ORACLE

Oracle Cloud DBA

Lear how to stay up to date on this Dbaas era – Day 1

Marcel Lamarca

Exadata Cloud Specialist

Oracle, Alliances and Channels LAD

February, 2024

SQL> select * from person where name = 'Marcel Lamarca'

About My Career

- 22 Years dedicated to study and support Oracle Databases.
- 12 Years working with Exadata (On-prem, C@C and Cloud Services) .
- 5 Year working for Oracle do Brasil
- 2   Year on Alliances LAD knowledge Team

Certifications

Oracle Cloud Specialist (OCS)

- Exadata Database Machine X9M Certified Specialist
- OCI Foundation 2020 / 2023
- Oracle Autonomous Database professional Administrator 2019 / 2023
- Oracle Cloud Database Migration and Integration 2021
- OCI Cloud Certified Architect Associate 2022
- OCI Cloud Certified Architect Professional 2022
- OCI Multi-Cloud Architect Professional 2023
- Oracle Database Services Certified Professional 2023

Oracle Certified Professional (OCP)

- Oracle Database certified professional 10g, 11g, 12c and 19c.
- Mysql 8.0 Database Administrator Certified Professional

Oracle Certified Specialist (OCE)

- Grid/RAC Database Administrator 11g
- Oracle Golden Gate 12c Certified Implementation Specialist

MARCEL LAMARCA

Exadata Cloud Specialist
Upgrade, Utilities, Patching, Performance & Migrations

in marcel-lamarca

marcel.lamarca@oracle.com

Agenda

1   Oracle Exadata Cloud

2   OCI Backup Database Options

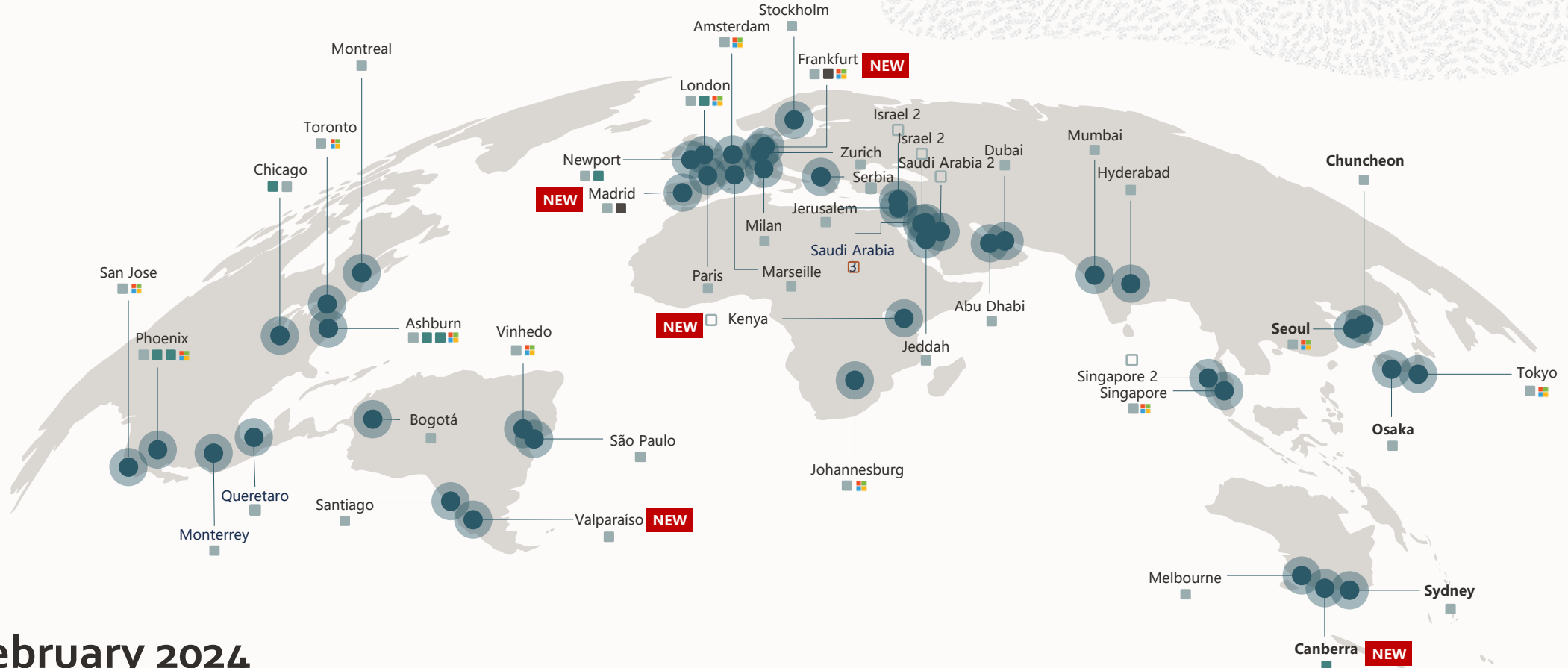**3**   Oracle NoSQL Database Cloud Service

4   Resources

OCI Cloud Region Maps

Oracle Cloud Infrastructure Global Footprint

February 2024

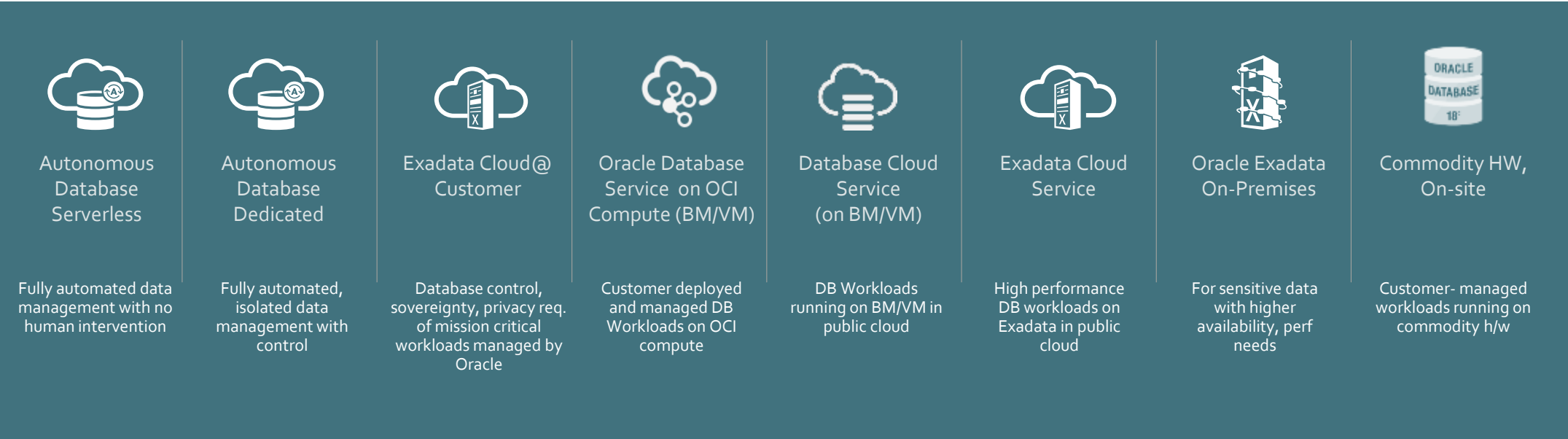**48 regions**; 5 more planned

12 Azure Interconnect Regions

Oracle Database deploy options

Choice of control and hybrid strategies
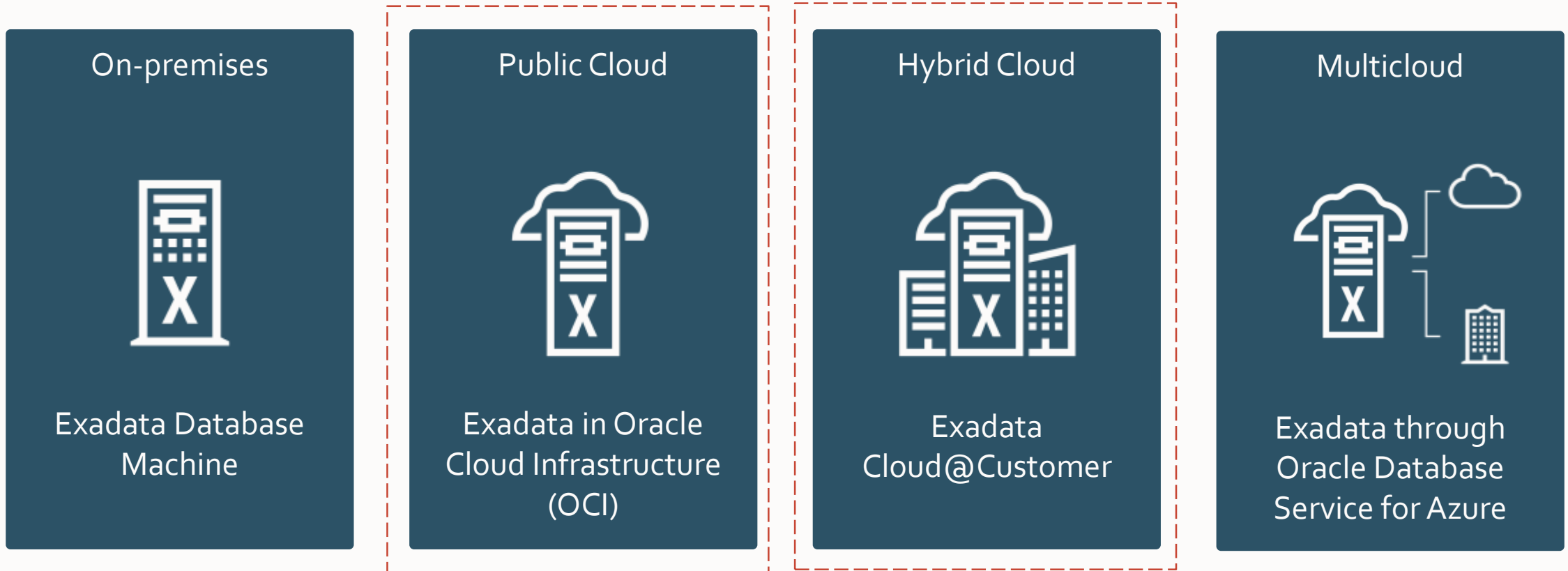
Use a single database for all deployments

Autonomous Database Serverless	Autonomous Database Dedicated	Exadata Cloud@ Customer	Oracle Database Service on OCI Compute (BM/VM)	Database Cloud Service (on BM/VM)	Exadata Cloud Service	Oracle Exadata On-Premises	Commodity HW, On-site
Fully automated data management with no human intervention	Fully automated, isolated data management with control	Database control, sovereignty, privacy req. of mission critical workloads managed by Oracle	Customer deployed and managed DB Workloads on OCI compute	DB Workloads running on BM/VM in public cloud	High performance DB workloads on Exadata in public cloud	For sensitive data with higher availability, perf needs	Customer- managed workloads running on commodity h/w

Oracle Exadata Cloud

Exadata runs everywhere
Identicality across deployments improves IT agility and reduces costs

On-premises	Public Cloud	Hybrid Cloud	Multicloud
Exadata Database Machine	Exadata in Oracle Cloud Infrastructure (OCI)	Exadata Cloud@Customer	Exadata through Oracle Database Service for Azure

Exadata Cloud | OCI Console

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

- Works with Autonomous Database on Dedicated Infrastructure

Exadata Cloud | Dom0 vs DomU Roles and Responsabilities
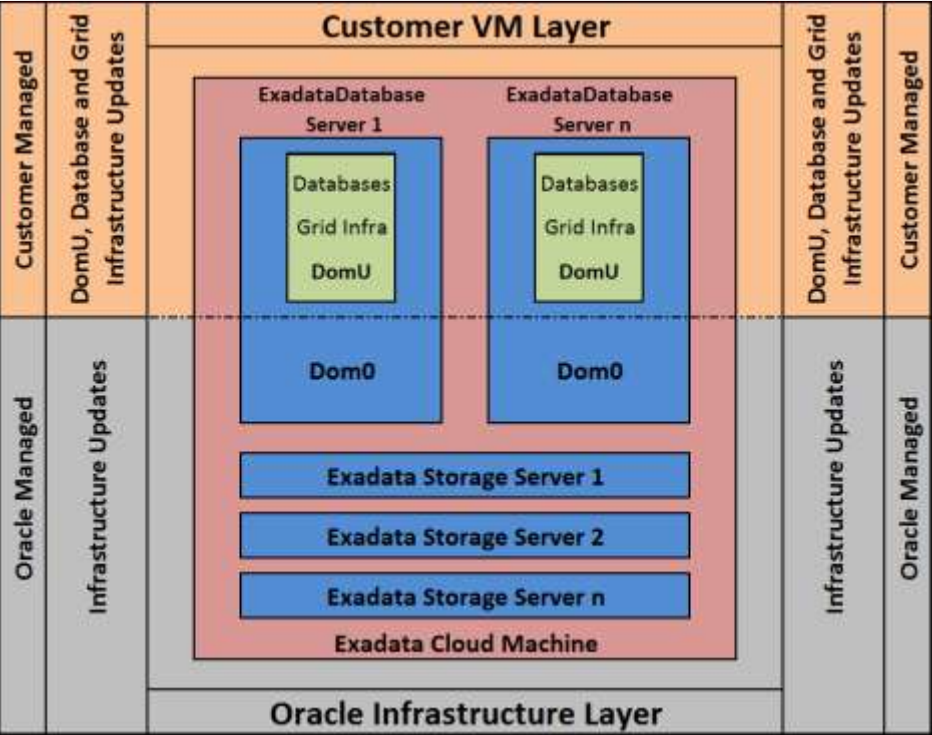
About *Domo* Oracle Responsibilities

