



Find the Right PostgreSQL Cloud Service for You

A dbInsight white paper for EDB

Executive Summary

Trigger

Enterprises are accelerating their use of the cloud because of the promise of operational simplicity and flexibility, and to make the best use of skills in a globally stretched technology talent pool. Managed database services deliver the biggest bang for the buck in the cloud because they shift mundane but critical housekeeping chores of database management, from physical deployment to software patching, updates, and security from the customer onto the shoulders of the cloud database provider. Not surprisingly, there is rapidly growing demand for managed cloud Postgres database services. Ranked by DB-Engines as the fourth-ranked database, the demand for Postgres skills is outstripping the labor market. As a result, Postgres managed cloud database services are fast-growing. But no two Postgres cloud services are alike. There are differences regarding multi-cloud support, not to mention choices with infrastructure, software updating cycles, and customer contracts. So, what should an enterprise look for when choosing the right fully managed cloud Postgres database service for their needs?

Our Take

Customers selecting the right Postgres managed cloud service involves:

- *Identifying the right database type.* The PostgreSQL open source database project was designed for online transaction processing (OLTP) deployments. However, the flexibility of the project has spawned numerous variants supporting data warehousing, centralized or distributed topologies, and different data types such as time series data.
- *Evaluating the expertise of the provider.* The PostgreSQL community is vast; however, some providers are more active contributors than others.
- *Cloud portability.* Some services are multi-cloud while others are restricted to a single cloud provider.
- *Ease of Oracle migration.* Oracle has a huge installed base, with many customers now looking for open source alternatives. Can those running Oracle databases readily migrate to PostgreSQL without disrupting their applications? Migration support varies by PostgreSQL provider.
- *Control over infrastructure and configuration.* Services differ widely, with most prescribing a limited range of options for infrastructure and control over the

cadence of software updates. This may not satisfy the requirements of running existing applications involving custom scripts and modifications that are already hard-coded into their customers' database instances.

EDB has long differentiated itself as "the Postgres experts" with Postgres being its only business. Boasting one of the deepest benches of Postgres experts in the industry, EDB is currently responsible for over 25% of the commits to each new Postgres release. In addition to offering an enterprise-grade community Postgres, the company has developed a Postgres solution that accommodates the needs of Oracle customers seeking to move to open source.

With BigAnimal, EDB has now planted its stake with a Postgres managed database cloud, offering a service differentiated by its multi-cloud support, compatibility with Oracle and an approach that places the enterprise customer in control. BigAnimal comes with the same support from the same team already working with customers who self-manage their databases. With BigAnimal, EDB delivers the best of both worlds: the same enterprise-grade platform with enterprise-grade support, and the operational simplicity of the fully-managed cloud, at no extra cost to the customer.

The draw of the cloud

Until recently, enterprises have been reticent about moving core back-end applications to the cloud for a combination of reasons including data gravity, interdependencies with other enterprise applications, and/or necessary customizations of the underlying database to execute the business logic.

What is prompting enterprises to move cloud adoption for core backend systems to the front burner? The answer can be found in the emergence of managed services such as Software-as-a-Service (SaaS) for applications and Database-as-a-Service (DBaaS or managed database cloud) for data platforms. By relieving overburdened IT staff of time-consuming housekeeping chores of operating databases, managed database cloud services enable enterprises to focus on what's most important: developing applications and tapping new data sources to grow their businesses. Managed services relieve them of non-value-added chores such as updating or patching software, provisioning clusters, and addressing security leaks. And because the cloud is flexible, customers do not have to overprovision or be stuck with underutilized capacity – they can ramp up or down the number of compute cores as workload patterns dictate. Managed cloud database services can help enterprises get the most out of their IT resources in a tight skills

market, enabling IT organizations to direct their focus on growing the business, rather than keeping the lights on.

