



SOUG - 2 OCTOBER 2026

# Bring Exadata in AWS

## A real-life experience

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# Agenda

How to run Oracle databases in AWS



Getting to Oracle AI Database@AWS



# Running Oracle in AWS

Self-managed  
Oracle on EC2

Amazon RDS  
for Oracle

Oracle AI  
Database@AWS

# Overview of Oracle AI Database@AWS



Oracle AI Database@AWS lets you migrate Oracle Exadata workloads to Oracle Exadata Database Service or Oracle Autonomous Database on Dedicated Infrastructure in AWS data centers



OCI services running on **Exadata infrastructure** in AWS



**Low latency network** connection to AWS services



Offering available through **AWS Marketplace**

# Oracle Database@AWS: Now Available

| Services                                                       | AWS |
|----------------------------------------------------------------|-----|
| 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 Database Autonomous Recovery Service                    | ✓   |
| Exadata X11M                                                   | ✓   |
| Oracle Database 19c and 26ai                                   | ✓   |
| Private and Public Offer                                       | ✓   |

## Regions Live

22 Live

- Europe (London)
- Europe (Frankfurt)
- Europe (Ireland)
- Europe (Paris)
- Europe (Zurich)
- Europe (Milan)
- Europe (Spain)
- Europe (Stockholm)
- US East (N. Virginia)
- US East (Ohio)
- US West (Oregon)
- US West (N. California)
- Canada (Central)
- South America (Sao Paulo)
- Asia Pacific (Mumbai)
- Asia Pacific (Hyderabad)
- Asia Pacific (Seoul)
- Asia Pacific (Tokyo)
- Asia Pacific (Sydney)
- Asia Pacific (Singapore)
- Asia Pacific (Osaka)
- Asia Pacific (Melbourne)

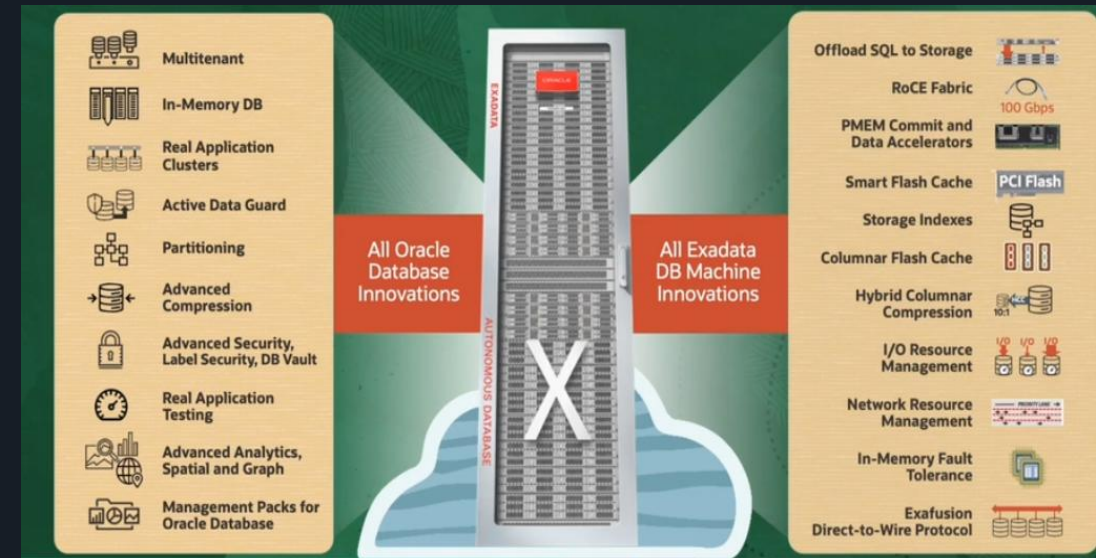
➤ ADB-S is currently available in us-east1 and us-west-2 regions

➤ Public offer is available for ADB-S



# Exadata Database Service on Dedicated Infrastructure (ExaDB-D)

- Oracle Exadata Database Service delivers Oracle Database capabilities on purpose-built, optimized Oracle Exadata infrastructure.
- It provides managed & scalable infrastructure and the option of License Included or Bring Your Own License (BYOL).
- Leverage all features of Exadata such as Smart Scan, Storage Indexes, HCC and Real Application Cluster features.
- Dedicated Exadata Infrastructure for workload isolation
- Root access on VMs for customization of database and operating system



# Exadata X11M/X11MV Configuration

| Database servers   |      |
|--------------------|------|
| ECPUs              | 760  |
| Memory (GB)        | 1390 |
| Local Storage (GB) | 1121 |
| Max DB servers     | 32   |

| Storage servers      |      |
|----------------------|------|
| Usable capacity (TB) | 80   |
| Flash Capacity (TB)  | 27.2 |
| Max Storage servers  | 64   |

| VMs                             |   |
|---------------------------------|---|
| Max # of VM Clusters per System | 8 |
| Max # of VMs per DB server      | 8 |

| Minimum infrastructure configuration    |      |
|-----------------------------------------|------|
| DB servers                              | 2    |
| Storage servers                         | 3    |
| Total ECPUs                             | 1520 |
| Total Memory (GB)                       | 2780 |
| Total Usable Disk Storage Capacity (TB) | 240  |
| Total Flash Capacity (TB)               | 81.6 |

X11MV supports up to 24 VM Clusters per infrastructure (3× X11M) and 12 VMs per DB server (1.5× X11M), enabling significantly higher consolidation density.

