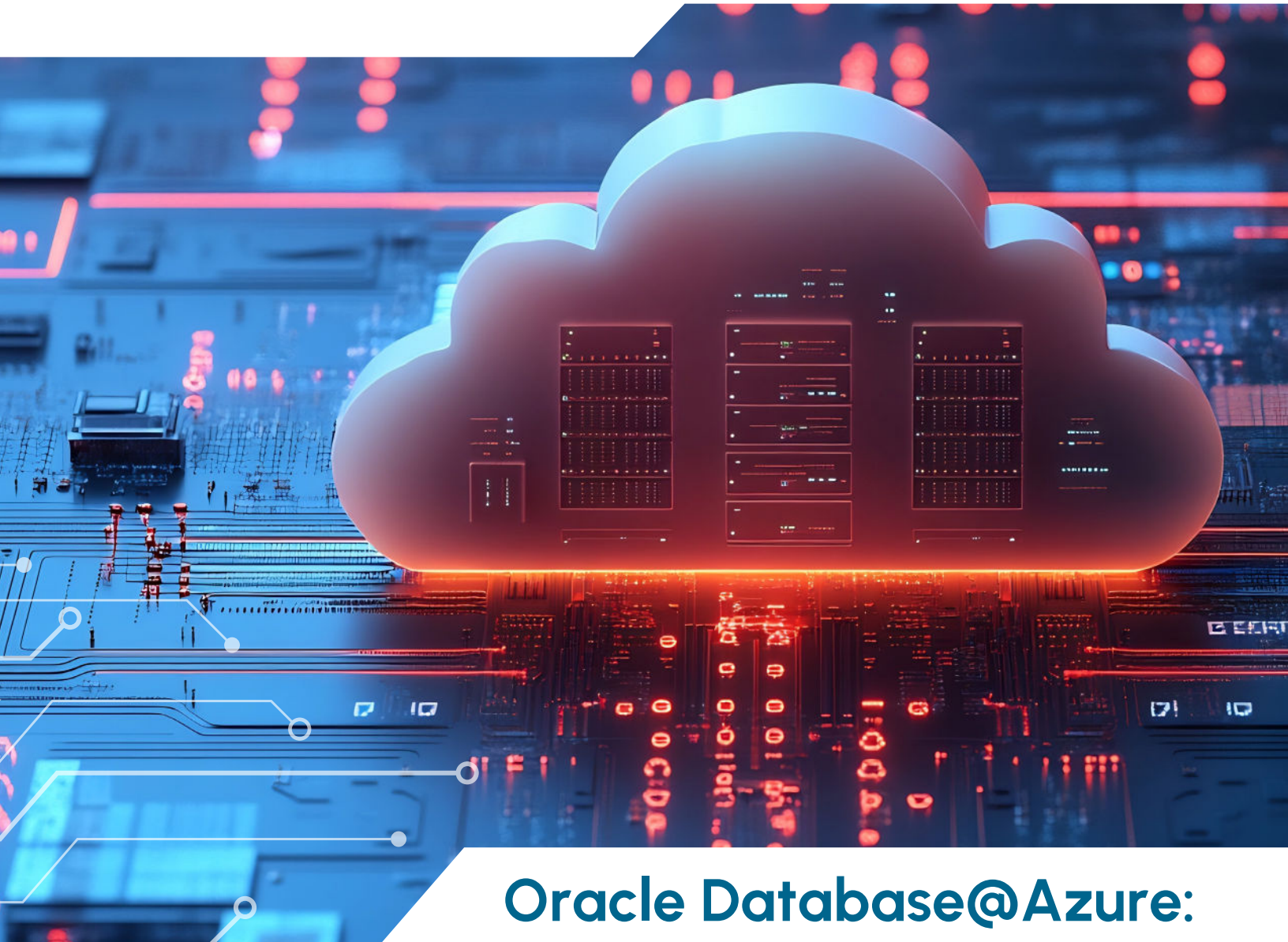




Oracle Database@Azure: The Genesis of Oracle's Multi-Cloud Leadership

The Debut of Oracle Database@Azure Unleashed Oracle's Multi-Cloud Vision and Strategy, Enabling the Company to Establish Enduring First-to-Market and Cloud Ecosystem Mind Share Advantages



Introduction: Why Oracle Database@Azure Delivers Competitive Advantages

Oracle Database@Azure was announced on September 14, 2023, as part of the expanded partnership between Oracle and Microsoft. It became available on December 13, 2023, starting in the Azure East U.S. region. Today, the offering is available in 14 regions around the globe with 18 additional regions slated to be available in the next 12 months.

