

Data In the Cloud: The Changing Nature of Managing Data Accessibility

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Effective management of enterprise data is both an opportunity and a concern for organizations using cloud-based services. Understanding the diverse business demands for data hosted in cloud-based application services, known as data in the cloud, will help IT leaders ensure access to crucial company data.

Key Findings

- Many organizations tell us that their fear of losing control over enterprise data is increasingly outweighed by the benefits offered by cloud-based application services, such as lower costs for infrastructure, accelerated development and more scalable solutions.
- There are justifiable concerns about data interdependencies that arise in virtual environments, where an organization's internal applications need to work in concert with cloud-based applications.
- Effective management and use of data represents a significant challenge for most organizations.
- Cloud computing increases data management complexity through security and privacy issues.

Recommendations

IT organizations considering cloud-based services:

- Examine the information delivery expectations across various corporate roles to determine your data management needs.
- Evaluate providers' ability to support access to source data, transforming and moving data, and, possibly, consolidation of data into internal applications (for example, a data warehouse) or external applications (such as hosted reservation applications) in a consistent and integrated manner as part of the organization's integrated architecture (which has been "extended" into the cloud).

Organizations in countries where regulatory controls dictate where data can reside:

- Ensure service providers' data hosting plans comply with local regulatory requirements. But do not impose data location restrictions on providers unless compliance is mandatory.

Vendors offering data management and integration in the cloud:

- Include performance and monitoring services and information delivery capabilities optimized for managing data and services in the cloud. Ensure that the virtual environment meets ongoing business requirements.

WHAT YOU NEED TO KNOW

Enterprises are finding that the fear of losing control over enterprise data is increasingly outweighed by the benefits offered by a collection of services accessible from anywhere. Cloud-based services also offer savings by removing the need to procure hardware and infrastructure. However, effective management and use of crucial data located in the cloud represents a significant challenge for most organizations.

STRATEGIC PLANNING ASSUMPTIONS

Through 2013, 30% of enterprises adopting cloud-based services will base their choices on providers' capability to reliably deliver and provide access to their data in the cloud.

ANALYSIS

Introduction

Use of alternative delivery models such as software as service (SaaS) and cloud-based offerings is increasing as businesses strive to cut costs during the economic downturn. Increasing numbers of enterprises are placing their data in the cloud. This is because the concept offers advantages such as lower infrastructure costs, fewer barriers to entry and accelerated speed-to-market. However, the effective management and use of data in the cloud presents significant challenges for most organizations. We examine the issues and highlight actions that need to be taken to solve the challenges.

The Future for Data in the Cloud

Gartner believes that cloud computing has the potential to dramatically reduce the economics and complexities of obtaining IT capabilities. This is because it enables on-demand use of hardware and software resources that users no longer need to install, deploy and support (see Note 1). As cloud computing evolves, many services are gaining the ability to scale up to almost any size of demand quickly, which is significantly increasing the ease of deployment. Users are attracted to cloud-based services because they offer access to a more scalable solution that may be more powerful than their internal technical architecture.

Note 1

Gartner's Definition of Cloud Computing

Gartner defines cloud computing as "a style of computing where massively scalable IT-enabled capabilities are delivered 'as a service' to external customers using Internet technologies." Off-premises computing resources are allocated to applications or customers elastically: just-in-time with on-demand and metered quantity and quality (advanced capability). To fulfill this requirement, the provider must have resources that substantially exceed the average use patterns. Therefore, mature cloud environments have massive scalability.

Enterprises are also adopting cloud-based services to achieve greater speed-to-market by avoiding lengthy application development and heavy reliance on internal support teams. Alternative approaches such as business process utilities and SaaS have made it easier for many providers to offer various "turn on and use" IT capabilities, such as reservation services in travel businesses. This is leading to increased demand for information management capabilities that support data held inside and outside the organization.

Enterprise use of data in the cloud is poised for significant growth. As a result, the number of providers of cloud-based services will increase. This in turn will drive a need for capabilities to manage external enterprise data. Gartner's 2008 study on the use of alternative delivery models for data management shows about a quarter of respondent companies using SaaS for data integration and data quality. However, SaaS (see Note 2) has shown slower penetration in the data warehouse and business intelligence (BI) software markets because companies already have installed software and these established markets are growing more slowly.

Data in the Cloud's Impact on Data Accessibility

The alternative delivery models will continue to evolve, so adoption will require proactive mitigation of data management concerns. In traditional data management deployment approaches, licensing models based on hardware capacity metrics add complexity and costs to implementation and support as business demand increases. At the same time, it is the customers that retain most of the risk and responsibility for the overall design and maintenance of the data management infrastructure. But the nature of data is now changing with the increasing adoptions of alternative delivery

models. It is no longer only resident inside the firewall or on platforms that an organization owns and controls. IT managers therefore need to identify the organization's long-term business strategy and examine the cloud-based services that can meet their data management needs.