# Pricing & Support

- ❖ Available through AWS Marketplace subscription based on the private offer provided by OCI
  - ❖ Spend counted towards AWS Commitments and Oracle Support Rewards
  - ❖ Charges based on the consumption will be reflected in AWS monthly bill
  - ❖ SKU level granular billing metrics available in AWS bill
- 
- ❖ Seamless support experience with joint support model by AWS and OCI
    - Create Technical & Limits SRs directly in OCI support using the CSI assigned to the tenancy – OCI will engage AWS support internally as required.
    - Raise issues related to AWS specific features like Zero-ETL with AWS and OCI support will be internally engaged as required.

# Oracle AI Database@AWS integrates with AWS services

## Backup and Analytics



Amazon Simple storage Service (S3) for automated and user managed backups



Amazon Redshift for real time replication with Zero ETL integration

## Identity and Access



AWS Identity and Access Management (IAM) for centralized access control



AWS Resource Access Manager (RAM) for sharing resources between accounts

## Monitoring



Amazon CloudWatch for real time monitoring



Amazon EventBridge for event-driven applications



AWS CloudTrail for governance and compliance

## Networking



Amazon VPC Lattice for secure service networking



AWS Transit Gateway (TGW) for extended connectivity



AWS Cloud WAN for extended connectivity

## Provisioning



AWS CloudFormation and Terraform for infrastructure as code



AWS Management Console, SDK, and Command Line Interface

## Compute



Amazon Elastic Compute Cloud for virtual servers in the cloud



Amazon EKS and Amazon ECS for containers in the cloud

# Getting to Oracle AI Database@AWS



# KEY TECHNICAL QUESTIONS



## Infrastructure & Deployment

- ▶ RDS vs EC2 vs ExaDB-D?
- ▶ Oracle edition & version?
- ▶ Managed vs self-managed?



## Sizing & Performance

- ▶ CPU, memory, storage needs?
- ▶ IOPS & latency requirements?
- ▶ Performance SLAs to meet?



## Licensing

- ▶ BYOL vs License Included?
- ▶ Core factor & vCPU mapping?
- ▶ EE option packs in use?



## HA & Disaster Recovery

- ▶ RPO / RTO targets?
- ▶ Multi-AZ / Data Guard / RAC?
- ▶ Cross-region DR needed?



## Migration Method

- ▶ Acceptable downtime window?
- ▶ Data Pump / DMS / GoldenGate / XTTS?
- ▶ DB size & transfer approach?



## Security & Networking

- ▶ VPC design & connectivity?
- ▶ Authentication method?
- ▶ TDE / encryption at rest & transit?



## Application & Dependencies

- ▶ Connection strings & drivers?
- ▶ Oracle-specific features used?
- ▶ External tools?



## Operations & Management

- ▶ Backup & retention strategy?
- ▶ Patching & upgrade cycle?
- ▶ Monitoring (CloudWatch, OEM)?

# On-premises strong foundation on Oracle, but somehow rigid

## ORACLE FOUNDATION

### On-Premises Oracle Implementation

RAC-enabled, engineered system —  
Years of tuning baked in

### Oracle-Specific Features

Partitioning, Advanced Compression,  
Transparent Data Encryption, RAC, CDBs, PDBs