This debut marked the beginning of Oracle's multi-cloud portfolio objective of meeting burgeoning enterprise customer demand for bringing AI and applications closer to their data by deploying Oracle Cloud Infrastructure (OCI) Oracle Database services and Oracle Exadata in hyperscaler data centers. Oracle Database@Azure provided the template for Oracle to follow with their Oracle Database@Google Cloud and Oracle Database@AWS offerings. Oracle Database@Azure also demonstrated that Oracle and its multi-cloud partners could deliver a rich set of natively accessible services to their joint customers. As a result, enterprises gain benefits in the following key multi-cloud operational and business process areas:

- **Full Oracle Database Functionality.** Through deployment within an Azure data center, Oracle Database@Azure powers latency-sensitive applications at microsecond (μ s) latencies and delivers the highest database performance, availability, security, and scalability. This includes Oracle Database-specific Real Application Clusters (RAC) for unrivaled scale and availability, Exadata for optimized performance, as well as embedded AI capabilities such as AI Vector Search and Select AI.
- **Seamless Migration.** Delivering an experience that's consistent with on-premises deployments of Oracle Database and Oracle Exadata accelerates migration to the cloud and reduces the need to rearchitect or refactor solutions. Oracle's Zero Downtime Migration (ZDM) enables customers to migrate their Oracle databases to the cloud with minimal disruption.
- **Integrated Solutions.** The ability to build new cloud-native applications using Autonomous Database 23ai and Azure technologies, including the rich set of Azure development, analytics, and AI services.

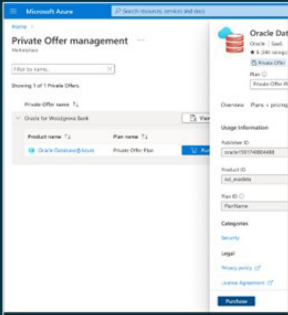
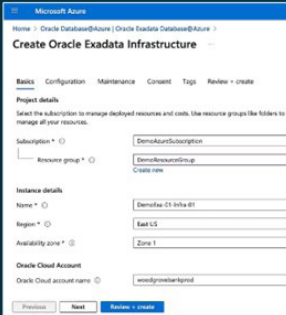
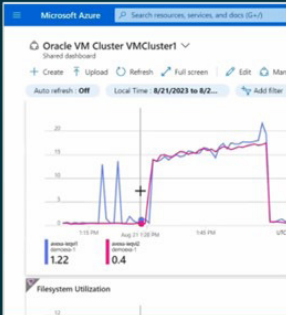
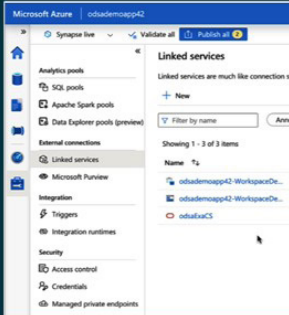
- **Seamless Experience.** Azure customers can use their native console and API experience to perform critical tasks such as provisioning, monitoring, operations, billing, and more.
- **Database Protection.** Customers can leverage Oracle Database Zero Data Loss Autonomous Recovery Service (Recovery Service) for data and ransomware protection and/or validated Oracle Maximum Availability Architecture (MAA) Silver, Gold, and Platinum tiers for Oracle Exadata Database Service for cross-region disaster recovery. It should also be noted that the organizations that need the fastest possible recovery of their Oracle databases with the least potential data loss—and customers that need to meet regulations such as SEC 17-4(f) for ultra secure, air-gapped architectures—can select the Recovery Service for these strict requirements, as it's a direct fit.
- **Financials.** Organizations directly benefit from consistent Oracle pricing on a global basis and pricing parity with OCI.
- **Marketplace and Programs.** Flexible pay-as-you-use pricing or custom pricing enables customers to leverage existing Oracle and Microsoft licenses, commitments, and discount programs.
- **Joint Support.** Oracle and Microsoft have developed a joint support model to ensure rapid response and resolution for mission-critical workloads.

