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Database as a Service (DBaaS): Use Cases and Adoption Patterns

A REPORT ON RESEARCH COMMISSIONED BY

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NEW YORK

20 West 37th Street
3rd Floor
New York, NY 10018
P 212 505 3030
F 212 505 2630

SAN FRANCISCO

140 Geary Street
9th Floor
San Francisco, CA 94108
P 415 989 1555
F 415 989 1558

LONDON

37-41 Gower Street
London, UK WC1E 6HH
P +44 (0)20 7299 7765
F +44 (0)20 7299 7799

BOSTON

125 Broad Street
4th Floor
Boston, MA 02109
P 617 261 0699
F 617 261 0688

Executive Summary

The rise of cloud computing has had an impact on multiple industry sectors – most notably server and storage infrastructure – as enterprises explore and enjoy the potential cost and agility benefits that come with using virtual infrastructure that is available on demand and as required.

The data processing and analytics sectors are no exception, and 451 Research has observed the emergence of growing number of database-as-a-service offerings, as well as growing adoption by startups and established enterprises alike.

Database-as-a-service offers multiple potential benefits, including lower database licensing and infrastructure costs, faster time to application development, and reduced administration overheads.

These benefits are most likely to be experienced by database administrators and architects, although senior decision-makers and business users also stand to gain from having on-demand access to database services, rather than waiting for databases to be configured and deployed on dedicated physical or virtual server infrastructure.

While 451 Research anticipates growing adoption of database-as-a-service (DBaaS), adoption is currently nascent compared with other cloud services, as enterprises look to make the most of their investments in on-premises database deployments, and also to identify the most appropriate workloads for transition or migration to DBaaS.

This report explores the factors shaping those adoption trends, including the potential benefits and challenges to DBaaS adoption, the economics of the cloud as they relate to database workloads, and adoption lifecycles.

Defining DBaaS

Database-as-a-service (DBaaS) involves the on-demand delivery of database management software to be consumed by end users as a service, without the need to first install any hardware or software.

Rather than requesting database resources of the IT department and waiting for them to be provisioned on dedicated physical or virtual server infrastructure, users are able to provision their own database resources from the cloud, paying only for the resources they consume, while the database software is maintained and managed by the service provider.

This report covers DBaaS, also referred to as cloud database services, in both public and private cloud. DBaaS is often used to describe database management systems installed on, and delivered via, the public cloud. Key public DBaaS providers include cloud computing specialists, as well as the incumbent database software providers, all of whom are making their software available for consumption as-a-service.

However, DBaaS could also describe the delivery model for a private cloud database service that utilizes an enterprise's existing computing infrastructure. In this case, the IT department remains responsible for maintaining and managing the database software, but it is consumed by the end user on-demand, rather than configured and installed in response to a specific requirement.

Many large enterprises are increasingly viewing private cloud databases as a means to improve the efficiency of providing end users with database resources, taking advantage of the functionality provided by their existing database software suppliers.

DBAAS ADOPTION TRENDS

Cloud computing has had a significant role to play in driving down the cost of storing and processing data, along with delivering additional benefits such as developer and business agility, faster time to adoption for emerging technologies, high availability, and reduced infrastructure configuration and management overheads. In recent years there has been an explosion in terms of the number of different approaches for storing, processing and analyzing data in cloud and hosted services.

Public cloud adoption is widespread, and the big data trend is driving more enterprises to look for new approaches to generate insight from data that was previously ignored. Cloud services provide an alternative to on-premises infrastructure for the storage and processing of data sets both large and small, and can lower the barriers to adoption, enabling enterprises to reduce the cost and time involved in configuring new data processing and analytics platforms.

However, cloud database is in the very early stages of adoption, with most data-related workloads deployed on-premises. 451 Research's Voice of the Enterprise (VotE) service provides some evidence of the ongoing dominance of on-premises, non-cloud environments for database workloads.

