FAQ

Cloud Volumes Service for AWS

Graham Smith, NetApp
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In partnership with

Abstract

This document answers frequently asked questions about the NetApp Cloud Volumes Service for AWS, a high-performance cloud file service with rich data management capabilities based on NetApp ONTAP® technology and cloud data services. This cloud service targets line-of-business (LOB) engineers, database admins, developers, and application architects, as well as IT and cloud architects in search of file services in the cloud.

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1 General Information

What is NetApp Cloud Service Volumes for AWS?

NetApp® Cloud Volumes Service for AWS is a cloud-native file storage service based on NetApp's proven ONTAP® technology together with additional data services. This service combines NetApp's wide-ranging expertise in file services with the simplicity and flexibility of the AWS cloud.

The service supports NFSv3 and NFSv4.1 for Linux/Unix clients and SMB 2.1, 3 & 3.1.1 for Windows clients operating in the cloud.

What business challenges does Cloud Volumes Service address?

NetApp Cloud Volumes Service delivers advanced, business-critical file-services to your cloud applications, so your technology stack becomes rocket fuel for innovation. When you need fast file storage performance, you can now look to NetApp, which offers a fully managed file service for the public cloud. Rather than standing up your own expensive NFS or SMB servers with the highest levels of cloud block storage, NetApp is your admin. Just choose your performance tier and we handle the quality of service and SLAs. You can take advantage of our intuitive user interface or automate everything through REST APIs. Keeping you productive is key.

Who should use this service?

Cloud Volumes Service is a good fit for customers who run NFS or SMB workloads and applications that leverage file services for data storage, such as SQL, HPC, DevOps, SAP, Media, and EDA. Cloud Volumes Service is a great fit for developers, line-of-business (LOB) engineers, database admins, data scientists, and application architects who consume storage capacity but do not want to administer it. The service can also be used by IT and cloud architects in search of file services in the cloud. Workloads like file services, analytics, databases, and DevOps have waited too long to take their rightful place in the cloud.

Can I use Cloud Volumes Service from clients in my data center?

You can connect to Cloud Volumes Service from on-premises clients by attaching the Virtual Interfaces from your AWS Direct Connect to the same Virtual Private Gateway as the Virtual Interfaces for Cloud Volumes Service.

2 Availability, Ordering, and Support

When is the solution available?

The solution is in general availability (GA), fully supported, and is publically listed in the AWS Marketplace.

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3 Solution Details

How does the Cloud Volumes Service compare to Cloud Volumes ONTAP?

The key differences between these services are around scale, performance, and user experience.

> Cloud Volumes Service is a high-performance storage service (including APIs), wherein NetApp configures and manages all storage infrastructure. In contrast, with Cloud Volumes ONTAP, the user is responsible for configuring and managing ONTAP and all the cloud storage resources associated with it. Cloud Volumes ONTAP Cloud is a great fit for infrastructure and storage admins who want to manage all the details of their storage infrastructure.
>
> The cloud service experience makes this offering a great fit for developers, line-of-business (LOB) engineers, database admins, and application architects who consume storage capacity but do not want to administer it.

How is Cloud Volumes Service billed?

Cloud Volumes Service is currently sold as a contract and as a metered (pay-as-you-go) subscription in the AWS Marketplace with a pay-as-you-go option to follow. Cloud Volumes Service will be billed by AWS on effective/logical capacity through the AWS billing system. Customers will receive a single bill from AWS that includes the charges for this service.

Are there additional charges when using Cloud Volumes Service for AWS?

AWS charges a one-time egress fee of $0.02 per gigabyte written to a cloud volume. This is not a recurring fee.

Does Cloud Volumes Service support access by more than one AWS VPC?

Yes, by using a Direct Connect Gateway, customers can connect up to 10 VPCs to a cloud volume.

Does Cloud Volumes Service support access from multiple Availability Zones (AZs) in a region?

Yes. Cloud Volumes Service can be accessed from all Availability Zones of the region.

Can Cloud Volumes Service for AWS in one AWS region be accessed by a VPC in a different AWS region?

Yes, by using a Direct Connect Gateway a cloud volume in one region can be accessed from other AWS regions. Note that performance may be limited by interregional access depending upon the distance between regions.

Can cloud volumes be shared between AWS accounts?

Yes, accounts within the same AWS Organization can share access to cloud volumes by using the AWS Resource Access Manager (RAM) and sharing subnets from accounts that have subscribed to the Cloud Volumes Service.

What protocols are supported?

