POSTGRES IN THE CLOUD ACCELERATES BUSINESS SUCCESS

TABLE OF CONTENTS

INTRODUCTION

Speed, agility and cost savings were the initial draw of cloud databases. Organizations are now looking to incorporate the cloud database into their infrastructures as they re-engineer their environments to support new development processes, operational models and data demands.

The database, by many accounts, is poised for the strongest growth among public cloud computing product categories. Cloud database management systems are projected to grow by 40.2 percent by 2018, the largest increase in the nearly 30 cloud-based categories projected by Gartner.[1]

Clearly, the question no longer centers on when or if organizations will adopt cloud database, but how organizations will optimize its value and use it most effectively.

The questions now before organizations are:

· Which of the disparate and evolving needs of an organization can be best served by a cloud database?
· How does a cloud database support a wide range of users and workloads?
· How do organizations establish a cloud database as an internal resource?

This white paper explores how Postgres Plus Cloud Database from EnterpriseDB (EDB) addresses these questions.

NOT JUST FOR DEV/TEST ANYMORE

We start out asking, "Which of the disparate and evolving needs of an organization can be best served by a cloud database?" For quite some time, the common perception was that enterprises only looked to a public cloud database to support short-term development and testing (dev/test) environments. However, there are a number of indicators that enterprises are now embracing databases in the public cloud for a range of workloads.

Ubuntu's annual Server and Cloud Survey[2] found that nearly as many respondents were using public cloud environments for production as for dev/test, with results at 59 and 60 percent, respectively. Further, 44 percent of respondents said the database was among the specific mission-critical services they had deployed in the public cloud.

A Forrester Research survey found that among services deployed in the public cloud, the relational database was the third-most identified as "crucial." Forrester posed the question in its seminal Q42012 Cloud Developer Survey[3], which drew the greatest number of responses from enterprise architects rather than developers, which also suggests usage beyond dev/test.

The survey also found the designation of the database in the public cloud as crucial held firm among respondents when asked about services they planned to deploy in the following 12 months. (Storage and compute were the two services that ranked higher.) Respondents also predicted they would increase their use of the public cloud to house data from core business transactions.

· **Surveys found that companies are increasingly utilizing public cloud resources, and specifically databases in the public cloud, for mission-critical organizational workloads. Clearly, cloud databases have moved past dev/test.**

The survey revealed another key prediction among respondents that reflect the changing nature of how cloud

---

[1] Gartner, Forecast: Public Cloud Services, Worldwide, 2012-2018, 1Q14 Update, March 31, 2014
[2] Ubuntu Insights. Critical Workloads, private deployments and market opportunities abound in the cloud. September 10, 2013
[3] Forrester Research, Q42012 Cloud Developer Survey, November 2012

databases are and will be used.

- **End users will increasingly seek environments that can be supported both in the cloud and on-premises.**

As more workloads and increasing amounts of critical data from core business transactions begin to migrate from local to hosted environments, portability becomes a significant concern.

It's important to note that having a cloud database that can be supported in the cloud and on-premise also requires specialized support to ensure organizations achieve the flexibility and agility that prompted many to examine cloud-based environments in the first place.

- **EDB's Postgres Plus Database with support for Amazon's virtual private cloud ensures data portability while at the same time providing the industry's most sophisticated Postgres support.**

THE NEWEST BUSINESS ADDRESS

The public cloud has transformed the infrastructure landscape for companies as cloud-based applications support more and more operational and specialized needs. Companies that base the whole of their operations in the cloud are not unusual making the web the newest business address.

Anecdotes abound, such as the early and well-documented transition of Australia's Proactive Accountants from on-premise applications to 21 cloud-based apps.[4] While actual numbers are hard to come by, one need only look at the growth of applications on AWS and the growing popularity of Amazon's developers conference to see the trend.

For startups, not having to dedicate their first several hundred thousand dollars raised to purchasing and configuring hardware resources means they can invest more in strategic growth initiatives much earlier. Tapping the cloud also means getting to market faster and getting faster validation of a product, service or underlying business model.

Small and mid-sized businesses are also increasingly moving more and more of their operations into the public

cloud, cutting costs and improving efficiencies. According to a survey of SMBs done by social business platform Spiceworks in the first half of 2013, the smaller the company, the more likely they were to use cloud-based applications. The survey found that 69% of SMBs with fewer than 20 employees and 55% of SMBs with 250 to 999 employees were using cloud-based apps in early 2013 and the numbers were predicted to increase through 2013 and into 2014[5].

However, the public cloud has also increased in importance for larger IT departments. Migrating operational workloads onto cloud platforms means reducing hardware maintenance and software upgrade requirements, thus freeing personnel to make more strategic contributions to the enterprise. When the cloud database comes with database compatibility for Oracle, enterprises can migrate workloads and end costly licenses to cut costs and gain greater flexibility by deploying in the cloud.

