

ORACLE

# Oracle Cloud DBA

Lear how to stay up to date on this DbaaS era – Day 3

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**Marcel Lamarca**

Exadata Cloud Specialist

Oracle, Alliances and Channels LAD

February, 2024



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



## MARCEL LAMARCA

Exadata Cloud Specialist

Upgrade, Utilities, Patching, Performance & Migrations

 marcel-lamarca

 marcel.lamarca@oracle.com

## 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 Administrator 2019
- 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



# Agenda

1

Oracle OCI Database Data Guard

2

Oracle Database Pathing and Upgrade

3

OCI MySQL Database service

4

OCI PostgreSQL Database service

5

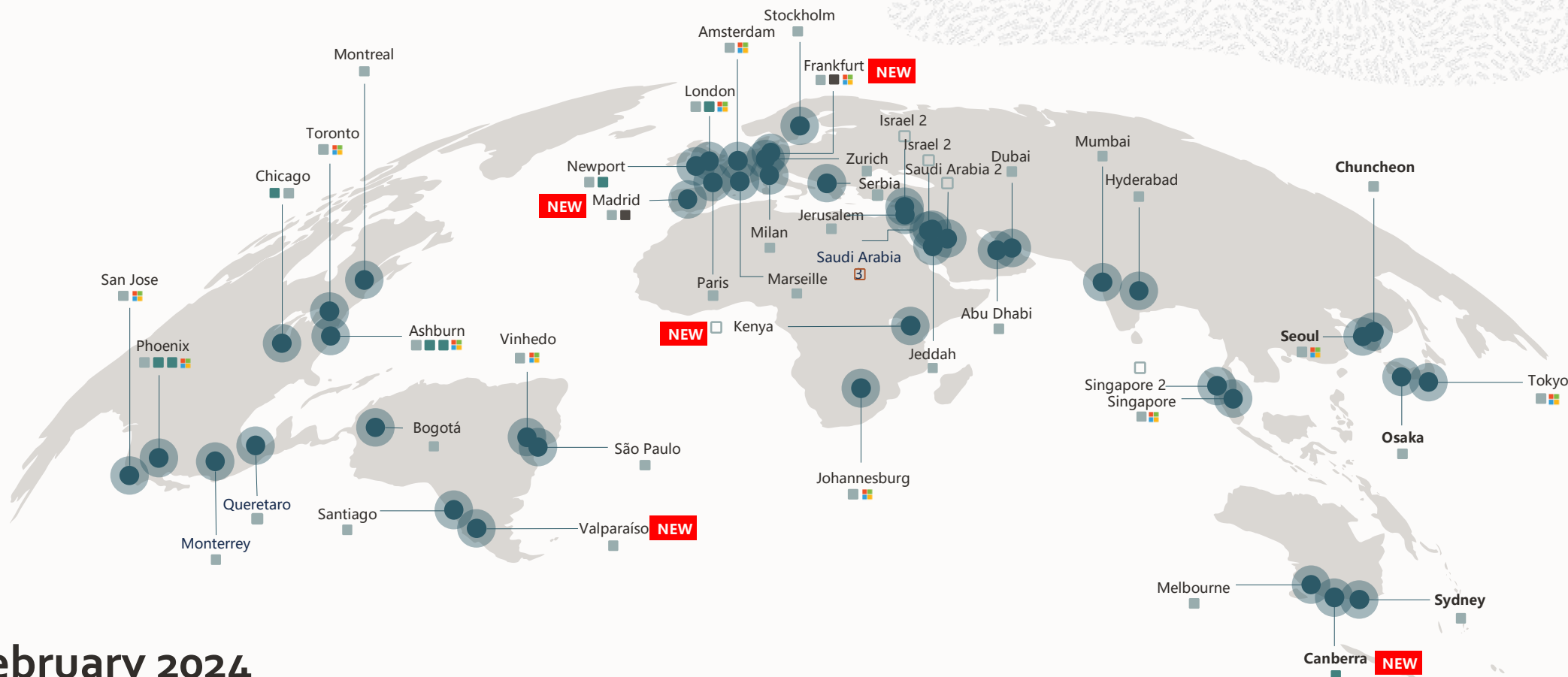
Oracle 1Z0-1093-23 topics





# OCI Cloud Region Maps

# Oracle Cloud Infrastructure Global Footprint

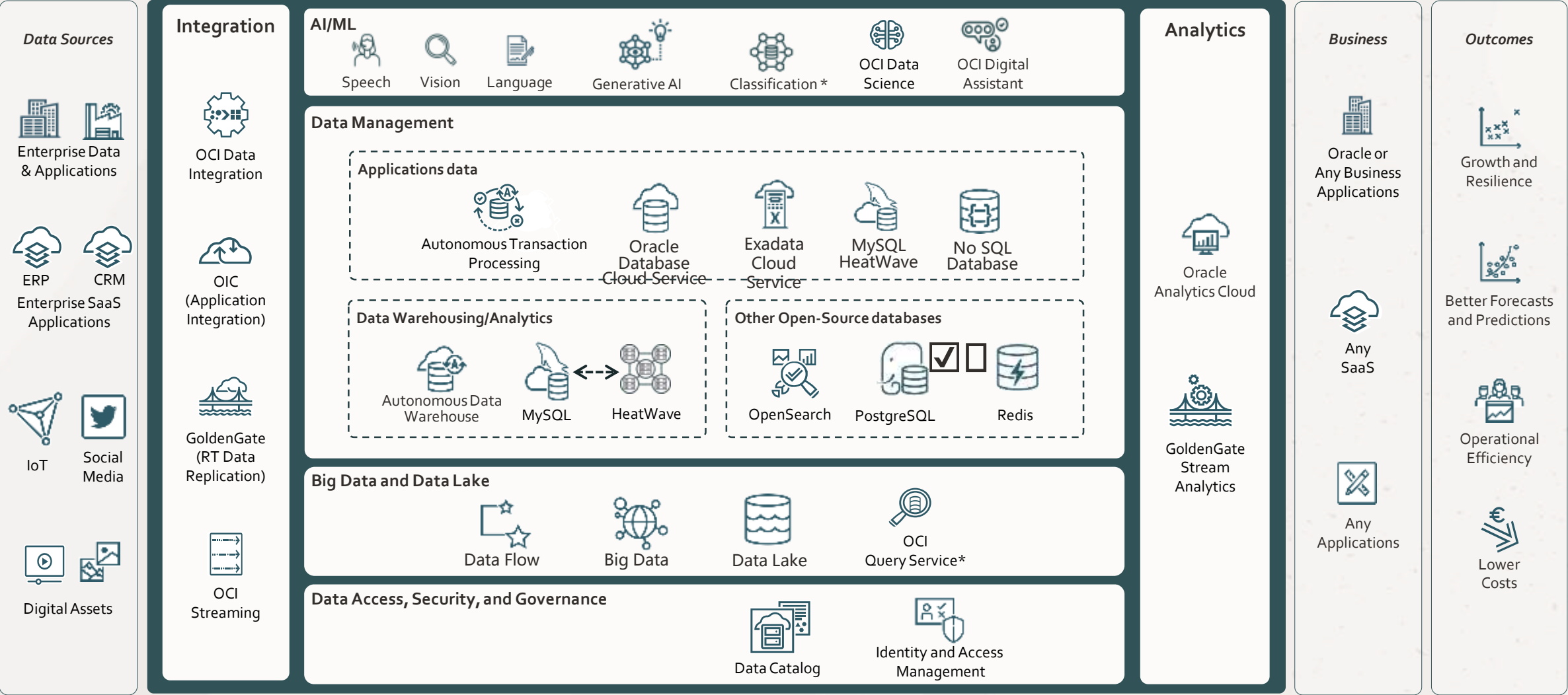


**February 2024**  
**48 regions; 5 more planned**  
**12 Azure Interconnect Regions**





# Oracle Data Platform: A complete suite of services





# MAA OCI Data Guard



# OCI Active Data Guard VS Data Guard

- Data Guard and Active Data Guard provide disaster recovery (DR) for databases with recovery time objectives (RTO) that cannot be met by restoring from backup.
- **Active Data Guard extends Data Guard capabilities** by providing advanced features for data protection and availability as well as **offloading read-only workload and fast incremental backups** from a production database. Active Data Guard is included in the Extreme Performance Edition and Exadata Service.
- To configure a Data Guard **system across regions or between on-premises** and Oracle Cloud Infrastructure DB systems, you must access the database host directly and use the **DGMGRL utility**.
- Oracle recommends that the DB system of **the standby database be in a different availability domain**.
- The standby databases in Oracle Cloud Infrastructure Database are physical standbys



# 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 ⓘ

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
<a href="#">DB12</a>	<a href="#">DB12STDBY</a>	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, Fast 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	
<a href="#">DB12</a>	<a href="#">single_marcel01</a>	Standby	Maximum Availability	Sync	0 seconds	Mounted (Data Guard)	Sat, Oct 22, 2022, 19:50:14 UTC	<div>Switchover</div> <div>Edit Data Guard Association</div> <div>Copy Peer Database OCID</div> <div>Copy Peer DB System OCID</div>



# Oracle OCI Data Guard Network Requirements

Avoid security know issues during physical OCI Data Guard provisioning

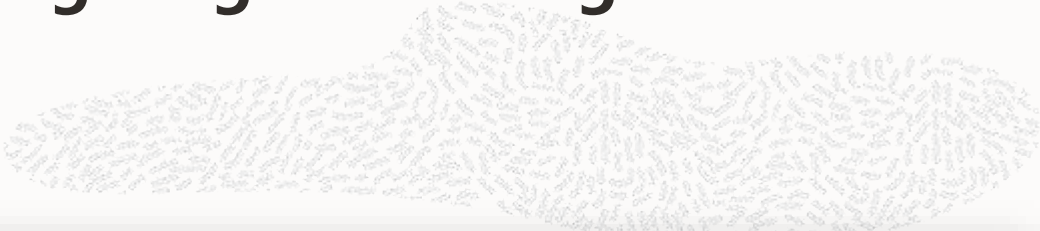


- **Properly configure the security list ingress and egress rules** for the subnets of both DB systems in the Data Guard association to allow TCP traffic to flow between the applicable ports. **Ensure that the rules you create are stateful (the default).**
- **The egress rules in the example show how 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

1 DB system information

2 Database information

Provide information for the initial database

Configure standby database

Database image Optional

Click **Change Database Image** to select 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 in Subnet: ocid1.subnet.oc1.lad.aaaaaaacx5bqxh24cgppgrzg7pfsrf4okvwhboryv6pj63xs435li5hcwkq by security rules associated with Subnet: ocid1.subnet.oc1.lad.aaaaaaacx5bqxh24cgppgrzg7pfsrf4okvwhboryv6pj63xs435li5hcwkq.

Previous

Enable Data Guard

Cancel

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The Oracle logo, consisting of a stylized 'O' inside a red square.

# VM Data Guard Switchover through OCI Console

ORACLE Cloud

Cloud Classic >

Search resources, services, documentation, and Marketplace

US East (Ashburn)

Overview > Oracle Base Database > DB Systems > DB System Details > Database Home Details > Database Details > Work requests > Work request details

WR

IN PROGRESS

Switchover Data Guard

Work request information

Switchover Data Guard

In progress

0% complete

Operation: Switchover Data Guard

Accepted: Tue, Apr 25, 2023, 22:28:56 UTC

OCID: ...s3rhla Show Copy

Compartment: acteamiad (root)/marlamar

Started: Tue, Apr 25, 2023, 22:29:33 UTC

Finished: —

Switchover Database

Are you sure you want to perform a database switchover? A switchover reverses the primary and standby database roles.