Cloud Volumes Service for AWS currently supports NFSv3 and NFSv4.1 for Linux/Unix clients and SMB 2.1, 3 & 3.1.1 for Windows clients operating in the cloud.

Is concurrent multi-protocol access (e.g., NFS and SMB) supported to the same volume?

Yes. Cloud Volumes Service for AWS supports simultaneous access via multiple file protocols to the same volume. Permissions and security style for access can be based on NTFS or UNIX.

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Is Active Directory (AD) supported?

Yes, Cloud Volumes for AWS supports Active Directory. Currently, supported options are Windows Server 2012 or 2016 as AD Servers and the AWS Directory Service.

How do snapshots work?

Snapshots of a cloud volume initially do not consume additional capacity. Additional capacity is only consumed when changes occur to the volume. The total capacity of all snapshots counts against the total capacity purchased.

How does instant copying work?

Copying a volume involves first taking a snapshot of the source volume (See “How do snapshots work?”). A new volume created from the snapshot is a full copy of the volume and consumes an equal amount of capacity. The new volume can have a different Service Level, allocated capacity, and snapshot policy than the parent volume. The total allocated capacity of all volumes counts against the total capacity purchased.

How does encryption work?

The underlying storage manages encryption per volume using an XTS-AES 256-bit encryption algorithm. The keys are managed by NetApp and are unique per volume. Customer provided key management and AWS Key Management Service (KMS) are not supported at this time.

Is encryption of data over the network supported?

Encryption of data over the network is supported via protocols. Currently, the protocols that offer encryption of data are SMB 3.0 and 3.1.1.

Is API access to Cloud Volumes Service for AWS supported?

Yes, RESTful APIs are available. API usage, with examples, is described in the online user documentation.

What is the expected performance from NetApp Cloud Volumes?

The service supports multiple service levels so that users can choose a service level that meets the application need.

Three service levels (IOPS/throughput targets) are available to meet various application needs. The service levels are:

- **Standard,** which provides 4000 IOPS per TB (4K IO) and 16MB of throughput per TB
- **Premium,** which provides 16000 IOPS per TB (4K IO) and 64MB of throughput per TB
- **Extreme,** which provides 32000 IOPS per TB (4K IO) and 128MB of throughput per TB

Note. There are write performance limits for single EC2 instances of ~5 Gbps. Much higher performance can be achieved with multiple EC2 instances.

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What is the expected latency from EC2 to Cloud Volumes in each AWS region?

Latency varies by region. The observed latencies in milliseconds (ms) between EC2 instances and the cloud volumes service are:

Region	Ping	4K random write	4K random read
us-east-1	0.88	1.22	1.20
us-west-1	1.41	2.16	1.99
us-west-2	4.47	5.21	4.67
eu-west-1	1.41	1.86	1.77
eu-west-2	0.93	0.95	0.86
eu-central-1	1.24	1.59	1.52
ap-northeast-1	3.66	4.06	3.70
ap-southeast-2	1.31	1.41	1.33

Does NetApp offer a public Service Level Agreement (SLA) for Cloud Volumes for AWS?

Yes, NetApp provides a Service Level Agreement (SLA) for the performance, availability, and durability of the Cloud Volumes Service. For details, please see the SLA documentation.

What will the customer see for capacity (physical or logical)?

Cloud volumes are provisioned with 100TB capacity and customers will see logical used capacity.

How many files do cloud volumes support?

Each cloud volume currently supports up to 100 million inodes (files and directories). This may be increased by customer request.

What data access security is provided?

Cloud Volumes Service provides high levels of data access security, including client ID access control based on IP address and/or CIDR and user access using file permissions and/or ACLs.

What level of data availability does the Cloud Volumes Service provide?

Cloud Volumes Service provides an SLA of at least 99.99% (four 9s) of data availability via architecture features such as redundant network paths, fail-over, and advanced data protection. Please note that the configuration of compute instances may affect end to end availability.

What level of data durability does the Cloud Volumes Service provide?

Cloud Volumes Service provides an SLA of at least to 99.9999999% (nine 9s) of data durability with advanced data protection.

Is replication from on-premises storage supported?

Yes, Cloud Sync enables data to be synced between on-premises storage and cloud volumes.

Is cross-regional replication between cloud volumes possible?

Yes, Cloud Sync can replicate data between cloud volumes in different regions when using an AWS Direct Connect Gateway.

Note that AWS charges a fee to transfer data between regions (currently $0.01/GB)

Is there a backup service for Cloud Volumes Service?

The Cloud Backup Service for CVS is expected to be rolled out in 2020.

