



# Datacenter Innovations & Trends

15<sup>th</sup> Nov 2016

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FY'16 revenue:

**\$5.55**  
**billion**

Recognized as a  
**FORTUNE 500® Company**  
2016<sup>1</sup>

**#1** in Converged  
Infrastructure  
capacity shipped



Leader in oil &  
gas, media &  
entertainment,  
financial  
services,  
healthcare

**#1**  
in data  
replication  
software

**#1** Creator of ONTAP, the world's  
branded storage operating  
system<sup>2</sup>

Fastest Growing  
SAN Vendor in  
2016

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# What if you could...

- Move to all-flash storage for the price of disk
- Deploy storage in minutes instead of hours
- Shrink your storage footprint from multiple racks to a few shelves
- Manage data anywhere—engineered, software-defined, and cloud storage
- Freely move data to where it runs optimally—flash, disk, and the cloud
- Support current enterprise apps and modernize with next-gen software

...without compromising on enterprise-grade capabilities



# “Data Anywhere” – Powered by NetApp



vmware



CITRIX



ORACLE



hadoop



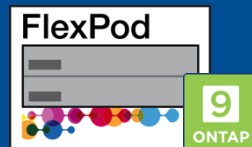
## NetApp<sup>®</sup> ONTAP<sup>®</sup> 9 Common Data Services

Engineered



AFF + FAS

Converged



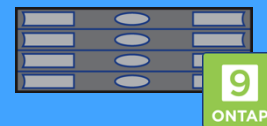
FlexPod<sup>®</sup>

Third-Party



FlexArray<sup>®</sup>

SDS



ONTAP Select

Near Cloud



NetApp Private  
Storage

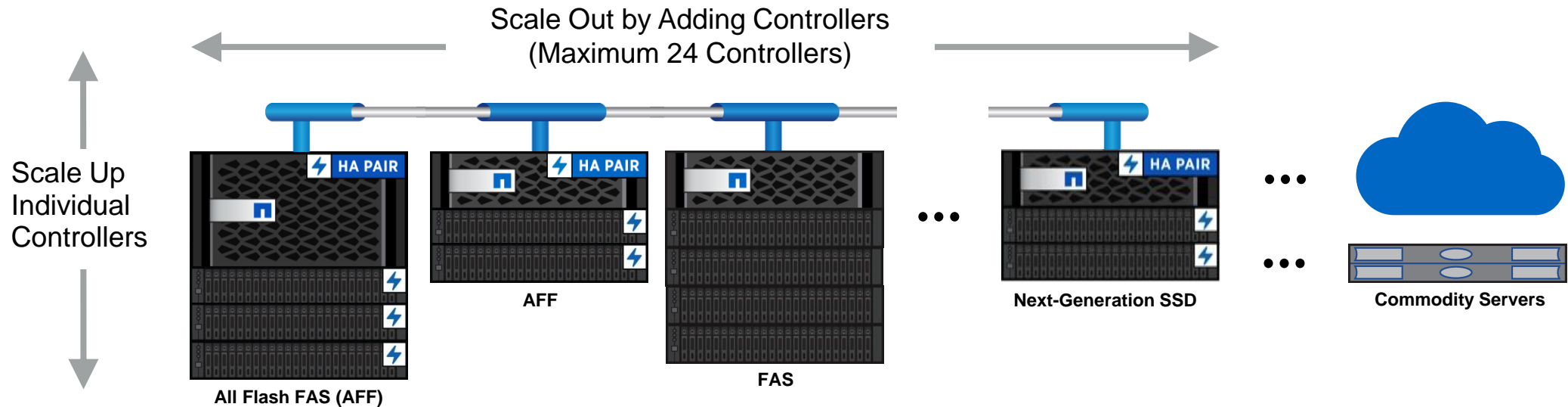
Cloud



ONTAP Cloud



# Future-proof IT with NetApp ONTAP



>4 million IOPS and 367PB effective all-flash capacity

- Scale out by intermixing your choice of flash and hybrid nodes
- Upgrade hardware/software during the regular workday—without disrupting users
- Incorporate software-defined, cloud, and next-generation flash