Enter the database admin password

OK

Cancel

WR

SUCCEEDED

Switchover Data Guard

Work request information

Switchover Data Guard

Succeeded

100% complete

Operation: Switchover Data Guard

Accepted: Tue, Apr 25, 2023, 22:28:56 UTC

OCID: ...s3rhla Show Copy

Compartment: acteamiad (root)/marlamar

Started: Tue, Apr 25, 2023, 22:29:33 UTC

Finished: Tue, Apr 25, 2023, 22:32:43 UTC

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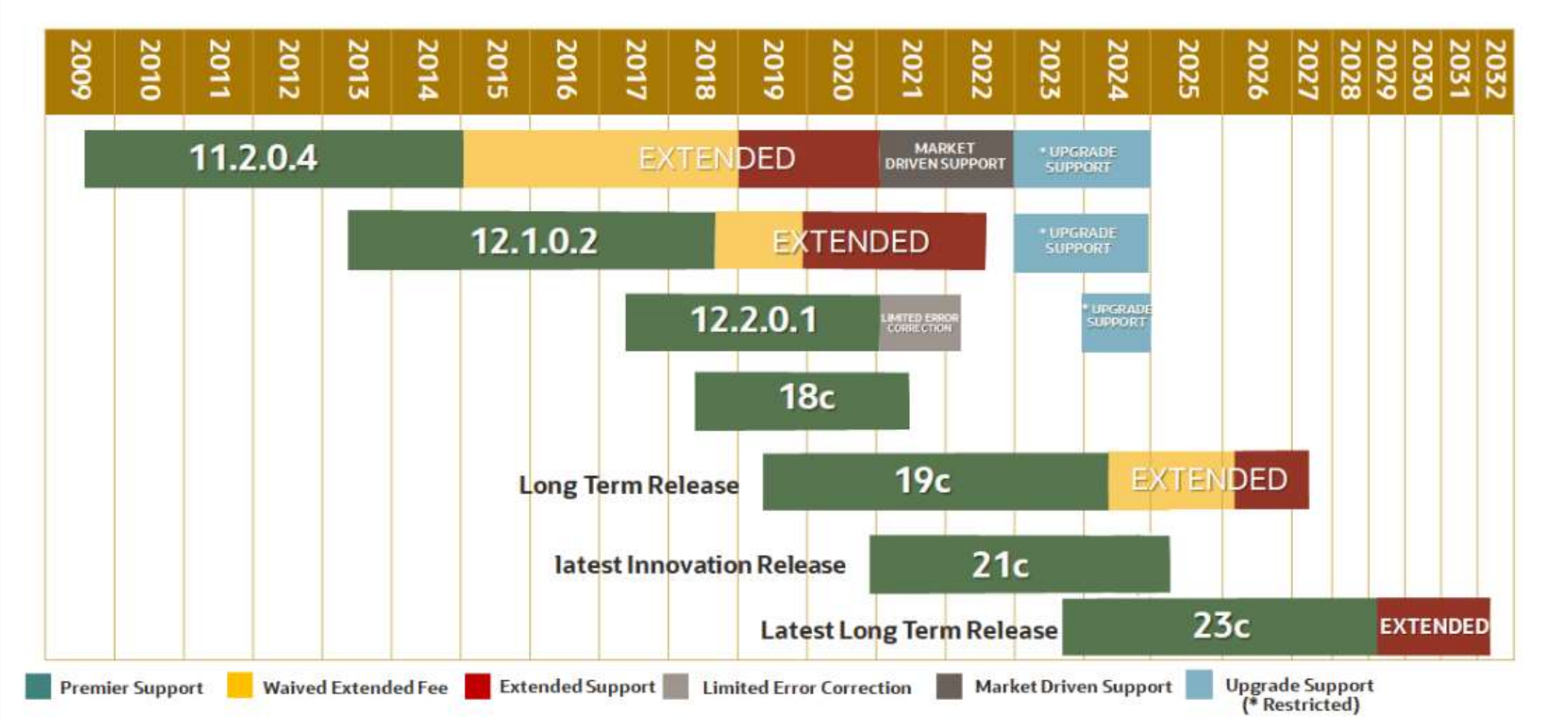
# Oracle Database version Timeline





# Oracle Database Releases and timeline

My Oracle Support Official Note (Doc ID 742060.1)





# Upgrade your Oracle database to 19c

# 19c Database Upgrade - Self Guided Assistance with Best Practices (Doc ID 1919.2)

★ 19c Database Upgrade - Self Guided Assistance with Best Practices (Doc ID 1919.2)

Visibility: EXTERNAL

To Bottom

(9)

Document Purpose

Upgrade Readiness

Verify Certification and Review Best Practices

Prepare Target Environment

Prepare Source Environment

Upgrade Initial Dev/Test Environments

Evaluate Performance on DEV/Test Environment

Upgrade PROD Environment

Recommended Training and Resources

Search This Document

Print

Document Purpose

Upgrade Readiness

Verify Certification and Review Best Practices

Prepare Target Environment

Prepare Source Environment

Upgrade Initial Dev/Test Environments

Evaluate Performance on DEV/Test Environment

19<sup>c</sup>

ORACLE®

Database

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# 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
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	<div>Run precheck</div> <div>Apply</div>





# OCI VM System DBCS | Oracle Home Patching Precheck

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	<div>Precheck</div>
Oct 2022 12.1.0.2 Database patch	Patch	● Available	12.1.0.2.221018	Thu, Dec 15, 2022 UTC	<div>Apply</div> <div>Copy OCID</div>





# OCI VM System DBCS | RAC Grid Patching in rolling mode

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

```
[grid@demol2crac2 ~]$ crsctl stat res -t
```

Name	Target	State	Server	State details
Local Resources				
ora.DATA.COMMONSTORE.advm	ONLINE	ONLINE	demol2crac2	STABLE
ora.LISTENER.lsnr	ONLINE	ONLINE	demol2crac2	STABLE
ora.chad	ONLINE	ONLINE	demol2crac2	STABLE
ora.data.commonstore.acfs	ONLINE	ONLINE	demol2crac2	mounted on /opt/oracle/dcs/commonstore,STABLE
ora.net1.network	ONLINE	ONLINE	demol2crac2	STABLE
ora.ons	ONLINE	ONLINE	demol2crac2	STABLE
ora.proxy_advm	ONLINE	ONLINE	demol2crac2	STABLE
Cluster Resources				

# OCI DBCS Oracle Home | One-off Patch Messages

Check if you have one-off patch installed before any database patch activity

## Confirm

The action might result in database downtime. Are you sure you want to apply the patch to the database?

If you have manually installed one-off patches on this database, Oracle recommends that you patch using a custom database software image that includes your one-off patches.

[Learn more](#) about OCI custom database software images.

This operation may roll back one-off patches that have been applied manually.

Do you want to continue?

OK

[Cancel](#)

# Patching Concepts | Out-Of-Place Patching

Oracle Home,  
19.18.0



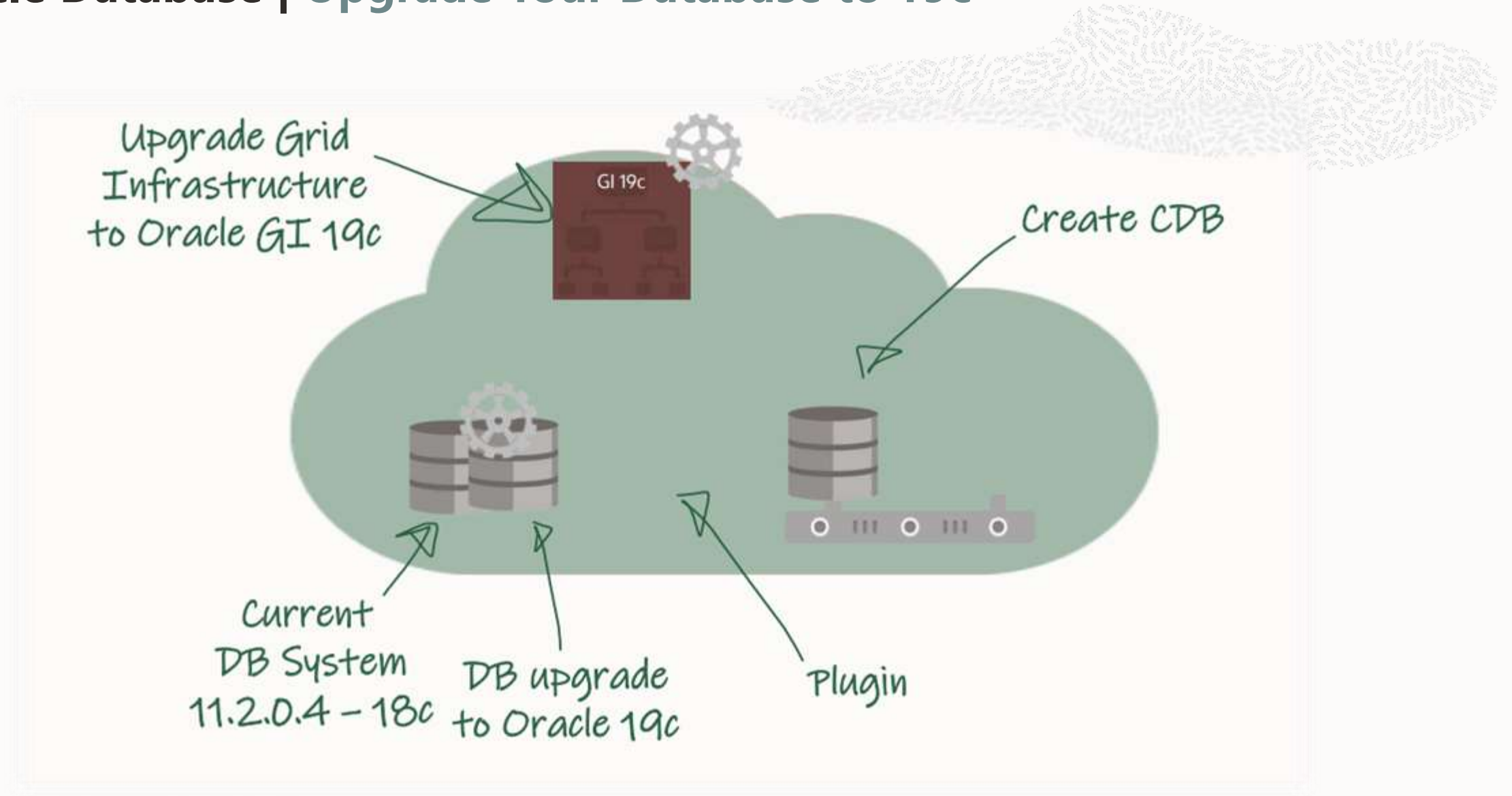
```
SQL> SHUTDOWN IMMEDIATE
```



```
# DATAPATCH
```

**New Oracle Home, 19.20.0**

# 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	
Oracle Database 19.15.0.0	Upgrade	● Available	19.15.0.0	-	<div>Precheck⋮</div>
Oracle Database 19.16.0.0	Upgrade	● Available	19.16.0.0	-	<div>Upgrade⋮</div>
Oracle Database 19.17.0.0	Upgrade	● Available	19.17.0.0	-	<div>⋮</div>
Showing 3 Items < 1 of 1 >					






# OCI VM System DBCS | Upgrade Database

It's recommended to update Gris Home first Oracle Database Upgrade

## Upgrade Database

[Help](#)



An Oracle Grid Infrastructure (GI) patch is available for your DB system. Oracle recommends patching your GI before upgrading the database.

