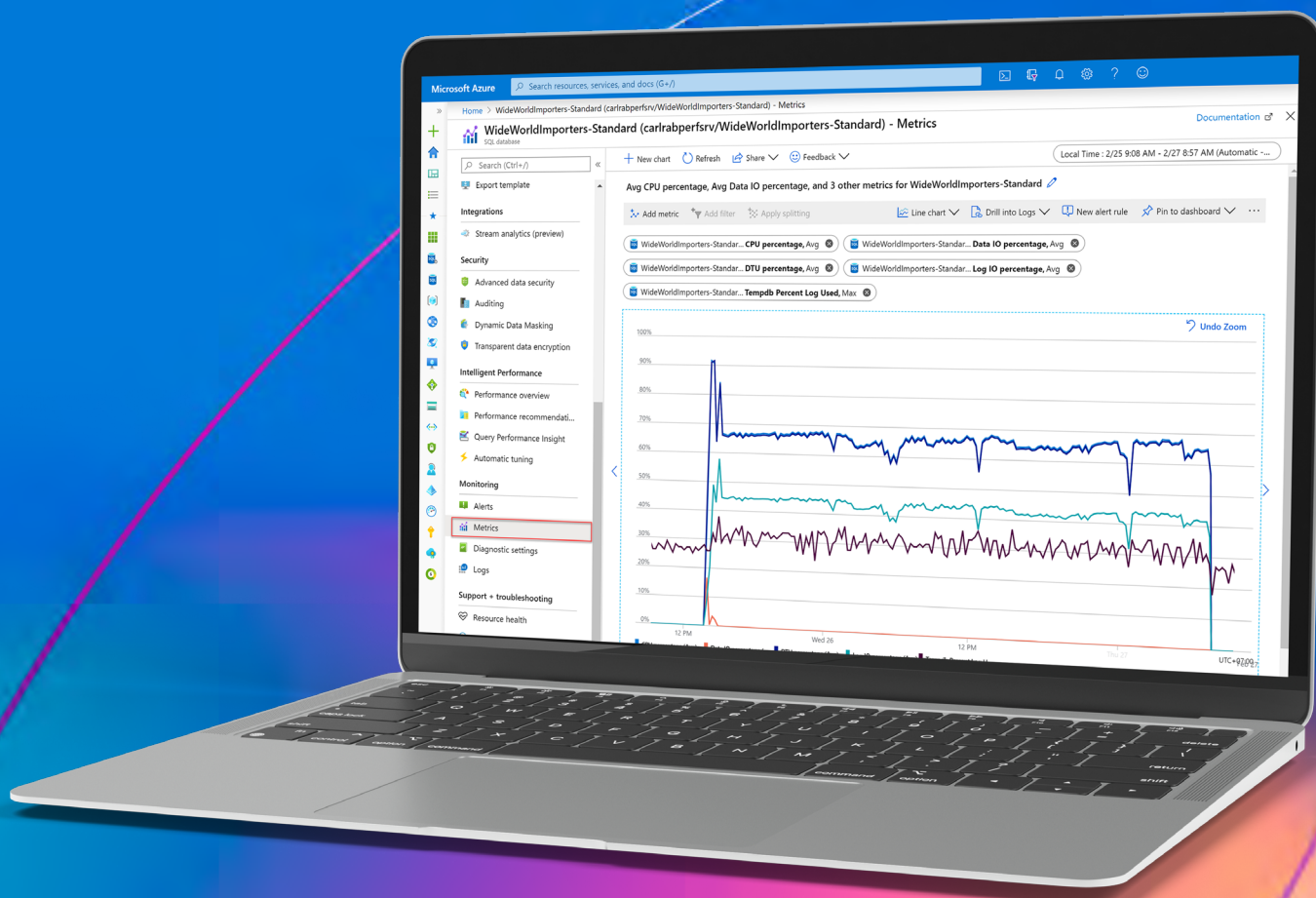


Fuelling AI innovation:

Build and scale applications and agents
with Azure AI-optimised databases

Based on real users of Microsoft Azure databases



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Introduction: data is the fuel for AI transformation

The future of AI starts with databases

AI has moved from experimentation to execution. 86% of business leaders believe that AI will be critical to maintaining or growing revenue in the years ahead,¹ and nearly all organisations already investing in AI report positive ROI.² Yet most enterprises still struggle to turn this promise into practice. Only 19 per cent say that they are maximising the value of their data,³ while many cite stronger data infrastructure as the key to faster AI adoption.⁴

At the same time, users are demanding more intelligent, more intelligent, data-driven applications. They expect natural language interactions, personalised recommendations and real-time responses that adapt instantly at global scale.

Taken together, the needs of businesses and users are defining what databases must deliver in the AI era.

Databases as AI enablers

AI applications change what is required from a database. Beyond storing information, databases must become AI enablers: ingesting massive and unpredictable workloads, delivering low-latency access to fresh data and supporting vector embeddings, semantic search and similarity matching. They must also provide the compliance, privacy and reliability needed to use sensitive data in AI training and inference. This convergence of operational and AI capabilities marks a fundamental shift in what traditional databases were designed to deliver.

¹Furlonger, David. [What your CEO means when they say “We’re in the era of AI”](#). Gartner. 25 April 2025.

²McWilliams, Lizzie. [EY research: Artificial intelligence investments are set to remain strong in 2025, but senior leaders recognise the emerging risks](#). EY. 10 December 2024.

³Furlonger, What your CEO means.

