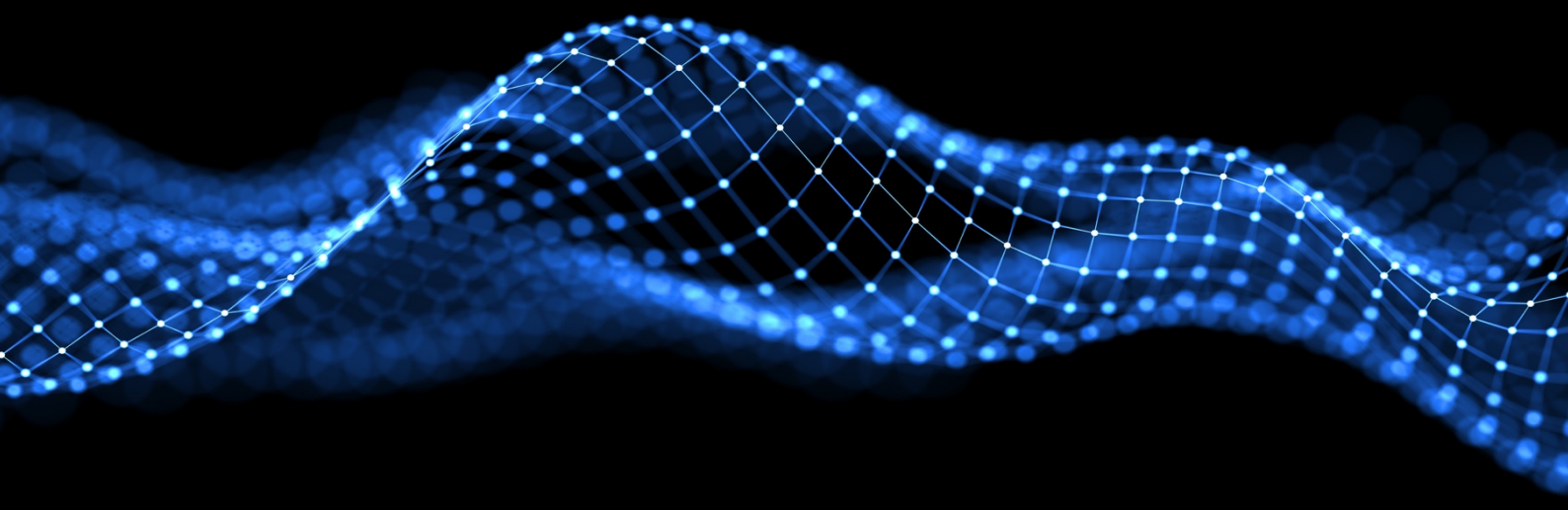


NetApp Cloud Volumes



PRODUCT BRIEF

The Architect's View



Cloud Volumes is a native integration of NetApp ONTAP storage in public cloud hyper-scalers, sold as a SaaS offering on Microsoft Azure and Google Cloud Platform and a virtual appliance in AWS. Users can directly provision file-based storage backed by ONTAP through CLI and GUIs, gaining the benefits of ONTAP without any deployment or integration work. For IT organisations, this represents an opportunity to use enterprise-class storage in public cloud and to gain benefits of data mobility for hybrid application architectures.

Background

Public cloud hyper-scalers have traditionally created bespoke software that implement features offered within their platforms. Storage has been no exception, with early implementations creating object stores (AWS S3) and block-based volumes or LUNs. File-based storage has followed on much later.

By design, these offerings obfuscate the specific hardware or infrastructure implementation because they are offered as services. With respect to storage, it's fair to say that the features offered by cloud-based storage products are generic in nature, compared to the more feature-rich solutions found in the enterprise. Again, we can say this is by design because applications running on public cloud are expected to be "cloud-native".

Sometimes storage needs more capabilities than the features offered by the hyper-scalers. Consistent high performance and low latency are important, for example, as are mature data services, like snapshots and mobility.

What are NetApp Cloud Volumes?

NetApp Cloud Volumes² is a native integration of NetApp's core flagship platform, ONTAP, in the public cloud. Today that means Microsoft Azure and Google Cloud Platform (GCP), however Amazon Web Services is supported - albeit not natively (more on that in a moment).

