CIO BRIEF

EDB Postgres® AI Agent Factory

Solving the 10 systemic barriers to enterprise AI at scale

Why AI initiatives stall

For CIOs, the promise of AI is clear: improved decision-making, automation at scale, and new revenue opportunities. Yet the reality is more complex. While many organizations have successfully experimented with AI, far fewer have been able to operationalize it at scale.

The reason is not model capability. It is the emergence of system-level challenges that traditional data and application architectures were never designed to address. AI systems are fundamentally different: They are probabilistic, stateful, and dependent on continuous coordination between data, memory, models, and workflows.

As organizations attempt to scale AI, they consistently encounter the same 10 challenges, ranging from inconsistent agent memory and degraded retrieval quality to governance risks and lack of observability. These issues compound quickly, turning promising prototypes into unreliable systems that cannot be trusted in production.

EDB Postgres AI (EDB PG AI) Agent Factory—the complete Postgres-native solution for building, testing, and deploying sovereign AI agents—addresses these challenges holistically by embedding solutions directly into a unified, Postgres-native platform, eliminating fragmentation and enabling production-grade AI systems.

From AI capability to AI competency

What AI competency means in practice is evolving. The most forward-looking deployments are moving beyond isolated tools toward an agentic workforce—AI systems that handle extended, multistep work across the same operational environments human teams use every day.

For CIOs, this creates a new architectural responsibility. Agentic systems require persistent memory, live operational data, and runtime governance—infrastructure that query-and-response systems were never designed to provide.

EDB PG AI is built to address this gap. It unifies the persistent memory, live data access, and runtime governance that agentic AI requires within a single Postgres-native platform.

Why now

Ninety-five percent of enterprises globally want to be their own AI and data platforms in the next 780 days. The urgency for solving these challenges is increasing. AI is moving from a competitive advantage to a baseline capability, and organizations that fail to operationalize AI will fall behind.

At the same time, regulatory pressures are intensifying, particularly around data sovereignty and security. Organizations must ensure that AI systems are not only effective but compliant.

Finally, the complexity of AI systems is growing. As organizations adopt multi-agent architectures and integrate AI into core business processes, the need for a unified system becomes critical.

The strategic problem: Fragmentation prevents scale

Most enterprise AI architectures are assembled from multiple components: vector databases, orchestration frameworks, model APIs, and external data pipelines. While each component may be effective in isolation, the overall system becomes fragmented.

This fragmentation introduces latency, inconsistency, and operational complexity. Data must move between systems, increasing both cost and risk. Observability is incomplete, making failures difficult to diagnose. Governance becomes harder to enforce, particularly in regulated environments.

The result is a structural limitation: Organizations can experiment with AI, but they struggle to scale it reliably.

The Agent Factory approach: Unifying the system control + reducing complexity + consistency

EDB PG AI resolves this by unifying all core AI components within a single system boundary. Data, vector search, orchestration, model interaction, and governance are all integrated into PostgreSQL, eliminating the need for external systems.

This architectural approach delivers three key advantages:

1. It **ensures consistency**. All components operate on the same data and state, eliminating synchronization issues.
2. It **reduces complexity**. By removing the need for multiple tools and integrations, it simplifies operations and reduces cost.
3. It **enables control**. Organizations retain full ownership of their data and AI workflows, ensuring compliance and security.

Solving the 10 critical challenges

The value of EDB PG AI becomes clear when examining how it addresses the 10 systemic challenges that prevent AI from scaling.

Challenge	Why it matters to CIOs	How EDB PG AI solves it	Business outcome
State management and memory	Inconsistent outputs reduce trust	Unified relational and vector persistence in Postgres	Reliable, context-aware AI behavior
Retrieval quality and drift	Poor reasoning, degrading decisions	Native vector engine with versioning and reindexing	Sustained accuracy over time
Data freshness	Outdated outputs, creating business risk	Real-time access to operational data; no external pipelines	Decisions aligned with current state
Tool orchestration	Workflow failures, disrupting operations	Built-in orchestration with retry and execution tracking	Reliable automation at scale
Prompt/policy injection	Security vulnerabilities, exposing data	Runtime policy enforcement and data-layer controls	Secure AI operations
Model routing and cost	Uncontrolled costs and inefficiency	Dynamic model routing and cost-aware execution	Optimized AI spend
Determinism and testing	Difficulty validating and debugging AI systems	Full versioning and traceability of workflows	Reproducible, testable AI
Multi-agent coordination	Inefficiency and system instability	Centralized orchestration and shared state	Scalable agent collaboration
Observability and debugging	Lack of visibility, slowing resolution	End-to-end tracing and telemetry	Faster troubleshooting and optimization
Governance and security	Compliance and data leakage risks	Native Postgres governance extended to AI workloads	Enterprise-grade compliance

Business impact: From AI experiments to AI systems

By solving these 10 challenges at the architectural level, EDB PG AI enables organizations to move beyond experimentation and into production-scale AI.

Time to value is significantly accelerated. McKnight Consulting Group found organizations compressed development timelines from 28 to 9 weeks—a 67% reduction—with 38% lower long-term maintenance costs.

Operational efficiency improves. Everest Group research found this approach reduces AI workflow complexity by more than 55% and eliminates more than 90% of integration steps.

Risk is reduced through embedded governance and security. By keeping all AI data within Postgres, organizations avoid introducing new security boundaries and ensure compliance with regulatory requirements.

Cost is optimized through efficient model routing and reduced infrastructure overhead. The Everest Group analysis shows organizations achieve 50% better total cost of ownership versus using fragmented architectures.

Why EDB PG AI wins

EDB PG AI succeeds because it addresses the root cause of AI failure: fragmentation. Instead of adding more tools, it removes the need for them by providing a unified platform.

It enables organizations to:

- Build AI systems directly on the existing data foundation
- Eliminate data movement and integration overhead
- Maintain full control over data and governance
- Scale AI reliably across the enterprise

Most important, it transforms AI from a collection of experiments into a **production-grade system capability**.

EDB Postgres AI: The sovereign data and AI platform for the agentic enterprise

EDB PG AI brings together a unified data layer, governance, sovereign control and orchestration, and an agent runtime environment, giving enterprises a trusted foundation for AI on infrastructure they own and control. The platform unifies transactional, analytical, and AI workloads in a single Postgres-based architecture—eliminating ETL, data movement, and operational fragmentation. And you choose where and how to deploy: on-premises, cloud, managed, or certified appliance.

The outcome: production-ready sovereign AI in days or weeks, not months.

EDB POSTGRES AI

EDB Postgres® AI (EDB PG AI) is the sovereign data and AI platform for the agentic enterprise. Built on Postgres, the world's leading open source database, EDB PG AI unifies transactional, analytical, and AI workloads in a single governed architecture, on-premises and across clouds. To learn more, visit www.enterprisedb.com.