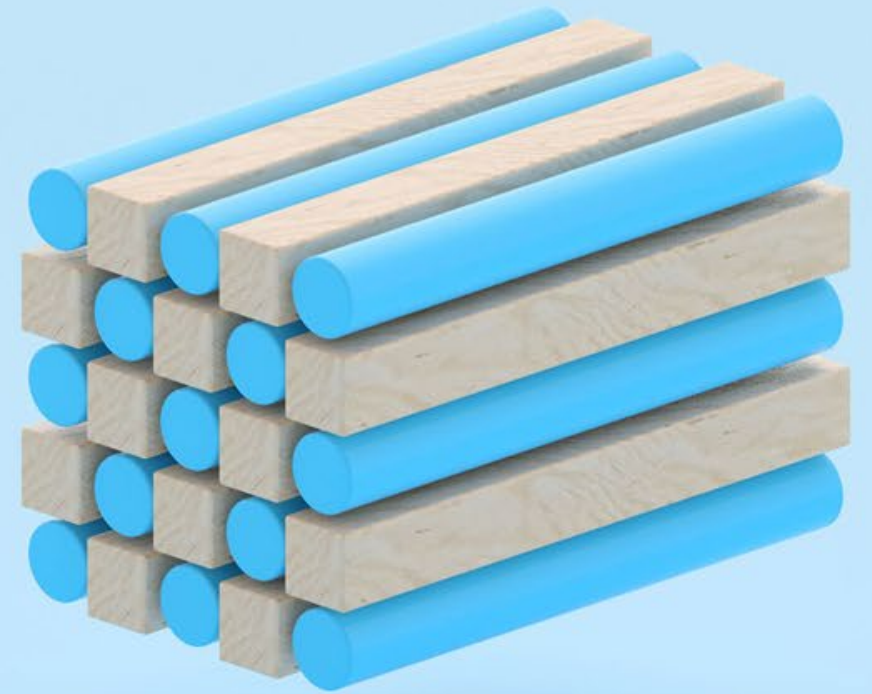


FSxONTAP in NetApp IT

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Agenda

- What is FSxONTAP?
- Our Current Application Storage Approach
- Hyperscaler Native vs. Best of Breed
- Key Benefits to NetApp IT
- Potential Drawbacks
- Cost Comparison

What is FSxONTAP?

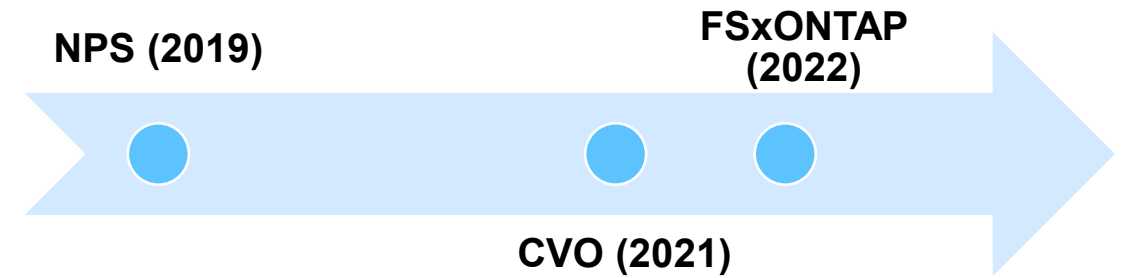


“Amazon FSx for NetApp ONTAP is a fully managed service that provides highly reliable, scalable, performant, and feature-rich file storage built on NetApp's popular ONTAP file system. It provides the familiar features, performance, capabilities, and APIs of NetApp file systems with the agility, scalability, and simplicity of a fully managed AWS service.”