The best of Oracle and multicloud partners—all in one place

Purchase in Azure Marketplace and parity with OCI

Deploy, manage, and monitor through Azure Portal and APIs

Combine with your choice of Azure services

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Microsoft Azure example shown


Source: Oracle

Figure 1: Microsoft Azure Example



Let Unique Oracle Database@Azure Competitive Advantages Flow

Oracle Database@Azure delivers the unique value of Oracle Database 23ai, a next-generation converged database for all modern workloads and datatypes. This includes built-in capabilities such as AI Vector Search, JavaScript Object Notation (JSON), Spatial, Graph, In-memory, OLTP, Analytics, Time Series, Blockchain, and Geo-distribution. In addition, Oracle Exadata, which is used to power Oracle Database@Azure, is purpose-built to run Oracle Database, enabling customers to gain what we identify as the most performant, available, and scalable cloud infrastructure for database workloads. With the full suite of Oracle Database and Exadata capabilities at their fingertips, customers can use the Oracle MAA, including RAC, Active Data Guard, and Globally Distributed Database for all these workloads, eliminating the need to have different products for different workloads.

From our point of view, Exadata improves the performance of all database workloads including AI, analytics, OLTP, modern applications, and security, while enabling database consolidation to reduce costs. As such, built-in advantages include the ability to implement AI-powered automation for workload optimization, reducing the need for manual database management and tuning. Key benefits include autonomous workload optimization, self-tuning Structured Query Language (SQL) execution, predictive database analytics, and AI-powered indexing and partitioning. Machine learning-driven management of Oracle Database indexes adapts to changing workloads, improving performance and further reducing manual tuning.

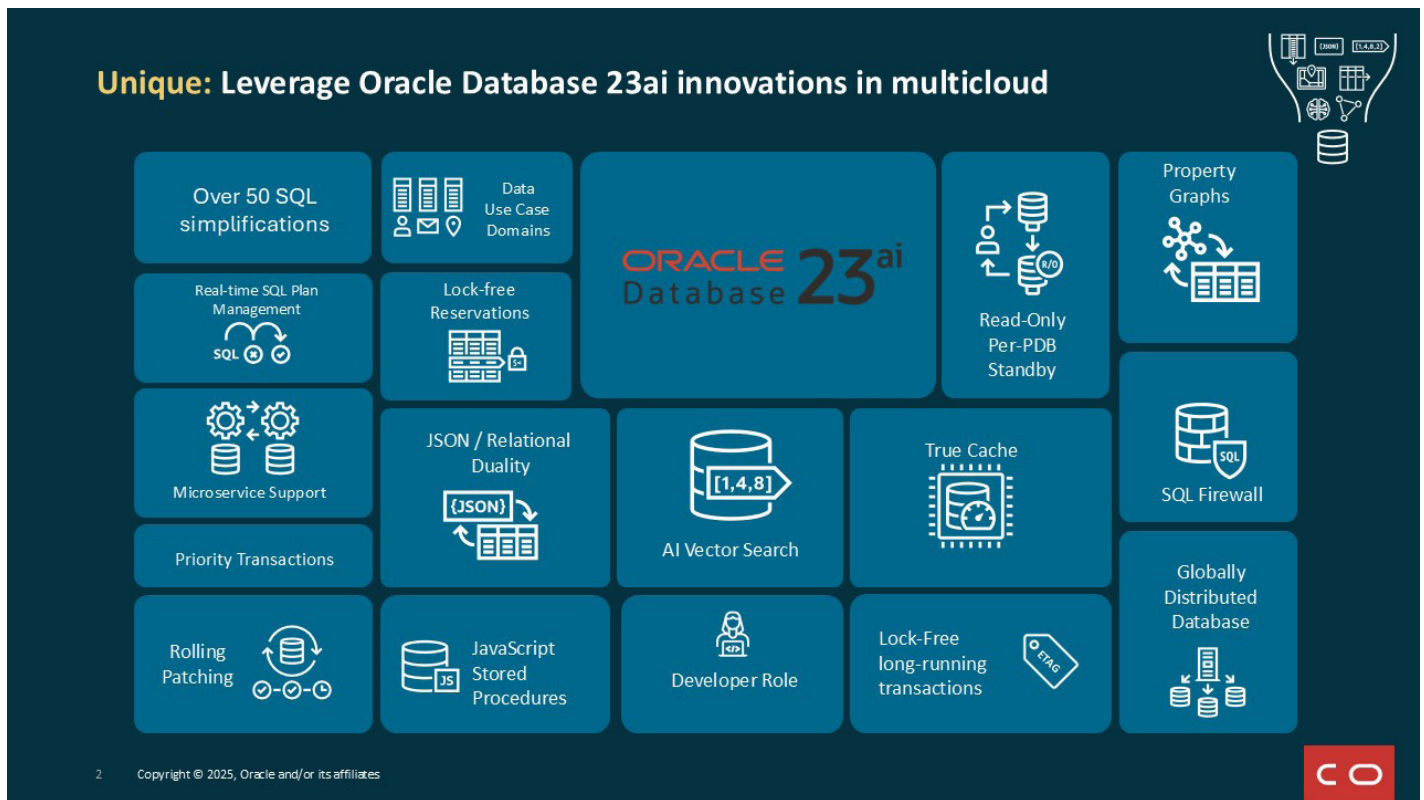
As a result, customers have a consistent database experience as the same Oracle Database can be deployed on-premises, in a hybrid cloud, and in multi-cloud architectures with no application changes.

