How to Innovate with NetApp Cloud Data Services on AWS

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Manager Sales and Business Development - EMEA
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Key Trends Driving Cloud Adoption
How customers are addressing external pressures

Firms that are aggressively using data to disrupt new markets are seeing \textit{2X top-line revenue growth and customer satisfaction} as their less-able peers.

\textit{IDC Data Thriver Research 2017}

Moving processing and content collection and delivery closer to the sources and consumers of information offers \textit{significant benefits} and creates \textit{new business models}.

\textit{Gartner strategic trends for 2018}

Transition from protecting the business to enabling the business by delivering \textit{the right infrastructure, at the right time}, from the right provider, ideally at the right cost.

\textit{Gartner 2018 CIO Survey for I&O Leaders}
NetApp Cloud Strategy

Enable customers to deliver business outcomes for all IT workloads on cloud and hybrid cloud environments

**EXPAND**
Continuously release new cloud services

**CUSTOMERS**

**BUY**
Enable customers to select where they buy

**DELIVER**
Deliver cloud data services to the top hyperscalers
NetApp and AWS Partnership

2013
NetApp’s first SaaS listing available on AWS

2014
Cloud Volumes ONTAP available on AWS

2015
AltaVault backup to S3

2016
- Cloud Sync – File Transfer to S3
- StorageGRID Integrations to S3

2017
- NetApp acquires GreenQloud for cloud orchestration
- Cloud Control O365 Backup

2018
- NetApp Cloud Volumes Service
- Cloud Insights
- NetApp Kubernetes Service
AWS and NetApp Customers

“This solution (Cloud Volumes ONTAP) takes a very risky piece of work – migrating data and not losing it – and does it efficiently and safely.” “Overall, we have the platform to scale our business tenfold from where we are now.” Mike Maloney, Vice President, Brightspace Cloud and IT, D2L
### NetApp Cloud Data Services Portfolio

**Cloud Central**

<table>
<thead>
<tr>
<th>Cloud Storage</th>
<th>Data Services</th>
<th>Cloud Controls</th>
<th>Cloud Analytics</th>
</tr>
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<tbody>
<tr>
<td>Cloud Volumes Service</td>
<td>Cloud Sync</td>
<td>NetApp Kubernetes</td>
<td>Cloud Insights</td>
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<tr>
<td>Cloud Volumes ONTAP</td>
<td>Cloud Secure</td>
<td>Service</td>
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<td>Cloud Tiering</td>
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<td>SaaS Backup</td>
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<td>Cloud Backup Service</td>
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NEW: NetApp Kubernetes Service
Cluster deployment on multiple clouds in 3 clicks

- The Universal Control Plane for Managed Kubernetes now available for everyone
  - The simplest way to deploy a Kubernetes cluster to the clouds.
  - Deploy a production-ready Kubernetes cluster in 3 clicks when you want and where you want
Innovate faster with insights across your application infrastructure stack

SaaS based tool that monitors all your infrastructure assets

SPECIFICALLY DESIGNED FOR CLOUD APPLICATION INFRASTRUCTURES
Analyze dynamic cloud infrastructure at scale and supports micro-services, containers and Kubernetes.

SaaS DEPLOYMENT GETS YOU UP AND RUNNING QUICKLY
Agents discover your infrastructure in minutes and begin monitoring.

ADVANCED ANALYTICS for proactive alerting, fast trouble shooting and optimization of resources with recommended workload placements

MONITORS ALL MAJOR VENDORS AND CLOUD PROVIDERS

BEST FOR:
- Monitoring cloud native applications that dynamically provision infrastructure through APIs
- Rapidly finding problems and reducing MTTR
- Optimizing cloud resources by understanding infrastructure relationships and usage
- Preventing critical infrastructure issues before they impact customers

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Cloud Sync Service
Secure, fast, automated data synchronization

Move your data using Secure, Fast, Automated Data Synchronization

BEST FOR:

- Rapid and secure data migration and synchronization across any source and target
- Continuous sync of large workloads while maintaining immediate data access.
- Onboard cloud environments by converting & copying your file-based datasets to the public cloud of your choice

CONTINUOUS, AUTOMATED DATA SYNCHRONIZATION with extremely fast data movement compared to other synchronizing solutions that only move deltas.

DELIVERY ASSURANCE BASED ON BUILT-IN DATA PROTECTION Secure data storage and transport with support for VPN and VPC.

FLEXIBLE ON-DEMAND CONSUMPTION Purchase directly or from the AWS Marketplace licensed or pay-as-you-go model.

BRING YOUR DATA CENTER AND THE CLOUD TOGETHER Realize the power of the Data Fabric with the ability to get your data where you want, when you want, and in any format.
SaaS Backup
SaaS Backup for Microsoft Office 365 and Salesforce

Guard your SaaS data from threats or accidental deletion

A SECURE, WEB-BASED, SOFTWARE-AS-A-SERVICE (SAAS) OFFERING
Backs up your Microsoft Office 365 or Salesforce accounts with encryption for data at rest and in flight

PROTECT AND MANAGE BACKUPS OF: Microsoft Exchange Online, OneDrive for Business, SharePoint Online, Groups, Teams, and Salesforce

CLOUD OR ON-PREMISES BACKUP TARGETS: Use NetApp-managed AWS S3 accounts or Bring Your Own Storage (BYOS) cloud or on-premises storage

NOW SUPPORTS SHARED MAILBOXES FOR MICROSOFT OFFICE EXCHANGE ONLINE through automated discovery and protection

