IBM Research:

Secure and Reliable Multi-cloud Storage

*IBM’s Multi-cloud Storage Toolkit eliminates vendor lock-in*

IBM scientists have developed a new cloud storage software that provides a simple interface for clients to migrate data from a storage device dynamically across multiple clouds, while keeping it confidential and secure. The technology is available for early trial testing.

Today, clients across all industries, including banking, retail and government, are embracing cloud computing to drive business innovation and growth. According to the 2012 IDG Enterprise Cloud Computing survey* two-thirds of the organizations interviewed believe that cloud computing is a very or somewhat important enabler of business innovation. However, cloud services can fail or become inaccessible. The study shows that the key concerns of businesses that want to implement a cloud strategy include security, accessibility and the governance of data and information. These underlying concerns about security, reliability and vendor lock-in have hampered the widespread adoption of cloud computing.

IBM’s patent-pending Multi-cloud Storage Toolkit overcomes these concerns by means of an innovative technique that stores and moves data seamlessly across multiple clouds. The software toolkit enables storage systems to access and use third-party private and/or public clouds for data migration, backup or file sharing. Depending on the configuration encryption, integrity protection, compression, and replication across multiple clouds are done by the Toolkit automatically. It uses a “cloud-of-clouds” approach that invokes the resilience of separate clouds to provide stronger protection against service outages and data loss than any single cloud can deliver. The toolkit adds multiple levels of redundancy and reliability by making cloud migration and backup easier and faster than is currently possible. If a cloud fails, the backup cloud immediately responds and ensures data availability, and it does so in a fashion that is transparent to the user.

Enabling the cloud of clouds

The Multi-clouds Storage Toolkit uses an “object storage” interface that permits clients to drag and drop files to be backed up or shared on the cloud(s) of their choice—individually of the vendor. The technology explicitly addresses space efficiency, data synchronization, and metadata coordination when storing data redundantly on object storage—documents are automatically synchronized on all Clouds with the most current version.
No communication between each of the computers using the Multi-cloud Storage Toolkit to access the Cloud(s) is needed.

With IBM's solution, the default storage provider is SoftLayer, an IBM Company, which provides the robust object-based interface. The combination of the Multi-clouds Storage Toolkit and SoftLayer offers clients more flexibility in their data storage management. For example, it enables clients to overcome limitations in their cloud storage capacity by dynamically routing to an alternative storage system—such as easily migrating from an on-premise private cloud to a remote public cloud and vice versa—thus optimizing the overall efficiency of data storage management. IBM scientists are already planning new capabilities for the technology including the ability to transparently migrate data across individual clouds, for example moving files from Amazon to SoftLayer.

The algorithms were published in a paper entitled "Robust data sharing with key-value stores" at the IEEE/IFIP International Conference on Dependable Systems and Networks (DSN): ibm.biz/BdRv2v

About IBM Cloud Computing

IBM has helped more than 30,000 clients around the world with 40,000 industry experts. Today, IBM has 100+ cloud SaaS solutions, thousands of experts with deep industry knowledge helping clients transform and a network of 40 data centers worldwide. Since 2007, IBM has invested more than $7 billion in 16 acquisitions to accelerate its cloud initiatives and build a high value cloud portfolio. IBM holds 1,560 cloud patents focused on driving innovation. In fact, IBM for the 21st consecutive year topped the annual list of US patent leaders. IBM processes more than 5.5M client transactions daily through IBM's public cloud. For more information about cloud offerings from IBM, visit http://www.ibm.com/cloud. Follow us on Twitter at @IBMcloud and on our blog at http://www.thoughtsoncloud.com.

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* 2012 IDG Enterprise Cloud Computing survey

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