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BLOG POST

# Oracle Scales and Secures Your Transactional Workloads in the AI Era

**How Oracle Maximum Availability Architecture Provides New Levels of Previously Unseen High Availability for Oracle AI Database**



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*Produced exclusively for Constellation Research clients*

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# INTRODUCTION

Artificial intelligence (AI) is transforming all aspects of enterprise data management, and one of the biggest showcases for this is the evolution of Oracle AI Database, which, with the support of Oracle Maximum Availability Architecture (MAA), has systematically raised the bar from traditional high-availability (HA) databases suited mainly for large-scale on-premises deployments to a comprehensive cloud platform delivering extreme resilience and security for everything from standard mission-critical workloads to the most ultracritical applications of the AI era. As such, it is a crucial contribution for enterprises not only for accelerating agentic AI adoption but also for ensuring always-on operations and protecting against emerging threats such as quantum computing, making it a key driver for Enterprise Acceleration.<sup>1</sup>

Ultimately, once data has been made available to AI and once all the agents are built, it will be the back-end systems' scale and availability that will be critical for enterprise success in the AI era—and Oracle just delivered the key platform for that success.

## ORACLE AI DATABASE RAISES THE BAR FOR HA

For the longest time, mission-critical-grade availability and future-proof security in databases has been complex to implement, expensive to operate at scale, and limited to organizations with deep in-house expertise. This all changed with Oracle's latest enhancements, announced on April 9, 2026, and it is time for CxOs to get going to make sure their enterprise data infrastructure is not at a strategic disadvantage versus their competition in the age of AI.<sup>2</sup>

## HOW ORACLE AI DATABASE PASSED THE HA INFLECTION POINT

The following recent developments are enabling Oracle AI Database to deliver unprecedented levels of availability and security, blowing by its inflection point:

- **AI breakthroughs accelerate and deliver autonomous capabilities.** AI-infused capabilities equip Oracle AI Database with advanced automation for performance tuning, patching, anomaly detection, and intelligent resource management that enable it to adapt dynamically to complex, high-stakes workloads in ways previously limited by manual operations and rigid architectures.
- **Hardware and architecture innovations radically decrease complexity.** Oracle AI Database’s coengineered approach with Oracle Exadata and Oracle Cloud Infrastructure (OCI), in addition to integration with Oracle’s multicloud partners and engineered systems advances, drives down operational overhead dramatically while making extreme availability economically feasible for a broader range of enterprises.
- **AI-driven workloads and threats compel stronger foundations.** The explosion of agentic AI applications and persistent risks—from sophisticated cyberattacks to quantum computing “harvest now, decrypt later” scenarios—push organizations to adopt next-generation databases, such as Oracle AI Database, as an essential solution for maintaining business continuity and data protection.
- **Adoption surges across enterprises.** Oracle AI Database already powers more than 90% of the world’s largest enterprises and tens of thousands of smaller ones; the new Oracle AI Database 26ai enhancements build on this foundation, extending stock-exchange-level resilience to more workloads than ever.
- **Investment and innovation momentum fuels rapid progress.** Oracle’s continued heavy R&D, close ecosystem partnerships, and customer-driven development have propelled capabilities such as Maximum Availability Architecture (MAA) Platinum-tier and Diamond-tier from best practices into push-button, application-transparent realities.

## HOW ORACLE SOLVES MISSION-CRITICAL AVAILABILITY AND SECURITY CHALLENGES

The following table outlines the top challenges to running mission-critical workloads in the AI era and describes how Oracle AI Database addresses them:

## IMPLEMENTATION CHALLENGES

Traditional availability approaches create unacceptable downtime and data loss risks for mission-critical applications of the AI era, with long failover times and complex manual interventions that disrupt business operations and now also disrupt agentic automation.

Ultracritical workloads (e.g., financial trading, real-time AI agents) cannot tolerate even brief interruptions or any data loss, demanding resilience beyond conventional high-availability solutions.

Emerging threats from AI-powered attacks and quantum computing expose data to new vulnerabilities, including “harvest now, decrypt later” risks that undermine long-term confidentiality.

Managing availability, resilience, and security separately diverts engineering focus from innovation by demanding extensive orchestration, monitoring, and custom configurations across hybrid environments.

## ORACLE AI DATABASE SOLUTION

Deliver MAA Platinum-tier availability with disaster failover times typically under 30 seconds for multinode clusters—up to 4x as fast as previous versions—application-transparent and included at no extra charge with Oracle AI Database 26ai and Oracle Exadata.

Introduce MAA Diamond-tier for near-zero downtime and zero data loss, with failovers typically under three seconds, for ultracritical workloads—without requiring application changes or extensive expertise.

Implement integrated postquantum cryptography support with National Institute of Standards and Technology (NIST)-approved quantum-resistant hybrid key exchange using TLS 1.3, plus Oracle Deep Data Security for centralized authorization and visibility policies based on user identity, roles, and context—protecting data at its source throughout its lifecycle.