- Oracle Cloud Ops manage Exadata infrastructure (hardware, system software) & hypervisor (domo);
- Oracle Support is responsible for update any version;
- The customer is responsible for scheduling Domo maintenance and must provide at least 4 dates per year;
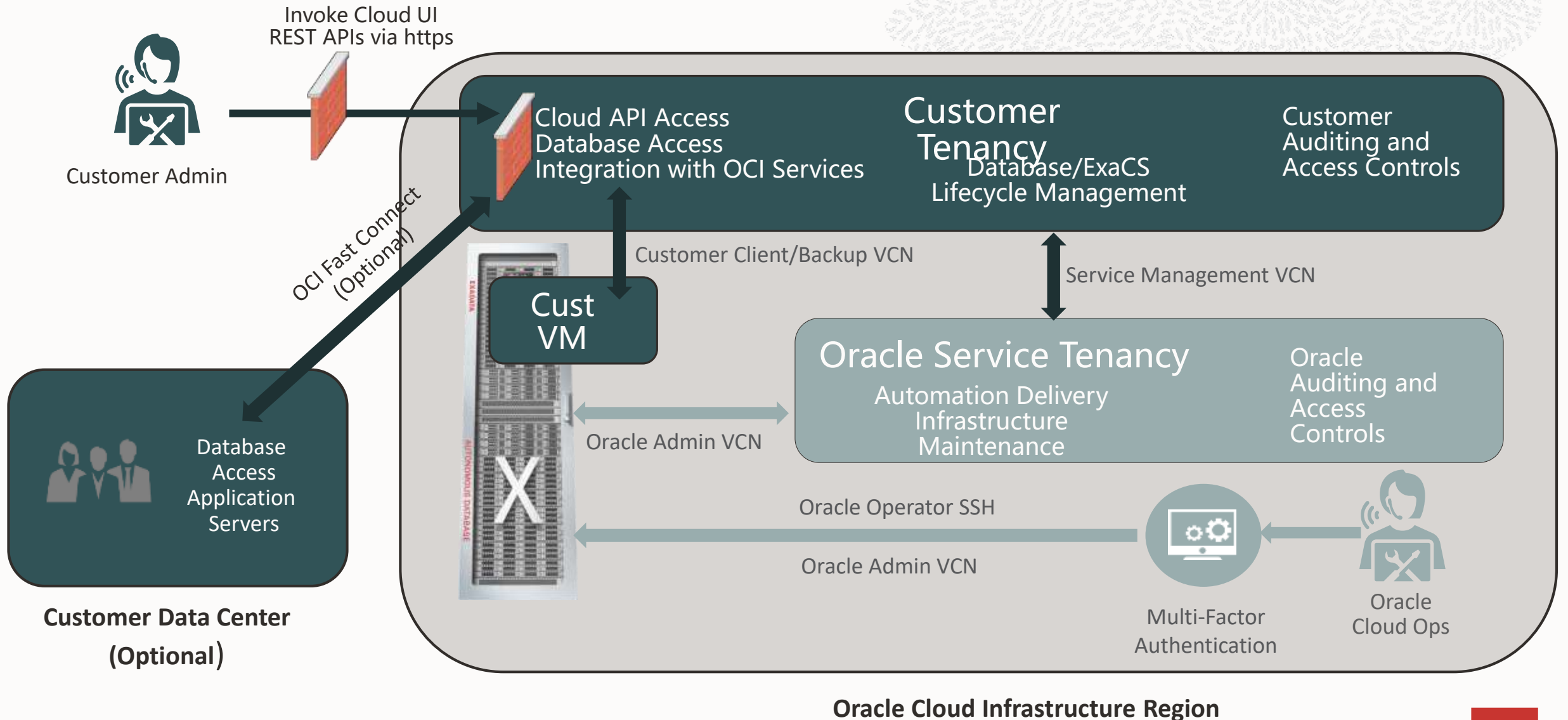
About *DomU* Customer Responsabilities

- Adjust license (BYOL or License included)
- Scale UP/Down resources
- For Exadatada Cloud at Customer Gen2 DomU uses KVM
- Customer have root access to domU;
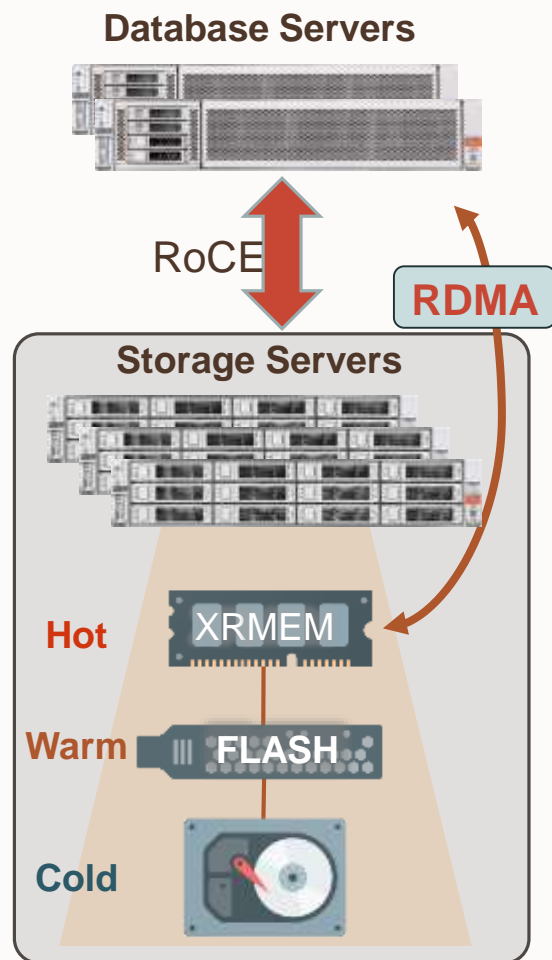- The customer is responsible for any update or configuration change on DomU;

Exadata Cloud at Customer | Control Plane Workflow

Invoke Cloud UI or REST APIs

Customer Admin

Oracle Public Cloud Control Plane

Deploy, Monitor, Lifecycle

Intranet

Local Control Plane Servers

Secure Tunnel

Two-factor authentication

Cloud Operations

Database Access by Application Servers

Outbound
- Health telemetry
- Alerts

Inbound
- Database/GI lifecycle calls
- VM lifecycle calls
- Infrastructure lifecycle calls
- Scaling up/down
- Troubleshooting and incident management

Customer Data Center

Oracle Public Cloud

Exadata Cloud Service Architecture

Invoke Cloud UI
REST APIs via https

Customer Admin

OCI Fast Connect
(Optional)

Cloud API Access
Database Access
Integration with OCI Services

Customer Tenancy

Database/ExaCS
Lifecycle Management

Customer Auditing and Access Controls

Customer Client/Backup VCN

Cust VM

Service Management VCN

Database Access Application Servers

Oracle Service Tenancy

Automation Delivery
Infrastructure
Maintenance

Oracle Auditing and Access Controls

Oracle Admin VCN

Oracle Operator SSH

Oracle Admin VCN

Multi-Factor Authentication

Oracle Cloud Ops

Customer Data Center

(Optional)

Oracle Cloud Infrastructure Region

Exadata architecture – scale out with intelligent storage

Database Servers

RoCE

RDMA

Storage Servers

Hot   XRMEM

Warm   FLASH

Cold

Scale-out system architecture and software

- Independent, online scaling of database and storage servers
- Scales from 2 to 210 Exadata X10M database servers
- Scales from 3 to 264 Exadata X10M storage servers
- Redundancy with fast failover provides high availability

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

- Bypasses network and I/O software, interrupts, context switches
- Data is transparently managed in multiple storage tiers to minimize latency
- High-performance active-active 100 Gbit/s internal network maximize throughput
- Speeds up both database reads and commits

Database cluster virtualization

- Deploy environments with different needs on the same system
  - Dev-Test, Staging Production, DR
  - OLTP, Analytics, Mixed Workloads
- Share and manage pools of resources to increase efficiency and lower costs
- Isolate resources to meet differing security and predictability requirements

There are no EF and XT Storage options for Exadata Cloud

High-Capacvity (HC) Storage
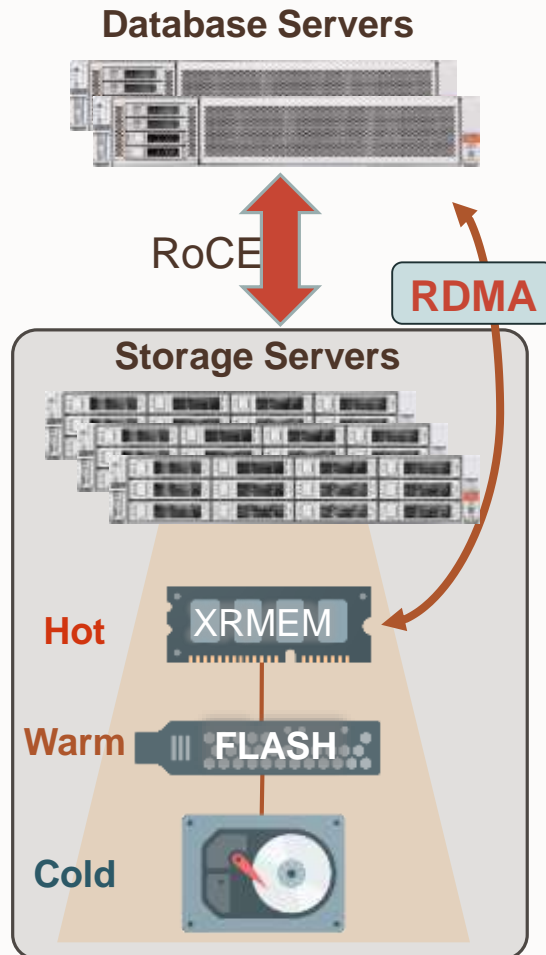
Extreme Flash (EF) Storage
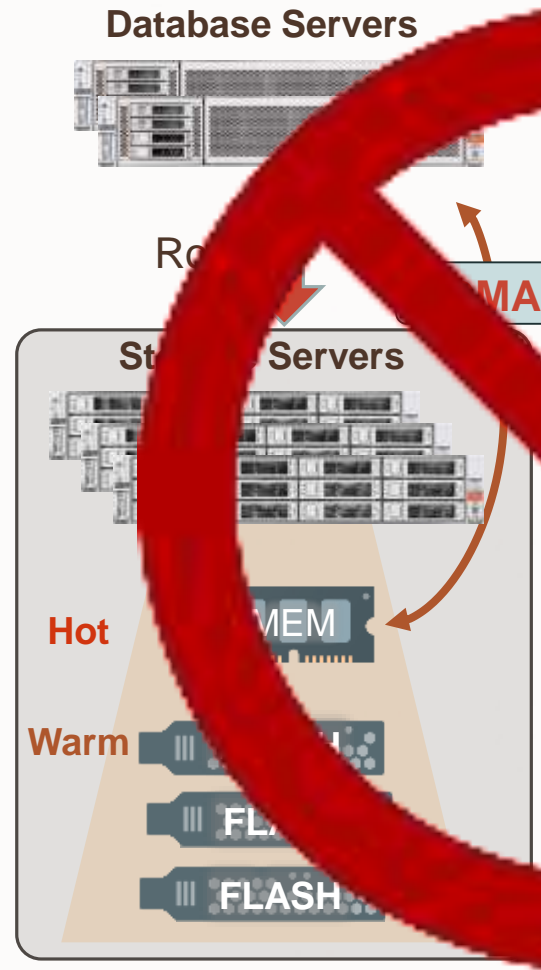
Extended (XT) Storage
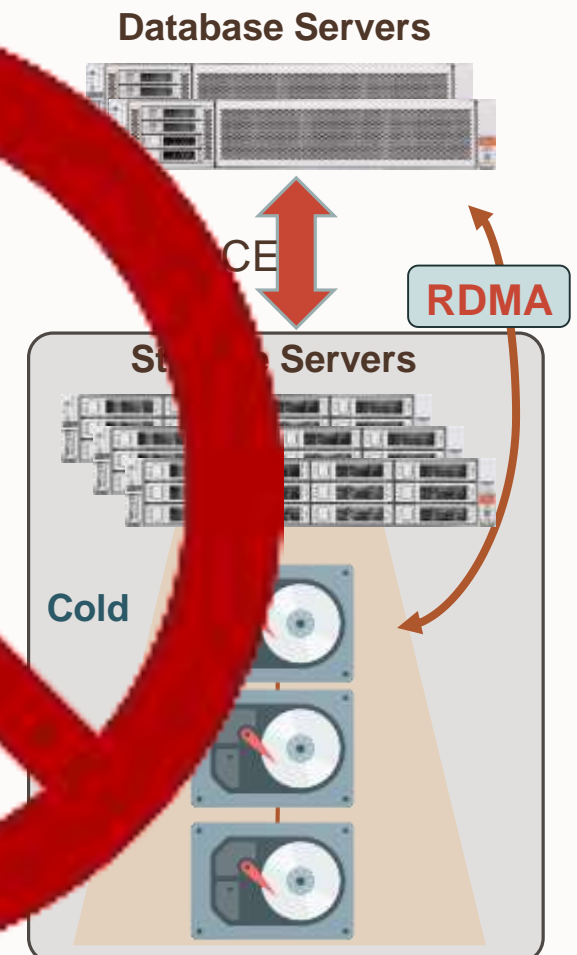
Exadata Cloud X9M Flexible Shapes