⁴Accenture. [A new dawn for dormant data](#). 2023.

The challenge for developers

Traditional databases fall short where it matters most: scalability, performance and AI-readiness. Developers need platforms that can auto-scale to meet unpredictable demand, sustain high performance under heavy loads and natively support advanced AI workloads such as vector search and retrieval augmented generation (RAG). They also need the flexibility to easily integrate emerging tools and services. Without these capabilities, teams struggle to deliver the intelligent, high-performing applications that users expect.

The challenges go beyond the technical limitations of traditional databases. For developers, there is a clear impact on their day-to-day work. Building AI-driven applications often means juggling multiple systems, each with its own APIs and management overhead. That complexity slows iteration, makes debugging harder and increases the risk of errors in production. Teams lose time wiring together infrastructure instead of building the features that matter to users. Knowledge sharing and collaboration are also hindered when every project requires different tools and workarounds.

The result: developers face mounting friction just as the demand for AI-powered applications is accelerating.

Azure databases: optimised for AI

That's exactly the gap that Microsoft Azure databases are designed to close. Azure databases are optimised for AI workloads – combining operational reliability with advanced AI capabilities in a single platform.

With the elasticity to handle unpredictable workloads, low-latency responses and built-in vector operations, Azure databases give organisations the scale and intelligence needed to power next-generation AI applications. They also integrate seamlessly with services across Azure – including Microsoft Foundry and Microsoft Fabric – so data can flow wherever it's needed for training, inference and analytics.

For developers, the advantage is simplicity. Instead of connecting multiple services, they can rely on databases with native support for semantic search and direct integration with Foundry products such as Azure OpenAI. This reduces pipeline complexity, accelerates iteration and helps teams to implement sophisticated AI patterns while following safe and responsible AI practices – without the overhead of building customised infrastructure.

For example, developers can build RAG applications without stitching together separate systems. With unified APIs, they can generate embeddings, store them alongside source documents and run similarity searches, all within the same database environment. The result is faster development and a streamlined workflow for intelligent applications.

This AI-first design allows teams to go beyond prototypes and deliver real AI applications in production – whether building global-scale conversational agents, personalised recommendation systems or predictive analytics that adapt in real time.

The central question for every team – whether they're building AI applications or setting AI strategy – is clear: is your database optimised for AI? Backed by real customer testimonials, the following sections explore how Azure Cosmos DB, Azure Database for PostgreSQL and Azure SQL Database each answer that question, providing the foundation for developers and enterprises to build and scale the next generation of intelligent, AI-powered applications.

Azure Database for PostgreSQL: a developer-friendly path to scalable AI and analytics

Azure Database for PostgreSQL appeals to developers who favour open-source tools while requiring enterprise-grade reliability and support.

Open-source familiarity with cloud-scale performance

Azure Database for PostgreSQL maintains full PostgreSQL compatibility, enabling developers to use their existing skills, tools and libraries while accessing cloud-native AI capabilities. This managed service helps eliminate operational overhead while preserving PostgreSQL's flexibility and extensibility.

Native extension support for AI workloads

PostgreSQL's extension ecosystem helps AI developers to add specialised capabilities without migrating to different platforms. Extensions like pgvector and pg_diskann provide native vector operations, while other extensions support time-series analysis, geospatial processing and statistical functions essential for AI applications and agents.

This extensibility benefits teams building AI applications requiring multiple data-processing paradigms.



Daniel Amini

Head of Cloud, Data and AI,
BJSS (now part of CGI),
1,000–5,000 employees



Azure Database for PostgreSQL is simple and easy to use. We followed the prescribed training and upskilled 10 engineers. They think it's straightforward. They've already got PostgreSQL skills to optimise the solution, so they know what to do. It was easy to get started quickly and become effective.

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Ease of set-up and cost-effectiveness

For AI developers working on experimental projects or start-ups with limited budgets, PostgreSQL provides a cost-effective entry point. The flexible pricing model enables teams to start small and scale based on application success.

Manikyam Thukkapuram

Director, Alliances & Engineering, Quadrant Technologies,
1,001–5,000 employees

Postgres has helped us to innovate and stay competitive. It has dramatically reduced our application development time, improving our efficiency by about 40%. It has cut costs by about 60% compared to on-premises applications.

Intelligent applications with PostgreSQL and pgvector

The pgvector extension transforms PostgreSQL into a vector-capable database while maintaining full SQL compatibility. AI developers can store vector embeddings alongside relational data, enabling applications that combine structured queries with semantic search operations. This hybrid approach is useful for applications requiring both precise filtering and similarity matching, such as product recommendation systems that consider user preferences and product attributes.

Li Tse Liu

Product Manager, financial services company,
5,001–10,000 employees

We are a bank. Our information is mainly stored in an SQL database. Azure Database for PostgreSQL offers a way for our colleagues to quickly understand vector search by using the combination of RDB and the vector search extension. This means that we do not have to learn vector databases at the beginning. We can simply turn on the extension, and it has the vector search immediately.

The PostgreSQL approach to AI development is particularly appealing to teams that value incremental adoption over wholesale platform changes. Rather than requiring developers to learn entirely new systems, PostgreSQL with Azure's managed service allows teams to gradually introduce AI capabilities while maintaining their existing SQL skills and development patterns. This incremental path often accelerates AI adoption in enterprises where PostgreSQL expertise already exists.

Azure SQL Database: enterprise-ready AI, availability and security

Azure SQL Database is the relational cloud database for optimising AI application performance and accelerating time to market. Built on the same engine as SQL Server, it enables developers to build intelligent applications using familiar tools and frameworks.