Oracle Database is clearly the mission-critical database that the largest and most critical enterprises in the world trust with their most important data and applications. Oracle Autonomous Database provides a fully automated and managed Oracle Database that is available in OCI, Azure, Google Cloud, and AWS, enabling global organizations to migrate and run any workloads securely, from the simplest to the most. It runs on top of RAC on Exadata Cloud Infrastructure, providing the highest performance, availability, security, and scalability. In addition to scaling up to handle the most demanding applications, it also scales down to handling small applications with as few as two ECPUs (elastic CPUs).

It's clear to us that the most valuable software on the planet is Oracle Database. It costs less to manage one converged database engine than 13 in the age of AI. How do you harmonize the data from 13 databases for GenAI large language model (LLM) or vision language model (VLM) model training and inferencing? How do you implement a real-time AI architecture? Run dozens of data pipelines and practice ETL on an hourly basis? It's architecturally unrealistic to prop up a separate AI database and try to maintain consistency with the core business database engine. It can't deliver real-time AI like a converged database can.

With Oracle Database@Azure, organizations are getting extreme AI Search, extreme OLTP, and extreme analytics, all powered by key capabilities unavailable anywhere else except Oracle and its hyperscaler partners: Oracle Database 23ai, Exadata, Autonomous, and RAC. RAC can endure a failure of 20 servers and keep running. There is no other vendor that offers this type of HA capability in the cloud.

Moreover, customers gain an AI journey edge by using Oracle Database 23ai that includes AI Vector Search, a collection of features that enable the Oracle Database to store the semantic content of documents, images, videos, and other unstructured data as vectors and use these to run fast similarity queries based on conceptual content rather than just keywords.



Source: Oracle

Figure 2: Oracle Database 23ai Innovations in Multicloud

Further, AI Vector Search enables organizations to use private business data in combination with LLMs in a [Retrieval Augmented Generation \(RAG\)](#) environment. This results in answers to natural language questions that are relevant, accurate, and understandable, helping boost business outcomes.

In addition to AI, another competitive advantage that can flow to enterprises using Oracle Database@Azure is their ability to efficiently build and run document databases using the Oracle Database 23ai JSON Relational Duality Views feature. This unique capability simplifies data management by allowing developers to use both relational data management techniques and JSON within a single application, streamlining complex data manipulations and bolstering developer productivity. A key value proposition for customers is that existing JSON workloads can be easily migrated to Oracle Database with no application changes using the MongoDB-compatible API. So why pay for two database licenses when you can save money and discard your MongoDB license and use the existing document database capabilities within Oracle Database? It is a question organizations worldwide are increasingly asking themselves today, where lower costs are becoming a frequent topic in the executive suite.

While some industry pundits may claim that running Oracle Database for multiple different workloads is analogous to placing all of your eggs in one basket, the correct way to look at it is if you disaggregate all of your workloads across four different databases, you are increasing your risk by 16x—as each new basket effectively doubles your risk.

Oracle MAA: Unparalleled Application and Database Protection from Regional Outages