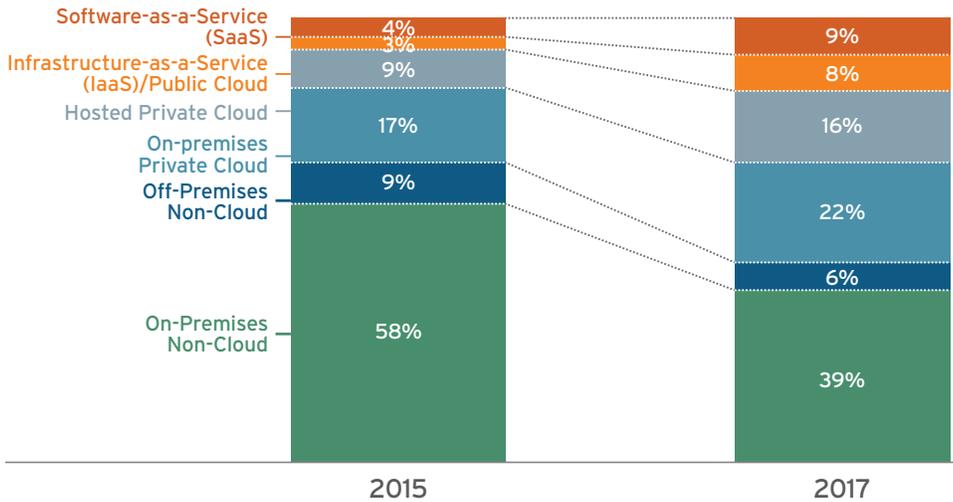
According to the VotE: Cloud Computing survey, conducted in the second quarter of 2015, just 4.4% of respondents are using SaaS (which in this case includes PaaS) as the primary deployment method for operational and analytic database workloads today, while 2.9% are deploying databases on infrastructure as a service. By comparison, 58.1% are deploying operational and analytic database workloads on on-premises, non-cloud environments, while 16.8% are using on-premises private cloud.

The VotE: Cloud Computing survey also confirms anecdotal evidence that adoption of cloud databases is lagging behind 'as-a-service' consumption for other software segments. The evidence suggests that over 51% of social business applications are delivered as-a-service, for example, while 9.6% of analytics/business intelligence deployments are delivered as-a-service today.

The results do indicate growing adoption of cloud for operational and analytic databases, however. Asked which deployment options they expect to be using two years from now, 8.5% of respondents expect to be using DBaaS for operational and analytic databases, up from 4.4% today, while database deployed on IaaS is expected to grow from 2.9% today to 8.0%.

The use of on-premises, non-cloud environments is expected to decline but remain the most popular deployment model, with levels at 38.7% two years from now, compared to 58.1% today. On-premises private cloud usage will grow from 16.8% today to 22.5%, while hosted private cloud usage is expected to almost double from 8.5% to 16.1%. Off-premises non-cloud deployments will decline from 9.3% to 6.2%.

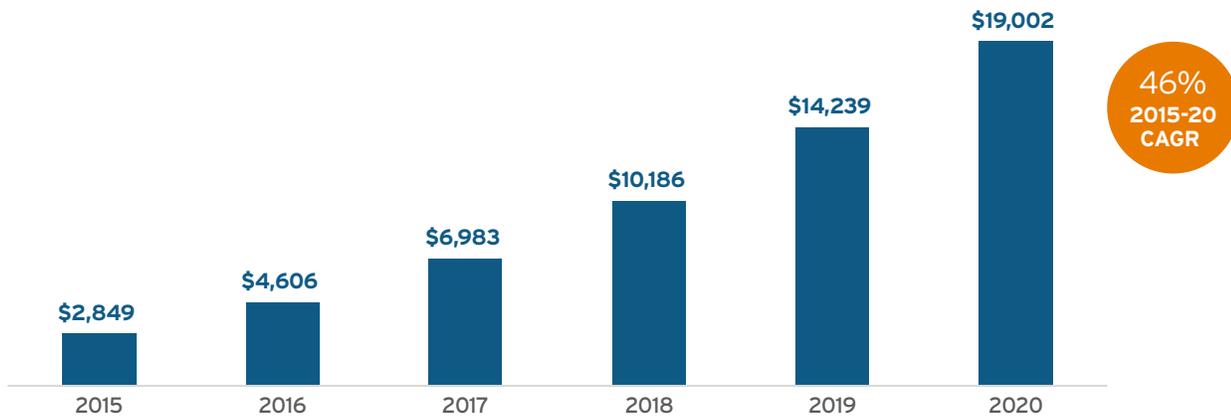
Operational and Analytic Database Deployments, n=147



Source: 451 Research, Voice of the Enterprise: Cloud Computing, Q2 2015

The early stage of cloud database adoption is also reflected in the market-sizing estimates provided by 451 Research's Total Data Market Monitor. 451 Research estimates that \$2.8bn was generated by vendors of data platforms and analytics products delivered as a service in 2015, which equates to just over 4% of the overall data platforms and analytics market. However, revenue from -aaS offerings is expected to climb at a CAGR of 46% to reach \$19.0bn, and more than 14% of the total market, in 2020.

