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The Forrester Wave™: Enterprise Cloud Databases, Q4 2012

by Noel Yuhanna, November 8 2012

KEY TAKEAWAYS

Cloud Databases Are Not A Database In A Virtual Machine

Cloud databases are fully automated multitenant services that present a database capability but are managed under the covers, giving, to varying degrees, elastic scale, performance, and availability management and programmability on a pay-per-use basis.

Database-As-A-Service Platforms Deliver On Agility And Scale

Cloud solutions let developers quickly set up and consume databases without the usual database administrators having to get involved. And as cloud applications experience unpredictable use patterns (which is often the case), the on-demand scalability of these cloud platforms reduces capacity management and administration concerns.

Reliability, Security, Integration, And Scalability Are Key Differentiators For Cloud Databases

As cloud databases become mature and larger mission-critical applications get deployed on public clouds, reliability, security, performance, and seamless scalability will dictate which providers will lead the pack.



The Forrester Wave™: Enterprise Cloud Databases, Q4 2012

Four Leaders And Four Strong Performers Compete For A Share Of The Enterprise Cloud Database Market

by [Noel Yuhanna](#)
with [James Staten](#) and Vivian Brown

WHY READ THIS REPORT

Cloud database offerings represent a new space within the broader data management platform market, providing enterprises with an abstracted option to support Agile development and new social, mobile, cloud, and eCommerce applications as well as lower IT costs. In our evaluation of the enterprise cloud database market, we used 45 enterprise-client-derived criteria to evaluate cloud database vendors. Clients can adjust the weighting and priority of these criteria to determine the best option to supplement their specific data management strategy and application needs. Using a general-case weighting, our research points to Microsoft, two products from Amazon Web Services (AWS) — Amazon Relational Database Service (RDS) and Amazon DynamoDB — and salesforce.com's Database.com as leading the pack due to their breadth of cloud database capabilities and strong product strategy and vision. EnterpriseDB, salesforce.com's Heroku Postgres, Caspio, and Xeround are close on the heels of the Leaders, offering viable solutions to support most current cloud database requirements.

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Forrester conducted product evaluations in Q2 and Q3 2012 and interviewed six vendor companies: Amazon Web Services (AWS), Caspio, EnterpriseDB, Microsoft, salesforce.com, and Xeround.

Related Research Documents

[Make The Cloud Enterprise Ready](#)
June 1, 2012

[Stay Alert To Database Technology Innovation](#)
November 19, 2010

[SQL Azure Raises The Bar On Cloud Databases](#)
November 2, 2010



THE CLOUD DATABASE MARKET IS GAINING MOMENTUM ACROSS INDUSTRIES

Today, IT budget constraints, increasing database licensing costs, manageability challenges, and lack of system resources are putting pressure on businesses to look for alternate approaches to deliver new business applications. Enterprises want to cost-effectively provision database infrastructure rapidly to support new web-based, social, and mobile applications. Web 2.0 applications are demanding data from multiple sources and often require support for new data types such as XML and unstructured data and content, leading to even broader database demands.

Application development and delivery professionals are increasingly looking to cloud platforms as the fastest and most flexible way to deliver new capabilities and services to the business. These platforms abstract away many of the operational challenges of deployment by providing key components such as infrastructure, caching, and, yes, databases as services. Cloud databases offer powerful data management platforms that remove many database management burdens so developers can focus on delivering a strong user experience and accurate business logic rather than database configuration, management, and administration. These database services automate the provisioning, administration, backup, recovery, availability, security, and scalability of the database without the need for a database administrator (DBA) or administrator-level support.

Forrester defines a cloud database as an:

“On-demand, multitenant, public-cloud-based database provisioned and managed on a pay-per-use basis.”

While cloud databases are theoretically capable of supporting many different use cases, the key focus of today’s offerings is mostly around systems of engagement applications being built by small to medium-size businesses and departments or lines of business (LOBs) at larger organizations. Currently, the use cases we see include:

- **Application development and testing.** Developers are sometimes unable to develop and test their application thoroughly on premises because they lack the database resources to do so. In most cases, application developers only need a basic database to test the functionality of the application rather than support comprehensive stress testing. Cloud databases offer on-demand database resources, which give developers resources when they need them and for just the duration of use — usually for a fraction of the cost of using an on-premises database.
- **Mobile applications.** Smartphones and tablets are becoming increasingly important ways for business users to share data and support new applications. Mobile applications typically are not designed to directly connect to 10 different applications or databases within the enterprise — a better practice is to provide them access to just one data source, a staging area for rapid access that can be maintained by data feeds whether the device is connected or not. Cloud databases often fill this need and support integrated data.