# NetApp ONTAP powers flash

Enterprise-grade data services with optimized cost, performance, and density

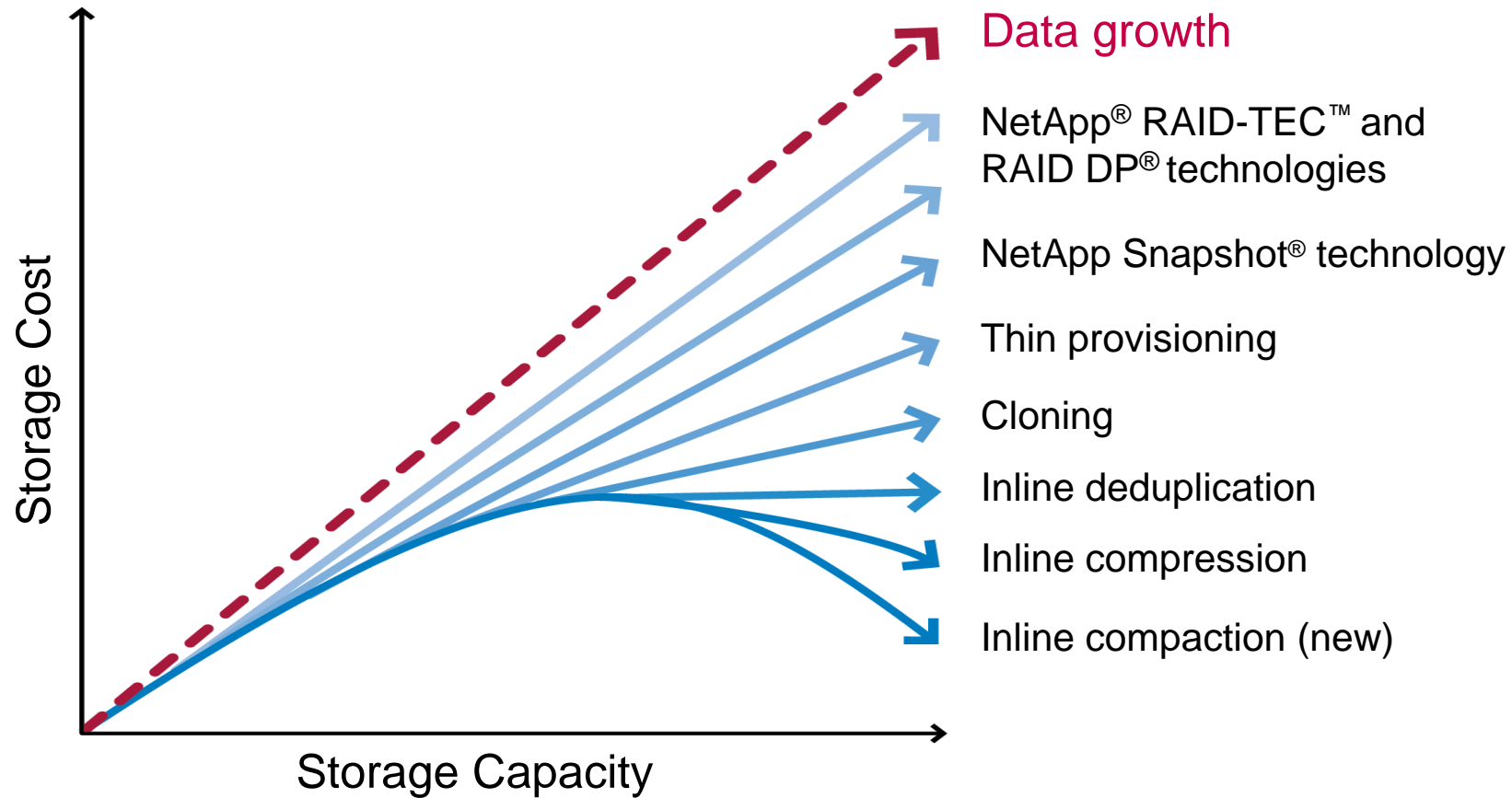


- Reduce the cost of flash with inline storage efficiencies
- Increase performance up to 60% with flash optimizations
- Shrink your storage footprint with 15TB SSDs