Familiar SQL server experience with cloud-native flexibility

Azure SQL Database maintains full T-SQL compatibility while adding cloud-native features, such as automatic scaling and global distribution. Developers can build on what they already know, accelerating the integration of AI capabilities into existing enterprise applications.



Adam Carlson

Senior Technical Lead,
Micron Technology,
10,000+ employees



The toolset is familiar to me since I've used SQL Server on-premises for quite a few years. Azure SQL Server integrates very well with other Microsoft applications.

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Azure SQL Database Hyperscale extends this foundation with the performance and scalability to support the most demanding, mission-critical applications – including AI workloads. With support for up to 100 TB of storage and the ability to scale compute and storage independently, Hyperscale is ideally suited for the massive volumes of data that AI models generate and consume, ensuring that applications remain responsive and efficient at any scale.

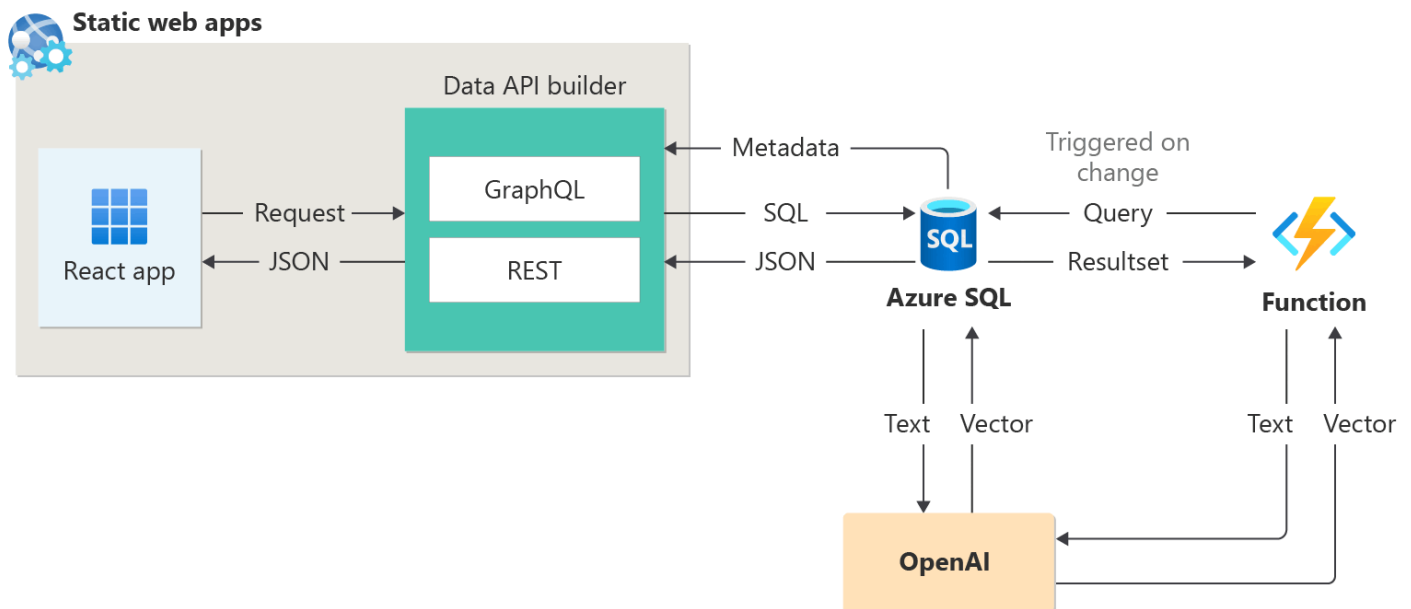
Fatai Akinwande

Specialist Datacentre and Servers, IHS Towers,
1,001–5,000 employees

Azure SQL Database is extremely scalable, allowing seamless scaling up or down with a simple change in parameters. It's a perfect ten out of ten in terms of scalability.

Native AI integration for building intelligent applications

Azure SQL Database natively integrates with Foundry Tools, enabling key patterns for building intelligent applications with minimal overheads. Developers can build RAG applications that improve large-language models by pulling in relevant data from external sources to give more accurate responses. Through external REST endpoint invocation, SQL-stored procedures can securely call services, such as Azure OpenAI or Azure AI Search, allowing developers to enrich applications with natural language processing, semantic search and other AI workloads. Azure SQL Database also supports in-database vector operations through a native vector data type, enabling similarity search across embeddings stored alongside relational data.



Developers can run ONNX machine learning models directly within Azure SQL Database, reducing data movement and enabling real-time inference scenarios. Trained models can be deployed as stored procedures or functions, supporting SQL-based AI applications. This is particularly beneficial for applications requiring real-time scoring, such as fraud-detection systems that evaluate transactions immediately upon entry.

Fredrick Weinshenk

Cloud Engineer, Med Tech Solutions,
51–200 employees

We're starting to implement more AI solutions. For example, we have a custom development team that does live archiving. If the EHR system goes down, they have another way to access patient records and images. We have another new product called ChartAI that is integrated with AI to support dictation and manage chart-related tasks. It saves the practitioners and doctors time by automating processes and simplifying things. We integrate with multiple platforms across the board, and we've never had any issues. It's pretty seamless. Microsoft is at the forefront of databases, and everyone uses SQL. It's a reliable, solid platform.

