EDB + Red Hat

Accelerate Application Modernization with **Red Hat and EnterpriseDB Postgres® AI**

Build and deploy cloud-native applications in hybrid cloud with EDB Postgres AI on Red Hat OpenShift

Today's enterprises and businesses demand scalable, secure, highly available, and always-on applications to stay competitive and deliver exceptional customer experience. As a result, enterprise IT organizations are implementing cloud-native methodologies for their software applications. In a recent survey, 80% of respondents confirmed that over the next five years, all or most of their new applications will be built in cloud-native platforms.[1]

Cloud-native applications can scale horizontally and vertically to meet growing demand, detect anomalies with full-stack observability, and automate administrative tasks. These applications need scalable cloud-native databases with integrated high availability, self-healing, observability, security, and compliance.

EnterpriseDB (EDB), the leading provider of enterprise-grade Postgres, has partnered with Red Hat to deliver a robust solution that combines EDB Postgres AI with Red Hat OpenShift, for a trusted Kubernetes-based platform for developing, modernizing, and deploying applications at scale.

Challenge: Aging data platforms can't deliver applications that satisfy the demand for always-on, anywhere workloads

Traditional infrastructure platforms struggle to deliver on ever-growing business application demands, because they lack the scalability, flexibility, and automation capabilities required to support rapidly changing and complex workloads. Additionally, traditional data systems struggle to integrate with new deployment models, leading to increased maintenance costs and reduced innovation speed.

In today's fast-moving software development world, developers and teams want to be agile and reduce software delivery times, so they need self-service and programmatic access to a production-like development environment. A big part of successful application development is having a robust and agile data management system and a flexible deployment architecture.

Solution: Cloud-native Postgres databases for scalable and enterprise-grade cloud-native applications

Building and deploying enterprise-grade cloud-native applications on hybrid clouds require modernization of legacy data infrastructures and implementing cloud-native–capable databases. More and more developers are creating and deploying applications with PostgreSQL. In a recent developer survey, 49% of developers reported developing applications with PostgreSQL, and it has been the leading database choice for developers for two consecutive years.[2]

EDB and Red Hat are working together to deliver a modern, robust, and enterprise-grade Postgres data infrastructure on Red Hat OpenShift for cloud-native applications and transactional, analytical, and AI workloads. EDB Postgres AI on Red Hat OpenShift is a secure, scalable, and highly available data infrastructure that accelerates application development and delivery, enables deployment on hybrid cloud, and reduces operational costs.

Enterprise-grade cloud-native database for hybrid cloud

EDB Postgres AI offers Postgres with enterprise features, including SQL compatibility with open source PostgreSQL, advanced replication, backup and restore, high availability, security, performance diagnostics, and round-the-clock expert support with 20+ years of experience. The databases can be run in geo-distributed clusters for continuous business operations across hybrid and multi-cloud environments to provide the highest availability (99.999%), with 5x throughput efficiency compared to native replication, while meeting data locality and data sovereignty requirements.

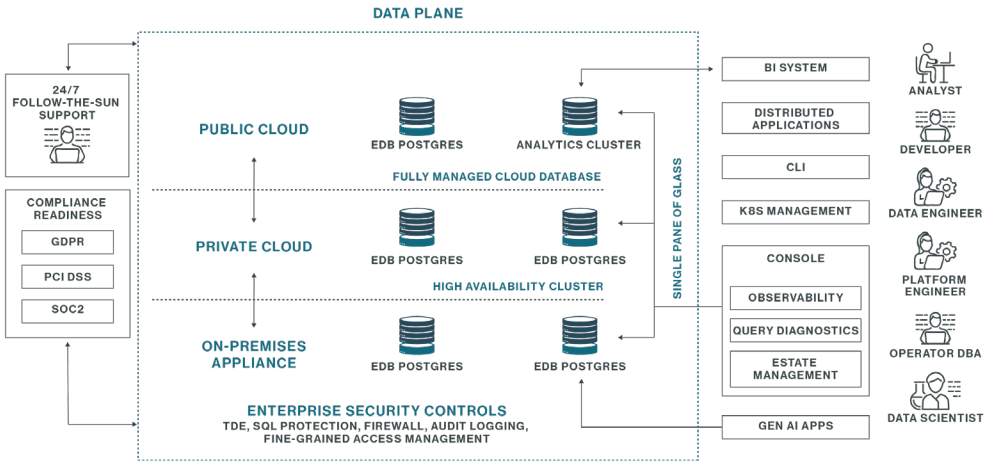

Figure 1. The EDB Postgres AI architecture: enterprise-grade Postgres for cloud-native deployments

Reduce operational costs with Level-5 Operator

With EDB Postgres operators for Kubernetes on Red Hat OpenShift, you can implement best practices for a variety of workloads, informed by EDB's deep Postgres expertise, and eliminate human error for a consistent deployment of data services. EDB offers two Level-5 operators to autopilot and manage Postgres in Kubernetes.