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

Storage (vertical axis)

Compute (horizontal axis)

Base System

Ideal for small-scale consolidation and the lowest cost

- 2 Database Servers
- 3 Strorage Servers
- Max VM's Per DB 4
- No PMEM

X9M Quarter Rack

Ideal for large databases, small-scale consolidation, and petabyte-scale analytics

- 2 Database Servers
- 3 Storage Servers
- Max VM's Per DB 8
- 4.5 TB PMEM

X9M Half Rack

Ideal for very large databases and medium-scale consolidation

- 4 Database Servers
- 6 Storage Servers
- Max VM's Per DB 16
- 9.0 TB PMEM

X9M Full Rack

Ideal for large-scale consolidation for all type of database workloads

- 8 Database Servers
- 12 Storage Servers
- Max VM's per DB 16
- 18 TB PMEM

Exadata Cloud at Customer X10M Shapes

NEW SHAPE

NEW SHAPE

Quarter Rack – X10M

Quarter Rack – X10M - L

Quarter Rack X10M- XL

<u>Total Capacity</u>

DB Servers
Storage Servers

380 Cores – 2,780 GB Memory
192 TB Usable DB Storage

380 Cores – **4,180 GB Memory**
192 TB Usable DB Storage

380 Cores – **5,600 GB Memory**
192 TB Usable DB Storage

There are no Half and Full rack shapes.
Expand Quarter Racks using Expansion Servers.

Easily right-size your service by adding compute and storage as needed

OLTP

Consolidate up to thousands of databases
Converged database, private cloud in the public cloud

OLTP and data warehouse

Compute scaling

Add compute servers

Starter Configuration

Petabyte data warehouse

Add storage server(s)
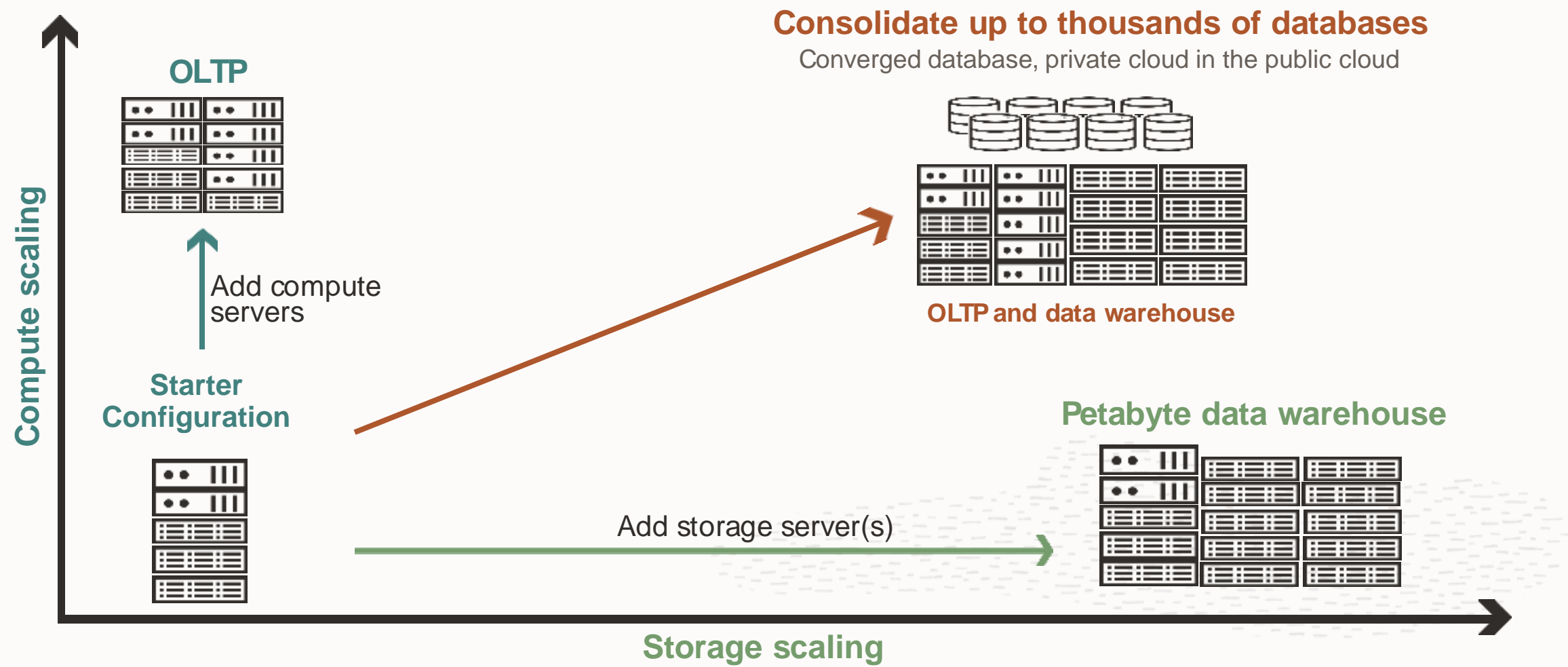
Storage scaling

Online – No downtime scaling

Exadata Cloud@Customer X10M Shapes

All Configurations greater than a Quarter Rack are elastic

Standard
Configuration

Elastic Configuration

Database Server

Storage Server

Incrementally add Database and Storage Servers
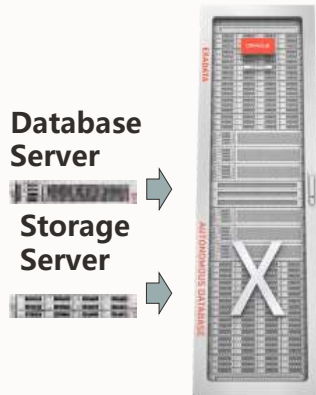
Add Racks to Continue Scaling

Database Server
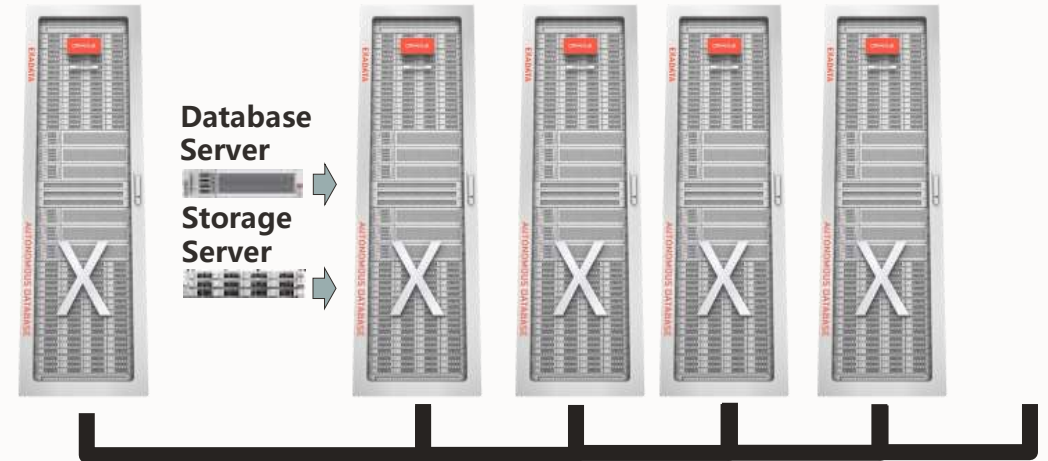
Storage Server

Start with a Standard Configuration

- Quarter Rack
- Quarter Rack-L
- Quarter Rack – XL

Elastically Expand Rack with Servers

- Database Server
- Storage Server

- Can NOT mix Database Servers with different memory configurations
  - e.g. X10M cannot be mixed with X10M-XL

Continue to Expand Servers using Expansion Rack(s)

- Up to 6 Racks including primary rack
- Max 32 Database Servers
- Max 64 Storage Servers
- Max 5 Expansion Racks

Exadata Cloud tools

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

Exadata Cloud Command Line Interface (*dbaascli*)

How to upgrade DBAAS Cloud Tooling using dbaascli (Doc ID 2350471.1)

Database Commands

- *dbaascli* database create
- *dbaascli* pdb create
- *dbaascli* pdb relocate

Backup Commands

- *dbaascli* database backup
- *dbaascli* database recover
- *dbaascli* create-dbstorage

Database Home Patch

- *dbaascli* database upgrade
- *dbaascli* db home patch
- *dbaascli* grid patch
- *dbaascli* update-dbhome

Exadata Cloud Pathing

Exadata Cloud Pathing
Pathing dom0, domU, Tooling, Grid and Oracle home, how and how to do

DOMU - CUSTOMER RESPONSIBILITY

Maintaining a secure Exadata Service instance in the best working order requires you to perform the following tasks regularly:

- **Patching Grid Infrastructure.**
- **Patching Database software.**
- **Patching Exadata Software Image (SO).**
- **Patching Tooling (dbaascli).**
- **Patching other components installed on DomU.**
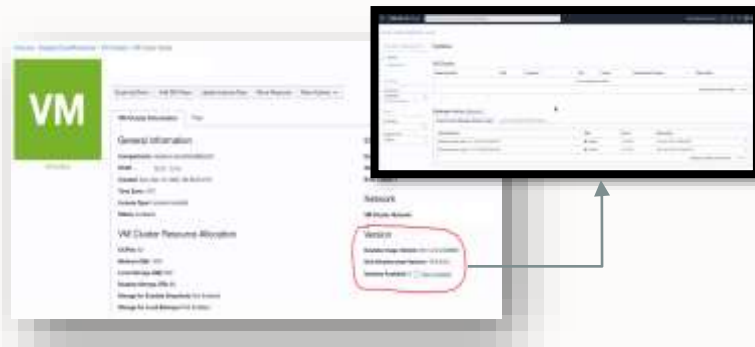
DOM0 - ORACLE RESPONSIBILITY

Oracle manages quarterly infrastructure maintenance updates of all other infrastructure components:

- **Patching Database Servers (Dom0).**
- **Patching Storage servers.**
- **Patching Network switches.**
- **Patching Control Planes.**

Quarterly maintenance updates may require a restart of the customer-managed guest virtual servers.

Quarter 1	Quarter 2	Quarter 3	Quarter 4
☑ JANUARY	☑ APRIL	☑ JULY	☑ OCTOBER
☑ FEBRUARY	☑ MAY	☑ AUGUST	☑ NOVEMBER
☑ MARCH	☑ JUNE	☑ SEPTEMBER	☑ DECEMBER

Exadata Cloud Features

Oracle Database and Exadata Platform Innovations

Multitenant
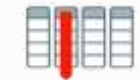
In-Memory DB

Real Application Clusters

Active Data Guard

Partitioning

Advanced Compression

Advanced Security, Label Security, DB Vault
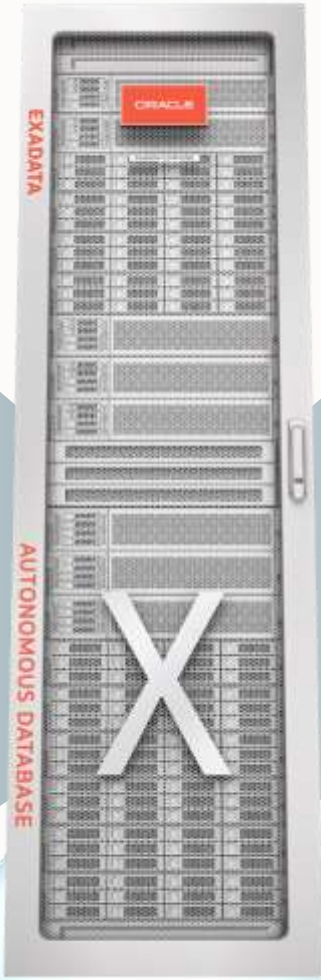
Real Application Testing

Advanced Analytics, Spatial and Graph

Management Packs for Oracle Database

All Oracle Database Innovations

All Exadata DB Machine Innovations

EXADATA

AUTONOMOUS DATABASE

Offload SQL to Storage

RoCE Fabric

100 Gbps

XRMEM Data Accelerator

Smart Flash Cache

PCI Flash

Storage Indexes

Columnar Flash Cache

Hybrid Columnar Compression

HCC

10:1

I/O Resource Management

I/O   I/O   I/O

Network Resource Management

PRIORITY LANE

In-Memory Fault Tolerance
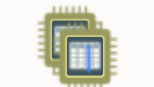
Exafusion Direct-to-Wire Protocol

