

ORACLE

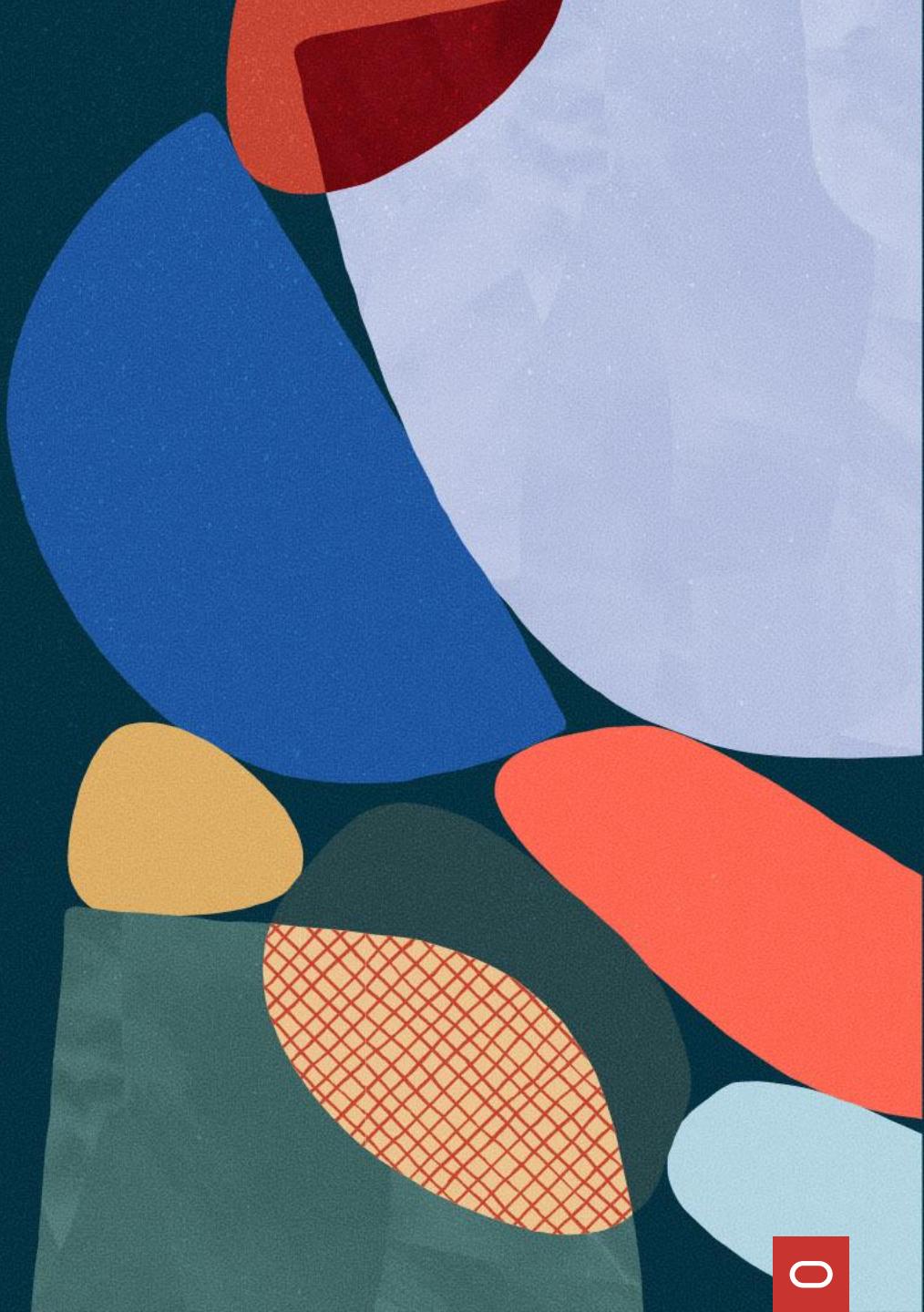
AI World

**Empower Your Data with Oracle
Database@AWS and Native AI Services**

LRN 3532

Kambiz Aghili

Vice President
Oracle Cloud Infrastructure (OCI), Multicloud



Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.

Empower Your Data with Oracle Database@AWS and Native AI Services

Kambiz Aghili

Vice President, Product Management
Oracle Cloud Infrastructure (OCI), Multicloud

1. Oracle Database@AWS, Overview, Introduction

Avinash Singh

Vice President, Cloud Technologies and Architecture,
Equifax

2. Equifax journey with Oracle Database@AWS

Michael Barras

Senior Principal Product Manager
OCI Multicloud

3. Deep dive on Oracle Database@AWS use cases

Oracle Database@AWS Overview

Kambiz Aghili

Vice President
Oracle Cloud Infrastructure (OCI), Multicloud





Multicloud

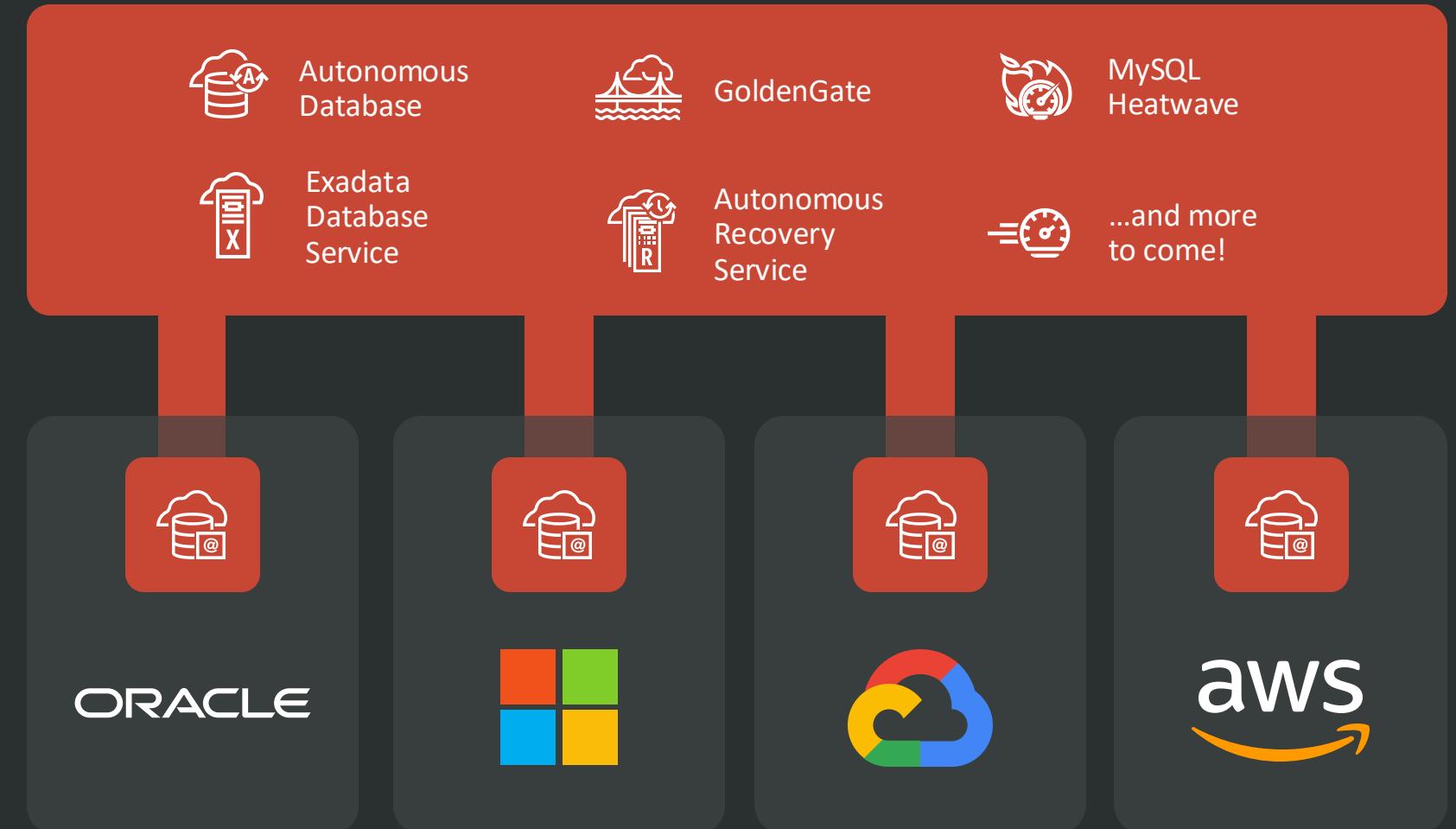


Multicloud is the Connecting Tissue



Multicloud

Oracle is in
all clouds





What is Multicloud?

