



Solution Brief

NetApp Cloud ONTAP for Amazon Web Services

Extending enterprise storage services to the cloud

Key Benefits

- Control public cloud storage resources with the NetApp® Data ONTAP® operating system—NetApp Data ONTAP is the world's #1 branded storage OS*—the same great storage management software for your data center.
- Multiple storage consumption models provide the flexibility that allows you to truly use just what you need, when you need it.
- Rapid point-and-click deployment from NetApp OnCommand® Cloud Manager allows you to deploy enterprise cloud storage on Amazon Web Services in minutes.

* Source: IDC Worldwide Quarterly Disk Storage System Tracker 2015 Q1, June 2015 (Open Networked Disk Storage System revenue).

The Challenge

In today's IT ecosystem, the cloud has become synonymous with flexibility and efficiency. When deploying new services or running 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.

For those other applications with fixed usage patterns, they often continue to be deployed in a more traditional fashion within on-premises data centers. This 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. They've 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, giving control over their data without concern of its location.

Managing Data in the Cloud

Hyperscale cloud providers such as Amazon Web Services (AWS) offer many functions, including infrastructure as a service, where 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. In order 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.

These hyperscale providers offer features and services that help with these issues, but how do you achieve true enterprise capabilities in the cloud that address your needs across the data fabric? 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 Cloud ONTAP for AWS

The NetApp Cloud ONTAP® storage software service delivers control of your data with the flexibility of a virtual machine. Cloud ONTAP is a software-only storage appliance built on the NetApp clustered Data ONTAP storage operating system, providing you with a superior universal storage platform that addresses your hybrid cloud needs from the data center to the cloud. Having the same storage operating system in the cloud as you do on your premises brings you the true value of a data fabric without having to train your IT staff in all new methods to manage your storage.

Cloud ONTAP provides a data storage solution that fits many different customer requirements, from small-capacity, low-performance applications to larger scale applications with high capacity needs. Cloud ONTAP is deployed and managed from OnCommand Cloud Manager as a virtual machine on Amazon EC2 compute instances managing Amazon EBS storage, allowing customers to build a virtual storage solution directly on Amazon resources.

Building your cloud storage environment on Cloud ONTAP provides enterprise-class features for your cloud storage. Clustered Data 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 clustered Data ONTAP SnapManager® tools suite, you get application consistency with those Snapshot copies. And on top of all the local storage features, clustered Data ONTAP provides #1 storage replication NetApp SnapMirror® technology, which brings your hybrid cloud together by tying your on-premises FAS storage to your Cloud ONTAP environment.

To address your data security concerns, Cloud ONTAP supports multiple methods for protecting your data. As you move to the cloud, you now have your data physically sitting on third-party, hyperscale storage. You can use AWS storage encryption and take advantage of their encryption key management services, or, if you are looking for a more secure option, Cloud ONTAP can manage encryption of your data, giving you an additional level of protection because you own the encryption keys.

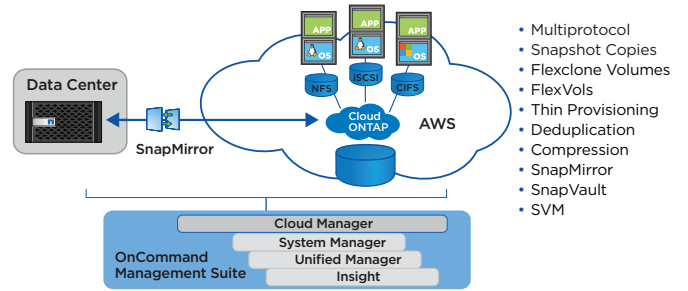


Figure 1) NetApp Cloud ONTAP for AWS

OnCommand Cloud Manager

The cloud is a new environment for many enterprises, and as you find a way to simplify how the resources are utilized, it is important to have tools available to simplify the experience. Cloud Manager is the deployment environment for Cloud ONTAP and provides installation, resource assignment, and provisioning of data. After a Cloud ONTAP instance is operating, Cloud Manager provides day-to-day management activities for the environment and can automate your data movement from on the premises to Amazon. Cloud Manager integrates with your cloud environment, allowing you to insert credentials that enable it 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 Cloud ONTAP
- Provides central point of control for all Cloud 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 ONTAP and NetApp Private Storage (NPS)

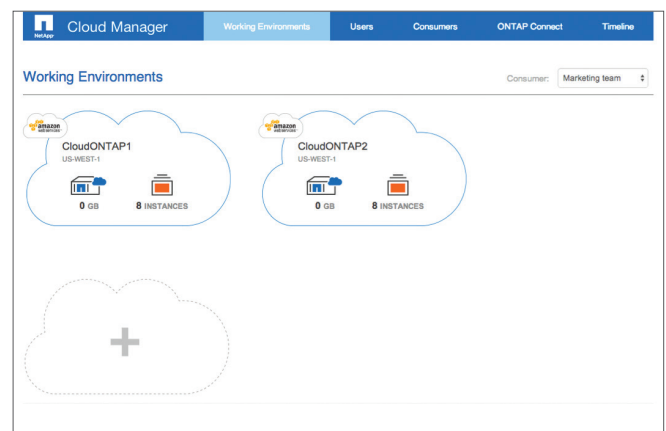


Figure 2) OnCommand Cloud Manager

Consumption Models

On top of the features that Cloud ONTAP software offers, it 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” (BYOL) model and is installed in your Cloud 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 may be utilized. There are multiple solutions within each consumption model that start at smaller 2TB capacity, with the largest instances supporting up to 368TB of capacity. For the pay as you go offerings, the Cloud

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 to the cloud, including near-the-cloud FAS storage systems and in-the-cloud Cloud ONTAP storage software.

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

	CLOUD ONTAP FOR AWS	CLOUD ONTAP FOR AWS (BYOL)
Multiprotocol	•	•
Data protection	•	•
NetApp FlexClone® volumes	•	•
EBS volume types	GP2 and magnetic	GP2 and magnetic
Procurement (license)	AWS Marketplace	NetApp
Solution capabilities	M3.XL: <ul style="list-style-type: none"> • Up to 2TBA • WS encryption M3.2XL, R3.XL: <ul style="list-style-type: none"> • Up to 10TB • NetApp and AWS encryption R3.2XL: <ul style="list-style-type: none"> • Up to 368TB GP2 • Up to 46TB magnetic • NetApp and AWS encryption 	All EC2 instances: <ul style="list-style-type: none"> • Up to 368TB GP2 • Up to 46TB magnetic • NetApp and AWS encryption
Support	Software support plan	Software support plan

APP LOCATION	SOLUTION	APPLICATION PROPERTIES
On premises	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 ONTAP	For applications with variable usage and variable storage patterns or applications that can benefit from rapid spin-up and/or spin-down of storage.

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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