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

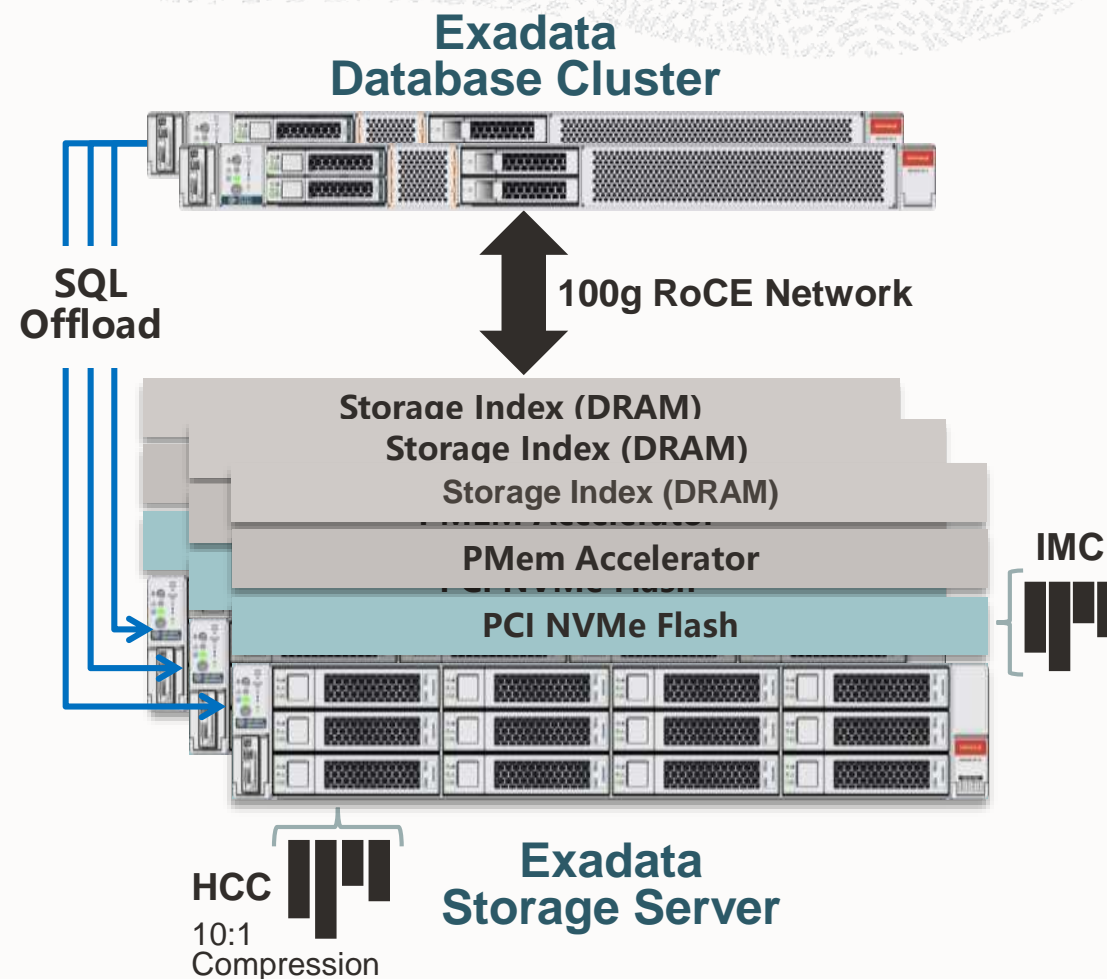- Eliminates I/O not relevant to a particular query

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 Database Cluster

SQL Offload

100g RoCE Network

Storage Index (DRAM)
Storage Index (DRAM)
Storage Index (DRAM)
PMem Accelerator
PCI NVMe Flash

