Database.com Getting Started Series White Paper

The future of database technology is in the clouds

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Overview

Database technology is the persistence layer at the heart of all data-centric applications, the tier of software that's in charge of organizing, protecting, and managing shared database access reliably, securely, and efficiently. This paper explores what the future holds for database technology. We'll learn the significant challenges facing on-premises database systems as cloud computing adoption becomes mainstream, and how the inevitable future of databases is cloud database services that are management-free, automatically tuned and optimized, and elastic to variable resource demands. Finally, we'll take a quick look at the Database.com cloud database service and some of its differentiating features that uniquely position it to support social and mobile apps.

Cloud computing arrives

Since the millennium, cloud computing has forever changed the landscape of the IT world because it provides enterprise-grade computing resources that are affordable and instantly available. Clouds provide straightforward access to IT resources. You just access as much resource as you need, when you need it, and never have to deal with the complexities of managing all the underlying mechanisms that provide the resources. Life is suddenly a lot simpler and easier with cloud computing.

The future of on-premises database systems: big challenges

For years, enterprises have been using database management systems (DBMSs) in their data centers as the heart of mission-critical applications. But the classic on-premises database server as we know it today will not likely survive in the world of cloud computing. Why such a bold statement?

- **On-premises database systems are difficult and time-consuming to manage** – They're notoriously complicated to configure and maintain, which doesn't match well with the low-touch model of cloud computing.
- **On-premises database systems don't scale easily** – They're not designed to automatically scale their workload elastically in response to varying demands at a moment's notice.
- **On-premises database systems aren't multitenant** – They're inherently single-tenant systems, which requires that each organization set up and manage multiple databases, sometimes for each application, and that's a lot of work.

While traditional database vendors struggle to adapt existing technology or invent new technology to address these problems, a serious challenge to their market share dominance has emerged: cloud database offerings.

The future of databases: cloud database services

A cloud database service, or *Database as a Service (DbaaS)*, provides easy access to scalable, on-demand database resources that data-centric apps can use. Cloud database services are the inevitable future of database technology because, when designed and delivered properly, they unlock the potential to solve the most pressing and daunting problems IT shops now face when deploying and managing on-premises relational databases.

- Cloud databases are **easy to use** because they don't require users to perform any low-level management such as patching, backups, and configuration.
- Cloud databases **deliver transparent performance** because they're automatically tuned and improved by the service provider daily.
- Cloud databases are **cost-efficient** because they don't require any up-front, expensive investments like software licenses or hardware, and they transparently scale according to varying application workloads.
- Cloud databases are **instantly available** to whoever needs them with just a few mouse clicks.

- Cloud databases are **reliable and secure** because they're constantly monitored and administered by dedicated professionals whose only job is to manage them.

Database as a Service is not just a concept—many nascent cloud database solutions are available or appearing today that embody the attributes described previously. But can you trust such untested systems to reliably and securely manage your data?

Introducing Database.com

Database.com is a proven cloud database solution you can use to support the persistence needs for your apps. Following are some of the key features of Database.com.

Proven

Database.com is proven database technology that powers all of salesforce.com's products today. At the time of this writing, it serves more than more than 100,000 organizations, 135,000 applications, 3 million users, and 10 billion transactions per quarter—all with an average request response time of less than 300ms and an average up time of 99.9+ percent for many years. Salesforce.com is completely transparent about the health of all systems via the website trust.salesforce.com. Here, you'll find historical and current status and performance information.

Easy to use

With Database.com, there's nothing to manage—salesforce.com takes care of everything for you. There's no software to install, update, and patch. No waiting on someone else when you want to provision databases. No worries about database backup and disaster recovery. No complex documentation set with thousands of pages and parameters to tune for performance or elasticity. There's even automatic indexing. Whether you have 1 database or 1,000 databases, all you need to focus on is building great apps.

Trustworthy

Database.com is built with the security and privacy of customer information in mind. Salesforce.com's infrastructure and corporate workplace meet all of the highest industry standards, including SAS 70 Type II, SysTrust, and ISO 27001 certifications.

Modern

Database.com is more than just another database system—it's jam-packed with next-generation features that make building and maintaining highly functional, secure, social, and mobile apps a snap.

- Database.com users, profiles, roles, groups, and row-level sharing rules help you build secure apps without the need to code, test, and maintain your own complicated security logic.
- With Database.com, it's easy to implement common application functionality without writing complicated and error-prone code. Such features include declarative, point-and-click configuration for workflows, encrypted/masked fields, validation rules, formula fields, roll-up summary fields, and cross-object validation rules.
- Database.com is "social" because it includes the Salesforce Chatter API, a built-in data model apps can leverage to become instantly social and collaborative.
- Database.com's REST APIs, OAuth implementation for user authentication/authorization, data feeds, custom Web services, embedded security model, and other features make it a perfect fit for easily building secure, scalable mobile apps, either native or HTML5.

Open

Database.com's full complement of open APIs lets you build applications using the approach of your choice. REST- and SOAP-based APIs are standards-based APIs that make Database.com open to whatever programming language you want to use. Using various APIs, your applications can do many things such as create-read-update-delete (CRUD) business data, load a large number of records asynchronously, and take advantage of the Chatter API to provide collaboration and social networking capabilities to any application.

Powerful

Most modern apps use server-side logic to centralize complex business logic and enforce complex data integrity rules. Apex, with syntax much like Java, is Database.com's procedural language that you can use to create server-side logic for an application. For example, Apex lets you create stored procedures that modify the database within the context of ACID transactions, and expose them as a custom Web services API (RESTful or SOAP) for your apps. You can also use Apex to build database triggers, routines that automatically fire (execute) when apps modify records in your database.

Summary

Since their inception in the 1970s, traditional on-premises database systems have grown overly complex, difficult to manage, and are struggling today to take full advantage of cloud computing technology. On the other hand, management-free, automatically tuned and optimized, and highly scalable cloud database services appear destined to be the future of databases.

Database.com is an enterprise cloud database service provided by salesforce.com. Database.com's technology, designed specifically to service a cloud, today supports some 100,000+ organizations across the globe. Individual enterprises and commercial Web software vendors trust Database.com to deliver robust, reliable, secure, Internet-scale applications.

For more information
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