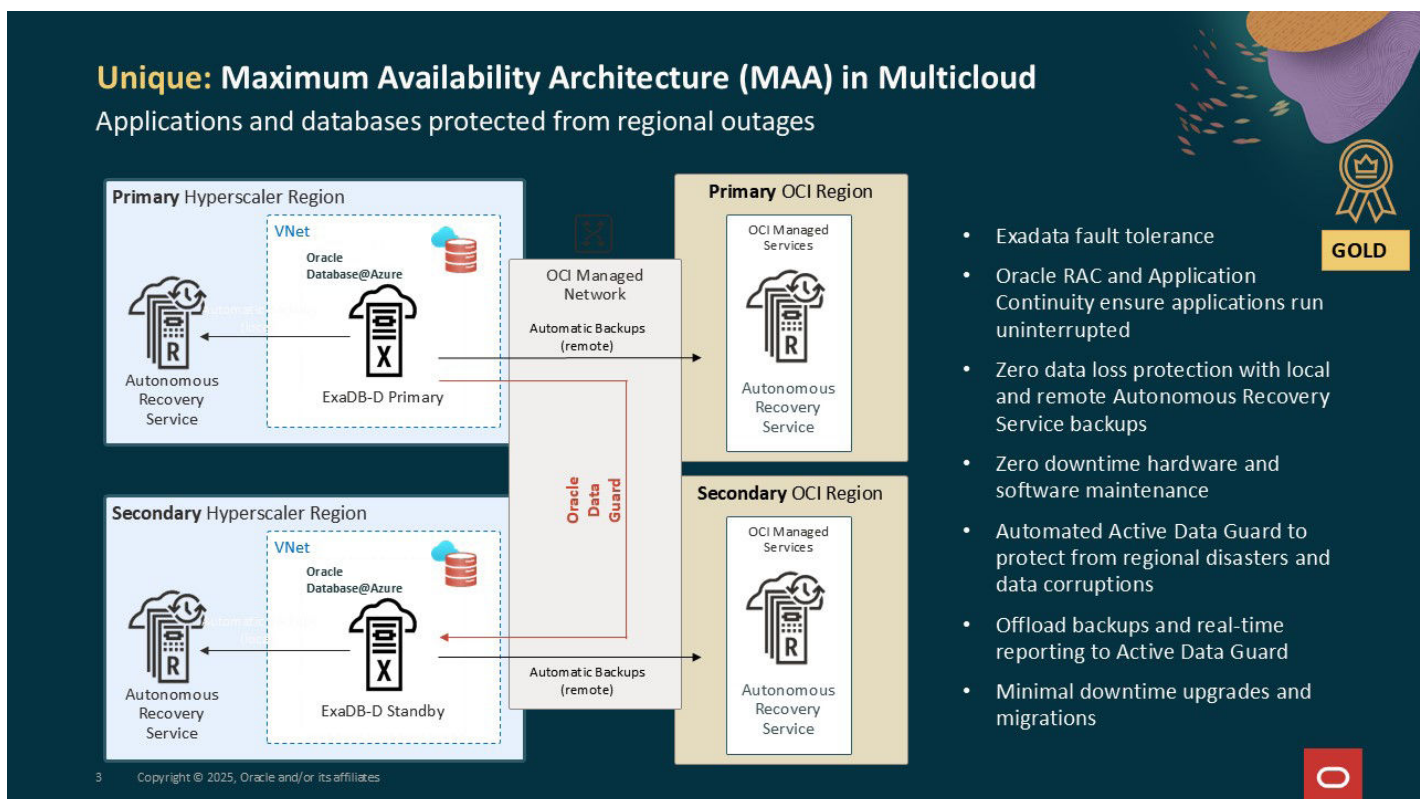


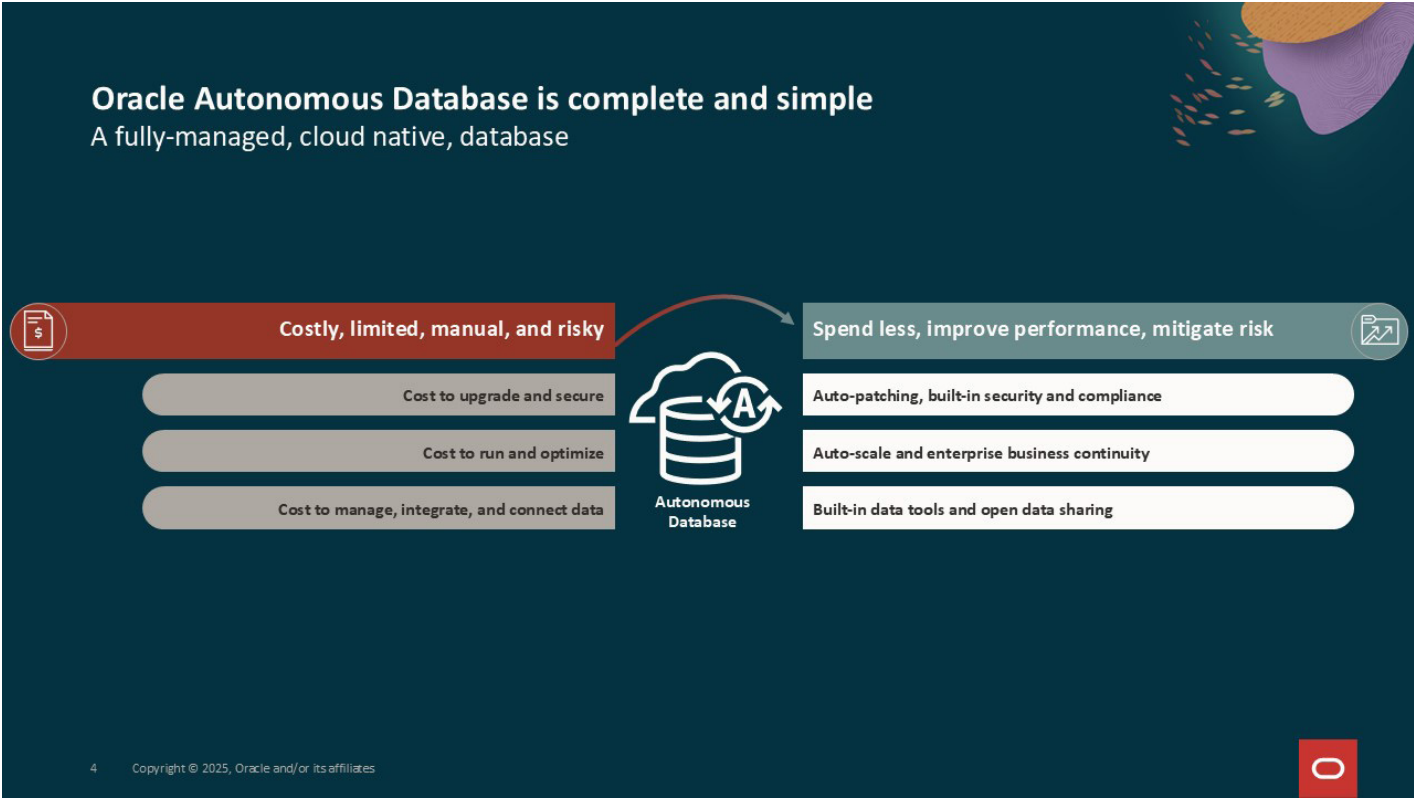
Figure 3: Maximum Availability Architecture (MAA) in Multicloud

Source: Oracle

Oracle MAA is designed to meet stringent Recovery Time Objective (RTO) and Recovery Point Objective (RPO) requirements through validated configurations tested under hundreds of failure scenarios using chaos engineering techniques. As a result, MAA helps customers achieve minimal or zero data loss and downtime during outages or maintenance activities, particularly when paired with the Recovery Service.

We see that Oracle MAA enables organizations to achieve unparalleled availability, resilience, and flexibility in their Oracle Database@Azure implementations while optimizing costs and simplifying management. These benefits make MAA competitively advantageous for enterprises with mission-critical workloads requiring maximum uptime and robust disaster recovery capabilities.

Oracle Autonomous Database Reunites Applications and Database in the Cloud



Source: Oracle

Figure 4: Oracle Autonomous Database

When enterprises started moving workloads to the cloud, many of them kept their Oracle databases running on-premises, as some applications required lower latency to operate properly.

Oracle Database@Azure helps reunite applications and databases in the cloud by providing low-latency application access to Oracle databases running on Exadata in Azure data centers. Several key features and capabilities available in Oracle Autonomous Database help customers not just reunify their applications and databases in the cloud but also increase operating efficiencies and lower costs. As a fully managed, AI-powered, automated cloud service, Oracle Autonomous Database reduces the need for manual database administration throughout the database lifecycle. Tasks such as provisioning, backing up data, recovering data, patching, auditing, alerting, disaster recovery, scaling, and more are automated by Autonomous Database. This allows developers to focus on building applications using new features such as AI Vector Search and JSON Relational Duality Views rather than managing databases and infrastructure.

As a result, Autonomous Database can help improve user experiences by automatically tuning the database and scaling infrastructure so applications with dynamic transaction rates can sustain high throughput and complex analytical queries can return results faster without manual intervention. Autonomous Database also helps enterprises maintain strong security by automating key security features including encryption, access controls, and continuous monitoring, which helps protect both the database and the applications that rely on it.