IMC

HCC
10:1 Compression

Exadata Storage Server

Smart Scan

Oracle Database | No Exadata System
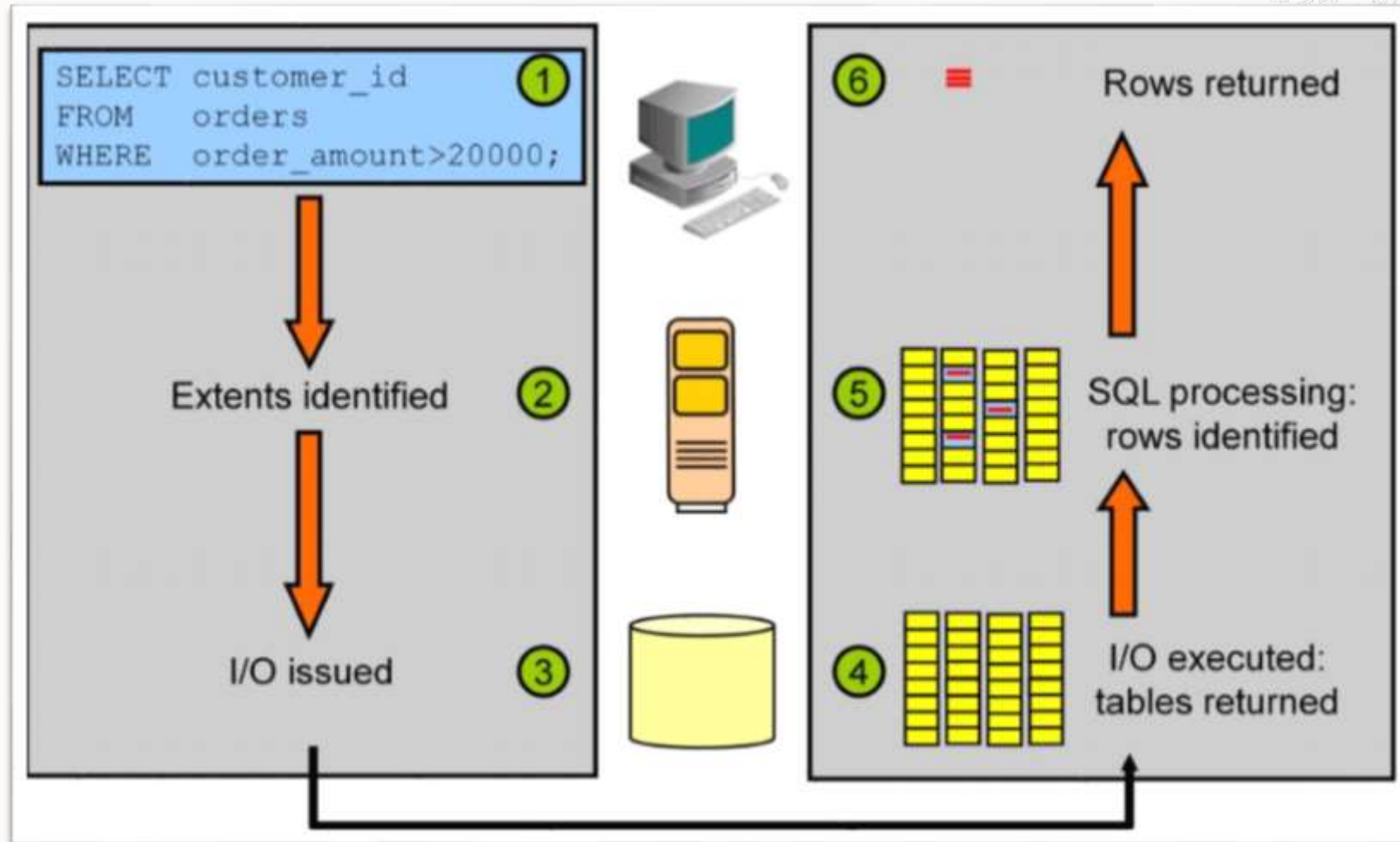
Exadata Cloud a Smart Scan | Off Load Querying
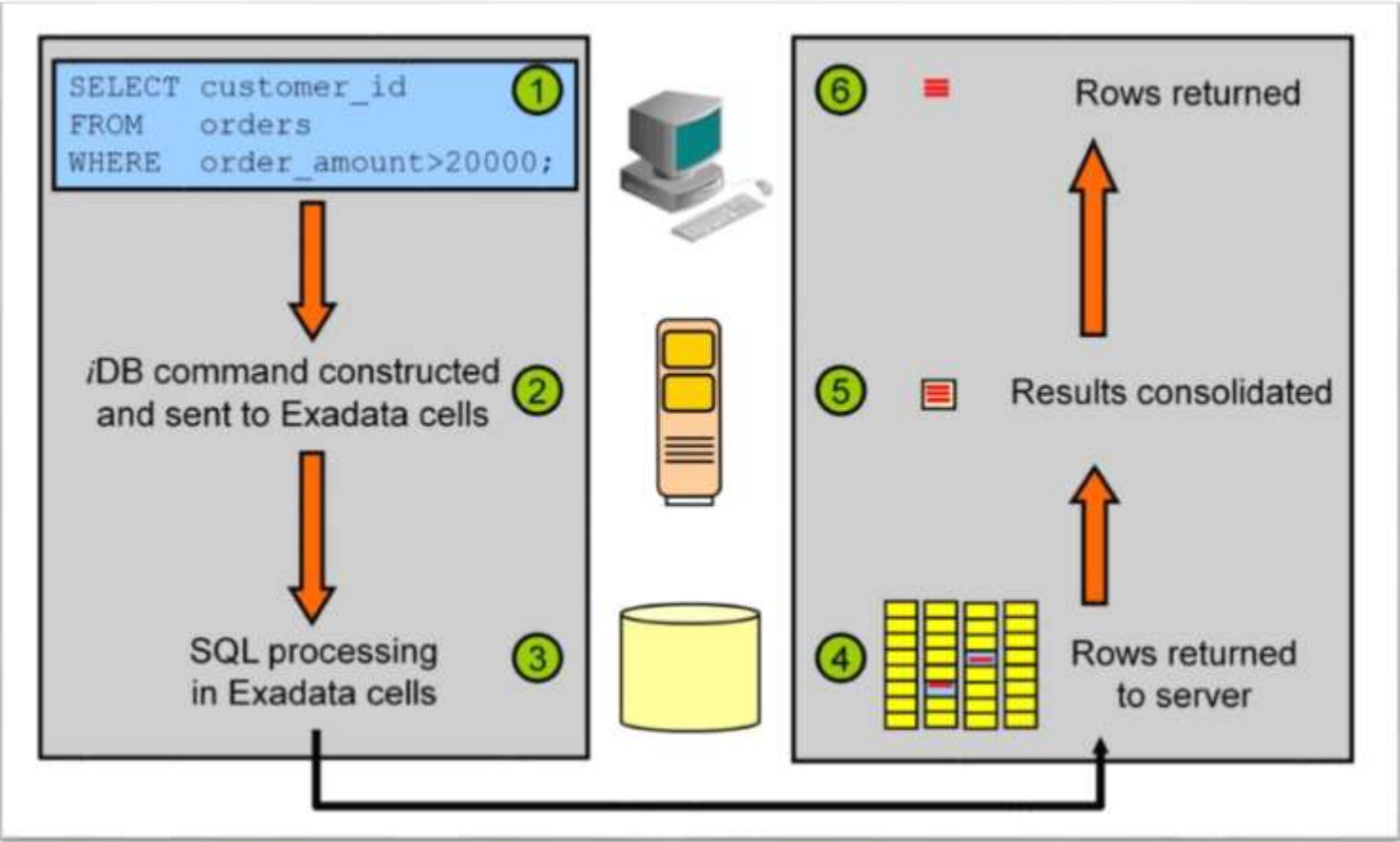
Query Execution plan | Traditional Database Vs Exadata System

```
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 global temporary table~~

- A Scan is performed on an index-organized table

- Fast full scan performed on a compressed index

- Fast full scan is performed on a reverse key index

- The table has row-level dependency tracking enabled.

- The optimizer wants the scan to return rows in ROWID order

- A LOB or LONG column is being selected or queried

- A select-for-update flashback query is being executed

- A query that references columns is referenced

Oracle Database backup options

Oracle Database automatic backup

Manage backup and restore feature for VM/BM DB System

- Backup stored in Object or Local storage

- DB System in private subnets can leverage Service Gateway

- Start With 2 cores and Scale Up/Down OCPU's based on your requirement

  Backup Options

- It is not possible to create a non-CDB via the console - use dbcli
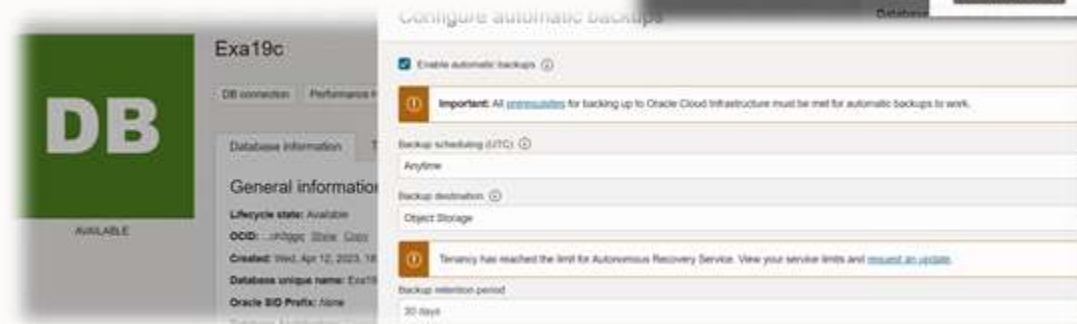
OCI Database Backup | Take Care before delete your Database

Terminate Database

Are you sure you want to terminate the peer database? Once it's terminated, the associated primary database will no longer be in high availability mode. Terminating the database permanently deletes it from its DB System and removes all automatic backups. You cannot recover a terminated database.

Are you sure you want to terminate database **DB12**? **Terminating the database permanently deletes it from its DB System and removes all automatic backups.** You cannot recover a terminated database.

Do you want to back up the database before terminating it?

☐ Yes, back up the database

To confirm termination, enter the name of the database:

[   ]

Terminate Database   Cancel

Cloud Backup | Oracle Database Backup Cloud Service page

Recovery Service offloads backup validation

All backups are checked for recoverability, reducing database service overhead

Traditional cloud backup

1. Backup (full or incremental) is created on the production database service and stored in object storage

2. Production service reads the backup from object store, validates it, and fixes issues **doubling the impact on production database services**

3. Periodic revalidation **increases production database consumption**

4. Resulting in:

   a. Lower production performance if resource constrained, or

   b. Higher consumption costs if resources are unconstrained, or

   c. Decision to not validate backups or revalidate them, increasing risk

All work takes place on the production database service

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
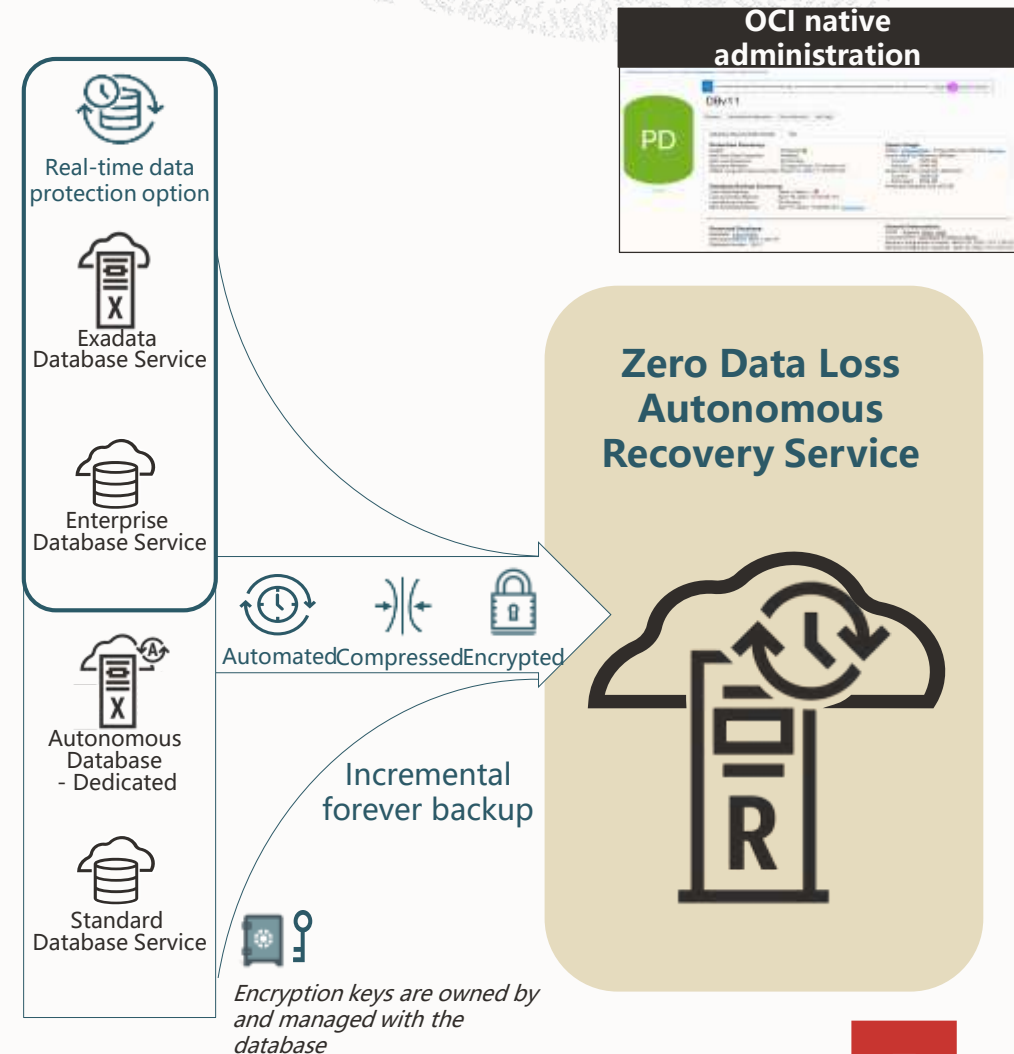
Operational efficiency

- 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

OCI native administration

Real-time data protection option

Exadata Database Service

Enterprise Database Service

Autonomous Database - Dedicated

Standard Database Service

Automated Compressed Encrypted

Incremental forever backup

Zero Data Loss Autonomous Recovery Service

Encryption keys are owned by and managed with the database

Recovery Service eliminates weekly full backups
Incremental-forever backups reduce backup overhead on production database services

Time Machine

Autonomous Database - Dedicated

Exadata Database Service

01001010110
10010101101
01001010110
01001010010
10010101100

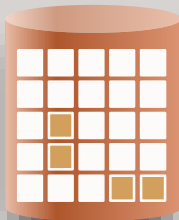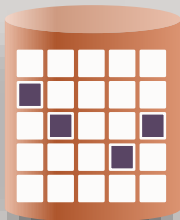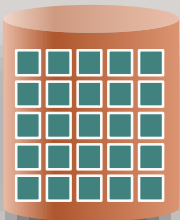Enterprise Database Service

Standard Database Service

R

Incremental forever backups of protected databases

Day 0 Full

Day 1 Incr

Day N Incr

Incremental forever backups stored on Recovery Service

Recovery Service simplifies database restores

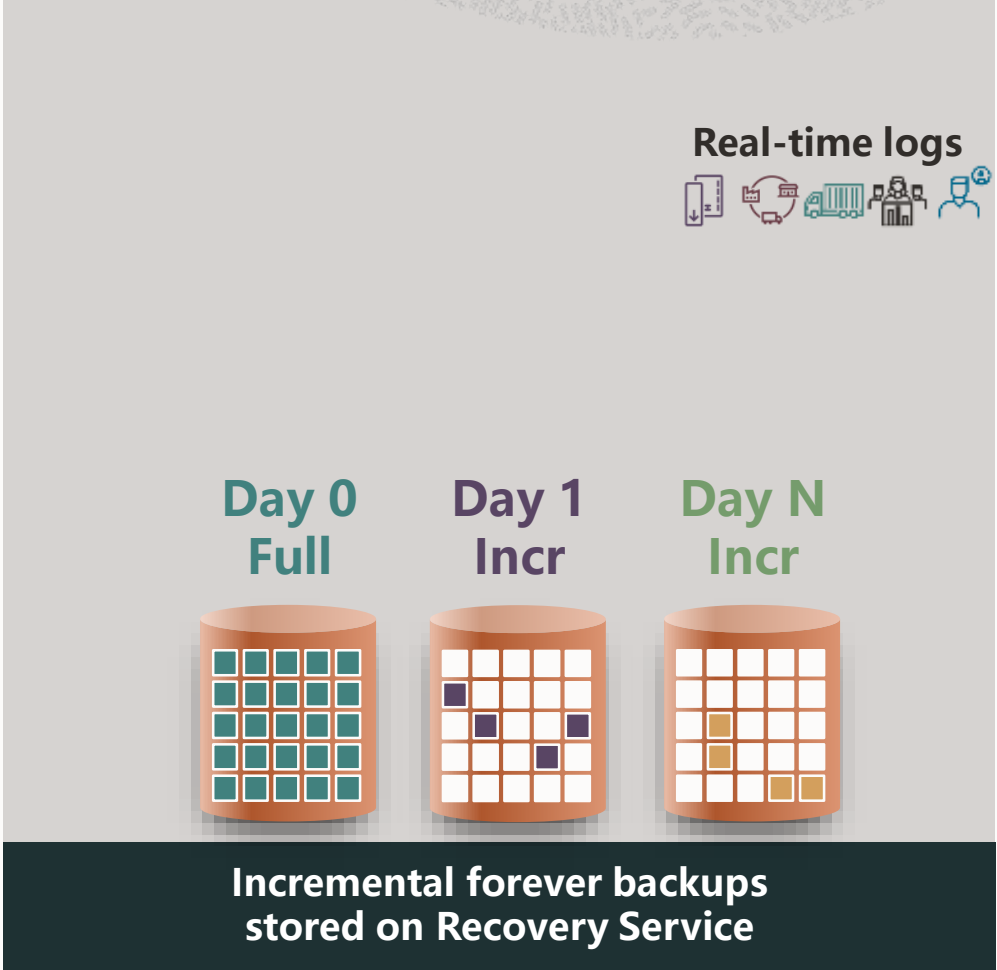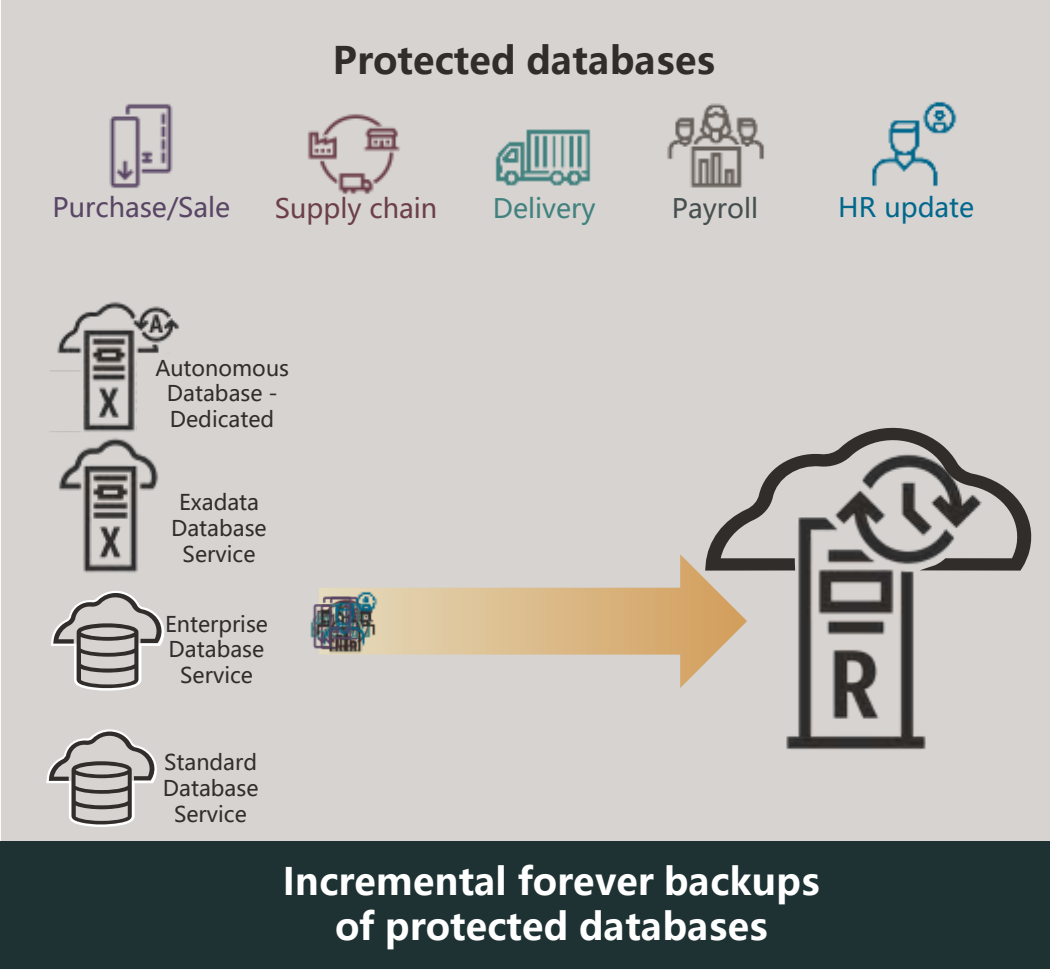Creation of virtual full backups eliminates multiple incremental restore & apply cycles