There are no manual backups of this database. Oracle recommends creating a manual backup of the database before starting an upgrade. [Learn more about creating a manual backup](#)

During the upgrade process, the system performs an automatic precheck. However, Oracle recommends running a manual precheck before upgrading to detect and mitigate any problems before the upgrade to minimize the downtime window. [Learn more](#) about upgrading.

Upgrade

Precheck

[Cancel](#)

# OCI VM System DBCS - Upgrade Pre check

Oracle Database 19c Upgrade pre check using OCI console



## Work requests

Operation	State	% complete	Accepted	Started	Finished	
<a href="#">Upgrade Database</a>	In progress	0%	Sun, Feb 12, 2023, 12:52:22 UTC	Sun, Feb 12, 2023, 12:52:31 UTC	—	⋮
<a href="#">Patch DB Home</a>	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	⋮
<a href="#">Patch DB Home</a>	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	⋮
<a href="#">Create DB System</a>	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 VM System DBCS - Grid Patching check

Current Database and Grid home using dbcli tool

```
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> █
```



# MySQL Database Service

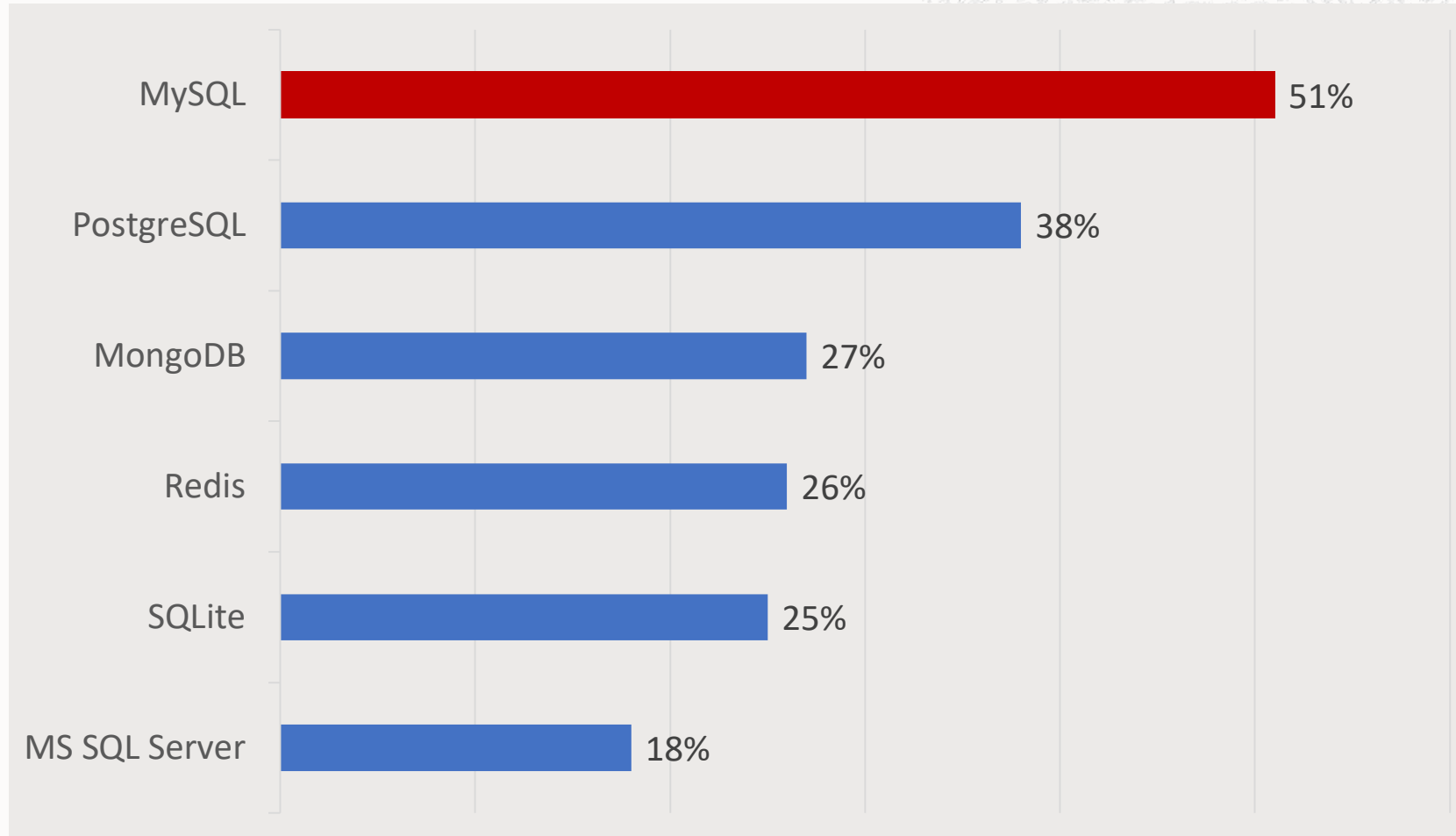
# MySQL is the #1 Open Source Database

Rank			DBMS	Database Model	Dec 2023
Dec 2023	Nov 2023	Dec 2022			
1.	1.	1.	Oracle 	Relational, Multi-model 	1257.41
2.	2.	2.	MySQL 	Relational, Multi-model 	1126.64
3.	3.	3.	Microsoft SQL Server 	Relational, Multi-model 	903.83
4.	4.	4.	PostgreSQL 	Relational, Multi-model 	650.90
5.	5.	5.	MongoDB 	Document, Multi-model 	419.15