Total Data-as-a-Service Market Revenue (\$M)

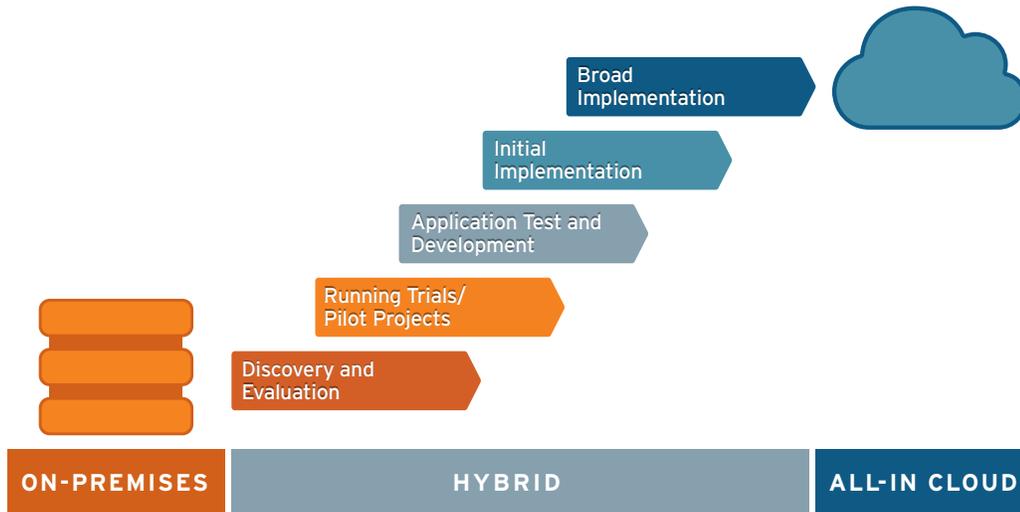


Source: 451 Research Market Monitor, Total Data: Platforms & Analytics

Not all database workloads are created equal, of course. Some are more mission critical than others, and some have regulatory implications that might prevent them from being deployed to a public cloud. While there are examples of companies deploying mission-critical production workloads to the cloud – typically those that have gone ‘all-in’ on cloud – much of the early cloud database adoption has been driven by transient workloads: development and test for example, as well as backup and recovery.

There are multiple phases to adoption of cloud database – from discovery and evaluation, through running pilots, test and development, and initial implementation to broad adoption.

Phases Of Cloud Database Adoption



451’s research indicates that cloud database adoption is highest among enterprises that are in the ‘application test and development’ and ‘broad implementation’ phases. In other words, the primary users of cloud database services are enterprises in the cloud test-and-development phase and those that have gone ‘all-in’ on cloud.

Either way, the vast majority of enterprises are a long way from going ‘all-in’ on cloud, meaning that most companies will be running a combination of on-premises, private cloud and public cloud database workloads for the foreseeable future. It is for this reason that we believe hybrid database services have a significant role to play in future adoption trends.

DBAAS DRIVERS AND CHALLENGES

451 Research’s Cloud Computing Executive Summit is an exclusive, complimentary invitation-only event that brings together senior decision-makers in a peer-to-peer environment to openly discuss issues related to cloud computing.

The core drivers and challenges discussed at recent Cloud Computing Executive Summits are outlined below.

Drivers	Challenges
<p>COST AVOIDANCE</p> <p>One of the key drivers for adoption of public cloud is cost - or more to the point cost avoidance - and database and analytics in the cloud are no exception. Enterprises are increasingly interested in public cloud database and analytics services as a potential means for avoiding on-premises costs - primarily server and other infrastructure costs, but also potentially database software licensing costs.</p>	<p>SECURITY ISSUES (PERCEIVED AND REAL)</p> <p>Any conversation about cloud adoption with IT decision-makers will almost immediately focus on perceived and real security issues of the cloud. This is clearly a sensitive topic for any data-driven workloads where data privacy and locality issues need to be taken into account. We have observed a growing acceptance from enterprises that major cloud providers are probably more secure than their own IT systems, but security concerns remain a barrier to adoption.</p>
<p>FLEXIBILITY</p> <p>Cost savings is one of the first things people talk about with regards to drivers for considering database-as-a-service, but arguably it is the flexibility that comes with database services that will be a long-term gain. Flexibility includes the freedom from reliance on hardware suppliers, the agility to configure cloud resources as required for new developments, and the ability to scale resources elastically to meet demand.</p>	<p>LIABILITY</p> <p>One of the reasons why security continues to be a barrier to adoption is a related issue: who is responsible if things do go wrong and what will the compensation be? Enterprises are used to dealing with fine-print contracts from hardware and software suppliers and can struggle to get the same level of promise from cloud suppliers as to their level of liability in a world where many services seem to be perennially in beta.</p>

Drivers

IT REJUVENATION

Cloud adoption goes hand-in-hand with shadow IT and an agility that is unfortunately lacking in most IT departments. DBaaS is perceived as an opportunity to rejuvenate the profile of IT in the eyes of the business by delivering them the flexibility and cost savings they are looking for, combined with the benefits of governance and responsibility.