**Cloud Native Database
Service Integration**



ADB



ExaDB



BaseDB



Unified Governance



Unified Governance



Console, APIs &
Infrastructure-as-a-code



Networking



Storage & Backup



Marketplace



Security



Observability



Deep Integration



What is Multicloud?

Cloud Native Database Services



ADB



ExaDB



BaseDB



Amazon Sagemaker



Amazon Bedrock



amazon QuickSight



Amazon ECS

Native Service Integration

Unified Governance



Data Governance



Console, APIs &
Infrastructure-as-a-code



Networking



Storage & Backup



Marketplace



Security



Observability

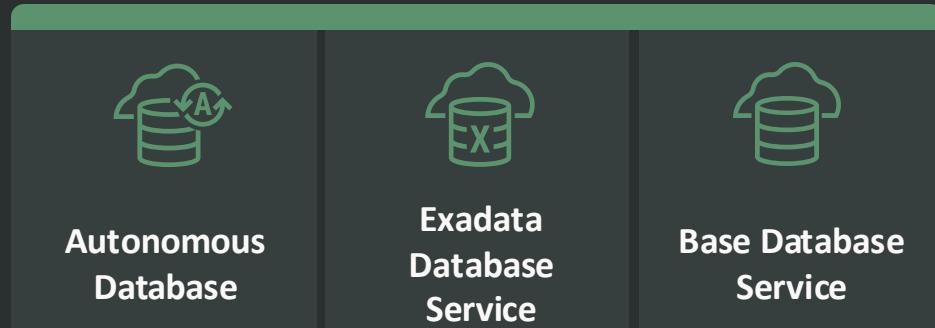


Deep Integration

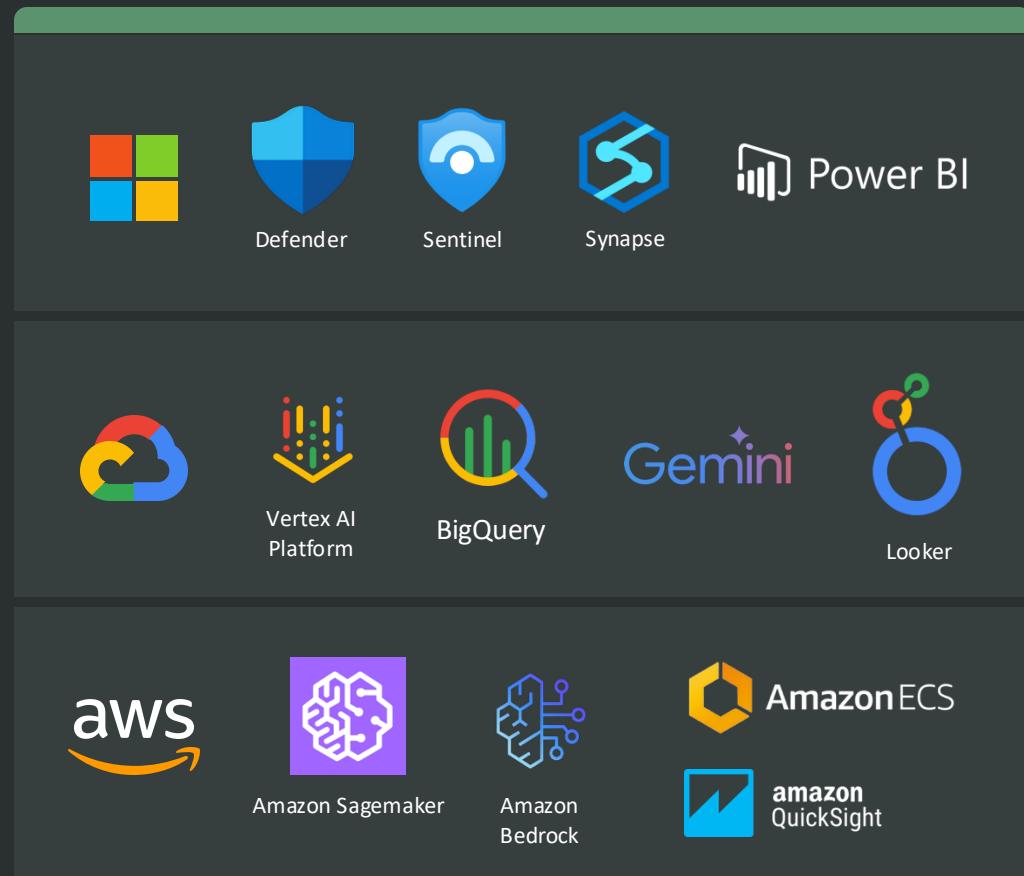


Multicloud

Native Database Service Integration



Interoperable Services



Oracle Database@AWS Service and Region Roadmap

Services	AWS	OCI
Oracle Exadata Database Service on Dedicated Infrastructure	✓	✓
Oracle Exadata Database Service on Exascale Infrastructure		✓
Oracle Autonomous Database (Serverless)		✓
Oracle Autonomous Database on Dedicated Exadata Infrastructure	✓	✓
Oracle Base Database Service		✓
Oracle Database Autonomous Recovery Service	✓	✓
Oracle GoldenGate		✓
Oracle Interconnect		
Exadata X11M	✓	✓
Exadata X9M	✓	✓

Oracle Database @AWS

- US East
- US West

2 Live

20 Planned

A photograph of a young woman wearing a black graduation cap and gown, smiling and holding a small child in her arms. The woman has long dark hair and is wearing a light-colored top under her gown. The child has blonde hair tied up in a bun and is wearing a pink shirt. They are outdoors, with other people in graduation attire visible in the background.

We help people
live their financial best

As a trusted global leader in data, analytics and technology
we deliver insights that power decisions to move people forward

Avinash Singh
VP - Technology (Global Platforms)
Equifax Inc.

Who We Are

Our Commitment Reflect Our Values



29M

29 Million U.S. consumers obtained loans to buy a car and 9.2M U.S. consumers secured a mortgage or home equity loan¹



\$4B+

\$4 Billion + instances of online identity protection¹



\$3.3M

\$3.3M total U.S. community impact of the Equifax Foundation and Equifax Gives²



25.5M

The Work Number service fulfilled 25.5M verifications for people seeking government assistance in the United States¹

All Products and services

<https://www.equifax.com/business/all-products/#capabilities>

Why Equifax

We Drive Businesses Forward, Faster

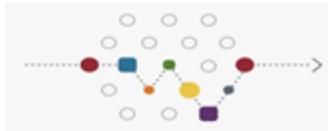
Equifax continuously innovates to help organizations make intelligent decisions more rapidly and with greater confidence.

Innovation That Accelerates Business Growth

Equifax has been driving responsible AI innovation for more than a decade with a commitment to ensuring transparency and explainability in the use of AI. Our more than 1,000 data and analytics professionals around the world anticipate the evolving challenges that our customers and consumers face - innovating not just for today, but for future growth.