### Deep App Coupling

PL/SQL-heavy logic, DB links, complex stored  
procedures

## A CHALLENGING LANDSCAPE

### Rising License & HW Costs

Refresh cycles every 5 years with capex spikes

### Slow Scaling

Capacity planning 12–18 months ahead;  
no elastic scale

### Isolated from Cloud Ecosystem

No native access to AWS analytics, AI/ML, or  
managed services

# The Workload Sets the Rules

## SLA

**99.99%**

Availability target —  
<52 min downtime per year

## Performance

**<200ms**

P99 transaction latency for real-time processing

## Growth

**3 times**

Data volume growth expected over 3-year horizon

## Global Reach

**Multi-Region**

Active-passive across 3+ AWS regions; DR <4 hrs RTO

## Security & Compliance

**Regulated**

GSMA, audit trail, data residency constraints

## Operations

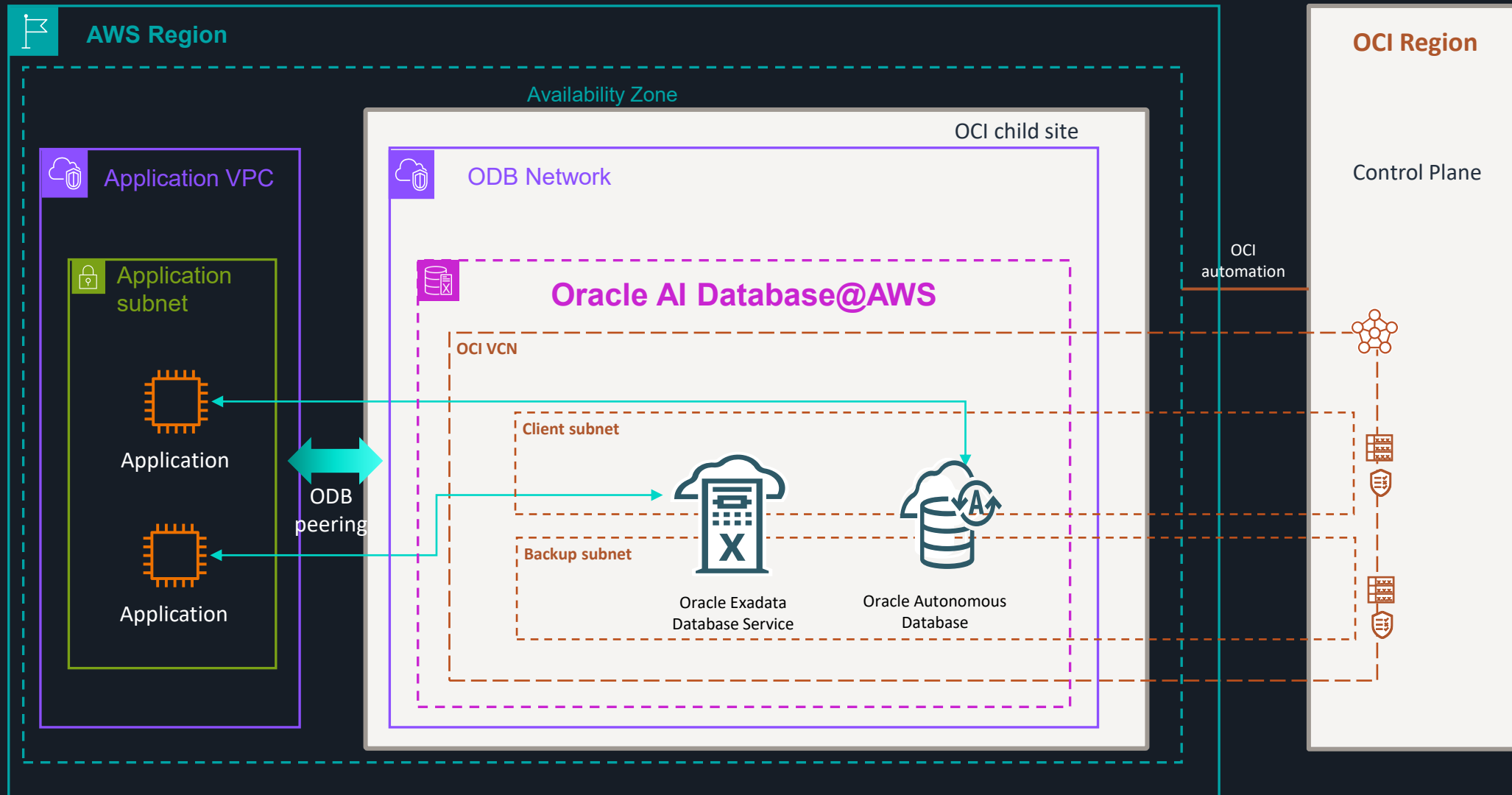
**Zero-Touch**

Automated patching, backup, failover with no manual runbooks

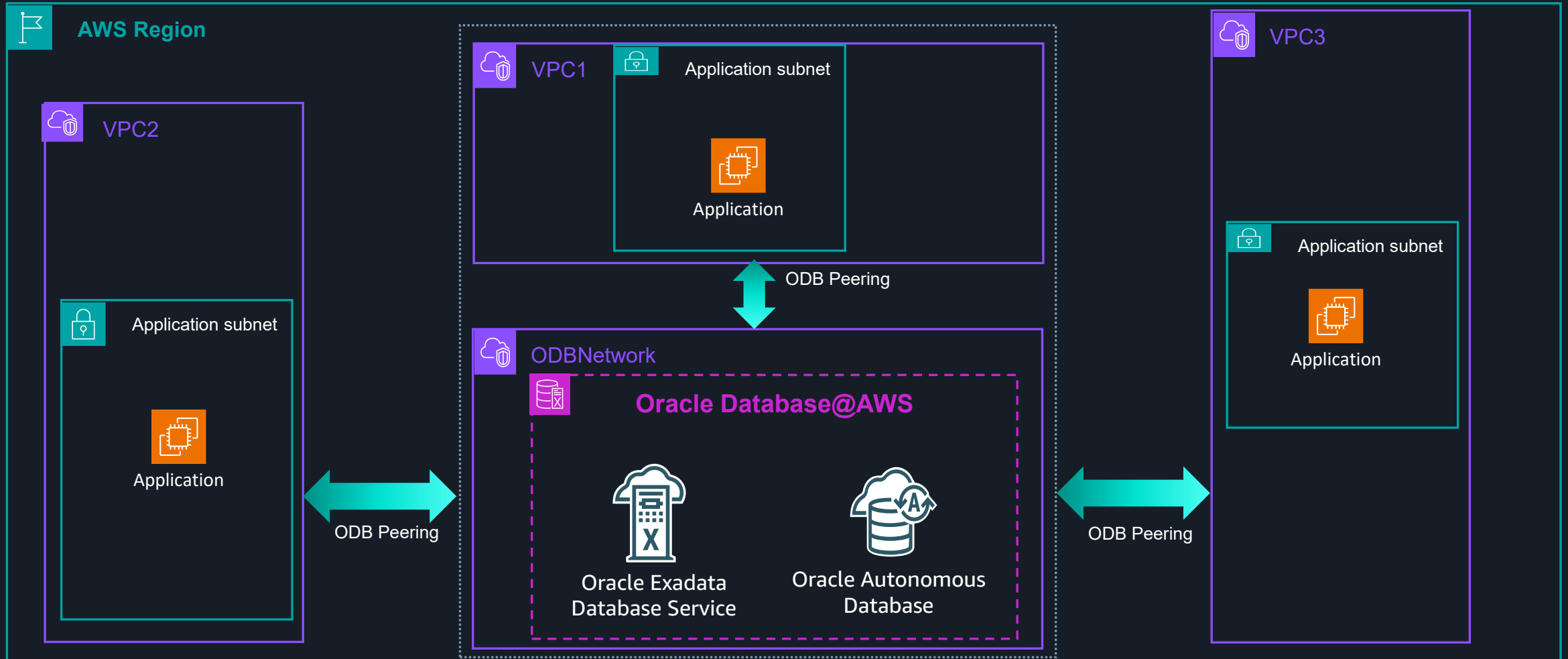