Provide an integrated, end-to-end framework via Oracle MAA enhanced with AI-driven automation, simplifying operations across cloud and on-premises while scaling performance for every workload.

## ADVICE FOR CXOS

Constellation has the following recommendations for CxOs considering the implementation or upgrade of their mission-critical database infrastructure and looking at Oracle AI Database:

- **Familiarize yourself immediately.** The ability to achieve extreme availability and quantum-ready security has dramatically advanced with AI integration. Incremental improvements demonstrate a historic understanding of the rate of change; resilience and protection now evolve rapidly, with the ability to deliver near-continuous operations for the full range of AI workloads.
- **Create a new resilience map for your data estate.** Advances in MAA Platinum- and Diamond-tier combined with built-in security enhancements enable a completely new scope for mission-critical

operations in the enterprise. Create the resilience map ASAP for your organization, and identify pilot workloads.

- **Start the platform evaluation process ASAP.** There is no time to lose when selecting databases that can handle AI-era demands. Obviously, a strong track record in enterprise-scale availability, security, and performance is going to be critical not only for a single project but also for your enterprise's long-term success.
- **Evaluate Oracle as your transactional platform for the AI.** Among established and emerging options, Oracle stands out in the mission-critical space, due to extensive experience in protecting the data of the largest companies in the world, decades of innovation, tight hardware/software integration with Oracle Exadata, and the recently announced innovations—the latest being the availability and security advances for the agentic AI age discussed in this blog post.
- **Practice commercial prudence.** No matter how compelling the new capabilities are and no matter how high the pressure to modernize is, CxOs need to practice commercial prudence. For instance, use the Constellation ShortList™ for enterprise databases,<sup>3</sup> ask for customer references, and negotiate successfully.

## MY POV

There is no time to waste before getting started with future-proofing architecture for the agentic AI era. Back-end innovation for scale, security, and HA is critical once agents are running successfully and demanding more scale than humans (e.g., Constellation expects an average human-to-agent ratio of 1 to 4 in the second half of 2026) as well as higher availability (e.g., agents work 24/7—there is no weekend patch window anymore). And the relative speed to AI-proof back-end processes is slower than building AI agents, so CxOs need to get a head start on the back-end work—the sooner the better.

Assessing both data risk and AI agent scaling requirements and success is a good guiding principle for where to start with back-end system renovation and innovations. With the MAA innovations, Oracle

stands out even more in the mission-critical application space. Consequently, Oracle AI Database needs to make the short list for enterprise database selections in the AI era.

## ENDNOTES

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<sup>1</sup> Mueller uses the term Enterprise Acceleration to refer to the need for enterprises to move faster and become more agile. For more, see: Holger Mueller, “Why the C-Suite Must Embrace Enterprise Acceleration,” May 5, 2019. <https://www.constellationr.com/research/why-c-suite-must-embrace-enterprise-acceleration>

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<sup>2</sup> For more, see the press release “Oracle AI Database Raises the Bar for Availability and Security Across Mission-Critical Workloads,” Oracle, April 9, 2026. <https://www.oracle.com/news/announcement/oracle-ai-database-raises-the-bar-for-availability-and-security-across-mission-critical-workloads-2026-04-09/>

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<sup>3</sup> For more, see: Holger Mueller, “Constellation ShortList™ Next-Gen Databases: RDBMS for On-Premises,” Constellation Research, February 2, 2026. <https://www.constellationr.com/research/constellation-shortlist-next-gen-databases-rdbms-premises>



## ANALYST BIO

# Holger Mueller

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Holger Mueller is a vice president and principal analyst at Constellation Research. He provides guidance for the fundamental enablers of the cloud, IaaS, and PaaS, with forays up the tech stack into big data, analytics, and SaaS. Mueller provides strategy and counsel to key clients, including chief information officers, chief technology officers, chief product officers, investment analysts, venture capitalists, sell-side firms, and technology buyers.

Prior to joining Constellation Research, Mueller was VP of products for NorthgateArinso, a KKR company. He led the transformation of products to the cloud and laid the foundation for new business-process-as-a-service (BPaaS) capabilities. Previously he was the chief application architect with SAP and was also VP of products for FICO. Before that he worked for Oracle in various management functions—on both the application development (CRM, Fusion) and business development sides. Mueller started his career with Kiefer & Veitinger, which he helped grow from a startup to Europe's largest CRM vendor from 1995 onward. Mueller has a Diplom-Kaufmann degree from the University of Mannheim, with a focus on information science, marketing, international management, and chemical technology. A native European, Mueller speaks six languages.

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## Organizational Highlights

- Named Institute of Industry Analyst Relations (IIAR) New Analyst Firm of the Year in 2011 and #1 Independent Analyst Firm for 2014 and 2015.
- Experienced research team with an average of 25 years of practitioner, management, and industry experience.
- Organizers of the Constellation Connected Enterprise—an innovation summit and best practices knowledge-sharing retreat for business leaders.
- Founders of Constellation Executive Network, a membership organization for digital leaders seeking to learn from market leaders and fast followers.

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