

# EBS in the Cloud

Understanding Options for Autonomous, Exadata, and Multicloud

# EBS Week 2024 Sponsors

**ConfigSnapshot**

EBS and Cloud Configuration Automation & Control

 **FLEXAGON™**

 **SYNTAX**

 **splashBI®**

*Thank you!*





# Introduction

# About Me

Marc Caruso

---

Chief Architect · Syntax

---

- 27 Years in Oracle Technology, ERP, and Cloud
- Oracle ACE Associate | OCI Certified Architect | AWS Certified Architect
- Experience as an Oracle customer, employee, implementer, and service provider with a technical and functional background
- Architect for hundreds of EBS systems and cloud migrations



# About Syntax

2,800+

Professionals  
Globally

900+

Customers

25+

Years Supporting  
Oracle ERP

- System Integrator and Managed Service Provider
- Oracle-Certified Cloud Solution Provider (CSP)
- 1<sup>st</sup> Oracle Strategic MSP Program in North America
- **26** offices globally across **15** countries
- Over 20,000 application environments under management
- Multicloud customer experience and automation tools

## Certified Service Expertise

**ORACLE** | Service Partner  
*Expertise in*  
**CSPE: Oracle Cloud Platform -  
Oracle Cloud Platform  
Data Management**  
in North America

**ORACLE** | Service Partner  
*Expertise in*  
**JD Edwards Applications  
to Oracle Cloud**  
in North America

**ORACLE** | Service Partner  
*Expertise in*  
**Oracle Cloud Platform -  
Oracle Cloud Platform Integration**  
in North America

**ORACLE** | Service Partner  
*Expertise in*  
**Oracle E-Business Suite  
Applications to Oracle Cloud**  
in North America

**ORACLE** | Service Partner  
*Expertise in*  
**Cloud Service Solution  
OCI Migration**  
in NAMED-North America

**ORACLE** | Service Partner  
*Expertise in*  
**CSPE: Oracle Cloud Platform -  
Oracle Database to Oracle Cloud**  
in North America

## Certified Sales Expertise

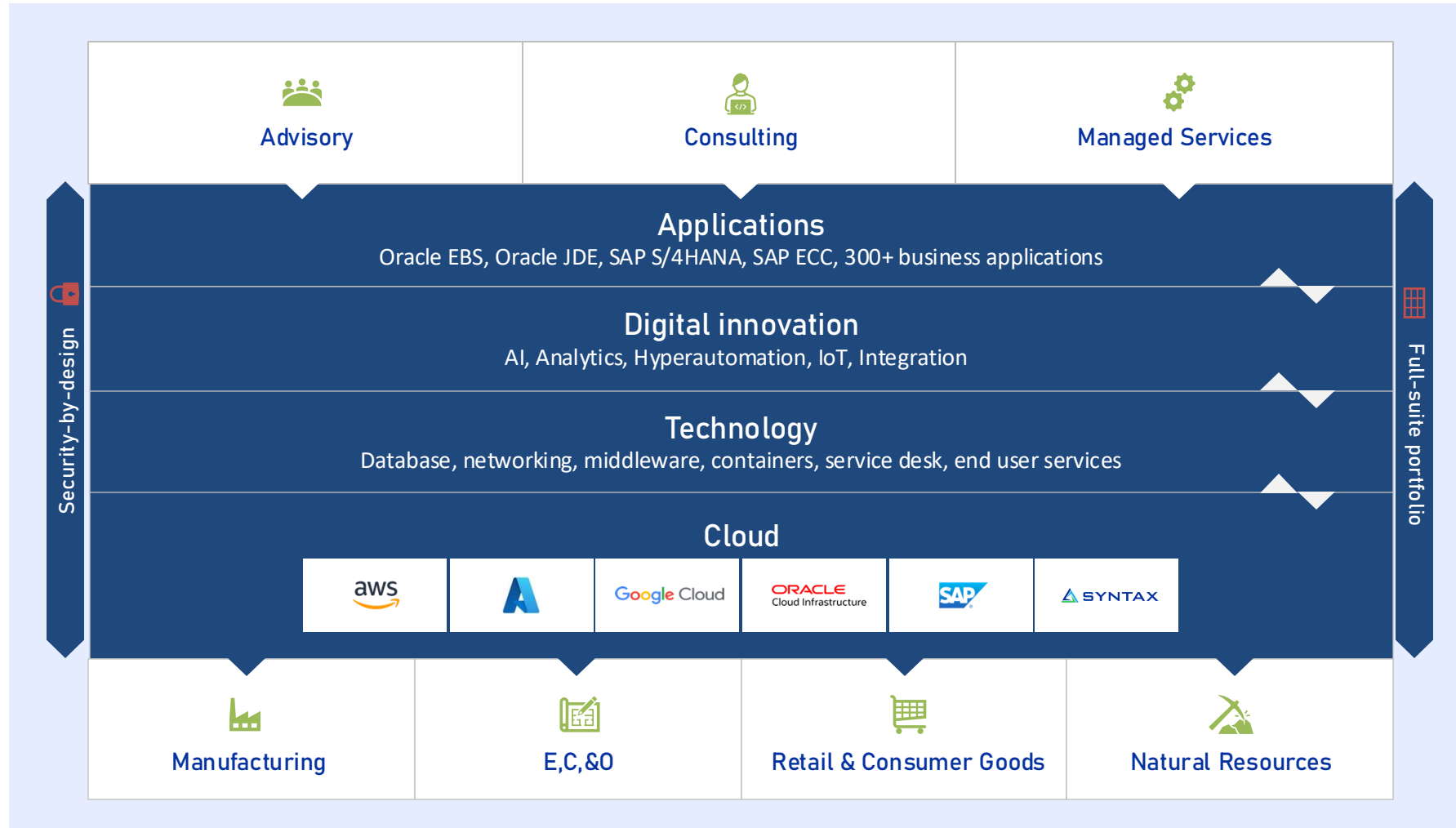
**ORACLE** | Sell Partner  
*Expertise in*  
**Oracle Cloud Platform**  
in North America