Request: January 9, 2022

**Restore Database
To Day 'N' at 14:53.12**

Autonomous Database - Dedicated

Exadata Database Service

Enterprise Database Service

Standard Database Service

Time Machine

**Incremental forever backups
of protected databases**

Day 'N' Virtual Full Backup

**Day 0
Full**

**Day 1
Incr**

**Day N
Incr**

**Incremental forever backups
stored on Recovery Service**
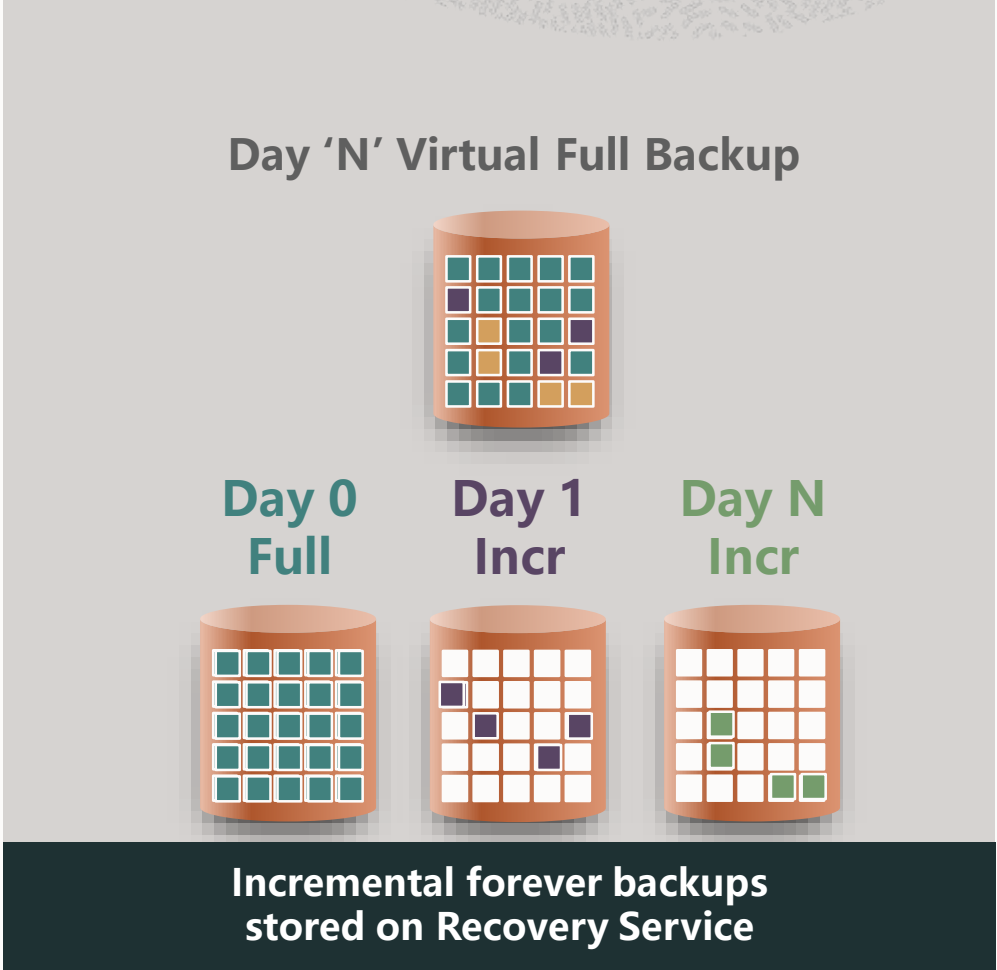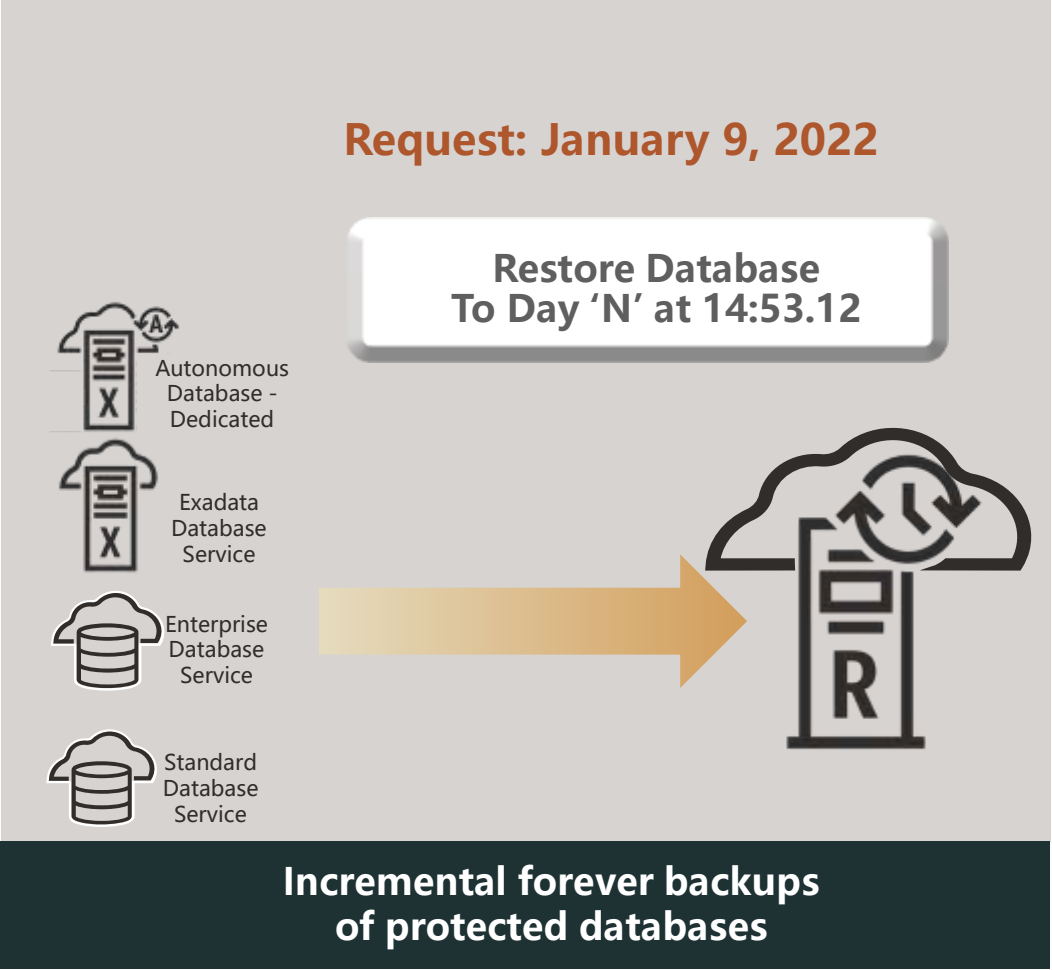
Recovery Service continuously protects Oracle databases

Real-time protection of database changes increases resiliency with point-in-time recovery
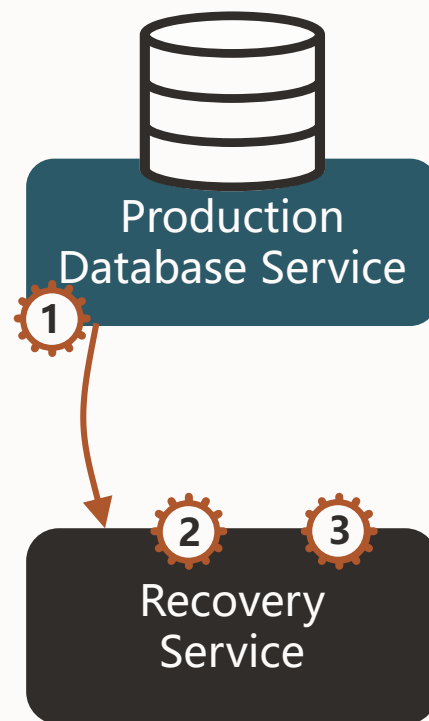
Time Machine

Protected databases

Purchase/Sale   Supply chain   Delivery   Payroll   HR update

Autonomous Database - Dedicated

Exadata Database Service

Enterprise Database Service

Standard Database Service

Incremental forever backups of protected databases

Real-time logs

Day 0 Full   **Day 1 Incr**   **Day N Incr**

Incremental forever backups stored on Recovery Service

Recovery Service offloads backup validation
All backups are checked for recoverability, reducing database service overhead

Traditional cloud backup

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4. Resulting in:
   a. Lower production performance if resource constrained, or
   b. Higher consumption costs if resources are unconstrained, or
   c. Decision to not validate backups or revalidate them, increasing risk

Production Database Service

1

2 3

Recovery Service

Most work takes place on the Recovery Service

Recovery Service backup

1. Incremental forever backup is created on the production database service and stored in the Recovery Service

2. The Recovery Service uses **internal Oracle Database knowledge** to check examine and fix backups when ingested, with **no impact on production databases**

3. The Recovery Service periodically revalidates backups with **no production database consumption**

4. Resulting in:
   a. **Minimal backup impact on production databases**
   b. **No additional production database service costs**
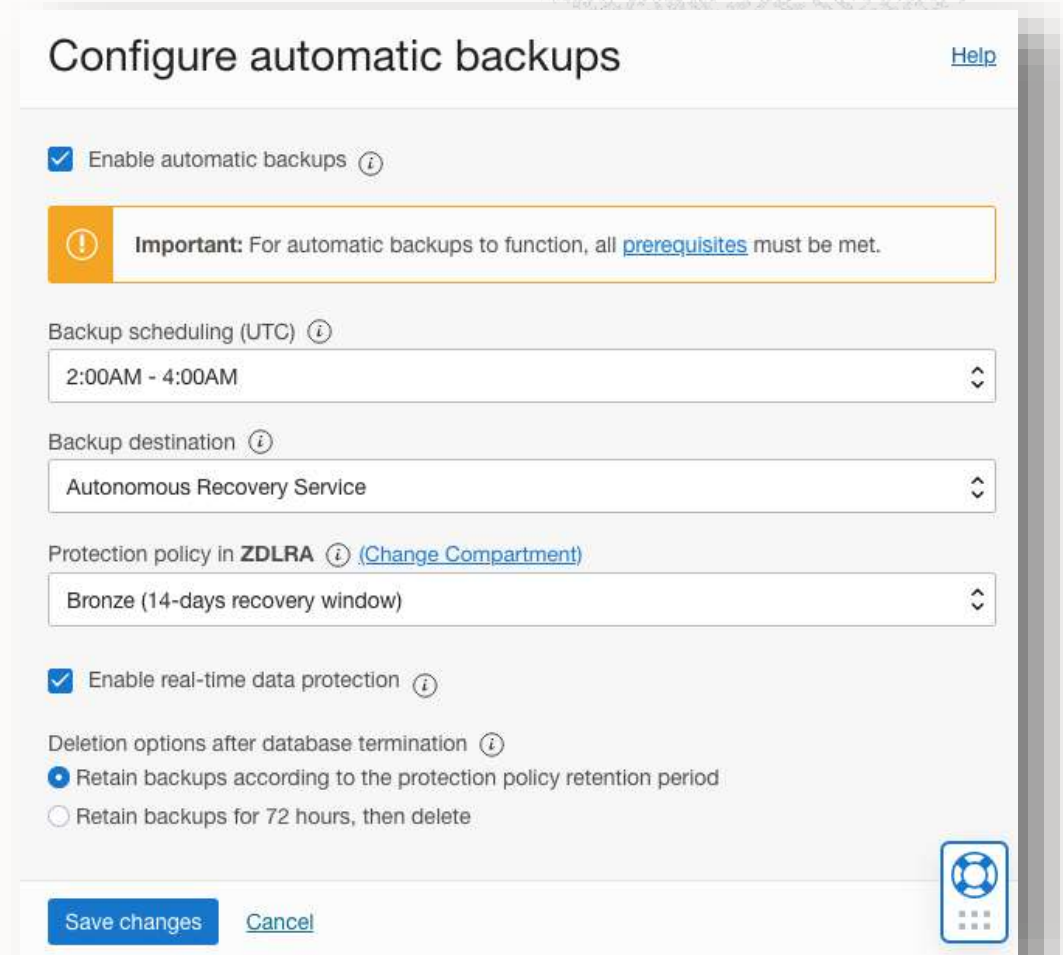   c. **Higher recoverability & lower risk**

Recovery Service is easy to set up and use
Protect Oracle databases with less then 5 clicks in the OCI console

A fully managed OCI service with a simple UI

1. Enable automatic backups

2. Schedule daily incremental backups to meet your business schedule

3. Select Autonomous Recovery Service

4. Select protection window of 14 to 95 days

5. Enable real-time protection

Recovery Service protects against unauthorized access
Built-in security and resiliency help safeguard mission-critical data

Encryption is mandatory

- Non-encrypted databases are rejected
- Keys are never stored in the Recovery Service

Access and management controls

- No direct user access to storage – backup only
- Access granted per protected database
- 14-day minimum retention enables recovery from human error or malicious internal actors

Resilient operations

- Fault-tolerant across all infrastructure components
- Highly available across Availability Domains and Fault Domain
- Load balanced within a region
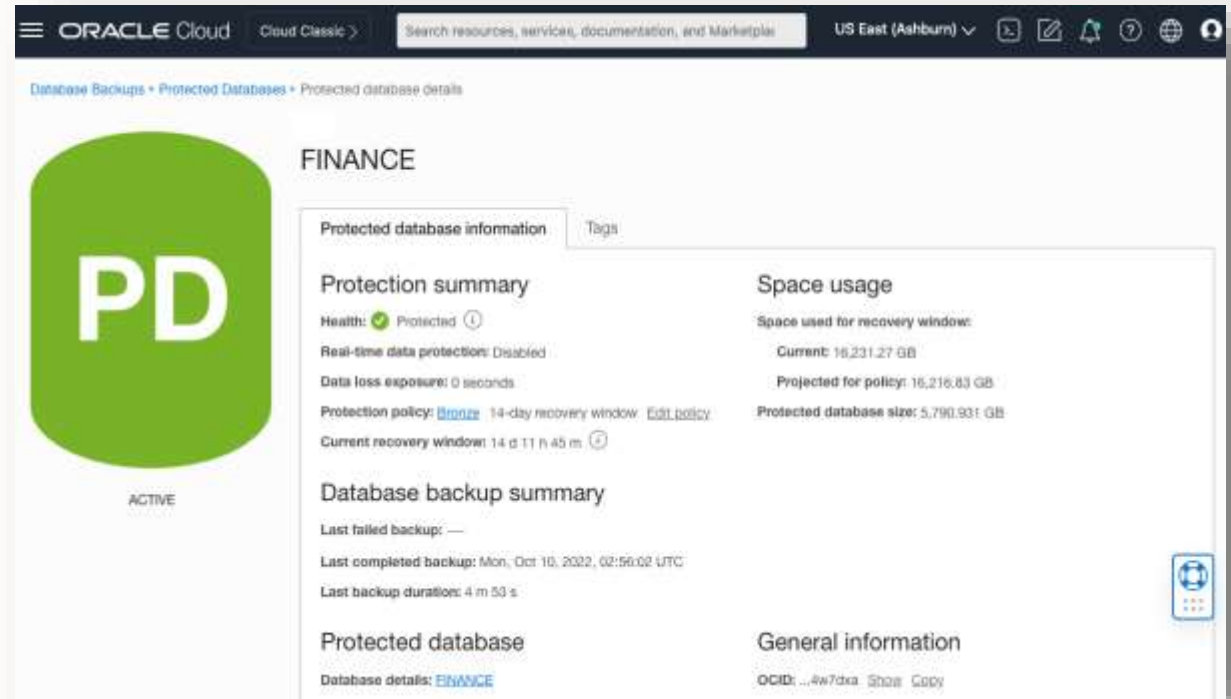
Recovery Service provides insights into backup health and operations

Built-in dashboards and tools simplify reporting and planning

Continuous monitoring of potential business risks

- Data loss exposure
- Recovery window

Critical data for operational planning

- Capacity usage
- Protection policy

Protected databases *in* ZDLRA *Compartment*

Protected databases offer an RMAN integrated 'incremental-forever' backup strategy to transfer Oracle Database backups to Oracle Cloud. Built to reduce network consumption and storage utilization, protected databases enable real-time data protection, backup validation and policy driven backup administration for all databases. Learn more.

Name	State	Health	Source database	Real-time data protection	Data loss exposure	Current recovery window	Recovery window space used	Protection policy	Database size	