The integration brings the maturity of ONTAP with the flexibility of consumption expected in public cloud.

With native integration on Azure and GCP, end users simply create volumes or file shares via GUI or API/CLI. All of the technical implementation of ONTAP is hidden from the user and managed by NetApp and the hyper-scalers. Cloud Volumes is effectively sold as SaaS (Software-as-a-Service).

Implementation of Cloud Volumes on AWS is managed slightly differently. Users build a cloud instance on EC2, from where storage can be administered, as if the software were a virtual appliance. Customers are expected to manage AWS implementations themselves.

Cloud Volumes on Azure and GCP are sold on a per-usage billing basis, billed by the hyper-scaler, with guaranteed levels of performance and availability. On AWS, billing is implemented via subscription-based licensing.

Availability

Both the Azure implementation of Cloud Volumes (Azure NetApp Files) and Cloud Volumes for GCP³ are in private preview. Registration can be made through the NetApp Cloud Portal, Cloud Central¹. The Cloud Central portal provides access to a range of NetApp services for Cloud that form part of the Data Fabric concept.

Customer Business Value

Why use NetApp file services rather than the standard cloud provider file platform? There are two main reasons.

Features – The NetApp implementation offers a mature set of features that will appeal to enterprise customers. Multi-protocol support, for example, is available with Cloud Volumes, whereas AWS EFS only provide NFSv4 and Azure file storage only offers SMB 3.0. EFS has limited performance scaling, based on file-system size, whereas Cloud Volumes can specify performance using Quality of Service.

Data Mobility – Cloud Volumes provides the future capability to connect on-premises data into the cloud in a highly efficient way. Today data has to be replicated at the file level. ONTAP uses SnapMirror replication at the 4K block level, meaning even large files can be efficiently kept in sync, without incurring lots of bandwidth charges. Today, AWS EFS offers no snapshot capability, so volumes can't easily be cloned. Azure only offers read-only copies of data, retained on the same physical storage as the original.

There are clearly further benefits, however these two points serve to highlight that Cloud Volumes can offer advantages compared to native offerings.

Market Positioning

Adding in storage from a well-established vendor allows the cloud hyper-scalers to deliver additional value for their customers. Picking NetApp provides the hyper-scalers access to a significant number of enterprise customers, with a future on-ramp for moving data to the cloud.

It's difficult to envisage other enterprise storage vendors being given the chance to deploy equivalent services, however there are existing file storage solutions available in hyper-scaler marketplaces today. These include Qumulo QF2, Zadara Storage, Nexenta, SoftNAS and Weka.IO Matrix.

Caveats

Cloud Volumes is still in private preview. Remember this is an implementation of ONTAP, so NetApp needs to develop the right operational processes to scale and support the hardware seamlessly across multiple data centres. This will need some planning and effort. There are also likely to be some service restrictions compared to native public cloud offerings, such as point-to-point replication between availability zones, compared to eventual consistency across multiple zones as usually seen with cloud-based storage platforms.

Reference Information

1. Located at <https://cloud.netapp.com/home>
2. More details at <https://www.netapp.com/us/cloud-marketplace/google-cloud-platform.aspx>
3. Google <https://www.blog.google/topics/google-cloud/google-cloud-and-netapp-collaborate-cloud-native-high-performance-storage/>

NetApp GCP press release <https://www.netapp.com/us/company/news/press-releases/news-rel-20180508-91880.aspx>

Further details on NetApp Cloud Volumes can be found in the following Architecting IT blog posts:

- [NetApp Extends Cloud Volumes to GCP](#) (Published 11 May 2018)
- [NetApp embraces cloud for future business growth](#) (Published 25 April 2018)
- [Is NetApp Becoming A Service Provider?](#) (27 November 2017)
- [Azure Enterprise NFS by NetApp – Initial Thoughts](#) (4 October 2017)

Further details on NetApp Data Fabric can be found with the following Storage Unpacked podcasts:

- [Soundbytes: The Data Fabric Explained with NetApp CTO Mark Bregman](#) (Published 19 November 2016)

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