

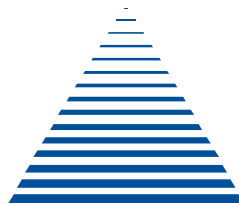
Cloud Storage for IT Conservatives

John Webster
June, 2011

Technology Insight Series

Evaluator Group

enabling you to make the best storage decisions



Evaluator Group

Introduction

Cloud services providers have been phenomenally successful over the past three years. Evaluator Group has observed both large and small companies [turn to cloud-based services providers](#) for blending their on-premise capabilities with alternatively managed IT infrastructure. Cloud and other IT service providers enable new business models, while allowing businesses to streamline their operations and add needed infrastructure quickly, without encumbering capital. IT is no longer bound to be a capital-intensive function that must be provided in house.

But with freedom still comes responsibility. Highly public outages and security breaches such as the theft of customer data at Sony and the outage at Amazon Web Services have exposed the continuing risks involved with cloud computing—a technology that is still maturing. While it is true that cloud services providers are ultimately not responsible for how their services are used, we believe that they do have to live up to very high standards of security, data integrity and user support. And, very importantly, IT administrators must not abandon their responsibilities for conducting a thorough analysis during vendor selection and maintaining careful oversight after deployment.

The Amazon Web Services (AWS) outage of April 21, 2011 [affected customers relying](#) on application and storage services running in one of its five data centers. Some affected customers lost touch with their applications, and, in turn, their customers using these applications, for a number of days. During this period, many of the affected customers reported difficulty in reaching AWS support personnel. Worse, some customers also lost data permanently. The true extent of the damage caused to AWS customers will likely never be disclosed.

This failure exposed two critical aspects of cloud computing that users must investigate and manage going forward:

1. Computing in the cloud requires a thorough understanding of each cloud services vendor's security and data protection capabilities during the selection process. Simply downloading an API and paying for services with a credit card won't provide that critical level of understanding or support when needed. Person-to-person relationships between IT administration and the cloud service provider are also critical to a successful experience with the cloud. Timely communications and support by the cloud service provider are essential when an unexpected event happens.
2. Business continuity is no longer a process confined to internal IT. When cloud services are used, the disaster recovery capabilities of one's cloud services provider must also be considered and practiced under the umbrella of the overall enterprise DR plan. And, if exposure is discovered as a result of the investigation, enterprise IT administrators must figure out a way to eliminate the exposure or find another cloud vendor.

Here we look specifically at how all of the value propositions and caveats highlighted above can be applied more specifically to cloud-based storage services. Since managing, protecting and retaining business data is critical to IT, it is even more important to understand a cloud storage vendor's reliability, availability, and support capabilities. At the same time, we realize that a successful cloud storage deployment will enable a highly scalable storage environment, with significantly reduced capital outlays. We also highlight the capabilities of Nirvanix cloud storage solutions that are gaining traction rapidly with conservative enterprise IT administrators.

Storage in the Cloud—What’s Needed

Large-scale enterprise data center storage administrators are notoriously conservative. And while their expertise is becoming increasingly blended into the IT administrative fabric as server virtualization and cloud integration projects advance, their diligence with regard to data availability and integrity carries forward. Once a decision is made to utilize cloud storage, this same diligence should also be brought forward when selecting a cloud storage services vendor. We believe that the AWS outage in particular has exposed some critical decision points. These include:

Accountability

If a problem occurs, IT administrators need a sense that the cloud services vendor takes ownership of the problem to the extent that the vendor is responsible. Even if the vendor is not responsible, will you get guidance and help with a recovery?

Availability

Whether the data is critical or not, you need an assurance that it will be available to you when you need it. The aspect of availability we’re talking about is not necessarily related to performance or even an SLA. Rather, it’s simply knowing that when you need a data object (file, volume, etc.) it will be available to you as you had planned when you signed on to the service. And, it will be returned to you in exactly the same form that it was when you originally stored it. It’s like depositing money at the local bank. You may not need it for years, but having the assurance that it’s there for you when you need it is an essential service provided to you by the bank.