TRANSFORMATIONAL CHANGE

Database-as-a-service adoption does not, of course, occur in isolation, and transformational change enabled by IaaS and PaaS adoption is a major driver behind database-as-a-service. There are database-specific choices to be made, but if there is already a cloud-first mandate for infrastructure and platform it stands to reason that the journey to DBaaS will be accelerated.

DATA GRAVITY

As an increasing volume of data resides in the cloud, and originates in the cloud, the economic arguments for processing and analyzing that data in the cloud are hard to ignore. With large volumes of data being produced by clickstreams and device sensors cloud storage is the most economically-viable choice, increasing the potential for associated database and analytics in the cloud.

Challenges

PERFORMANCE

Performance is a related issue. The question is not whether performance hits will occur, but how will the cloud services supplier respond when they do? Without an answer they can rely on many enterprises are naturally reticent to move low-latency mission-critical workloads to the cloud. Even for those that are experimenting, performance tests need to be carried out on a workload by workload basis to identify which applications are suitable for cloud deployment.

COST

While cost avoidance is a driver for cloud adoption, cost - or more to the point the lack of clarity about cost - is a barrier to adoption. There is general confusion about how to compare the cost of services on different cloud platforms, and a lack of clarity about whether vendors will enable enterprises to bring existing licenses to the cloud. Additionally sunk costs, in database licenses and associated hardware and data center facilities, can also be a barrier to change.

PEOPLE AND PROCESS CHANGE

While discussion naturally focuses on technological drivers and barriers for cloud adoption, people and process factors are also significant barriers to DBaaS adoption. For example, dependence on waterfall development methods is a barrier to flexible adoption of cloud services, while the scale of transformational change can become daunting to individuals and organizations alike. Database-hugging by DBAs is also a potential barrier to adoption of shared database services.

CLOUD ECONOMICS

Since cost appears as a factor on both sides of the drivers / challenges assessment, it is worth exploring the economic case for database and analytics in the cloud in greater detail.

Our ongoing research indicates that economics is a primary driver of cloud adoption. The economic benefit of cloud is in reducing risk by allowing the service consumer to increase and reduce usage without the need to invest in infrastructure.

However, cost savings from migrating to the cloud are not guaranteed. Much depends on the nature of the workload. To put it simply: If workloads are sporadic, an on-premises implementation is likely to be underutilized most of the time, making public cloud the better option. However, if data processing workloads are more frequent, a public cloud implementation is unlikely to gain from the theoretical advantage of being able to scale back resources, making on-premises, or private cloud, adoption a more attractive option.

One of the implications of this is that while public cloud is ideal for development and test and environments and proofs of concept, it becomes less economically viable for more mission-critical environments as usage grows.

Another issue is that migrating data to the cloud may not be a simple matter. Organizations with business intelligence and analytic workloads involving legacy data models, distributed across multiple corporate divisions, can be particularly challenged. Often the move to a cloud means re-architecting data models and recalculating metrics, which can be complex, and a task some companies are reluctant to undertake because of the costs, time and skills involved.

HYBRID DATABASE SERVICES

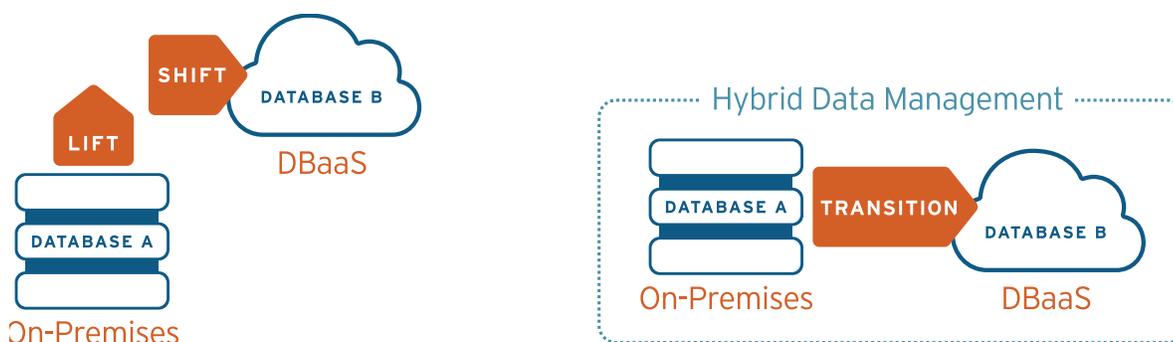
Since all companies other than brand-new start-ups have already made investments in databases deployed on-premises, it is inevitable that most enterprises will go through the hybrid phase of using both on-premises and cloud databases.

As already noted, some workloads will take longer to move to cloud database services than others due to various concerns including security, data locality and regulations, so hybrid environments are going to be in the majority for the foreseeable future.