Charley Hanania

Data Platform Specialist, QS2 AG – Quality Software
Solutions, technology services company,
1–10 employees

Microsoft Azure SQL Database is integrated into other Azure capabilities and has a great foundation, being based on SQL Server with a long history of security, performance and usability from a DBA perspective. Once you've set up a server, adding databases is easy... I'm looking forward to using some of these new AI-driven functions that have come out around vectorisation. Having the data closer to my transactional databases or data makes it easy to augment and enhance the database and applications that I currently use. It's great that Azure SQL now seamlessly integrates with Microsoft Fabric. It's a first-tier service in the cloud that connects to web applications and other databases. The data transformation orchestration capabilities within Database Factory and similar capabilities make it effortless to move things forward.

Availability for regulated environments

Enterprise AI applications are often used in regulated industries, where strict security and compliance are required. Azure SQL Database provides developers with built-in enterprise-grade security features, such as encryption, access controls, ledger capabilities and audit logging.

In addition, Azure SQL Database's built-in high availability ensures that AI applications maintain consistent service levels during peak usage or system maintenance.

Maanda Ambani

Senior AI Specialist, Nedbank,
10,000+ employees

Currently, SQL is our main database repository within the bank. All of our client data is stored on the SQL database and it's the main database that we use in the field. Most of our critical systems are on SQL databases.

For AI applications, reliability means more than uptime. Azure SQL Database Hyperscale scales compute and storage independently, accommodating data growth without compromising performance. High-speed query processing and low-latency data access help ensure consistent performance for demanding modern applications, regardless of size.

Security and highly powerful integration with analytics

Azure SQL Database's integration with Microsoft Fabric and Power BI enables developers to build comprehensive intelligence platforms that combine operational AI with analytical insights. Azure SQL Database also integrates with Microsoft Power Platform, which offers no-code/low-code tools for building apps, visualising data, automating workflows, creating external-facing websites and building AI agents. With these integrations, developers can deliver applications that support both real-time AI processing as well as historical analysis and reporting.

Ryan Park

System Architect, Sugar Creek Packing Co.,
1,001–5,000 employees

Microsoft Azure SQL Database has significantly improved our operations by allowing us to extract data and generate comprehensive reports in Power BI. This enables a high-level overview of our operations, which helps us look at the entire picture instead of just analysing individual orders line by line. This increased accessibility to data enhances productivity.

reviewer2596431

Software engineer, financial services company,
51–200 employees

My company is in the early stages of exploring Azure SQL Database's ability to power next-generation AI applications. We've tried AI Studio... Everything living in Azure makes it really easy.

The strength of Azure SQL Database for AI applications lies in its ability to bridge traditional enterprise data management with contemporary AI requirements. By unifying relational data with vector similarity searches and direct integration into Foundry Tools, developers can ground AI experiences in enterprise data without moving information across multiple platforms.

For teams operating in regulated industries or large enterprises with established SQL Server investments, Azure SQL Database provides a pathway to AI innovation that doesn't require abandoning existing skills, compliance frameworks or integration patterns. The result is often faster AI adoption with lower risk compared to greenfield approaches.

Azure Cosmos DB: AI-optimised serverless NoSQL and vector databases at any scale

Azure Cosmos DB addresses the primary challenges that developers face when building NoSQL applications – unpredictable workload patterns, low-latency retrieval and global scale.

Scalability and performance: auto-scaling, global distribution, low-latency reads/writes

Azure Cosmos DB's automatic scaling capabilities adjust to unpredictable AI workload patterns – from sudden inference request spikes to batch processing for model training. Azure Cosmos DB gives AI applications global reach, scaling across regions while preserving millisecond latency and reliable consistency.



Patrick Oguaju
Software Developer,
Next (retail),
10,000+ employees



Azure Cosmos DB offers us scalability. It saves costs because the system scales up when we have an enormous amount of data going in. Once we are back to low traffic, it scales down.

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Millisecond response times are essential for real-time AI applications like chatbots, recommendation engines and fraud-detection systems that must respond to user interactions immediately.

Michael Calvin

CTO, Kinectify,
fraud-detection company,
11–50 employees

The latency and availability of Azure Cosmos DB are excellent. We have single millisecond latency point reads, which are the majority of the queries that we run on our platform. So, it's an ultra-high-performance, ultra-high-throughput platform for managing data.

AI enablement: built-in vector search for RAG applications

Azure Cosmos DB's integrated vector storage and automatic indexing reduce the need to maintain separate vector databases, simplifying application architecture while also supporting advanced AI patterns. The platform supports high-dimensional vector operations, full-text and semantic search, and traditional document queries within the same API calls.

Developers building RAG applications can store documents, generate embeddings through Azure OpenAI in Foundry models and execute semantic searches without managing data synchronisation between multiple systems.

Jeff Yeh

Senior Manager, eCloudvalley,
computer software company,
201–1,000 employees

The integration of the [Azure Cosmos DB] vector database into Foundry Tools is significant. Currently, we employ vector search logic alongside traditional full-text search methods in most of our applications. It is easier for applications to retrieve those search results.

Developer agility: build faster with familiar tools

Azure Cosmos DB provides developers with multiple API options, including a native JSON document (NoSQL) API designed for millisecond read/write operations and integrated vector search. Developers also have the option to use the vCore-based MongoDB-compatible API, powered by the open-source DocumentDB project. Teams can use familiar programming patterns while accessing advanced AI capabilities, reducing the learning curve when migrating applications or integrating AI features. Comprehensive SDK support for languages such as Python, Node.js and Java enables developers to work with their preferred languages and frameworks, accelerating prototyping and application development.