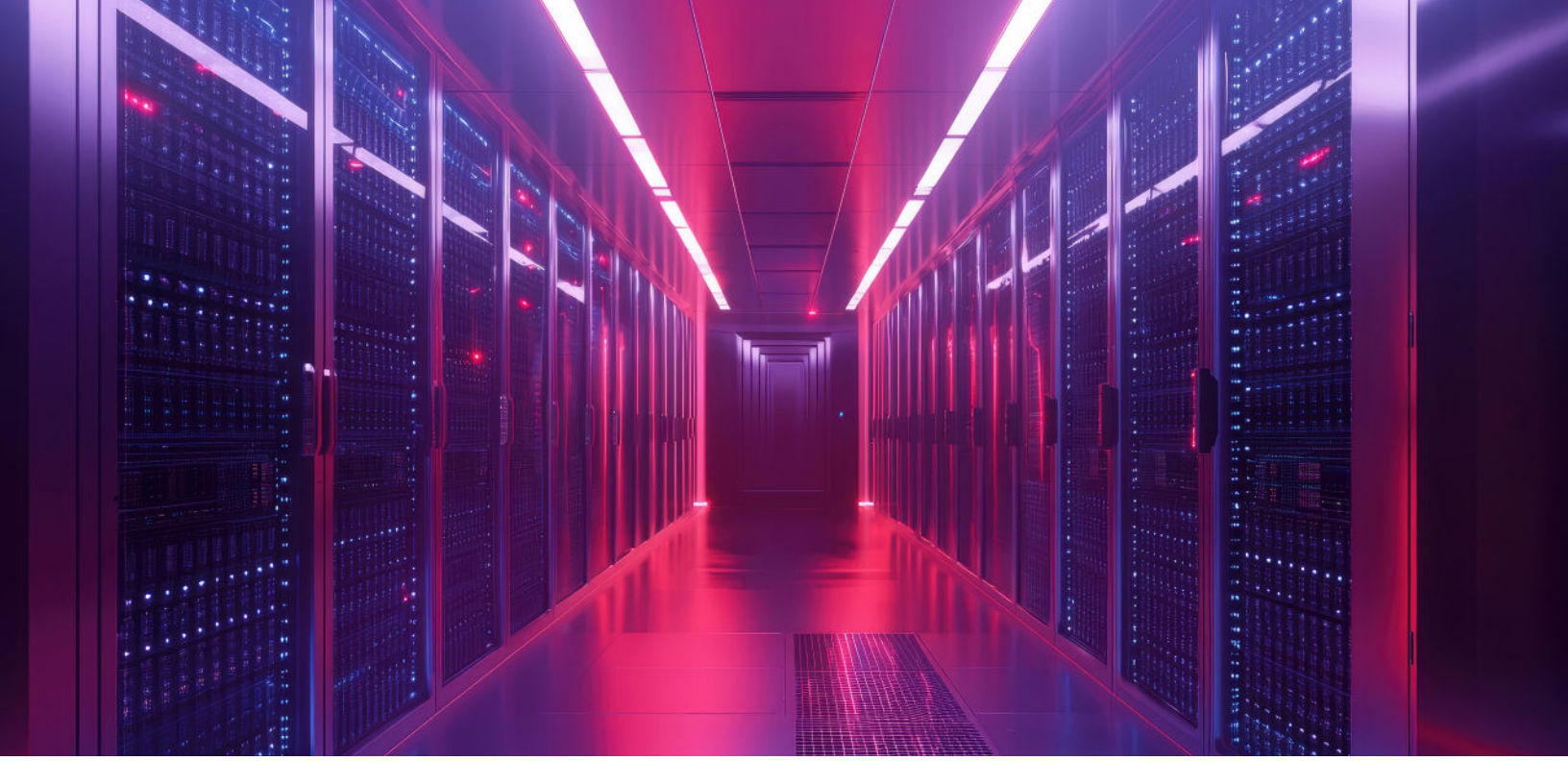
Additional Enduring Oracle Database@Azure Benefits

We identify additional key benefits such as giving customers a clear-cut path to modernize from IaaS to database services. Through Oracle Database@Azure, customers can overcome legacy IaaS challenges related to dealing with database performance and availability that do not meet service level agreements (SLAs), overcoming inefficient maintenance overhead, and database sprawl.

Now they can achieve immediate benefits from microsecond database latency; up to 99.995 percent SLAs; Oracle-managed database infrastructure or fully automated Autonomous Database, and gain as much as 40:1 database consolidation. Also, customers can build new applications with the combination of Oracle Database and the Azure development stack.

Oracle Database@Azure implements a comprehensive defense-in-depth strategy to secure data and identities across multiple layers. For example, Oracle Database@Azure enables data-at-rest and data-in-flight encryption by default, applying encryption at the database layer using transparent data encryption (TDE). This secures both containers and pluggable databases. The availability of the Recovery Service not only maintains data encryption, but also enables customers to efficiently back up their data in real-time and rapidly recover it to a specific point in time if anything should happen. It can even recover down to the individual transaction or SCN (System Change Number).