# Network topology



# Oracle AI Database@AWS Architecture



# Direct ODB peering with multiple application VPCs

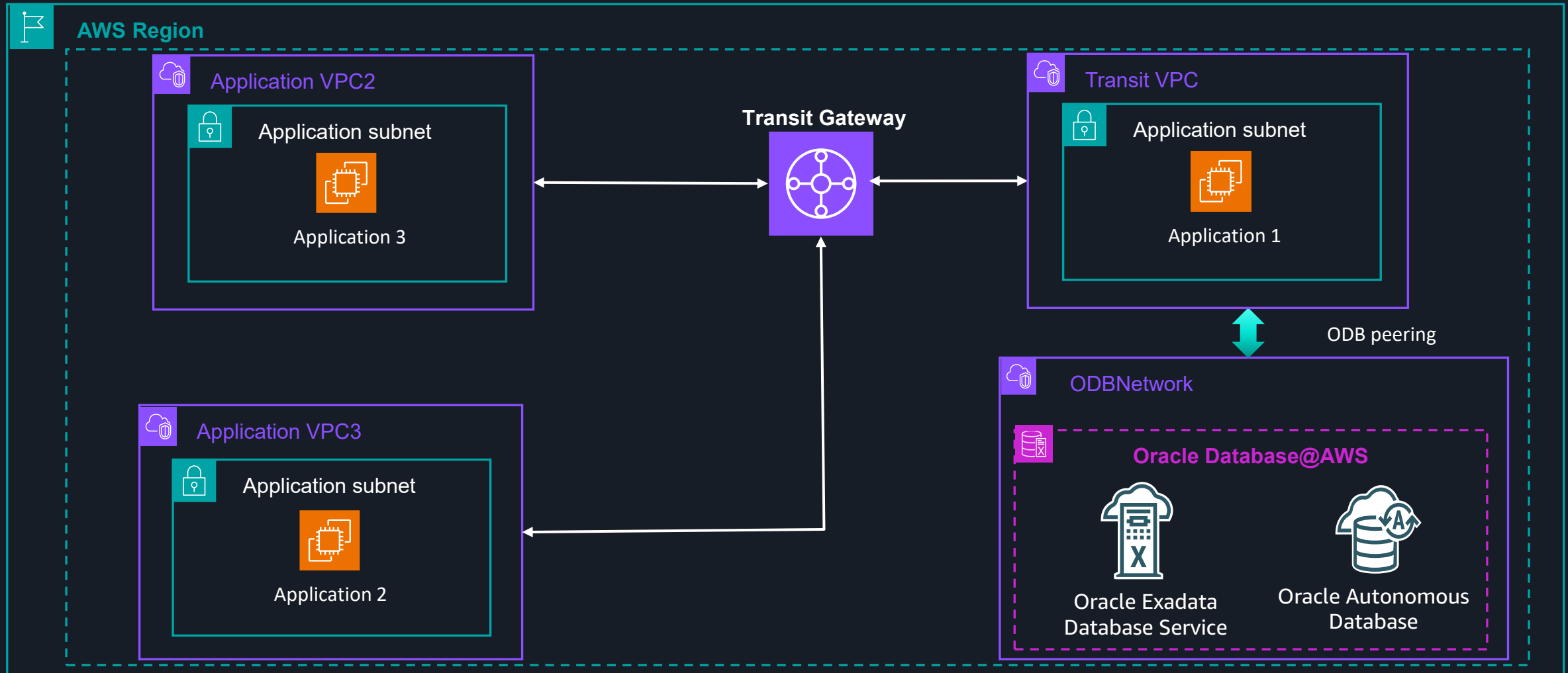


➤ Maximum 125 peering connections per ODBNetwork

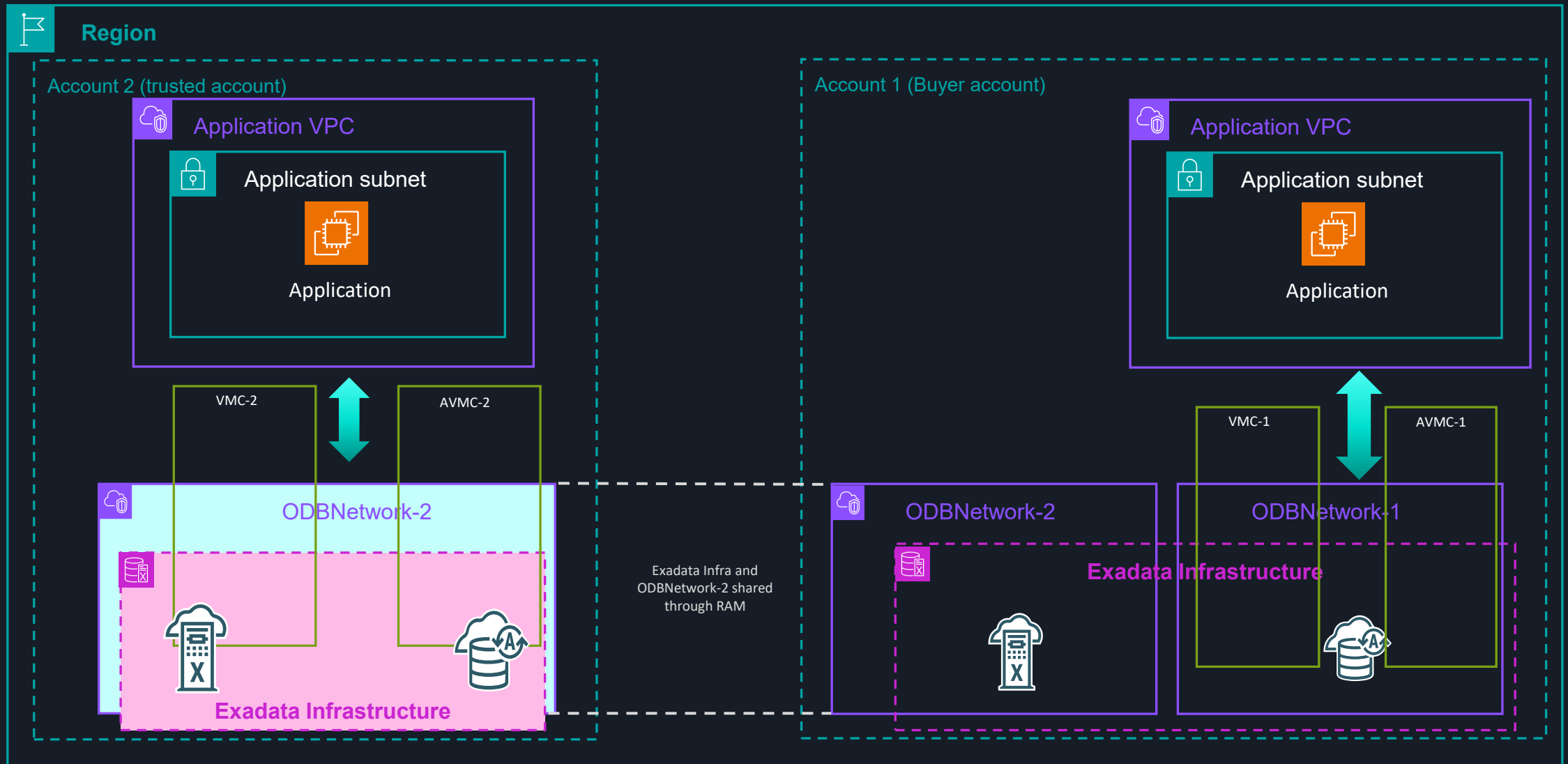
➤ OCI limits on number of NSG rules per VCN may need to be increased for high number of peering connections



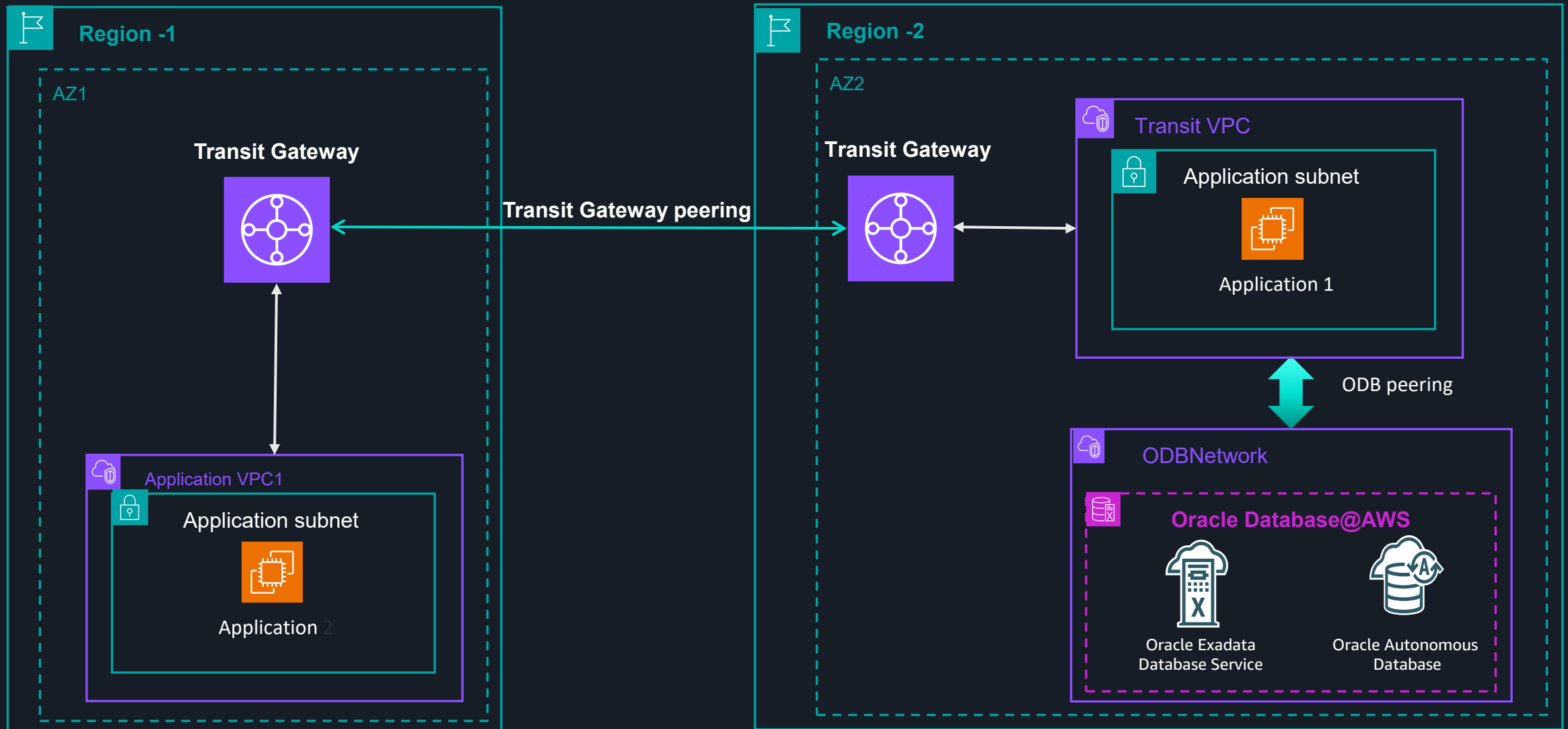
# Connectivity from multiple VPCs in the same account / region using TGW or Cloud WAN