However, it could be argued that hybrid database services are not just an inevitable phase of adoption, but actually have a role to play in accelerating the adoption of cloud database services. Database services that span on-premises and cloud will provide a consistent experience for database administrators and users, as well as tools and managed services that will enable users to transition workloads to cloud databases, rather than lifting and shifting applications and associated databases, which can be costly and complex.

This transition of workloads from on-premises to cloud database using hybrid database services will be enabled by a number of core technologies: database software that supports elastic expansion and contraction, as well as cloning, refreshing and relocating databases from on-premises to the cloud; and also database management software that enables organizations to manage assets on-premises and in the cloud, effectively giving users a single pane of glass in which to work.

Hybrid vs Lift and Shift



Use case examples

As part of its ongoing research into cloud database adoption, 451 Research recently spoke to three companies in different stages of cloud database deployment. The use-case examples below illustrate the multiple trends driving adoption of cloud databases, as well as the various challenges and benefits of cloud database services.

CUTTING DATABASE COMPLEXITY AND COSTS USING CLOUD AT ZAMIL ITG

The conglomerate Zamil Industrial's in-house technology provider is looking to reverse the ratio of on-premises versus cloud databases in a staged approach over the next five years. 451 Research spoke with its Program Manager, Abhijit Wagh, to assess the motivation behind this thinking and whether he sees any bumps along the way.

Zamil Industrial is a publicly listed company based in Dammam, Saudi Arabia, that develops materials and equipment such as air conditioning for use in the construction industry. It employs over 11,000 people in 55 countries, and derives around 30% of its revenues from outside Saudi Arabia.

The vast majority of its IT needs are provided by an in-house IT operations and technology group called Zamil Information Technology Global (ITG), that has between 100 and 150 staff. Zamil ITG aims to serve Zamil Industrial's technology needs with unified processes across the parent firm's numerous subsidiaries, whilst obviously complying with any local applicable laws and regulations. It aims to automate workflows, optimize IT performance and respond to business requests in as timely a manner as possible.

Zamil ITG is responsible for all database purchasing decisions for its parent company. Databases are clearly an important part of the IT estate: not only do they underpin its critical applications such as ERP, finance, supply chain management (SCM) and human resources, but they also account for around 60-70% of the total software budget.

Across the group, it has just two database providers: Oracle and Microsoft. The vast majority of its database needs are provided by Oracle (the firm has deployed around 12 Oracle Databases), with two Microsoft SQL Server being used to support a workflow application that relies on Microsoft SharePoint and Adobe software. In terms of volume, there is around 600GB in Oracle Databases on-premises, and 5-6GB in SQL Server on-premises.

Zamil ITG has also deployed two Oracle Database instances in the Oracle Cloud: about 100GB is currently stored there. However, the company is in the process of moving much more of its database workloads to the cloud. Whilst today the ratio is around 80% on-premises to 20% in the cloud, it anticipates that the ratio will be 70/30 or even 60/40 next year. Five years out it anticipates that cloud deployments will have overtaken on-premises, to a ratio of perhaps 60% cloud, and 40% on-premises.

So why is the company so keen to move more database workloads to the cloud, and does it envisage any problems with the strategy?

“Sharing becomes very smooth. Backup and upgrades are very smooth. We don’t have the licensing cost of so many Oracle instances, and a lot of time that was spent maintaining and upgrading them in each country can be done much more easily, centrally, in the cloud.”

Abhijit Wagh, Zamil ITG

Abhijit Wagh is Program Manager at Zamil ITG, with a particular focus on its database strategy, which it applies across Zamil Industrial and all of its subsidiaries. He told us that a good example of the benefit of cloud database services came from one of its document management applications used by engineers. Originally, since the application was split across five countries, each had its own Oracle Database instance. By moving the application to Oracle Database in the cloud, the company has reduced that to a single instance.

Wagh said the advantage of this approach is that sharing between geographies, maintenance, backup and upgrades are all far smoother and simpler.

Today Zamil ITG has deployed around 17 applications in the cloud, but that figure is going up all the time. Wagh said the obvious cost savings and efficiency improvements mean that the company’s goal is to deploy on the cloud wherever and whenever possible, which is why he expects cloud deployments to have outstripped on-premises databases within the next five years.

Adding up the cost savings in terms of licensing costs, and maintenance and upgrades of the previous on-premises databases, Wagh estimates that the company can save 60-70% by moving to Oracle Database Cloud Service. In addition, collaboration across geographies, backups, maintenance and upgrades are all far smoother.

But what about security concerns? Are there any applications that are less suited to database-as-a-service? According to Wagh, applications such as ERP and finance might be harder to put in the cloud due to security concerns in the minds of senior executives as well as investors. However, he believes it might become easier to conceive of as the company adds more applications to the cloud, and as other companies start to move ERP or finance applications into the cloud.