**DB-ENGINES**



# MySQL is the most popular database for developers



# Innovative organizations across many industries run MySQL – Do you?

## Social

facebook



LinkedIn



Pinterest

## E-Commerce

Booking.com

NETFLIX

UBER



淘宝网  
Taobao.com

阿里巴巴  
Alibaba.com

## Tech



GitHub

HubSpot

zendesk



## Finance



J.P.Morgan

citi



VISA



## Manufacturing

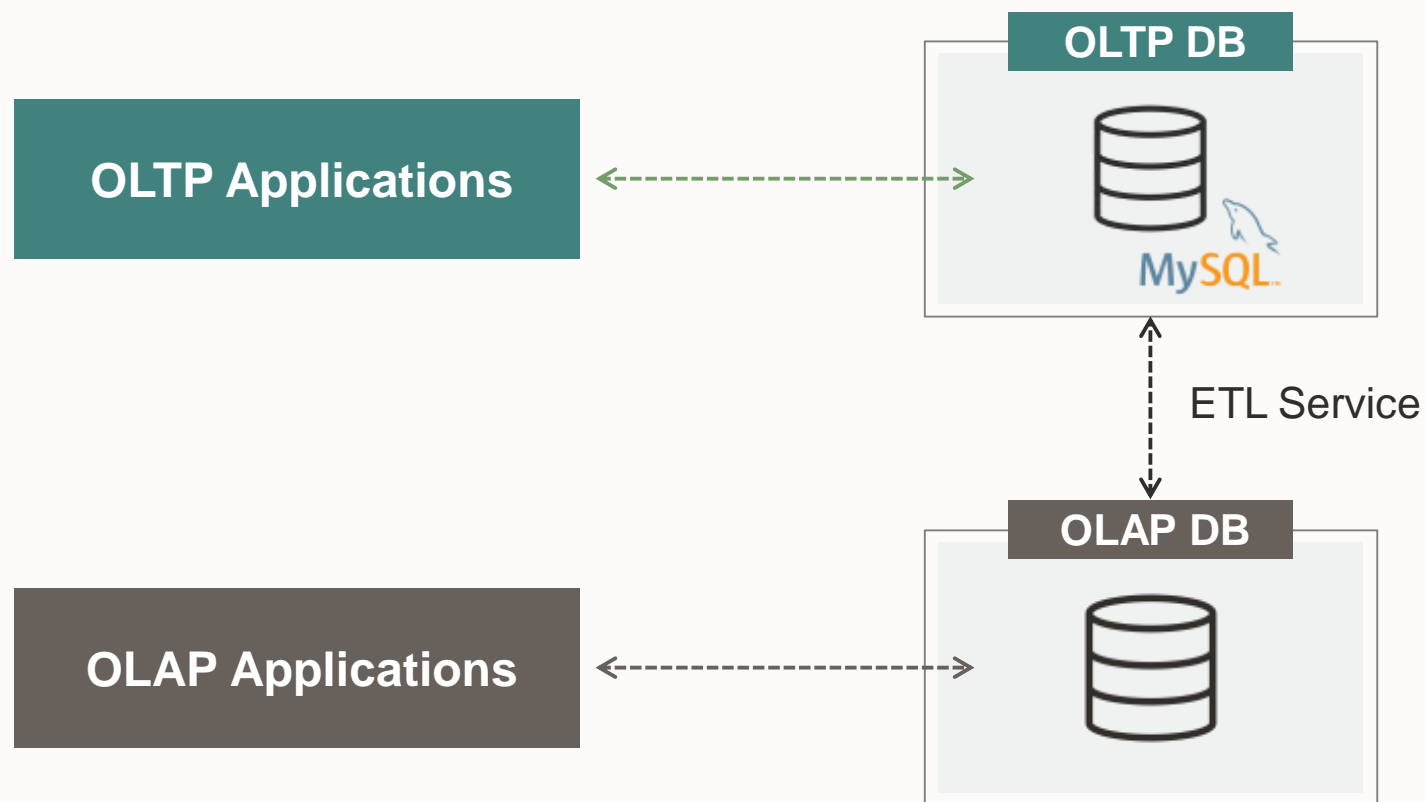
TESLA



TOYOTA



# MySQL is optimized for OLTP, not designed for analytic processing



Separate analytics database

Complex ETL

No real-time analytics

Security & compliance risks

Increased costs



# MySQL Community VS Enterprise



ORACLE

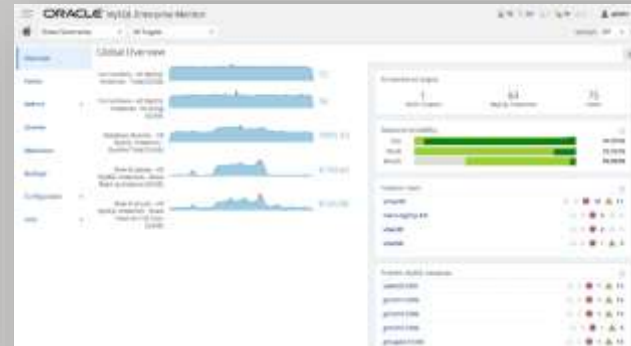


## Database Core

DB Engine (InnoDB), Replication,  
High Availability, Partitioning



Premier Support



Enterprise Monitor



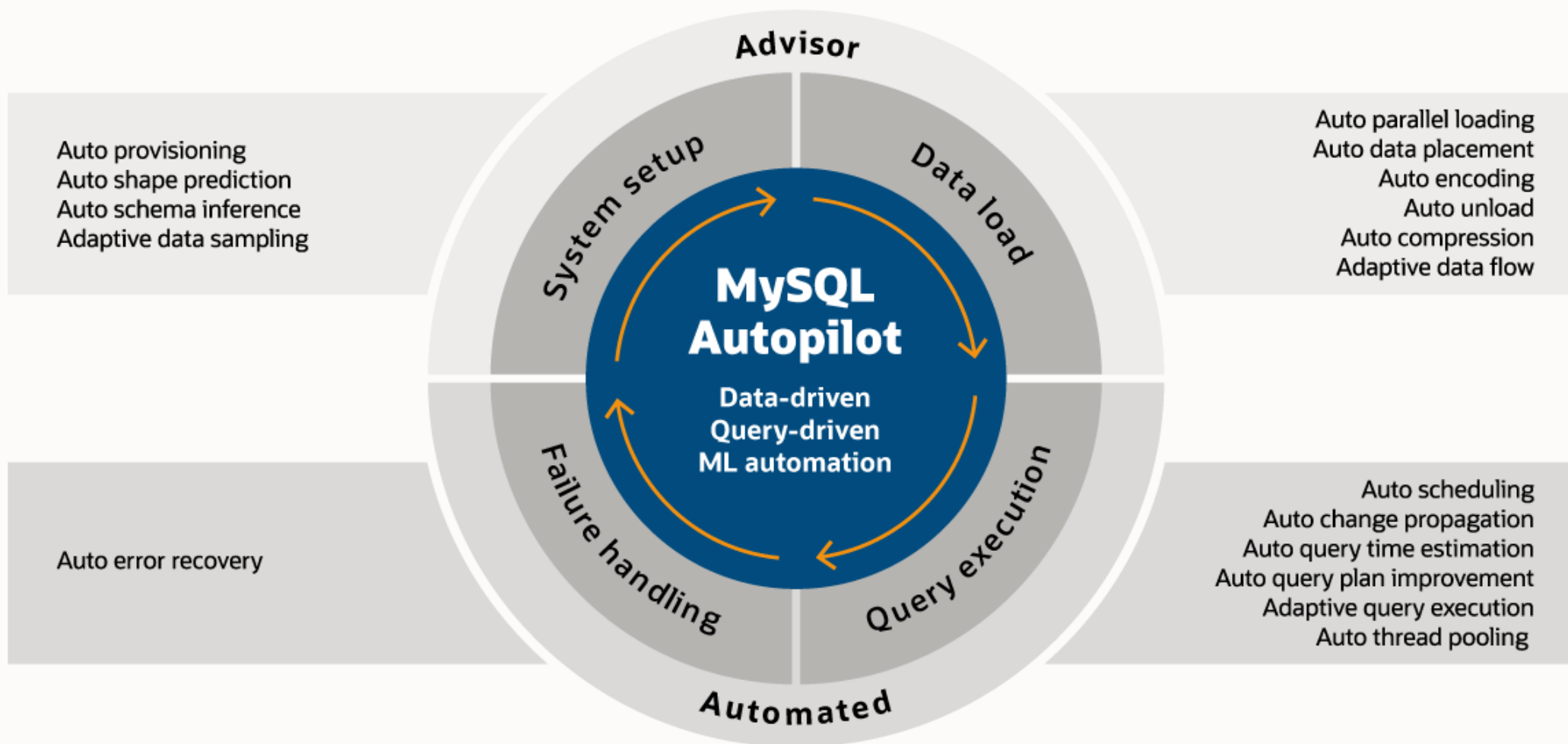
Encryption  
Masking



Thread Pool

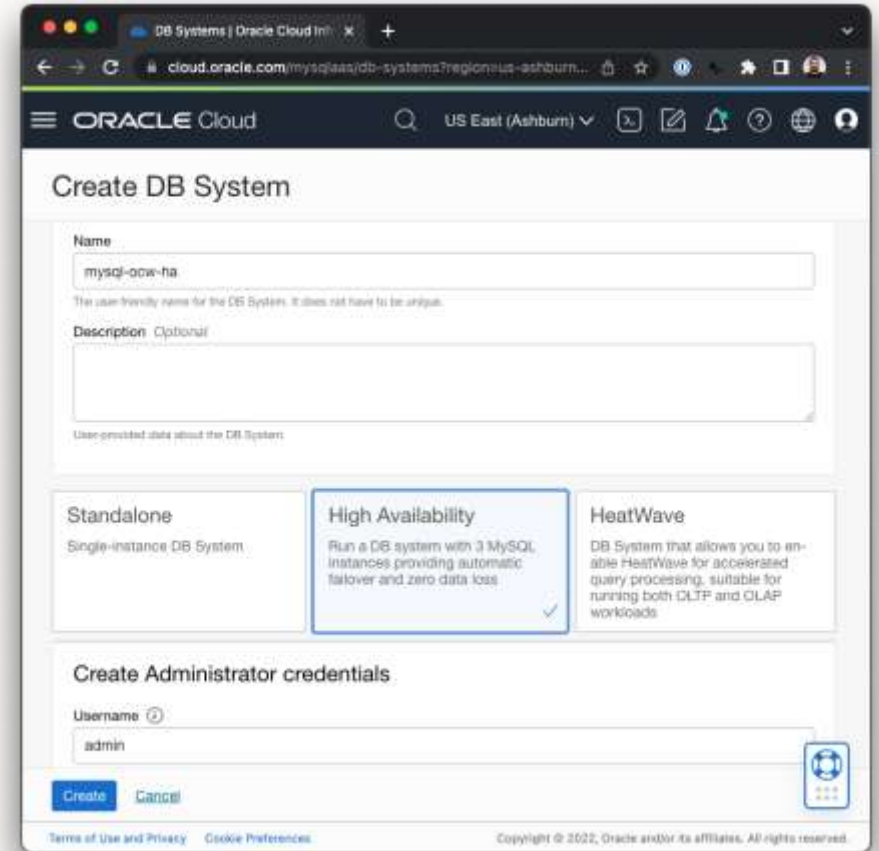
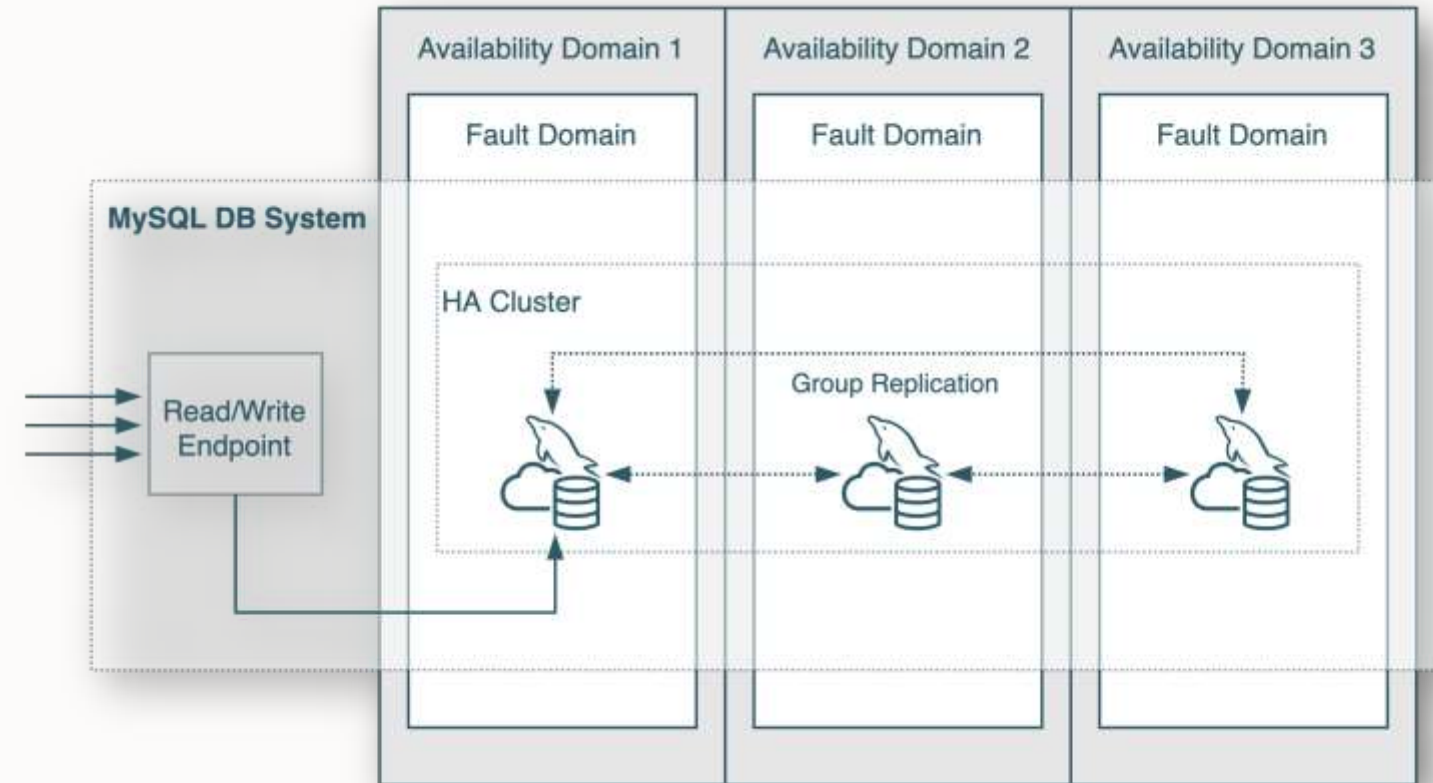
# Machine learning-powered automation for MySQL HeatWave

High query performance at scale, higher OLTP throughput, and the best price performance

