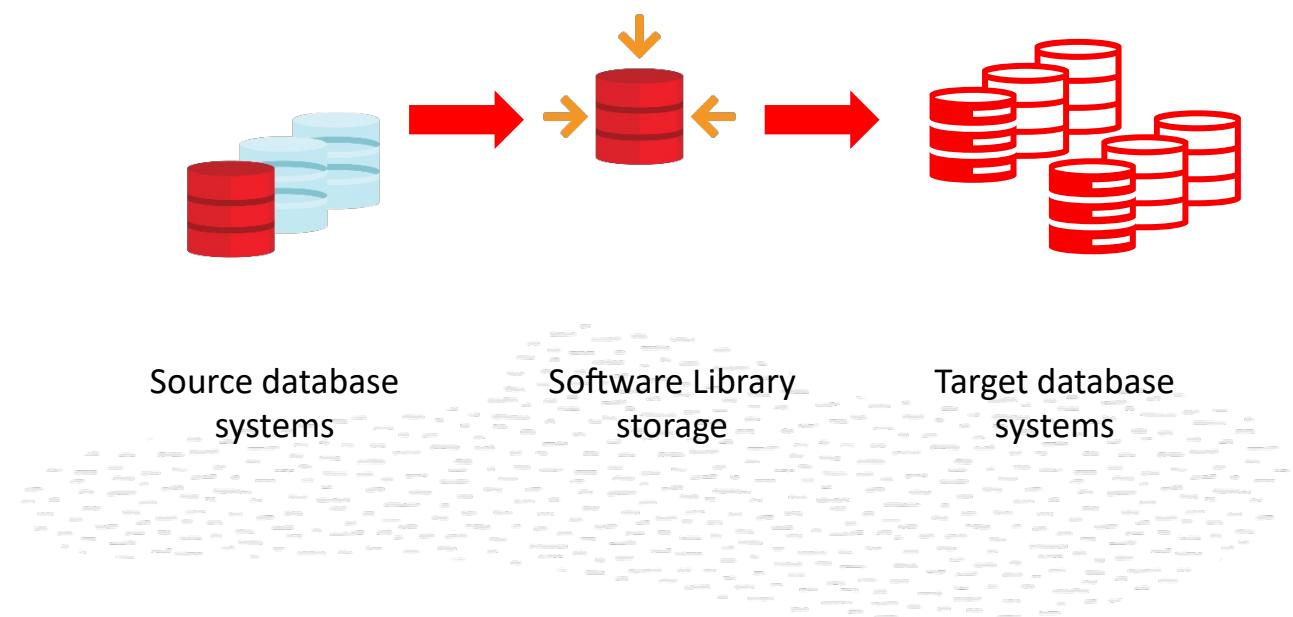


Multitenant Database Management

- Gold Image based software deployment via Profiles
- Rapid provisioning made easy with mass deployment of Oracle software such as clusterware, database, client
- Consolidation of non-CDB to PDB
- Deployment procedures provide highly customizable orchestration engine
- Lock down access for controlled and error free deployments

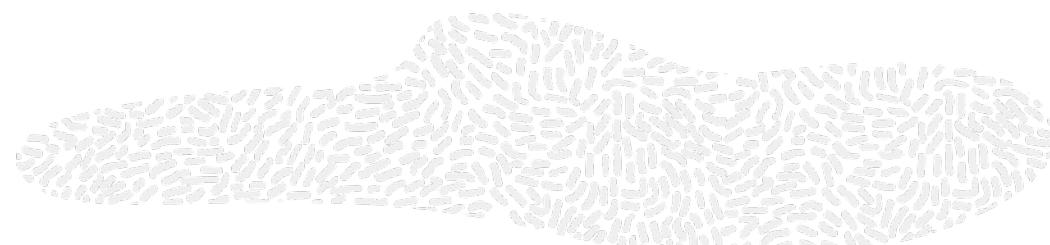
Save **Gold** image (and optionally data) from source systems to EM software library

Deploy saved Image and data to target systems with customizations

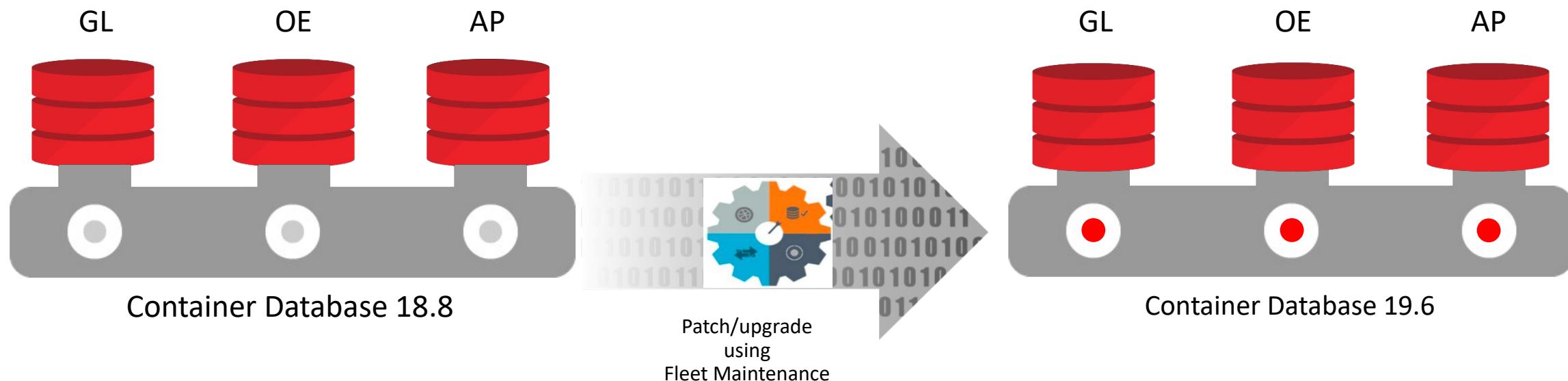


Patch, Upgrade Multitenant Databases

Patch CDB; multiple pluggable as one

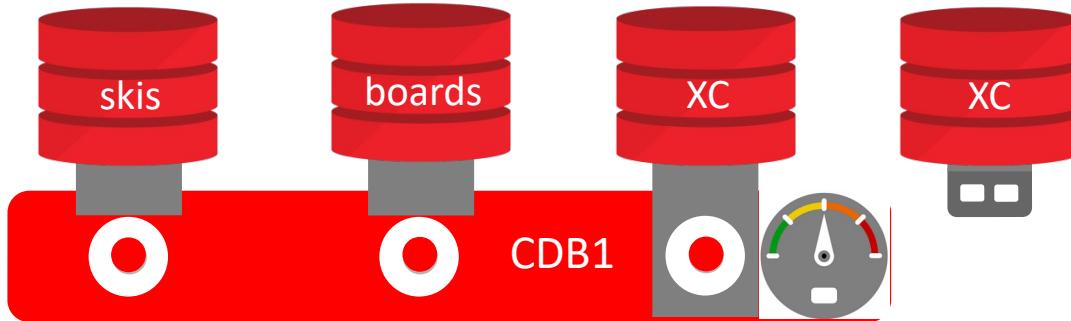
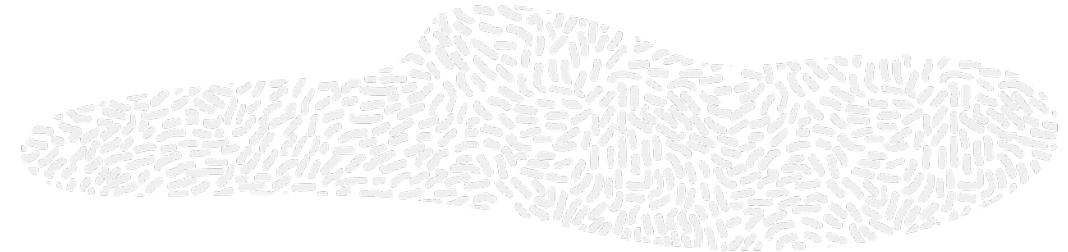


The investment of time and effort to patch (or upgrade) one multitenant container database results in patching many pluggable databases in it



Patch, Upgrade Multitenant Databases

Patch one pluggable at a time



Container Database 19.3



Container Database 19.6

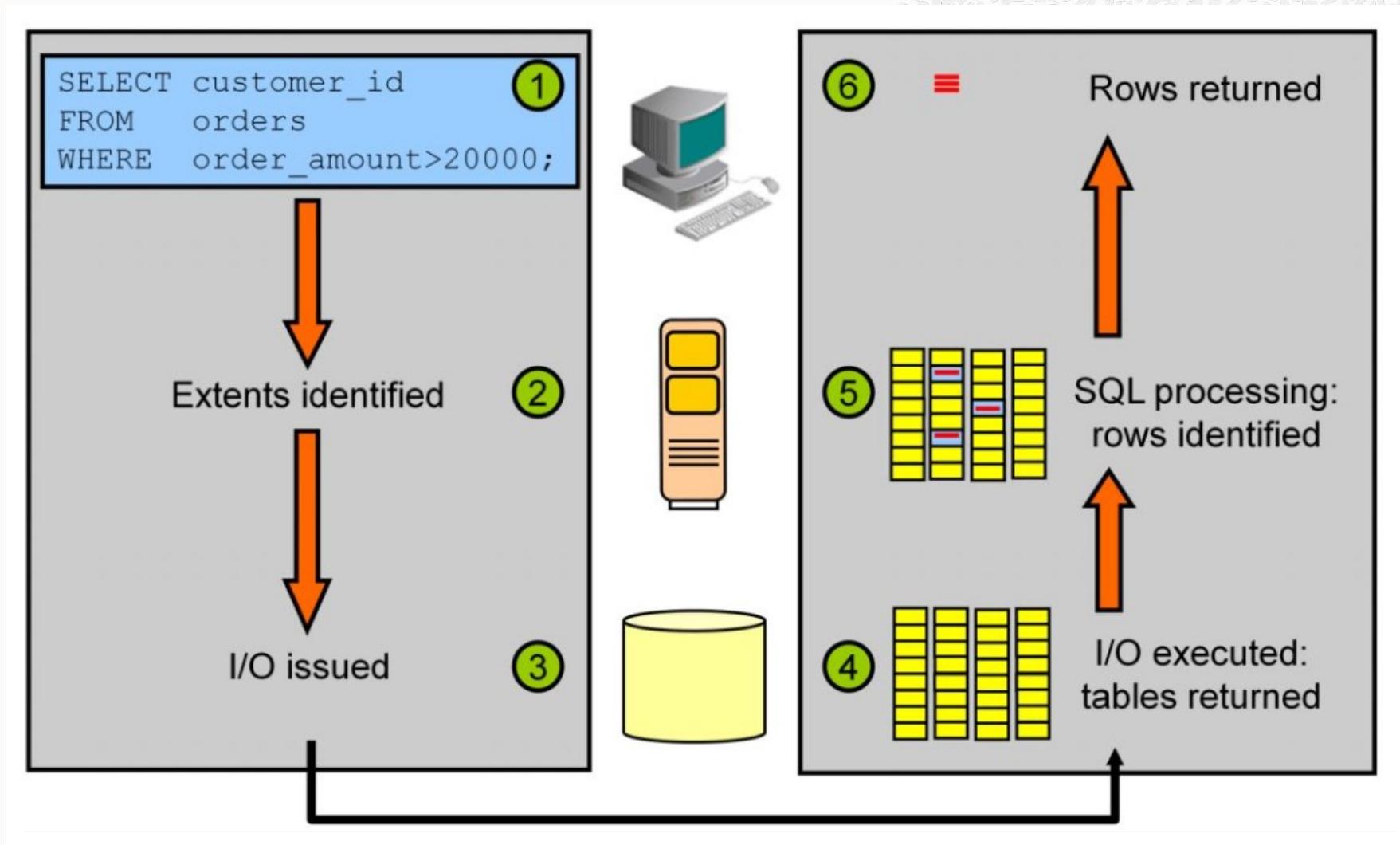
To patch (or upgrade) a single pluggable database

- Unplug from the old CDB; plug into new CDB
- With shared storage, moving between CDBs is a simple case of moving PDB's metadata
- An unplugged PDB carries with its lineage, Opatch, encryption key info etc.
- Simple and quick fallback option as source CDB stays intact