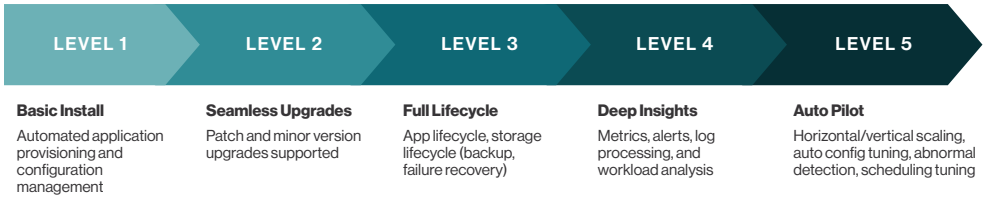

Figure 2. Kubernetes operator capabilities as defined by The Operator Framework, 2024, operatorframework.io/operator-capabilities

EDB Postgres for Kubernetes provides an enterprise-grade CloudNativePG with enhanced lifecycle and EDB Postgres Distributed for Kubernetes, which enables operations of highly available, active-active Postgres clusters in Kubernetes.

EDB Postgres for Kubernetes (EP4K) operator is an enterprise-grade Postgres operator certified for Red Hat OpenShift, which makes the platform capable of running highly available Postgres clusters that are secure by default, replicated, and automatically backed up using object storage buckets or physical volume snapshots. Through standard Kubernetes practices, such as using GitOps, policy frameworks, and Tekton Pipelines, the operator can create, manage, and control Postgres clusters. This tightly integrates Postgres databases with the rest of the application stack, lowering the cognitive load of developer teams and bringing DBAs, DevOps, and developer teams closer together.

Building on years of experience as the world's largest Postgres contributor and professional services provider, a new Postgres cluster created through the operator survives the destruction of a replica, with the operator creating a new replica immediately after it detects that the old replica is gone. If the current primary fails, the process of promoting a replica to the primary—critical for achieving low recovery time objectives (RTO)—is completed within seconds. EP4K operator allows the use of asynchronous or synchronous replication. For disaster recovery, archiving write-ahead log files to an object stored at least every five minutes—and more often in the case of a busy database—a recovery point objective (RPO) of, at most, five minutes is achievable without additional configuration.

Through the addition of physical volume snapshots as a backup and restore target, even very large databases—up to terabytes in size—can be safely run on Red Hat OpenShift, with instant backups reducing the time required to restore a database to a matter of minutes. Lifecycle management is simplified by using the fully automated EP4K distribution, providing the option to perform inconspicuous rolling and minor upgrades of database software. By hooking into the Red Hat OpenShift Operator Lifecycle Manager (OLM), the operator itself will be kept up to date without human intervention.

Enhanced security and compliance

EDB Postgres is the enterprise-hardened Postgres solution offering advanced security features standard to commercial databases, including Transparent Data Encryption (TDE), audit trail, privilege analysis, and firewall. Compliance readiness includes GDPR, PCI DSS, and SOC 2 (for DBaaS).

One of the most critical aspects of the EDB solution with Red Hat OpenShift is that it is the only database operator to take advantage of Red Hat OpenShift security features and run under the restricted security context constraint (SSC), the most secure SSC. Finally, EDB uses the universal base images provided by Red Hat to build container images for the database server, the connection pooler, and the operator. These images are continuously monitored and updated for security updates. This approach provides organizations with full support and security coverage from EDB and Red Hat.

Simplify and accelerate software delivery

EDB Postgres AI ensures that your developers have easy and self-service access to production-like, enterprise-ready environments and the ability to deploy, manage, and monitor all Postgres databases using a common set of interfaces (GUI, CLI, and DevOps tooling) across hybrid and multi-cloud. The standardized production-like database in the dev/test phase helps developers identify potential issues much sooner in the development process, speeding up the time to market for new features.