There are concerns about information delivery deficiencies in virtual environments, when an organization's internal applications need to work in concert with cloud-based applications. The danger of this affecting corporate or service performance will force enterprises to re-evaluate their strategy for data and SaaS applications. Clear understanding of data use in the enterprise and interdependencies for data access must be established before examining vendors' cloud-based offerings. Careful review of the impact on data accessibility opportunities and challenges will help determine which approach is needed in each dependency area. It will also help establish the baseline for expectations and basis for adoption of cloud-based application services. We examine the areas for consideration below.

Evolving Solution Architectures to Meet Broader Data Accessibility Needs

The challenges of accessing data in application and solution architectures that are growing in complexity while supporting rising demand for tighter and more-real-time integration will force IT leaders to re-think their approach to strategic IT initiatives. Added capabilities will be delivered through cloud-based services. This requires tight coordination and integration during solution deployment efforts to ensure information architectures work with data in the cloud.

Through 2013, 30% of enterprises adopting cloud-based services will base their choices on providers' capability to reliably deliver and provide access to their data in the cloud. Enterprises will seek improved ways of finding, accessing and sharing their data across on-premises and cloud-based services. They will also require ways of monitoring and preventing service deficiencies in the network of data and applications in the cloud to ensure services are delivered efficiently, and they will want a way to manage all of this in one place.

Action: Vendors managing data in the cloud must also offer data delivery and performance monitoring services that are optimized for virtual environments.

Data Sharing Across Cloud-Based Services

Enterprises will need to find more seamless ways to access, integrate and share data between cloud-based services. Therefore, they will demand that vendors provide a single point of entry. An example would be the use of a "one-stop shop" data access service to manage event calendars, contacts, transactions, product information in various applications hosted in the public cloud, regardless of whether they are SaaS-based or developed internally.

Note 2

Gartner's Definition of Software as a Service

Gartner defines SaaS as "software that's owned, delivered and managed remotely by one or more providers." The provider delivers software based on a single set of common code and data definitions that are consumed in a one-to-many model by all contracted customers anytime, on a pay-for-use basis, or as a subscription based on use metrics. The one-to-many model can be implemented through multitenancy or isolated tenancy. Multitenancy implies elasticity — thus, multitenant SaaS is part of cloud computing. Isolated tenancy allocates fixed isolated resources to each user organization — thus, it is a form of hosting.

As cloud-based alliances and technology partnering emerge to improve data sharing, data management offerings will play an increasingly important role in meeting the analytical and operational needs of data and transactions in the cloud. While partnering among providers is an initial step for addressing data-sharing issues in the cloud, resulting capabilities will have far-reaching implications for users. The users will have the ability to access and maintain consistent data across cloud-based domains. This is good news, as any data that is critical for business operations must not depend on the availability or capability of a single cloud-based provider's infrastructure.

Action: Providers of cloud-based services must be prepared to meet the data-management needs of organizations utilizing cloud-based rich data. This will require provision of integration services for accessing source data, data sharing between cloud-based applications, and, possibly, consolidation of data into internal (for example, a data warehouse) or external applications (such as hosted reservation applications or CRM services).

Data Portability

Enterprises will be confronted with the need to move valuable data from one service domain to another when they switch providers. Organizations migrating data from one part of the cloud to another or into internal applications face significant data integrity issues, including incomplete, inaccurate or failed data migration. There will also be the challenge of data integration with the new application. Therefore, stringent information-management policies need to be considered. These should include typical expectations of failover management, high availability, disaster planning and recovery. Cloud-based services adoption and planning must address definitions and standards related to data acquisition, data federation and application integration to ensure there is an architected approach for bringing strategic information back in-house or moving it to another application in the cloud.

Action: Businesses must establish data-migration services as part of their broader solution planning and data-management capabilities. This requires the cloud-based application service to work in conjunction with the user organization's IT systems to ensure data in the cloud remains portable.

Legal and Regulatory Borders for Physical Access

Use of the cloud-based services will be bound by legal and regulatory policies. Many policies apply when sensitive data such as personal or financial information is moved outside the jurisdiction of those regulations. While cloud-based services would largely not promote the keeping of data within an enterprise's national borders, some geographical requirements or national preferences will restrict where data can legally reside. For example, a U.S. company that keeps personal data on European customers needs to deal with the European Union (EU) privacy laws, even if that company does not have operations in an EU country. However, data location restrictions should not be forced on providers unless compliance is mandatory. Restrictions on data location will reduce the efficiency and flexibility of data architectures, and could minimize the business benefits of cloud computing.

Action: Global cloud computing platforms and cloud-based services will need to support data hosting and access issues for nations where regulatory controls dictate where the data can reside. Organizations with such constraints should assess service providers' data hosting plans and ensure compliance with local regulatory requirements. Organizations considering cloud computing need to include the security, privacy and availability risks of the data and application services in the essential compliance measures required of the provider. Information that represents a competitive differentiator, should remain the property of the business and be protected contractually by remedies that include punitive value equal to the competitive risk — which likely far exceeds the deployment cost.