Postgres managed database cloud services are not alike

Over the years, Postgres has become one of the most preferred enterprise databases. Amongst veteran developers, Stack Overflow has consistently rated Postgres as the most loved database, while DB-Engines typically ranks it among the top 4 or 5 most popular databases. An “overnight success” after 25 years, Postgres has matured into a highly versatile database checking all of the boxes that enterprises require of databases running the systems that keep the lights on. Thanks to its highly flexible open source licensing, there is a rich variety of Postgres database platforms out there, from transaction processing to analytics, and more.

Not surprisingly, that same variability has extended to the cloud, where no two cloud Postgres managed Database-as-a-Service (DBaaS, or managed database cloud) offerings are alike. When selecting a managed Postgres DBaaS, here are the major criteria to evaluate.

Database type

Postgres has become one of the most broadly implemented open source projects thanks to the platform’s robustness that has been made possible by the breadth and depth of the community. It has spawned a vast ecosystem of technology providers who are delivering Postgres database platforms in a variety of forms, from transaction (OLTP) databases to data warehouses, specialized databases (e.g., time series) and others. When choosing a managed PostgreSQL database cloud service, the first criterion is to ensure that it supports the right use case(s).

Expertise

The next criterion is understanding the depth and breadth of the provider’s PostgreSQL expertise. Some providers actively contribute to the open source community while others either consume the results and/or modify the platform with proprietary code.

For the customer, this can directly impact their success in several ways, including:

- *How fast and how effectively can the provider get to the root of the problem?* This will depend on whether the provider has intimate knowledge of the underlying Postgres codebase.

- *How available are the right skills?* Postgres's popularity may have built a large practitioner base, but those skills are in very high demand, stretching the talent pool.
- *Is the vendor contributing their unique Postgres expertise back to the community?* This matters for several reasons. First, if a vendor is active in the community, fixes that customers require are more likely to get worked into the upcoming open source community release. Second, some cloud vendors are modifying the core Postgres codebase to deploy in their cloud services, leading to vendor lock-in because these Postgres deployments cannot be moved to other clouds or other Postgres providers.

Infrastructure and configuration

How much control will the customer have over how their Postgres instance will be configured and deployed? This can be an important criterion for established applications where the customer has already made significant customizations.

Most Postgres managed cloud database services are only available in “vanilla” configurations where the provider offers a single standard or limited selection of hardware instance types along with failover, backup, and software upgrades. Such standardized or vanilla managed database cloud services are well suited for greenfield applications that can be designed for the implementation. The drawback, however, is that bespoke Postgres (or Oracle) implementations and applications may be too closely tied to the specific managed database cloud service resulting in cloud vendor lock-in.

The ability to specify the implementation is well-suited for established systems, such as enterprise backend applications, where there are significant customizations binding the business logic to the schema through stored procedures or logic coded in non-SQL languages (e.g., Python, Java); in these scenarios, the customer might require “superuser” privileges that are not necessarily supported by most managed database cloud services.

A key criterion for customers is understanding what degree of choice, if any, does the cloud Postgres managed database cloud provider offer and how a customer can future-proof their instance selections as workload requirements evolve.

Why EDB BigAnimal

EDB knows Postgres

The answer starts with the company behind BigAnimal. EDB was into Postgres before it became fashionable, and it was one of the first to deliver enterprise-grade support for this open source database.

This was during a period where open source was associated with the LAMP stack, comprised of Linux, Apache web server, MySQL database, and a choice of Perl, Python, or PHP programming languages. The goal with the LAMP stack was delivering developer-friendly tooling that developers could use to quickly build simple web applications. Conventional wisdom at the time was that open source technologies were not yet ready to take on mission-critical workloads supporting requirements such as high concurrency.

EDB proved open source was ready for prime time. By becoming one of the first technology providers to support Postgres, EDB provided that an open source database could stand up to the needs of complex, enterprise-level workloads. And with 15+ years in the market, EDB has arguably the longest track record for delivering commercially-supported Postgres.

