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CIO Guide: Hybrid Cloud Use Cases That Reduce TCO and Drive Business Value

How innovative solutions from Microsoft Azure and NetApp are helping organizations to lower costs and reduce risks in backup/archiving, improve disaster recovery and deploy primary enterprise workloads in the public cloud.

As organizations increasingly look to the public cloud to address specific business opportunities and use cases, Microsoft's Azure Infrastructure as a Service (IaaS) platform is gaining significant momentum. Azure has solidified Microsoft's position as the clear No. 2 provider behind Amazon Web Services and achieved a growth rate of 136% between 2013 and 2014, making it by far the fastest growing platform in the industry.[1]

The growth reflects Microsoft's more aggressive approach to the cloud in general and reinforces its position as a company that can offer enterprise customers a comprehensive package of cloud products and services, including private, hybrid and public cloud solutions. The range of solutions is expanded considerably through enhanced solutions offered by other industry leaders such as NetApp.

For companies that already have a significant investment in Microsoft platforms, Microsoft cloud solutions offer new possibilities to improve agility, reduce costs and simplify manageability. Using Azure as part of a cloud or IaaS solution also helps IT departments address key initiatives that are driving cloud adoption, such as data backup and archiving, disaster recovery, test and development and business analytics, among others.[2]

While many IT decision makers understand how Azure can provide significant value as part of a hybrid cloud solution, they also recognize the importance of focusing on security, compliance and other issues that effect how, where, when and which use cases are deemed most suitable for a successful deployment.

Given all of these challenges, IT leaders can maximize opportunity by exploring use cases where leading

1 "Microsoft's Azure is Starting to Close the Gap With Amazon's Cloud Service," Bloomberg Business Week, Dec. 11, 2014

2 "NetApp is Accelerating Your Data Protection Strategy to The Clouds," Enterprise Strategy Group, January 2015

vendors such as NetApp have developed products that have been designed to make it easier to deploy a public cloud solution such as Azure. This white paper examines specific use cases for deploying Azure as part of an enterprise cloud initiative. They are:

- **Incorporating Azure into a NetApp backup and archiving solution.**

- **Using Azure to support primary enterprise workloads, such as SQL, Oracle and SAP, as well as disaster recovery.**

In addition to examining why and how Azure can deliver significant benefits in these use cases, the paper also explores innovative solutions from NetApp that make deploying Azure in these contexts much simpler and more cost efficient, delivering ongoing value to any enterprise

USE CASE: Azure and NetApp in a Backup/Archiving Environment

Cloud computing is a disruptive force that is changing the paradigm—for the better— in backup and archiving strategies. IT decision makers cite data backup and archiving as the No. 1 use for cloud infrastructure, according to a survey by The Enterprise Strategy Group.[3] Business and IT challenges driving this shift include:

- **Data growth:** Data continues to grow at a staggering rate with no end in sight. The amount of data that is being created and stored is doubling every two years and will grow by a factor of 10 in the period starting in 2013 and ending in 2020.[4]

- **Cost containment:** Buying more on-premises disk arrays to deal with storage growth can have a huge negative impact on storage costs and IT resources, particularly if organizations don't find efficient solutions for backup and archiving.

- **Reduced time to complete backup and recovery:** More data creation means more data to back up. In today's business environment, where organizations are trying to accelerate IT processes, backup solutions must be able to complete within shrinking backup and recovery windows.

- **Accelerated RTOs and RPOs:** Compliance and e-discovery demands—along with overall business demands for higher availability—require faster recovery times and less data loss, something that many legacy backup solutions cannot keep pace with, particularly solutions that continue to use tape.

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3   Ibid, Footnote No. 2.
4   "The Digital Universe of Opportunity: Rich Data and the Increasing Value of the Internet of Things," IDC, April 2014

- **Moving away from tape:** Organizations using tape architectures for backup and recovery take the risk that they won't be able to back up and recover data in a timely manner to meet business, regulatory or other requirements. In addition, they are likely spending way too much money on a solution that is not efficient for current and future needs. When making decisions relating to moving from tape to disk, explore innovative alternatives rather than simply purchasing another on-premises backup solution.