Vector-indexing optimisations help similarity searches execute efficiently even with millions of embeddings, supporting production-scale AI applications without performance degradation. Azure Cosmos DB for NoSQL supports multiple vector index types for billion-scale search. DiskANN in Azure Cosmos DB for NoSQL delivers high-speed and highly accurate large-scale vector search by storing most of the index on disk instead of in the memory, enabling low latency and cost-efficiency for AI workloads.

Bhaskar Bhatt

GenAI, Data Digital Products Strategy & Transactions
Transformation Leader, Ernst & Young,
10,001+ employees

Cosmos DB improved our search result quality. Our response's accuracy rate is higher than 85%, which is remarkable for such a large volume of data. We are searching several terabytes of data, and our harmonised data layer is substantial. We get data from multiple global data providers... The entire framework is built on Python. We have both structured and unstructured data pipelines. There are multiple layers to our architecture, but Cosmos DB is the main one.

Chander Dhall

CEO, Cazton,
201–500 employees

It is very easy and very simple now, given all the improvements, but it is also designed very well. And because we specialise in it, it is the easiest thing on our side. Data modelling is much easier than in SQL and other databases. The learning curve is a lot smaller than a typical RDBMS. It is very similar to code, and that is another benefit. Developers love it because you don't have to learn something new.

Serverless options are particularly ideal for AI applications with unpredictable usage patterns, combining instant scalability with consumption-based efficiency.

Yoni Nijs

CTO, Zero Friction,
11–50 employees

We could see its benefits immediately after we deployed it. It became clear that it is very accessible and very user-friendly. It is a managed service. It is not like you set up an SQL database and have to manage everything yourself. As a managed service, you automatically have global distribution. You tick a box, and you have a globally distributed database with high availability and continuous back-ups set up.

For AI developers building applications that need to scale unpredictably – from experimental prototypes to global production systems – Azure Cosmos DB's combination of developer familiarity, built-in intelligence and instant global reach provides a strong foundation. The platform's ability to handle both operational workloads and AI processing within the same service reduces the architectural complexity that often slows AI application development.

Time to market: accelerating MVP development

Azure Cosmos DB's managed service model reduces infrastructure management overheads. Developers can focus on building AI features rather than managing database clusters, replication and scaling.

Michael John Peña

Director, Data & AI, Playtime Solutions,
11–50 employees

We achieved a strong return on investment.

Using Azure Cosmos DB enabled us to bring a project to the MVP stage in six weeks.

With one recent application that we had, if we had used another approach, the project could have taken six months in an enterprise setting where everything is slow and challenging. Getting an MVP of that project would have taken six to eight months, but because we had an active choice of using Azure Cosmos DB and the other related cloud-native services of Azure, we were able to get to an MVP stage in a matter of weeks. That was a very measurable impact. If we used another route, just defining the tables, entities and other things would have taken us a significant amount of time. We had already identified base entities. We knew that we could add more columns or remove some columns as the project evolved. This gave our project agility. We do not have to look at it periodically. I don't get support calls that our application is down.

AI application patterns with Azure databases

RAG with Azure Cosmos DB and Azure OpenAI

RAG is one of the most popular AI application patterns, enabling developers to ground large language models in specific domain knowledge. Azure Cosmos DB's integrated vector search simplifies RAG implementation by reducing the need for separate vector databases.

Developers can store documents in Azure Cosmos DB, generate embeddings via Azure OpenAI, store embeddings alongside the original documents and perform similarity searches to provide relevant context in language model prompts.

AI agents are another popular AI use case. To operate efficiently, agents often need a persistent, high-performance memory and knowledge store. Azure Cosmos DB plays that role by storing and retrieving the structured, unstructured and vectorised data that agents use to reason, plan and act.



Joel Hulen

Lead Cloud Architect,
Solliance, Inc.,
1–10 employees



Microsoft Azure Cosmos DB has helped improve the quality of our organisation's search results in a several cases. In one case, the improvement is when we are using the vector store. And in another, we used it alongside Azure AI search. Indexing the data within Microsoft Azure Cosmos DB in that search service works well.

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reviewer2724105

Product Management Leader, Sitecore,
1,001–5,000 employees

Microsoft Azure Cosmos DB has reduced our total cost of ownership significantly, allowing us to sell our product at extremely competitive pricing, and Microsoft Azure Cosmos DB is the main reason why that's true. Super sharp latency and excellent availability are one of the best parts of Microsoft Azure Cosmos DB because the challenge that we wanted to address with the built-in vector database was content discovery. Content discovery is a really difficult problem in content management, and being able to find relevant content is a large-scale problem. We are using Microsoft Azure Cosmos DB for semantic search and to provide AI capabilities that go beyond simple vector search. We are extremely pleased with the AI services in Microsoft Azure Cosmos DB, notably their hybrid search feature, which combines AI search with full-text search to deliver an excellent mix of search results.

Daniel Amini

Head of Cloud, Data and AI, BJSS (now part of CGI),
1,000–5,000 employees

PostgreSQL is acknowledged as an incredibly powerful industry leader. We've built critical pieces of national infrastructure in the UK that rely on Postgres. A version of Postgres on Azure that's easy to adopt has enabled us to innovate. The addition of AI extensions is even more exciting. It's a significant opportunity for us... The OpenAI integration and extensions have massively simplified integrating AI into a database. Azure Database for PostgreSQL's native vector capabilities are also incredibly powerful.