Insights That Provide Clarity and Confidence

Our robust data and advanced analytics capabilities generate **insights** that create a competitive **advantage** for our customers and open new opportunities for consumers.



Differentiated Data

The breadth of our unique data gives our customers a more complete picture of consumers and competitive markets to drive quicker and confident decisions.



Advanced Analytics

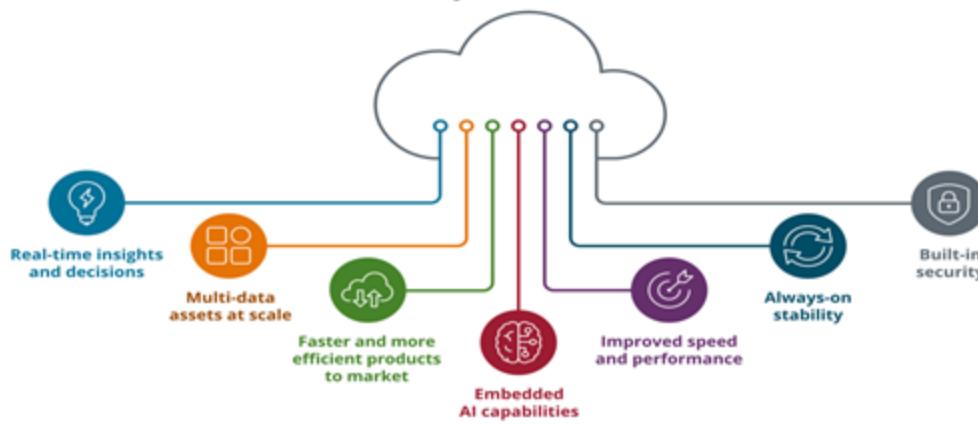
We apply patented Artificial Intelligence and trusted Machine Learning techniques to help customers get to results faster.



Global Insights

The results are actionable insights our customers use to understand their markets, find new growth opportunities, protect against fraud and better serve consumers.

The Equifax Cloud™



Over 3.5B Equifax delivered consumer credit files to US lenders YTD



Over 708K In the United Kingdom, Equifax helped people purchase a home



4.6M Brazilian consumers secured a car loan through the support of Equifax



16M Completed know-your-customer verification checks for customers in Canada

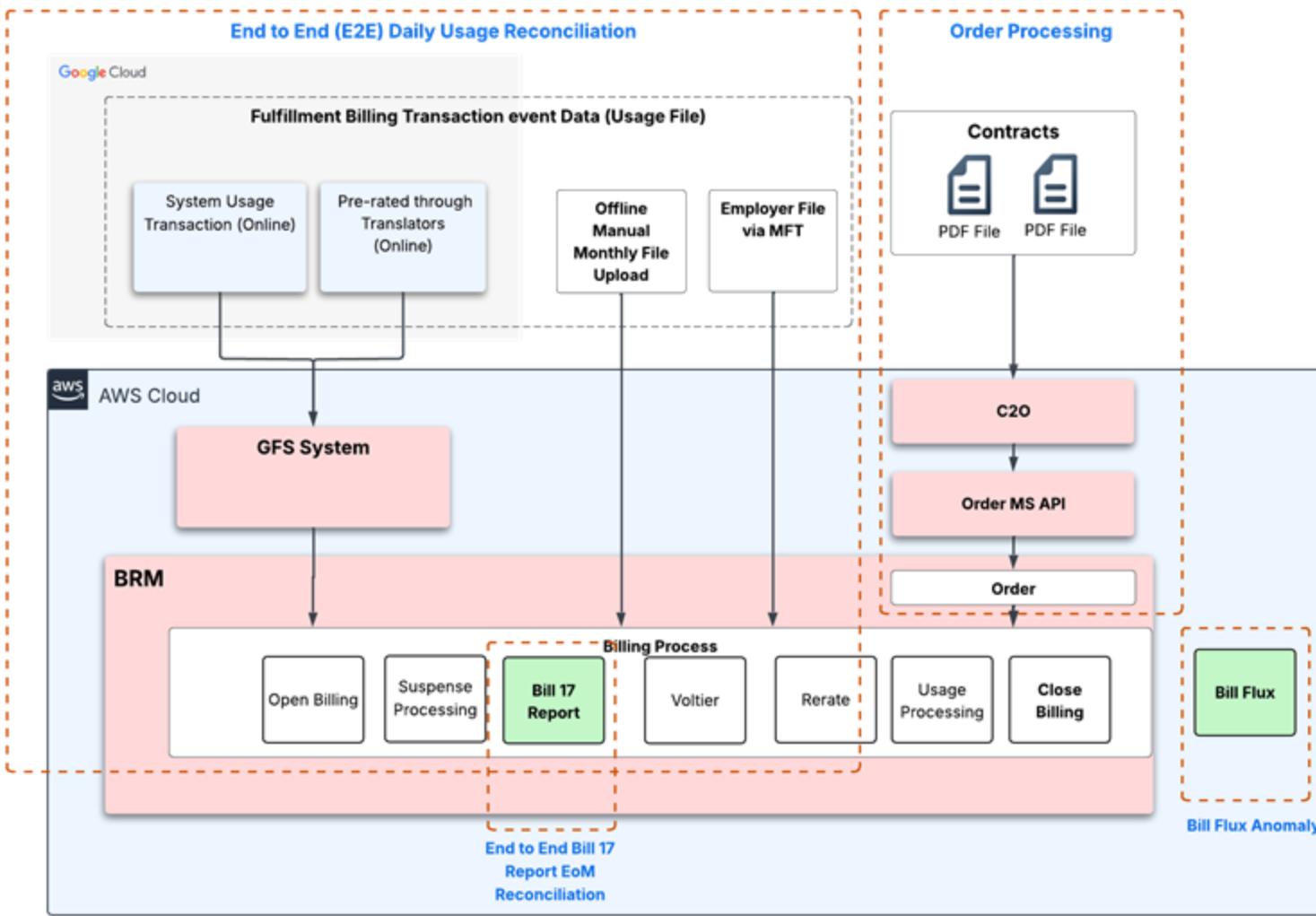
Maximizing AI Performance with the Equifax Cloud™

The Equifax Cloud was custom built to maintain and manage the large volume of diverse, proprietary datasets needed to **maximize AI performance**. Our vision for the Equifax Cloud is to expand the depth and predictiveness of our data to help our customers innovate faster and create more effective insights into the people and communities they serve.

Equifax has introduced **100+ new product innovations** for five consecutive years.*

*100+ NPIs introduced in 2020, 2021, 2022, 2023 and 2024.

Enterprise Data and Billing System



BRM Processes Orders, execute Usage Transactions, run Billing and generate customer Invoices

- High-Volume Usage Processing:** Ingests and processes millions of transactions daily from dozens of global platforms and data sources.
- Dynamic Order Management:** Manages a high volume of new and modified customer orders daily, ensuring billing is always aligned with contracts.
- Complex Billing & Rating:** Supports sophisticated rating, discounting, and billing rules to ensure accuracy.
- Automated Reconciliation:** Generates comprehensive reconciliation and anomaly analysis reports to ensure financial integrity across the entire process.

