

#### APRIL 2025

# Build Critical Applications on Couchbase's Flexible, Scalable Data Platform

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**Abstract:** The value proposition for implementing artificial intelligence (AI) using enterprise data is clear and is driving organizations to find the best platform to build on. AI promises to deliver enhanced customer experience, increase operational efficiency, and drive new revenue opportunities. However, traditional relational databases lack the flexibility and scalability required to support modern AI-driven applications and agents. Couchbase Capella, along with its mobile and edge capabilities and integrated AI services, provides an agile and scalable, developer-friendly data platform architected with JSON throughout to support these initiatives. Couchbase helps enterprises build and run critical, AI-powered applications more efficiently and cost-effectively.

### Efficiency, Experience, and Innovation Lead AI Business Drivers

As organizations seek to improve competitiveness, reduce costs, and empower new growth potential, AI is becoming a critical business enabler to drive business value. This is shown in Figure 1, where Enterprise Strategy Group asked organizations what their primary business driver is for implementing AI.<sup>1</sup>

Figure 1. Core Data Platform Goals



Source: Enterprise Strategy Group, now part of Omdia

<sup>1</sup> Source: Enterprise Strategy Group Research Report, <u>Navigating Build-versus-buy Dynamics for Enterprise-ready AI</u>, January 2025.

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This underscores the pivotal role organizations are placing on the AI plans and enterprise data to drive future business success. There is an emphasis placed on:

- **Operational efficiency.** Improved operational efficiency enables organizations to automate tasks and streamline processes.
- **Customer experience.** Personalizing interactions, providing real-time support, and anticipating customer needs can enhance customer satisfaction and brand loyalty.
- **Innovation.** By driving the creation of new products and services and accelerating R&D, AI can give businesses a competitive edge with faster, more intelligent decision-making.

## **Databases Core to Successful AI Initiatives**

There is no question that the foundation for AI success is the right data, which comes from databases that can extract the maximum value from data. As shown in Figure 2, a large majority (84%) of organizations are implementing or evaluating new databases to support generative AI applications.<sup>2</sup> This data and the strong growth in generative AI application development show a continuous expansion of database technologies, which can improve their accuracy. These technologies are being implemented now and moving forward to support the many generative AI and AI agent use cases planned across organizations.



Figure 2. Database Strategy is Core to Generative AI Initiatives

Source: Enterprise Strategy Group, now part of Omdia

## Successful AI Requires a Modern Data Platform

The rapid rise of AI-driven applications fundamentally reshapes how organizations operate, engage with customers, and compete in the digital economy. Whether powering personalized customer experiences, automating business processes, or enabling real-time decision-making, AI is quickly becoming the engine behind many modern business strategies.

<sup>&</sup>lt;sup>2</sup> Source: Enterprise Strategy Group Research Report, <u>Rethinking Database Requirements in the Age of AI</u>, February 2025.

However, realizing Al's full potential is not without its challenges. To deliver intelligent, responsive applications and control large language models, organizations must unify and operationalize massive volumes of structured, semistructured, and unstructured data—often spread across disconnected systems, cloud environments, and edge devices. Developers and data teams must not only manage diverse data types but also ensure that this data is trustworthy, available in real time, and seamlessly integrated into AI models and workflows to prevent models from creating hallucinations.

Recent research from Enterprise Strategy Group underscores the magnitude of this challenge:<sup>3</sup>

- 31% of organizations reported that integrating data from disparate sources is one of their most significant data management hurdles.
- 92% of respondents agreed that database performance is critical to the success of their generative AI initiatives.

#### **Market Insight**



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These figures reflect a growing recognition that existing data infrastructure is holding AI initiatives back. Traditional relational databases—designed decades ago for transactional workloads—are poorly suited to meet the demands of modern AI-powered applications and applications that operate using the flexible JSON data format. Their rigid schemas, static data models, and single-purpose architectures struggle to handle the volume, variety, and velocity of data required by today's intelligent systems.

Moreover, as AI adoption accelerates, the need for real-time data access, scalability, flexibility, and low-latency performance has become non-negotiable. Organizations are discovering that piecing together siloed systems and legacy databases not only introduces unnecessary complexity and cost but also limits their ability to scale AI initiatives efficiently.

To succeed in this new era, enterprises require a modern, unified data platform—one that can seamlessly integrate diverse data sources, deliver real-time insights, and support the evolving needs of AI-native applications and agentic systems. This platform must simplify data architecture, reduce operational overhead, accelerate the time to value of AI investments, and drive accurate responses. Without this modern foundation, even the most sophisticated AI models will fail to deliver meaningful business impact.