# Sharing Exadata Infrastructure and ODB Network



# Connectivity from VPCs in different regions using TGW or Cloud WAN

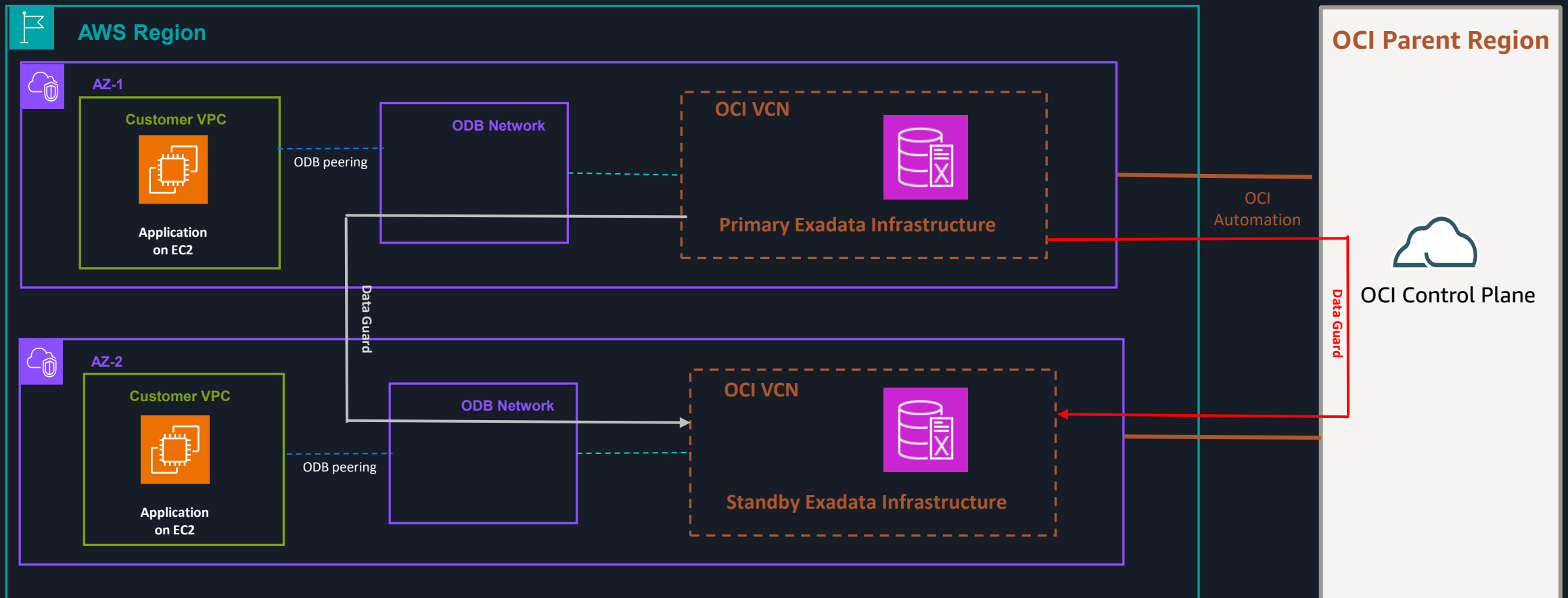


# High Availability and Disaster Recovery

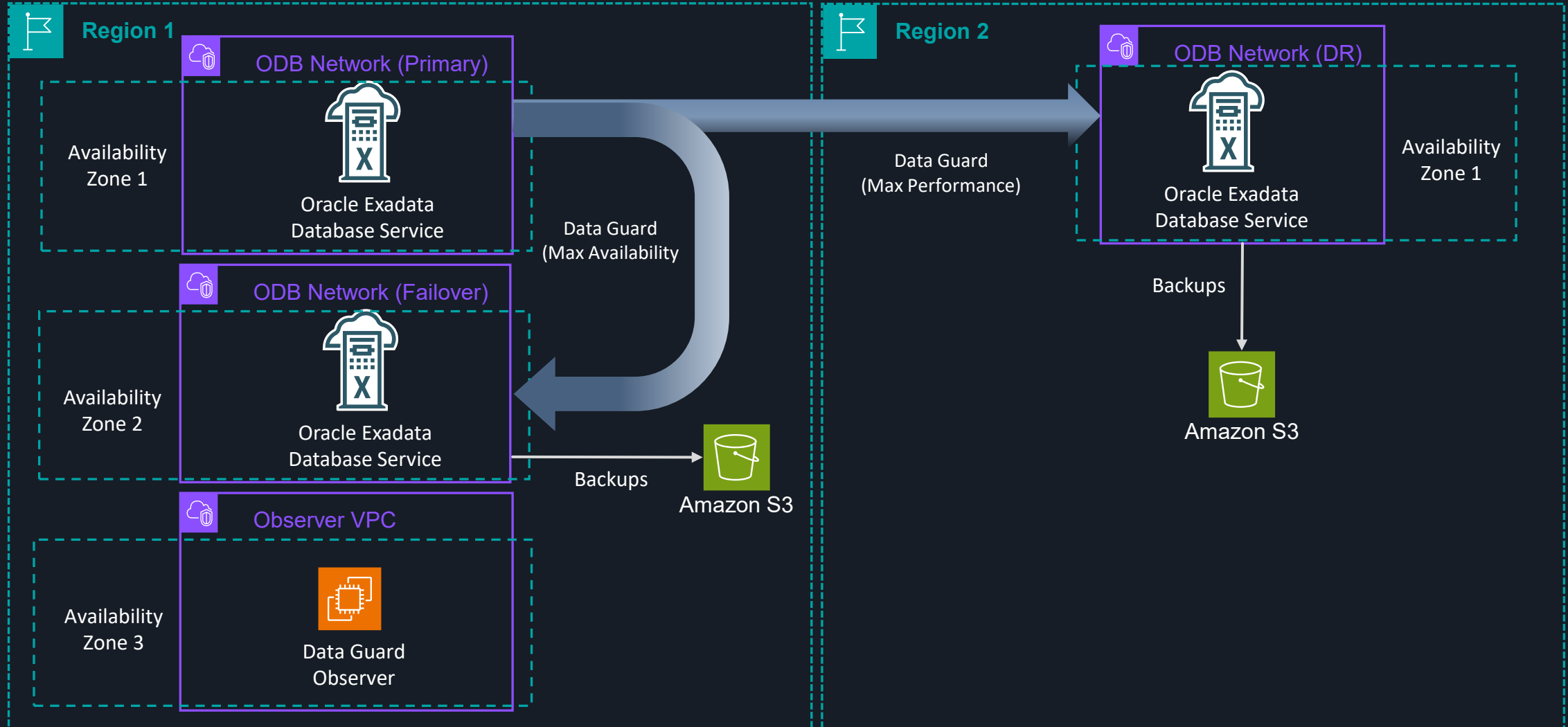


# HA/DR with Oracle Database@AWS

- ❑ Real Application Cluster (RAC) features are integrated with ExaDB and ADB-D
- ❑ Data Guard association for HA/DR cross AZs or cross-Regions



# MAA – Gold reference architecture



# Backup & Security



# Auto Backup targets for Oracle Database@AWS

| Destination        | Remarks                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Amazon S3          | Backup remains in AWS except one copy stored in OCI Object Storage.                                                                        |
| OCI Object Storage | Backup travels through OCI AWS backbone network. Supported for both ExaDB and ADB.                                                         |
| ZRCV in AWS        | ZDLRA based solution with appliance in AWS. Low RPO and reduced resource consumption in the database host with always incremental strategy |
| ZRCV in OCI        | Same as above with appliance in OCI parent region.                                                                                         |

# Oracle Database@AWS- Security

| Security Feature    | Granularity           | Options                                         |
|---------------------|-----------------------|-------------------------------------------------|
| Encryption          | Encryption at rest    | TDE - enforced                                  |
|                     | Encryption in transit | SSL/NNE based                                   |