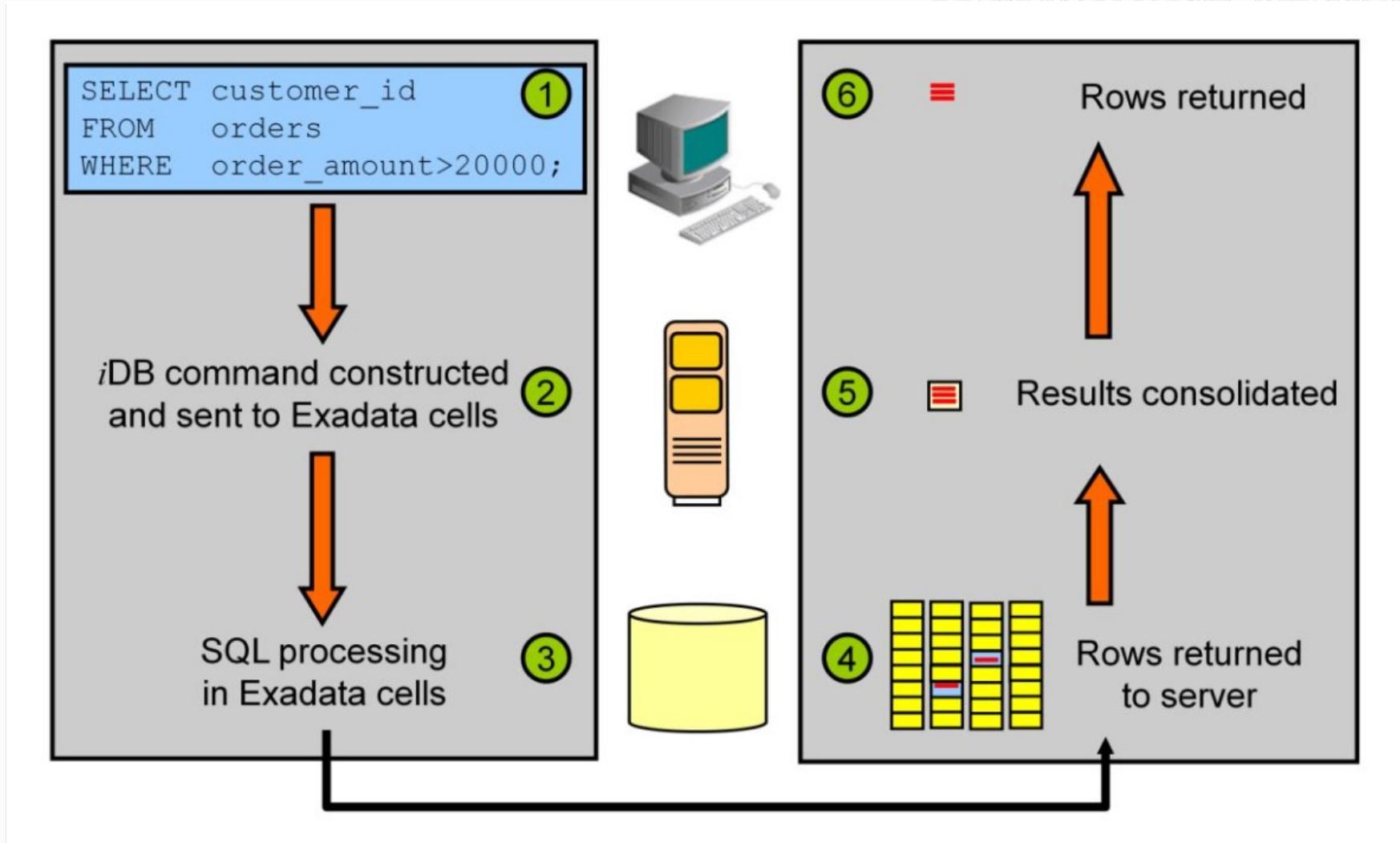
Exadata Cloud Smart Scan



Oracle Database | No Exadata System



Exadata Cloud a Smart Scan - Off Load Querying



Query Execution plan Traditional Database Vs Exadata System

```
SQL> select * from table(dbms_xplan.display);
```

```
PLAN_TABLE_OUTPUT
```

```
Plan hash value: 970577077
```

Id Operation	Name	Rows	Bytes	Cost	(%CPU)	Time
0 SELECT STATEMENT		902	23452	10	(0)	00:00:01
1 TABLE ACCESS BY INDEX ROWID BATCHED	CUSTOMERS	902	23452	10	(0)	00:00:01
* 2 INDEX RANGE SCAN	CUSTOMERS_ID_PK	902		6	(0)	00:00:01

```
Predicate Information (identified by operation id):
```



```
PLAN_TABLE_OUTPUT
```

```
Plan hash value: 2008213504
```

Id Operation	Name	Rows	Bytes	Cost	(%CPU)	Time
0 SELECT STATEMENT		902	23452	306K	(1)	00:00:12
* 1 TABLE ACCESS STORAGE FULL	CUSTOMERS	902	23452	306K	(1)	00:00:12

```
Predicate Information (identified by operation id):
```

```
1 - storage("ID"<=1000 AND "ID">>=100)
      filter("ID"<=1000 AND "ID">>=100)
```



Exadata Smart Scan Why it's not working?

- Scan performed on a partitioned table
- A Scan is performed on an index-organized table
- Fast full scan is performed on a compressed index
- Full scan is performed on a reverse key index
- Table has row-level dependency tracking enabled.
- Optimizer wants the scan to return rows in ROWID order
- A LONG or LONG column is being selected or queried
- A select from flashback query is being executed
- A query that has been referenced

Backup Your Cloud Database



Oracle Database Cloud Backup



Help Center Database Backup Service Search

[Get Started](#)

Tasks

Resources

Videos

Books

Home / Cloud / Cloud Platform / Database Backup Service

Oracle Database Backup Cloud Service

Get Started

Use Oracle Database Backup Cloud Service to store Oracle Database backups in the cloud.



Learn About Database Backup Cloud Service

Watch an overview video

[Related Video](#)

Learn about the service

Learn about the backup module

See the FAQ



Get a Subscription

[Manage and monitor services](#)

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[See important details about subscriptions](#)



Get Started with Database Backup Cloud Service

[Understand the backup workflow](#)

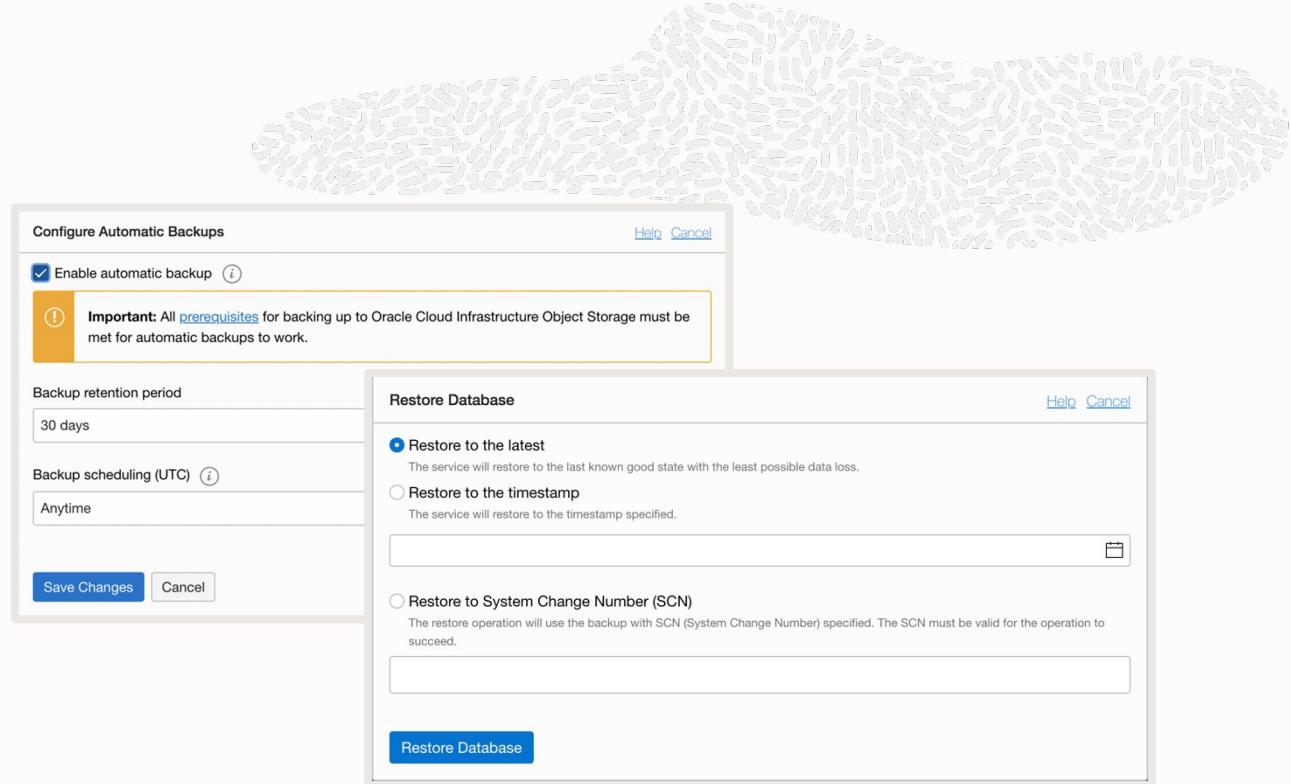
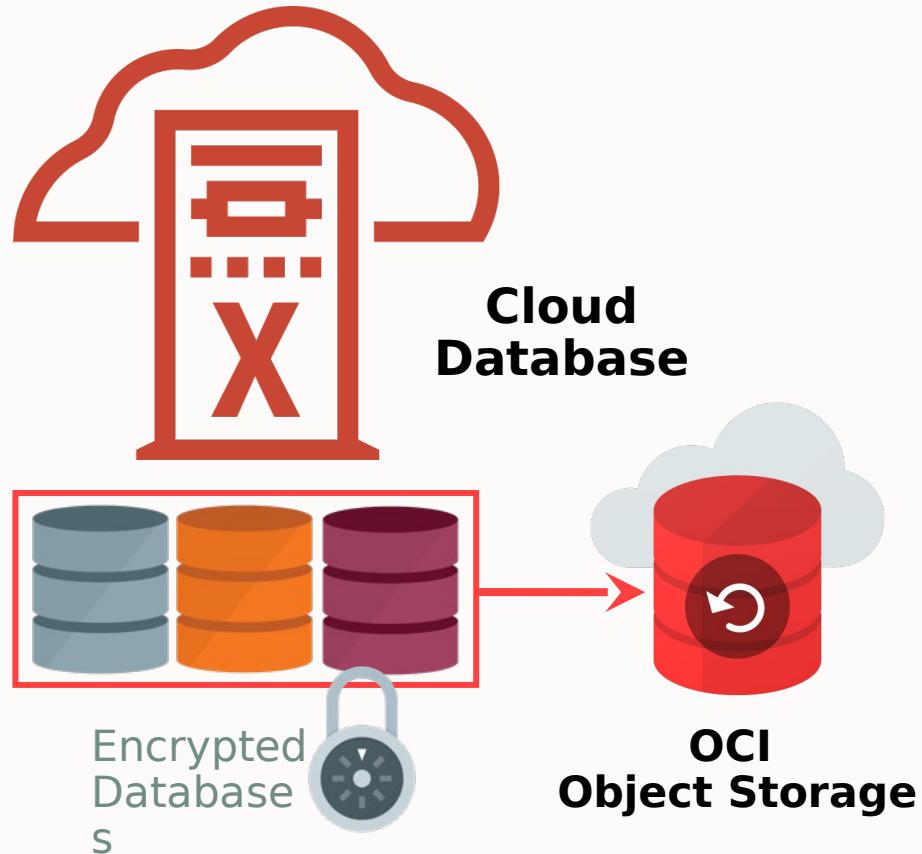
[Download and install the backup module](#)

[Perform configuration and backup tasks](#)

[Click Here](#)



Database Backup



Backup and restore with Object Storage

- Schedule automatic backups and retention policy
- Create on-demand backups
- Create databases from backup
- Receive notifications for successful and failed backups
- Restore databases to the latest backup or point-in-time

Zero Data Loss Recovery Service



Zero Data Loss Autonomous Recovery Service Features

Ransomware resiliency

Zero data loss database protection enables you to recover protected databases to within less than a second of when an outage or ransomware attack occurred.

Real-time transaction protection

Continuous data protection and database-aware recovery validation enable you to reliably meet data protection goals and recover to any point in time.

Management and operational efficiency

Automatic database protection and lifecycle management minimize administration time, improve the efficiency of production database services, and help consistently secure critical information.

[Click Here](#)

Oracle Database Zero Data Loss Autonomous Recovery Service

A fully managed, automated service for continuously protecting Oracle databases in OCI



Ransomware resiliency

- Automatic and mandatory encryption to help prevent data theft
- Safeguards backups with enforced 14-day retention
- Optimizes backups in the background for fast recovery with zero data loss

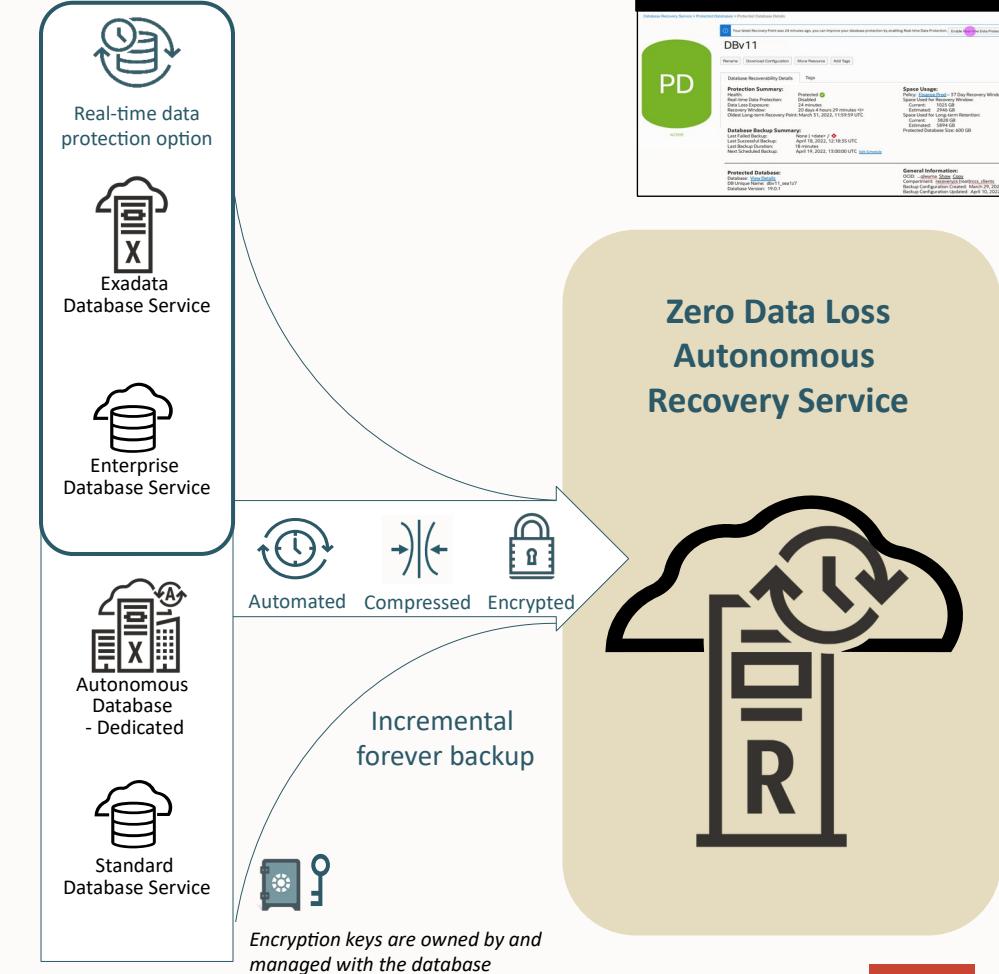
Operational efficiency

- No more weekly full backups – eliminates production database overhead
- Shorter backup windows with incremental forever strategy
- Zero-impact database recovery validation for every backup