Why Consider A Hybrid Cloud Approach?

Using NetApp and Azure as part of a modern backup and archiving solution will make a lot of sense to IT decision-makers because it allows the organization to take advantage of the benefits of a cloud architecture, including:
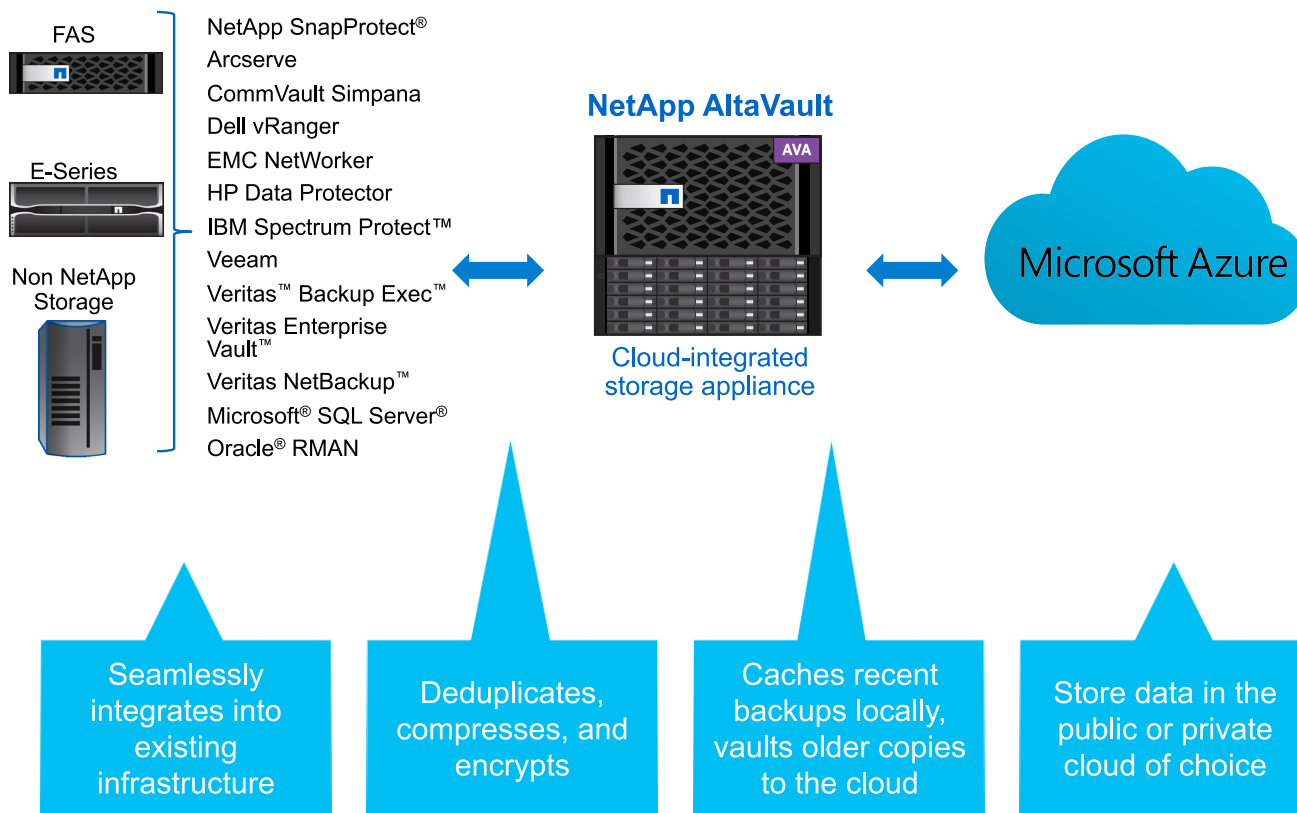
- Lower total cost of ownership
- Improved resource optimization
- Elastic scalability (particularly important in dealing with data growth and workload management)
- Self-service capabilities
- More efficient use of IT personnel and resources

But a public cloud solution alone will typically not be sufficient to address all of the challenges facing IT in dealing with backup and archiving today. By using a local appliance that is integrated with a public cloud solution such as Azure, the organization can reduce security risks, accelerate backups and restores, shorten RTOs and RPOs, and enable improved resiliency.