“There would be lots of questions from management and investors about moving business data such as finance and ERP to the cloud. To answer those questions we need to show them that this is OK as we add more applications. They need to see more examples from the market, too.”

Abhijit Wagh, Zamil ITG

Later this year the company will deploy a more critical application – a project information management system – on the Oracle Database Cloud Service. Wagh noted that particular application includes rather sensitive information; however, following a review the company is happy with the security on offer.

Wagh said whilst he would never say never, the company has no plans to look to any alternative database providers. In fact, he said there is benefit in using Oracle both on-premises and in the cloud, because if any issues were to arise, there aren’t multiple vendors that are able to blame each other.

With the obvious cost savings that the company has identified, it hasn't been necessary to do a detailed TCO analysis. Moving database workloads to the cloud hasn't just saved money either: Wagh points to the various operational efficiency improvements as another reason he expects cloud database deployments to overtake on-premises in the next five years, even if cost-savings are the biggest driver.

Developers can deploy applications more rapidly because they don't need to have the hardware team provision machines, and there was no data transformation required to move data from on-premises Oracle instances to the cloud – indeed Wagh says Oracle's migration tools are excellent. In addition, it's far easier to test new applications in the cloud, and far faster.

So are there any applications that will never be suitable for deploying in the cloud? Whilst Wagh concedes that it would be a tough sell to put finance applications in the cloud today, he expects that one day, all applications will be considered suitable to be hosted on Oracle Database Cloud Service.

SOLUTION-SOFT LEVERAGES CLOUD FOR SOFTWARE DEVELOPMENT AND QUALITY ASSURANCE TESTING

Solution-Soft, a Silicon Valley-based software firm, wants to be the preeminent leader in driving development activities, specifically quality assurance (QA) to the cloud. 451 Research recently spoke with Solution-Soft's CTO, Paul Wang, to discuss the firm's strategy for taking key development tasks and activities to the cloud, which have traditionally been done on-premises.

Solution-Soft was founded in 1993 with headquarters in Santa Clara, California. The company started out initially offering a storage management product. Since then, Solution-Soft has expanded its portfolio to provide other system platforms and management products such as Safe Velocity for secure data transfers, GDZip and MEZip for file compression, Safe Capacity for automated data life-cycle management, and Time Machine for virtual clock application testing.

The company counts 46 of the Fortune 100 amongst its customers, with total customer count exceeding 2,000. There are approximately 50 employees in the company and about half of those work in engineering roles.

Solution-Soft's flagship product, Time Machine, provides customers with the ability to setup up virtual clocks and 'time travel' back or forward in time to allow for application testing and to conduct quality assurance testing during software development. Time Machine, for instance, allows customers to test end-of-day, month, quarter, and even year-end processes for billing, workflows, and similar time-sensitive processes.

In order to ensure that Time Machine can work on a variety of platforms—Linux, Windows, Solaris, AIX, and HP-UX, for instance—Solution-Soft conducts a number of testing scenarios. Solution-Soft likes to replicate its customers' environments when conducting the testing scenarios because it provides the most ideal environment.

However, mimicking customers' environments can often include building out complex racks and server systems with a variety of applications. Rather than making significant investments in on-premises hardware, including resources to maintain the systems, Solution-Soft moved its development testing, along with quality assurance activities to the cloud.

The primary driver behind the move to the cloud for Solution-Soft was to gain a competitive advantage because the company found that it could not only shorten its development cycles, but also cut costs at the same time.

Time Machine is compatible with a variety of databases. However, for Solution-Soft's customers, the Oracle Database is the database of choice for most users—approximately 70%, according to the company. That being the case, the company recently released a new product called Time Machine Framework for Oracle. Solution-Soft does 100% of the development for this product in the cloud because the cloud provides a number of development benefits.

Because Solution-Soft uses the cloud for development testing, the company is not running the Oracle Database in production per se. Instead, Solution-Soft leverages the cloud to spin-up Oracle Database instances for testing scenarios. And at any given time, Solution-Soft might have up to 50 separate Oracle Database instances running in the cloud running a mix of environment variables—applications, cores, memory, and so forth.

While Solution-Soft likes to mimic its customers' environment to ensure accurate test scenarios, the company also realizes that it's not feasible to replicate fully the customer environment. As such, Solution-Soft finds that 1TB is the typical data volume, which the company has found adequate to run its tests.

While Oracle is the dominant database in use by Solution-Soft's customers, other databases are still in use amongst its customer base. Therefore, Solution-Soft still carries out some on-premises testing scenarios for other databases. The current ratio is approximately 60-40 for testing on the Oracle Cloud versus on-premises testing for non-Oracle databases.

