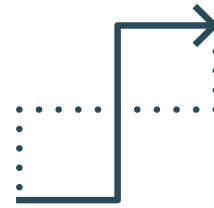


TECHNICAL BRIEF

Agentic Migrations in EDB Postgres® AI

Eliminate the last-mile complexity of enterprise database migration



Database migration has historically been constrained by the inability of available tools to resolve the most complex aspects of system transition. While schema extraction and data movement are well understood, the failure point consistently occurs in the final stages of migration, when incompatibilities in PL/SQL code, schema conversation gaps, and application dependencies require extensive manual intervention.

These “last-mile” challenges introduce unpredictability into migration timelines and create a dependency on specialized expertise that does not scale across large estates.

The EDB Postgres AI (EDB PG AI) agentic migrations capability addresses this constraint by replacing traditional, manual migration efforts with an AI-orchestrated migration process run entirely within your controlled environment. The result is a migration path that is measurably faster, materially less complex, and architecturally compatible with the compliance requirements of regulated industries. Enterprises gain a direct route from legacy Oracle and cloud-locked databases to a production-ready, AI-ready Postgres platform.

The core technical challenge: Last-mile migration complexity

From a systems perspective, database migration is not a monolithic task; it is a sequence of tightly coupled transformations across multiple layers of the stack. The initial phases, including schema extraction and baseline compatibility analysis, can often be managed using conventional tools.

However, the complexity increases significantly when addressing differences in procedural logic, execution semantics, and application code. Often the result is a failed migration attempt.

The most significant technical challenges can be categorized into three domains: procedural code transformation, schema compatibility resolution, and application-layer dependency alignment. Each of these domains introduces nontrivial issues that cannot be resolved simply.

Technical domain	Failure mode	Root cause
Procedural code (PL/SQL)	Incomplete or incorrect conversion	Semantic differences between Oracle PL/SQL and PostgreSQL PL/pgSQL
Schema compatibility	Invalid or suboptimal structures	Divergence in data types, indexing strategies, constraints, and DDL semantics
Application layer	Runtime failures in testing or post migration	Tight coupling to database-specific behavior premigration
Data movement	Inconsistencies, production downtime	Lack of coordinated orchestration
Validation	Undetected defects	Absence of automated verification mechanisms

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Traditional migration pipelines treat these domains as loosely connected stages, requiring engineers to manually bridge gaps between tools at every handoff. This results in a fragmented workflow, and each stage introduces additional complexity and potential for error compounding over time. A short-term project turns into a multiyear effort.

The EDB PG AI model: AI-assisted orchestration

With agentic migrations, EDB PG AI is designed to minimize manual intervention while enabling migrations at enterprise scale. This architecture differs fundamentally from traditional pipelines in that it is iterative rather than linear, enabling continuous optimization throughout the migration process.

Execution flow: From assessment to validation

Bulk assessment

Before any migration begins, organizations need a clear, data-driven picture of what they are working with. For large enterprises managing hundreds of Oracle databases distributed across multiple data centers, manual assessment is not practical—planning alone can consume months of DBA time without a single database being moved.

EDB PG AI addresses this by running parallel assessments across the entire database estate simultaneously. The platform registers multiple source databases and evaluates each one for schema compatibility and migration complexity, so users can prioritize accordingly.

EDB PG AI delivers:

- Automatic evaluation of schema compatibility and migration complexity across every registered database
- Identification of the easiest migration targets, enabling teams to capture early wins and build internal momentum before tackling more complex workloads
- A data-driven migration strategy that replaces months of manual planning with an instant estate-wide view
- Destination database creation directly within the platform, so teams can begin migration immediately after assessment

With EDB PG AI, organizations can produce an accurate migration roadmap in days rather than months. Teams know what to migrate first, how complex each workload is, and what the overall effort will cost—before writing a single line of code.

Application layer assessment

Schema-level assessment reveals structural incompatibilities, but it does not expose the full risk profile of a migration. Application-layer dependencies are frequently the source of failures that only appear in testing or after cutover.

EDB PG AI extends the assessment phase beyond schema analysis to evaluate how the application layer interacts with the database through SQL calls. This surfaces compatibility issues at the SQL API level where migrations most commonly fail: stored package/procedure/function calls and other Oracle-specific SQL constructs the application uses that generic database migration tools are completely unaware of.