- **Departmental collaboration.** Today, there is a growing demand for enhanced collaboration to support real-time decision-making. This requires sharing data as easily and flexibly as possible with a wide range of constituents — in and outside the company. When an enterprise collaboration tool is out of reach, a cloud database offers a lightweight way to improve collaboration by storing commonly used data in a centralized location that can be shared among various personnel from any location in the world.
- **SMB and departmental applications.** Small and medium-size businesses (SMBs) have application requirements that are very similar to those of large enterprises — except they don't have as much IT budget, technical staff, or infrastructure. Cloud database lets SMBs store data but also offer application development tools to build simple applications. These easy-to-use application development tools usually focus primarily on business users' needs.
- **Database backup and archive.** Backups are essential for data recovery but also to meet certain compliance requirements that necessitate storing specific data for a longer period. Organizations can also use cloud databases to store data for backup purposes; cloud databases cannot only back up data that is already part of the cloud but can also perform automatic online backups of changed data for small databases in data centers or field offices, storing that information in the cloud at a fraction of the cost of storing it in an on-premises database.¹ In addition, cloud databases can be used to archive data for long-term retention economically.

Cloud Databases Deliver Economies Of Scale Through Automation And Standardization

One of the key benefits of a cloud database is rapid deployment without database and infrastructure configuration hassles. These services automate the provisioning, administration, backup, recovery, availability, security, and scalability of the databases by delivering highly standardized offerings. Not only does this speed deployment, but it also provides a host of other benefits, including:

- **Sharing resources enables savings on database licenses, infrastructure, and administration.** Unlike on-premises databases, where the organization carries the fully loaded cost burden of the license, infrastructure, DBA, and operational costs around availability and recoverability, cloud databases spread these costs across multiple customers, meaning that each organization pays only for its actual usage of the shared service and not for future workloads or unused capacity. Our analysis found two types of cloud database services. The first is a multitenant database service that uses a shared database model across customers, while the second gives each customer a standalone database running on shared system resources. The multitenant database offers greater cost savings because it can deliver greater economies of scale. The standalone database offers more-controllable performance, security, and latency.

- **On-demand scalability offers the flexibility to add or reduce resources dynamically.** Predicting web-based application usage can be extremely challenging, especially during peak times, such as holidays or spikes in social network popularity. The standard practice of overprovisioning resources can be expensive, and underprovisioning can affect response times, leaving customers and business users frustrated. Many cloud database solutions deliver on-demand scalability that adds shards and system resources as load changes.
- **Continuous high availability ensures that the database service is always available.** All cloud database providers offer high availability and service-level assurance, ranging from basic availability to multisite, geographically distributed, synchronized replicas to deliver extreme availability.² However, service outages (such as the spring 2012 power outage AWS suffered at its northern Virginia data center) show that even the largest cloud services are still beholden to the same risks as any other data center service.³ Interestingly enough, none of the cloud database vendors in this Forrester Wave™ evaluation guarantee four 9s of availability by default. Some do guarantee four 9s of availability at an additional cost.
- **Integration with PaaS helps developers build applications faster.** Several cloud database providers also offer platform-as-a-service (PaaS) solutions that combine application development tools, runtime, and administration and management tools and services.⁴ Although all the cloud databases in this evaluation can be used in a standalone capacity, when an organization consumes a cloud database as part of a PaaS offering, developers gain additional agility and flexibility as well as the obvious integration benefits.

Strong Growth Is Ahead For The Cloud Database Market

Although the cloud database market is in its early stages, Forrester has seen significant growth in adoption over the past two years, especially by retail, telecommunications, eCommerce, manufacturing, and media clients. Forrester estimates the current public cloud database market to be approximately \$400 million and that it will grow to \$1.2 billion by 2017.⁵ Cloud databases are still evolving and maturing to support features such as high-performance solid-state drives, in-memory cache technology, scale-out sharding, and extreme high-availability options. We believe pressure on IT to support newer applications without growing budgets will further increase enterprises' need for cloud databases. In addition, with improved latency and on-demand scalability in the coming years, we are likely to see a larger migration of existing on-premises tier-two and tier-three applications to public clouds, thus increasing the use of cloud databases. Top vendors, such as the ones included in this Forrester Wave evaluating enterprise cloud databases, will continue to extend their products to deliver innovative solutions.

