

# HYBRID CLOUD

## START MOVING FROM CONCEPT TO REALITY

There's little doubt that enterprise IT organizations view hybrid cloud as the optimal environment for the future. For example, the market research firm IDC predicts that more than 65% of them will commit to hybrid cloud before 2016<sup>1</sup>. This rapid adoption is being driven by companies seeking to transform into agile, digital-first businesses that can turn on a dime when it comes to launching and scaling new product and service offerings.

The challenge for IT is to be able to securely manage data across different clouds as easily and seamlessly as consumers can manage data across personal devices and services, such as those offered by Apple. However, in the case of Apple, the products and services have been designed to operate within an ecosystem that is rigorously controlled by a single company. The reality is that most enterprise IT environments encompass a diverse mix of legacy systems, outsourced services, and private and public clouds that were never designed to work together.

### WEAVING HYBRID ASSETS TOGETHER

The ideal hybrid cloud is an IT environment where everything can be managed under a single canopy and data can flow freely to where it's needed the most. But performance characteristics vary across platforms; the cost and methods for moving data are likely to be unique to each vendor or service provider; and different clouds may offer different application services and use different data storage models.



For example, enterprise applications that run on-premises rely on a variety of data interfaces, protocols, and formats that have evolved over time and are required by the application architectures. Cloud services, on the other hand, often use relatively new data formats based on a RESTful architecture, such as Amazon Web Services' popular S3 API, or the Swift object protocol developed by the OpenStack community. This type of mismatch between legacy and cloud-native applications presents a significant obstacle for companies that want to migrate their existing workloads to the cloud.

"CIOs are being tasked to take maximum advantage of the cloud, but to do so they must contend with applications and data that are being distributed across a growing number of incompatible cloud services," says Tom Shields, director of strategic marketing at NetApp.

<sup>1</sup> IDC FutureScape: Worldwide Cloud 2015 Predictions, December 2014  
Doc #253476, <http://www.idc.com/getdoc.jsp?containerId=253476>



Ironically, enterprises risk recreating “data center sprawl,” but across a more diverse and virtualized environment than they currently manage, and at a scale they have not previously experienced.

NetApp helps IT organizations build a data fabric for the hybrid cloud that seamlessly connects resources and allows data management, movement, and protection across internal and external cloud services. A data fabric built on NetApp technology is a software-defined approach based on the industry’s most widely adopted storage operating system, which provides a consistent data format, an efficient data transport, and a variety of data protection options for integrating with the hybrid cloud.

NetApp provides a unified architecture so that data management remains consistent across cloud services. This helps eliminate silos by enabling data to flow as applications are moved, whether from legacy platforms to cloud services with nearly unlimited scale, or from the public cloud back to IT-managed, private cloud environments.

## LEVERAGE THE CLOUD WITHOUT SACRIFICING SECURITY OR CONTROL

Despite the emergence of new standards and open source options, connecting disparate data centers, remote offices, and clouds into a cohesive, integrated data management environment presents a major challenge for most IT organizations.

“The broad-based industry adoption of OpenStack APIs and open source container management technologies such as Docker in 2015 makes

multi-cloud integration and workload portability more feasible than in the past, but the imperative is for an overarching management regime that allows automated, policy-based access to all required IT resources, whether at a provider site or in the corporate datacenter,” according to IDC<sup>2</sup>.

A data fabric provides the overarching data management component for storage services and makes it possible to readily move data to and from hyperscale clouds such as Amazon Web Services (AWS), as well as provision and move workloads and data between cloud resources.

For example, a large Asia Pacific-based financial organization wanted to utilize AWS as soon as it became available in the region, but using native cloud storage simply wasn’t an option for all of its workloads for two reasons: 1) Many applications would need to be rewritten to run on AWS; 2) As the custodian of personal information on behalf of various business partners, it was contractually required to maintain physical control over some of the data.

Instead, the company provisioned a hybrid environment using NetApp Private Storage for Cloud so that the physical data storage systems could be deployed directly adjacent to an AWS location, but not actually reside in the AWS cloud. By deploying a data fabric over a secure network, the company was able to maintain the required data governance, save money by exiting an entire data center, and take advantage of the economics and elasticity of virtual servers in the cloud. Moreover, it has now begun to deploy virtual cloud-based storage systems from NetApp that

<sup>2</sup>IDC FutureScape: Worldwide Cloud 2015 Predictions, December 2014  
Doc #253476, <http://www.idc.com/getdoc.jsp?containerId=253476>

support the data interfaces required by its existing applications, making it faster and easier to move legacy workloads to the AWS cloud in the future.

“Data fabric enables organizations to efficiently transition workloads to the cloud when it makes sense, such as consolidating data centers, managing the life cycle of application data, or protecting data in a more cost-effective way than can be achieved on-premises,” says Shields.