BRM - Oracle Billing and Revenue Management
GFS - Global Financial System
C2O - Contract to Order, MS - Microservices

Key Considerations - BRM Database



RDS
Storage
Limitation
(64 TB)



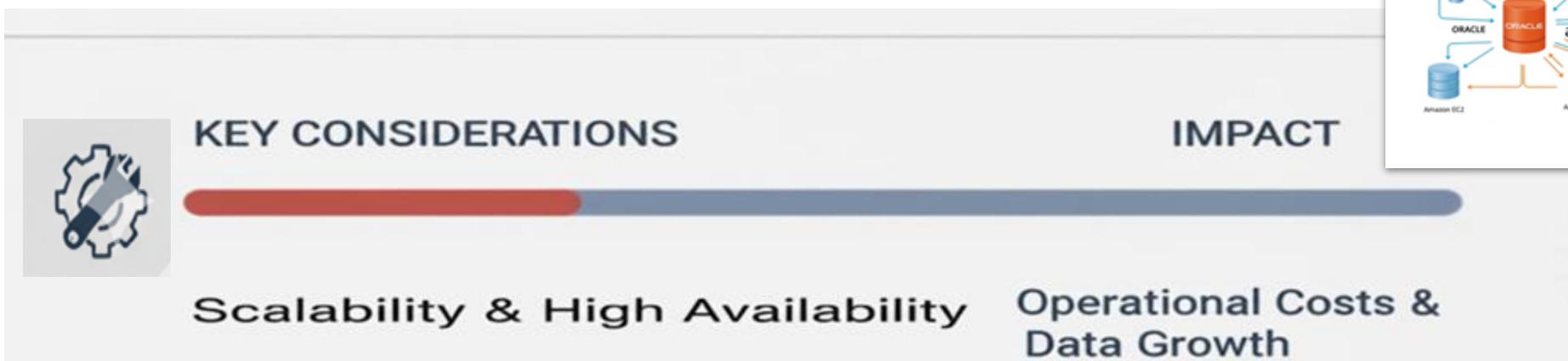
Performance
Bottleneck
(Large
Datasets)



RAC Unavailability
(No clustered
write)



Heavy OLTP
Throughput Issues
(High Volumes
Read and Write)



Key Benefits

Optimized Performance and Throughput

Oracle Exadata advanced processing power will be leveraged to significantly increase database throughput and accelerate processing for our **Billing and Revenue Management system**. This enhancement is projected to **reduce the billing and invoice generation cycle time**, leading to faster financial closing and improved cash flow.

Scalable Storage and Data Visibility

The availability of **petabytes of storage capacity** will minimize the need for frequent **purge and archival maintenance**, reducing administrative overhead and risk. Furthermore, maintaining a comprehensive, **live database** will empower Billing Operations and Business teams with **extended, long-term data visibility** for superior analysis and reporting.

Unified Cloud Workload

The **Oracle Database Network (ODB) on AWS** provides a secure, seamless integration layer for our **Billing data and Analytics**. This setup efficiently connects the Oracle workload with existing AWS services, creating a **foundational architecture** that is ready for ADB@AWS and will accelerate data insights. This unlocks a broad spectrum of **future enhancements**.

Strategic Focus and Reduced Operational Overhead

Implementation of **Autonomous Database capabilities** will automate routine database maintenance tasks (e.g., patching, tuning, security). This transition will allow the IT and database teams to shift their focus from reactive maintenance to **strategic business growth initiatives** and value-add activities.

Oracle Database@AWS Select Use Cases

Michael Barras
Senior Principal Product Manager
OCI Multicloud

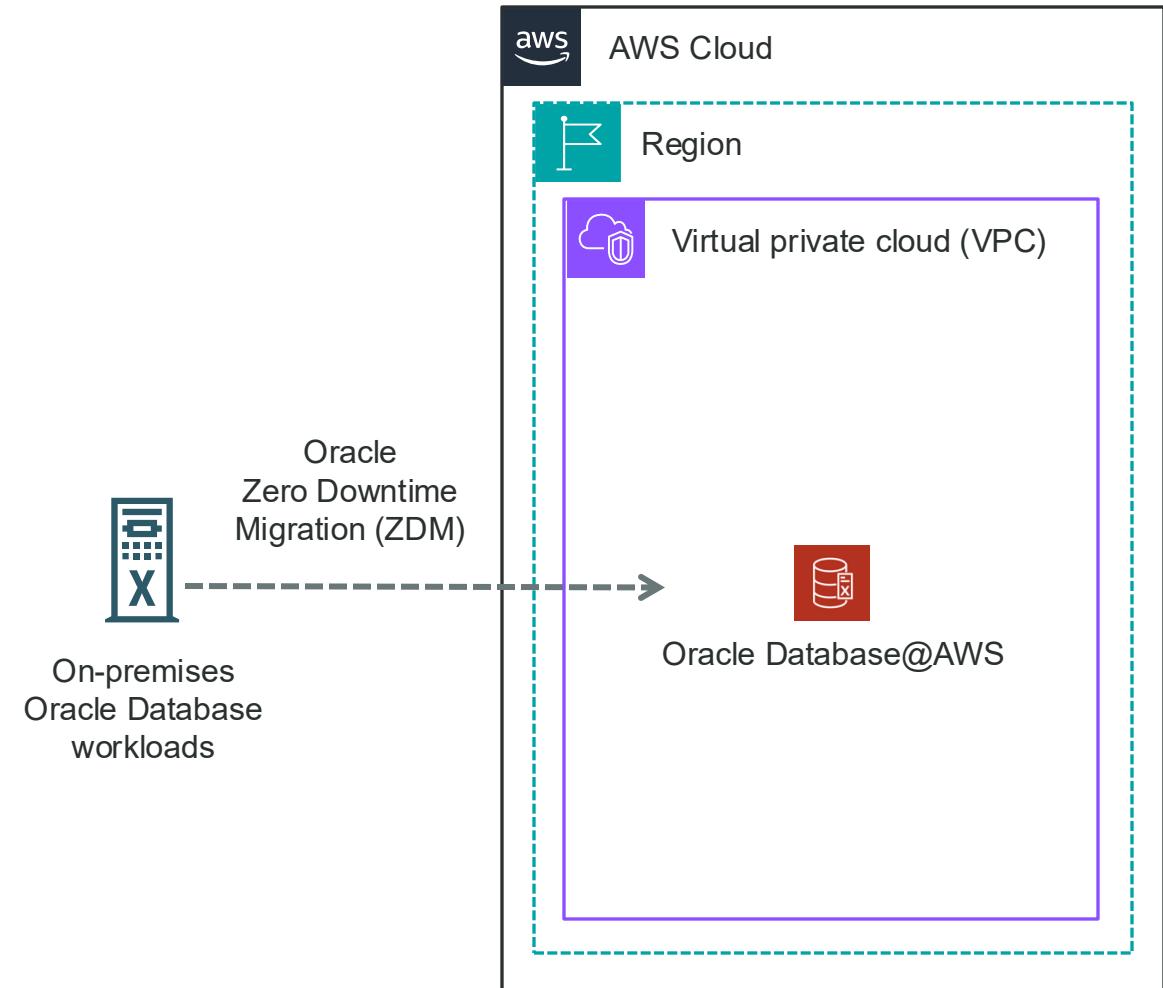


Migrate, Lift and Shift On-premises workloads

Lift and Shift your Oracle Exadata workloads to Oracle Exadata Database Service or Oracle Autonomous Database on Dedicated Exadata Infrastructure within AWS with minimal changes.

Maintain full feature availability, architectural compatibility, and the same performance (or better) compared to on-premises.

Achieve high resilience with a combination of Oracle Real Application Clusters (RAC) and the high availability architecture of Oracle Database services across multiple AWS Availability Zones, along with Amazon S3 for database backups.