Predictable Pricing Metrics

Assuming that you understand and are comfortable with the pricing model today, you should have the ability to project your costs for cloud storage for at least the current budget year and possibly the next, based on a reasonable expectation of capacity growth and bandwidth usage (assuming that bandwidth charges apply). Otherwise budgeting for future projects may be at risk.

Data Relocation

Keeping with the bank metaphor, you should anticipate the need to withdraw some or all of your data from a cloud service vendor and store it someplace else. Preparing for this case is advised regardless of whether you are satisfied with the cloud storage provider or not. Reasons for using cloud services can change. When they do, you need to have the flexibility to relocate data to another cloud services provider or to in-house storage—often the case when a new application uses cloud storage at inception, but growth dictates a move to in-house infrastructure. You also need to know how relocation is done, how long it will take, and what the additional charges will be, if any.

Stability

At the height of the Internet 1.0 boom there were approximately 30 Storage Services Providers (SSPs). Of those, only one is still doing business. They failed because their business models could not sustain profitability. Their cost structure included continually buying the most expensive, high-end, enterprise storage array to keep ahead of capacity demand from customers. However revenues never exceeded

costs so they were continually losing money at a rate that put nearly all of them out of business within two years. Cloud storage providers, in contrast, are largely focused on the unstructured data opportunity and use commodity, high-density enterprise storage systems and servers, layering their cloud management software on top. Cloud storage is a long-term business proposition if it is seen as a long-term archival repository—a cloud storage application we see with increasing frequency. Users must be able to match data longevity with the business outlook for the cloud storage vendor.

Nirvanix' CloudComplete Portfolio

Nirvanix was founded in 2007 as an enterprise-class cloud storage services provider and operates eight interconnected data centers in the US, Europe, and Asia. Today, Nirvanix offers variable deployment options—public, hybrid and private cloud storage solutions—under its CloudComplete portfolio and owns all the requisite cloud storage IP for these types of deployments. This means that Nirvanix can deploy a private cloud storage node at a customer site, federate that with their public cloud, and guarantee end-to-end visibility and management.

Nirvanix now counts over 1,000 customers accessing its global network, many of which are large enterprises. Applications for Nirvanix cloud storage services include content distribution, enterprise data protection, disaster recovery, and offsite archive.

Nirvanix Cloud Storage Network

Nirvanix services emanate from a global network of distributed storage nodes under a single namespace called the Nirvanix Cloud Storage Network. The Cloud Storage Network's infrastructure is fully redundant enabling Nirvanix to guarantee 99.9% uptime in its standard Service Level Agreement (SLA) with their customers. Customers can sign up for higher SLAs: 99.99% for two data copies and 99.999% for three or more data copies using Nirvanix policy-based replication. Dynamic load balancing of traffic is accomplished by replicating content in adjacent storage servers, thereby eliminating resource contention and degradation of service during peak load periods. Further, data integrity and protection is underwritten with RAID 10 and RAID-6.

Nirvanix Cloud File System

At the core of the Cloud Storage Network is Nirvanix' internally developed Cloud File System, a true global namespace FS. The Cloud File System's node-based architecture routes customer files to the closest global location where access is occurring to optimize performance. It is engineered to scale up to millions of users and billions of files. Customers are not required to provide additional bandwidth to accomplish content distribution on a global scale. As mentioned earlier, private-to-public cloud federation is supported and partnerships with cloud gateway companies such as Panzura, and Riverbed for its Whitewater appliance, provides a local, enterprise-class on-ramp to Nirvanix' Cloud Storage Network.

Customers interact with the Cloud Storage Network in four basic ways:

The Nirvanix API and development tools facilitate integration of existing customer applications, infrastructure, and internal processes with the Cloud Storage Network. A range of programming languages and development environments are supported and ready to use code samples are provided for reducing time to deployment. Mobile interface capabilities are also supported.

Nirvanix CloudNAS Gateway enables organizations to turn any server into a gateway to the Cloud Storage Network, accessible by many existing applications and processes via the standard CIFS and NFS protocols.