AI-powered personalisation using Azure Database for PostgreSQL and vector extensions

Personalisation systems require databases to handle both user behavioural data and product/content embeddings for similarity matching. Azure Database for PostgreSQL with pgvector enables developers to build recommendation engines combining SQL-based filtering with vector similarity search. This allows applications to filter items based on business rules (availability, pricing, category) and then rank the results using their semantic similarity to user preferences.



Johnny Halife

CTO, Southworks,
201–500 employees



One of the scenarios in which we have used the MongoDB driver on Microsoft Azure Cosmos DB was an AI project with the NFL. It was called the NFL Combine Copilot, and we needed to ground data and provide real-time insights to scouts and coaches on the sidelines. It had to be fast and precise, as there are significant stakes involved. The experience was fantastic in terms of performance. One of the most critical aspects was that there was no margin for error – it's five days in February with 350 athletes and 32 NFL teams present. It needs to work, scale, be precise and bring the required results, or you have to wait a year. This has been one of the areas where we have pushed it to the limit regarding availability, scalability and the whole concept of search and grounding for AI applications. Using Microsoft Azure Cosmos DB and getting started with it is super straightforward... With the current AI wave, the built-in vector database capability of Microsoft

Azure Cosmos DB for model grounding or the RAG pattern is crucial. Previously, we had to consider alternatives, such as Pinecone and other third-party software, dealing with all the problems of designing, scaling and maintaining the database. Microsoft Azure Cosmos DB enabling this feature allows us to use it out of the box with familiar tools and context, along with the benefits of its scalability and elasticity, providing excellent support for the highly relevant RAG pattern for AI search. We have developed several AI scenarios, one of which was recently highlighted in Gartner research. This scenario involves discovering multimodal media within the context of sports, showcasing how organisations like the NBA and NFL use Azure to locate specific pieces of content through interaction with an agent. This was built using the integrated Azure Cosmos DB vector database functionality.

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Li Tse Liu

Product Manager, financial services company,
5,001–10,000 employees

We use [Azure Database for PostgreSQL] as a RAG database. It coordinates our chunks and connects them with the embedded model to organise them into high-dimensional space. The performance of our RAG application is very good. We have 96% satisfaction. It facilitates AI technology adoption by coordinating chunks and connecting them with the embedded model. We are a bank. Our information is mainly stored in an SQL database. Azure Database for PostgreSQL offers a way for our colleagues to quickly understand vector search by using the combination of RDB and the vector search extension. This means that we do not have to learn vector databases at the beginning. We can simply turn on the extension, and it has the vector search immediately.

Predictive analytics with Azure SQL Database and T-SQL AI integration

Enterprise applications often require predictive capabilities integrated directly into operational workflows. Azure SQL Database enables developers to deploy machine-learning models as stored procedures for real-time scoring within transactional applications.

This pattern is useful for applications like fraud detection, dynamic pricing or inventory optimisation which make predictions based on real-time operational data.

Maanda Ambani

Senior AI Specialist, Nedbank,
10,000+ employees

Our migration to Azure for most databases has increased our organisation's efficiency and reduced the maintenance required to manage on-premises infrastructure. With on-premises infrastructure, you have to build and maintain your set-up. It has reduced our downtime. We've improved our productivity because we can automate database deployments and script execution within the database.

Hybrid architectures with event-driven and streaming AI

AI applications often combine multiple databases and processing patterns to handle different aspects of intelligent systems. Developers can use Azure Cosmos DB's change feed to trigger AI processing pipelines, Azure Database for PostgreSQL for analytical processing and Azure SQL Database for operational intelligence.

By supporting each workload natively, Azure databases eliminate the need for complex integrations between separate systems, reducing development time and operational overhead while increasing reliability. For AI developers, this means more time spent on model development and application logic rather than infrastructure plumbing.

reviewer2595687

cloud engineer, Meijer,
10,000+ employees

We primarily use Microsoft Azure Cosmos DB as a transactional data store and for some event-driven applications. We use the change feed and the function app triggers a lot. MPerks, our customer loyalty application, uses it. It has become our go-to database.

Czesław Szypuła

Architect of Business Intelligence Solutions, Nestlé,
10,000+ employees

[Azure SQL Database] is user-friendly. Compared to other solutions, it's based more on clicks, not on scripts. It's easy to manage... We use this solution for analytics and business intelligence. The solution is deployed on-premises and in the cloud... There are tens of thousands of users.

Developer experience: Build fast, scale faster

The importance of choosing the right database

The choice of database platform fundamentally shapes how AI developers approach their daily work. Beyond individual database features, the development workflow – from initial prototype to production deployment – varies significantly across database platforms, affecting everything from the complexity of debugging to team collaboration patterns.

Relational databases store data in tables with rows and columns, whereas NoSQL databases store data as JSON documents. Depending on the database chosen, developers either work with a fixed schema or manage the data structure within the application code (schema-less development).



it_user660030

Data Management Architect,
healthcare company,
201–500 employees



I consider SQL Azure the leader for cloud-based RDBMS solutions, far ahead of any other cloud-based RBMS offering. Where I have structured data, SQL Azure is my de facto storage tier.

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Microsoft SDKs are available for Azure Cosmos DB, Azure Database for PostgreSQL and Azure SQL Database. The following Kinectify quote refers to Microsoft SDKs built for Azure Cosmos DB, but similar results are possible with Azure Database for PostgreSQL or Azure SQL Database.

