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Oracle Maximum Availability Architecture (MAA)

Data Sheet

Introduction

Enterprises use Information Technology (IT) to gain competitive advantages, reduce operating costs, enhance customer communication, and increase management insights into their business.

Thus, enterprises become increasingly dependent on their IT infrastructure and its continuous availability. Oracle Maximum Availability Architecture (MAA) consists of a set of best practices blueprints for the integrated use of Oracle's High Availability (HA) and Disaster Recovery (DR) technologies that ensure this level of availability.

Oracle Maximum Availability Architecture (MAA)

MAA best practices are created and maintained by a team of Oracle developers that continually validate the integrated use of Oracle AI Database High Availability features using chaos engineering techniques and other testing methodologies. Real-world customer experience is also fed back into the validation performed by the MAA team, spreading lessons learned to other customers.
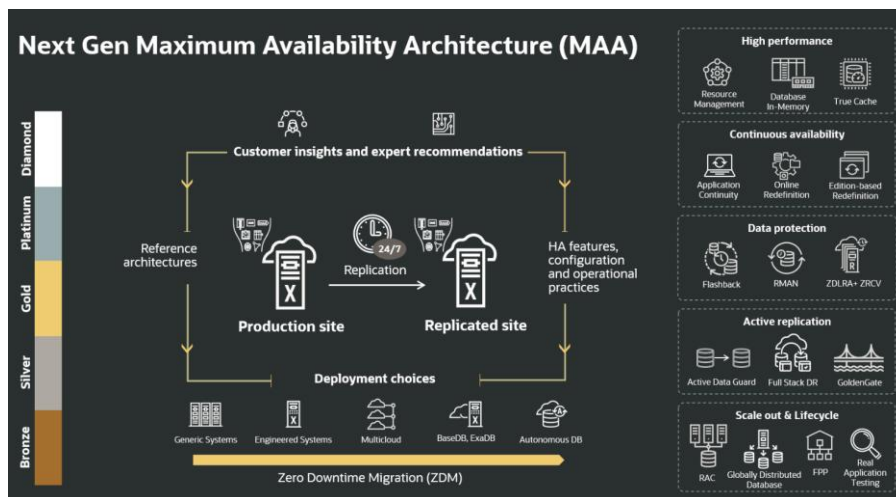
MAA includes best practices for critical infrastructure components, including servers, storage, and network, combined with configuration and operational best practices for the Oracle AI Database's high availability capabilities deployed on it. MAA resources (on oracle.com/goto/maa) are continually updated and extended.

Although not all applications have the same high availability and data protection requirements, MAA best practices describe standard architectures designed to achieve different service-level objectives. Details are provided in Oracle MAA Reference Architectures.

"*The goal for us at Epsilon is to have 99.999% availability. We found out that a lot of our processing time was being done by the reporting process. We used Active Data Guard to offload reporting to another set of servers that had a huge impact on our production database as there was enough capacity to run OLTP transactions.*"

Keith Wilcox
VP, Database
Epsilon

Maximum Availability Architecture Fundamentals

Over the years, the next generation of Oracle MAA has evolved in multiple directions. For example, Oracle MAA on Engineered Systems now provides the MAA best practices and blueprint recommendations as part of the engineered and, hence, integrated deployment that one will find on Engineered Systems such as the Oracle Exadata Database Machine, which is now a required platform for the updated Platinum and new Diamond MAA tiers. For Oracle AI Database Services in the Oracle Cloud, Oracle MAA is not only integrated into the deployment; the Oracle Cloud, especially the Platform as a Service offering, is operated following those standards that have ensured maximum availability for many of Oracle's customers for decades.
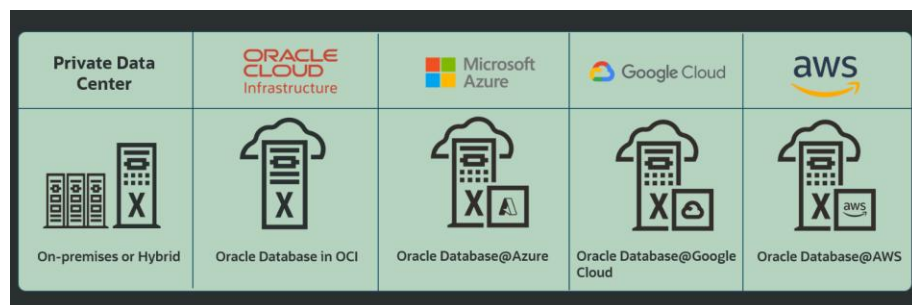

Maximum Availability Architecture Tiers and Technology

Oracle Maximum Availability Architecture (MAA) has established itself as the new de facto High Availability (HA) standard for database technologies, providing essential guidance where comprehensive alternative literature is scarce. MAA acts as a universal blueprint for any database operator aiming to achieve the highest service levels, systematically considering and discussing the full range of potential failure scenarios that affect any database. For the Oracle AI Database, MAA goes further by providing validated solutions based on Oracle's integrated HA features. This body of best practices is maintained by Oracle developers who continuously validate the integrated use of these features using rigorous chaos engineering and real-world customer feedback.

Key features

- Tiered high availability and disaster recovery reference architecture blueprints
- Business continuity with protection for both committed and in-flight transactions
- Data protection for unexpected outages or disasters
- Minimized downtime for unforeseen outages as well as planned maintenance for both the database and application

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Over the years, MAA has evolved to seamlessly integrate with Oracle's modern platforms, ensuring maximum availability is delivered by default. This evolution includes MAA on Engineered Systems—such as the Oracle Exadata Database Machine—where the best practices are an integral part of the deployment required for top tiers like Platinum and the new Diamond tier. Similarly, for Oracle AI Database Services in the Oracle Cloud, MAA is incorporated into both the deployment and the cloud service operations. The MAA framework details standardized MAA Reference Architectures (Bronze, Silver, Gold, Platinum, Diamond) designed to achieve different service-level objectives, helping customers align their availability strategy with their specific business requirements.

Ultimately, Oracle MAA addresses a broad audience across the enterprise. It is a critical resource for Oracle customers seeking to enhance their existing database availability or those preparing for a new Oracle deployment, providing clarity on how to cover all types of failures and planned maintenance operations. Crucially, MAA also offers guidance for application developers. It advises on which failures the application must specifically handle and, more importantly, for which failures the application can rely on the database layer—via features like Transparent Application Continuity—to keep service disruptions completely transparent to the end-user. This approach allows developers to focus on business logic while ensuring enterprise-grade continuity.

Maximum Availability Architecture (MAA) in the Oracle Cloud, everywhere and anywhere!

For Oracle Cloud, including our multicloud partner hyperscalers (Azure, AWS, and Google Cloud), MAA is automated into the various Oracle AI Database Service PaaS offerings, including Oracle Base Database Service, Oracle Exadata Database Service, Oracle Exadata Cloud at Customer, and Oracle Autonomous Database. These services have various flexible options with high availability and disaster recovery built directly into the infrastructure, following best practices with different options (see the above diagram) aligned with each of the MAA tiers, depending on the selected service offering.

Related products

The following products are components of Oracle Maximum Availability Architecture (MAA):

- Oracle Real Application Clusters (RAC)
- Oracle Active Data Guard
- Oracle GoldenGate
- Oracle Multitenant
- Oracle Application Continuity
- Oracle Edition-based Redefinition

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