| Auditing            | Database level        | Unified Auditing/ Fine Grained Auditing         |
|                     | Resource level        | AWS CloudTrail                                  |
|                     |                       | OCI Audit Service                               |
| Network Isolation   | Database level        | Database ACL, Database Firewall                 |
|                     | Virtual Network level | Security Group and Security List on the OCI VCN |
| Access restrictions | Database level        | Database Vault, VPD, RLS                        |
|                     | Resource level        | AWS IAM Policies, groups/roles                  |

# Why Oracle AI Database@AWS?



# We Needed Cloud Benefits Without an Oracle Rewrite

## CANDIDATES FOR EVALUATION

### Lift & Shift EC2

No Exadata performance — failed on P99 latency

### Re-platform Aurora PostgreSQL

5,000+ PL/SQL objects — rewrite risk too high

### Oracle AI Database@AWS

Full Oracle compatibility + AWS-native integration

## ORACLE AI DATABASE@AWS

### DELIVERED THE BEST VALUE

#### Exadata Performance

Smart scan, storage offload

#### Zero Code Changes

All Oracle features preserved; no migration refactor

#### AWS Integration

VPC-native, IAM, CloudWatch

#### Single Invoice

AWS Marketplace billing; counts toward EDP commitment

# Oracle AI Database@AWS Turned a Migration into a Value Platform

## Operational Excellence

Managed Exadata — Oracle patches & HW handled by OCI  
Option for automated backups to S3 with 99.999999999% durability. Data Guard replication with options for automated failover

## Analytics & AI Unlocked

Zero-ETL integration direct to Amazon Redshift  
Feed SageMaker with live transactional data  
Event-driven pipelines via Amazon EventBridge