**ORACLE** | Sell Partner  
*Expertise in*  
**Oracle HCM Cloud**  
in North America

**ORACLE** | Sell Partner  
*Expertise in*  
**Oracle ERP Cloud**  
in North America

**ORACLE** | Sell Partner  
*Expertise in*  
**Oracle SCM Cloud**  
in North America

# Syntax Services



# Agenda

- Cloud Overview
  - Stats, Challenges, and Benefits
- EBS in a Multicloud / Hybrid Cloud World
  - Just the Facts!
- The Latest in Oracle Innovation
  - Autonomous Database
  - Exadata Database
  - OCI@Hyperscaler Solutions



# Audience

If you are...

a cloud novice

an IT pro

a technical user

a functional user

IT management

EBS management

If you are...

...thinking about EBS cloud options

...already running EBS in the cloud

...considering changing cloud providers

...trying to reduce operating expense

...unable to run Production in the Cloud





# Cloud Overview

# Cloud Adoption Key Statistics

**3.6B**

Global Cloud  
Users

47% of the global population, meaning that nearly half of everyone on earth uses the cloud

**94%**

of enterprises use cloud services in 2023, and cloud adoption is still growing

**67%**

of enterprise infrastructure is now cloud-based

**1,295**

number of cloud services used by the avg enterprise

**60%**

of all corporate data is stored in the cloud

**41%**

of enterprise workloads are in the cloud

**45%**

of enterprise IT budgets spending on the cloud by 2026

# Cloud Adoption Challenges



## Expertise and Specialization

Cloud expertise is hard to find, hard to keep, and expensive to keep trained.



## Cost Reduction and Control

Cost efficiency requires economies of scale and optimized resource allocation.



## Reliability and Availability

Continuous monitoring minimizes disruptions that can cost money, risk opportunity, and devalue your reputation.



## Scalability and Flexibility

Scaling resources in response to business needs can be challenging.



## Security and Compliance

Ensuring security and compliance is a complex, critical, and expensive challenge.



## Velocity

Inability to rapidly deploy innovative technologies to adjust to market and customer expectations for new products and services.



## Core Competencies

Managing and maintaining technology can divert valuable resources and attention away from core activities.



## Global Reach & Support

Operating on a global scale requires a global presence to ensure rapid detection and response to issues.

# Cloud Adoption Benefits

**94%**

of businesses report significant online security improvements after adopting the cloud

**74%**

of businesses that implement Cloud services report improved customer service

**73%**

of businesses that implement Cloud services report improved financial performance

**80%**

of companies report operation improvements after adopting the cloud

**68%**

of businesses that implement Cloud services report improved employee productivity

**65%**

of businesses that implement Cloud services report reduced time to market



# Hybrid Cloud vs. Multicloud

**Gartner definitions.**

## **Hybrid cloud:**

...refers to policy-based and coordinated service provisioning, use and management across a mixture of internal and external cloud services.

## **Multicloud is:**

...the use of the same type of IaaS or PaaS cloud services from multiple cloud service providers to avoid vendor lock-in or attain different functional advantages from different providers.



**On-Premises**



**Private Cloud**



**Public Cloud**



**SaaS**

# Toolbox Considerations

## Where to put your data?

- Your Data Center
- Collocation Facility
- MSP/CSP Cloud
- Hyperscaler Cloud
- Hyperscaler Cloud @ Your Data Center



## PaaS

(Platform-as-a-Service)

- OPEX (Public Cloud)
- OPEX or CAPEX (Private Cloud)
- Avoids data center, hardware, and OS management
- Provides Subscription Platform Software
- Toolbox of Vendor Solutions
- Vendor-Driven Releases



## IaaS

(Infrastructure-as-a-Service)

- OPEX (Public Cloud)
- OPEX or CAPEX (Private Cloud)
- Avoids data center and hardware management
- Investment in Tooling Required
- Most Flexible Model



## Decision Criteria

- ✓ OPEX vs. CAPEX
- ✓ Maintenance Requirements
- ✓ Scalability and Flexibility
- ✓ Cost Predictability
- ✓ Integration and Automation
- ✓ Security

# Cloud Native Application vs. E-Business Suite

## Cloud Native Application

- Built on a specific hyperscaler platform, leveraging one or more hyperscaler services
- Traditional aspects of application development are designed to take advantage of hyperscaler services