Features of FSx for ONTAP

- Support for petabyte-scale data sets in a single namespace
- Multiple gigabytes per second (GBps) of throughput per file system
- Multi-protocol access to data using the NFS, SMB, and iSCSI protocols
- High availability and durability with Multi-AZ deployments
- Automatic data tiering that reduces storage costs by automatically transitioning infrequently-accessed data to a lower-cost storage tier based on your access patterns
- Data compression, deduplication, and compaction to reduce your storage consumption
- Support for NetApp's SnapMirror replication feature
- Support for NetApp's on-premises caching solutions: NetApp Global File Cache and FlexCache
- Support for access and management using native AWS or NetApp tools and APIs
- AWS Management Console, CLI, and SDKs
- NetApp ONTAP CLI, REST API, and Cloud Manager
- Support for the following data protection and security features:
- Encryption of file system data and backups at rest using KMS keys
- Encryption of data in-transit using SMB Kerberos session keys
- On-demand anti-virus scanning
- Authentication and authorization using Active Directory
- File access auditing

Application Storage Providers in CloudOne IaaS



Not Utilized in CloudOne IaaS

Azure NetApp Files (ANF)

CVS

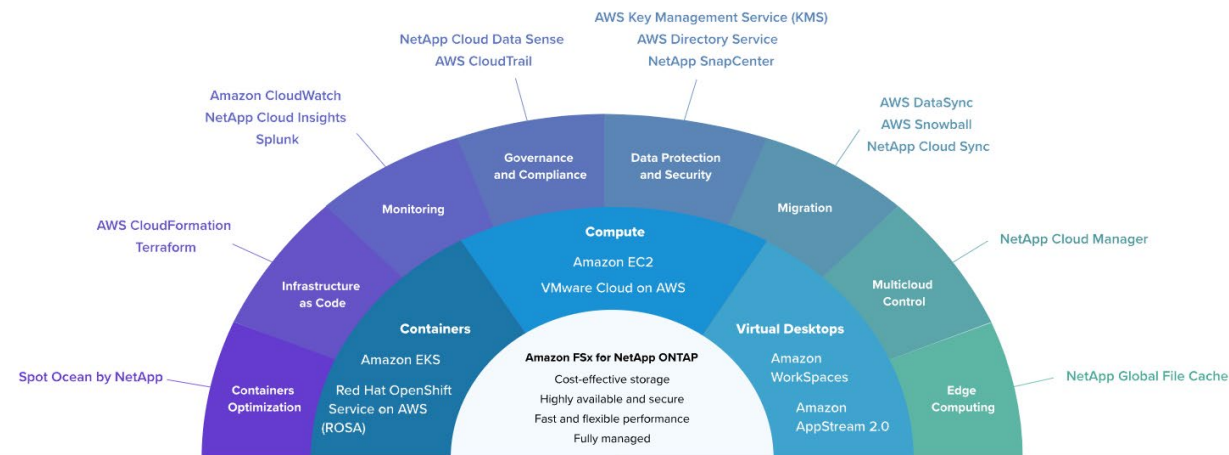
Hyperscaler Native vs. Best of Breed

Best of Breed (incumbent)

- Superior features and tech
- Code once to work across your Hybrid Cloud
- The Devil You Know
- Leverage existing operational processes and integrations

Native

- Scalable across Regions
- Better integration with other native services (ex. ELB and EC2)
- Superior programmatic access (CLI, Ansible, etc)
- Lower cost
- Chargeback



Key Benefits for IT

- Scale to new Hyperscaler Regions w/o weeks of setup for new CVO infra
- Lower cost + chargeback to internal Cost Centers (volume tagging)
- Killer performance – “The combined benefits of NVMe, io2 block express [and Nitro/Scalable Reliable Datagram protocol] makes it a beast.” - Ram Kodialbail
- Ability to scale SSD capacity, throughput and PIOPS in place will minimize wasted spend
- We don't manage it!

Potential Drawbacks

- You don't control ONTAP release rollout, AWS does
- Two control planes (AWS and ONTAP)
- You are not comfortable with your data running in someone else's datacenter (encryption at rest and in transit offered)
- As always, be wary of Data Transfer charges. Limit inter-Region traffic.

Cost Comparison CVO vs FSxONTAP

- FSxONTAP Components of Cost
 - Single AZ or Multi-AZ
 - SSD Capacity (primary storage; allocated but adjustable)
 - Network throughput (allocated but adjustable)
 - PIOPS (3 IOPS per GB of SSD; allocated but not yet adjustable)
 - Capacity Pool (S3; consumed)
 - Storage
 - Reads and Writes
 - Backups (optional; consumed)
- <https://fsxontap.calculator.aws/> (FSxONTAP)
- <https://cloud.netapp.com/aws-calculator> (CVO)

Thank you

