



## Solution Brief

# NetApp ONTAP Cloud for Amazon Web Services

Extending enterprise storage services to the cloud

### Key Benefits

- Control public cloud storage resources with the NetApp® ONTAP® 9 operating system—ONTAP is the world's #1 open networked branded storage OS\*—the same highly available storage management software for your data center.
- 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 OnCommand® Cloud Manager enables you to deploy enterprise cloud storage on Amazon Web Services (AWS) in minutes.

\* Source: IDC Worldwide Quarterly Disk Storage System Tracker 2015 Q4, March 2016 (Open Networked Disk Storage System revenue).

### 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 in your infrastructure 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 bursty cycles.

Applications with fixed usage patterns often continue to be deployed in a more traditional fashion within on-premises data centers. This situation creates a hybrid IT, or 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

Hyperscale cloud providers such as Amazon Web Services 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.

Hyperscale providers offer 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 data fabric needs? Can you simply get the data in and out of the cloud consistent with your own 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/CIFS), data deduplication, or application-integrated snapshots?

## NetApp ONTAP Cloud for AWS – High Availability

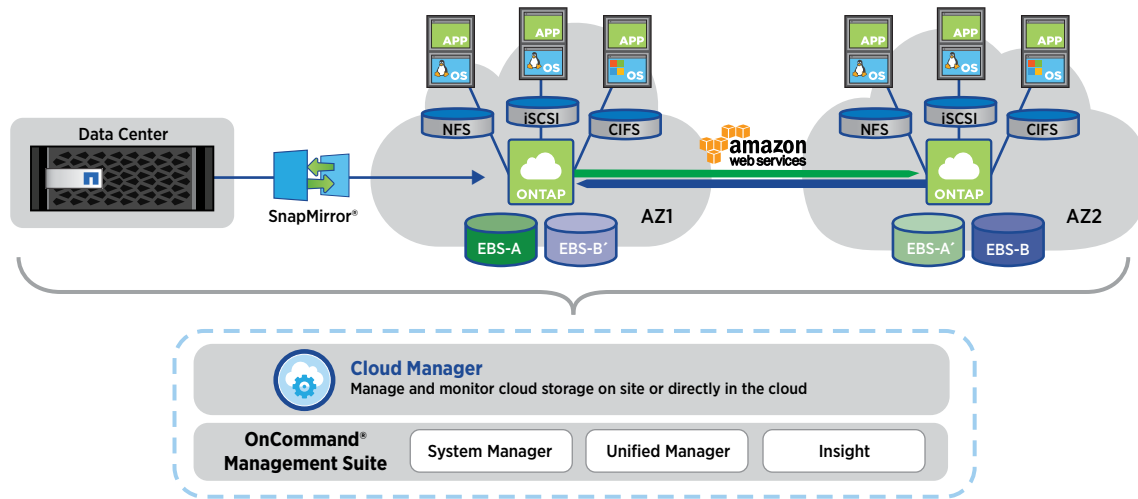


Figure 1) NetApp ONTAP Cloud for AWS.

### NetApp ONTAP Cloud for AWS

The NetApp ONTAP® Cloud storage software service delivers enterprise control, protection, and efficiency to your data with the flexibility of the cloud. ONTAP Cloud is a software-only data management service built on the NetApp ONTAP 9 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 storage.

ONTAP Cloud provides a data storage solution that fits many different customer requirements. These requirements range from applications with limited data reliability requirements, such as development and test, to critical applications that require highly available nondisruptive operation, such as production business applications. ONTAP Cloud is deployed and managed from NetApp OnCommand 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 ONTAP Cloud provides enterprise-class features for your cloud storage. ONTAP allows you to provision both NAS and SAN storage for your application environment with CIFS, NFS, and iSCSI support. You also get zero-impact NetApp Snapshot® copies that provide near-instantaneous point-in-time backups of your data without taking additional storage resources or affecting your application performance.

In addition, you minimize your storage footprint with 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 All Flash FAS (AFF) and FAS storage to your ONTAP Cloud environment.

In the cloud, your data physically sits on third-party storage, and to address security concerns, ONTAP Cloud 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, ONTAP Cloud 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.