Fault Tolerance

---

High Availability

---

Scalability

Performance

---

Security

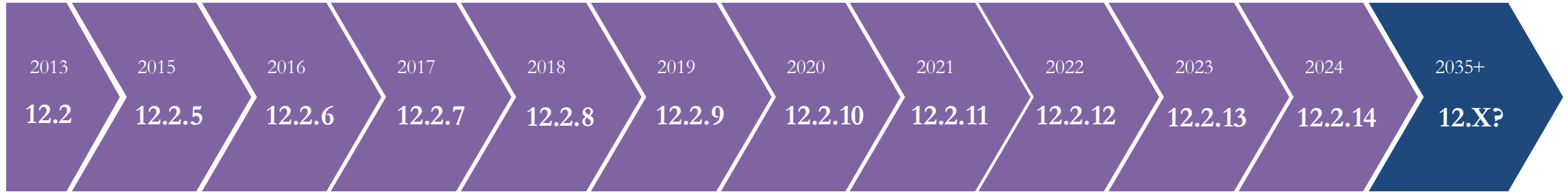
---

Recoverability

## Oracle E-Business Suite

- 30+ year-old code that has evolved through multiple iterations of technology stacks
- Built to be installed on a traditional operating system
- Capabilities around fault tolerance, high availability, scalability, encryption, etc. are limited by 1) software and 2) software license entitlements
- Just because "the cloud" can do things, doesn't mean EBS can take advantage of them, and doesn't mean you are licensed to do them
- **"Infrastructure" is required**

# E-Business Suite Support Timeline



## 12.2.14 Continuous Innovation Release launched in September 2024

- 12.2.14 is compatible with Oracle Autonomous Database - Dedicated
- 12.2.7 is the new Error Correction Baseline, so customers below this level need to apply patches to be supported.
- Enterprise Command Center releases can be used with earlier versions of EBS

---

**12.1.3** Sustaining Support after December 2021 – Market-Driven Support through ACS until December, 2024

---

**11.5.10.2** Sustaining Support



# Benefits of E-Business Suite in the Cloud

Manageability	Leverage cloud tools to monitor and automate common tasks
Performance	Quickly and easily adjust compute and storage parameters
Scalability	Ramp up or down services as needs dictate
Capacity	Endless capacity without hardware lifecycle pains
Efficiency	Pay for what you use
Velocity	Minimize provisioning time and keep your business nimble
Recoverability	Fast and easy failover in the event of a disaster



# E-Business Suite in a Multicloud World

# Which Cloud Makes Sense for EBS?

Most cloud decisions come down to...



Licensing



Relationship



Value



Services

Recent announcements eliminate the barriers of running fault-tolerant, highly available Oracle Databases in all of the major hyperscalers

# The Cloud World Has Changed

September, 2023

Press Release

## Microsoft and Oracle Expand Partnership to Deliver Oracle Database Services on Oracle Cloud Infrastructure in Microsoft Azure

*Microsoft Joins Oracle as the Only Other Hyperscaler to Offer Oracle Cloud Infrastructure Database Services to Simplify Cloud Migration, Multicloud Deployment, and Management*

Austin, Texas and Redmond, WA—Sep 14, 2023

Oracle Corp and Microsoft Corp today announced Oracle Database@Azure, which gives customers direct access to Oracle database services running on Oracle Cloud Infrastructure (OCI) and deployed in Microsoft Azure datacenters.

Oracle Database@Azure delivers all the performance, scale, and workload availability advantages of Oracle Database on OCI with the security, flexibility, and best-in-class services of Microsoft Azure, including best-in-class AI services like Azure OpenAI. This combination provides customers

Press Release

## Oracle and Google Cloud Announce a Groundbreaking Multicloud Partnership

*Google Cloud will offer Oracle Cloud Infrastructure database services and high-speed network interconnect with Oracle*

*Partnership helps customers simplify cloud migration, multicloud*

Austin, Texas and Sunnyvale, Calif.—Jun 11, 2024

Oracle and Google Cloud today announced a partnership that gives customers the choice to combine Oracle Cloud Infrastructure (OCI) and Google Cloud technologies to help accelerate their application migration and modernization.

Oracle Interconnect for Google Cloud will be initially available for customer onboarding in 11 global regions, allowing customers to deploy general purpose workloads with no cross-cloud data transfer charges. Later this year, a new offering, Oracle Database@Google Cloud, will be available at the highest level of Oracle Database and network performance, along with feature and pricing parity with OCI.

Press Release

## Oracle and Amazon Web Services Announce Strategic Partnership

*Customers can now access Oracle Autonomous Database and Oracle Exadata Database Service in AWS, simplifying the migration and deployment of enterprise workloads to the cloud while improving agility, flexibility, and security*

Austin, Texas and Seattle, Wash.—Sep 9, 2024

Oracle and Amazon Web Services, Inc. (AWS) today announced the launch of Oracle Database@AWS, a new offering that allows customers to access Oracle Autonomous Database on dedicated infrastructure and Oracle Exadata Database Service within AWS. Oracle Database@AWS will provide customers with a unified experience between Oracle Cloud Infrastructure (OCI) and AWS, offering simplified database administration, billing, and unified customer support. In addition, customers will have the ability to seamlessly connect enterprise data in their Oracle Database to applications running on Amazon Elastic Compute Cloud (Amazon EC2), AWS Analytics services, or AWS's advanced artificial intelligence (AI) and machine learning (ML) services, including Amazon Bedrock.