The current cloud database market falls into two key categories:

■ **Large cloud vendors offering broader infrastructure-as-a-service (IaaS) and PaaS portfolios.**

Large cloud database vendors, such as AWS, Microsoft, and salesforce.com primarily offer cloud database services as part of bigger cloud platform offerings that include application development, data integration, and infrastructure services. All of these vendors continue to integrate their cloud databases into this portfolio to support faster application development and deployment. Large vendors of note not evaluated in this Forrester Wave include Oracle and Google. Although Oracle is best known for its database and applications, it does not currently offer a public cloud database service; it is best represented here through Amazon RDS, which offers the Oracle database as one of its deployment options. We are likely to see a direct cloud database service from Oracle in the next several years that will compete against the solutions in this Forrester Wave (including Amazon RDS). Google offers a lesser-known cloud database called Google Cloud SQL, a web service built on top of MySQL. However, Google Cloud SQL is primarily intended to be used with Google App Engine, its PaaS offering, and is not intended for standalone consumption.

- **Specialized pure-play vendors offering simplified database-as-a-service.** The specialized pure-play vendors, including EnterpriseDB, Caspio, and Xeround, differentiate themselves from their larger platform counterparts by offering simplified, highly functional solutions that can effectively support any type of application for small to moderate enterprises or departmental/LOB operations of larger enterprises. Unlike large vendors such as AWS, Google, and Microsoft that typically have their own data centers and infrastructure, specialized pure-play vendors typically leverage other cloud infrastructures to free them from the same burdens you are escaping when you use a cloud. The vendors in this evaluation offer their database services atop AWS, HP Cloud Services, Joyent Cloud, and Rackspace.

Does Database IP Control Matter In A Cloud Database Offering?

Some of the services reviewed in this Forrester Wave do not leverage a database designed and owned by the vendor itself, so in some criteria we looked at how the relationship between the cloud service provider and the database management system (DBMS) vendor affected (or limited) the service provided. For example, Amazon RDS provides Oracle's enterprise and open source MySQL databases and Microsoft SQL Server commercial on-premises software as database-as-a-service options in the cloud, so in this case AWS depends on the DBMS vendor for support, bug fixes, advancement, and the cost of the service. We believe that if the cloud database vendor owns the database source code (or is using an open source solution that the vendor itself releases and supports), it has much greater freedom to customize the DBMS for multitenancy, scale, sharding, and other relevant features. For cloud databases that are part of a PaaS offering (this is the case for salesforce.com's Heroku Postgres database solution), the dependency on who owns the database intellectual property (IP) becomes less of a concern, as the PaaS vendor becomes responsible for the database tier from an availability, security, backup, recovery, scalability, and integration perspective.

ENTERPRISE CLOUD DATABASE EVALUATION OVERVIEW

To assess the state of the cloud database market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top cloud database vendors using criteria gathered through extensive conversations with Forrester clients. These criteria map to the measures often found in organizations' requests for proposal and are also relevant to developers' and DBAs' use of these services.

The Evaluation Focused On Access, Scalability, Administration, And Usability

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 45 criteria, which we grouped into three high-level buckets:

- **Current offering.** In this category, we look at: 1) cloud data types and data models; 2) cloud data access; 3) cloud data integrity and transactions; 4) cloud database architecture; 5) cloud database scale and performance; 6) application development; 7) cloud database availability; 8) cloud data security; and 9) cloud database administration.
- **Strategy.** In this category, we look at: 1) corporate vision, road map, and differentiation; 2) R&D commitment by the vendor; and 3) pricing strategy. This section focuses on vendor strengths in delivering innovative solutions and road map alignment with what Forrester sees as the key market trends for the coming years.
- **Market presence.** In this category, we look at: 1) company financials, including revenue, growth, and profitability; 2) adoption of the solution across various industries; 3) training provided, including online and classroom; and 4) the partner ecosystem.