FINANCE	● Active	Protected (i)	FINANCE	Enabled	0	7 d 7 h 54 m	8,121.12 GB	Bronze	5,778 GB	⋮
SALES	● Active	Protected (i)	SALES	Disabled	29 m 47 s	7 d 8 h 12 m	9,022.26 GB	Silver	3,944 GB	⋮
HRMS	● Active	Protected (i)	HRMS	Disabled	29 m 49 s	7 d 8 h 15 m	5,427.58 GB	Bronze	3,909 GB	⋮

Real-time protection and data loss exposure

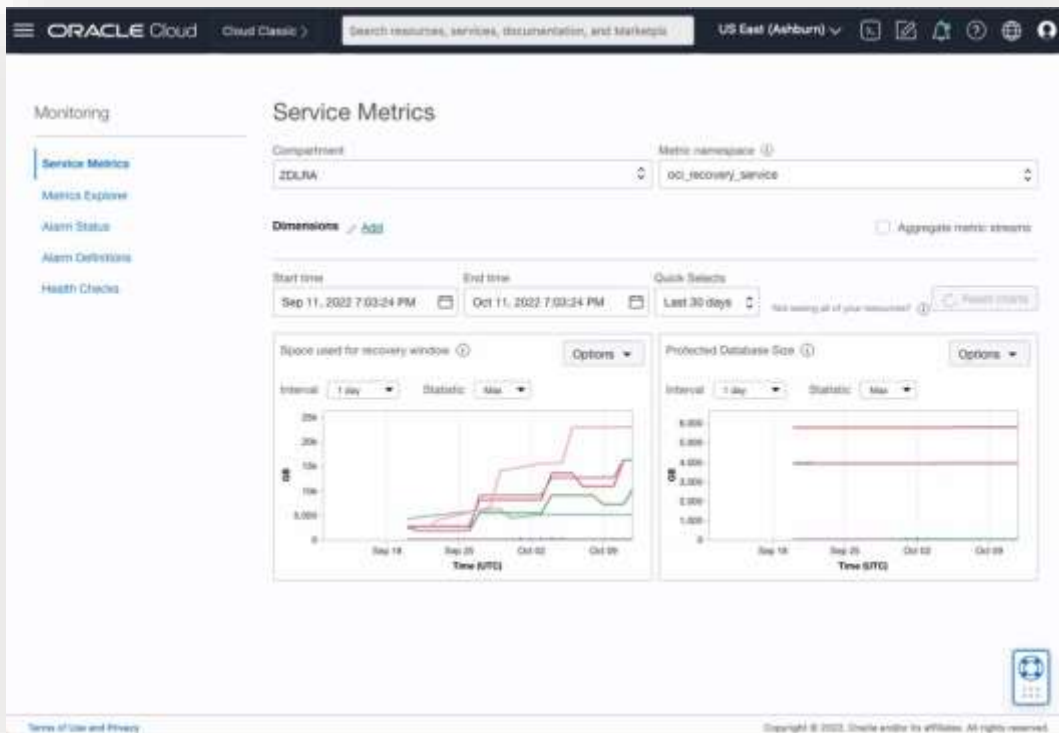**Recovery window and capacity used**

Protection policy

Recovery Service integrates with OCI observability and management

Comprehensive visibility across the full cloud stack

Integration with OCI Metrics Explorer provides common access to critical information

Alarms and notifications are created within OCI for consistent monitoring and management
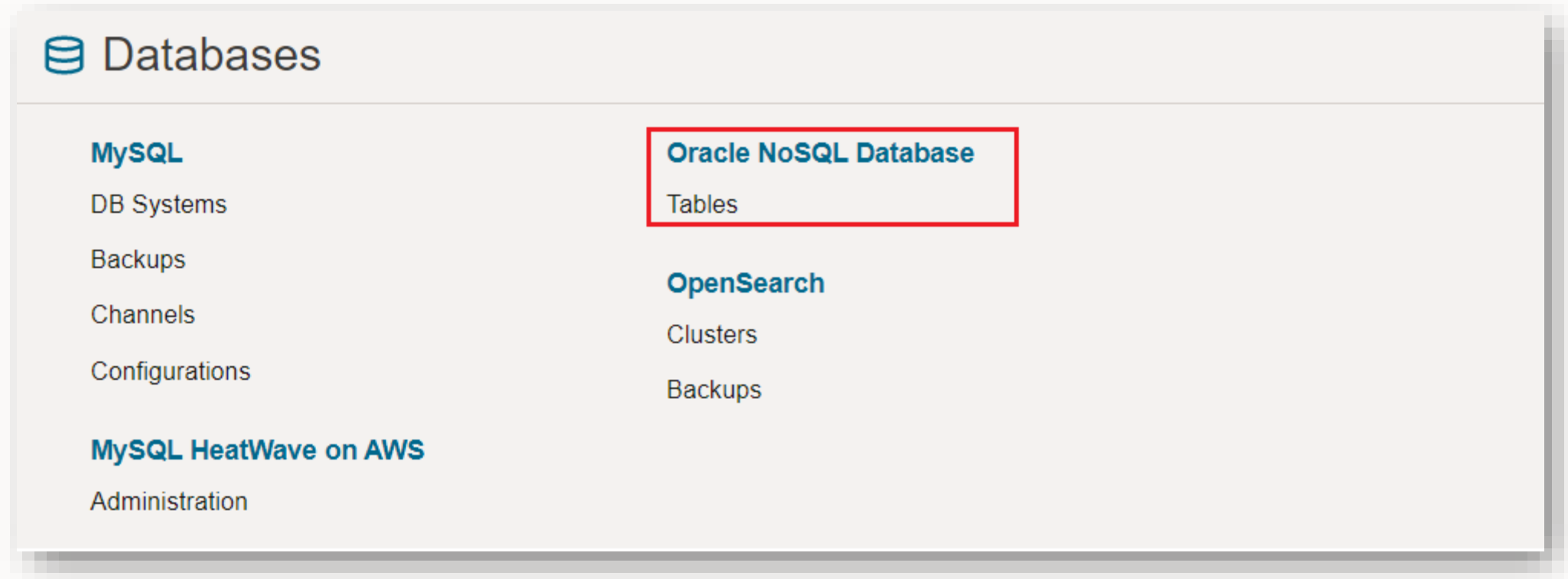
Oracle NoSQL Database Cloud Service

Oracle NoSQL Database Services on OCI Console

Easy provisioning and Management

Oracle NoSQL Database Architecture Overview
A distributed, shared nothing key/value data store architected for HA

Application

NoSQL Driver

Key Space (Auto-sharded tables)

Hash Function

Shard — Elected Leader, Replica, Replica

Shard — Elected Leader, Replica, Replica

Shard — Elected Leader, Replica, Replica

Storage Node

Storage Node

Storage Node

Fault Containment Zone 1

Fault Containment Zone 2

Fault Containment Zone 3
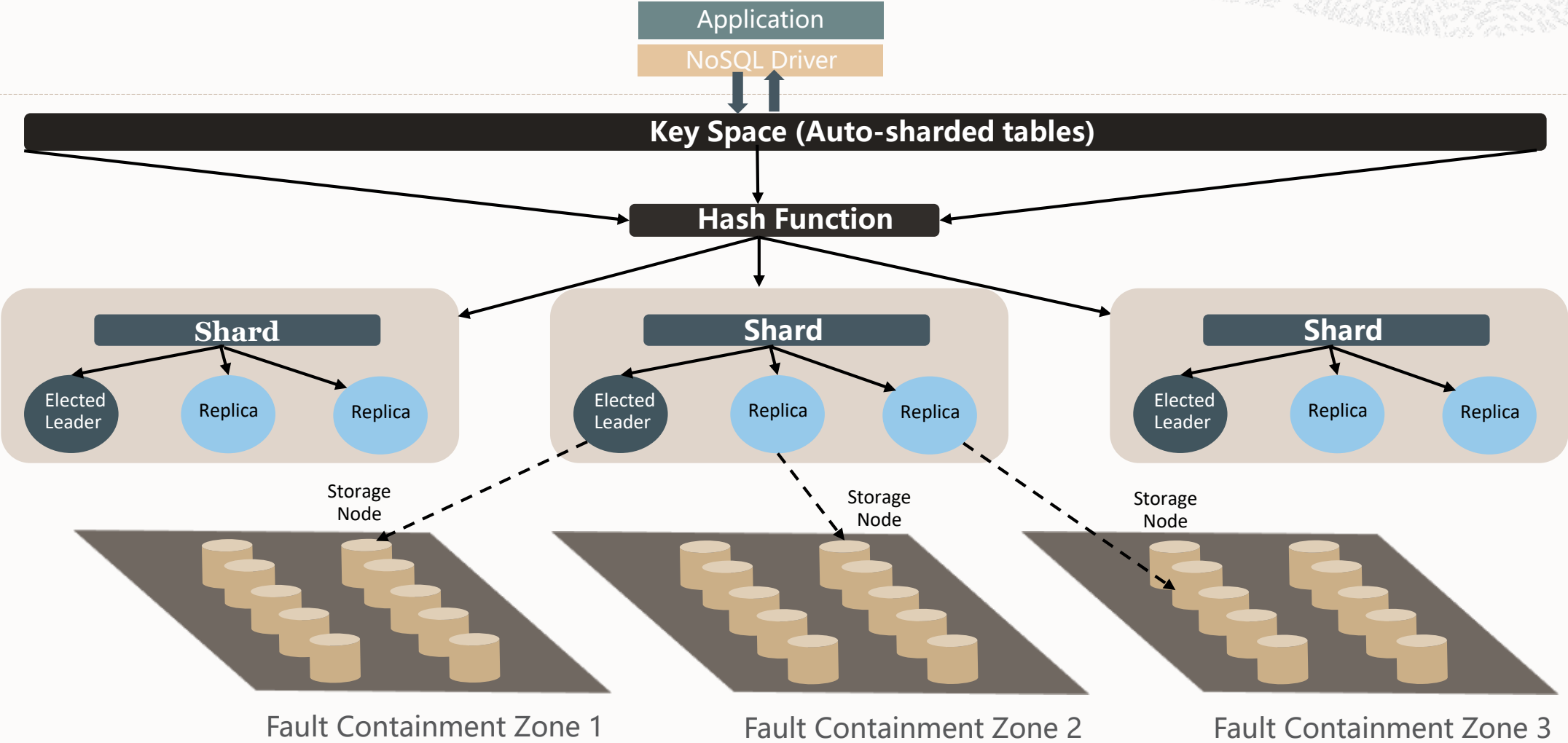
Oracle NoSQL Database Cloud Service
Built for extreme, dynamic workloads of today's modern applications

Fast, Flexible NoSQL Database Service at any scale

- **Fully managed**, **serverless** NoSQL database **table service**
- **Single digit millisecond** and **predictable** latency at any scale
- **Linear throughput scaling** for **extreme** workloads
- Multi-model support (document, fixed schema, key/value)
- **Built-in high availability** for business continuity
- Fully **ACID compliant** and **adjustable** read consistency
- Serverless computing through Oracle Functions
- Available in 30 OCI commercial regions worldwide (Mar 2022)

Differentiated Use Cases

- **Request level granularity** for extreme workloads, and handles **spikes** and **drops optimally**
- Fast, constant, high-volume workloads requiring **predictable low latency** for **highly responsive applications**
- Designed for business applications requiring **scale**, **performance**, and **high availability** with flexible consistency
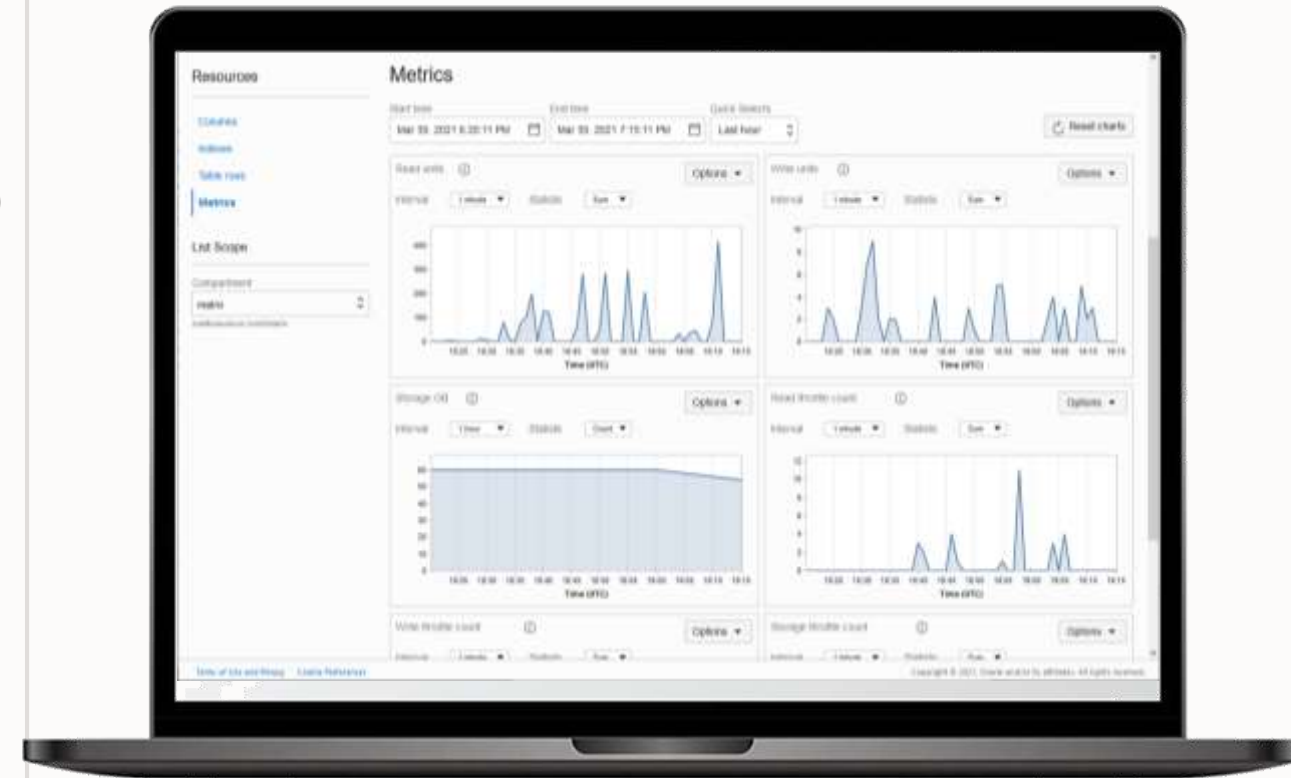
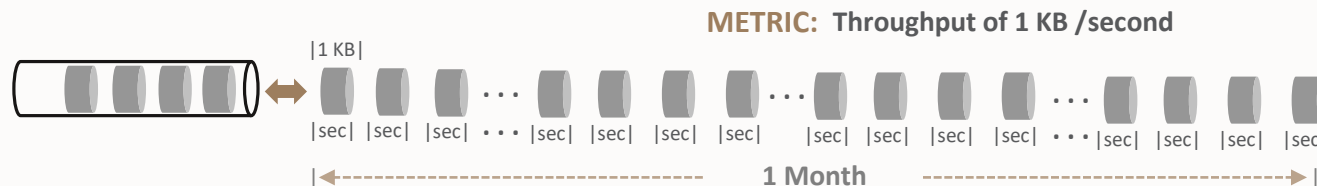# Oracle NoSQL Database Cloud Service - Metrics
Throughput provisioning

1 Write Unit

- The throughput of up to 1 kilobyte (KB) of data per second for a write operation over a one-month period

- Approximately 2.67 million writes per month

1 Read Unit

- The throughput of up to 1 kilobyte (KB) of data per second for an eventually consistent read operation

- Approximately 2.67 million eventually consistent reads per month

- 2 Read units are needed for an absolute consistent read

METRIC: Throughput of 1 KB /second

|1 KB|

|sec| |sec| |sec| · · · |sec| |sec| |sec| |sec| · · · |sec| |sec| |sec| |sec| · · · |sec| |sec| |sec| |sec|

|←----------------------------------- 1 Month -----------------------------------|

Period of a month
=3600 KB/Hr*744 Hr
=2.67 million (writes/reads) KBs

Oracle NoSQL Database Cloud Service – Capacity
Provisioned capacity vs. on-demand capacity

Provisioned Capacity

- Must determine read/write units in advance

- Adjustments done via API or console

- Increasing unlimited

- Decreases limited to 4 per day

- Pay for what you provision

- Deep understanding of workload needed

On-Demand Capacity

- Automatic scaling

- No rate limiting in your application

- No workload characterization

- Simple to use

- Pay for what consumed

Oracle NoSQL Database Cloud Service – Provisioned Capacity
Provisioned throughput

- Provision reads/sec, writes/sec, GB storage at table creation time
  - Dynamically increase
  - Dynamically decrease

2000 read units   **100 write units**   **500 GB Storage**