Larry Ellison, Oracle Chairman and CTO, and Matt Garman, AWS CEO, will

ORACLE | aws

June, 2024

September, 2024



# Comparing Terminology

Term or concept	OCI	AWS	Azure	Google Cloud
Isolated collection of regions	<a href="#">Realm</a>	<a href="#">Partition ↗</a>	<a href="#">Cloud ↗</a>	not applicable (global by design)
Localized geographic area	<a href="#">Region</a>	<a href="#">Region ↗</a>	<a href="#">Region ↗</a>	<a href="#">Region ↗</a>
One or more data centers located within a region	<a href="#">Availability Domains (AD)</a>	<a href="#">Availability Zone (AZ) ↗</a>	<a href="#">Availability Zone (AZ) ↗</a>	<a href="#">Availability Zone ↗</a>
Hardware grouping within a data center	<a href="#">Fault Domains</a>	not applicable	<a href="#">Fault domains ↗</a>	<a href="#">Failure Domain ↗</a>

# Oracle Multicloud Solutions

- Two hyperscaler-focused solutions:
  - Database@Hyperscaler
  - OCI Interconnect (Azure/GCP only)
- Database solution is built on Exadata Dedicated
- OCI interconnect leverages FastConnect (3ms latency)
- Cloud@Customer, Dedicated Regions are also options for larger customers or those with significant compliance requirements
- Oracle takes front-line support with specialized teams



# Comparing Terminology

Term or concept	OCI	AWS	Azure	Google Cloud
Top management group	<a href="#">Organization and Parent Tenancy</a>	<a href="#">Organization ↗</a>	<a href="#">Root Management Group ↗</a> and <a href="#">Subscriptions ↗</a>	<a href="#">Organization ↗</a>
Multiple account management	<a href="#">Organization</a>	<a href="#">Organization ↗</a>	<a href="#">Management Groups ↗</a>	<a href="#">Organization ↗</a>
Organizing resources	<a href="#">Compartments</a>	not applicable (see <a href="#">AWS and Compartmentalization ↗</a> for more information)	<a href="#">Subscriptions ↗</a> and <a href="#">Resource Groups ↗</a>	<a href="#">Folders and projects ↗</a>
Metadata for resources	<a href="#">Tags</a>	<a href="#">Tags ↗</a>	<a href="#">Tags ↗</a>	<a href="#">Labels ↗</a>

# Hyperscaler Direct Connectivity to OCI



## OCI locations

ap-tokyo-1

ap-mumbai-1

ap-singapore-1

ap-sydney-1

ap-melbourne-1

eu-madrid-1

uk-london-1

eu-frankfurt-1

ca-montreal-1

sa-saopaulo-1

us-ashburn-1

- Azure Brazil South & OCI Vinhedo (Brazil Southeast)
- Azure Canada Central & OCI Toronto (Canada Southeast)
- Azure East US & OCI Ashburn, VA (US East)
- Azure Germany West Central & OCI Germany Central (Frankfurt)
- Azure Japan East & OCI Tokyo (Japan East)
- Azure Korea Central region & OCI South Korea Central (Seoul)
- Azure South Africa North & South Africa Central (Johannesburg)
- Azure Southeast Asia region & OCI Singapore (Singapore)
- Azure UK South & OCI London (UK South)
- Azure West Europe & OCI Amsterdam (Netherlands Northwest)
- Azure West US & OCI San Jose (US West)
- Azure West US 3 & OCI US West (Phoenix)

Use another FastConnect  
Partner for interconnect



# Oracle Database Multicloud Solutions

- Oracle hyperscaler partnerships are now on parity
- Oracle Database@Hyperscaler is natively deployed @Hyperscaler on Exadata Dedicated model
- Allows provisioning of Autonomous and Oracle Database
- Designed to compete for high-end, enterprise workloads that require redundancy and performance – does not compete directly with AzureSQL, AWS RDS
- Delivered as a private offer through the hyperscaler Cloud Marketplace
- Customer Benefits:
  - Draws down customer commitments with the native hyperscaler
  - Allows customers to purchase subscription licensing
  - No core factor penalty



# OCI Multicloud@AWS

## Oracle Database@AWS

- Limited availability in US East – single AZ
- GA in Q2-2025 in US East and TBD
  - Two AZ/Region
  - Exadata CS and Autonomous Dedicated
- Integrates with S3 for backup

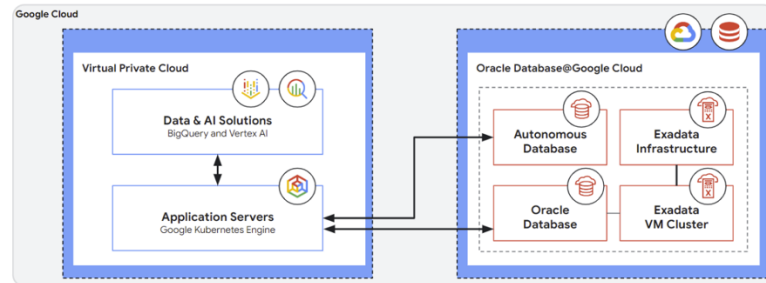
## Connectivity

- No plans for direct connectivity to AWS – 3<sup>rd</sup> party connectivity required