BEST FOR:
- Extending Office 365 and Salesforce data protection with granular backup and restore
- Meeting regulatory compliance with long-term retention and choice of backup targets
- Protecting & recovering all e-mail, calendar, contacts, tasks, site collections, lists and files
Cloud Volumes ONTAP for AWS
Data Control, Cost Efficiency, Business Continuity/Disaster Recovery

Enterprise data & storage management running natively in the cloud

BEST FOR:
- Moving applications to the cloud months or years faster
- Automating development and testing for faster time to market
- Ensuring business continuity across IT environments with a data center in the cloud

BUILT-IN STORAGE EFFICIENCY REDUCES COSTS
Deduplication, compression, thin provisioning, and cloning

PRECONFIGURED TO MATCH YOUR WORKLOAD REQUIREMENTS
Deduplication, compression, thin provisioning, and cloning

SYNCHRONIZE AND MANAGE BOTH IN CLOUD AND ON-PREMISES
Data through a single, management console

MULTIPLE PROTOCOLS PUBLIC CLOUDS DO NOT OFFER
With NFS, SMB, iSCSI, move any workload to public cloud
# NetApp Cloud Volumes Service for AWS

To run your applications on AWS at optimal performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>DEPLOY MORE WORKLOADS IN THE CLOUD</td>
<td>even legacy apps - for maximum agility</td>
</tr>
<tr>
<td>GO FROM ZERO TO 100TB</td>
<td>deployed in seconds, fully automated</td>
</tr>
<tr>
<td>PAY-AS-YOU-GO</td>
<td>shifts expense from CapEx to OpEx</td>
</tr>
<tr>
<td>SECURE AND PROTECT DATA</td>
<td>no application performance impact</td>
</tr>
<tr>
<td>CLONE DEV/OPS WORKSPACES INSTANTLY</td>
<td>for faster releases</td>
</tr>
<tr>
<td>PURCHASE CLOUD VOLUMES SERVICE THROUGH AWS MARKETPLACE</td>
<td>for seamless service and billing</td>
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</table>

A fully-managed, cloud-file storage service that enables app deployment in the cloud and speeds app development

**BEST FOR:**

- File-based workloads that benefit from cloud services
- Legacy applications that have not been moved to the cloud due to limitations
- Big Data analytics such as genomics that require performant cloud storage
A deeper look at NetApp Cloud Volumes Service for AWS
Cloud Volumes Use Cases

- File Services
- DevOps and Application Development
- Production Workloads
- SQL & NoSQL Database

- Disaster Recovery
- Backup and Archive
- HPC and Video Rendering
Use Cases: Migrate file based Apps to AWS

Achieve the precise performance, scale, and security that each application demands.

- Windows apps, Active Directory, etc.
Use Cases: Big Data Analytics

Move Big Data analytics such as genomics sequencing to AWS cloud to make data-driven decisions faster.
Use Cases: DevOps

Automate development and test environments with the ability to clone hundreds of environments in minutes.
### NetApp Cloud Volumes Service for AWS

**Services and key concepts (Part 1 of 2)**

<table>
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<tr>
<th>Volume</th>
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</table>
| ▪ The pricing metric is $/GB-month. GB is defined as logical capacity  
▪ Multiple service levels at different $/GB-month price points  
▪ NFSv3 and/or SMB3 are available. NFSv4.1 coming soon |

<table>
<thead>
<tr>
<th>Snapshot</th>
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| ▪ The pricing is $/GB-month  
▪ Snapshot logical space is priced and billed at the same rate as the cloud volume. |

<table>
<thead>
<tr>
<th>Copy</th>
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</table>
| ▪ The pricing metric is $/GB-month  
▪ Creates a full copy with its own QoS and Snapshots |

<table>
<thead>
<tr>
<th>Clone*</th>
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</table>
| ▪ The pricing metric is $/GB-month.  
▪ The clone for application development & test is part of the same volume.  
  ▪ Space provisioned for clone volume is used for only incremental changes.  
  ▪ The customer is charged on the logical size of the clone.  
  ▪ The clone volume shares the quality of service (QoS) budget and snapshots with the parent volume. |
NetApp Cloud Volumes Service for AWS
Services and key concepts (Part 2 of 2)

- Cloud Sync is a zero cost service for Cloud Volumes
  - Sync to or from any NFS or CIFS volume to a Cloud Volume

- **Cross-Region Backup***
  - Pricing metrics
    - $/GB moved on wire
    - $/GB-month of logical data backed up

- **Cross-Region Disaster Recovery***
  - Pricing metric:
    - $/GB moved on wire
    - $/GB-month of logical replication space
Cloud Volumes Service for AWS roll out

Areas with latencies < 50 ms

- US-West 2
- US-West 1
- US-East 1
- Dublin EU-West 1
- London EU-West 2
- Frankfurt EU-Central 1
- Tokyo AP-Northeast 1
- Sydney AP-Southeast 2
- 3x faster than self-managed block storage with 3 NFS servers and 15 EBS volumes
- A previously impossible calculation: able to complete it in 45 minutes using NetApp Cloud Volumes in AWS
- Easy onboarding: 30tb >2M files up in <2 days

Hákon Guðbjartsson, PhD, Chief Informatics Officer
Take the Next Step

✓ Check out NetApp Cloud Central and explore solutions for all your cloud workloads (primary, secondary, Kubernetes)
https://cloud.netapp.com/home

✓ Explore and test our services for AWS today
https://netapp.com/aws

✓ Talk to us today about deploying Cloud Volumes today.
See demos in our booth at: G12
- Multiprotocol (NFS or SMB) POSIX support
Thank you