# Proven efficiency

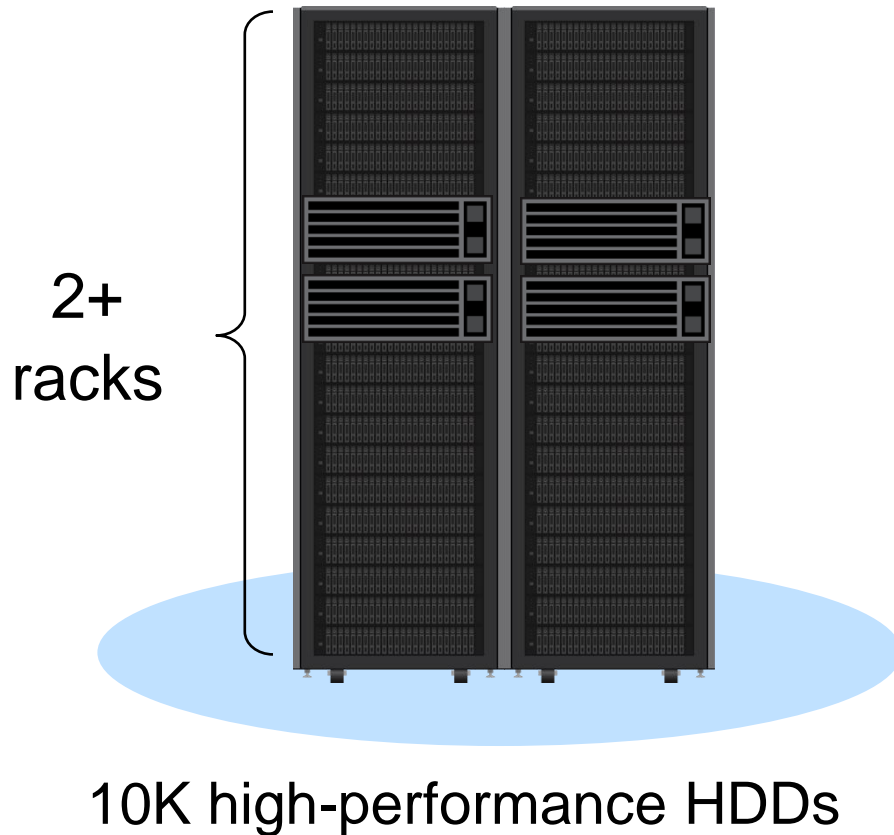
Drive storage cost reductions: lower capex and opex





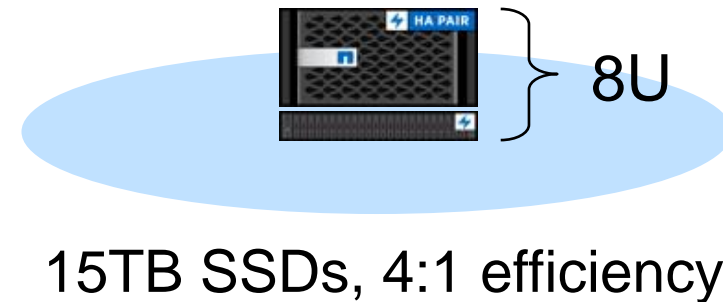
# Radically change data center economics

## 1PB of storage



- <1ms latency performance to **all** data
- 11 times smaller footprint—8U vs. 2+ racks
- 11 times lower power consumption, 8kWh
- No tuning for performance
- 6-month payback