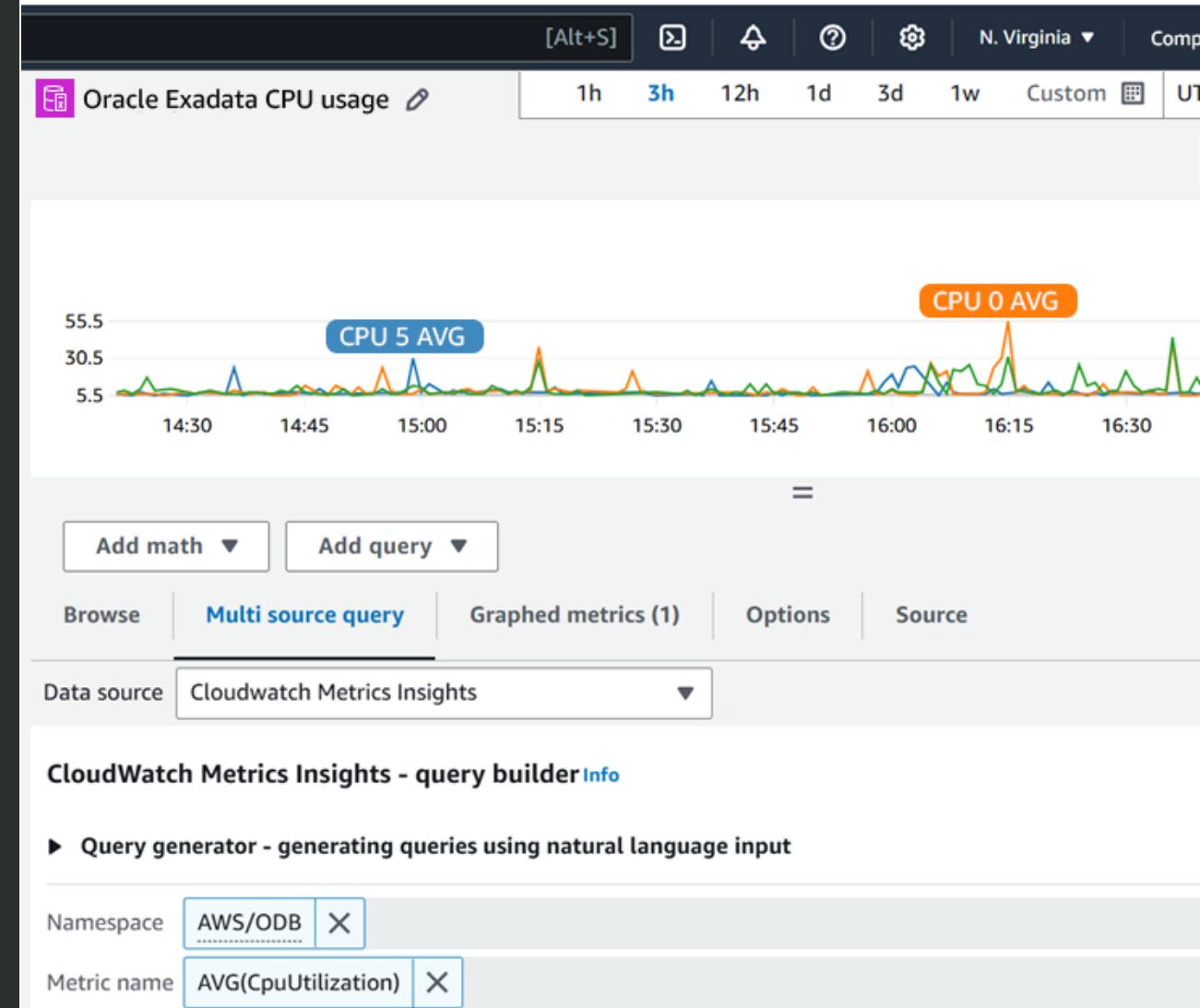
Simplify data management, support, and operations

Benefit from a **unified experience** between Oracle and AWS with collaborative support, purchasing, management, and operations.

Usage of Oracle Database@AWS qualifies for your existing AWS commitments and Oracle license benefits, such as Oracle Support Rewards.

Leverage your **existing AWS** and Oracle Database skills, automation, and processes together in a **multicloud** environment.

Simplify management and operations using native integration with the AWS Management Console, CLI, APIs, and monitoring.

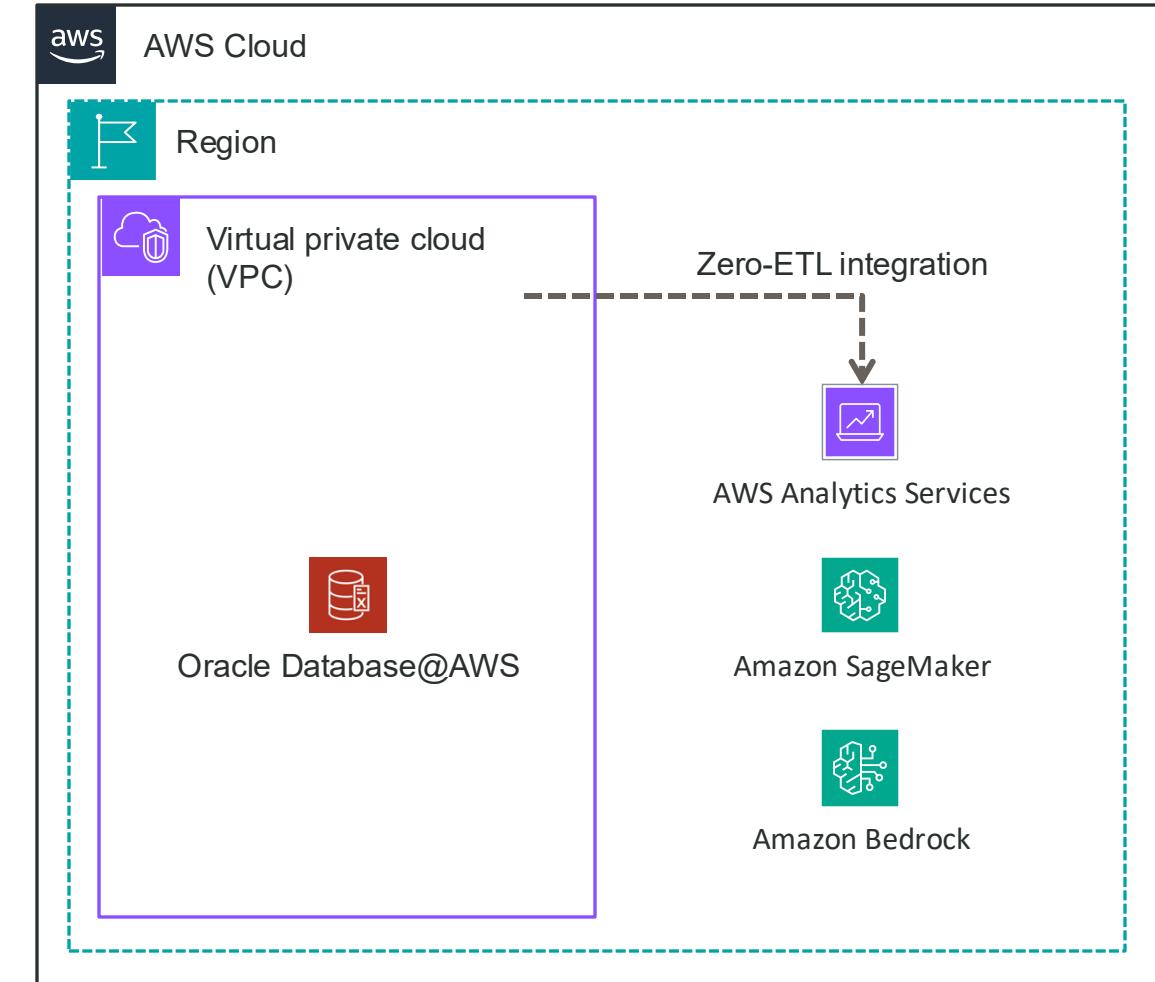


Unify Data Architecture across Oracle – AWS, Simplify App Dev

Generate **deeper insights** and analytics **innovation** using **zero-ETL** to unify your data across Oracle and AWS for analytics, machine learning, and generative AI.