EDB is also one of the Postgres community members with the most skin in the game. With three of the seven Postgres community core team members on staff, EDB has significant influence on the open source project roadmap. Today, at least 25% of all commits for new PostgreSQL releases come from EDB. For EDB customers, that means that major issues that they flag to EDB are more likely to get close attention from the community. And, with Postgres being EDB's only business, customers can count on access to one of the largest support teams in the world dedicated to this database. The company has over 300 Postgres engineers on staff worldwide.

The next logical step for enterprise Postgres users

BigAnimal promises a smooth transition for organizations currently running Postgres on-premises for systems that keep the lights on. For instance, a large IT services firm relies on EDB's Remote DBA service to support its hosting business that is run within its own customer's data centers or colocation facilities. They are on the receiving end of demands from their client base to capitalize on the latest innovations of cloud computing, such as high availability. EDB BigAnimal is attractive for them, not only because it offers continuity for their relationship with EDB and access to Cloud DBA support services, but also for several unique reasons including support of:

- Superuser privileges for installing scripts and modifications that are already hard-coded into their customers' Postgres instances as a transitional step to simplify migration;
- Multi-region deployments; and
- Multi-cloud support, providing customers the freedom to run a BigAnimal on the cloud of their choice.

The same EDB service *plus* a managed cloud database

EDB BigAnimal customers get the same access to the same EDB experts as on-premises customers and the advantages of a managed database cloud service, at no additional cost. With BigAnimal, EDB takes the following housekeeping tasks off the shoulders of its customers, encompassing:

- Delivering 24 x 7 monitoring and support;
- Providing unparalleled high availability and automated backups;
- Maintaining security and compliance;
- Handling all OS and database patching and updating; and
- Managing all deployment and network configuration.

Managed cloud services made a big difference with an EDB customer that was already self-managing a Postgres database in the Microsoft Azure cloud. They discovered that the growth of the database was making management more burdensome. Originally, its Postgres instance was fairly compact, managing metadata for a service that it was delivering to customers. But as the database expanded from gigabytes to terabytes, it needed a partner to offload database management so it could concentrate on its core business. It chose BigAnimal because EDB had, in its words, “the best support team behind Postgres in the cloud,” and because it will support cross-region failover.

EDB is introducing extreme high availability on BigAnimal, which offers significantly higher uptime targets compared to other leading Postgres cloud services. BigAnimal supports agility in that customers can readily ramp up or down their requirement for compute infrastructure as traffic warrants as part of their cloud provider contracts; with EDB, BigAnimal customers pay for only as much capacity as they use.

Postgres managed database cloud services are not the same

As noted above, there is a large variety of Postgres managed database cloud services, but no two of them are alike. Table 1 shows some of the factors that distinguish BigAnimal from other managed cloud database services for Postgres transaction databases.

Table 1. EDB BigAnimal key differentiators

| Benefit | Description |
|------------------------------------|--|
| Best of both worlds | Same EDB expert support + managed cloud managed database cloud service at no extra cost |
| Multi-cloud with no vendor lock-in | Run on the cloud of your choice. BigAnimal currently supports AWS & Azure, with GCP coming in Q4 2022. Built on open source Postgres so data can freely migrate. |

| | |
|---------------------------|---|
| Transparent pricing | Customers choose their infrastructure and can leverage their cloud discounts. |
| Control your data | Customer's data is fully isolated and can be tracked through existing AWS and Azure cloud console and logging tools |
| Extreme high-availability | EDB BigAnimal will deliver Extreme High Availability |
| Compatible with Oracle | Built-in support of key Oracle database features delivers faster time-to-benefit from Oracle migrations |
| Postgres expertise | Access to hundreds of Postgres experts and active open source committers ensure speedy issue resolution and influence on platform development |

Source: EDB

Cloud provider lock-in

The vast majority of Postgres OLTP managed database cloud services are cloud vendor-specific and, no matter how closely these providers adhere to the Postgres open source trunk, most typically take prescriptive approaches to how Postgres is physically implemented. With most managed Postgres cloud services, the provider typically:

- Supports deployment only on their own cloud;
- Builds reliance on the cloud vendor's unique software and hardware infrastructure, from system, storage, and network APIs to security measures (e.g., perimeter security, identity and access management, encryption;
- Prescribes whether encryption is on by default or requires the customer to turn encryption on;
- Limits the options for compute and storage instance types;
- Controls the pace by which software is patched or updated; and
- Restricts the customer's ability to run custom scripts.

