Solution Brief

NetApp Cloud Volumes ONTAP for Amazon Web Services

Simple and fast data management in the cloud

Key Benefits

- Control public cloud storage resources with the NetApp® Cloud Volumes ONTAP® operating system. ONTAP is the world's #1 open networked branded storage OS.*
- Multiple storage consumption models provide the flexibility that allows you to use just what you need, when you need it.
- Rapid point-and-click deployment from NetApp Cloud Manager enables you to deploy advanced data management systems in Amazon Web Services (AWS) in minutes.

The Challenge

In today's IT ecosystem, the cloud has become synonymous with flexibility and efficiency. When you deploy new services or run applications with varying usage needs, the cloud provides a level of flexibility that allows you to pay for what you need, when you need it. With virtual machines, the cloud has become a go-to deployment model for applications with variable usage patterns that can be spun up or spun down on demand or have unpredictable cycles.

Applications with fixed usage patterns often continue to be deployed in a more traditional fashion in on-premises data centers. This situation creates a hybrid cloud environment for applications based on the model that best fits the applications. In this hybrid cloud environment, data is at the center. It is the only thing of lasting value. It is the thing that needs to be shared and integrated across the hybrid cloud to deliver business value. It is the thing that needs to be secured, protected, and managed.

In particular, customers need to control what happens to their data no matter where it is. Although they can outsource infrastructure and applications to the cloud, they can never outsource the responsibility they have for their business data. Customers have spent years controlling and aligning the appropriate levels of data performance, protection, and security in the data center to support their applications. Now, as they seek to pull in a mix of public cloud resources for infrastructure and apps, they need to maintain control of their data in this new hybrid cloud. They need a single, cohesive data environment, or Data Fabric, to give them control of their data no matter where it is.

Managing Data in the Cloud

Public cloud providers such as Amazon Web Services (AWS) offer many functions, including infrastructure as a service, for which customers purchase raw server and storage resources to use as they see fit. Customers can use server or virtual server environments to run their applications and the raw storage for data. For customers to utilize the storage in a way that is consistent with their on-premises data center, it is important that their data be controlled and protected.

AWS offers features and services that help with these issues. But how do you validate that your data is secure, under control, and consuming the least amount of resources in the cloud to address your needs? Can you simply get the data in and out of the cloud in a way that is consistent with your on-premises storage environments? Do your teams need to learn a new set of interfaces and tools? Does the storage have the functionality you need, such as file share services (NFS/SMB), data deduplication, and application-integrated snapshots?

NetApp®

* Source: IDC Worldwide Quarterly Enterprise Storage Systems Tracker 2018 Q1, June 2018 (Open Networked Enterprise Storage Systems revenue).

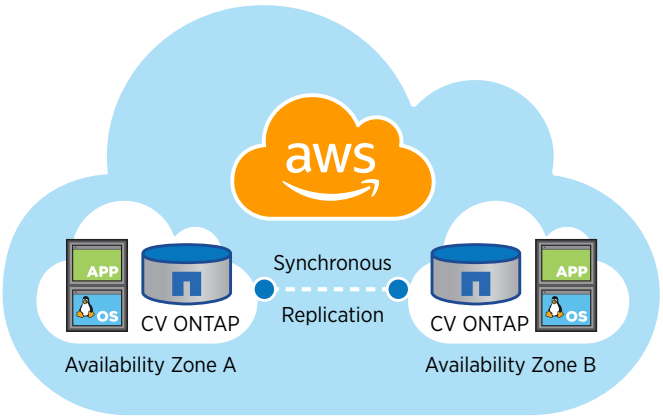

Figure 1) NetApp Cloud Volumes ONTAP for AWS.

NetApp Cloud Volumes ONTAP for AWS

NetApp Cloud Volumes ONTAP (formerly ONTAP Cloud) data management software delivers control, protection, and efficiency to your data with the flexibility of the cloud. Cloud Volumes ONTAP is a software-only data management service built on the NetApp ONTAP storage operating system, providing you with a superior universal storage platform that addresses your cloud data needs. Having the same storage operating system in the cloud and on your premises brings you the value of a Data Fabric without having to train your IT staff in all-new methods to manage your data.

Cloud Volumes ONTAP provides a data storage solution that fits many different customer requirements. These requirements range from disaster recovery, development, and test environments to critical applications that require highly available nondisruptive operation, such as production business applications and file services using NFS and SMB. Cloud Volumes ONTAP is deployed and managed from NetApp Cloud Manager as a software-only solution on Amazon EC2 compute instances managing Amazon EBS storage. This capability enables customers to build a virtual storage solution directly on Amazon resources.

Building your cloud storage environment on Cloud Volumes ONTAP provides advanced data management features for your cloud storage. ONTAP allows you to provision both NAS and SAN storage for your application environment with SMB, NFS, and iSCSI support. You also get zero-impact NetApp Snapshot™ copies that provide near-instantaneous point-in-time backup and recovery copies of your data without consuming additional storage resources or affecting your application performance.

In addition, you minimize your storage footprint and cloud resources spend with storage efficiency features such as data deduplication and data compression that can act on your primary data. With the NetApp SnapManager® tool suite, you get application consistency with those Snapshot copies. On top of all the local storage features, ONTAP provides #1 storage replication NetApp SnapMirror® technology. This technology brings your hybrid cloud together by tying your on-premises AFF and FAS storage to your Cloud Volumes ONTAP environment.

In the cloud, your data physically sits on third-party storage, and to address security concerns, Cloud Volumes ONTAP supports multiple methods for protecting your data. You can use AWS storage encryption and take advantage of AWS encryption key management services. If you are looking for a more secure option, Cloud Volumes ONTAP can manage encryption of your data. Doing so gives you an additional level of protection because you can own and manage the encryption keys outside of the cloud.