Michael Calvin

CTO, Kinectify,
11–50 employees

I've built tools around the Azure Cosmos DB SDKs that make them incredibly easy to use.

My team had no learning curve and could leverage our shared libraries. It took me less than a week to achieve a production-quality implementation for accessing and saving data within a platform.

Debugging and observability in AI applications

AI applications present unique debugging challenges that are often not addressed by traditional database tooling. Vector similarity results, embedding generation performance and AI model-inference bottlenecks require specialist observability approaches that vary significantly between platforms.

Azure Database for PostgreSQL's extensive logging and query analysis tools help developers understand both SQL query performance and vector search behaviour within the same debugging session. This unified troubleshooting experience is particularly beneficial for AI applications that combine traditional queries with semantic search operations.

Li Tse Liu

Product Manager, financial services company,
5,001–10,000 employees

It [Azure Database for PostgreSQL] facilitates AI technology adoption by coordinating chunks and connecting them with the embedded model.

Daniel Amini

Head of Cloud, Data and AI, BJSS (now part of CGI),
1,000–5,000 employees

My team speaks highly of the platform's observability and monitoring features. It's as efficient as an enterprise needs it to be and has all the tooling and telemetry necessary to run an enterprise database.

Team collaboration and knowledge transfer

The learning curve for different database platforms affects not only individual productivity, but also team dynamics and knowledge sharing.

Azure SQL Database's familiar tooling enables teams to onboard new developers quickly, while Azure Cosmos DB's multiple API options allow teams with different backgrounds to effectively contribute to the same project.

Fredrick Weinschenk

Cloud Engineer, Med Tech Solutions,
51–200 employees

Azure SQL Database deployment was straightforward, and the overall experience was very positive. I feel like I could do SQL migrations blindfolded. We onboard a lot of clients that have as many as 1,500 users.

reviewer1606569

Founder, tech services company

I would recommend Azure SQL Database. We're very happy with what we have. It is very familiar because of our experience with the on-premises SQL Server. If you are used to working with SQL Server, it is a natural progression.

Development methodology alignment

Different Azure databases align with different development methodologies and team structures. Agile teams building AI prototypes often gravitate towards Azure Cosmos DB's schema flexibility, while enterprise teams with established DevOps practices may prefer Azure SQL Database's integration with existing CI/CD pipelines. Both emerging and established developer teams looking for the familiarity, flexibility and extensibility of open source tools may favour Azure Database for PostgreSQL.

The choice of database platform increasingly influences development velocity, not through individual features but through how well the platform aligns with team skills, project timelines and architectural preferences. This alignment often matters more than raw performance specifications when determining real-world development success.

Matthew Spieth

Sr Database Administrator, ECU Health,
10,000+ employees

I like to describe [Azure Cosmos DB] as a programmer's database. .NET developers, in particular, can design and work with the data easily because it's schema-free, and developers really love Cosmos DB because of its schema-free nature and the freedom it offers. Cosmos is widely used for web applications. You can also use it for inventory management and IoT solutions... there are loads of different applications.

Manikyam Thukkapuram

Director, Alliances & Engineering, Quadrant Technologies,
1,001–5,000 employees

We moved from Oracle to [Azure Database for] Postgres due to the latter's feature set and open-source advantages.

Why customers choose Azure databases for AI

Competitive differentiation through data strategy

In evolving AI markets, database choice often determines competitive positioning. Companies that can iterate faster on AI features, deploy globally without latency penalties and integrate new AI capabilities without architectural rewrites maintain advantages that compound over time.



Manikyam Thukkapuram “
Director, Alliances & Engineering,
Quadrant Technologies,
1,001–5,000 employees

The effective integration of Postgres with Microsoft products, and especially the inclusion of AI features in Azure AI, is significant for our applications. [Azure Database for] Postgres is not just a database but includes robust AI features that aid in innovation and competitiveness.

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Risk mitigation in AI investments

AI projects carry inherent technical and business risks. Database platforms that reduce these risks – through managed service reliability, compliance certifications and supplier stability – enable teams to focus resources on differentiated AI capabilities rather than infrastructure concerns.

Fabricio Noriega

Software Architect, Dynaxti,
1–10 employees

Microsoft Azure SQL Database runs naturally, allowing us to use it as a service without worrying about infrastructure or deploying servers... Azure SQL Database offers strong performance, effectively managing tasks like tuning and indexing, which eliminates manual optimisation and frees up our time for other priorities. Azure SQL Database has significantly reduced our total cost of ownership. By utilising it as a service, we have eliminated the need for physical servers and their redundant counterparts, which were previously necessary.

Strategic platform alignment

The decision to standardise with respect to Azure databases often reflects a broader strategic commitment to Microsoft's AI ecosystem. Companies investing in Azure OpenAI, Foundry Tools or Foundry find that database integration multiplies the value of these investments by reducing overheads and enabling more sophisticated AI architecture.

Maria Pallante

EVP, Technology Solutions, Bond Brand Loyalty,
1,001–5,000 employees

The most valuable aspect of Cosmos DB is its performance. It serves as the foundation for OpenAI's infrastructure, providing us with similar functionality. This not only prepares us for AI use cases but also efficiently supports our loyalty use cases. We can share information with our customers and deliver experiences without concern about performance.

Tiago Duarte

CTO, Stellium Consulting,
11–50 employees

The recent addition of vectorisation and similarity comparisons add values for AI workloads. The performance and scalability of Cosmos DB are excellent, allowing it to handle large workloads compared to other services... Cosmos DB performs exceptionally well and has not caused any issues that require node adjustments for enhanced performance.