What to Look for in a Hybrid Cloud Solution

A leading example of a cloud-integrated storage appliance for backup and archiving is NetApp AltaVault . AltaVault works with existing backup software, such as NetApp SnapProtect, CommVault Simpana or Symantec NetBackup. AltaVault can also ingest data directly from Microsoft SQL Server, Oracle RMAN and others (see graphic below).

AltaVault sits on the customer premises and integrates with the existing backup software. It deduplicates, compresses and encrypts data and streams it to Microsoft Azure (or any other cloud provider of the customer's choosing). AltaVault intelligently caches recent backups, while vaulting older versions to the cloud, as depicted here:

FAS

E-Series

Non NetApp Storage

NetApp SnapProtect®
Arcserve
CommVault Simpana
Dell vRanger
EMC NetWorker
HP Data Protector
IBM Spectrum Protect™
Veeam
Veritas™ Backup Exec™
Veritas Enterprise Vault™
Veritas NetBackup™
Microsoft® SQL Server®
Oracle® RMAN

NetApp AltaVault

Cloud-integrated storage appliance

Microsoft Azure

| Seamlessly integrates into existing infrastructure | Deduplicates, compresses, and encrypts | Caches recent backups locally, vaults older copies to the cloud | Store data in the public or private cloud of choice |

There are significant customer benefits to this approach. AltaVault enables rapid restores with the advantage of off-site protection. It delivers a backup and recovery strategy driven by cloud economics, along with faster recovery, reduced data loss, ironclad security and minimal management overhead. With AltaVault, organizations have been able to:

- **Reduce overall TCO** by approximately 90% when compared to traditional backup and archiving methods.
- **Cut data volumes** by up to 30:1 using variable-length inline deduplication and compression.
- **Improve security and compliance** with complete, end-to-end security for data at rest and in flight and FIPS 140-2 Level 1 certified encryption.
- **Reduce risk** by eliminating tape transport and accelerating RTOs and RPOs.
- **Accelerate cloud onramp** by deploying in less than 30 minutes and transporting data to the cloud up to four times faster.
- **Support policy-based** data lifecycle management to help lower costs, reduce risks and streamline compliance/e-discovery responsiveness.

USE CASE: Azure and NetApp for Primary Enterprise Workloads and Disaster Recovery

As with backup and archiving, cloud models are similarly changing the dynamics for provisioning and managing primary enterprise workloads, as well as deploying disaster recovery solutions. Analysts are predicting that the hybrid cloud market could grow by as much as 50% in 2015 compared to 2014.[5]

A major factor driving this growth is the belief among many business and IT leaders that the model for IT has to change from one that is reactive to business events, into one that is proactive and service-centric. Cloud computing provides a clear path to this new IT model through features such as resource pooling, self-service provisioning and chargebacks for measured service.

Top Benefits of Using the Hybrid Cloud

Hybrid clouds enable organizations to leverage the benefits of the cloud model for their primary business applications, while also alleviating potential concerns about security, compliance and other issues. By deploying a hybrid cloud for primary enterprise workloads, IT organizations can not only move to a more service-centric model, but they can also address some of their most critical challenges. The top ten benefits of using the hybrid cloud for primary enterprise workloads are:

1. **Enable enterprise "scale-up" applications** to run on the "scale-out" cloud architecture, using enterprise-grade storage

2. **Address data control, data policy and sovereignty issues.** With the right solution in place, IT doesn't have to give up control over issues such as where the company's data is located. This can be an important concern for companies that do business multi-nationally. With hybrid cloud, IT also maintains more control over security and compliance.