EDB BigAnimal, built on a cloud-native architecture, was built to be cloud-independent from the get-go. Initially, BigAnimal supports AWS and Azure clouds, with GCP coming in Q4, 2022. And because BigAnimal is deployed in the customer's own cloud account, the customer is in the driver's seat with their cloud provider relationship. They, not EDB, choose which cloud and what related services to consume.

The customer controls their data

With BigAnimal, the customer remains in full control, and custody of, their data. The data remains within the customer's own account that they maintain with the cloud provider. Furthermore, because every BigAnimal account runs on dedicated nodes, the customer's own data stays fully isolated from neighboring customers. And because BigAnimal operational data is fully integrated with AWS and Azure monitoring and logging tools, customers get a full picture of their operating environment and their data.

A path to the future

With BigAnimal, EDB provides a transparent process for migrating to the cloud with little or no disruption to how they run their current applications, and provides a pathway for the customer to grow and evolve their implementation.

For instance, an EDB customer is adopting BigAnimal because of their goal to move to the cloud and the flexibility to deploy across multiple regions. But in the short run, they require measures to preserve the stability of their existing application as a bridge to the future. That includes support of multiple Postgres versions and capabilities such as Superuser so they can install the scripts and modifications to the database to accommodate their current application. In the long run, as the customer plans to modernize its applications to become more agile and flexible in the future, they modify their deployment so that logic and data are more cleanly abstracted.

Big Animal's support for all of these requirements will provide the best of both worlds – the flexibility for the customer to support their current requirements and a path to modernization.

Superior security

BigAnimal has you covered. BigAnimal automatically upgrades your database in case of security vulnerabilities, and EDB's position in the Postgres community ensures that they are aware and ready to act as soon as any vulnerability is identified. Additionally, with tools such as SQL/Protect for SQL injection mitigation, BigAnimal users can trust that their data is secure.

Compatibility with Oracle databases

Compared to other Postgres-based cloud databases, BigAnimal offers a compelling advantage for Oracle database customers seeking to leverage the benefits of open source and the cloud. With EDB Postgres Advanced Server (EPAS) available on

BigAnimal, Oracle customers can readily migrate to Postgres in the cloud with minimum disruption. EDB EPAS interprets, translates, and natively mimics Oracle drivers, Oracle code, and Oracle queries. That means:

- Most Oracle PL/SQL code can run without changes to code or without requiring explicit conversions directly on EDB EPAS, which is available on-premises and in BigAnimal.
- Oracle features – including data types, tables, sequences, constraints, triggers, views, stored procedures, database links, materialized views, and indexes – can be automatically converted into EDB Postgres Advanced Server DDLs via an EDB web-based migration portal for Oracle customers.

With EPAS Oracle compatibility, teams familiar with Oracle’s SQL queries will be able to run them easily in BigAnimal. That means fewer changes to applications and workloads, translating to less risk, and resulting in faster time to benefit.

Table 2 shows a few selected examples of this built-in Oracle compatibility. These features are designed to smooth the path and reduce the time-to-benefit for Oracle customers to migrate to EPAS.