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4 Purchasing Cloud Volumes Service for AWS

What do you get when you subscribe to the metered (pay-as-you-go) subscription?

The metered subscription provides the ability to pay for what you use. Volumes can be freely added and deleted, allocation can be increased or decreased and service levels can be changed, charges will be accumulated based on usage during the monthly billing period.

Is there an upfront cost to subscribe to the metered (pay-as-you-go) subscription?

No, you only pay for what you use

Is there a fee to cancel a metered (pay-as-you-go) subscription?

No, you can cancel at any time and there is no cancelation fee

What do you get when you purchase a bundle or bundles?

When you purchase one or more bundles, you are entitled to use cloud volume capacity of up to the sum of all the bundles, for the specified term, and the features associated with the bundles. The capacity is based on logical storage and can be utilized across multiple volumes, as desired. Other features include:

1. Storage protocols – NFS (v3, v4.1), SMB (21, 3.0 & 3.1.1)
2. Snapshots
3. Instant Volume Copy
4. Encryption - Keys Managed by NetApp

How do you purchase Cloud Volumes Service for AWS bundles?

Cloud Volumes Service for AWS can be purchased in the AWS Marketplace.

Can the capacity of a bundle be distributed across supported AWS regions?

Yes. Currently, Cloud Volumes Service bundles' capacity can be distributed among supported AWS regions (for example, a portion of bundle purchased can be used in US-East-1, and the remainder of the bundle can be used in US-West-1).

Can multiple bundles be purchased at one time and combined for a longer-term?

No. Cloud Volumes Service for AWS bundles are pre-defined for a specified period of 1 or 12-month terms, which begins on the subscription date in the AWS Marketplace. Purchases of multiple bundles at the same time all have the same expiration date for their term.

Can multiple bundles be purchased at one time, and combined for a larger capacity commitment?

Yes, multiple bundles can be purchased at one time to allow greater capacity than specified in any single bundle. The time commitments for all bundles purchased at the same time run concurrently, meaning they all have the same expiration date.

Can bundle(s) auto-renew when their term expires?

In the AWS Marketplace, customers can specify if they want to allow auto-renewal of their subscription. Auto-renewal will happen at expiration and at the then-current price. There are no guarantee identical bundles (features) will exist in the future.

Can capacity be increased by adding bundles to a previous purchase?

Yes, additional bundles can be purchased and added to existing bundles to increase the total capacity entitlement. However, once an AWS subscription has been created, the total cost of the subscription can

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only be increased. Bundle quantities can be increased and decreased within an AWS subscription only if the total cost is the same or greater than originally purchased.

Once an AWS subscription has been created, its expiration date does not change. When adding a bundle to an already existing subscription, the AWS Marketplace prorates the cost of the new bundle(s) based on the time remaining on the current subscription, and the new capacity has the same expiration date as the original capacity. The newly purchased bundles will be at the then-current price.

> For example, you buy a bundle (Bundle-1) to start. In Month Six, you buy an additional bundle (Bundle-2).
>
> For Bundle-1, you are charged the price for the bundle. In Month Six, you have used six months (out of twelve months) of Bundle-1 and want to buy an additional bundle (Bundle-2). So, AWS will prorate the cost of Bundle-2 by 50% of a full 12-month bundle price and charge the incremental cost (since six months remain of the 12-month term). The new capacity commitment will be the sum of Bundle-1 plus Bundle-2, and all capacity will expire on the original expiration date (of Bundle-1).

What happens if you attempt to use more capacity than allocated to that volume?

You can continue to write data to the volume beyond the allocated capacity level; however, the performance of the volume will not increase until the allocated capacity is increased and the additional capacity used counts against purchased capacity.

What happens if you attempt to allocate more capacity than the amount purchased?

NetApp will provide the required extra capacity and highlight an error message. The capacity that NetApp provided automatically to allow the storage operation to succeed will count against any newly purchased capacity. Subsequent operations may fail until additional capacity is purchased and/or the customer reconfigures their environment to create available space.

Can a customer migrate from a Bundle to a metered (pay-as-you-go) subscription?

Yes, a customer can turn off the auto-renew for their Bundle contract and then subscripted to the metered offering with no disruption of service.

Can a customer migrate from a metered (pay-as-you-go) subscription to a Bundle?

Yes, a customer can subscribe to a Bundle and then cancel their metered subscription with no disruption of service.

Where to Find Additional Information

To learn more about the information described in this document, please reach out to your NetApp sales representative. You can also learn more about Cloud Volumes Service by visiting NetApp Cloud Central at http://cloud.netapp.com.

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