Build **new scalable microservices-based apps** by combining Amazon EC2, Amazon EKS, and Amazon ECS with Oracle Database features, such as AI Vector Search to accelerate modernization.

Reduce **management overhead** across the cloud, data estates, workloads, and use case.



Unify – Generate deeper insights and develop new innovation

Empower your data with native AI services

- Unify your data across Oracle and AWS for machine learning and GenAI
- Enhance application intelligence and analytics
- Accelerate time to market for new features

Unify use case example

Problem

Existing image search returns low quality results due to large catalog of product titles with poor keyword searchability



Solution

Enhance product search with GenAI and natural language processing to deliver more accurate results – making it easier for customers to find what they need and increasing sales conversions

Unify Empower your data with native AI services

Customer journey

1

Onboard with Oracle Database@AWS through the AWS Marketplace

2

Provision OCI database services into your AWS account

3

Combine the capabilities of Oracle Database 23ai with AWS AI services

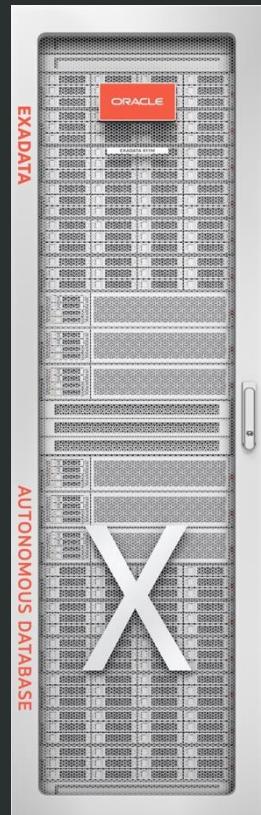
1. Onboard with Oracle Database@AWS through the AWS Marketplace

Purchase a private offer through the AWS Marketplace

- Work with Oracle account team on private offer
- Pay AWS, consume against AWS commitments
- Earn Oracle Support Rewards towards your tech software license support bill
- Access **OCI, Oracle Database services** from within AWS data centers

Exadata: Premier Platform for Oracle Database Services

Extreme performance, scalability, and availability for data and AI workloads, at a low cost



Data optimized hardware

Scale-out, data optimized compute, networking, and storage

Data intelligent software

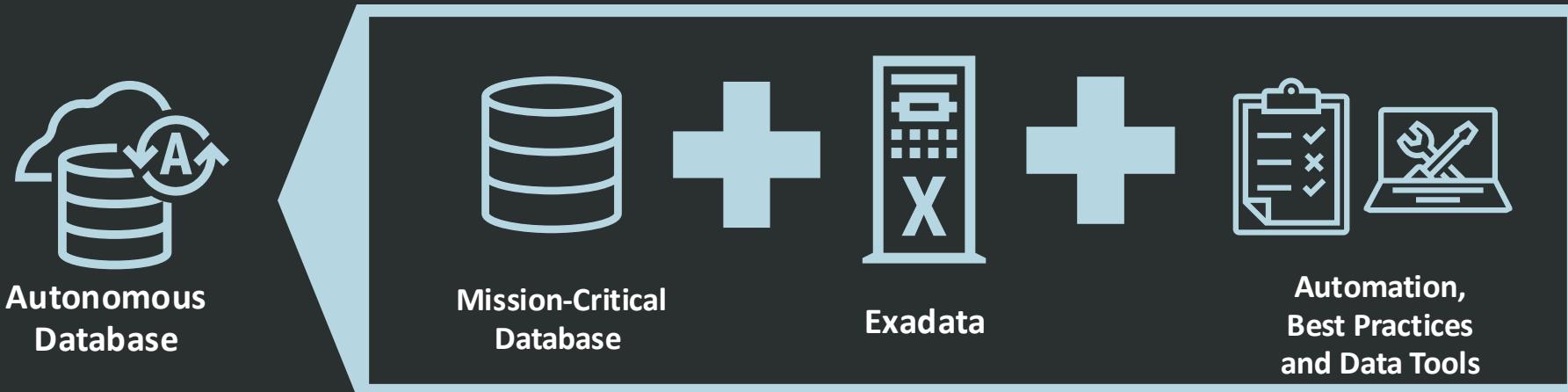
Unique algorithms deliver extreme performance and efficiency for AI, analytics, and mission-critical apps, at any scale