Major customer Conduent, who delivers digital business process solutions in commercial, government, and transportation, supporting 2.3 billion customer service interactions annually, selected Oracle Database@Azure to speed up the processing of its mission-critical tolling management and payment processing application. As Conduent attested: "With Oracle Database@Azure, we've been able to use multi-cloud low latency to improve application performance and simplify the management of our IT infrastructure."



Looking Ahead and Key Takeaways

In summary, we believe that Oracle Database@Azure provided the archetype model for enabling customers to run Oracle Database workloads in their preferred hyperscaler cloud. Through the Oracle Database@Azure offering, Oracle unleashed the multi-cloud model that is overwhelmingly favored by enterprises in meeting their database workload optimization demands across multi-cloud environments and the swiftly evolving AI ecosystem.

The key takeaways on why the Oracle Database@Azure can fulfill the topmost multi-cloud database demands for IT and persuade multi-cloud decision-makers include:



Run Oracle Database Workloads Anywhere: Organizations can run the same Oracle Database across on-premises, in a hybrid cloud, a public cloud, and using a multi-cloud approach with Oracle Cloud Infrastructure.



Lower Costs While Boosting Performance. Oracle Database@Azure can deliver lower costs for customers while increasing performance. Customers can run more workloads, more data, more users, in less time with fewer database resources using Oracle Exadata.



Modernize Data Infrastructure and Applications: Oracle Database@Azure supports modernization of data infrastructure and applications by accelerating an agile cloud strategy that has no constraints and enables customers to drive innovations through the swift adoption of breakthrough data technologies.



Call-to-Action

We encourage organizations to adopt Oracle Database@Azure to take full advantage of this unique multi-cloud service for running Oracle Database workloads in Microsoft Azure data centers. Based on the strategic partnership between Oracle and Microsoft, the focus is on simplifying migration, enhancing performance, and enabling innovation. Here's a concise breakdown:

- **Explore and Evaluate:** Assess how Oracle Database@Azure can address your organization's needs by combining Oracle's enterprise-grade database services (such as Exadata, Oracle Database 23ai, and Autonomous Database) with Azure's application and AI capabilities. Review case studies from customers such as [Conduent](#) and [Liantis](#), to understand real-world benefits including low-latency and scalability..
- **Contact Sales Teams:** Reach out to Oracle or Microsoft sales representatives to discuss tailored solutions. Oracle can create an Azure Private Offer via the Azure Marketplace, allowing you to use existing Microsoft Azure Consumption Commitments (MACC) or Bring Your Own License (BYOL) options for cost efficiency.
- **Initiate a proof of concept or pilot:** Act now to capitalize on this integrated offering, which delivers high performance, simplified cloud management, and multicloud flexibility. Engage with Oracle or Microsoft to experience the benefits firsthand.
- **Onboard and Provision:** Start the onboarding process through the Azure portal or APIs. This involves setting up the service, which integrates OCI within Azure data centers, ensuring seamless provisioning and management with familiar Azure tools. This helps ensure workload migration and consolidation with full compatibility with on-premises Oracle Database and Oracle Exadata deployments.
- **Migrate and Modernize:** Use proven tools such as Oracle Zero Downtime Migration to move workloads without database or application refactoring. Combine Oracle Database with Azure's AI, analytics, and developer services to modernize applications and unlock data-driven insights, as well as build new cloud native apps with Azure Kubernetes, for example, and Oracle Autonomous Database.
- **Monitor and Optimize:** Leverage Azure Monitor to track database metrics, logs, and performance. Implement Oracle's MAA for resilience and fine-tune workloads for cost and efficiency.

In conclusion, most of the world's most important data resides in Oracle Database. Who else has invested in a continuous stream of database innovations and data platform engineering to the extent Oracle has? You need data to get AI, and now the relevance and importance of a converged database available in the cloud of your choice has become a key enabler to help organizations get ahead of their principal competitors.

Important Information About This Report

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Oracle is a global technology leader known for its comprehensive suite of cloud applications and infrastructure solutions. With a strong focus on multicloud strategies, Oracle enables organizations to run workloads seamlessly across Oracle Cloud Infrastructure (OCI) and other major platforms like Microsoft Azure and AWS. This flexibility helps enterprises modernize IT environments while maintaining choice, performance, and compliance. Trusted by businesses worldwide, Oracle continues to drive innovation across databases, applications, and cloud services.

Futurum

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