# OCI Multicloud@GCP

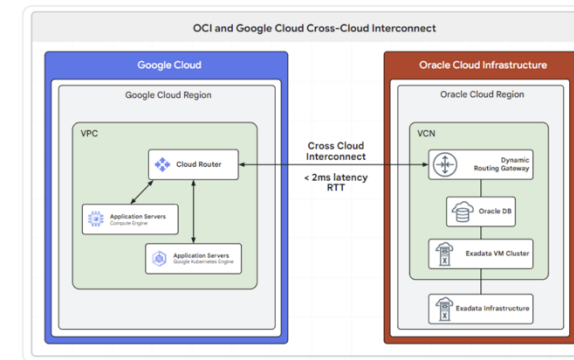
## Oracle Database@GCP

- Available in US East, US West, UK South, and Germany Central
- Autonomous, Exadata, ZDLARS available
  - Two AZ/Region
  - Exadata CS and Autonomous Dedicated
- Integrates with S3 for backup



## Connectivity

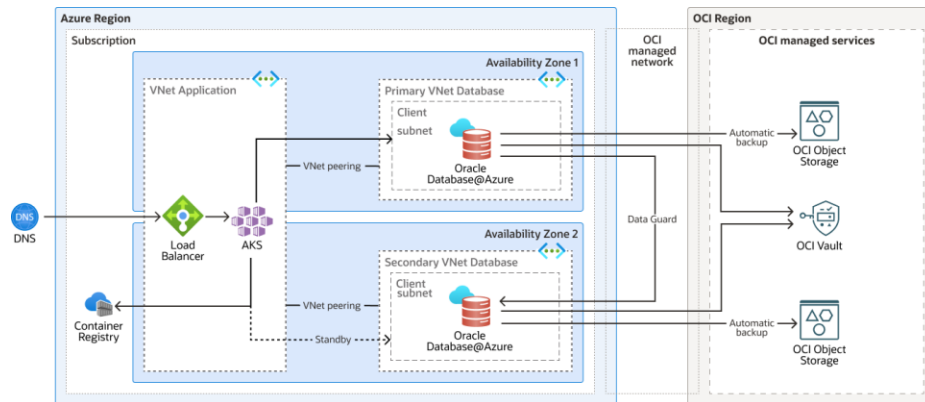
- Google-OCI Cross-Cloud Interconnect in 11 Regions



# OCI Multicloud@Azure

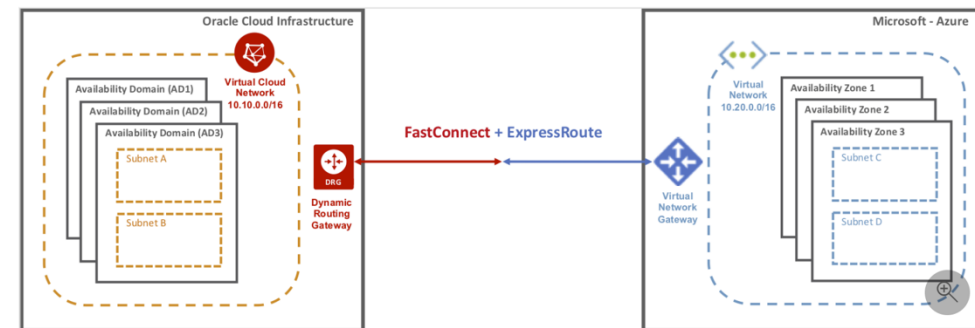
## Oracle Database@Azure

- Available in 6 Regions
- Backups to OCI Object Storage
- Terraform landing zone available



## Connectivity

- FastConnect/ExpressRoute interconnect
- Available in 12 Regions globally



# Licensing EBS in the Cloud

- EBS almost always requires Oracle technology licenses (Database EE + Internet AS or WebLogic)
  - Most customers use Processor metric for production and Named User Plus (NUP) for non-production, the latter requiring minimums per Processor that must be considered
- Oracle recognizes Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform as "Authorized Cloud Environments"  
<https://www.oracle.com/us/corporate/pricing/cloud-licensing-070579.pdf>
- Licensing terms effectively cut processor counts in half, giving Oracle Cloud Infrastructure a competitive advantage for Oracle workloads
- Oracle Database@Hyperscaler is not impacted by core factor table restrictions, but the application tier still is





# Database Innovation & E-Business Suite

# Why You Should Care

- Oracle's innovations with 23ai and Exascale are game changers in:
  - Availability
  - Performance
  - Scalability
  - Cost/Value
  - Resiliency
  - Capability