## **Couchbase Unified Data Platform**

Couchbase's modern data platform is uniquely suited to help organizations overcome the data challenges of Al adoption and unlock new levels of agility, scalability, and intelligence. By unifying data access, scalability, and Al services into a single platform, Couchbase empowers enterprises to build trusted, governed data sources and run Al-powered solutions within a secure, high-performance environment.

Organizations using Couchbase can overcome the limitations of legacy databases by consolidating their infrastructure, reducing costs while significantly increasing functionality. This is where Couchbase delivers its unique value. The Couchbase unified data platform is purpose-built to meet the complexities and performance needs of modern applications and AI workloads. Delivered as Couchbase Capella Database-as-a-Service (DBaaS)— alongside mobile, analytics, and AI services—the platform offers unmatched flexibility, scalability, and real-time responsiveness across cloud, on-premises, and edge environments.

Key platform capabilities include:

- Accelerating application development and deployment cycles.
- Supporting structured, semi-structured, and unstructured data—critical for AI and real-time use cases.
- Delivering high-performance, low-latency access at scale.
- Operating seamlessly across hybrid, multi-cloud, and edge environments.
- Simplifying AI integration and streamlining data workflows.
- Leveraging a memory-first, distributed architecture for high availability and scalability.

#### **Couchbase Developer Data Platform**



#### **Market Insight**

Enterprise Strategy Group performance testing showed Couchbase Capella demonstrated up to 12x higher throughput compared to a leading competitor,

underscoring its ability to support demanding, real-time applications at scale.<sup>4</sup>

As shown in Figure 3, the Couchbase developer data platform is a unified, developer-centric layer designed to power modern applications with real-time data capabilities. It combines transactional, mobile, analytics, and AI services underpinned by enterprise-grade security and supports both SQL and JSON throughout.

Figure 3. Couchbase for Developers



Source: Couchbase

<sup>&</sup>lt;sup>4</sup> Source: Enterprise Strategy Group Technical Validation, <u>*The Use of Couchbase for Developing and Supporting AI-powered Applications*</u>, January 2025.

The platform is available in both customer-managed (Enterprise) and fully managed (Capella) deployment models and runs across public cloud, cloud edge, and on-premises environments. With built-in data intelligence, Couchbase seamlessly integrates with AI tools, unstructured data, and multi-source systems, powering use cases such as AI agents, chatbots, IoT, personalization, and operational analytics.

#### Why Couchbase Capella Is Ideal for AI

Couchbase Capella's unique strengths make it ideal for powering AI applications.

- Performance and scalability: Capella's memory-first architecture and distributed design offer exceptional throughput—up to 12x higher than a leading competitor—enabling faster processing of AI workloads with fewer resources.
- Enhanced developer productivity: Couchbase's flexible JSON model eliminates the need for rigid schemas and complex data normalization, enabling developers to quickly iterate and integrate data from diverse sources.
- Integrated AI services: Capella includes native AI services such as:
  - o Vector search for similarity matching and retrieval-augmented generation.
  - o Secure, federated model hosting with support for NVIDIA AI Enterprise.
  - o Automated vectorization and unstructured data processing.
  - o A reusable AI agent catalog with response governance capabilities.
- **Mobile and edge Al support:** Couchbase Mobile, powered by Couchbase Lite and Sync Gateway, enables offline-first Al applications to run reliably at the edge, even in environments with inconsistent network access.

## Use Case: BroadJump Improves Performance By 500%

BroadJump, a healthcare sourcing analytics company, needed to accelerate its ability to process complex queries across massive healthcare supply chain data sets to support applications like the BroadJump PriceChecker, which delivers real-time and historical pricing insights. Its existing database architecture couldn't meet performance demands or provide the level of visibility clients required.

By adopting Couchbase, BroadJump gained a powerful, feature-rich platform that improved query performance by 500%, cut storage needs by over 50%, and reduced development cycle times by 25%. With Couchbase's flexible JSON model, SQL++ support, and scalable architecture, BroadJump consolidated systems, simplified development, and empowered analysts to deliver faster, more insightful analytics. This resulted in clients gaining better control over expenses and procurement strategies and BroadJump operating more efficiently at scale.<sup>5</sup>

### Conclusion

As AI adoption accelerates, organizations need a modern data platform that can simplify complexity, integrate diverse data sources, and scale efficiently to power intelligent applications. Couchbase's unified data platform delivers the performance, flexibility, and built-in AI capabilities required to meet these demands—whether in the cloud, on premises, or at the edge. If you are looking for the right solution to support your AI initiatives and build critical, scalable, and real-time applications, Enterprise Strategy Group strongly recommends you consider Couchbase.

<sup>&</sup>lt;sup>5</sup> Source: "About BroadJump," Couchbase.com.

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