NetApp Cloud Manager

The cloud is often a new environment for many enterprises, and as you find a way to simplify your cloud resource usage, it is important to have tools available to enhance the experience. Cloud Manager software is a centralized management environment for your ONTAP software-based hybrid cloud storage environment, including the Cloud Volumes ONTAP, AFF, and FAS storage systems. Cloud Manager is the deployment environment for Cloud Volumes ONTAP and provides installation, resource assignment, and provisioning of data.

Cloud Manager provides day-to-day management activities for your Data Fabric endpoints and can automate your data movement to and from AWS. Cloud Manager integrates seamlessly with your cloud environment, allowing you to insert credentials that enable Cloud Manager to gather the resources you need to meet your storage requirements. With visibility into the resources consumed by each instance, Cloud Manager monitors and provides valuable feedback to the administrator about the cost of resources over time. This information helps you to decide when to move workloads to the most cost-efficient environment.

Figure 2) NetApp Cloud Manager.

Cloud Manager Key Features

- Simplifies configuration and deployment of Cloud Volumes ONTAP
- Provides central point of control for all Cloud Volumes ONTAP instances
- Automates data movement between your premises and AWS
- Provides cost monitoring of your AWS cloud storage resources
- Eases license and entitlement management
- Facilitates hybrid environments that include Cloud Volumes ONTAP, AFF, and FAS storage systems

Consumption Models

In addition to the features that Cloud Volumes ONTAP offers, there are two consumption methods: pay as you go and subscription. Pay as you go is purchased directly from your AWS account and is charged either on an hourly basis or annually. The subscription model is a license purchased from NetApp that follows the Amazon bring-your-own-license (BYOL) model and is installed in your Cloud Volumes ONTAP instance. BYOL subscriptions can be purchased in six-month or annual increments.

For application needs that are short term and/or for environments that must spin up or down on demand, the hourly pay-as-you-go consumption model is appropriate. If your application is more deterministic and/or will be used for longer periods of time, the six-month or annual subscription might be better. There are multiple solutions in each consumption model that start at a single instance with 2TB capacity and range up to two-node high-availability environments with up to 368TB of capacity. For the pay-as-you-go offerings, the Cloud Volumes ONTAP capacity and feature inclusion depend on the AWS EC2 server instance chosen. Small server instances are matched with small capacity, and the largest instances support the maximum capacity.

A True Hybrid Cloud

To help you determine the infrastructure that best fits your application and economic needs, NetApp offers a wide variety of options from which to choose. These options range from on-premises storage systems and near-the-cloud NetApp Private Storage (NPS) systems to in-the-cloud Cloud Volumes ONTAP storage software service.

Table 1 shows the workload characteristics to help you choose which application environment best fits your applications.

About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit www.netapp.com. #DataDriven

Table 1 shows the workload characteristics to help you choose which application environment best fits your applications.

Table 1) Application environments and workload characteristics.

	CLOUD VOLUMES ONTAP FOR AWS (SINGLE NODE)		CLOUD VOLUMES ONTAP FOR AWS HIGH AVAILABILITY	
Licensing	Pay as you go	BYOL	Pay as you go	BYOL
High availability	No	No	Yes	Yes
Multiprotocol	NFS, SMB, iSCSI	NFS, SMB, iSCSI	NFS, SMB, iSCSI	NFS, SMB, iSCSI
Data protection	Snapshot, SnapMirror, SnapVault®	Snapshot, SnapMirror, SnapVault	Snapshot, SnapMirror, SnapVault	Snapshot, SnapMirror, SnapVault
NetApp FlexClone® volumes	Yes	Yes	Yes	Yes
Tiering to S3	Yes	Yes	Yes	Yes
Encryption	• ONTAP encryption • AWS encryption with default key or external keys	• ONTAP encryption • AWS encryption with default key or external keys	• ONTAP encryption • AWS encryption with default key or external keys	• ONTAP encryption • AWS encryption with default key or external keys
VMware Cloud support	Yes	Yes	Yes	Yes
AWS regions	All	All plus GovCloud	All	All plus GovCloud
EBS volume types	GP2, ST1, SC1, and IO1	GP2, ST1, SC1, and IO1	GP2, ST1, SC1, and IO1	GP2, ST1, SC1, and IO1
Procurement (license)	AWS Marketplace	NetApp	AWS Marketplace	NetApp
Solution capabilities	M4.XL: • Up to 2TB M4.2XL, R4.XL: • Up to 10TB M4.4XL, C4.4XL, C4.8XL, R4.2XL • Up to 368TB	M4.4XL, C4.4XL, C4.8XL, R4.2XL: • Up to 360TB	M4.XL: • Up to 2TB M4.2XL, R4.XL: • Up to 10TB M4.4XL, C4.4XL, C4.8XL, R4.2XL: • Up to 368TB	M4.4XL, C4.4XL, C4.8XL, R4.2XL: • Up to 360TB
Support	Software support plan	Software support plan	Software support plan	Software support plan

APP LOCATION	NETAPP SOLUTION	APPLICATION PROPERTIES
On premises	AFF/FAS/E-Series	Application usage pattern and resource requirements are well known, with long-term steady-state usage.
Near the cloud	NPS for Cloud	Application has high governance and/or high performance requirements but with variable usage patterns.
In the cloud	Cloud Volumes ONTAP	Applications have variable usage and variable storage patterns, or applications can benefit from rapid spin-up and/or rapid spin-down of storage.