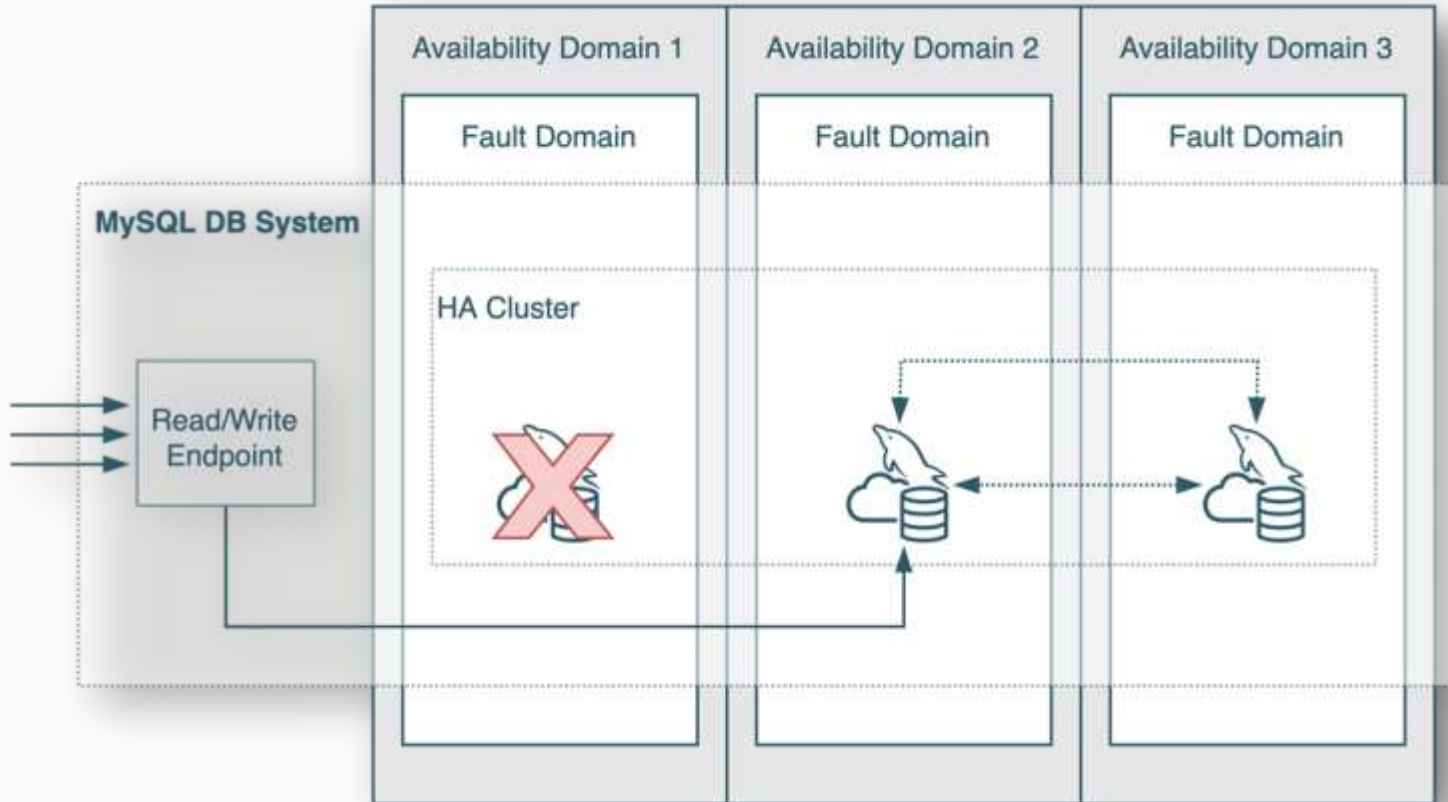




# High Availability



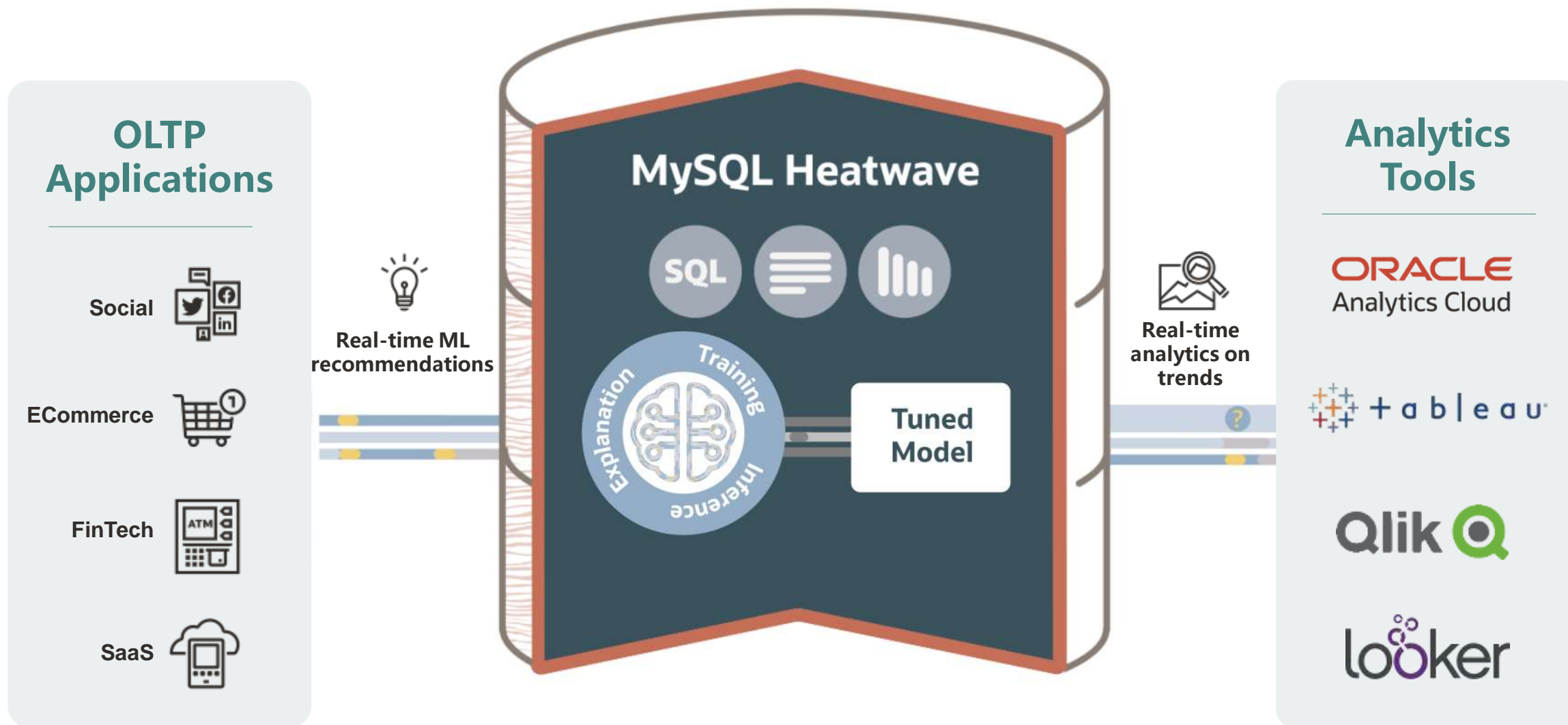
# High Availability



- SLA 99.99%
- Automatic failover
- Manual switchover
- Rolling upgrades during maintenance
  - Less than 1 minute impact
  - MySQL version upgrades and OS security patches
- RPO: 0
- RTO: Less than a minute

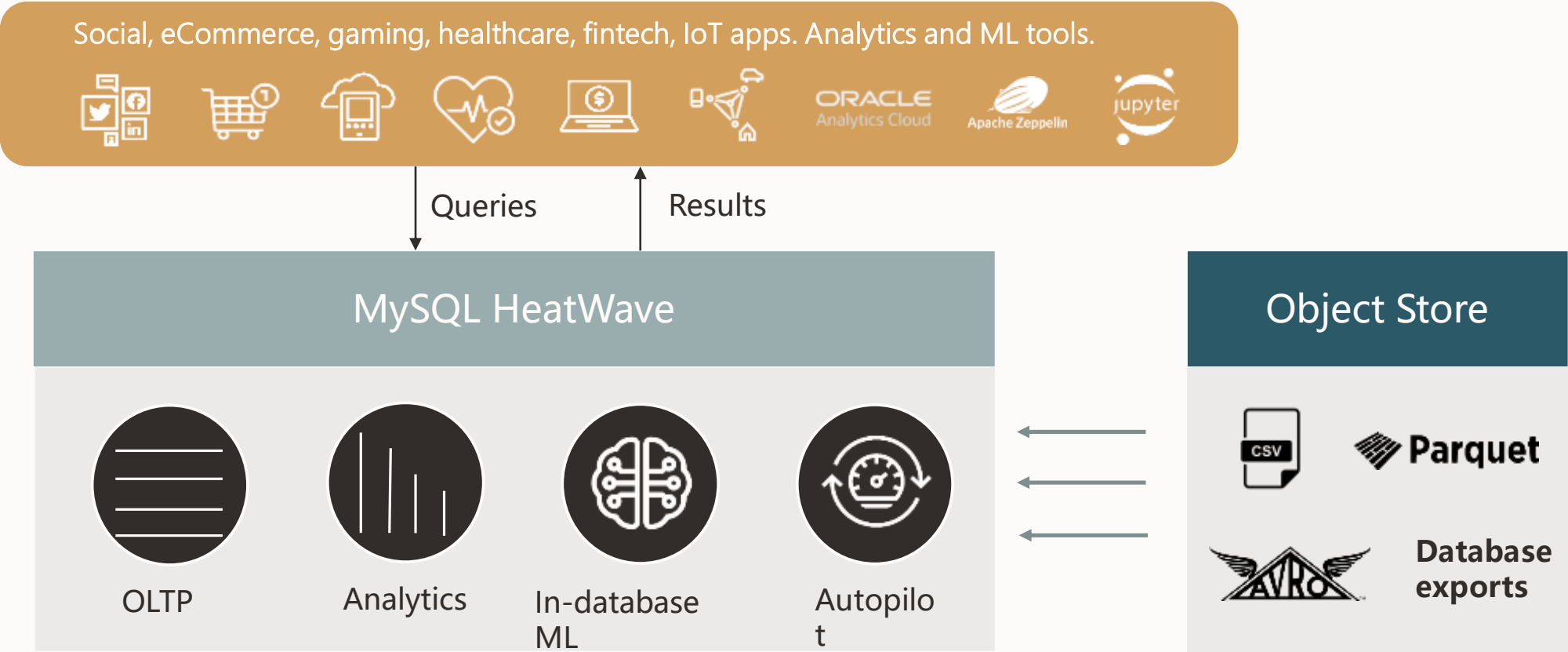


# Machine learning em ação junto com MySQL HeatWave



# MySQL HeatWave overview

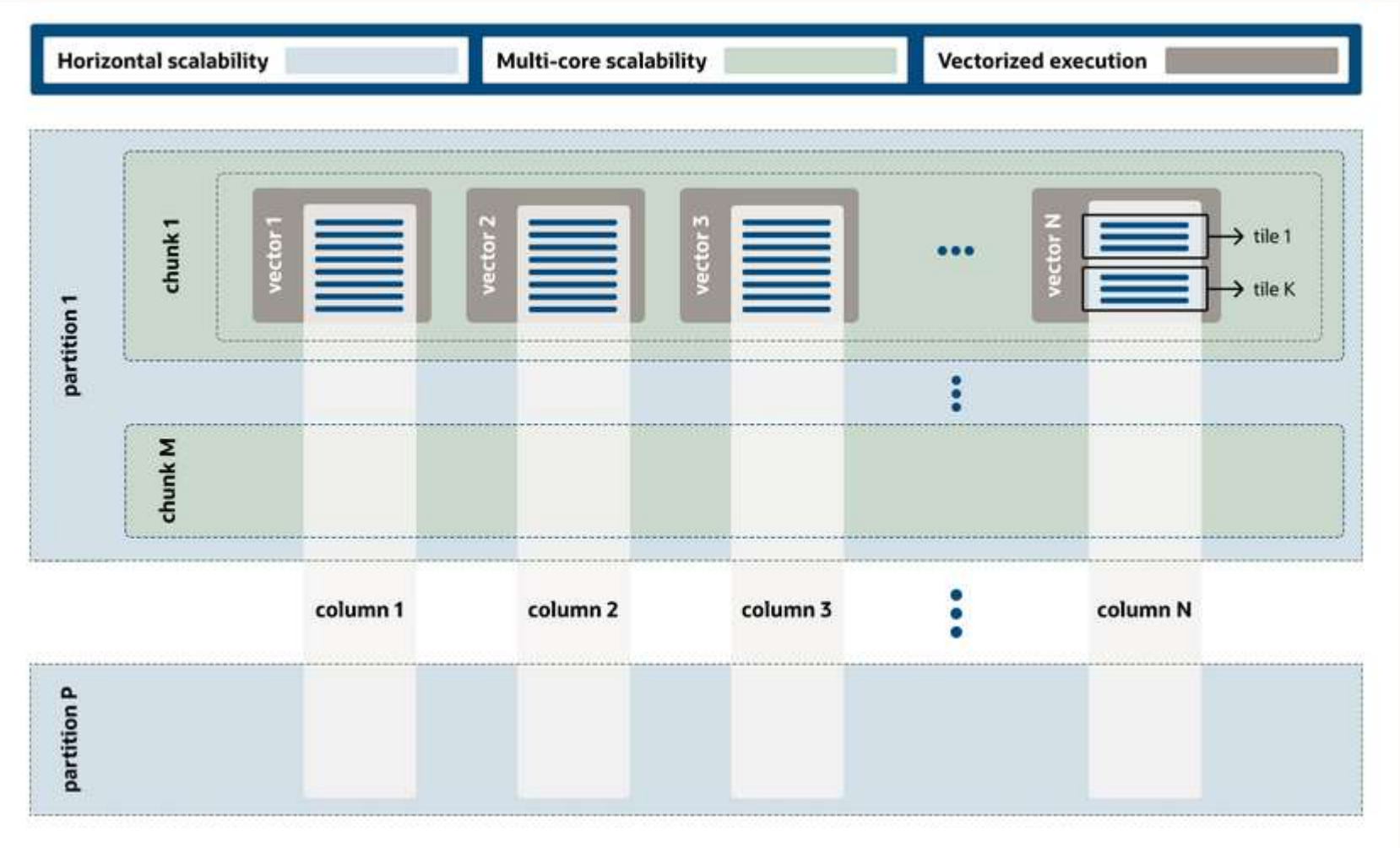
Transactions, real-time analytics across data warehouse and data lake, and machine learning in one database service