3. **Provide architectural choice** for where a workload should run—on Microsoft Azure, Amazon Web Services, IBM SoftLayer, hosted by a partner or on-premises.

4. **Enhance business agility** by assigning workloads to the most appropriate platform, thereby improving application performance and availability.

5. **Leverage on-demand compute capabilities** to optimize resources, reduce total cost of ownership and enable self-service provisioning for business decision makers.

6. **Allow elastic scalability** so IT can spin up compute resources when they are needed—such as for seasonal spikes in business or for test/development environments—and then scale them back down when they're no longer needed.

7. **Improve disaster recovery** and accelerate RTOs and RPOs to achieve higher availability of business-critical applications.

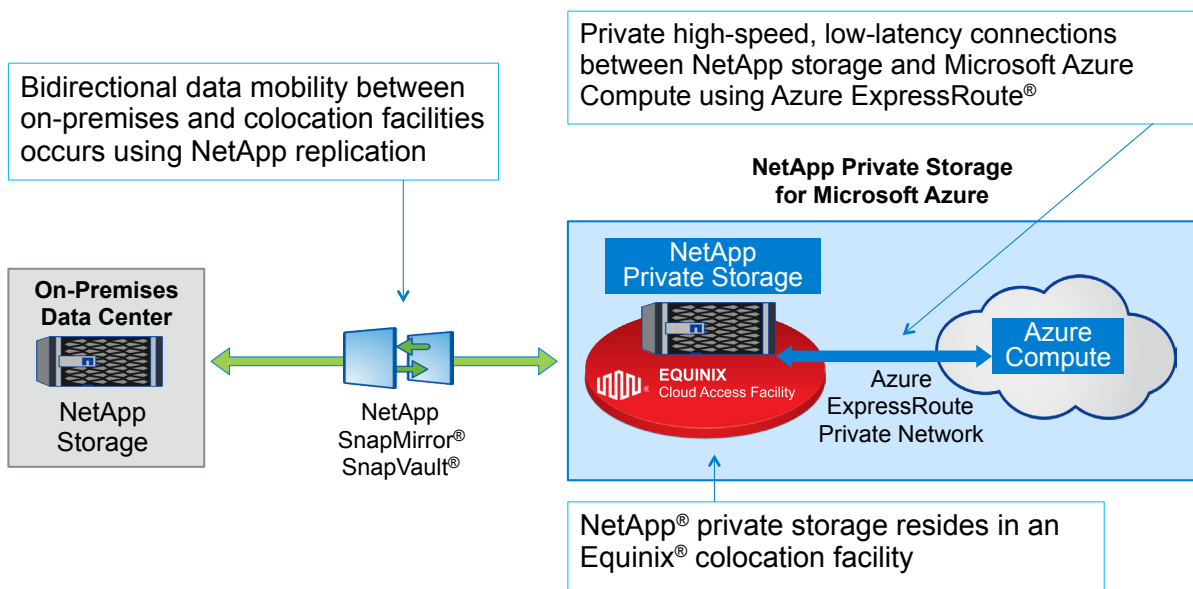5   "Hybrid Cloud Adoption Set for Big Boost in 2015," ComputerWorld, December 18, 2014

8. **Enhance availability** by replicating to an off-site facility—while also maintaining control over the data.

9. **Support new initiatives** such as big data analytics and The Internet of Things, while modernizing legacy applications to adjust for major changes in usage driven by activities such as mobility, telecommuting and social networking.

10. **Leverage multiple cloud models**—private, hybrid and public— for cost efficiency, agility, flexibility and scalability, among other business benefits.

An Innovative Solution Using Azure and NetApp

In deploying cloud models for primary enterprise applications, IT departments can achieve maximum business value by seamlessly integrating all cloud resources so they can be managed dynamically and on an enterprise-wide basis. Inhibitors to this approach include inconsistent data containers, inefficient transport and an inability to address data governance across multiple clouds.