Cloud simplicity

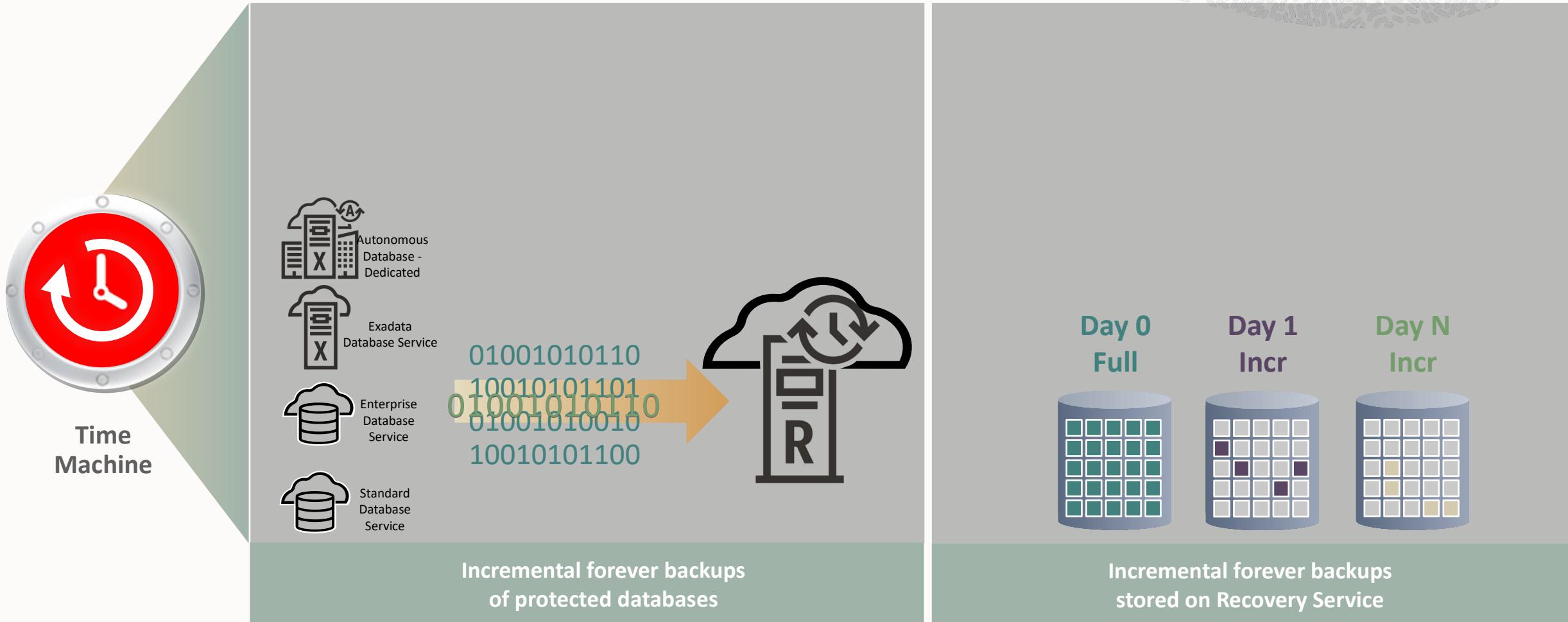
- Quickly configure database protection at scale with zero data loss
- Control costs with database-specific backup consumption metrics
- Gain deep data protection insights with granular recovery health dashboard

Using proven Recovery Appliance technology



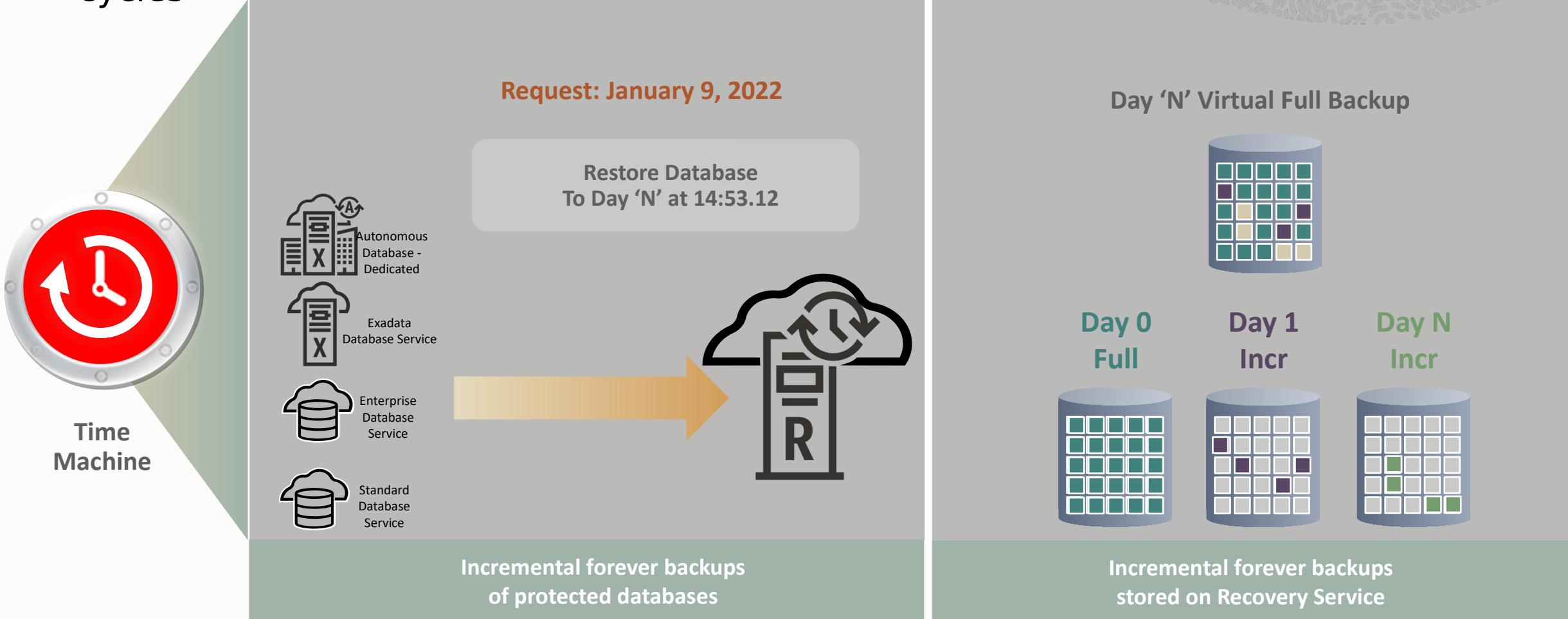
Recovery Service eliminates weekly full backups

Incremental-forever backups reduce backup overhead on production database services



Recovery Service simplifies database restores

Creation of virtual full backups eliminates multiple incremental restore & apply cycles



OCI Database Security



They cannot access my data...

Are you sure?

Stolen Credentials

Ransomware

Buffer Overflow

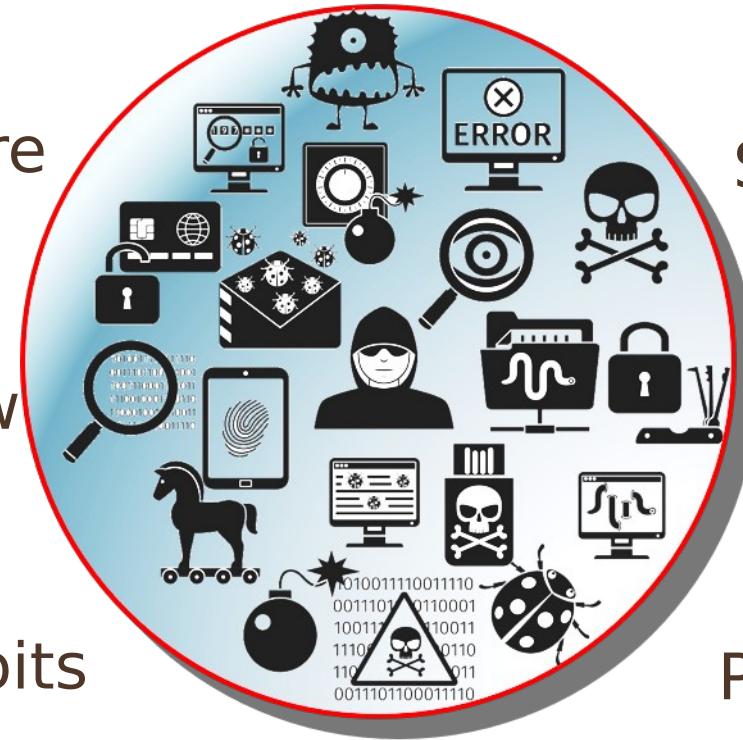
Apps Exploits

SQL Injection

DBA Grant's

Phishing

Unpatched Systems



Oracle Advanced Security

Encryption and redaction of sensitive data prevent out-of-band access

- **Transparent Data Encryption**

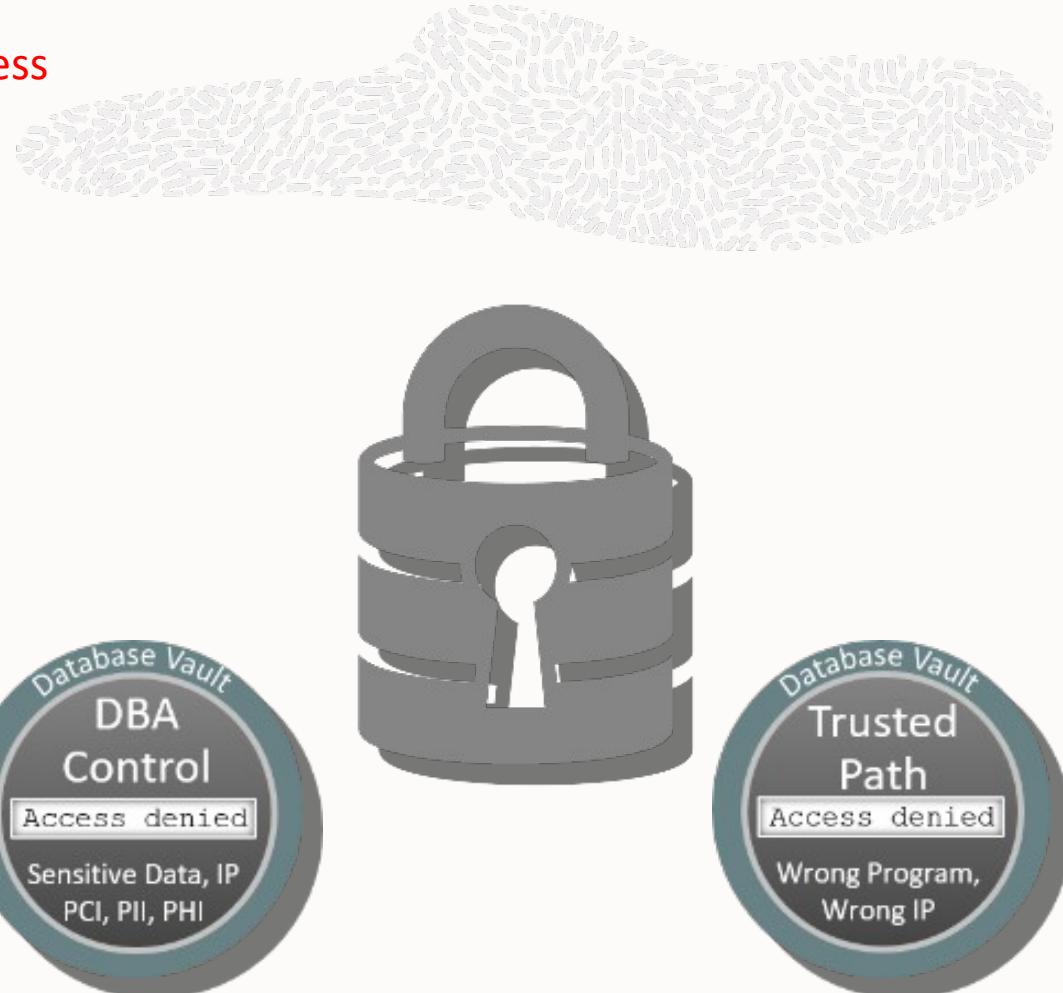
- Stop would-be attackers from bypassing the database and reading sensitive information directly from storage by enforcing data-at-rest encryption in the database layer.