## NetApp AFF





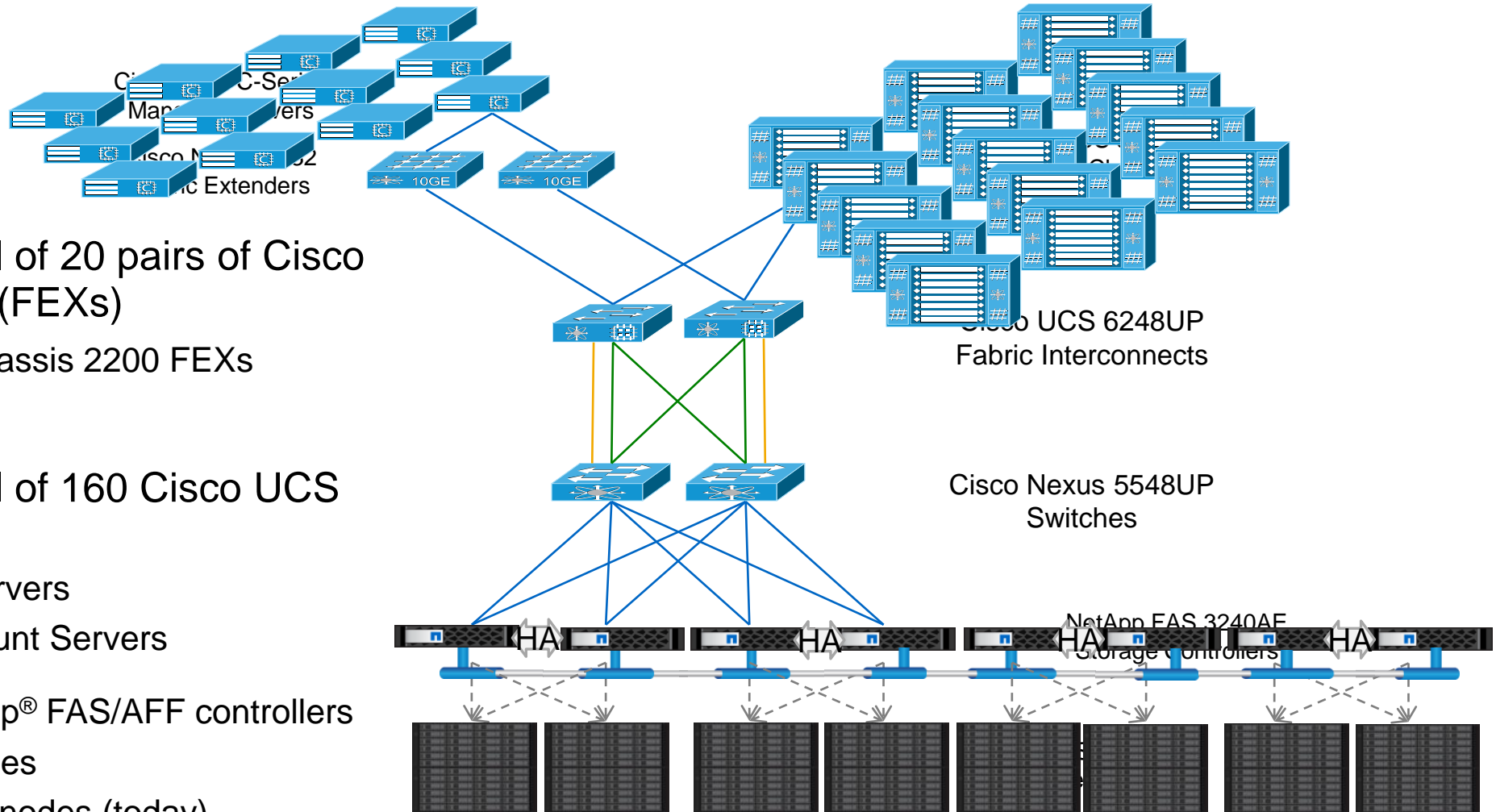
# FlexPod platform

- Standardized, prevalidated, converged platform
- Virtualized or nonvirtualized environments
- **Flexible:** one platform scales to fit many mixed workloads
- Benefits
  - Flexibility
  - Built-in data center efficiencies
  - Reduced risk