### OnCommand Cloud Manager

The cloud is often a new environment for many enterprises, and as you find a way to simplify your 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 ONTAP Cloud, AFF, and FAS storage systems.

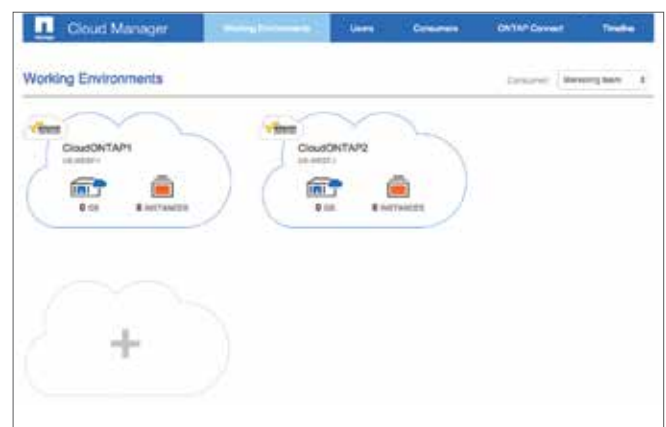


Figure 2) OnCommand Cloud Manager

Cloud Manager is the deployment environment for ONTAP Cloud, and provides installation, resource assignment, and provisioning of data.

Cloud Manager provides day-to-day management activities for your data fabric end points and can automate your data movement to and from AWS. Cloud Manager integrates 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.

### Cloud Manager Key Features

- Simplifies configuration and deployment of ONTAP Cloud
- Provides central point of control for all ONTAP Cloud 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 ONTAP Cloud, AFF, and FAS storage systems

### Consumption Models

On top of the features that ONTAP Cloud offers, the software provides two methods for consuming the storage: 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,” or BYOL, model and is installed in your ONTAP Cloud 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 within 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 ONTAP Cloud 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, near-the-cloud NetApp Private Storage (NPS) systems, and in-the-cloud ONTAP Cloud storage software service.

The product table that follows shows the workload characteristics to help you choose which application environment best fits your applications.

	ONTAP CLOUD FOR AWS		ONTAP CLOUD FOR AWS HIGH AVAILABILITY	
	Pay-as-you-go	BYOL	Pay-as-you-go	BYOL
High Availability	No	No	Yes	Yes
Multiprotocol	•	•	•	•
Data protection	•	•	•	•
NetApp FlexClone® volumes	•	•	•	•
AWS Regions	All*	All* plus GovCloud	All	All
EBS volume types	GP2 and magnetic	GP2 and magnetic	GP2 and magnetic	GP2 and magnetic
Procurement (license)	AWS Marketplace	NetApp	AWS Marketplace	NetApp
Solution capabilities	M3.XL, M4.XL: <ul style="list-style-type: none"> <li>• Up to 2TB</li> <li>• AWS encryption</li> </ul> M3.2XL, M4.2XL: <ul style="list-style-type: none"> <li>• Up to 10TB</li> <li>• AWS encryption</li> </ul> R3.XL, R3.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• NetApp and AWS encryption</li> </ul>	M3.XL, M3.2XL, M4.XL, M4.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• AWS encryption</li> </ul> R3.XL, R3.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• NetApp and AWS encryption</li> </ul>	M4.XL: <ul style="list-style-type: none"> <li>• Up to 2TB</li> <li>• AWS encryption</li> </ul> M4.2XL: <ul style="list-style-type: none"> <li>• Up to 10TB</li> <li>• AWS encryption</li> </ul> R3.XL, R3.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• NetApp and AWS encryption</li> </ul>	M4.XL, M4.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• AWS encryption</li> </ul> R3.XL, R3.2XL: <ul style="list-style-type: none"> <li>• Up to 368TB GP2</li> <li>• Up to 46TB magnetic</li> <li>• NetApp and AWS encryption</li> </ul>
Support	Software Support Plan	Software Support Plan	Software Support Plan	Software support plan

\* Sao Paolo does not support the M3 instance type.

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	ONTAP Cloud	Applications have variable usage and variable storage patterns, or applications can benefit from rapid spin-up and/or rapid spin-down of storage.

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### About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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