Fastest on-ramp to data infrastructure modernization with Oracle compatibility

Together, Red Hat OpenShift and EDB Postgres AI empower builders to modernize legacy systems and re-platform existing applications to roll out modern solutions for transactional, analytical, and AI workloads. With EDB Postgres Advanced Server and Red Hat OpenShift, you can migrate your database to where your business needs it.

- Migrate databases and schema to EDB Postgres AI in under 20 days.
- Reduce application rewrites by up to 95%.
- Consolidate data operations for transactional, analytical, or AI workloads.

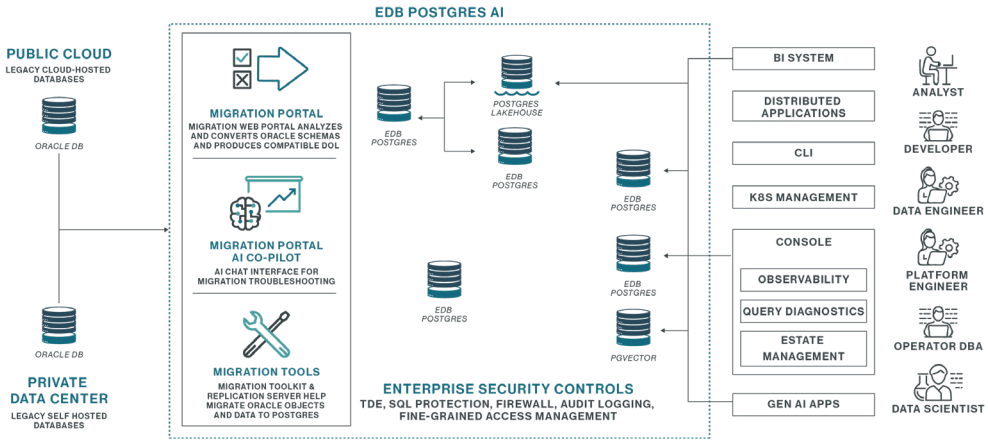

Figure 3. The EDB Postgres Advanced Server with Oracle compatibility provides mission-critical features to support enterprise-grade database operations, including advanced replication, high availability, security, and performance diagnostics.

Conclusion

Accelerating application modernization first requires modernization of the data infrastructure for cloud-native applications and leveraging cloud-native databases with the ability to scale and provide high availability, self-healing, observability, security, and compliance, while maintaining lower cost of ownership and operational costs.

EDB Postgres AI with Red Hat Openshift enables customers to modernize and deploy their applications leveraging cloud-native Postgres databases in complex hybrid and multi-cloud environments, ensuring high availability, security, and disaster recovery with minimal downtime. Reduce total cost of ownership with streamlined deployment, automated operations, and an open source, secure software supply chain.

Learn more

Learn about EDB Postgres AI

Learn about Red Hat OpenShift

Learn about how EDB and Red Hat are collaborating to drive application modernization
Get Started Today

Resources

1. Pure Storage Survey, "The Voice of Kubernetes Experts Report 2024," www.purestorage.com/company/newsroom/press-releases/survey-reveals-surge-in-cloud-native-adoption.html

2. Stack Overflow, "2024 Developer Survey," survey.stackoverflow.co/2024/technology#1-databases

About EDB Postgres AI
EDB provides a data and AI platform leveraging Postgres for transactional, analytical, and AI workloads across any cloud. Serving 1,500+ customers globally, EDB supports major industries and contributes to the PostgreSQL community. EDB ensures high availability, security, compliance, and observability, helping enterprises modernize and scale efficiently.

About Red Hat OpenShift
Red Hat OpenShift is the leading hybrid cloud application platform, bringing together a comprehensive set of tools and services that streamline the entire application lifecycle, from development to delivery to management of app workloads.

Trusted by 3,000 customers across industries (including 56% of the top 25 Global Fortune 500), it combines built-in security features with dedicated support, a trusted software supply chain, and Red Hat Enterprise Linux as the operating foundation.

EDB

EDB provides a data and AI platform that enables organizations to harness the full power of Postgres for transactional, analytical, and AI workloads across any cloud, any time.

For more information, visit www.enterprisedb.com.