Living in two worlds, however, means stakeholders require expert support for applications deployed to the cloud and on-premise. The world's largest provider of Postgres software, services and support, EnterpriseDB is the leading provider of Postgres support in the cloud.

---

[4] VentureBeat, Going All In: How to Run a Company on 21 Cloud-based Apps, April, 2012
[5] Spiceworks, State of SMB IT Report 1H 2013, May 29, 2013.

STAKEHOLDERS IN THE CLOUD DATABASE

We can now address our second question, "How does a cloud database support a wide range of users and workloads?" Answering this question requires identifying the stakeholders making demands on the cloud database. In addition to the challenges inherent to their roles, each of the following end users is also under pressure to leverage technology more strategically. In other words, choose technology that gets the job done faster, cheaper and better.

Consider these individuals and the pressures facing each one:

Database Administrator/Architect – Fielding increasing demand for access to, and insight into, organizational data, but locked into sky-high license and maintenance contracts with a traditional proprietary software vendor, and has limited or no budget for expanding an already overly complex data infrastructure.

Application developer – Working under greater scrutiny from multiple business units who have joined the DevOps movement, and now must deliver better-performing applications on increasingly shorter development times while still dependent on IT staff to set up necessary build environments.

IT Manager – Losing control of the computing resources used within the enterprise as developers end run IT by choosing their own solutions, including cloud databases, with little regard for enterprise standards or long-term downstream effects on application performance and management.

Web 2.0 Company Architect – Launching a new technology endeavor with the latest in web-based tools and solutions, some of which may not align with in-house skills, while focusing on go-to-market strategy and company growth objectives.

Now, let's consider how a cloud database eases some of the pressures on these end users.

Database Administrators/Architects
Having access to a cloud database means having instant resources to support overflow and short-term initiatives such as application upgrades, apps with special requirements or data transformation initiatives.

Tapping a cloud database also provides greater reliability, greater performance and the most recent software features, something many organizations can't offer in-house. After all, with the right cloud database, a DBA can set up a global database with cross-availability zone failover and high availability in less than a day for a fraction of the cost of building out or arranging for physical resources.

Postgres Plus Cloud Database supports the DBA/Architect with the following features:

· Point-in-Time-Recovery
· Support for Amazon Web Services' Virtual Private Cloud
· Support for AWS' Provisioned IOPs
· Pre-configured binary replication, load balancing and connection pooling to boost performance
· Each deployment is a completely private instance
· Optional full access to and control over database configuration parameters
· Automated failover
· GUI dashboard
· Self-service setup
· Database compatibility for Oracle
· Advanced security features
· Coverage across all Amazon global regions
· 24x7 support from Postgres experts

Application Developer
Application developers, whether part of an enterprise development division or a small shop, have flocked to cloud-based services and the database is no exception. Small operations have tapped cloud databases because of their low-cost and agility. Dev teams at larger companies, however, have moved to cloud databases because of internal operational pressures. They can't afford to wait for IT to build out dev/test environments.

Postgres Plus Cloud Database is particularly well suited for application developers because of the following features:

- Self-service
- Optional full access to and control over database configuration parameters
- Automatic horizontal read scale0out of database clusters
- Same database in the cloud as on-premise for greater portability
- Database compatibility for Oracle to enable the use of commands and syntax without retraining
- Support for unstructured and semi-structured data types with JSON/JSONB for document data and HStore for key/value pairs
- Ability to combine data of multiple types from different databases, normalize it within the relational framework and query it with SQL

IT Manager

For the enterprise, moving application development teams onto a cloud database relieves multiple pain points. On the one hand, dev teams can move faster than IT and cloud resources can be set up faster than on-premise environments. On the other hand, controlling access to the cloud database resource, as with other cloud resources, means being able to standardize and monitor access to the database component of development environments.

Postgres Plus Cloud Database satisfies the needs of IT managers with:

- Subscription-based pricing for greater budget predictability
- Self-service access for individual development teams to set up their databases when developing apps
- Support for Amazon Web Services' Virtual Private Cloud to enable both enhanced security and hybrid clouds
- Single instance deployment for greater security
- Predictable performance of Postgres in the cloud and on-premise

- Automatic horizontal read scale-out of database clusters to satisfy unpredictable or spiky load demands
- Support for schemas and schema-less data within a single environment where application business logic can be standardized and controlled
- Database compatibility for Oracle to enable testing and production cloud environments for migrations of Oracle applications to Postgres

Web 2.0 Company Architects

Web 2.0 company architects need to pull together cloud-based resources that perform and scale to meet indeterminate demand for new endeavors. They need easy-to-use solutions that can function with little or no oversight because some lack the bandwidth for constant monitoring or the in-house skills required for these scalable setups. Some need pre-configured solutions that can function to meet a baseline threshold right off the bat. Still others, however, need or want root access to the underlying parameters for configuration and tuning to meet very specific needs.