Evaluated Vendors Have Viable Offerings And Established Presence In The Market

Forrester included six vendors and eight individual offerings in the assessment: Amazon DynamoDB, Amazon Relational Database Service (RDS), Caspio, EnterpriseDB, Microsoft, salesforce.com's Database.com, salesforce.com's Heroku Postgres, and Xeround. Each of the participants has (see Figure 1):

- **An established cloud database offering.** To participate in this evaluation, each vendor needed to be actively marketing its cloud database solution. The vendor must have initially released the product version included in the evaluation prior to April 2012.
- **A credible installed base.** We evaluated vendors that had 50 or more customers, at moderately sized to large organizations, using the vendor's cloud database service in production.⁶

- **At least 10 mentions by Forrester clients over the past 12 months.** Vendors must be top of mind for Forrester customers to be included in this Forrester Wave. Although there are more than a dozen vendors offering cloud databases today, the six vendors evaluated in this evaluation are the ones that Forrester customers most often short-list.

Figure 1 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product evaluated	Date evaluated
Amazon Web Services (AWS)	Amazon Relational Database Service (Amazon RDS)	June 27, 2012
Amazon Web Services (AWS)	Amazon DynamoDB	June 27, 2012
Caspio	Caspio Bridge	June 21, 2012
EnterpriseDB	Postgres Plus Cloud Database	June 14, 2012
Microsoft	Windows Azure SQL Database	June 26, 2012
salesforce.com	Database.com	June 26, 2012
salesforce.com	Heroku Postgres	June 26, 2012
Xeround	Xeround Cloud Database	June 6, 2012

Vendor selection criteria

Vendors must be actively marketing a cloud database solution, and the vendor must have initially released the product version included in the evaluation prior to April 2012.

Vendors must have 50 or more customers, at moderately sized to large organizations, using the vendor's cloud database service in production.

Vendors must have at least 10 mentions by Forrester clients over the past 12 months.

Source: Forrester Research, Inc.

CLOUD DATABASES OFFER CHOICES TO SUPPORT ANY APPLICATION TYPE

Not all cloud databases are created equal, and in a few cases vendors have more than one offering. There's a high degree of variance across services, making different cloud databases better suited to different classes of applications. The evaluation uncovered a market in which (see Figure 2):

- **Microsoft, Amazon RDS, Amazon DynamoDB, and salesforce.com's Database.com lead.** These vendors all have services with a strong combination of automated database administration, security, availability, application development, scalability, and performance. Microsoft continues to execute well and remains a Leader, offering SQL Database, its multitenant database services on the Windows Azure environment. The Amazon Relational Database Service (RDS) offering

has been strong for a few years now, and with the release of Amazon DynamoDB, a fully managed and scalable NoSQL database, AWS reaffirms its commitment to cloud databases. Salesforce.com’s Database.com did well in this Forrester Wave, offering strong support in collaboration, visual application development, and simplified database administration.

- EnterpriseDB, salesforce.com’s Heroku Postgres, Caspio, and Xeround are competitive.** EnterpriseDB has strong support for data access, integration with on-premises data, database life-cycle management, and support for third-party tools. Salesforce.com’s Heroku Postgres is a strong offering with good on-demand scalability, visual application development, database administration, data access, and on-premises support. Caspio’s visual application development platform excels in ease of use, on-premises integration, and simplified database administration, making it an attractive solution for small-to-medium cloud applications. Xeround is a viable alternative for MySQL shops with its strong data access and administration and ease of use.

Figure 2 Forrester Wave™: Enterprise Cloud Databases, Q4 '12



The Forrester Wave™
 Smart data for smart decisions

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Source: Forrester Research, Inc.

Figure 2 Forrester Wave™: Enterprise Cloud Databases, Q4 '12 (Cont.)