Even though Solution-Soft does 40% of its development in the cloud, the company is looking to move that to 100% over time, particularly as Oracle adds support for additional operating systems, such as Windows and Solaris to its cloud. The move to put development in the cloud is primarily driven by economics for Solution-Soft, although there are some strategic and technical advantages as well.

From a strategic standpoint, the cloud enables Solution-Soft to improve its time to market—that is, to release its software faster. For Solution-Soft, the cloud negates the need to rely on IT to maintain on-premises hardware. From an economic standpoint, Solution-Soft doesn't need to pay for resources to carry out administrative tasks, which can often be tedious and low value-add. Instead, personnel can work on high-value tasks. There are costs for storing large racks and servers when there can be intermittent utilization. With the cloud, Solution-Soft is able to spin-up or spin-down servers at will and maintain greater efficiency over time. From a technology perspective, Solution-Soft doesn't need to configure and setup complex rack servers that can take several weeks to set up initially and often require incremental tuning over time.

While Solution-Soft is moving towards being 'all-in' on the cloud, some of its customers continue to face concerns and challenges in moving to the cloud. One of the most common issues lies with how security is managed. Another is the process of migrating data and applications to the cloud. Performance is another often-raised issue but Solution-Soft feels that performance is in many ways manageable because extra burst capacity can be spun-up as required.

For Solution-Soft, it envisions fully transitioning to the cloud for all its development needs. However, in working with some of its customers, it sees more of a hybrid model emerging where some workloads are required to be on-premises while other workloads can be in the cloud. That being the case, Solution-Soft still needs to develop tools and utilities that can operate in a hybrid environment, which includes the company's Time Machine Management Console, an interface application that allows for hybrid management.

Time Machine Framework for Oracle and Management Console is available at Oracle Database Cloud Marketplace. It enables Oracle Database Cloud customers to pull in their go-live date to migrate to the Oracle Cloud faster or run their Quality Assurance test bed in the cloud efficiently.

Solution-Soft is looking to be the leader in the cloud-based software development and quality assurance testing. That's primarily why Solution-Soft is in many ways practicing what it preaches. The company does its development work for Time Machine Framework for Oracle exclusively in the Oracle Cloud and as such is capturing best practices. In working with its customers, Solution-Soft is in a much better position to pass on these best practices and encourage its customers to adopt the Oracle Cloud.

SETTLEOURESTATE.COM KEEPS THINGS SIMPLE IN THE CLOUD

The online asset management firm Settleourestate.com chose cloud database services to underpin its growing online business.

Settleourestate.com, launched in July 2015, is an online asset management service provider. It's geared up to help those dividing their assets amongst friends and family members: they insert their assets individually or by uploading a spreadsheet of items, and they can then assign items to individuals as they choose.

Meanwhile, registered individuals can log in and have their say as to which assets they are particularly fond of. The company says that as well as helping someone organize how they distribute their assets, it also means that emotions stay in check and the process runs more smoothly.

It's a small firm – having only launched last summer – that employs around ten staff members. It is the brainchild of founder and CEO, Ron Hardman. As well as running the company, Hardman also designed the website technology: he has held technical roles at Oracle and is the co-author of a number of books such as Oracle 10g PL/SQL Programming by Oracle Press.

The company currently has in the region of 4,500 customers using its asset management database. The service is provided free of charge – the firm has plans to add premium features for a subscription – and users have around a year from when they first start to allocate their assets and take into consideration feedback from family and friends. Once all assets have been allocated, each individual can download their own personal list, export it to a spreadsheet, or request an email summary.

Being something of an Oracle expert, it is not surprising that Hardman chose to build the business on technology built with Oracle Application Express (APEX) – a rapid application development environment to build web apps on top of an Oracle Database. The application was developed in APEX, and subsequently hosted on Oracle Database Cloud.

Settleourestate.com has no databases on-premises, no other database providers, and nothing that remotely resembles hybrid cloud: the company is exclusively cloud-based.

Currently, the company has a single Oracle Database instance in the cloud, storing around 4.5GB. Hardman says if it grows much more, it would probably have to add another instance. There are two applications that run on the database: the main asset management application that is the foundation of the Settleourestate.com service, and another administrative console that is solely used by staff for management and reporting purposes.

The company is about to launch a new service, called MyQuest, which will probably require another Oracle Database instance on Oracle Cloud. That service will help users map out their various goals and chart their progress towards them. Hardman says there is no doubt that he will again use Oracle APEX and the Oracle Database Cloud, since he has been very pleased with his current use of the technology.

“Oracle APEX is my number one product. It makes it simple to build a fully functioning web application really fast.”

Ron Hardman, CEO, Settleourestate.com.