- **Data redaction**

- Reduce the risk of unauthorized data exposure in applications by redacting sensitive data before it leaves the database. Partial or full redaction prevents large-scale extraction of sensitive data

- **Transparent to applications**

- Encryption is implemented at the database kernel level, eliminating the need for any changes to applications.





Introducing Oracle Data Safe

Unified database security control center

- Risk dashboard: configuration, data, users
- Monitor user activity
- Mask data for test
- Extensible - more features to come...

Benefits

- No special expertise needed: click-and-secure
- Saves time and mitigates security risks
- Defense-in-depth security for all customers

[Click here](#)



Oracle Autonomous Database



What is Oracle Autonomous Database?

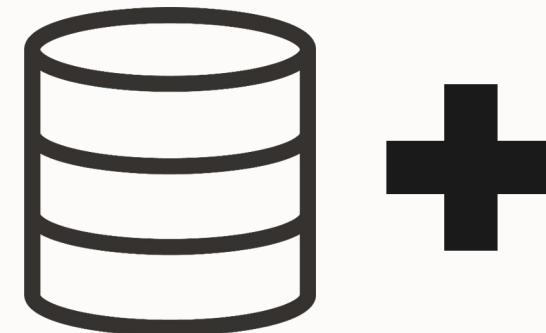
Using the cloud to eliminate all the complexity of mission critical databases



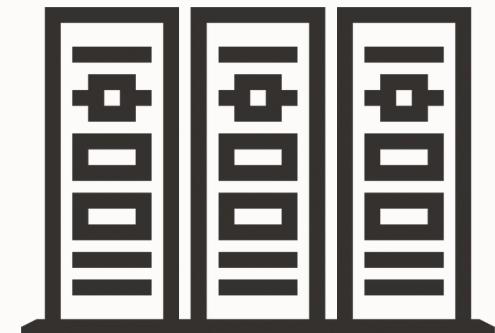
**Oracle
Autonomou
s
Database**



**Complete
Infrastructu
re
Automation**



**Complete
Database
Automation**



**Automated
Data Center
Operations**

Autonomous Database | Shared Infrastructure

Oracle Database

Overview

Autonomous Database

Autonomous Data Warehouse

Autonomous JSON Database

Autonomous Transaction Processing

Autonomous Dedicated Infrastructure

Oracle Base Database (VM, BM)

Exadata on Oracle Public Cloud

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External Database

Data Safe - Database Security

Overview

Security Assessment

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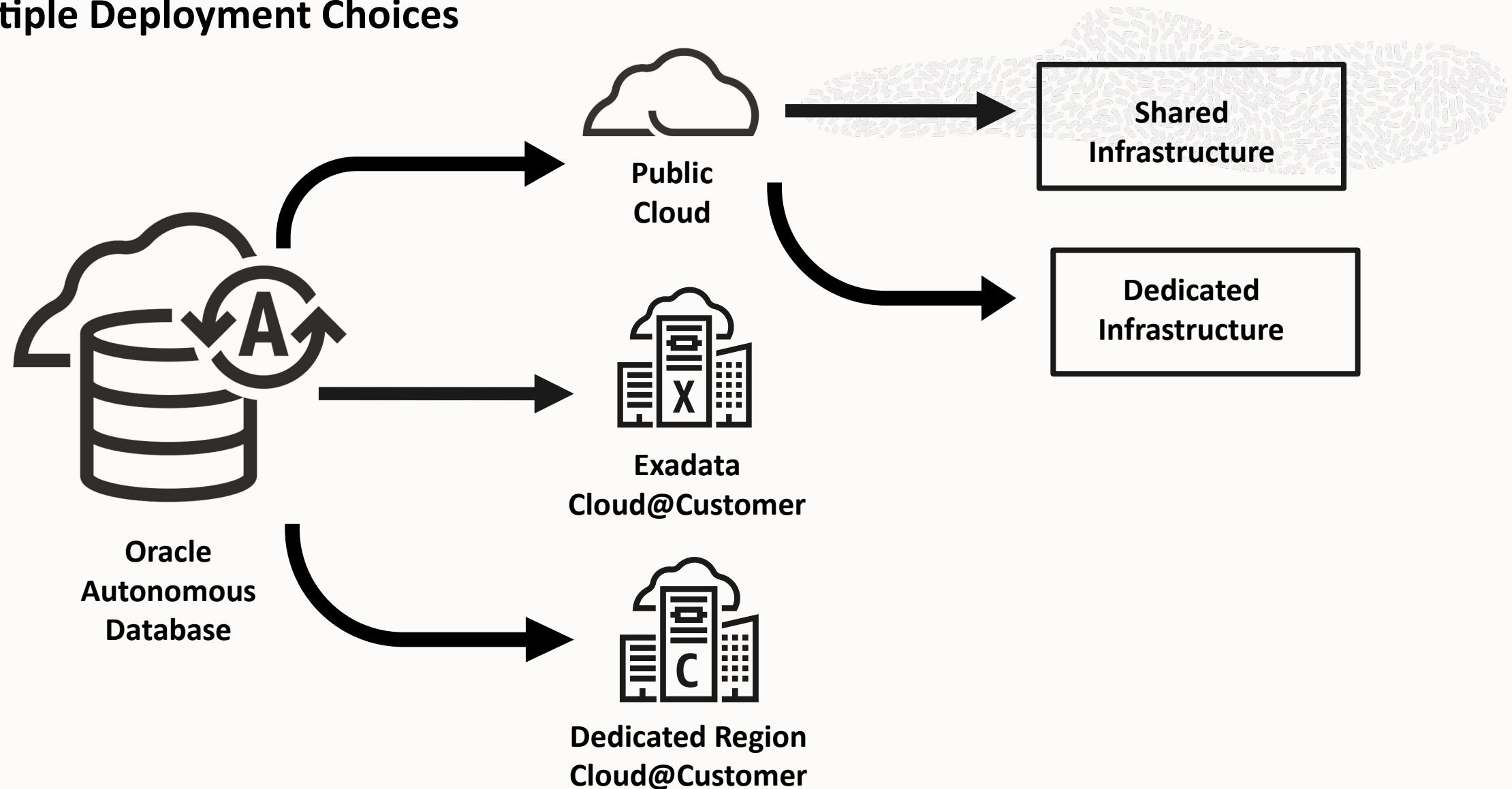
Activity Auditing

Database Backups

GoldenGate

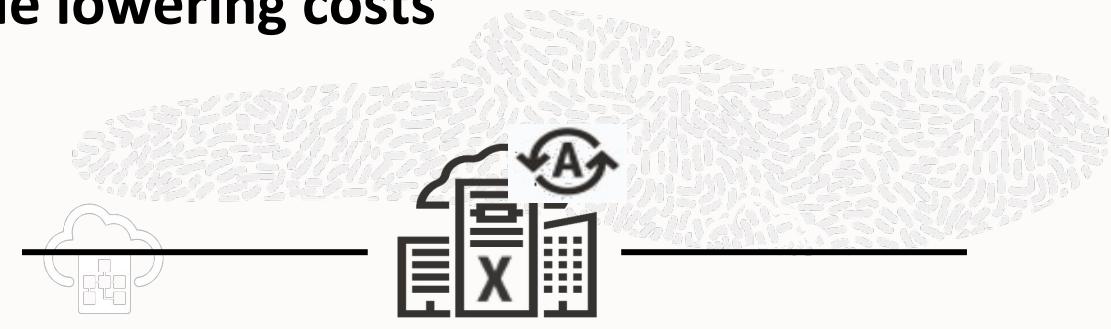
Operator Access Control

Multiple Deployment Choices

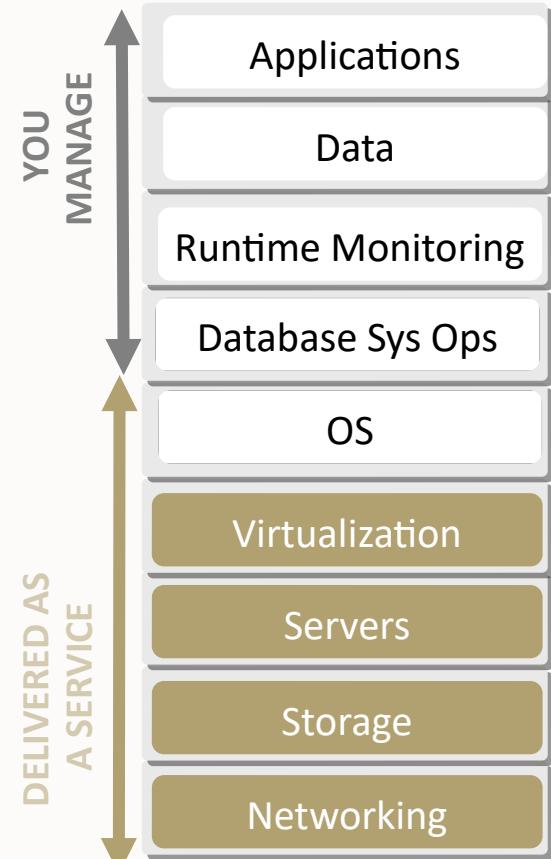
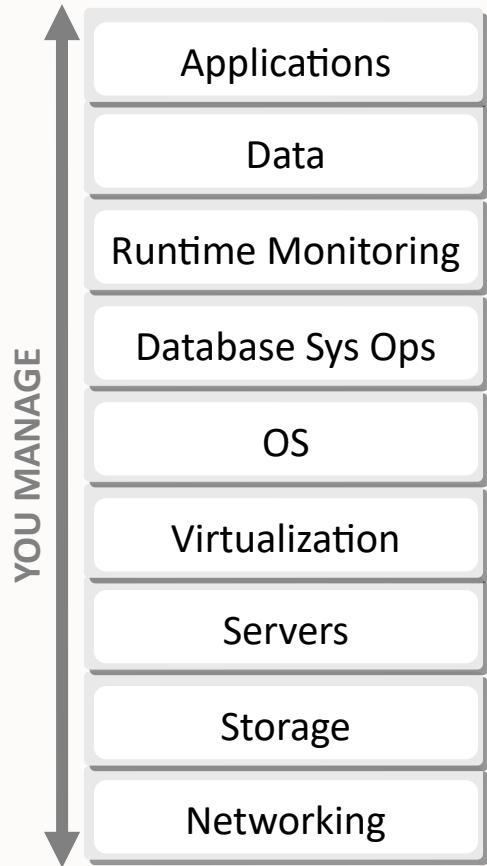


Transfer more responsibility to the service while lowering costs

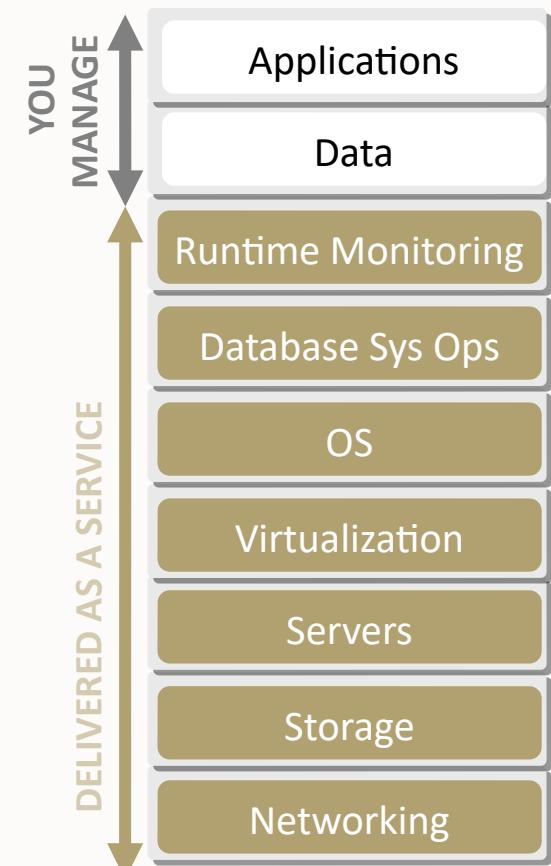
Same cost per OCPU, greater value with Autonomous



Traditional IT



Exadata Database



Autonomous

Oracle Autonomous Console Management

Create Autonomous Database

Data Warehouse	Transaction Processing	JSON	APEX
Built for decision support and data warehouse workloads. Fast queries over large volumes of data.	Built for transactional workloads. High concurrency for short-running queries and transactions.	Built for JSON-centric application development. Developer-friendly document APIs and native JSON storage.	Built for Oracle APEX application development. Creation and deployment of low-code applications, with database included.

Choose a deployment type

Shared Infrastructure	Dedicated Infrastructure
Run Autonomous Database on shared Exadata infrastructure.	Run Autonomous Database on dedicated Exadata infrastructure.

Choose Autonomous Container Database

Autonomous Data Guard-enabled Autonomous Container Databases

Autonomous Container Database in **FleetCompartment** ([Change Compartment](#))

FLEET_ACD ([View Details](#))

Configure the database

OCPU count
0.1

You can enable up to 35 OCPUs. Available cores are subject to compartment quotas and existing core allocation. [Learn more](#).

Auto scaling

Allows system to use up to three times the provisioned number of cores as the workload increases. [Learn more](#).

Storage (GB)

32

The available storage, up to 131072 GB. Available storage is subject to compartment quotas. [Learn more](#).