EDB PG AI delivers:

- Analysis of Oracle-specific SQL and PL/SQL constructs used by the application layer
- Identification of constructs that require transformation before migration can proceed
- Surfacing of incompatibilities with clear context so teams can make informed decisions about remediation priority
- Guidance via the Migration Portal AI Copilot to resolve issues identified during this phase

By identifying application-layer risk earlier in the migration process, teams can address the issues most likely to cause post-migration failures before testing begins.

Schema and data migration

Many migration projects stall at schema and data migration. Generic tools handle straightforward DDL conversions, then leave the complex code rewrites, stored procedure conversions, and compatibility issues to the DBA team. EDB PG AI approaches this differently: The Migration Portal automates the work that consumes the most time, and AI Copilot provides expert guidance for the issues that require human judgment.

The built-in Migration Portal analyzes Oracle schemas and applies a set of repair handlers to address common schema incompatibilities automatically. This includes conversion of DDL constructs, data type mappings, and schema-level code fixes that would otherwise require manual DBA intervention. The result is a reduction in manual code rewrites, with 95% compatibility.

For the compatibility issues that automated handlers do not fully resolve, the Migration Portal AI Copilot provides on-demand guidance. Teams can directly understand the nature of a remaining incompatibility, review resolution options, and apply fixes, all without engaging an external consultant or sending schema data outside the organization's environment.

EDB PG AI also decouples data movement from the application cutover event, eliminating the operational risk that forces organizations to choose between migration progress and production stability. The platform performs an initial full data snapshot from the source database, then uses change data capture and event streaming to replicate ongoing changes to the data migration destination continuously. This means systems remain fully operational throughout the migration process.

Validation

Migration success cannot be assumed from the completion of data movement alone. Data integrity and performance characteristics must all be verified before an organization can confidently cut over to the new platform. EDB PG AI assists validation through LiveCompare, which verifies that the destination environment meets predefined success criteria before cutover. This ensures that the migrated environment is production ready before the organization commits. For regulated organizations, it also provides the required audit trail for signing off on a completed migration.

Sovereignty

For those organizations in regulated industries, the migration workflow itself is a data security event. Schema metadata, source database structures, and live workload data are all sensitive, and many migration tools require them to be routed through external platforms to complete the job.

EDB PG AI ensures that any component of the migration workflow, integrated with EDB PG AI Hybrid Manager, runs within the customer's infrastructure. No schema data, workload metadata, or migration artifacts are transmitted to external services.

The sovereign architecture includes:

- Full migration execution within the customer's on-premises or private cloud environment
- AI Copilot configurable to use locally hosted language models, ensuring that data remains inside the security boundary
- Architecture that compliance and security teams can review and validate before migration begins
- Freedom from need for third-party migration tools—the entire workflow is contained within the EDB PG AI platform

The sovereign architecture removes the compliance blocker that prevents regulated organizations from modernizing. It also eliminates the class of risk introduced when third-party migration tools create a new data exposure surface at the most sensitive point in the migration lifecycle.

Workflow comparison

Phase	Traditional Approach	EDB PG AI
Estate assessment	Manual scripts and sampling	Bulk assessment, data-driven migration strategy
Application layer	Issues surface in testing or post migration; no systematic premigration analysis	Application-layer compatibility assessed before migration begins; risk surfaced with context
Schema migration	Rule-based tools handle straightforward conversions; complex rewrites are left over	Automated repair of common incompatibilities; guided resolution of remaining issues
Data movement	Separate tooling with manual coordination; downtime required for cutover	Integrated change data capture keeps legacy systems live; cutover on organization's own schedule
Validation	Post hoc manual testing; issues discovered after cutover	Assisted validation via LiveCompare
Data sovereignty	Schema data and workload metadata routed through external platforms	Every step executes inside the customer's environment; no external dependencies

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Extensibility: APIs, MCP server, and automation integration

For organizations with existing DevOps and platform engineering workflows, EDB PG AI exposes its migration capabilities through a comprehensive API layer and a model context protocol (MCP) server. This enables incorporation of migration tasks into existing automation pipelines without manual coordination.

The MCP server allows external agents and automation tools to initiate, monitor, and manage migration tasks programmatically. A Langflow template is also available, providing a visual pipeline designer for teams that want to build custom automation around the migration workflow. It includes cluster provisioning, schema migration, and snapshot, plus streaming data migration steps.

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 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.