Settleourestate.com's code is hosted in Bitbucket. Code is then checked in, and data backed up from the Oracle Database at regular intervals without affecting the running applications. Hardman notes that Oracle Database Cloud in any case automatically creates two mirrors of the database that are held in different geographic regions, with point-in-time recovery capability. Hardman says the biggest advantage of choosing an Oracle Database Cloud – other than that he was already very familiar with Oracle technology – was time to market. He was able to go from the start of development to launching the product in 30 days.

“I went from start to launch in 30 days. If I hadn't chosen cloud, I would still have been configuring the hardware and getting the database working by that stage.”

Ron Hardman, CEO, Settleourestate.com.

Hardman says that it would have been prohibitively expensive to use an Oracle Database on-premises, but since he wanted to use APEX he was keen to stay with an Oracle database. Besides, he is positive about the speed and flexibility of deploying Oracle Database in the cloud.

Are there any drawbacks? Hardman says there are some security applications that he is familiar with that he can't use with Oracle Database Cloud Service, because it doesn't allow him full systems administrator privileges. There are other ways of adding similar packages, however.

He also notes that any upgrades to the Oracle Database are made according to Oracle's schedules, not his own. Whilst he is given notice of a short period of downtime for such an upgrade, and so far has not had an issue with his running applications, he notes that he does need to test the applications will still function correctly after an upgrade.

Despite that, Hardman says the company has had no performance, security or availability concerns with Oracle Database Cloud. He says that there is a big advantage in how easy it is to manage the Oracle database instance, saving on a full-time database administrator. If anything, Hardman would like it to be even easier for him to spin up a new Oracle Database instance in the cloud: he can request one via the Web but it still needs approval by Oracle staff.

Are there any applications that wouldn't be suited to the Oracle Cloud? Hypothetically, Hardman says that applications such as finance or ERP might be difficult to host in the cloud. But he stresses that this isn't down to the technology from Oracle, but because a company would need good in-house IT skills to ensure the security of data at rest as well as in motion if it needs to be moved regularly between on-premises applications and the cloud.

In Hardman's case, with his existing Oracle expertise and fondness for the APEX development environment, Oracle Database Cloud Service was a no-brainer. Nevertheless, the time to market, simplicity and cost savings have all more than met expectations for Settleourestate.com, giving Hardman the confidence to use the same technologies to underpin his next major project, MyQuest.

Conclusions

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DBaaS adoption is still nascent but given the multiple benefits of moving to cloud in general and DBaaS in particular, we expect to see growing adoption of database services in the coming years. Cost avoidance and cost savings are an obvious primary driver for greater adoption, but operational efficiency, reduced administration overheads and faster time to development will also drive greater adoption. Enterprises of all sizes are recommended to begin evaluating DBaaS offerings, as well as their existing workloads to identify those suitable for migration to DBaaS. There are also multiple barriers to adoption, including security, data locality and regulatory considerations, so while security concerns are abating, hybrid adoption models can be expected to dominate in the short term. Hybrid database services are not just an inevitable result of the existing reliance on databases deployed on-premises, but also have the potential to serve as an on-ramp to increased DBaaS adoption by providing a consistent experience for database administrators and users, and the potential to lower the cost and complexity of transitioning workloads to DBaaS. Enterprises should also begin evaluation of hybrid database management offerings that will enable them to manage both on-premises and cloud databases and lower the barriers for transitioning workloads to DBaaS.

Key findings

DBaaS is in the very early stages of adoption, with most data-related workloads deployed on-premises.

We are seeing increased use of cloud database services for development and test use-cases, and increased adoption of both public and private cloud for operational and analytic databases is anticipated.

The key drivers for cloud databases are cost avoidance, flexibility, IT rejuvenation, transformational change, and data gravity.

One company interviewed estimated that it can save 60-70% in terms of licensing costs, and maintenance and upgrades by adopting cloud databases.

Interviewed companies also cited operational efficiencies: reduced database administration requirements, lower server configuration and management overheads, and shorter development cycles.

The primary barriers to cloud database adoption are security issues (both perceived and real) liability, performance, cost and people and process change.

Companies interviewed expect security concerns to abate over time, and already have plans to deploy more mission critical applications involving sensitive data to cloud databases.

The vast majority of enterprises are a long way from going 'all-in' on cloud, meaning that most companies will be running a combination of on-premises, private cloud and public cloud database workloads for the foreseeable future.

Since all companies other than brand-new start-ups have already made investments in databases deployed on-premises, it is inevitable that most enterprises will go through a hybrid phase of using both on-premises and cloud databases.

Hybrid database services have a role to play in accelerating the adoption of cloud databases by providing a consistent experience for database administrators and users, as well as tools and managed services that will enable users to transition workloads to cloud databases.