Postgres Plus Cloud Database has attracted a large contingent of Web 2.0 companies that operate all or in great part in the cloud. They are drawn to Postgres Plus Cloud Database in particular by the access it gives them to a low-cost, high-performance enterprise-class relational database on par with costly traditional databases. The same features that appeal to other stakeholders appeal to this population too. In particular, companies running their mission-critical workloads in the public cloud need greater control over database tuning parameters and configurations rather than just the basic "black-box" options from other database-as-a-service options. Also, the added security provided by private instances rather than multi-tenant environments and access to full 24x7 support from true Postgres experts is vital for these companies.

WHAT SHOULD THE CLOUD DATABASE LOOK LIKE?

——

Cloud databases must deliver all of the promised benefits of the cloud – like horizontal and vertical scalability and elasticity of virtual machine size and storage, ease-of-use, backup and (seemingly) infinite resources in a cost-effective and efficient manner.

Postgres Plus Cloud Database was designed to deliver all of these things. It comprises a purpose-built cloud architecture that enables the database to take advantage of additional resources, such as server and network capacity in response to fluctuations in demand for processing power, without human intervention. This is sometimes called auto scaling.

Auto scaling in Postgres Plus Cloud Database is guided by thresholds users define during setup with an easy-to-use, point-and-click management console. This ease-of-use has made Postgres Plus Cloud Database attractive to web 2.0 architects who may lack database professionals internally or want to deploy those resources elsewhere, as well as to application development companies and teams that need a database to function autonomously while they focus on code.

Another key differentiator is that Postgres Plus Cloud Database provides the same developer experience in the cloud as on-premise. This is becoming more and more important to developers and enterprise architects, as Forrester's survey found.

Root Access for Configuration and Tuning

· **72 percent of respondents to Forrester's Q42012 Cloud Developer Survey said they wanted root access to the database for configuration and tuning.**

Postgres Plus Cloud Database deploys as a completely private instance of the database and is not shared with nor impacted by other cloud customers. Because the instance is private, Postgres Plus Cloud Database can give users root access, giving them full control over tuning and configuration parameters to meet varied application needs. Similarly, users can continue to use all the features they are accustomed to using in their own data center in the cloud without making any sacrifices while also getting all the cloud environment benefits too.

As a result, Postgres Plus Cloud Database is attractive to very sophisticated database professionals who want the same enterprise-class database they have in the data center but need the promised benefits of the cloud.

· **For DBAs, developers and architects who want complete control or have complex needs, Postgres Plus Cloud Database gives users full access to and control over the database configuration parameters.** This is a key **differentiator** from other, so-called "black box" Postgres platforms, which limit or prevent access to tuning parameters.

· **By using the same database distribution in the cloud as in the data center, organizations always have an integration/migration path between the two environments —there is no data lock-in.**

WHY POSTGRES PLUS CLOUD DATABASE?

PostgreSQL is the leading enterprise-class open source alternative to proprietary relational database products, both on-premise and in the cloud. Advances over the past three years have added powerful new features and capabilities for evolving data challenges. Also called Postgres, it can for example, power many applications written for NoSQL-only databases, allowing developers to use Postgres to build applications that achieve the same results as NoSQL-only solutions.

Postgres Plus Cloud Database features enhancements developed by EnterpriseDB to extend PostgreSQL with features and capabilities for greater enterprise-class

performance, security and manageability. Postgres Plus Cloud Database also features database compatibility for Oracle, developed by EDB. Therefore, Oracle shops can leverage Postgres Plus Cloud Database to take advance of the cloud's scalability and elasticity as well as EDB's auto scaling for applications originally written to run on Oracle.

Postgres Plus Cloud Database leverages the features of the cloud to provide significant benefits, some of which are not available with other cloud-based deployments of the open source PostgreSQL.

The following, while not complete, is a list of key features and

Key Features and Capabilities	End User Benefits
Database compatibility for Oracle (available with Postgres Plus Cloud Database Advanced)	Most Oracle applications can run with no or few changes, allowing dramatic cost reductions while preserving existing code bases and skill sets.
High performance with pre-configured binary replication, load balancing and connection pooling	Supports more users than a stand-alone configuration in the data center.
Higher performance (available with Postgres Plus Cloud Database Advanced)	Increases transaction speed over the already fast performance of Postgres Plus Cloud Database Basic.
Highly scalability with automatic horizontal read scale out of database clusters	Satisfies unpredictable or spiky as well as indeterminate load demands.
High Availability with automatic failover (in transaction preferred or recovery preferred options)	Minimizes downtime due to unexpected failures, ensuring business continuity.
Support for Amazon Web Services' Virtual Private Cloud feature	Enables user to manage inbound and outbound traffic at the instance and at the subnet level for greater security and control. The VPC feature also enables Postgres Plus Cloud Database users to operate hybrid clouds, seamlessly linking on-premise Postgres deployments with cloud instances through a secure connection.
Advanced security features	User-scheduled, automatic backups for safeguarding data, and automatic storage expansion to prevent running out of storage space. Further, each deployment is a completely private instance.