```
JAVA code sample:
TableRequest tableRequest = new TableRequest()
        .setStatement("create table if not exists foo (id integer,
value JSON)")
        .setTableLimits(new TableLimits(2000, 100, 500))
        .setTimeout(1000);
TableResult res = NoSQLHandle.tableRequest(tableRequest);
```

Modify the table lowering the read units to 1000

```
tableRequest.setTableLimits(new TableLimits(1000, 100, 500))
```

Note: Every TableRequest is a DDL call to the NoSQL store and may be performed 4 times within a minute.
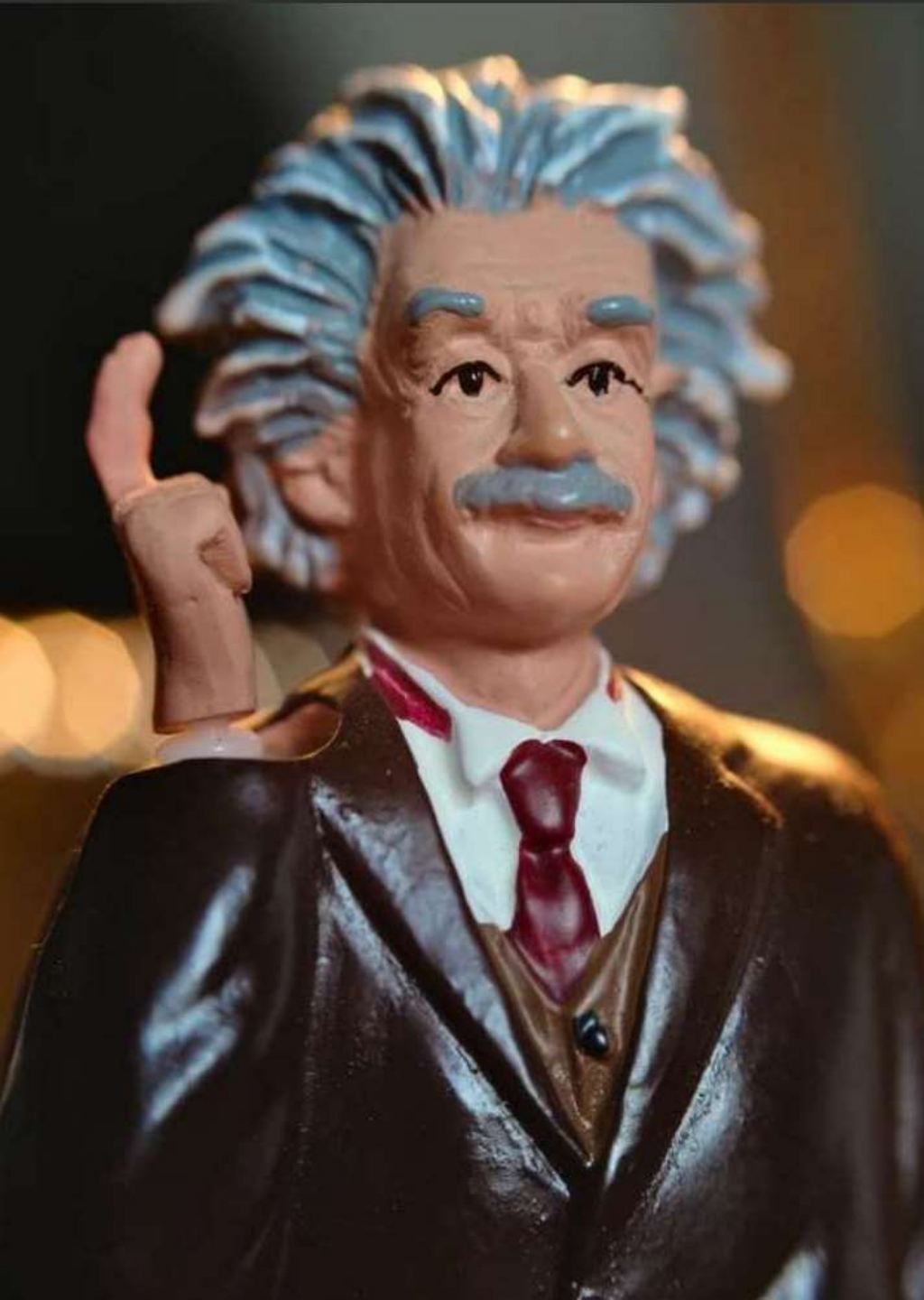
Oracle NoSQL Database Cloud Service – On-Demand Capacity
Auto-scaling throughput

Set to 0 **Set to 0** **500 GB Storage** **On-demand mode**

Python Code Sample

```python
request=TableRequest().set_statement(statement).set_table_limits(
        TableLimits(0,0,500,TableLimits.CAPACITY_MODE.ON_DEMAND))

handle.do_table_request(request, 50000, 3000)
```

Demo 1 – OCI NoSQL Services

- NoSQL Table provisioning
- NoSQL Table Insert using OCI Console

Demo 2 – Exadata Smart Scan

- Changing Table execution plan using Index
- Change index to invisible and enable Smart Scan

Resources

- **Oracle Database Backup Cloud Services**

  https://docs.oracle.com/en/cloud/paas/db-backup-cloud/

- **Oracle NoSQL Database Cloud Service**

  https://docs.oracle.com/en/cloud/paas/nosql-cloud/

- **Exadata X9M Datasheet**

  https://www.oracle.com/a/ocom/docs/engineered-systems/exadata/exadata-cloud-infrastructure-x9m-ds.pdf

- **Exadata Cloud Dbaascli commande reference**

  https://docs.oracle.com/pt-br/iaas/exadata/doc/ecc-using-dbaascli.html

- **Exadata X10M Cloud at Customer Datasheet**

  https://www.oracle.com/a/ocom/docs/engineered-systems/exadata/exadb-cc-x10m-ds.pdf

- **Zero Data Loss Autonomous Recovery Service**

  https://www.oracle.com/database/zero-data-loss-autonomous-recovery-service

- **Oracle oci License Management Services**

https://www.oracle.com/corporate/license-management-services/

- **Exadata Cloud at Customer Documentation**

https://docs.oracle.com/en/engineered-systems/exadata-cloud-at-customer/

- **Exadata Cloud Services documentation**

https://docs.oracle.com/en-us/iaas/exadatacloud/exacs/exadata-cloud-infrastructure-overview.html

- **Exadata Cloud Dedicated on Azure**

https://docs.oracle.com/en/solutions/deploy-exadata-on-oracle-db-azure/index.html#GUID-5EBF9A57-D710-48C4-BDDA-7E71A10AC62B

- **Oracle Live Labs**

https://apexapps.oracle.com/pls/apex/r/dbpm/livelabs/home

- **Live Labs - Oracle NoSQL powers Video On-Demand applications**

https://apexapps.oracle.com/pls/apex/f?p=133:180:17361911969675::::wid:3694

- **Live Labs - Discover Serverless Apps Using NoSQL Cloud Service**

  https://apexapps.oracle.com/pls/apex/r/dbpm/livelabs/view-workshop?wid=879&clear=RR,180&session=17361911969675

- **Live Labs - NoSQL Cloud Service**

  https://apexapps.oracle.com/pls/apex/f?p=133:180:17361911969675::::wid:642

- **Oracle NoSQL Database Cloud Service: Most flexible NoSQL Database**

  https://www.youtube.com/watch?v=TtZOy_NRouc

Thank you

—

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