# Key Facts

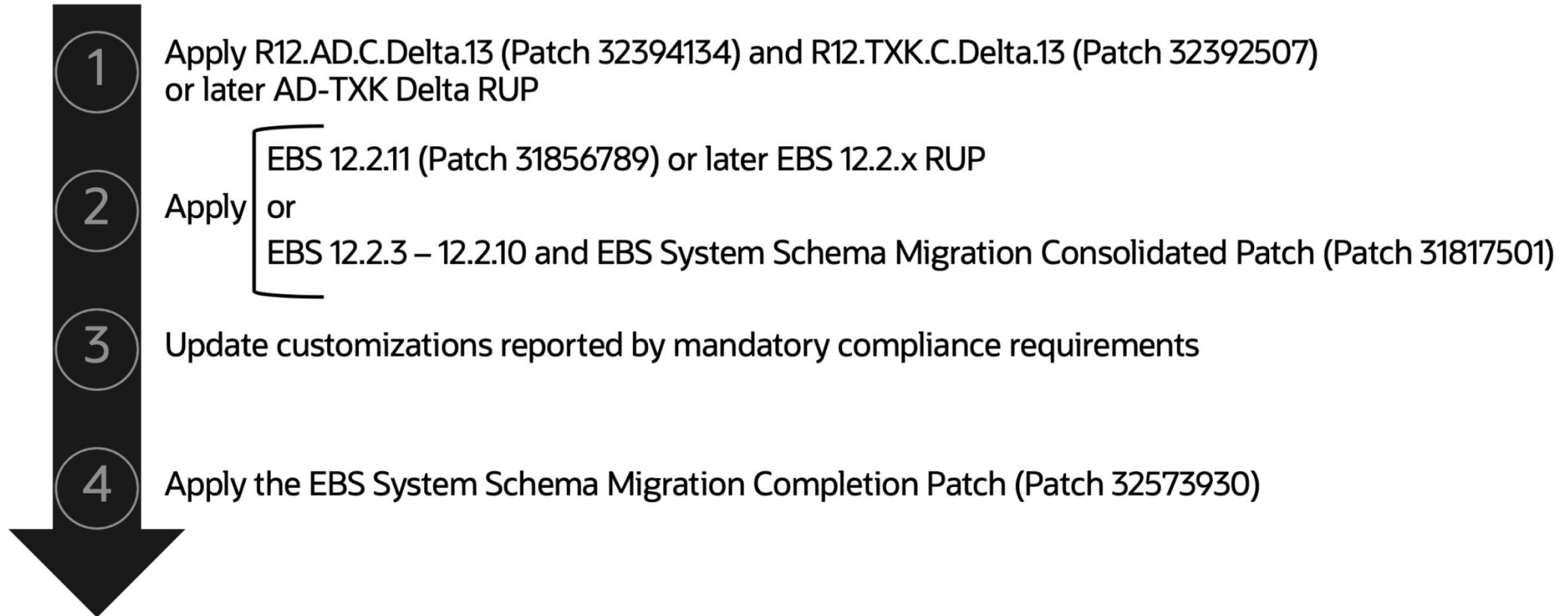
- Oracle Database and Oracle Autonomous run on the same Oracle Exadata hardware – you can deploy either type of database
- Oracle Exadata hardware is the same in Oracle Cloud Infrastructure, Oracle Cloud@Customer, and Database@Hyperscaler, creating options for hybrid cloud and multicloud solutions
- Customers pay a fixed fee for the hardware (quarter, half, full racks) and a per-unit fee for scalable database cores
- Customers can bring their own licenses (BYOL) or get subscription licensing
- Oracle 23ai is not yet certified with E-Business Suite

## Plan for the Future - EBS\_SYSTEM Schema Migration

- To prepare, migrate to EBS System Schema (MOS Doc ID 2755875.1 and 2758999.1) and move objects from SYS and SYSTEM to EBS\_SYSTEM, APPS, or APPS\_NE
- Requires EBS 12.2.3 at a minimum, plus patches
- Impact:
  - EBS admin functions will be performed by EBS\_SYSTEM
  - Access to the OS-level of the database is no longer required
  - App tier connects to Database Service Names
  - Enables Unified Auditing