General Information

Database Name: ATPDevTest1
Workload Type: Transaction Processing
Compartment: **.../PM_Compartment**
OCID: ...ibmzoq [Show](#) [Copy](#)
Created: Tue, May 25, 2021, 17:34:32 UTC
OCPU Count: **0.1**
Auto Scaling: Enabled [i](#)
Storage: **32 GB**
Database Version: 19.11.0.0.0
Lifecycle State: Available
Instance Type: Paid

Scale Up/Down

OCPU count

0.6

You can enable up to 74 OCPUs. Available cores are subject to compartment quotas and existing core allocation. [Learn more](#).

Auto Scaling

Allows system to use up to three times the number of cores specified by the OCPU count as the workload increases. [Learn more](#).

Storage (GB)

512

The available storage, up to 131072 GB. Available storage is subject to compartment quotas. [Learn more](#).

[Update](#)

[Cancel](#)

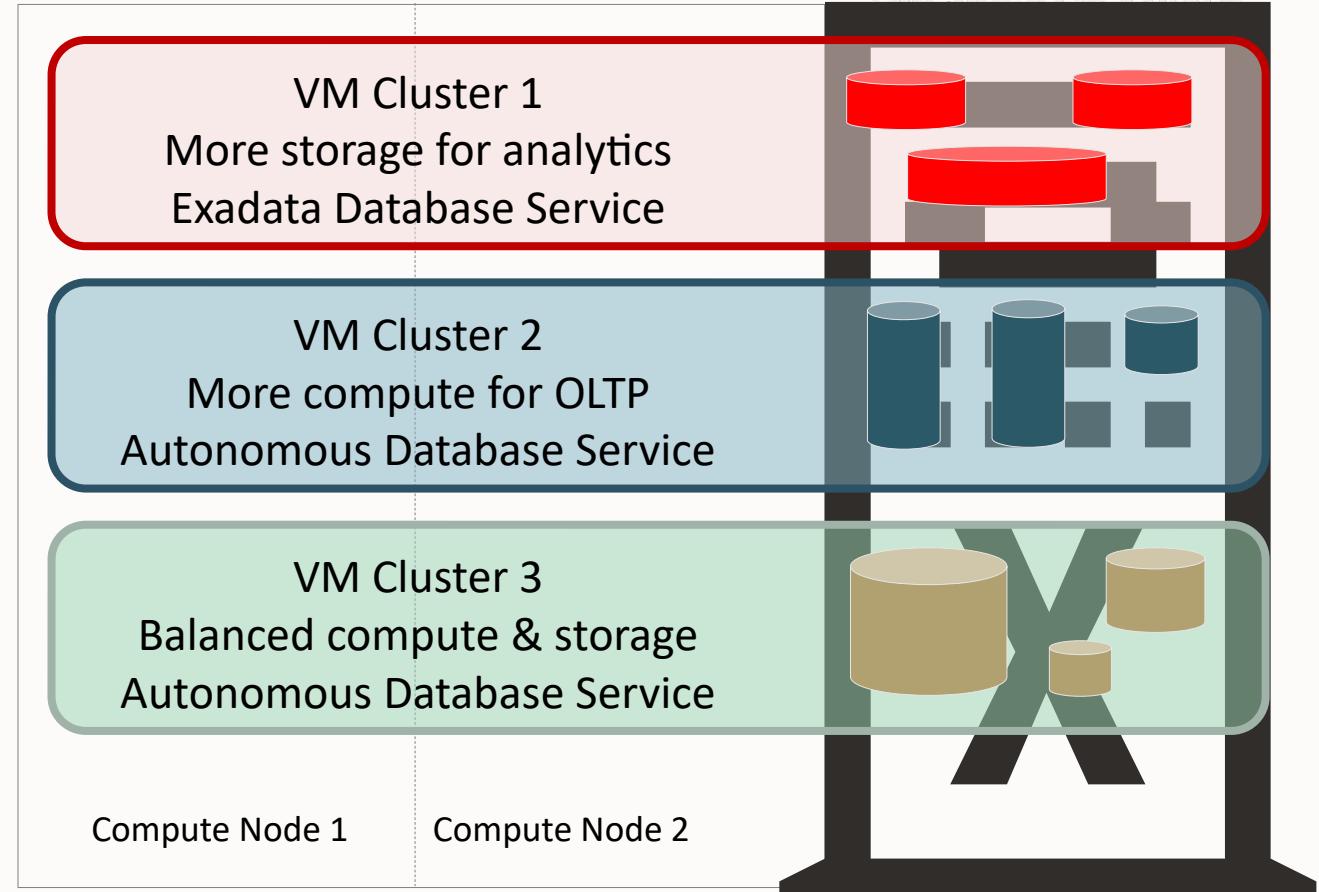
Oracle Autonomous Secure Connection | Credential Wallet

The screenshot shows the Oracle Cloud Autonomous Database Credential Wallet interface. The main title is "Database Connection". A message states: "You will need the client credentials and connection information to connect to your database. The client credentials include the wallet, which is required for all types of connections." Below this is a section titled "Download Client Credentials (Wallet)" with a "Download" button. Another section titled "Connection Strings" lists various TNS names and their corresponding connection strings, each with "Show" and "Copy" links.

TNS Name <small>(i)</small>	Connection String <small>(i)</small>
ATPDB2_tp	...ME=ATPDB2_tp.atp.oraclecloud.com))) Show Copy
ATPDB2_medium	...TPDB2_medium.atp.oraclecloud.com))) Show Copy
ATPDB2_tpurgent	...DB2_tpurgent.atp.oraclecloud.com))) Show Copy
ATPDB2_low	...E=ATPDB2_low.atp.oraclecloud.com))) Show Copy
ATPDB2_high	...=ATPDB2_high.atp.oraclecloud.com))) Show Copy
ATPDB2_tp_tls	...ME=ATPDB2_tp.atp.oraclecloud.com))) Show Copy
ATPDB2_medium_tls	...TPDB2_medium.atp.oraclecloud.com))) Show Copy
ATPDB2_tpurgent_tls	...DB2_tpurgent.atp.oraclecloud.com))) Show Copy
ATPDB2_low_tls	...E=ATPDB2_low.atp.oraclecloud.com))) Show Copy

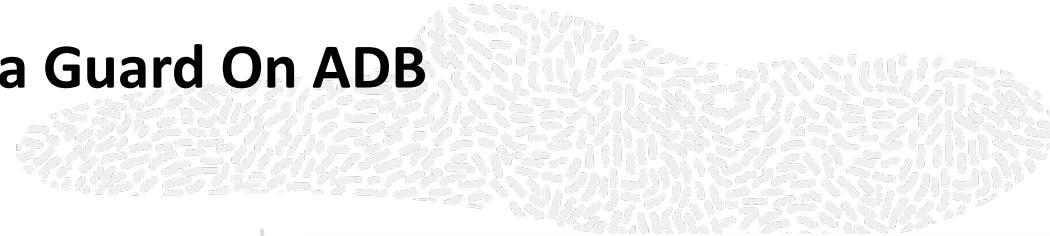
Increasing Resource Utilization Efficiency and Consolidation Savings

1. Multiple VM clusters can be created on Exadata Cloud@Customer Infrastructure
2. Each VM cluster can be configured to match workload needs (e.g. more storage for analytics or more compute for OLTP)
3. Each VM cluster can be used for either Autonomous or Exadata Database Service
4. Each VM cluster can support multiple databases for consolidation
5. More VM clusters can be added as needed using unallocated resources
6. Consumption in each cluster can be scaled independently (and automatically with Autonomous Database)



Available on Exadata Cloud@Customer Infrastructure X7 through X9M

Automated Data Protection – Autonomous Data Guard On ADB



- One-click enable
- Simple and transparent data protection
- Fully-managed standby database
- Completely transparent to customer applications
- Automated failover for zero-data loss scenarios
- User initiated failover for other scenarios
- Seamless reconnection - no new wallet or network configuration required
- RPO: 5 mins, RTO: 2 mins
- Cross Exadata machine or Availability Domain (AD)
- Cross Region

The screenshot shows the Oracle Cloud interface with the following details:

- My Quick Start Lab**
- DB Connection**, **Performance Hub**, **Service Console**, **Scale Up/Down**, **More Actions**
- Autonomous Database Information** tab selected, showing:
 - General Information**: Database Name: QSLDB, Workload Type: Data Warehouse, Compartment: adwc4pm (root)/ADW_Frankfurt, OCID: ...njbqzq, Status: Disabled (Enabled).
 - Infrastructure**: Dedicated Infrastructure: No, Autonomous Data Guard: (i) Status: Disabled (Enable).
- Tools** and **Tags** buttons.

The screenshot shows the Oracle Cloud interface with the following details:

- Enable Autonomous Data Guard** dialog box open.
- Message: "Enabling Autonomous Data Guard creates a peer database, and database billing. Do you want to enable Autonomous Data Guard?"
- Region** dropdown menu open, showing a list of regions:
 - UK South (London) - Current Region (selected)
 - Canada Southeast (Montreal)
 - Canada Southeast (Toronto)
 - Chile Central (Santiago)
 - Germany Central (Frankfurt)
 - India South (Hyderabad)
 - India West (Mumbai)
 - Japan Central (Osaka)
 - Japan East (Tokyo)
 - Netherlands Northwest (Amsterdam)
 - sa-vinheido-1
 - Saudi Arabia West (Jeddah)
 - South Korea Central (Seoul)
 - South Korea North (Chuncheon)
 - Switzerland North (Zurich)
 - UAE East (Dubai)
 - UK West (Newport)
 - US East (Ashburn)
 - US West (Phoenix)
 - US West (San Jose)



SCAN ME

Move Standard Database Workload Autonomous Database



Autonomous Database

Autonomous Operation

- Reduce intensive and manual DBA Tasks
- Auto Database Tuning, Pathing and Securing Capabilities

Lowest cost to adopt Autonomous Database (ADB)

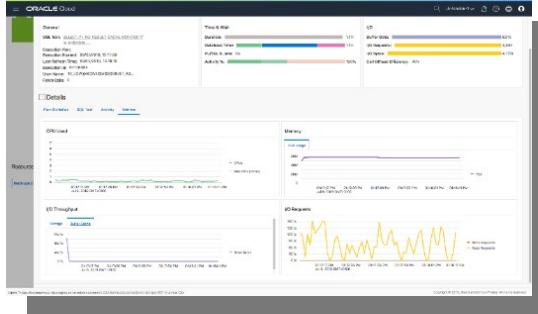
- No additional infrastructure costs, pay only for ADB OCPUs
- Leverage features that drive a true pay-per-use consumption
- Use BYOL to reduce your costs and TCO

Simplest transformation for new and existing workloads

- Autonomous automation and optimized end-to-end
- Developer self-service for new database application development

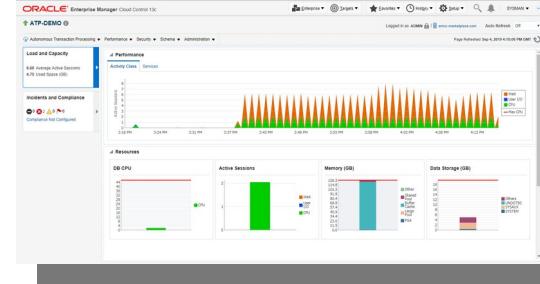
[Click Here](#)

Autonomous Management Tools | All Tools Bundled with ADB



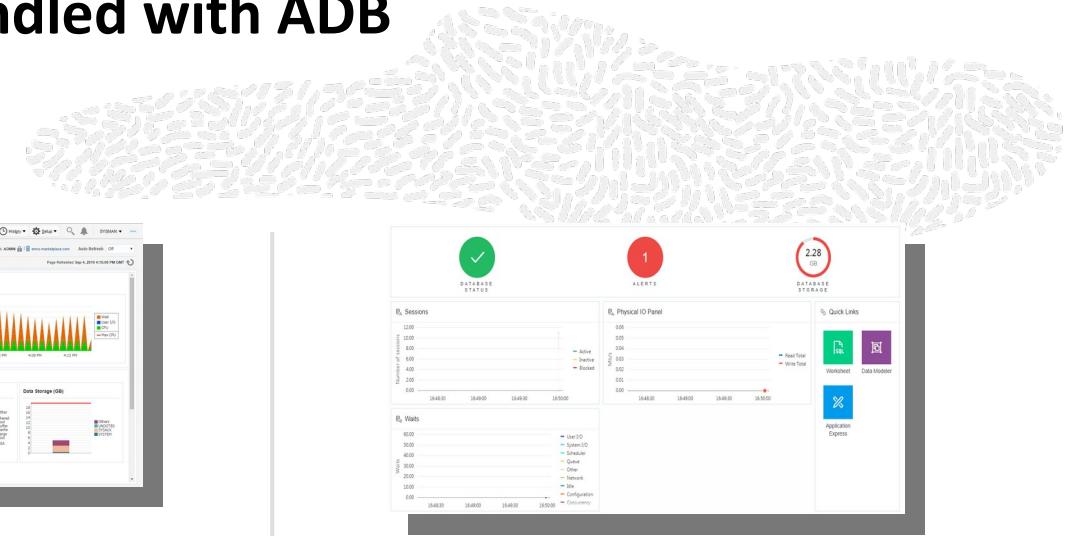
Oracle Management Cloud

Managing multiple DB instances across On-premises and Oracle Cloud - Need a consolidate view



Enterprise Manager

Get rid of time-consuming and resource-intensive weekly full backups on production database services



OCI Console DB Mgmt Services

Working across multiple ADB instances (dev, Test, QA and etc.)
Needs access to SQL performance data

OCI DBCS Bare Metal



Database Cloud Service | Bare Metal

Understanding Oracle OCI DBCS Bare Metal Roles and Limitations



Bare Metal DB Systems rely on Bare Metal servers running Oracle Linux

- One-node database system
- Two Bare Metal shapes
 - BM DenseIBM.01.36 up to 36 Cores, 512 GB Memory and 9 3.2 TB locally attached (28.8 TB total)
 - BM DenseIBM.02.52 up to 52 Cores, 768 GB Memory and 8 6.4 TB locally attached (51.2 TB total)
- Start With 2 cores and Scale Up/Down OCPU's based on your requirement
- Data Guard with and across Ads (Requires DB Enterprise Edition)
- No Oracle RAC Allowed, just Single Instance
- No-CDB Database allowed just using **dbcli** command line tool
[Click Here](#)

Oracle DBCS Bare Metal Console Management

Create DB system

1 DB system information
2 Database information

Select an availability domain

AD-1 wBCz:US-ASHBURN-AD-1 ✓ AD-2 wBCz:US-ASHBURN-AD-2 AD-3 wBCz:US-ASHBURN-AD-3

Select a shape type

Virtual Machine **Bare Metal** ✓

Select a shape

BM.DenseIO1.36 2 Available Core Count Change shape

Browse All Shapes

A shape determines the options for resources such as node count, core count, and storage. For information about shapes, see [Shapes for Bare Metal DB Systems](#).