Table 2. EDB Postgres Advanced Server Oracle compatibility (selected examples)

| Feature | Description |
|-------------------------------------|--|
| Oracle configuration parameters | Examples include date, upper/lower case, string concatenation, SQL statement rollback, and pointers to Oracle installation directories |
| Complex PL/SQL queries | Oracle PL/SQL calls such as CONNECT BY for querying hierarchical fields, and LIST AG that allows grouping and concatenation of results are supported |
| System Catalog Views | Compatible with Oracle Data Dictionary |
| Oracle Packages | Collections of functions, procedures, variables, cursors, user-defined record types, and records that are referenced by a common identifier |
| PL/SQL-compatible Stored Procedures | Full compatibility for server-side stored procedures, functions, triggers, and packages |
| Oracle data types | Fully supported |
| Rollback | Automatic rollback of aborted SQL commands are supported down to individual statement level |

Source: EDB

Extreme High Availability

For customers with mission-critical applications, every hour of downtime can cost them millions of dollars. From the get-go, EDB has targeted the needs of enterprises running mission-critical applications that must stand up to requirements such as supporting the necessary scaling for high concurrency scenarios at consistent service levels. EDB takes high availability seriously, as it already supports five 9s (99.999%) on-premises. This capability will soon be coming to BigAnimal. It provides a loosely-coupled active-active approach across a designed group of servers. Within that group, or “mesh,” you can write to any server and the changes to each row will be automatically sent to all other servers in that group. EDB Postgres Distributed is flexible; while the default mode replicates data asynchronously, customers can configure various durability options, including group commit for serializable consistency across nodes and “CAMO” to avoid accidental transaction replays.

Takeaways

The core backend systems that run enterprises are the last frontier of enterprise cloud adoption. The cloud is becoming a front-burner issue because of the tactical and strategic advantages that fully managed database cloud services can provide. Huge global demand for Postgres skills has stretched the talent pool to the point where enterprises need to find ways of getting the most out of the limited resources that they have.

Given the popularity of Postgres as the default enterprise-grade open source database platform, there is not surprisingly a wide choice of managed Postgres cloud database services on the market. But no two of them are alike.

EDB offers both of its supported Postgres in BigAnimal, – the community version and EDB Postgres Advanced Server (EPAS).

EDB's core differentiation with Big Animal is the company's unparalleled Postgres expertise. Postgres is EDB's only business. The company employs one of the industry's deepest benches, with a force of 300+ certified Postgres experts. EDB backs up BigAnimal with that same staff. The company is hard-wired into the PostgreSQL open source community, and is currently responsible for at least 25% of the commits to the open source project. For EDB BigAnimal customers, that means that resolutions to major issues identified in EDB engagements are very likely to get incorporated into upcoming community releases.

Unlike cloud provider-delivered managed Postgres cloud services, EDB BigAnimal will run on the cloud of your choice; there will be no lock-in to running BigAnimal on AWS, Azure, or soon, Google Cloud. BigAnimal customers can take advantage of the service by running this in their existing cloud accounts.

BigAnimal also carries several features that are unique to EDB. For instance, with EPAS supported on BigAnimal, Oracle customers have a straightforward path to a compatible Postgres managed service in the cloud, with a platform that will run Oracle PL/SQL applications with no changes in code. And with Extreme High Availability to come online soon, BigAnimal will be delivering some of the highest Postgres availability in the cloud.

For EDB customers, the bottom line is that BigAnimal delivers the best of both worlds: the ability to take advantage of the existing support and feature-rich EDB Postgres in a fully managed cloud service, at no extra cost.



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About dbInsight

dbInsight LLC® provides an independent view on the database and analytics technology ecosystem. dbInsight publishes independent research, and from our research, distills insights to help data and analytics technology providers understand their competitive positioning and sharpen their message.

Tony Baer, the founder and principal of dbInsight, is a recognized industry expert on data-driven transformation. *Onalytica* named him as a Top Cloud Influencer for 2022 for the fourth straight year. *Analytics Insight* named him one of the [2019 Top 100 Artificial Intelligence and Big Data Influencers](#). His combined expertise in both legacy database technologies and emerging cloud and analytics technologies shapes how technology providers go to market in an industry undergoing significant transformation.

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