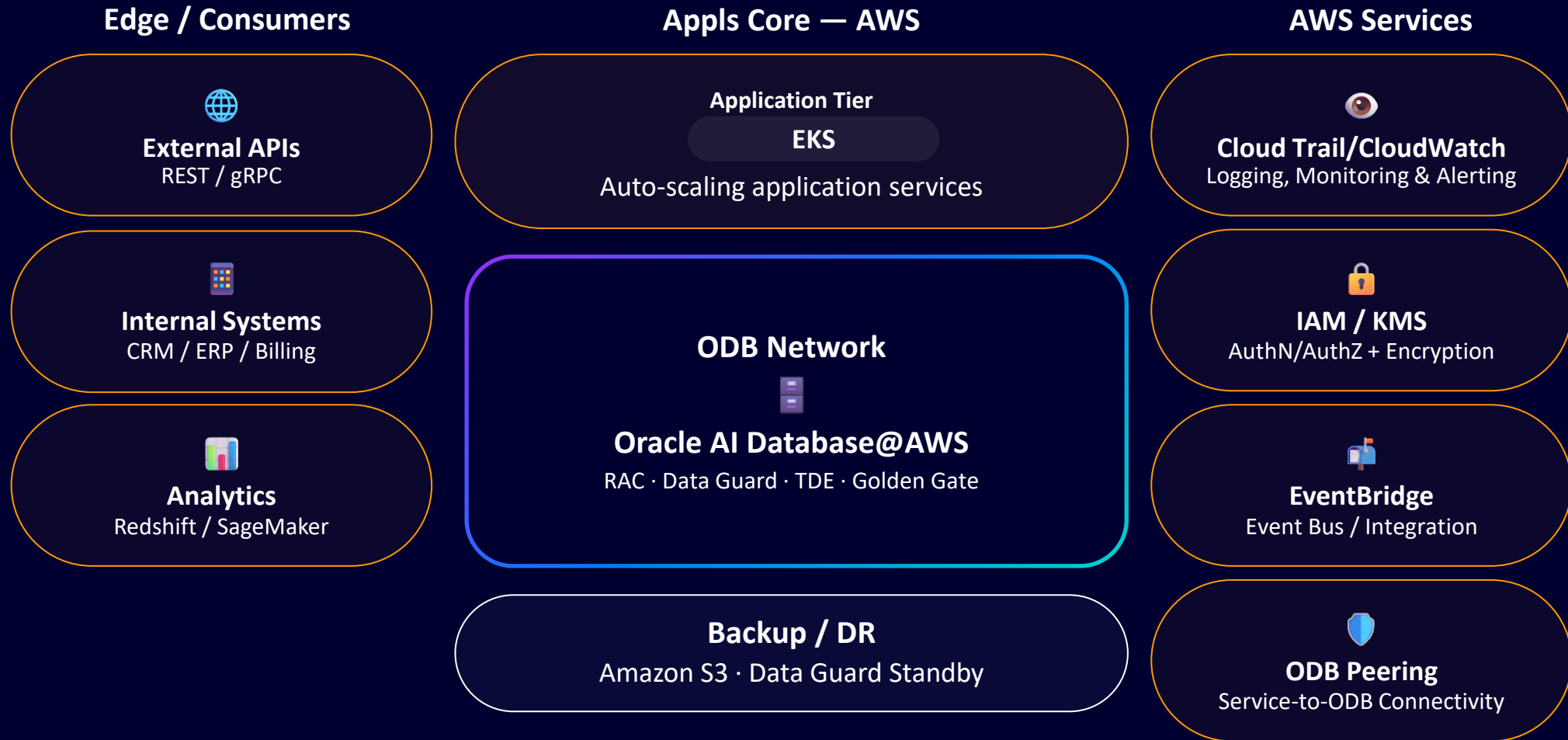
## Financial Model Shift

Capex to Opex — no hardware refresh cycles  
Usage counts toward AWS EDP and Oracle Support Rewards. Elastic scale reduces over-provisioning

## Global Readiness

Deploy to multiple AWS regions with low-latency app tiers. Active-standby across regions using Oracle Data Guard

# The Architecture Changed from Database-Centric to Platform-Aware



Oracle AI Database@AWS as the data foundation — surrounded by AWS-native services

# The Critical Enabler Was Understanding the ODB Network Model

## **ODB Network Isolation**

Provisioned as a dedicated network resource inside AWS. Shares VPC-like attributes but is managed by OCI. Applications in your VPC reach the ODB network over a VPC peering-style connection.

## **Storage Architecture**

Exadata Smart Scan offloads I/O processing to storage cells. Backups flow to Amazon S3, enabling S3 lifecycle policies and cross-region replication for disaster recovery.

## **NetworkHub Integration**

AWS services reach ODB network paths via Transit gateways— no extra VPCs, no complex transit gateways. CloudWatch metrics flow back without additional networking setup.

## **Dual Control Plane**

Provisioning via AWS Console, CLI, or SDK. AWS APIs call corresponding OCI APIs transparently. Unified support — one ticket covers both AWS and Oracle layers.

ODB Network- A new AWS network construct — not a VPC, but it peers to one

# The Migration Path Had to Protect Stability First

HOMOGENIOUS MIGRATION – ORACLE TO ORACLE: MINIMAL RISK; MAXIMUM COMPATIBILITY

## Phase 1 — Assess & Prepare

Inventory all DB objects, identify Data Guard topology, provision ODB network + Exadata VM cluster, validate latency to app tier

## Phase 2 — Migrate & Validate

RMAN-based migration to ODB. Application tier deployed to EKS. Full regression test against production data volume. SLA validation under load.

## Phase 3 — AWS Service Integration

Connect CloudWatch dashboards, wire EventBridge pipelines, enable Zero-ETL to Redshift for analytics. IAM roles per service component. KMS encryption-at-rest.

## Phase 4 — Cutover & Stabilize

Blue/green cutover with DNS flip. On-prem kept as warm standby for 4 weeks. Full operational runbooks migrated to AWS Systems Manager.

# Key Learnings



# The Journey Confirmed Some Assumptions and Challenged Others

## What Worked Well

Exadata performance matched on-premises benchmarks within 5% Oracle feature compatibility was complete — zero PL/SQL refactoring needed. AWS API provisioning of the ODB network was faster than expected (<2 hrs).



## Watch Out For

ODB Network is a new construct — not every AWS network tool understands it yet. Dual support model (AWS + Oracle) requires internal awareness of who to call. EDP credit eligibility needs procurement alignment upfront.



## Architecture Insight

Plan your VPC subnet CIDR carefully — ODB Networks require dedicated non-overlapping address space. Design this before any resource provisioning; it cannot be changed post-deployment.



## Unexpected Benefit

Analytics teams can now query near-real-time apps data without impacting OLTP performance on the Exadata cluster.



# Thank You!

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