Name	Maximum Core Count	Minimum Core Count
<input checked="" type="checkbox"/> BM.DenseIO1.36	36	2
<input type="checkbox"/> BM.DenseIO2.52	52	2

1 Selected

Showing 2 Items < 1 of 1 >

Configure storage

Data storage percentage

80%

Configure the DB system

Total node count

1

The node count for the selected shape cannot be changed.

Oracle Database software edition

Enterprise Edition High Performance

Select an Oracle Database Software Edition

Standard Edition

Enterprise Edition

Enterprise Edition High Performance

Enterprise Edition Extreme Performance

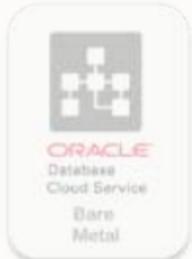


OCI DBCS Virtual Machines



Database Cloud Service | Virtual Machine

Understanding Oracle OCI DBCS roles and limitations



Entry-level, provision with GI or LVM (fast-provision)

Restrictions:

- 2 DB Systems types on VM
 - One Node - One VB Database System
 - Two Nodes - Two VM Clusters with Oracle RAC Features
- Can have only a Single Database Home and one Database
- Amount of memory allocation depends on VM Shapes
- On a RAC shape, each node is assigned on a different fault domain

[Click Here](#)

Oracle DBCS Virtual Machine Console Management

Create DB system

1 DB system information 2 Database information

Select a shape type

Virtual Machine ✓ Bare Metal

Configure shape

A shape determines the options for resources such as node count, core count, and storage. For information about shapes, see [Shapes for Virtual Machine DB Systems](#).

AMD VM.Standard.E4.Flex
4 core OCPU, 64 GB memory, 4 Gbps Network Bandwidth, 64K IOPS

Change shape

Change shape

Shape series

A shape determines the options for resources such as node count, core count and storage. [Learn more](#).

AMD AMD
Flexible OCPU count. AMD processors.

Intel Intel
Flexible and fixed OCPU count. Intel processors. ✓

Intel X9
Flexible OCPU count

Intel X7
Fixed OCPU count

Change shape

Configure OCPU

Name	OCPU	Memory	Network bandwidth	Theoretical max IOPS
<input checked="" type="checkbox"/> VM.Standard3.Flex	8	128 GB	8 Gbps	128K

You can customize the number of OCpus. Other resources scale proportionately. [Learn more about flexible shapes](#).

Number of OCpus per node

8 1 32

1 Selected Showing 1 Item

Configure the DB system

Total node count

2

Oracle Database software edition

Enterprise Edition Extreme Performance

Total storage (GB) Read-only ⓘ

912



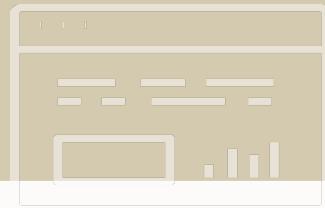
OCI Command Line Interface (*dbcli*)

OCI Command Line Interface Database Options and doc references



Backup Commands

- *dbcli* create-backup
- *dbcli* getstatus-backup
- *dbcli* schedule-backup



DB Storage Commands

- *dbcli* list-dbstorages
- *dbcli* describe-dbstorage
- *dbcli* create-dbstorage
- *dbcli* delete-dbstorage



[Click Here](#)

Database Home Commands

- *dbcli* create-dbhme
- *dbcli* describe-dbhme
- *dbcli* list-dbhme
- *dbcli* update-dbhme



OCI Cloud MAA Architecture



Oracle OCI Physical Data Guard Console Management

Database information Tags

General information

Lifecycle state: Available

OCID: ...32vonq [Show](#) [Copy](#)

Created: Sat, Oct 22, 2022, 19:54:02 UTC

Database Role: Standby

Database unique name: DB12_iad1r5

Oracle SID Prefix: None

Database Architecture: Container Database

Character Set: AL32UTF8

Backup

Automatic backup: Disabled [\(i\)](#)

Data Guard

Status: Enabled

Encryption

Encryption Key: Oracle-managed key

Data Guard Associations

Enable Data Guard

Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Launched
DB12	DB12STDBY	Standby	Maximum Availability	Sync	0 seconds	Mounted (Data Guard)	Sat, Oct 22, 2022, 19:50:14 UTC

Showing 1 Item < 1 of 1 >

Edit Data Guard Association

Data Guard association details

Data Guard Type

Active Data Guard

Active Data Guard is a licensed option to the Oracle Database Enterprise Edition and enables advanced capabilities that extend the basic Data Guard functionality. These capabilities include Real-Time Query and DML Offload, Automatic Block Repair, Standby Block Change Tracking, Far Sync, Global Data Services, and Application Continuity. [Learn more.](#)

Data Guard

Oracle Data Guard ensures high availability, data protection, and disaster recovery for enterprise data. Data Guard provides a comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle databases to survive disasters and data corruptions. Data Guard maintains these standby databases as transactionally consistent copies of the production database. [Learn more.](#)

Protection mode

Maximum Availability

Data Guard Associations

Enable Data Guard

Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Launched
DB12	single_marcel01	Standby	Maximum Availability	Sync	0 seconds	Mounted (Data Guard)	Sat, Oct 22, 2022, 19:50:14 UTC

Switchover

Edit Data Guard Association

Copy Peer Database OCID

Copy Peer DB System OCID

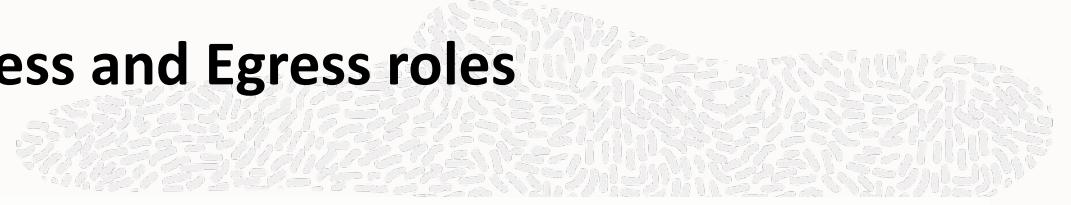
Oracle OCI Data Guard Network Requirements

Avoid security know issues during physical OCI Data Guard provisioning

- Properly configure the security list ingress and egress rules for the subnets of both DB systems in the Data Guard association to allow TCP traffic to flow between the applicable ports. Ensure that the rules you create are stateful (the default).
- The egress rules in the example show how to enable TCP traffic only for port 1521, which is a minimum requirement for Data Guard to work. If TCP traffic is already enabled on all of your outgoing ports (0.0.0.0/0), then you need not explicitly add these specific egress rules. Service Gateway can provide NW connectivity.

Rules(Prod)	Stateless	Source	IP Protocol	Source Port	Dest Port
Ingress	No	10.0.01.0/24	TCP	All	1521
Egress	No	10.0.1.0/24	TCP	All	1521
Rules(Sby)	Stateless	Source	IP Protocol	Source Port	Dest Port
Ingress	No	10.0.0.0/24	TCP	All	1521
Egress	No	10.0.0.0/24	TCP	All	1521

Avoid Data Guard Provisioning Error | Change Ingress and Egress roles



Enable Data Guard

Provide information for the initial database

1 DB system information 2 Database information

Configure standby database

Database image *Optional*

Click **Change Database Image** to choose your software version

Change database image

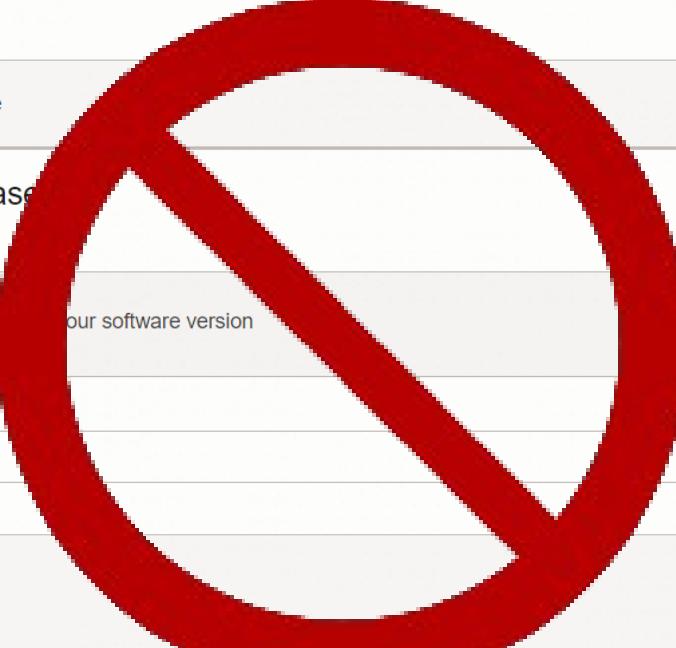
Database password

.....

Show advanced options

Data Guard Association cannot be created when standard database service port (1521) is blocked for instances ... with Subnet: ocid1.subnet.oc1.iad.aaaaaaaaacx5bqxh24cgpgrzg7pfsr4okvwhboryv6pj63xs435ii5hcwkq by security rules associated

Previous Enable Data Guard Cancel



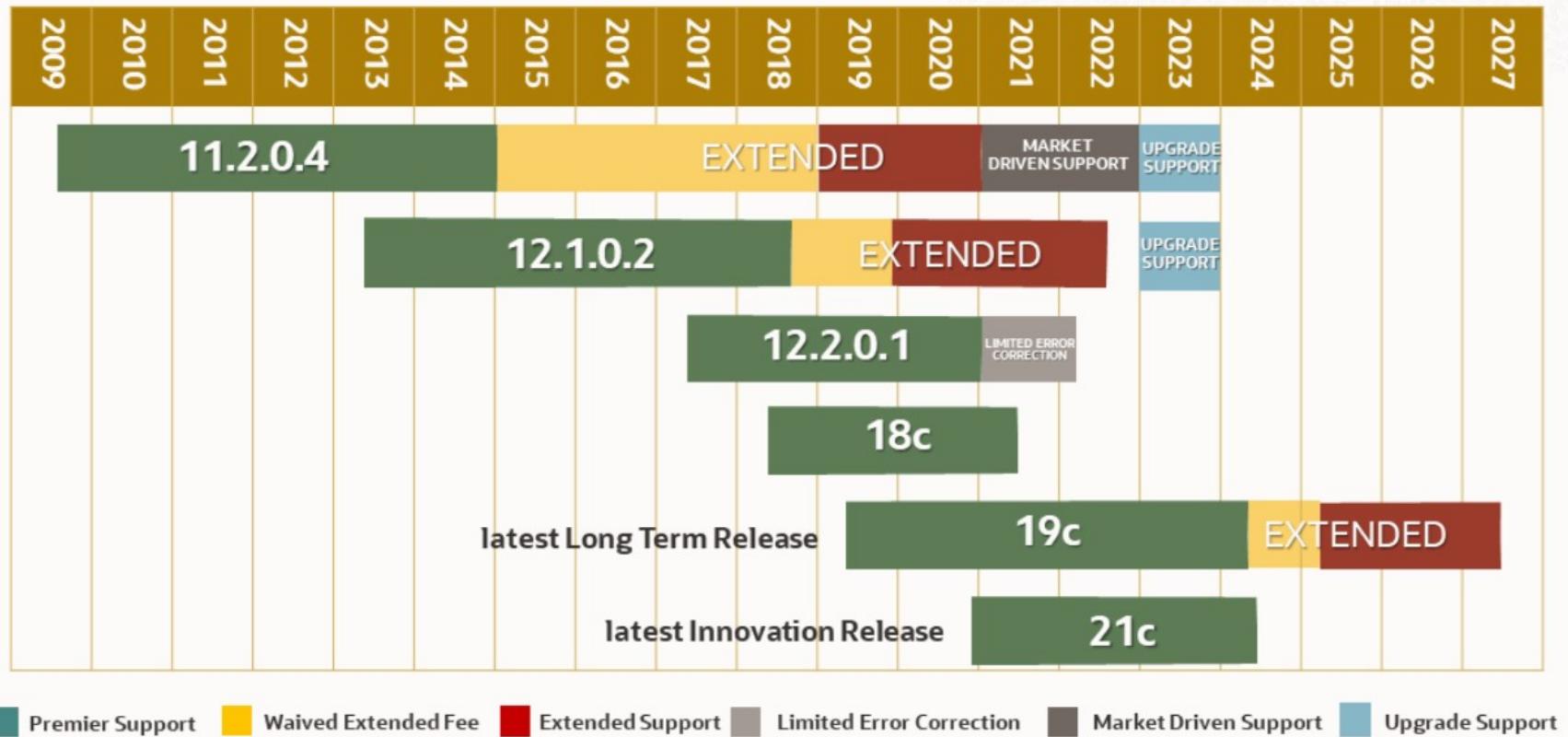
Oracle Database Version and Timeline



Oracle Database 19c – 8 years of support

My Oracle Support Official Note (Doc ID 742060.1)