	Forrester's Weighting	Amazon DynamoDB	Amazon RDS	Caspio	Database.com	EnterpriseDB	Heroku Postgres	Microsoft	Xeround
CURRENT OFFERING	50%	3.17	3.89	3.10	3.32	3.03	3.82	4.00	2.72
Cloud data types and data model	10%	2.00	3.00	3.00	4.00	3.00	4.00	5.00	3.00
Cloud data access	10%	3.00	3.00	2.80	3.60	4.40	3.60	3.60	3.40
Cloud data Integrity and transactions	5%	3.00	3.00	2.00	3.00	3.00	4.00	3.00	3.00
Cloud database architecture	15%	2.10	4.40	3.60	2.10	3.50	3.60	3.60	2.10
Cloud database scale and performance	10%	4.40	4.20	1.80	2.20	1.80	3.60	3.60	3.00
Application development	15%	3.00	5.00	4.00	5.00	3.00	5.00	5.00	3.00
Cloud database availability	10%	4.20	2.80	3.00	2.20	1.60	2.20	3.60	1.60
Cloud data security	10%	2.80	3.50	2.40	3.00	3.00	3.00	3.00	2.10
Cloud database administration	15%	4.10	4.50	3.70	4.00	3.50	4.60	4.50	3.30
STRATEGY	50%	4.76	4.16	3.34	3.92	3.80	2.76	4.52	3.16
Product strategy	60%	5.00	4.00	3.30	4.00	3.80	3.00	5.00	3.00
Commitment	40%	4.40	4.40	3.40	3.80	3.80	2.40	3.80	3.40
Pricing	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARKET PRESENCE	0%	2.77	4.70	3.10	3.97	1.75	3.57	4.88	1.48
Company financials	40%	3.50	5.00	3.40	4.30	0.40	4.60	4.70	1.60
Adoption	30%	3.80	5.00	3.80	3.00	1.80	3.00	5.00	1.80
Training	15%	1.50	3.00	4.00	4.00	5.00	1.50	5.00	0.00
Partners	15%	0.00	5.00	0.00	5.00	2.00	4.00	5.00	2.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

Customize The Scoring To Decide Which Cloud Service Is Best For You

This evaluation of the cloud database market is intended to be a starting point only. We encourage readers to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

VENDOR PROFILES

Today, vendors that can provide scale-out sharding of data, solid-state drives (SSDs), distributed in-memory caching, modest service-level assurance, data encryption, granular access control and auditing, and integration with on-premises data sources have positioned themselves to successfully deliver a viable cloud database platform to their customers.

Leaders: Large Vendors Strike A Balance Between Features And Strategy

- **Microsoft offers the most comprehensive cloud database solution.** Windows Azure SQL Database, formerly known as SQL Azure Database, lets organizations create, scale, and extend applications into the cloud. With this service, you can provision a SQL Server database easily, with simplified administration, high availability, scalability, and its familiar development model. In addition, Windows Azure, Microsoft's public cloud platform, lets you run SQL Server in a virtual machine (this use case is independent of SQL Database and was not part of this evaluation). Overall, Microsoft's Windows Azure SQL Database has done well since its launch in 2008, with deployments found across various vertical industries supporting moderate to large-scale application deployments. Although there is a 150 GB limit on the individual database size with SQL Database, customers are supporting multiple terabytes by using each database as a shard and integrating it through the application.
- **Amazon RDS offers a viable cloud database platform for heterogeneous DBMSes.** AWS offers three cloud database services: Amazon SimpleDB, a nonrelational data store (not evaluated in this comparison); Amazon RDS, a web service that offers MySQL, Oracle, and Microsoft SQL Server databases as managed virtual machines; and Amazon DynamoDB, a NoSQL database service.⁷ Today, Amazon RDS is one of the most widely used cloud database platforms, supporting thousands of customers across various vertical industries. This is primarily because the Amazon RDS platform supports several popular DBMSes, including Microsoft SQL Server, MySQL, and Oracle Database, offering enterprises more choices. This means that the code, applications, and tools you already use today with your existing databases can be used with Amazon RDS.
- **Amazon DynamoDB delivers a strong cloud database to support larger applications.** According to Amazon, DynamoDB is the fastest-growing new service in the history of AWS. Amazon DynamoDB is a fully managed NoSQL cloud database platform that uses solid state drives (SSDs) to store data and automatic shards to scale to support larger high-performance applications. Customers are using DynamoDB to support advertising campaigns, drive Facebook applications, track gaming information, collect and analyze sensor and log data, and scale eCommerce applications. Customers include Amazon Cloud Drive, Electronics Arts, IMDb, Shazam, and Smug Mug. As DynamoDB is a NoSQL database, it does not support relational model or table joins or complex transactions.
- **Salesforce.com runs on Database.com, delivering maturity and stability.** Database.com is a relational database service that integrates with salesforce.com's overall cloud platform. With Database.com, you can share data across multiple channels, connect customers and employees with mobile applications, and support web-based applications. Although you can use Database.com as a traditional database store, it is best suited for use with mobile and web applications, which contain the user interface and application code together. Typical use cases for Database.com include social and mobile enterprise applications running on a cloud platform as well as native mobile apps on smart devices.