Organizations can alleviate these challenges through an innovative solution called NetApp Private Storage for Microsoft Azure. Organizations can leverage their own NetApp storage solution, which is physically colocated at a bonded Equinix facility adjacent to Azure. High-speed, low-latency network connectivity between the NetApp storage system and Azure is achieved through Microsoft Azure ExpressRoute. The following is a graphic depiction of how the solution works:

NetApp Private Storage for Microsoft Azure

Private high-speed, low-latency connections between NetApp storage and Microsoft Azure Compute using Azure ExpressRoute®

Bidirectional data mobility between on-premises and colocation facilities occurs using NetApp replication

NetApp Private Storage for Microsoft Azure

NetApp Private Storage

On-Premises Data Center

NetApp Storage

NetApp SnapMirror® SnapVault®

EQUINIX Cloud Access Facility

Azure ExpressRoute Private Network

Azure Compute

NetApp® private storage resides in an Equinix® colocation facility

NetApp®

With this solution in place, organizations can get the benefits of the cloud, utilizing the speed and capacity of enterprise-grade storage to satisfy the requirements of IOPS-hungry enterprise applications—while also maintaining greater control over their data to address data sovereignty, security, compliance and governance concerns.

For enterprise workloads, the solution provides significant speed advantages over cloud-based storage, providing an order-of-magnitude greater IOPS performance. Organizations can use the combination of NetApp and Azure for their primary enterprise workloads, while tapping into Azure for variable workloads such as test and development, disaster recovery, analytics and scientific computing.

As one example, NetApp Private Storage for Microsoft Azure enables cloudburst capabilities for peak workloads so that organizations can leverage the benefits of the public cloud with no degradation in performance. With this solution critical data is replicated to NetApp storage at the Equinix colocation facility. IT can spin up a large number of virtual machines in Azure and access data on NetApp, leveraging high bandwidth, low latency and large compute resources for reads and writes. When the peak workload ends, IT can simply remove the VMs.

In a disaster recovery use case, critical data is replicated to the NetApp system in the Equinix facility. VM instances are set up inside the Azure virtual private cloud. When a failure occurs at an on-premises site, IT can bring up VM instances in the Azure virtual private cloud and connect to data on the NetApp system in the Equinix facility.

NetApp Private Storage for Microsoft Azure also leverages the hybrid cloud for a range of other use cases that impact primary enterprise applications. This includes multi-cloud application continuity to enable applications to function across cloud models with a number of high-availability features.

Conclusion

Cloud computing brings a wide range of potential benefits to any organization, which most business and IT leaders find too compelling to ignore. These include lower costs, improved agility, the opportunity to enable self-service provisioning and many others.

However, while the benefits of the cloud are of immense value, there are still issues around data control, compliance and data management that raise red flags about moving strictly to a public cloud model. There are also issues with running enterprise apps designed to scale up in the scale-out cloud. For many businesses, the answer is to deploy a hybrid cloud.

With the right hybrid cloud architecture in place, organizations can leverage Microsoft Azure to enable elastic scalability, business agility and improved disaster recovery—while also maintaining the performance and data controls inherent to an on-premises solution.

In this white paper we have examined several use cases and two different NetApp solutions that enable organizations to leverage Azure in a hybrid cloud environment. These are NetApp AltaVault for backup and archiving; and NetApp Private Storage for Microsoft Azure for primary enterprise workloads and disaster recovery. If you're interested in more information about how these solutions can simplify your journey to the hybrid cloud, please review the following resources:

NetApp Private Storage for Microsoft Azure

http://www.netapp.com/us/solutions/cloud/microsoft-cloud/microsoft-azure.aspx

NetApp AltaVault Cloud Integrated Storage Appliance

http://www.netapp.com/altavault

Metricon Homes | Microsoft Case Study

http://www.netapp.com/us/system/pdf-reader.aspx?pdfuri=tcm:10-134654-16&m=cs-8789.pdf&q=metricon&cp=1