Database Releases and Support Timelines



OCI DBCS Patching

OCI DBCS Grid Patching

Pre check through OCI Console before change any bundle patch version

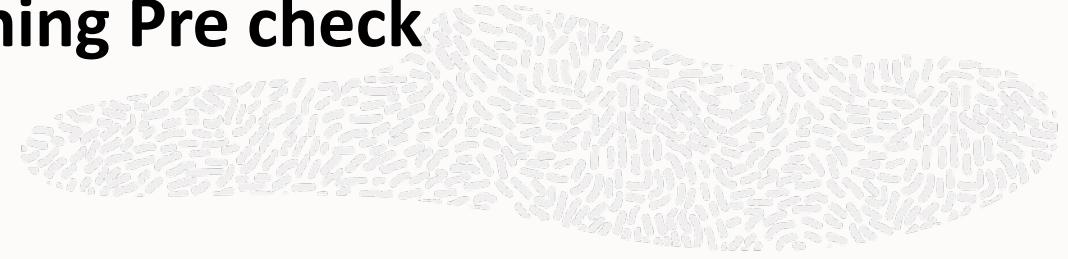
Updates

DB System: [demo12rac](#)

Update description	Type	State	Component	Version	Last successful precheck	Release date	More
Jan 2023 19c Db System patch	Patch	Available	GI patch	19.18.0.0.0	—	Tue, Oct 17, 2023, 01:00:00 UTC	⋮
Oct 2022 19c Db System patch	Patch	Available	GI patch	19.17.0.0.0	Wed, Feb 8, 2023, 16:16:34 UTC	Run precheck Apply	⋮

OCI VM System DBCS | Oracle Home Patching Pre check

Pre check through OCI Console



Database: [dem12rac](#)

Oracle Database Software Images

Custom Database Software Images

Patch description	Type	State	Version	Release date	
Jan 2023 12.1.0.2 Database patch	Patch	● Available	12.1.0.2.230117	Wed, Jan 25, 2023 UTC	Precheck ... Apply
Oct 2022 12.1.0.2 Database patch	Patch	● Available	12.1.0.2.221018	Thu, Dec 15, 2022 UTC	Copy OCID

OCI VM System DBCS | RAC Grid Patching in rolling mode

For a DBCS RAC environment a Grid patch will run in rolling format

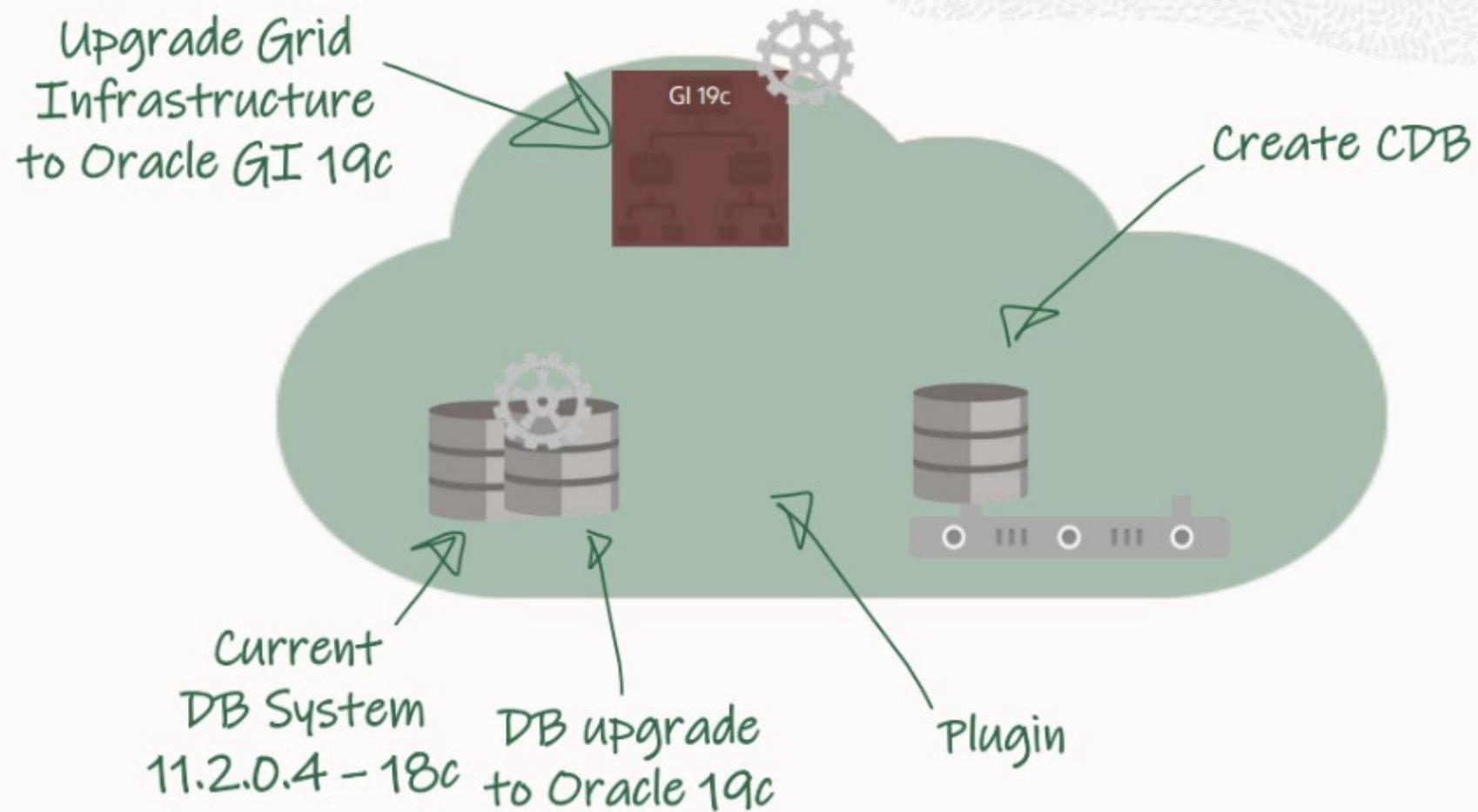
Name	Target	State	Server	State details
<hr/>				
ora.DATA.COMMONSTORE.advm	ONLINE	ONLINE	demo12crac2	STABLE
ora.LISTENER.lsnr	ONLINE	ONLINE	demo12crac2	STABLE
ora.chad	ONLINE	ONLINE	demo12crac2	STABLE
ora.data.commonstore.acfs	ONLINE	ONLINE	demo12crac2	mounted on /opt/oracle/dcs/commonstore,S TABLE
ora.net1.network	ONLINE	ONLINE	demo12crac2	STABLE
ora.ons	ONLINE	ONLINE	demo12crac2	STABLE
ora.proxy_advm	ONLINE	ONLINE	demo12crac2	STABLE
<hr/>				
Cluster Resources				

OCI DBCS Upgrade Database Version

Move your Oracle Database to 19c

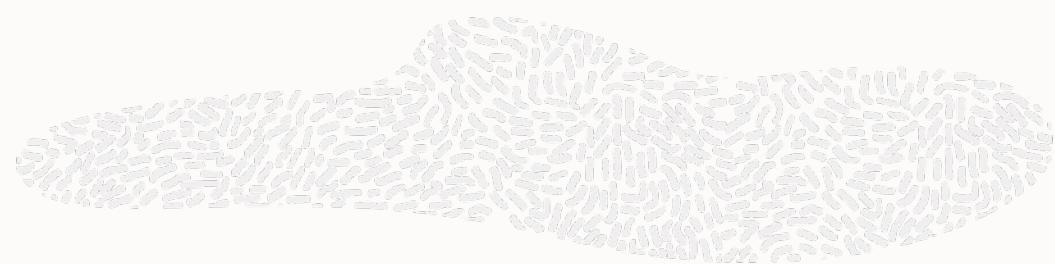


Oracle Database | Upgrade Your Database to 19c



OCI VM System DBCS Upgrade Precheck

Oracle Database 19c Upgrade pre check using OCI console



Database: [dem12rac](#)

Oracle Database Software Images

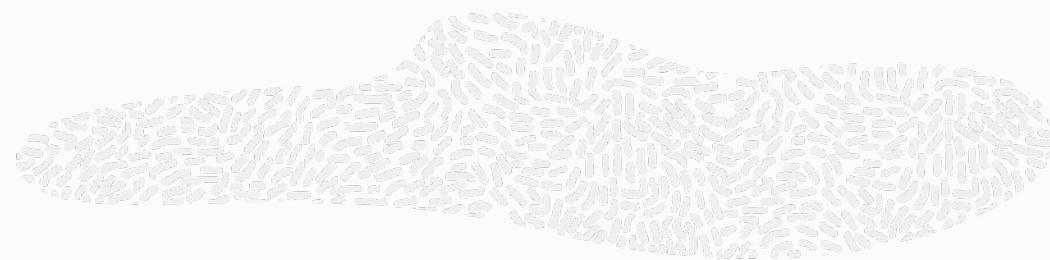
Custom Database Software Images

Patch description	Type	State	Version	Release date	Precheck	⋮
Oracle Database 19.15.0.0	Upgrade	● Available	19.15.0.0	-	Precheck	⋮
Oracle Database 19.16.0.0	Upgrade	● Available	19.16.0.0	-	Upgrade	⋮
Oracle Database 19.17.0.0	Upgrade	● Available	19.17.0.0	-		⋮

Showing 3 Items < 1 of 1 >

OCI VM System DBCS - Upgrade Pre check

Oracle Database 19c Upgrade pre check using OCI console



Work requests

Operation	State	% complete	Accepted	Started	Finished	
Upgrade Database	● In progress	0%	Sun, Feb 12, 2023, 12:52:22 UTC	Sun, Feb 12, 2023, 12:52:31 UTC	—	⋮
Patch DB Home	● Succeeded	100%	Wed, Feb 8, 2023, 20:52:17 UTC	Wed, Feb 8, 2023, 20:52:46 UTC	Wed, Feb 8, 2023, 21:51:01 UTC	⋮
Patch DB Home	● Succeeded	100%	Wed, Feb 8, 2023, 14:17:47 UTC	Wed, Feb 8, 2023, 14:17:59 UTC	Wed, Feb 8, 2023, 14:29:11 UTC	⋮
Create DB System	● Succeeded	100%	Wed, Feb 8, 2023, 00:27:28 UTC	Wed, Feb 8, 2023, 00:27:52 UTC	Wed, Feb 8, 2023, 04:47:36 UTC	⋮

Showing 4 Items < 1 of 1 >

OCI DBCS Pós Database Upgrade



Oracle Database Components Status

```
SQL> select COMP_NAME, VERSION, STATUS from dba_registry;
```

COMP_NAME	VERSION	STATUS
Oracle Database Catalog Views	19.0.0.0.0	VALID
Oracle Database Packages and Types	19.0.0.0.0	VALID
JServer JAVA Virtual Machine	19.0.0.0.0	VALID
Oracle XDK	19.0.0.0.0	VALID
Oracle Database Java Packages	19.0.0.0.0	VALID
OLAP Analytic Workspace	19.0.0.0.0	VALID
Oracle Real Application Clusters	19.0.0.0.0	VALID
Oracle XML Database	19.0.0.0.0	VALID
Oracle Workspace Manager	19.0.0.0.0	VALID
Oracle Text	19.0.0.0.0	VALID
Oracle Multimedia	19.0.0.0.0	VALID
Spatial	19.0.0.0.0	VALID
Oracle OLAP API	19.0.0.0.0	VALID
Oracle Label Security	19.0.0.0.0	VALID
Oracle Database Vault	19.0.0.0.0	VALID

```
15 rows selected.
```

```
SQL> █
```

OCI DBCS Compatible Database Parameter

Only change database compatible database when you are sure rollback is not necessary

```
Connected to:  
Oracle Database 19c EE Extreme Perf Release 19.0.0.0.0 - Production
```

```
SQL> show parameter compatible
```

NAME	TYPE	VALUE
compatible	string	12.1.0.2
noncdb_compatible	boolean	FALSE

Resources





SCAN ME

Oracle Live Labs

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Event Code →

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EM with multitenant Database Live Labs

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SCAN ME

EM - Hybrid Multitenant Database Lifecycle Management

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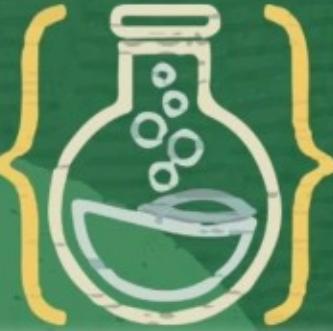
Start

Oracle LiveLabs reached 3 Million Views!!