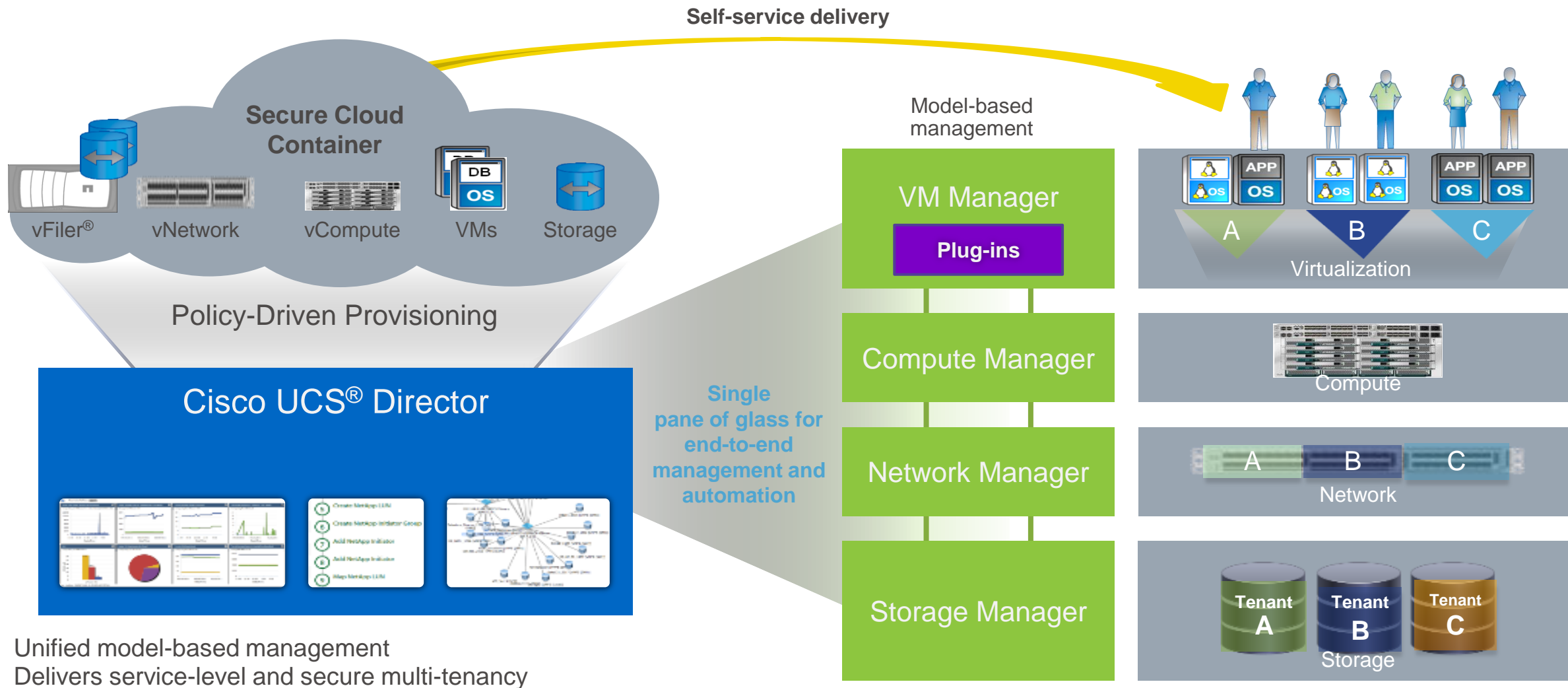
# FlexPod with clustered Data ONTAP

- Scale up to a total of 20 pairs of Cisco Fabric Extenders (FEXs)
  - B-Series Blade Chassis 2200 FEXs
  - Nexus 2000 FEXs
  
- Scale up to a total of 160 Cisco UCS servers
  - B-Series Blade Servers
  - C-Series Rack Mount Servers
  
- Scale up to 24 NetApp® FAS/AFF controllers
  - NAS only = 24 nodes
  - SAN and NAS = 8 nodes (today)