Tight Integration with Third-party Applications including Panzura Application Network Storage, Nasuni cloud gateway, Riverbed Technology Whitewater storage accelerator appliances, CommVault Simpana data management software, Front Porch Digital DIVASolutions archiving and distribution software for the media and entertainment industry, and Symantec backup and archiving products, enabling Symantec's One Click to the Cloud™ for data migration.

The Nirvanix Management Portal (NMP) provides IT administrators with a comprehensive view of an enterprise customer's account. NMP provides a control and monitoring point over storage capacity and communications bandwidth usage as well as file and folder management including file versioning. Incremental backups of customer data are managed via the NMP. Direct user access to backups is also provided. 24x7 operations and continuous monitoring is included. Data relocation is also supported via a facility called Cloud Sideloader that can be used to migrate files from cloud service providers to the Nirvanix Cloud Storage Network.

Security

As mentioned earlier, security is an essential requirement for cloud-based services. Nirvanix offers multiple levels of security that address differing threat vectors and potential risk of data exposure, both external and internal to the Nirvanix Cloud Storage Network. These include:

External

- Three credentials that establish the authenticity of the user plus an optional fourth credential that customers can use when an application is referred over public channels
- HTTPS/SSL encryption at login and token passing during each session
- Multiple password protection measures
- Private key authentication

Internal

- All servers firewalled
- No network management devices accessed from the outside
- Only the exact software components needed to perform the server's role are installed on each server host and each software component executes as an authenticated process, specifically created for that software role
- Each server has network access only to other servers where software components needed for a specific application are resident
- Sensitive data is disassociated i.e. communication over Nirvanix' internal network of file system metadata is segregated from file data.
- Customer sensitive data either strongly encrypted or strongly hashed with secret keys

From a physical integrity perspective, each Nirvanix facility is equipped with digital security cameras with motion detection, biometric hand scanners, access validation with identity and a triple-interlock

early warning fire system with VESDA. In addition Nirvanix has received certification that it conforms to SAS 70 II requirements to ensure proper internal controls are in place.

24 x 7 Support

Nirvanix provides large-scale enterprise-quality service and support starting with initial customer contact, and following through to Nirvanix cloud storage service integration and to post-implementation. Nirvanix solutions architects work collaboratively with the customer's storage, IT, and development departments to determine the Nirvanix cloud storage option and third-party solutions best suited to address business objectives, while reducing costs and optimizing performance and flexibility. After implementation, customers have one-on-one, 24x7, access to sales Nirvanix engineers for timely issue resolution.

Conclusion

In one way, the outage at Amazon shows how rapidly companies of all sizes have adopted these cloud services. Over the past decade, one of the biggest transitions IT has made is from internally to externally sourced services driven by a willingness to accept and use internet-delivered services. However, the customer vulnerability that was extensively reported during the outage on Twitter and in numerous blog posts—including pleas for help posted to the AWS Developer Forum page—graphically demonstrates the fact that cloud is still a maturing IT services delivery model.

We believe that Nirvanix is a step ahead of the present maturity curve because of its singular focus on cloud storage services and the resulting capabilities described above. In addition, it has a better understanding of the very conservative mindset of its large-scale enterprise customers. Full inspection by prospective customers of all Nirvanix' data centers is not only allowed, its encouraged. Customers are also allowed to specify where their data is to reside as part of their contractual agreement. Dedicated sales engineers and solution architects who understand each customer's IT and business objectives manage the person-to-person customer interface. Nirvanix cloud storage has passed muster with a growing list of large-scale enterprise users who are now leveraging their services as a secure and cost-effective way to quickly provision storage for a range of differing applications.

About Evaluator Group

Evaluator Group Inc. is dedicated to helping [IT professionals](#) and vendors create and implement strategies that make the most of the value of their storage and digital information. Evaluator Group services deliver [in-depth, unbiased analysis](#) on storage architectures, infrastructures and management for IT professionals. Since 1997 Evaluator Group has provided services for thousands of end users and vendor professionals through product and market evaluations, competitive analysis and [education](#). www.evaluatorgroup.com Follow us on Twitter @evaluator_group

###