Engineered to run everywhere

On-premises, Cloud@Customer, Oracle Cloud, and Multicloud

Autonomous Database Delivers the Best Data Experience

Fully-managed, cloud native, lowest TCO



✓ Eliminates many manual tasks

✓ Reduces human error

✓ Simplifies scaling

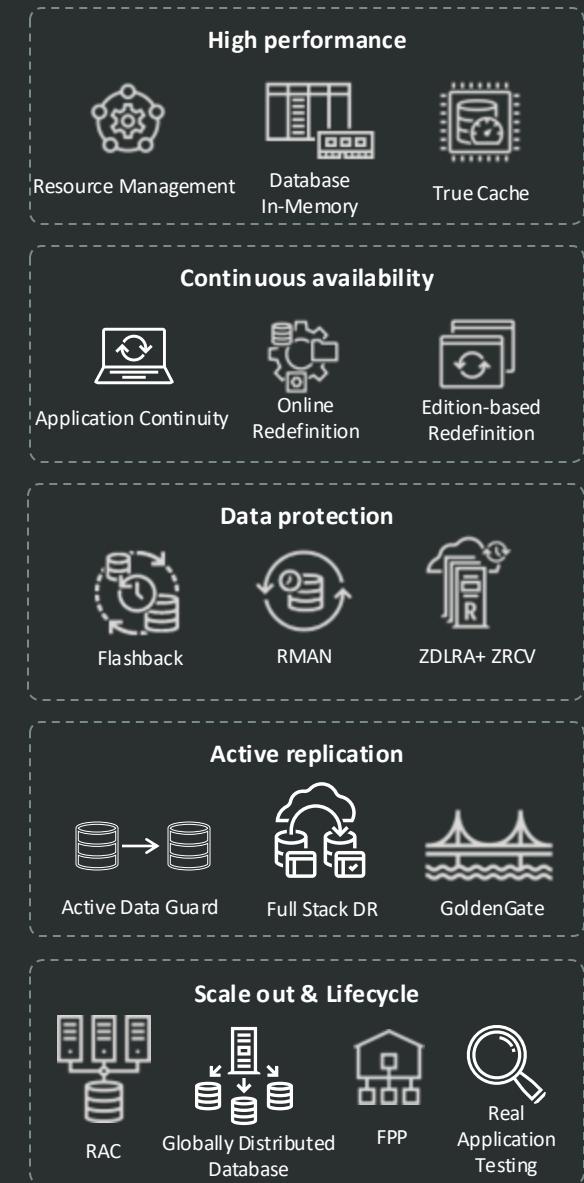
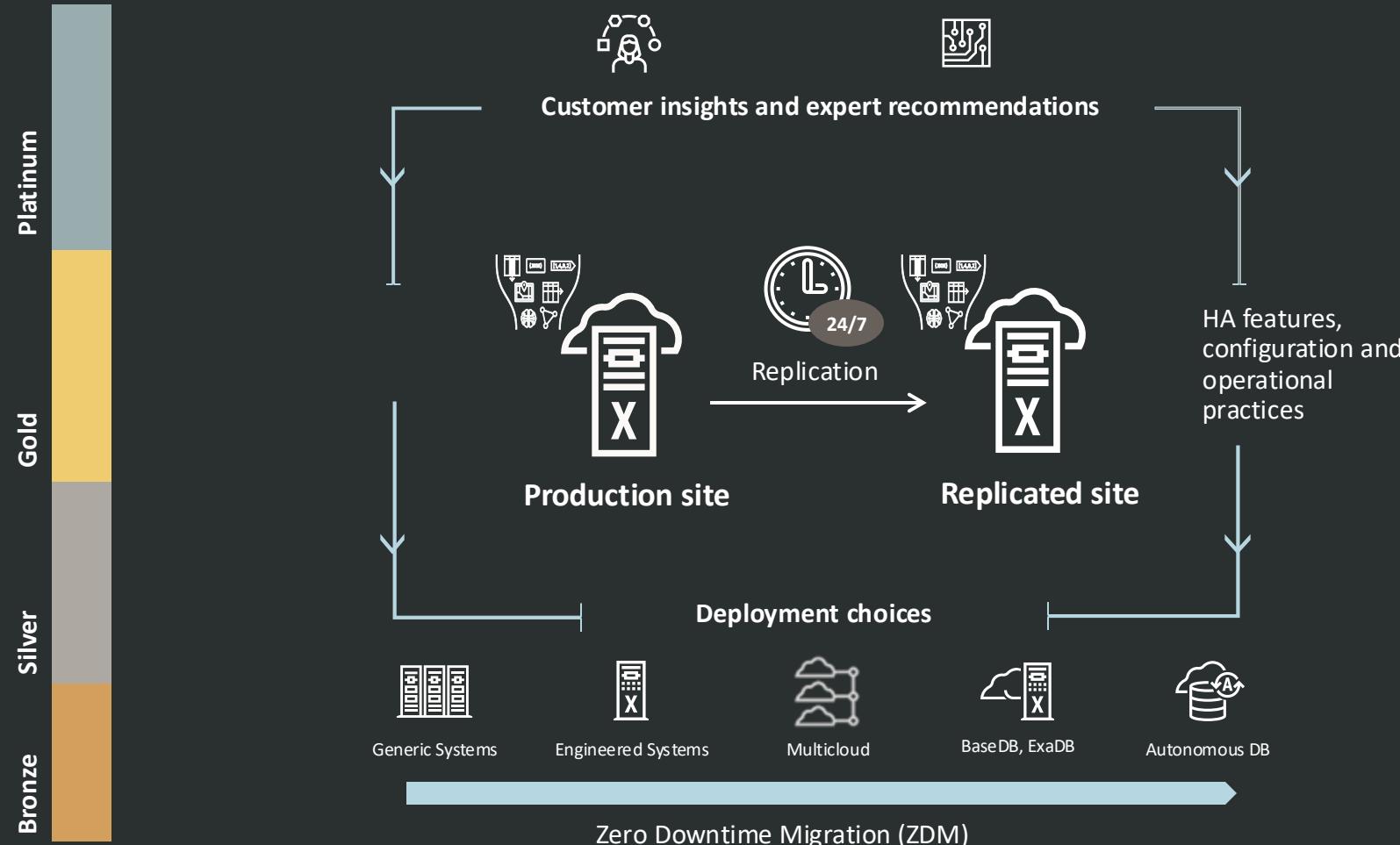
✓ Minimizes downtime

✓ Aligns costs with demand

Runs on top of **Real Application Clusters** ♦ Up to **99.995% SLA** ♦ **Zero regression SLO**

Oracle Maximum Availability Architecture (MAA)

Standard Reference Architectures for Never-Down Deployments



2. Provision OCI database services into your AWS account

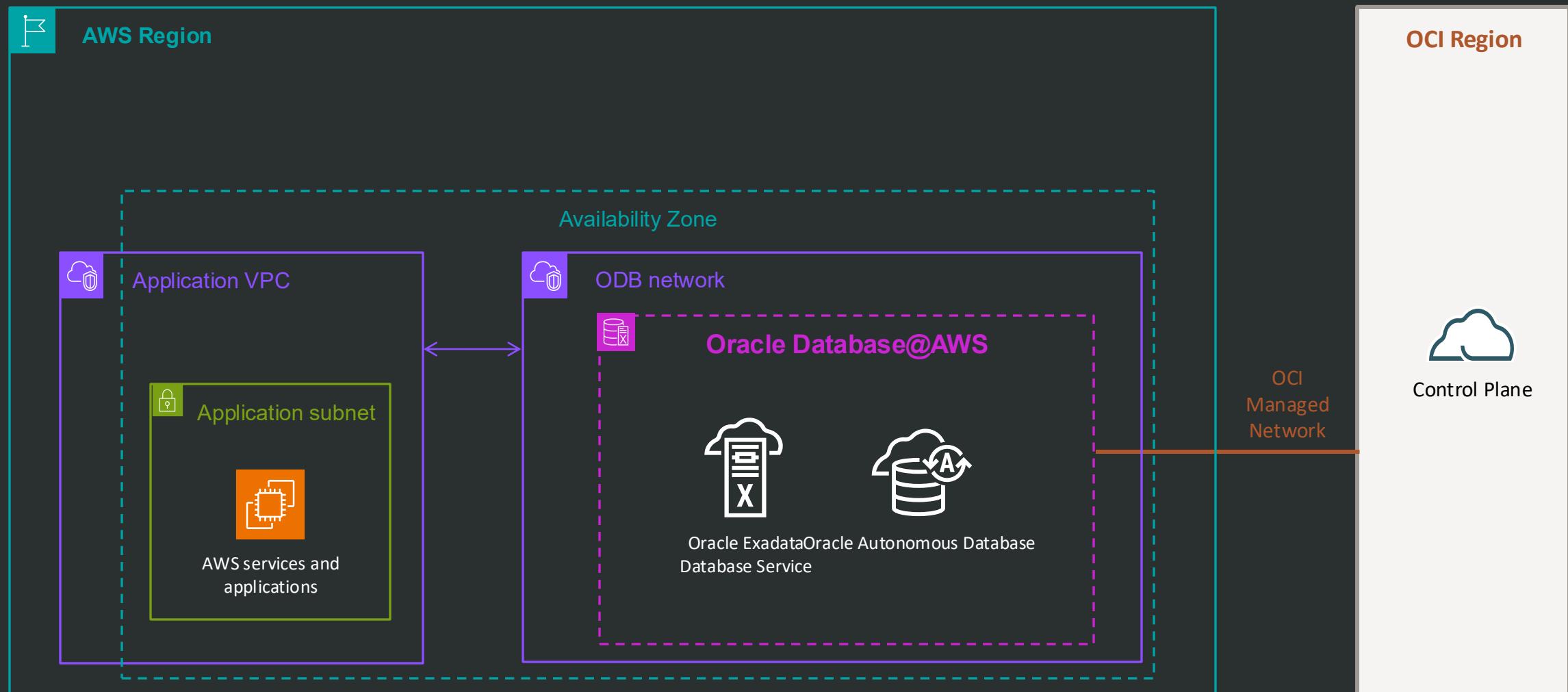
Provision OCI database services in AWS

- AWS management console, CLI/API, CloudFormation, Terraform
- Control access with AWS Identity and Access Management
- Manage networking with Amazon Virtual Private Cloud
- Log API calls to AWS CloudTrail
- Monitor infrastructure with Amazon CloudWatch

Manage OCI database services through OCI

- OCI console, CLI/API, Terraform, with identity federation
- Create and manage container and pluggable databases
- Manage backup and restore, Data Guard, OCI integrations

Oracle Database@AWS architecture



Create and peer Oracle Database Network



```
aws odb create-odb-network
--display-name      dev-cluster-odbn
--availability-zone us-east-1a
--client-subnet-cidr 10.23.0.0/24
--client-subnet-cidr 10.45.0.0/24

aws odb create-odb-peering-connection
--odb-network-id    odbnet_abcdef0123
--peer-network-id   vpc-abcdef0123456789
```