For both non-MySQL and MySQL workloads



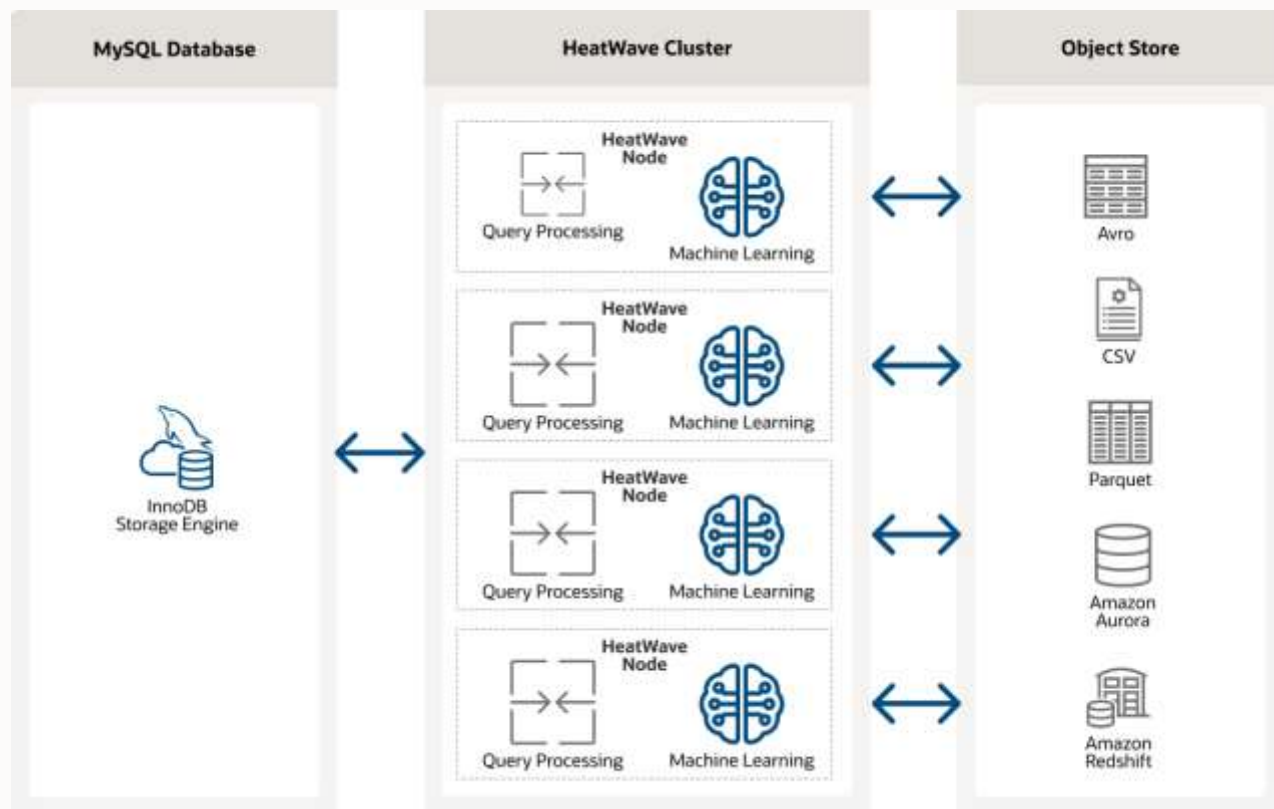
# In-Memory hybrid columnar processing





# MySQL HeatWave Lakehouse

Query half a PB data in the object store—in a variety of file formats



- Query data in MySQL, in the object store, or across both—using standard SQL syntax
- Up to 500 TB of data—the HeatWave cluster scales to 512 nodes
- Querying the data in the object store is as fast as querying the database – **an industry first!**
- Scale out data processing in the object store, data is not copied to the MySQL Database: for both MySQL and non-MySQL workloads



# MySQL HeatWave Console



Monitoring

MySQL HeatWave ORACLE

Cluster: demo-cluster

Summary

HeatWave

Cluster Memory Utilization

Data Dictionary

MySQL

27%

Interactive Query UI & Data Management

MySQL HeatWave ORACLE

Workspace

DB System

Query 1

Query Results

HeatWave Cluster

Cluster Memory Utilization

HeatWave ML

MySQL Autopilot

MySQL HeatWave ORACLE

Evaluate Model: DEMO\_CORPUS

Estimate Cluster Size with MySQL Autopilot

Name	%	HeatWave Cluster Memory Usage (GiB)	T1	Tables Selected	T1	Warnings
sampleDB		0.000	0 of 16	0		
sampleDB2		0.000	0 of 9	2		
sampleDB3		820.686	26 of 28	5		
sampleDB4		1194.211	0 of 8	0		
sampleDB5		0.000	0 of 8	0		

Name	%	Warnings	Memory Size Estimate (GiB)	T1	Rows Estimate	T1
sample_20240101_CUSTOMERS			0.001	6		
sample_20240101_CUSTOMERS			0.001	1,447		
sample_20240101_CUSTOMERS			19.518	189,947,748		
sample_20240101_CUSTOMERS			504.989	1,485,072,176		
sample_20240101_CUSTOMERS			0.001	211,767		
sample_20240101_CUSTOMERS			0.019	166,057		
sample_20240101_CUSTOMERS			0.004	1,017,970		
sample_20240101_CUSTOMERS			0.009	72,540		
sample_20240101_CUSTOMERS			0.001	1		
sample_20240101_CUSTOMERS			0.001	7,311		
sample_20240101_CUSTOMERS			0.001	0		
sample_20240101_CUSTOMERS			0.001	12,174,876		
sample_20240101_CUSTOMERS			0.001	17,423		
sample_20240101_CUSTOMERS			0.001	509		
sample_20240101_CUSTOMERS			0.001	35		
sample_20240101_CUSTOMERS			0.001	20		
sample_20240101_CUSTOMERS			0.001	18		

Summary

2004.847 (GiB)

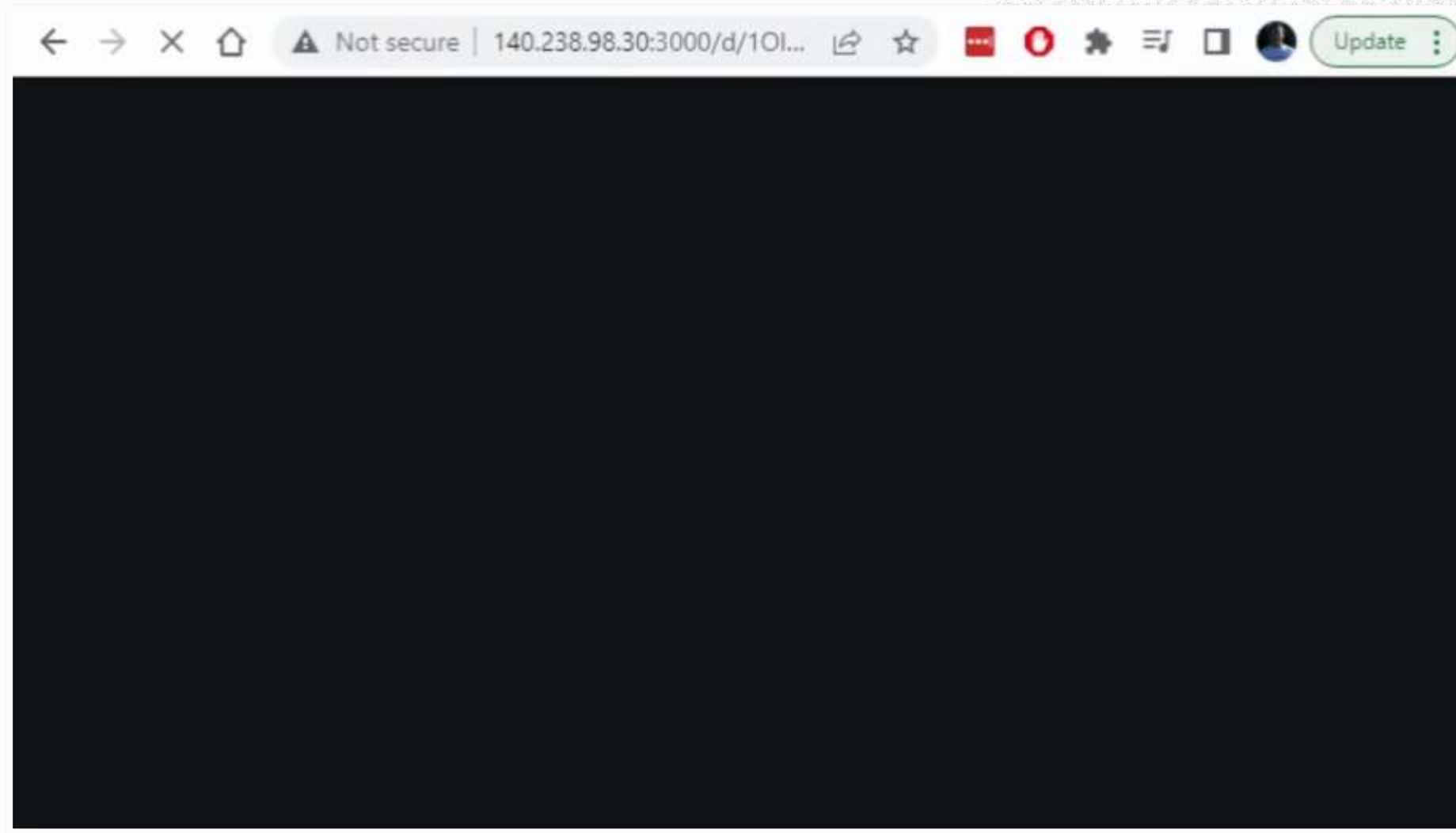
256 (GiB)

8

2048 (GiB)



# MySQL Heatwave working on report



# Backups

## Manual or Automatic

- Retention Period
- When to Backup
- Full or Incremental
- Point-in-Time Recovery (only non-HA DB Systems)

### Edit Backup Plan



#### Enable automatic backups

Enables automatic backups. You must also specify a retention period, and select a backup window.

#### Backup retention period *Optional*

The retention period defines how long to store the backups, in days. ⓘ

7



#### Enable point in time restore ⓘ

Enables you to restore from a DB system at a point in time.



#### Select backup window

The backup window start time defines the start of the time period during which your DB system is backed up.