FlexPod® with Clustered Data ONTAP®

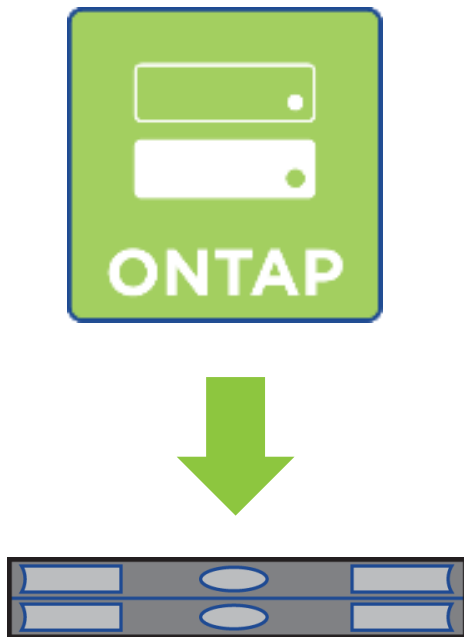
# Pod Management: FlexPod UCS Director Single Point of Management



- Unified model-based management
- Delivers service-level and secure multi-tenancy

# NetApp ONTAP Select

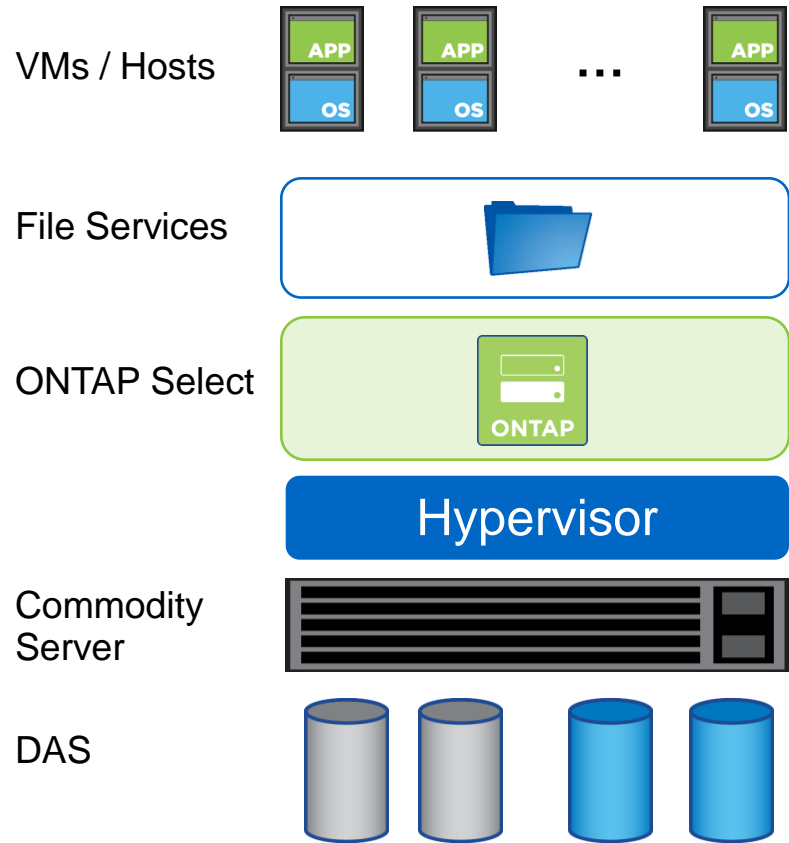
Software-defined NetApp ONTAP software



- What is NetApp® ONTAP® Select?
  - Software-defined storage for commodity servers
  - Deploys in data center or remote office
  - Flexible capacity-based license
  - Choice of configurations, up to 4-node HA
- What problems does ONTAP Select address?
  - Leverages SDS economics
  - No compromises on enterprise-grade features
  - Efficient data protection from core to edge