Deploy Exadata Infrastructure

...

```
aws odb create-cloud-exadata-infrastructure  
--display-name      dev-exainfra  
--availability-zone us-east-1a  
--shape              Exadata.X11M  
--compute-count     2  
--storage-count     3
```

Create VM Clusters on Exadata Infrastructure

```
aws odb create-cloud-vm-cluster  
--display-name      dev-cluster-vmc1  
--cloud-exadata-infrastructure-id exa_abc123  
--odb-network-id   odbnet_abcdef0123  
--cpu-core-count   64  
--ssh-public-keys  ssh-rsa ABC123DEF456  
  
aws odb create-cloud-autonomous-vm-cluster  
--display-name      dev-cluster-avmc1  
--cloud-exadata-infrastructure-id exa_abc123  
--odb-network-id   odbnet_abcdef0123  
--cpu-core-count-per-node 32
```

Create databases using OCI console/CLI

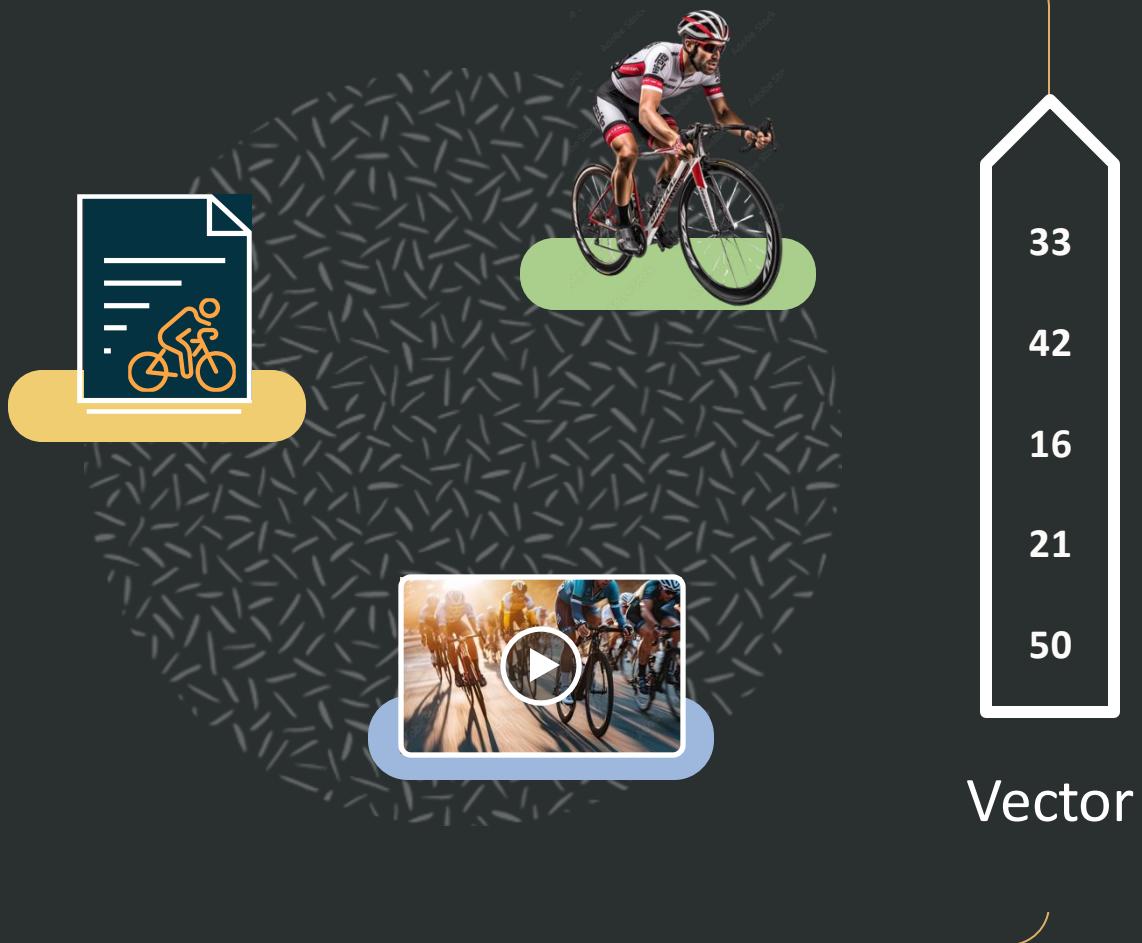
```
...  
oci db database create  
--db-home-id      ocid1.dbhome.oc123abc  
--db-name         cdb123  
  
oci db autonomous-container-database create  
--display-name    acdb123  
--patch-model     RELEASE_UPDATES  
--autonomous-vm-cluster-id ocid1.avmc.oc123abc
```

3. Combine the capabilities of Oracle Database 23ai with AWS AI services

Oracle Database 23ai

- AI Vector Search
 - `VECTOR()` data type for storing vector embeddings
 - SQL syntax and functions express similarity search with ease
 - Approximate search indexes packaged and tuned for high performance and quality
 - No need to move and synchronize data or manage multiple products

Oracle AI Vector Search



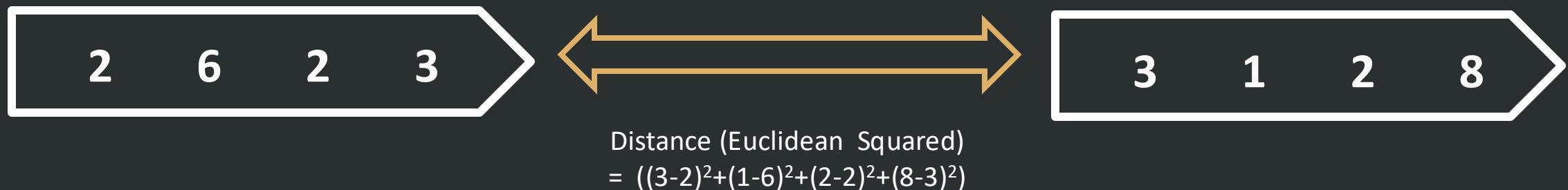
An AI Vector is a sequence of numbers, called dimensions, that represent the semantic content of a document, image, or video

Developers create a vector for an object by just passing the object to a built-in vectorization function

Oracle 23ai natively stores vectors and compares vectors to find objects with similar semantic content

Oracle AI Vector Search

The main operation on vectors is the
Mathematical Distance between them



There are many mathematical distance formulas

Store and query vectors in Oracle Database 23ai



1. Extend schema

Add a new column of data type **VECTOR()** to store embeddings next to your existing data



2. Generate vectors

For each row of existing or new data, call Amazon Bedrock to generate vector embeddings to store in the database



3. AI Vector Search

Query product data with SQL, using new **VECTOR_DISTANCE()** function to find closest matches

Combine relational and AI search directly in SQL

```
...  
  
SELECT product_id, title, image_url  
FROM product  
WHERE image_url is not null  
ORDER BY VECTOR_DISTANCE(title_vr, :search_vr)  
FETCH FIRST 10 ROWS ONLY;
```

Visit our booth in the Oracle AI World Hub to see the full demo

Learn more about Oracle Database@AWS

<https://www.oracle.com/cloud/aws/>

Find solutions, pricing, video demos, documentation, or connect with a specialist and sign up

Visit our booth in the Oracle AI World Hub

Chat with product experts and explore Oracle Cloud Infrastructure and our Multicloud offerings

[See the full Empower Your Data demo](#)

Visit the AWS booth in the Oracle AI World Hub

Connect with our AWS partners and learn more



Your feedback is important.

**Scan this QR Code or use the
Mobile App to share your
thoughts on this session.**



ORACLE