#### Window start time

06:48 UTC



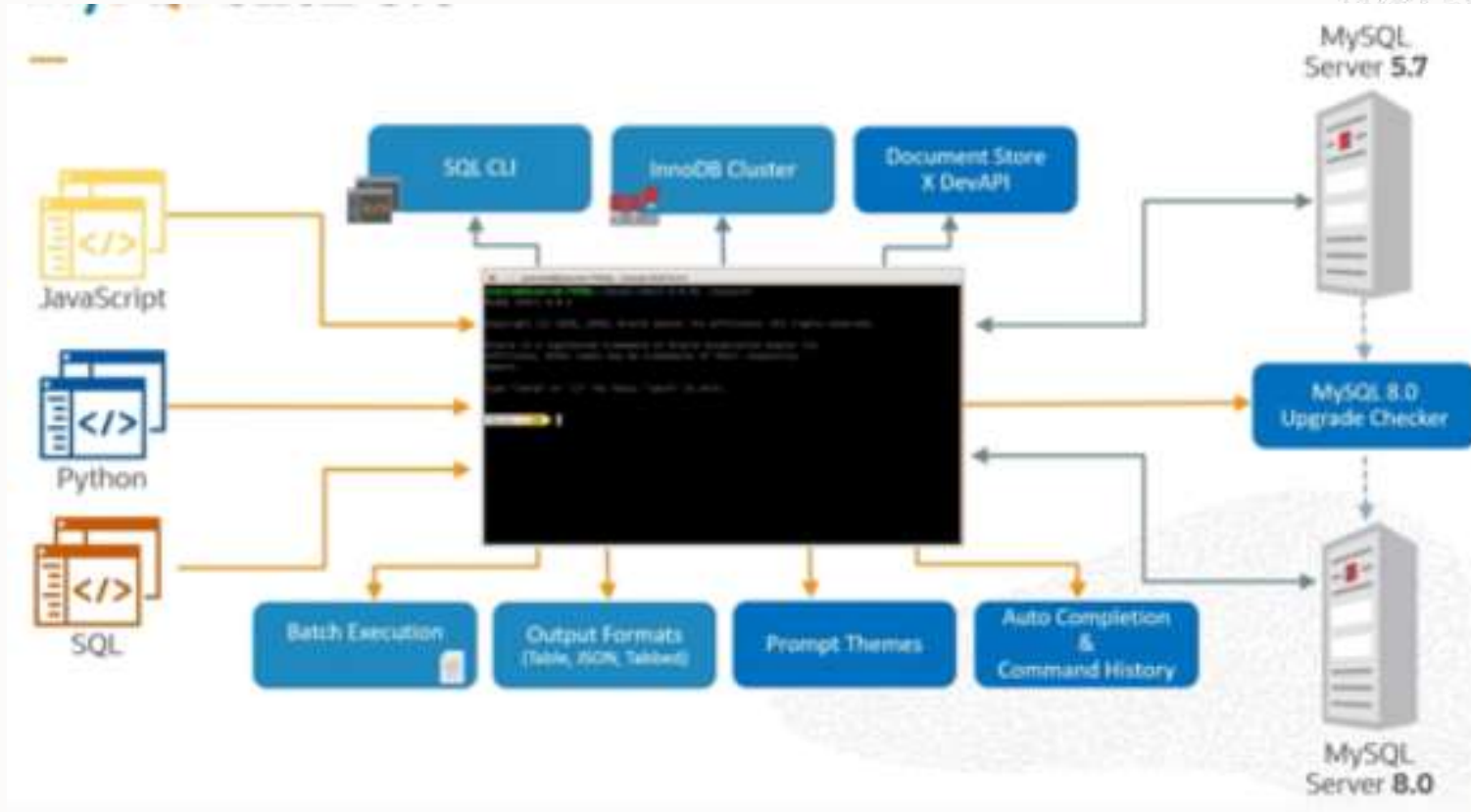
[Show backup windows per region](#)



# MySQL database management tool



# Understanding MySQL shell tool



## Endpoint

Connect to the DB System using a MySQL client/connector via the endpoint below: [How do I connect?](#)

**Private IP Address:** 10.0.1.253 | [Copy](#) ⓘ

**Internal FQDN:** -

**Availability Domain:** yQUJ:US-ASHBURN-AD-1

**Fault Domain:** FAULT-DOMAIN-2

**MySQL Port:** 3306

**MySQL X Protocol Port:** 33060

```
# sudo yum -y install mysql-shell
```





# MySQL Database provisioning

# MySQL VCN requires port 3006 on ingress rules

## Add Ingress Rules

### Ingress Rule 1

Allows TCP traffic 3006

☐ Stateless ⓘ

Source Type

CIDR



Source CIDR

Example: 10.0.0.0/16

IP Protocol ⓘ

TCP



Source Port Range *Optional* ⓘ

All

Examples: 80, 20-22

Destination Port Range *Optional* ⓘ

3006

Examples: 80, 20-22

Description *Optional*



# Exadata Cloud at Customer | Control Plane Workflow

## Add Ingress Rules

### Ingress Rule 1

Allows TCP traffic 33060

☐ Stateless ⓘ

Source Type

CIDR



Source CIDR

0.0.0.0/0

Specified IP addresses: 0.0.0.0-255.255.255.255 (4.294.967.296 IP addresses)

IP Protocol ⓘ

TCP



Source Port Range *Optional* ⓘ

All

Examples: 80, 20-22

Destination Port Range *Optional* ⓘ

33060

Examples: 80, 20-22



# Mysql vcn Ingress Roles port 3006 and 33060

<input type="checkbox"/>	No	0.0.0.0/0	TCP	All	3006	TCP traffic f or ports: 300 6	⋮
<input type="checkbox"/>	No	0.0.0.0/0	TCP	All	33060	TCP traffic f or ports: 330 60	⋮





# Oracle MySQL Cloud Console de Gerenciamento

### Create DB system

#### Production

Sets up a high availability DB system with recommended defaults for a production environment.

#### Development or testing

Sets up a standalone DB system with recommended defaults for a development or testing environment.

#### Provide DB system information

Create in compartment

mariamar

acteamiad (root)/mariamar

#### MySQL.VM.Standard.E4.4.64GB

**CPU core count:** 4  
**Memory size:** 64 GB  
**Max network bandwidth:** 4Gbps

A shape determines the number of OCPUs, memory, and other resources allocated to a MySQL instance of a DB system. A high availability DB system contains three MySQL instances and hence has thrice the number of OCPUs and memory. See supported shapes.

**Data storage size (GB)**

1024

Storage allocated to each MySQL instance for data and log files. Storage size impacts IOPS and throughput. Data storage size must be an integer between 50 and 131,072.

**Total IOPS:** 76800  
**Total throughput:** 600 MB

#### Standalone

Single-instance DB system

#### High availability

Run a DB system with 3 MySQL instances providing automatic failover and zero data loss.

#### HeatWave

DB system that allows you to enable HeatWave for accelerated query processing, suitable for running both OLTP and OLAP workloads.

### Create administrator credentials

Username ⓘ

Define the administrator username

### Browse all shapes

A shape determines the number of OCPUs, memory, and other resources allocated to a MySQL instance of a DB system. A high availability DB system contains three MySQL instances and hence has thrice the number of OCPUs and memory. See supported shapes.

All types

Virtual machine

Bare metal

Name	Supports HeatWave	CPU core count	Memory size	Max network bandwidth
<input type="checkbox"/> MySQL.VM.Standard.E3.1.8GB	No	1	8 GB	1Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.1.16GB	No	1	16 GB	1Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.2.32GB	No	2	32 GB	2Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.4.64GB	No	4	64 GB	4Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.8.128GB	No	8	128 GB	8Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.16.256GB	No	16	256 GB	16Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.24.384GB	No	24	384 GB	24Gbps
<input type="checkbox"/> MySQL.VM.Standard.E3.32.512GB	No	32	512 GB	32Gbps

Select a shape


















Cancel





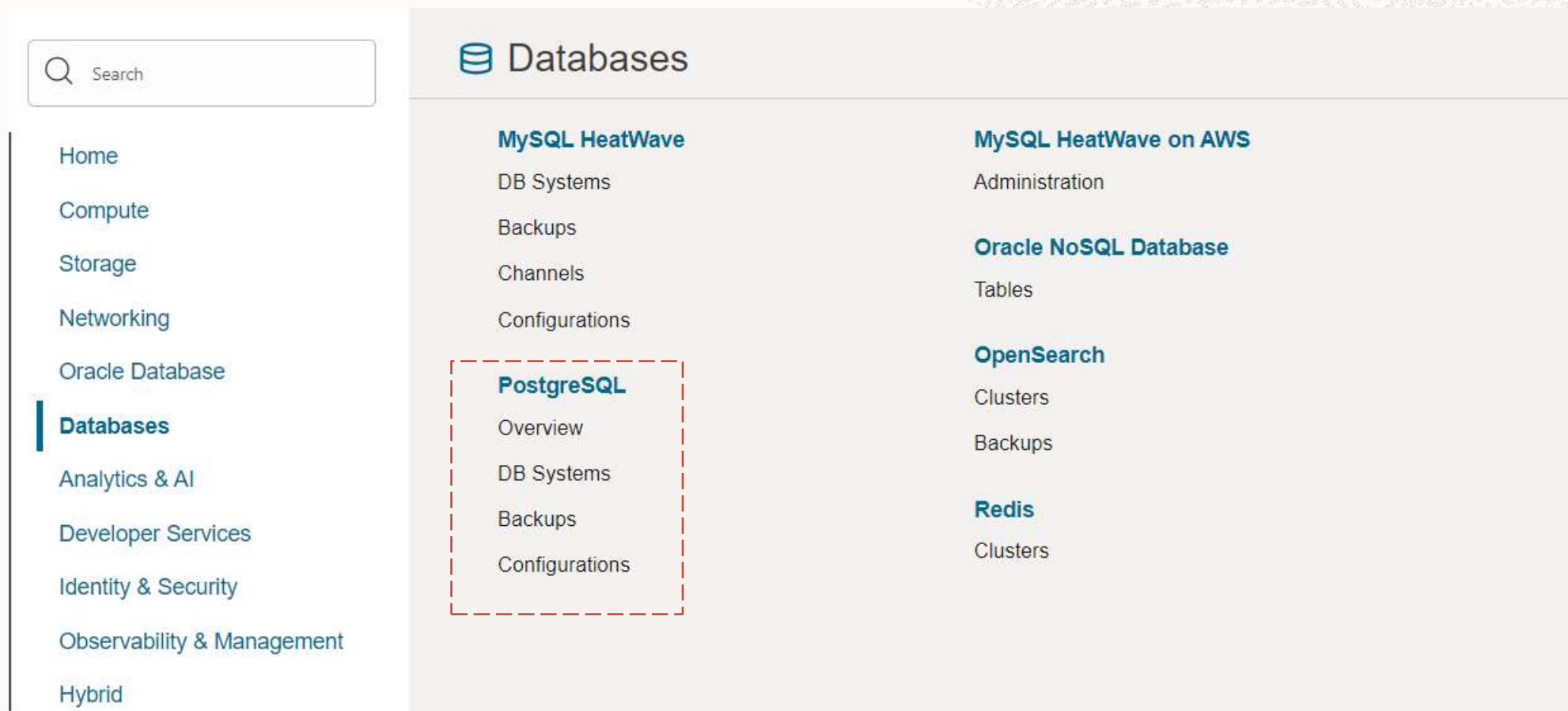
# OCI PostgreSQL Database

# PostgreSQL - one of the most advanced open source databases

Rank			DBMS	Database Model	Score		
Nov 2023	Oct 2023	Nov 2022			Nov 2023	Oct 2023	Nov 2022
1.	1.	1.	Oracle 	Relational, Multi-model 	1277.03	+15.61	+35.34
2.	2.	2.	MySQL 	Relational, Multi-model 	1115.24	-18.07	-90.30
3.	3.	3.	Microsoft SQL Server 	Relational, Multi-model 	911.42	+14.54	-1.09
4.	4.	4.	PostgreSQL 	Relational, Multi-model 	636.86	-1.96	+13.70
5.	5.	5.	MongoDB 	Document, Multi-model 	428.55	-2.87	-49.35
6.	6.	6.	Redis 	Key-value, Multi-model 	160.02	-2.95	-22.03
7.	7.	7.	Elasticsearch	Search engine, Multi-model 	139.62	+2.48	-10.70
8.	8.	8.	IBM Db2	Relational, Multi-model 	136.00	+1.13	-13.56
9.	9.	 10.	SQLite 	Relational	124.58	-0.56	-10.05
10.	10.	 9.	Microsoft Access	Relational	124.49	+0.18	-10.53