## PROTECT YOUR DATA IN A HYBRID ENVIRONMENT

Since cloud first became a viable option, the issue of security has been the foremost concern among CIOs, and it has caused many to be too tentative in adoption. With a data fabric, a single management interface enables IT administrators to use policy engines to enforce service level objectives for data availability and data protection across the hybrid cloud. A single control plane that monitors and controls the flow of data throughout the cloud enables IT organizations to maintain stewardship of their data regardless of where it is stored.



Consistent management across a data fabric makes it possible to employ efficient data transfers for cloud-based backup and recovery, disaster recovery (DR), and archiving. It also enables flexible multi-datacenter replication configurations so that organizations can protect data consistently and cost-effectively, utilizing the diverse resources available in a hybrid cloud.

A data fabric provided much-needed relief to a technology-focused proprietary trading firm experiencing rapid growth. Stringent regulatory requirements had caused the IT team to spend an increasing amount of time backing up systems and storing trading logs, e-mail, and other communications. Not only did it require the dedicated effort of an IT specialist each month to manage the tape-based backups, but restore operations required multiple people to be involved for days at a time.

By using a combination of NetApp cloud-integrated storage and AWS Glacier storage services, the trading firm was able to meet its security requirements, eliminate its tape management service, and benefit from low-cost cloud storage. As a result, backups have been automated, restore operations are quick and painless, and the IT team has been freed up for higher priority projects.

One of the world’s largest HR services firms is also leveraging a data fabric to manage data services across a hybrid cloud, in this case, for disaster recovery. Its IT team had been searching for a solution that could leverage the AWS cloud for DR while maintaining the high levels of application performance achieved when running the applications on-premises. In addition, the entire process needed to be automated to ensure a fast and predictable failover from the primary site to a secondary site in the cloud.

By deploying NetApp all-flash storage arrays, the firm was able to use a single interface to manage the data on its high performance, on-premises storage systems and then automatically failover to a cloud-based storage system running at AWS in case of a disaster. This was made possible by the ability to deploy a secure, software-defined, virtual NetApp storage system in the cloud that runs the same software and delivers the same service levels as those in the data center, a unique capability of a data fabric built on NetApp technology.

## RESPOND FASTER TO CUSTOMERS

A data fabric can also enable businesses to respond to customers faster by accelerating IT cycle times from development and testing through to production. New applications can be rapidly prototyped in the public cloud and then moved across the fabric to the platforms that best fit business requirements for performance and security. Existing applications can be migrated to or from the cloud, and the application data can be seamlessly moved across cloud platforms as requirements dictate.

One example comes from a company that has developed a new platform to help businesses leverage the Internet of Things (IoT). This multinational firm is providing its customers with connectivity, monitoring, management, and big data analytics, which enables them to design new services for a converged physical and digital world, such as options for “pay-as-you-drive” car insurance, and the remote monitoring of engine performance in passenger cars based on real-time data streams.

Creating these new services requires a highly scalable platform that can collect information from billions of devices while offering flexible deployment options for different target markets and customers. The company built its IoT platform by creating a fabric that delivers a variety of data services across multiple clouds, including: an OpenStack-based private cloud; a hybrid environment based on NetApp Private Storage solutions for both AWS and IBM SoftLayer; and cloud-based NetApp storage arrays running at AWS.

Delivering the right level of application performance across hybrid cloud resources is a crucial element when aligning IT assets to the needs of the business. A data fabric can transform how companies manage, secure, protect, and move data in the cloud, and enables them to quickly take advantage of new developments, such as flash storage, converged infrastructure, and a host of new cloud services and software technologies.

## HYBRID CLOUD IS THE NEW IT ECOSYSTEM

Hybrid cloud promises the agility, economics and performance that enterprises are seeking in order to achieve the best business outcomes. However, no one vendor or service provider can deliver the ultimate hybrid cloud, nor would IT organizations want to be locked into a single-source solution. Because of this, one of the key goals for hybrid clouds is the portability to switch from one provider to another as needs and circumstances change.

NetApp has fostered an ecosystem of solutions and services to provide IT organizations with a wide range of choices as they build out their own data fabrics. “We already work with hundreds of partners that deliver cloud services based on NetApp technology,” says Shields. “Now we’re taking it a step further. For example, our customers can spin-up virtual storage arrays in the cloud using a credit card, or they can choose to rent CPU time in the cloud and connect with one of our secure, private storage options outside of the cloud. In both cases, a single management console enables them to easily and efficiently move their application data across cloud services.”

In a fast-changing business environment, IT needs to move quickly and with greater scale than ever before, while balancing risk and costs. The cloud provides IT with an opportunity to speed innovation and opens new possibilities for driving business transformation. NetApp’s vision for the future of data management enables IT leaders to build a foundation for the hybrid cloud today, and then use it to connect with a variety of services in the public cloud based on their business needs.

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