Enhanced security (available with Postgres Plus Cloud Database Advanced)	Additional database security controls protect mission-critical data and help meet compliance requirements.
Point-in-time recovery	Ensures and eases data recovery in the event of a loss.
Support for Amazon's Provisioned IOPs	Ensures high performance for I/O intensive workloads.
NoSQL capabilities for greater developer flexibility and data controls	Support for schemas and schema-less data within a single environment where application business logic can be standardized and controlled.
Root access	Provides full access to and control over database configuration parameters to meet specific demands and requirements.
GUI dashboard	Eases overall manageability and tasks like status monitoring, scaling up machines, automatic backup, cloning, tear down and more.
Same experience in the cloud as on-premise	Delivers predictable performance and experience, and with Amazn's VPC, eases the combining og environments.
Self-service setups	Eases overall usability by making databases ready in minutes without special administrative work. Further enables development groups to create their own environments as needed.
Subscription-based pricing	Provides greater control and visibility in budgeting for on-demand IT resources.
24x7 Support	Support from Postgres experts at the largest provider of Postgres software, training and services.
Coverage through all Amazon service regions	Provides global access and cross-region replication and failover.

THE CLOUD - A NEW INTERNAL RESOURCE

We now arrive at our third question, "How do organizations establish a cloud database as an internal resource?" The answer is a change in the purchasing model. Utility-style, pay-as-you-go billing was a significant draw when cloud databases emerged. Many users started with one-off dev/test workloads to gain experience and comfort with using the cloud – orsometimes in the case of Postgres Plus Cloud Database, comfort with using Postgres. The billing model proved to be inexpensive and it helped avoid long-term commitments.

However, as the cloud database begins to support more and more ongoing demands, technology chiefs and DBAs need greater visibility into cloud resource costs. The pay-as-you-go model can be difficult for budget planning if projects continue for long periods of time or multiple users at a single organization are using the same cloud resource with little oversight.

To better control budgets, cloud database users are increasingly turning to long-term subscription models. With Postgres Plus Cloud Database, users can purchase one- or three-year subscriptions that entitle them to use Amazon reserved instances at a low fixed cost. This eliminates fluctuations in costs and enables technical professionals to set up and reuse standardized environments. Having this resource on hand also speeds deployment and makes resources

SUMMARY

The cloud database is increasingly recognized for its ability to satisfy the needs of multiple stakeholders. Postgres Plus Cloud Database, in particular, is able to deliver performance, utility and flexibility for new classes of end users across the enterprise and SMB landscape.

Postgres Plus Cloud Database has powerful capabilities for the enterprise, such as support for Amazon's Virtual Private Cloud for greater security and hybrid clouds as well as features that support high performance and high availability. Combined with database compatibility for Oracle, these features and capabilities have propelled Postgres Plus Cloud Database ahead of other database deployments.

Ease-of-use and automated functions combined with Postgres' ability to support and combine structured and unstructured data make Postgres Plus Cloud Database a leading destination among developers. These features along with a GUI dashboard and management tools have appealed to tech-savvy companies operating largely on cloud-based solutions.

The underlying design, purpose-built for the cloud, means Postgres Plus Cloud Database can support a wide range of end users, workloads and operational models. And by leveraging subscription models, organizations can take greater control over Postgres Plus Cloud Database and manage it as an internal resource for long-term value.

Get started today! Let EnterpriseDB help you start leveraging the many benefits of the cloud for your business. Contact us at +1-877-377-4352 or +1-781-357-3390, or send an email to sales@enterprisedb.com.

ABOUT ENTERPRISEDB

EnterpriseDB is the leading worldwide provider of Postgres software and services that enable enterprises to reduce their reliance on costly proprietary solutions and slash their database spend by 80 percent or more. With powerful performance and security enhancements for PostgreSQL, sophisticated management tools for global deployments and Oracle compatibility, EnterpriseDB software supports both mission and non-mission critical enterprise applications. More than 2,500 enterprises, governments and other organizations worldwide use EnterpriseDB software, support, training and professional services to integrate open source software into their existing data infrastructures.

Based in Bedford, MA, EnterpriseDB is backed by top-tier venture capitalists and strategic investors like Red Hat and IBM. For more information, please visit www.enterprisedb.com.