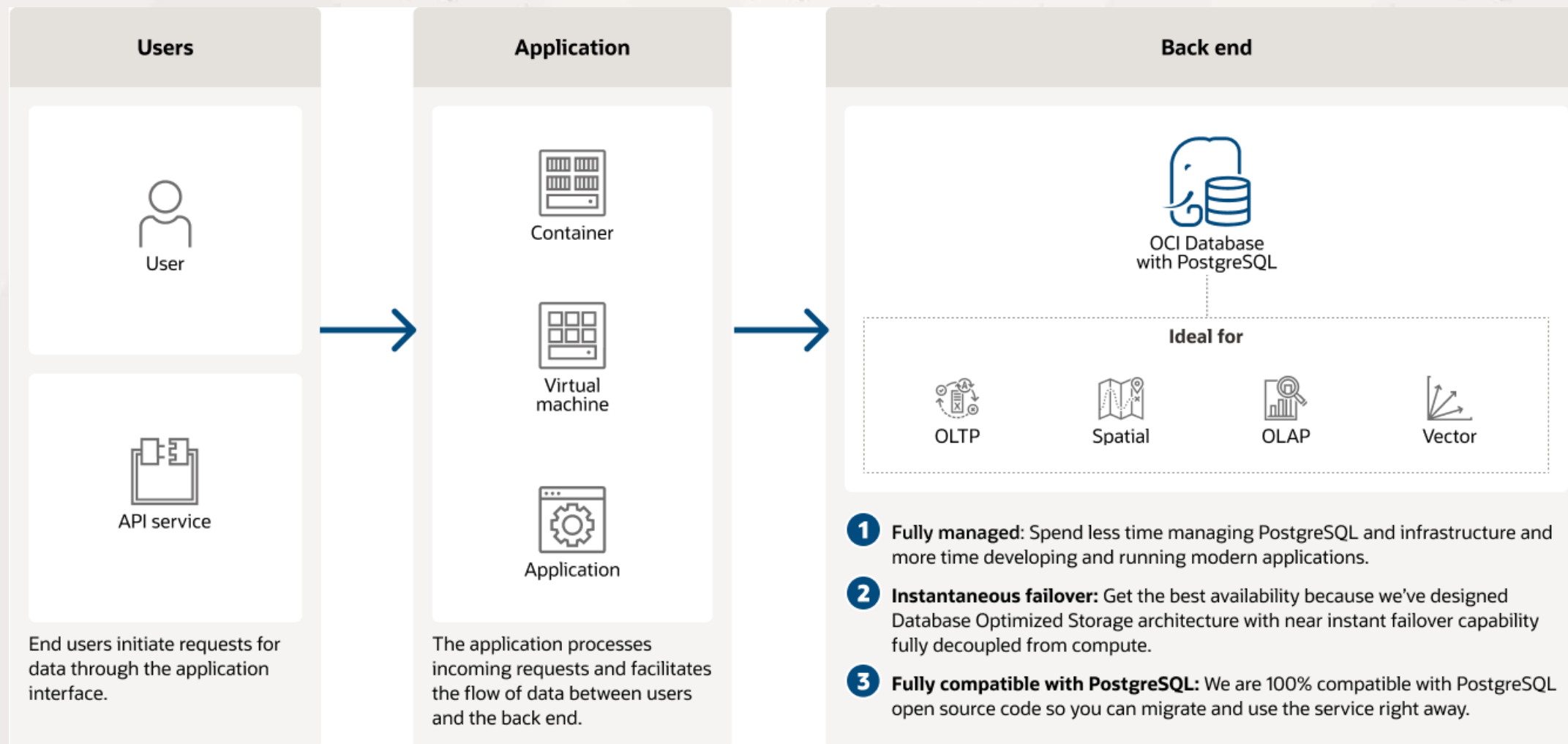


# OCI database Postgres on oci console



# OCI Database with PostgreSQL

A fully managed service





# User Experience - PostgreSQL clusters list view

ORACLE Cloud

Search resources, services, documentation, and Marketplace

US West (Phoenix)

PostgreSQL

Overview

Databases

Backups

Configurations

Additional resources

Work requests

List scope

Compartment

George-test-compartment

aprdemo (root)/Demo-compartment/Jimb\_Lab/George-test-compartment

Databases in George-test-compartment *Compartment*

Create PostgreSQL database

Search by name

Name	State	Database system	OCPUs	RAM (GB)	Software version	Created
<a href="#">postgresql20230901100050</a>	ACTIVE	Multi node	4	64	14.5	Fri, Sep 1, 2023, 17:06:53 UTC
<a href="#">postgresql20230818173824-test</a>	ACTIVE	Multi node	4	64	14.5	Sat, Aug 19, 2023, 00:42:38 UTC

Showing 2 items < 1 of 1 >

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# User Experience - Create multi-node PostgreSQL cluster

ORACLE Cloud

Search resources, services, documentation, and Marketplace

US West (Phoenix)

Create PostgreSQL database

Create database

Configure database

Review and create

Configure database

Database configuration

Database name in george-test-orgapartment: [CLADDB-2375647861](#)  
postgres00231105000046

Description: Optional

Use provided data and the OS system

PostgreSQL version  
14.5

Database system

Node count: ①  
3  
One primary node is required. Additional nodes are created as standby/replica nodes.

Performance tier  
100K IOPS

Data placement  
☐ Regional  
Data stored locally in multiple availability domains  
☒ Availability Domain-specific  
Data redundancy across the selected availability domain

Availability Domain:  

AD-1  
dJUE-PHX-AD-1

AD-2  
dJUE-PHX-AD-2

AD-3  
dJUE-PHX-AD-3

Previous

Create

Cancel

Sign up for Oracle Cloud

Oracle Help Center

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# User Experience - Create multi-node PostgreSQL cluster cont.

ORACLE Cloud

Search resources, services, documentation, and Marketplace

US West (Phoenix)

Create PostgreSQL database

1 Select creation type

2 Configure database

3 Review and create

Hardware configuration

Memory scales with number of OCPU selected. Storage scales depending on usage. [Learn more](#)

OCPU count

32

Available Shapes

Name	OCPUs	RAM (GB)
<input checked="" type="checkbox"/> PostgreSQL VM Standard 54 Flex 32 512GB	32	512 GB

1 selected

Showing 1 item

Network configuration

The VCN and subnet where the DB system endpoint will be attached. The DB system endpoint uses a private IP address and is not directly accessible from the internet. [How do I connect to a DB system?](#) If you do not have a VCN, [create a VCN](#).

The current region has a single availability domain, creating a highly available DB system will spread all PostgreSQL instances across all fault domains in the region, irrespective of whether an AD-specific or regional subnet are selected.

Virtual Cloud Network in **george-test-compartment** [Change compartment](#)

G-Test-VCN

Subnet in **george-test-compartment** [Change compartment](#)

private-subnet-G-Test-VCN (Regional)

Private IP address: Optional

Database administrator credentials

Username <sup>ⓘ</sup>

Admin

Once set, the username cannot be changed.

Password options

☒ Input password ☐ Use OCI Vault

Previous

Next

Cancel

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# User Experience - Detailed view with Read replica

PGD

ACTIVE

postgresql20230901100050

Edit name

Create backup

Move resource

Refresh

More actions

DB system information

Management policy

Tags

General information

Network configuration

Connection details

Resources

Database nodes

Database nodes

Package

Metrics

Work requests

Database nodes

distance-e5e01432240

distance-0a25568b7008

State

Type

Availability Domain

Updated

Created

ACTIVE

Primary

du:db-prv1-ad-1

Fri, Sep 1, 2023, 17:14:52 UTC

Fri, Sep 1, 2023, 17:06:53 UTC

ACTIVE

Replica

du:db-prv1-ad-1

Fri, Sep 1, 2023, 17:14:52 UTC

Fri, Sep 1, 2023, 17:06:53 UTC

Showing 2 items

< 1 of 1 >

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# Oracle Exam 1Z0-1093-23



## Exam 1Z0-1093-23: Oracle Base Database Services 2023 Professional



- Number of Questions **55**
- Format **Multiple Choice**
- Duration **90 minutes**
- Passing Score **68%**

# Oracle Base Database Services 2023 Exam Topics



## Oracle Cloud Platform for Database in the Cloud

- Describe Oracle Cloud Platform for Database in the Cloud
- Describe Oracle Cloud Infrastructure Strategy (OCI)

## DB Systems BM/VM

- Discuss Database Cloud Services (Overview)
- Provision Database Cloud Service on a Virtual Machine DB System
- Manage Database Cloud Service on a Virtual Machine DB System
- Manage the Database Lifecycle for Database Cloud Services on a Virtual Machine DB System
- Utilize Database Cloud Service Management Interfaces

## Exadata Database Service

- Explain the Exadata Database Service
- Provision Exadata
- Manage Exadata Infrastructure and VM Clusters
- Manage the Exadata Database Lifecycle
- Utilize Exadata Cloud Management tools

# MySQL Database Service and HeatWave Technical Overview

- Describe the MySQL Database Service
- Manage MySQL Database
- Provision and connect to MySQL Database
- Monitor MySQL Database
- Set up Backup for MySQL Database Service
- Describe performance considerations for the MySQL Database Service
- Create, manage, and use HeatWave



## NoSQL Database Cloud Service

- Explain connecting to the NoSQL Database Cloud service
- Explain table security management
- Explain table rate limiting
- Describe NoSQL data models
- Explain provisioned throughput for NoSQL Database Cloud Service
- Describe NoSQL language SDKs



# Oracle Cloud Infrastructure Database Management Service

- Describe the Oracle Cloud Infrastructure Database Management Service
- Install and configure Management Agent
- Register External Databases & enable and use Database Management
- View Fleet Summary and Management features
- Use Database Groups and Jobs





# Resources



- **MySQL HeatWave Implementation Associate (University Training)**

<https://mylearn.oracle.com/ou/learning-path/become-a-mysql-heatwave-implementation-associate/128102>

- **MySQL Web Site**

<https://mysql.com>

- **MySQL Web Site for developers**

<https://dev.mysql.com>

- **Oracle MySQL web Page**

<https://www.oracle.com/mysql>

- **MySQL Github Repository**

<https://github.com/mysql>

- **Getting Started with MySQL HeatWave on OCI**

<https://developer.oracle.com/learn/technical-articles/getting-started-with-mysql-heatwave-on-oci>



- **Introducing OCI Database with PostgreSQL**

<https://blogs.oracle.com/cloud-infrastructure/post/oci-database-postgres>

- **OCI Database with Postgres**

<https://www.oracle.com/br/cloud/postgresql>

- **OCI Database Postgres documentation**

<https://docs.oracle.com/en-us/iaas/Content/postgresql/home.htm>

- **Database With Postgres Pricing**

<https://www.oracle.com/cloud/postgresql/pricing/>

- **First Principles: Optimizing PostgreSQL for the cloud**

<https://blogs.oracle.com/cloud-infrastructure/post/first-principles-optimizing-postgresql-for-the-cloud>



- **Upgrade your database now ( Mike dietriche site)**

<https://mikedietrichde.com/>

- **Oracle Architecture Center Site**

<https://docs.oracle.com/solutions>

- **Oracle Live Labs**

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

- **Oracle Luna Labs**

<https://luna.oracle.com>

- **Ask Ton Official Site**

<https://asktom.oracle.com>



# Thank you

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