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Copiar link



YouTube play button icon

1 hour

Outline

- Create a Pluggable Database (PDB)
- Unplug/Plug an existing Pluggable Database
- Clone an existing Pluggable Database (PDB)
- Compliance Management for Pluggable Database (PDB)
- Patch an existing Pluggable Database
- Self-service to request a PDB using PDBaaS
- Administrative Setup for PDB-as-a-Service



Oracle Multitenant on Live Labs

LiveLabs Search Workshops and Sprints... Event Code Sign In

Pluggables, Clones and Containers: Oracle Multitenant Fundamentals

Share Start

Pluggables, Clones and Containers: Oracle Multitenant Fundamentals Copiar link

This is why your data strategy isn't working

Watch on YouTube

3 hours

Outline

- Environment Setup
- Clone, Plug and Unplug PDBs
- Hot Cloning, Refresh and Relocation
- Application Containers

Prerequisites

- Familiarity with Database is desirable
- Some understanding of basic database terms is desirable
- Familiarity with Oracle Cloud Infrastructure (OCI) is helpful

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Tharseo IT: Migrate Ellucian Banner ERP to Oracle Cloud using FastConnect and Rackware

Reference Architecture

Deploy a containerized Jenkins CI/CD pipeline by using Terraform on Oracle Cloud Infrastructure

Understand the architecture underlying the successful deployment of a dockerized Jenkin...

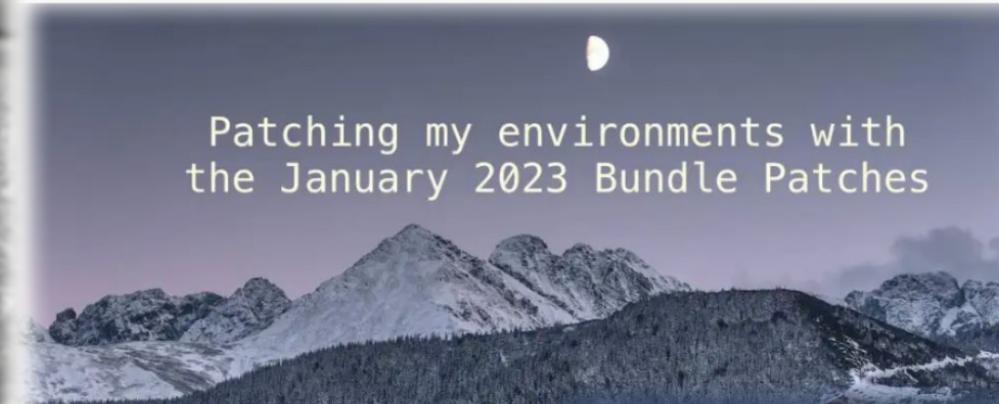
Automation Available

[Click here](#)



Upgrade your Database - NOW! | [Twitter](#) [LinkedIn](#) [X](#) Mike Dietrich's Blog About Oracle Database Upgrades... Mostly

Blog Slides Hands-On Lab ▾ Events Videos Scripts Links Oracle Documentation Privacy ▾ About



Patching my environments with the January 2023 Bundle Patches

Photo by karokrasinska



Rolling back or removing all patch SQL changes

[Click Here](#)



Databases Are Fun

dohdatabase.com



Slides

[Main slide deck](#)

A screenshot of a YouTube channel page for "Oracle Database Upgrades and Migrations". The channel has 3,81 mil inscritos and 251 vídeos. The main video thumbnail is titled "Try AutoUpgrade using our Hands-On Lab ...". The video description explains that if you are new to upgrading Oracle Database with AutoUpgrade or just want a safe place to try out some of the new cool features, the Hands-On Lab is the perfect place for you. It can provision the lab - FOR FREE - using Oracle LiveLabs and access the environment via a browser. It's so easy... The video has 2.934 visualizações and was uploaded há 1 ano.



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[Click Here](#)



SCAN ME

The screenshot shows a blog post titled "Generate APEX application checksum in PL/SQL". The post discusses how generating a checksum is useful to compare running applications. It includes a link to a "Release and Patching Strategy" seminar.

This post is also available in: [Português](#)

Webinars

In Oracle APEX, generating the application checksum is useful to compare if the application you have running is an exact copy of the application running somewhere else. To create this checksum, you ...

Web Seminar Duration Released Slides

Episode 1 Release and Patching Strategy	105 minutes	Feb 4, 2021	gelog
---	-------------	-------------	-------

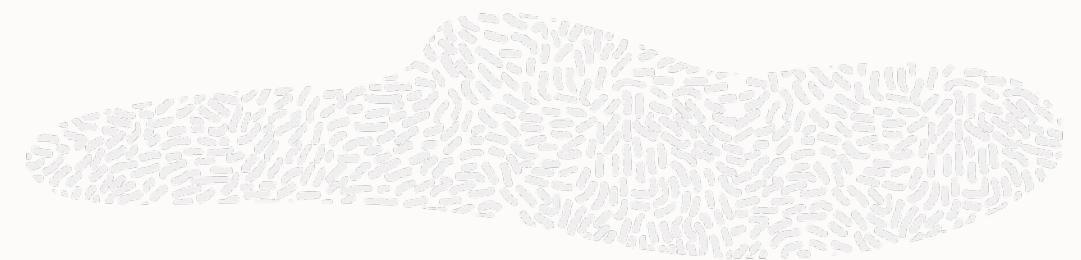
Dictionary changelog for all 19c and 21c versions

19c

- Oracle Database 19.4.0 dictionary changelog
- Oracle Database 19.5.0 dictionary changelog

[Click Here](#)





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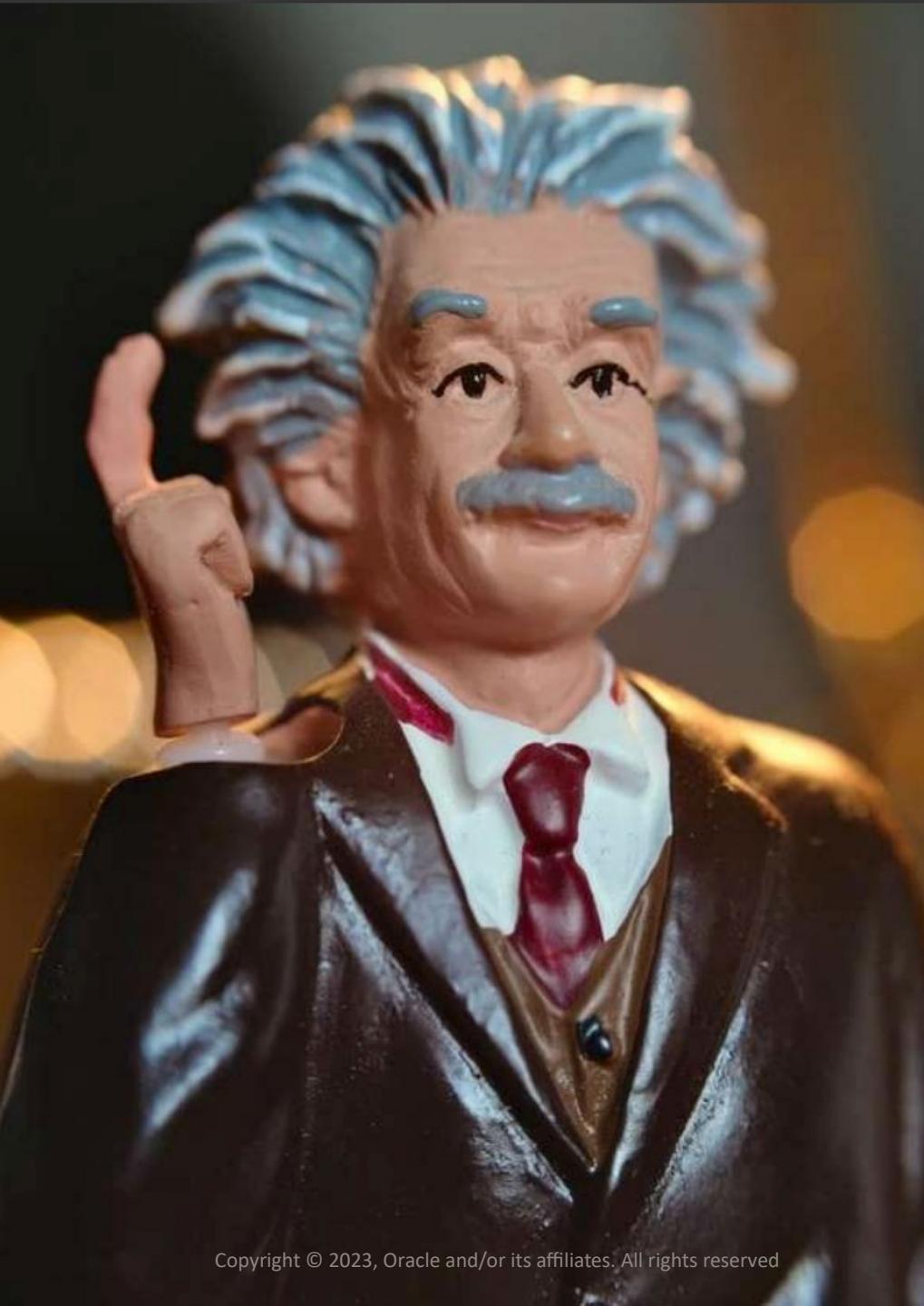
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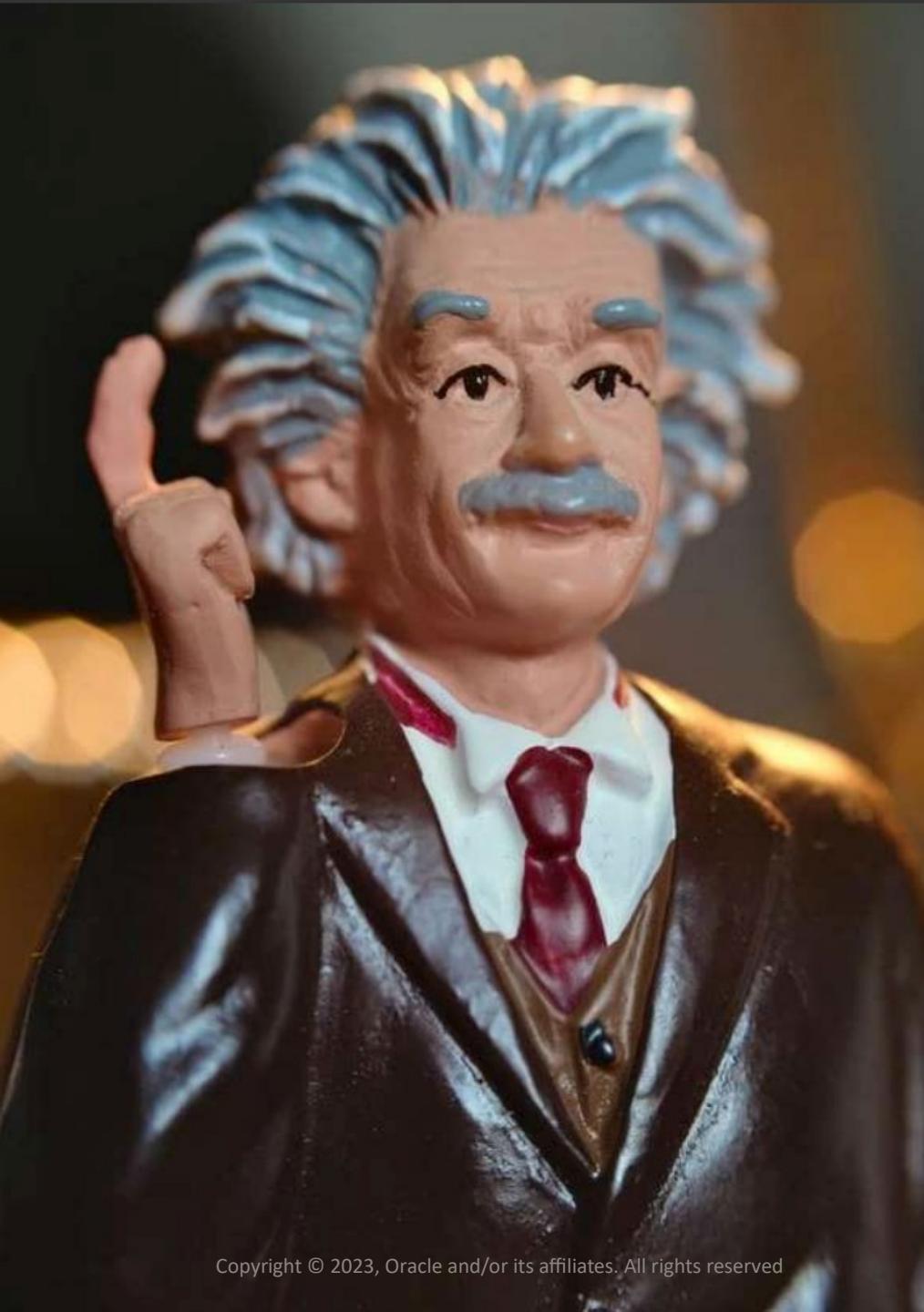
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Demo 1 – OCI DBCS Database

- Creating a PDB on DBCS using ***oci console***
- Creating a PDB on DBCS Database using ***dbccli***





Demo 2 – Autonomous Database

- Create Autonomous Database ADP
- Populate Autonomous database



Demo 3 – OCI Data Safe

- Register Autonomous Database on Data Safe
- Generate Data Safe Report





Thank You 😊

**Questions / Feedback / Training
Suggestions**

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Ask for help 😊

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