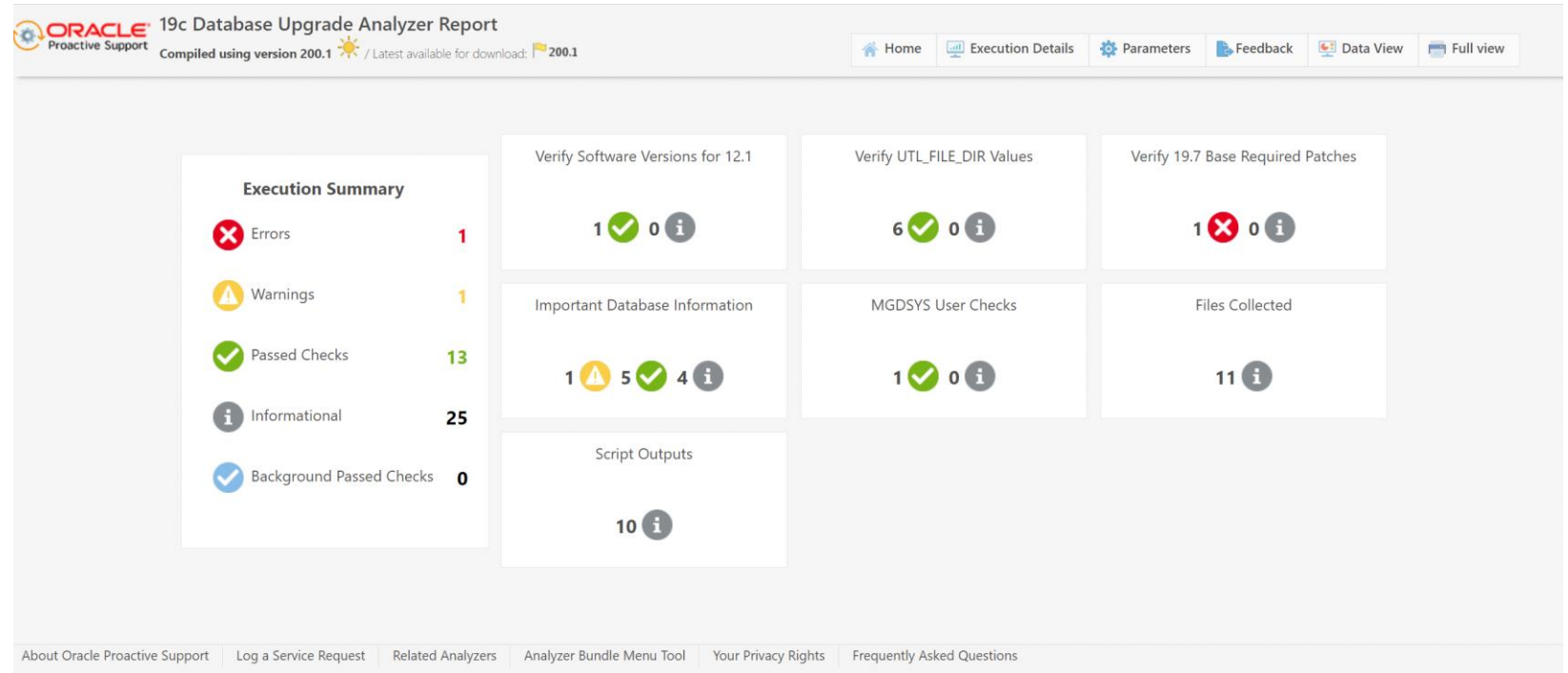
# EBS\_SYSTEM Schema Migration Process





# Plan for the Future - Oracle 19c

- EBS Database 19c Upgrade Analyzer
- New Autonomous Health Framework Tool
- Customizations using UTIL\_FILE\_DIR must be redeveloped
- Database will be converted to a pluggable database



## Plan for the Future – EBS 12.2.7 ECB

- Error correction baseline is 12.2.7, which is a requirement for 23ai
- You should be applying innovation releases annually, especially if you are considering a move to SaaS

# EBS Certification with Autonomous Database

- Only available on 12.2.7 or higher on Database 19c
- Only available for Dedicated Infra – not Share Infra
- VM Clusters can only contain EBS – no other DB
- See MOS Note 2759000.1 for more details

# Upcoming EBS Certification with Oracle Database 23ai

- What you need to do:
  - Upgrade database to 19c (no direct upgrade from 11gR2/12.1)
  - Upgrade EBS to new ECB 12.2.7
  - Run the EBS System Schema Migration (MOS Note 2755875.1)
  - Enable Unified Auditing
  - Convert to case insensitive PDB
- <https://blogs.oracle.com/ebstech/post/ebs-122-planned-certification-with-db-23ai-summary-part-7>

# Why Exadata/Autonomous for Oracle EBS?

## Exadata Dedicated Infrastructure

- Fault Tolerant
- Highly Available
- High Performance
- Scalable

## Commercials

- Pay for the hardware
- Pay-for-use for database OCPU - scale up/down with no downtime
- Available in quarter, half, and full racks of hardware
- Minimal premium when compared to OCI Base Database Cloud Service



# Considerations for Exadata Cloud Service

- A Service Limit increase is required to deploy Exadata Dedicated – this can take a few days
- Maintenance is required for hardware, grid infrastructure, OS, and database software – build activities into your annual planning
- For businesses that need near-zero downtime, build a DR solution that can be used to seamlessly fail over during maintenance activities – it nullifies the need for DR testing!
- Database clusters must only have EBS databases, so architect accordingly

# What's Next: Exascale

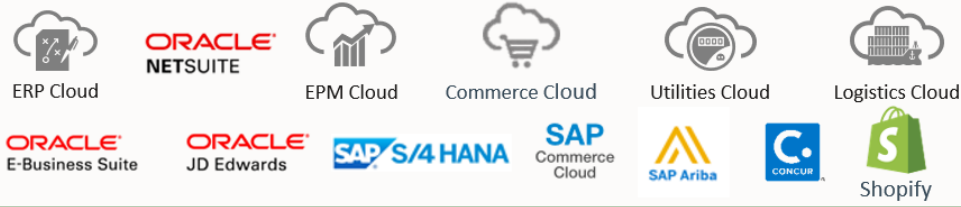
- Exascale is a serverless version of the Exadata Cloud solution that provides significant scaling versus the Exadata dedicated hardware model
- E-Business Suite is not yet certified for Exascale
- Key benefits include:
  - Fully scalable ECPU model
  - Exascale Storage Cloud