Strong Performers: Startups Offer Viable Alternatives

- **EnterpriseDB offers a good cloud database solution for PostgreSQL.** EnterpriseDB Postgres Plus Cloud Database (PPCD) provisions PostgreSQL or Postgres Plus Advanced Server databases in single-instance high-availability clusters or deployed as sandboxes for public and private clouds. PPCD supports elastic storage that can automatically add capacity when needed, perform backup and restore tasks, and load balance across servers. EnterpriseDB also offers the Postgres Plus Advanced Server, which can help organizations migrate applications written to run on Oracle into its cloud platform. Since its launch earlier this year, EnterpriseDB said PPCD has accumulated more than 80 paying customers and thousands of trial requests. Overall, its cloud database solution is suitable for small to medium-size applications running on PostgreSQL and for customers looking to migrate off Oracle onto a public cloud platform.
- **Salesforce.com's Heroku Postgres offers a viable database platform.** Salesforce.com also offers a database service through its Heroku Postgres PaaS solution that provides startups and IT organizations with a faster way to create and deploy business applications. We evaluated Heroku Postgres separately, as it does not share the same platform, architecture, or delivery method as Database.com. Heroku Postgres runs an unmodified version of the community Postgres but offers value-added features such as Dataclips, followers, and forks. In addition, it provides management services for monitoring, health checks, availability, and technical support. Some of the customers using Heroku Postgres include Best Buy, CloudApp, and Sierra Club.
- **Caspio delivers a simplified cloud database solution.** Caspio's cloud service is built on Microsoft SQL Server and offers an abstraction layer above it that simplifies setup and administration of this database for non-DBA business users. Although Caspio does not directly support sharding, it offers on-demand scale and dynamic provisioning based on resource demand. Overall, Caspio offers a viable option for customers building small-to-medium or departmental applications in moderately sized to large organizations.
- **Xeround offers good features for MySQL customers.** Xeround's cloud database uses MySQL as its DBMS and offers autoscaling, a no-downtime service-level agreement (SLA), and one-click deployment. As of July 2012, Xeround said it had more than 26,000 users of its cloud database platform. Its database service is deployed on the AWS, HP, and Rackspace public clouds and has integration with Engine Yard, a leading PaaS offering. Xeround Cloud Database is available for integration and resale by other cloud providers and independent software vendors (ISVs).

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- **Product demos.** We asked vendors to conduct demonstrations of their product's functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with two of each vendor's current customers.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and we encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

- ¹ Forrester published a report exploring the use cases for disaster recovery in the cloud, the different models and providers today, and the benefits and risks of this approach. See the March 20, 2012, “[An Infrastructure And Operations Pro’s Guide To Cloud-Based Disaster Recovery Services](#)” report.
- ² Some of these high availability services are not available in all geographies and do not universally support the ability to replicate your database across geographies. See the February 9, 2010, “[Infrastructure-As-A-Service \(IaaS\) Clouds Are Local And So Are Their Implications](#)” report.
- ³ Power outage caused by severe thunder storms in northern Virginia took out a significant number of high-profile AWS customers. Source: Elise Ackerman, “The Real Story Behind The AWS Outage And What It Means For Investors,” *Forbes*, June 17, 2012 (<http://www.forbes.com/sites/eliseackerman/2012/06/17/the-real-story-behind-the-aws-outage-and-what-it-means-for-investors/>).
- ⁴ Forrester defines PaaS as, “A complete application platform for multitenant cloud environments that includes development tools, runtime, and administration and management tools and services. PaaS combines an application platform with managed cloud infrastructure services.” See the May 19, 2011, “[The Forrester Wave™: Platform-As-A-Service For Vendor Strategy Professionals, Q2 2011](#)” report.
- ⁵ Forrester’s cloud database market estimate is based on information received from various vendors and also looking at the overall database market size and its adoption in the public cloud. In addition, the forecast is based on trends seen around mobile, Web 2.0, departmental, and new tier-two and tier-three applications that are likely to be deployed in organizations in the coming years.
- ⁶ We classify moderately sized organization as those that have annual revenue of more than \$500 million and large organizations as those that have \$1 billion or more in revenue.
- ⁷ Amazon SimpleDB was not included in this Forrester Wave because we limited each vendor to two cloud database products.

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