# NetApp ONTAP Select

Enterprise data services for the private cloud



## ■ ONTAP Select

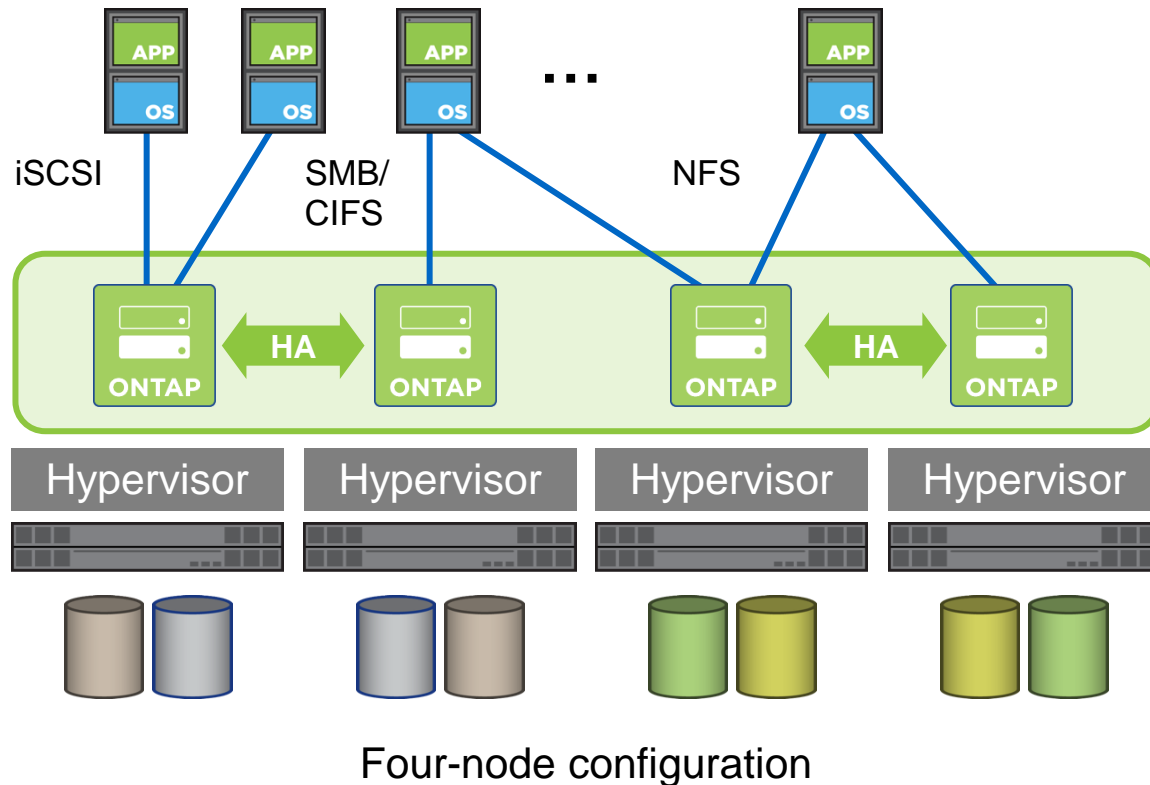
- Software-defined storage built on NetApp® ONTAP® software
- Deployed on commodity hardware
- Enterprise NAS services for DAS
- Ideal for data center and ROBO office use cases

## ■ Benefits

- Flexibility and agility
  - Cloudlike storage agility deployed on your server infrastructure
  - Procure and deploy capacity in less than a day
- Enterprise availability
  - Enterprise data management built on the leading NetApp ONTAP storage software
  - HA scale-out architecture enables elastic, reliable growth
- Efficient and effective protection
  - Integrated Data Protection with NetApp Snapshot®, SnapMirror®, and SnapVault® technologies
  - Native data reduction technologies include deduplication, compression, and thin provisioning

# NetApp ONTAP Select features

Enterprise data service—software defined



- Software-defined delivery
  - Flexible—Leverage existing or new commodity server infrastructure
  - Agile—Rapidly deploy storage resources, from procurement to provisioning in a day
  - Cost effective—Granular pay-as-you-go capacity
- Enterprise-class data services
  - Efficient—Thin provisioning, deduplication, and compression
  - Resilient—High-availability architecture
  - Scalable—Up to four nodes with capacity up to 400TB raw
  - Protected—Integrated NetApp® Snapshot® copies, local and remote backup, and disaster recovery features
  - Unified—File and block protocol access
- Built for the Data Fabric
  - Replicate and move data nondisruptively to any NetApp ONTAP® based storage resource (cloud or on premises)
  - Easily manage storage environment across the hybrid cloud with common tools