# Modernizing EBS Support Apps in OCI

# Moving from SOA to OIC for Integrations

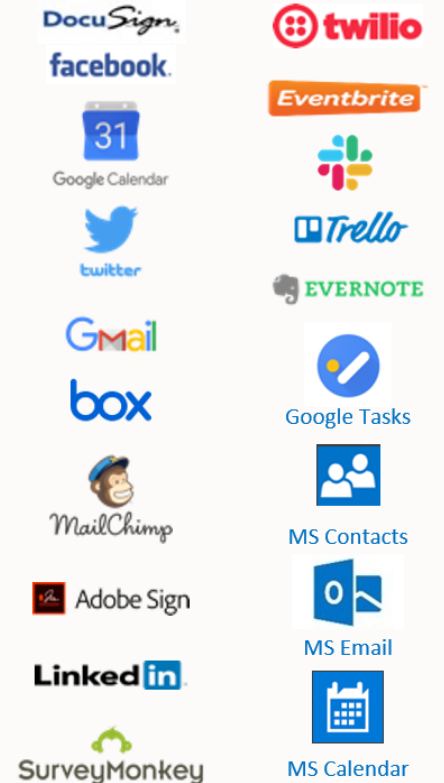
## ERP Connectivity



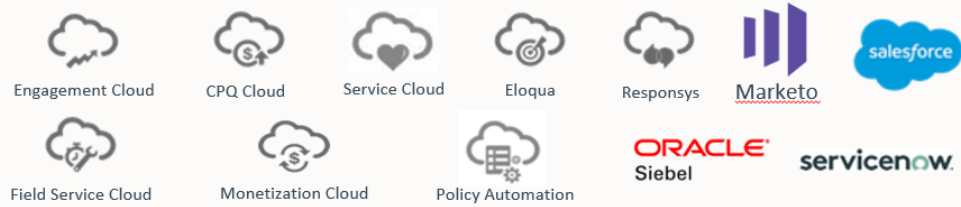
## HCM Connectivity



## Productivity and Social Connectivity



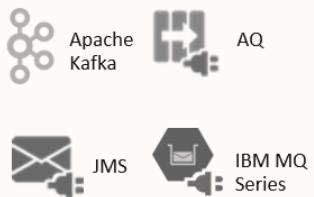
## CX Connectivity



## Database Connectivity



## Enterprise Messaging



## Technology Connectivity



## RPA Connectivity



## Future Proof

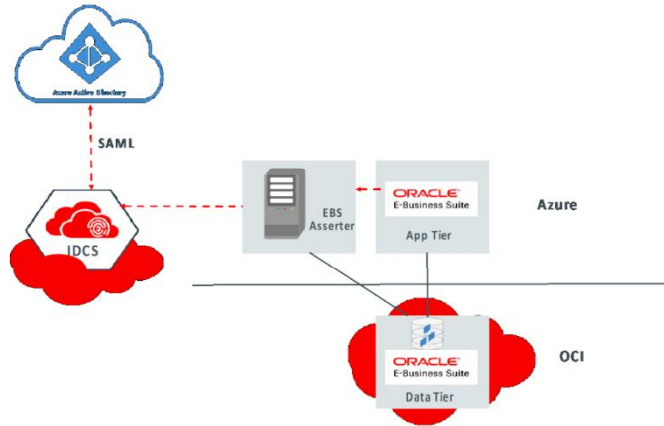


Limit maintenance and upgrade costs  
**Oracle supported**



# Moving from OIM/OAM to IAM for Single Sign-On

- Oracle's Identity Cloud Service is supported for use with E-Business Suite
- Can be linked to Active Microsoft Directory or Azure Entra ID, and end-to-end provisioning capabilities are now supported
- Allows the assignment of EBS Roles and Responsibilities



## Select Provisioning Operations

### ☒ Create Account

Create an account in Oracle eBusiness Suite - User Management when the app is granted to the user, either directly or via a group membership.

### ☒ Update Account

Enable this action to update the account in Oracle eBusiness Suite - User Management.

### ☒ De-activate Account

Enable this action to deactivate or activate the account in Oracle eBusiness Suite - User Management.

### ☒ Delete Account

Delete the account in Oracle eBusiness Suite - User Management when the Identity Cloud Service user is deleted.



# Migrating OBIEE / Discoverer to OAC

Feature	OBIEE	OAC
Self-service data visualization	Yes	Yes
Corporate analytics dashboards	Yes	Yes
Pixel-perfect reports	Yes	Yes
Enterprise semantic models	Yes	Yes
Role-based access control	Yes	Yes
Data replication	No	Yes
Scorecard and Strategy Management	Yes	No
Flash Templates	Yes	No
WebDAV Server Delivery Channel	Yes	No
Oracle Marketing Segmentation	Yes	No
BI Scheduler Job Manager	Yes	No
Oracle Business Intelligence Mobile App Designer	Yes	No
Mobile exploration with Oracle Analytics Day by Day	No	Yes

Prepare	Explore	Experience
Semantic Models	Interactive Data Visualization	Dashboards
Self-Service Data Sets	Natural Language Query & Narration	Reports
Analytics Catalog	Auto-ML & AI Insights	Role Based Security
Metadata & Data Search	One-Click Advanced Analytics	Enterprise Scale Deployment



# Q&A