Future-proofing AI application development

Technology leaders choose Azure databases not only for their current capabilities, but also for Microsoft's commitment to AI innovation. The platform's ability to introduce new AI capabilities – from emerging model types to novel search algorithms – without requiring application rewrites offers protection against rapid AI evolution.

What distinguishes Azure's approach is the recognition that AI applications require more than just database functionality – they need an ecosystem of connected services. The integration between databases, AI services, development tools and global infrastructure creates a multiplier effect that individual capabilities cannot achieve alone. This ecosystem approach explains why developers often report faster AI deployment cycles and better production outcomes when building on Azure's database foundation.

Sergio Cortez

CIO, Caja de Ahorros (Panama),
1,001–5,000 employees

Azure SQL Database's integration with AI applications will be beneficial because all the Azure AI applications are in the cloud, making it seamless. You don't need to connect to any on-premises or external sources to address integration. It will also speed up our data processing. SQL's native connectivity and efficiency in scaling workloads are highly beneficial, and the ability to integrate seamlessly with other Microsoft applications adds significant value.

Conclusion: the Azure advantage for AI applications

Azure's operational database portfolio is uniquely positioned to support real-world AI

Azure's database portfolio provides AI developers with purpose-built platforms that combine operational reliability with advanced AI capabilities. Rather than forcing developers to choose between traditional databases and AI-specific tools, Azure databases integrate both within unified platforms.

Each database platform serves specific AI application patterns while maintaining compatibility with Azure's broader AI ecosystem. This approach ensures that developers can choose the best database for their particular requirements while still accessing consistent AI capabilities across the platform.

Customers see success through ease of use, innovation velocity and scalable intelligence

PeerSpot user testimonials consistently highlight three key advantages of Azure databases: simplified development processes, accelerated time-to-market and the ability to scale AI applications globally. These benefits are the result of Azure's integrated approach to AI and database services.



Kunal Mukerjee

Vice President, Technology,
Strategy & Architecture, Docusign,
1,001–5,000 employees



"[Azure Cosmos DB] is integral to our business because it helps manage schema and metadata for all our documents and customers. The AI insights we glean based on Azure OpenAI also end up in Cosmos DB. We need a NoSQL store because the schema is dynamic and flexible, so Cosmos DB is a great fit. It has four nines, or possibly five nines, availability, excellent geo-distribution and auto-scaling. Cosmos DB has improved search result quality, throughput and query latency. There are trade-offs to finding the sweet spot among all of these. Having a NoSQL solution that can do that in a 100% Azure shop is the best fit we could want.

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Developers have reported significant reductions in development time and infrastructure complexity, allowing them to focus on building innovative AI features rather than managing database operations.

Choose the right engine for the right job – and bring AI to life faster

The key to successful AI application development is found in matching database capabilities to specific use-case requirements:

Azure Cosmos DB is built for applications requiring global distribution, automatic scaling and integrated vector search capabilities. It's ideal for RAG applications, real-time personalisation and event-driven AI systems.

Azure Database for PostgreSQL provides the best solution for teams that prefer an open-source database while requiring enterprise reliability. It's optimised for intelligent, AI-powered applications, with native AI capabilities integrated directly into the database layer. These capabilities include vector search, Azure AI extension, LangChain integration and AI Agents support.

Azure SQL Database best serves enterprise applications requiring familiar SQL interfaces, regulatory compliance and integration with existing Microsoft tooling. It's optimal for adding AI capabilities to traditional enterprise systems.

All three platforms share common advantages: built-in AI capabilities, seamless integration with Foundry Tools, managed service benefits and the ability to handle both operational and AI workloads within unified architectures.

The future of AI application development lies in platforms that reduce the traditional boundaries between operational databases and AI infrastructure. Azure's database portfolio provides a trusted, integrated foundation, helping developers build intelligent applications that scale globally while maintaining the reliability and consistency required for production systems.

By choosing Azure databases for next-generation AI applications, developers gain access to proven platforms that accelerate development cycles, reduce infrastructure complexity and deliver global scalability. The testimonials and experiences shared by users on PeerSpot demonstrate the practical benefits and real-world successes that teams achieve when building AI applications on Azure's database foundation.

About PeerSpot

PeerSpot is the authority on enterprise technology buying intelligence. As the world's fastest-growing interview platform dedicated to enterprise technology, with over 3.5 million enterprise technology visitors, PeerSpot enables 97 of the Fortune 100 companies to make technology-buying decisions. Technology suppliers understand the importance of peer reviews and encourage their customers to be part of our community.

PeerSpot helps suppliers to capture and utilise authentic product feedback in the most comprehensive way, assisting buyers when conducting research or making purchase decisions, as well as helping them to use their voice of customer insights in other educational ways throughout their business.

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About Azure Databases

Azure databases are equipped to power the next era of applications – at any scale, anywhere. Our fully managed database services are built for developers, database administrators and data professionals, who need intelligent, integrated and trusted solutions to accelerate innovation. With built-in AI capabilities, hyperscale performance and seamless integration across open-source and Microsoft technologies, Azure databases enable teams to focus on application development rather than database management.

We deliver industry-leading security, compliance and reliability, while supporting modern workloads with features like Copilot assistants, vector search and deep integration with Azure AI and analytics. Our commitment to sustainability and flexibility ensures that organisations can build, scale and modernise with confidence, driving better business outcomes in today's data-driven world.

[Learn more about building and scaling your AI apps with Azure managed databases.](#)