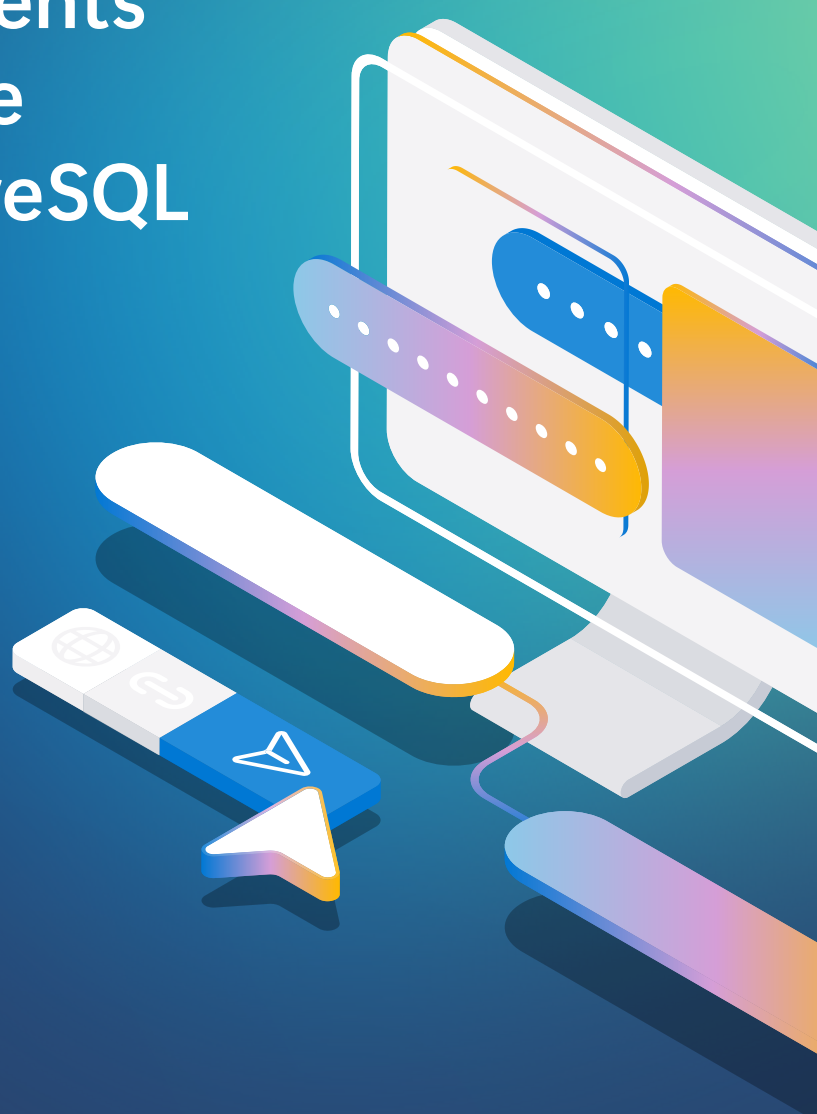


Build Smarter AI Agents and Apps with Azure Database for PostgreSQL

Azure Database for PostgreSQL empowers you to build scalable, performant and accurate AI agents and applications with confidence. It supports seamless development of Information Retrieval (IR) systems for AI agents as well as traditional and advanced Retrieval Augmented Generation (RAG) applications with knowledge grounded in structured, unstructured or graph data stored in the database. Through integrations with agentic frameworks, such as LangGraph, LlamaIndex, Azure AI Foundry and Semantic Kernel, developers can easily build intelligent systems that retrieve and reason over business data.

Additionally, Azure Database for PostgreSQL can serve as a memory store for agents capturing context, preferences, and interactions.

You can unlock the full potential of agent-based development and information retrieval with Azure Database for PostgreSQL.

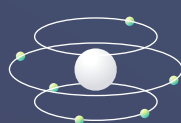


Seamless, scalable, performant and accurate information retrieval for Agents and RAG



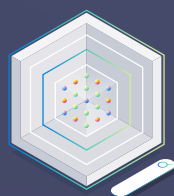
Vector search with pgvector

Azure Database for PostgreSQL supports the pgvector extension, which allows you to store high-dimensional vectors and query them by similarity. This tight integration of relational data and vector-based retrieval reduces complexity and latency for your RAG pipelines.



Built-in AI capabilities with azure_ai extension

Azure AI extension empowers Azure Database for PostgreSQL users to bring the power of LLMs to their business data by providing seamless integration with Azure OpenAI, Azure Cognitive Services, Azure ML, and other Azure AI services. The extension also offers Semantic Operators that help you go one step beyond vector search by bringing advanced GenAI functionality directly into PostgreSQL queries.



Enhance scalability with DiskANN vector indexing

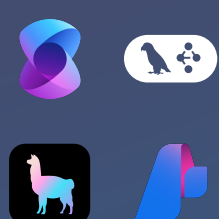
Azure's unique algorithm indexes vectors by storing data partly on disk and caching in memory, enabling fast, low-latency semantic searches over billions of vectors while minimizing memory use and cost. DiskANN outperforms methods like HNSW on large datasets to deliver 10x speed at 4x lower cost and supports integration with PostgreSQL filters.



Improve accuracy with GraphRAG and Semantic Operators

GraphRAG enables agents and applications to reason over knowledge graphs by integrating graph construction, storage, and querying directly within PostgreSQL. The extract() semantic operator in the azure_ai extension simplifies graph creation, while the Apache AGE extension provides native graph storage and querying via OpenCypher. For full automation, the Microsoft GraphRAG library offers an alternative path to build and consume graphs seamlessly.

Semantic Operators empower developers to harness the capabilities of LLMs directly within PostgreSQL queries. Available through the azure_ai extension for Azure Database for PostgreSQL, these operators unlock semantic relationships in operational data to deliver more accurate results without relying on external orchestration layers or services.



Support for leading agentic orchestration frameworks

Seamless integration with the leading Agentic orchestration frameworks, such as Semantic Kernel, LangGraph, LlamaIndex, and Azure AI Foundry, simplifies development of multi-agentic architectures and orchestration by providing patterns and libraries for creating AI agents so you don't have to build them from scratch. Test it out at aka.ms/agentic-shop



Integration with the latest protocols

Azure is also at the forefront of new standards like the Model Context Protocol (MCP). Azure MCP Server exposes Azure Database for PostgreSQL to AI agents to safely execute queries on the PostgreSQL database when needed through a consistent interface. This greatly simplifies connecting agents to enterprise data in a governed manner.

Streamlined workflows to speed agentic and AI app delivery

Microsoft's PostgreSQL extension for Visual Studio Code, now enhanced with GitHub Copilot capabilities for PostgreSQL, redefines how developers build intelligent, agentic applications. By embedding PostgreSQL context and AI-powered assistance directly into the IDE, this extension eliminates the friction of context-switching and empowers developers to query databases, explore schemas, optimize performance, and even generate SQL—all within the familiar VS Code environment.

Real gains for real-world dev teams:

- Faster iterations with natural language prompts in familiar environments.
- Reduced ramp-up thanks to Copilot guidance and intuitive visual tooling.
- Secure collaboration with Entra ID-based access.

Azure Database for PostgreSQL is more than a fully managed, enterprise-grade database—it's a launchpad for building intelligent, AI-powered agents and applications. By combining the flexibility of open-source PostgreSQL with Azure's robust AI and cloud-native capabilities, developers can accelerate innovation without compromising on performance, security, or scalability.

Get started today.