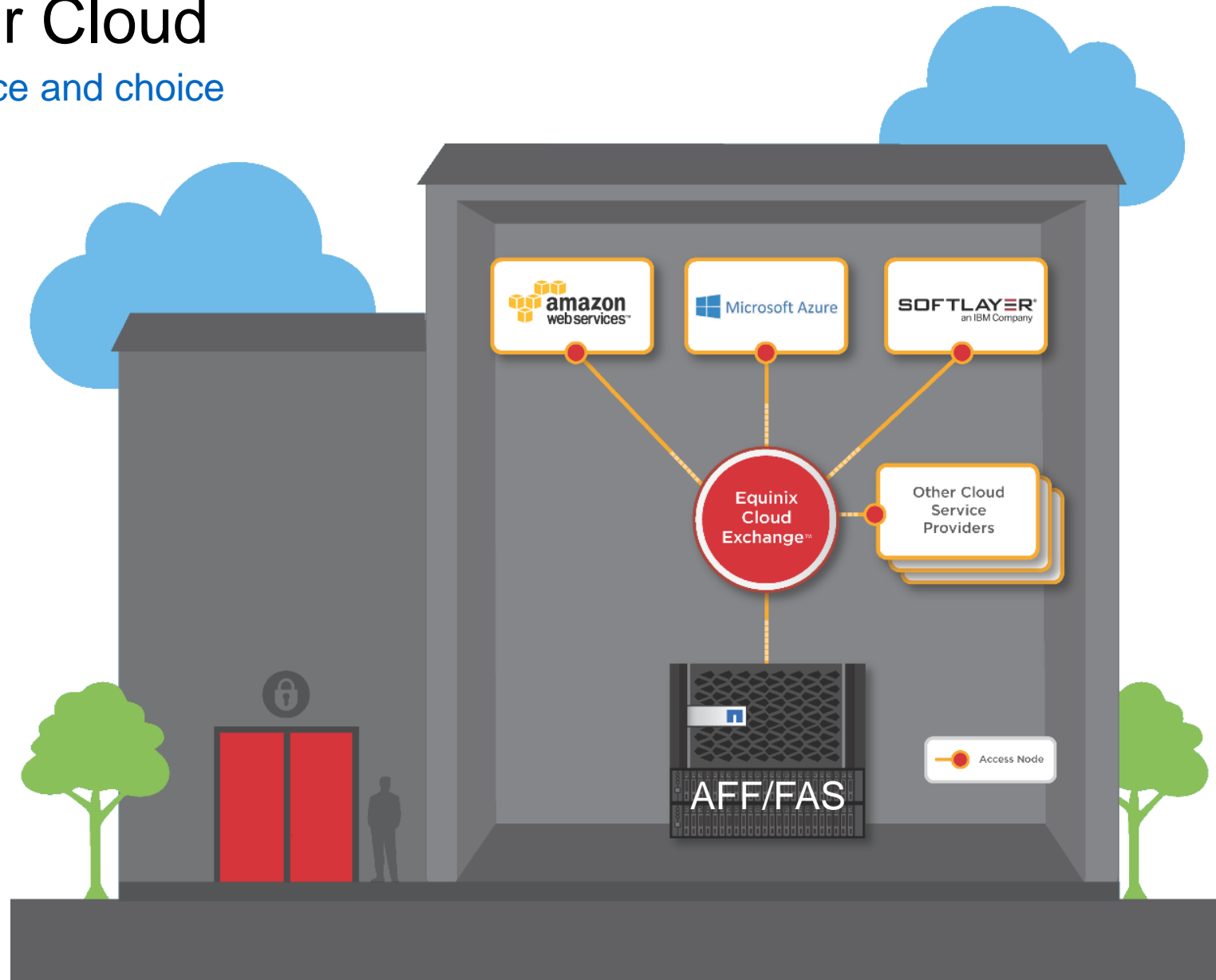
# NetApp Private Storage for Cloud

Control your clouds through data governance and choice

Data Control

Multi-cloud choice

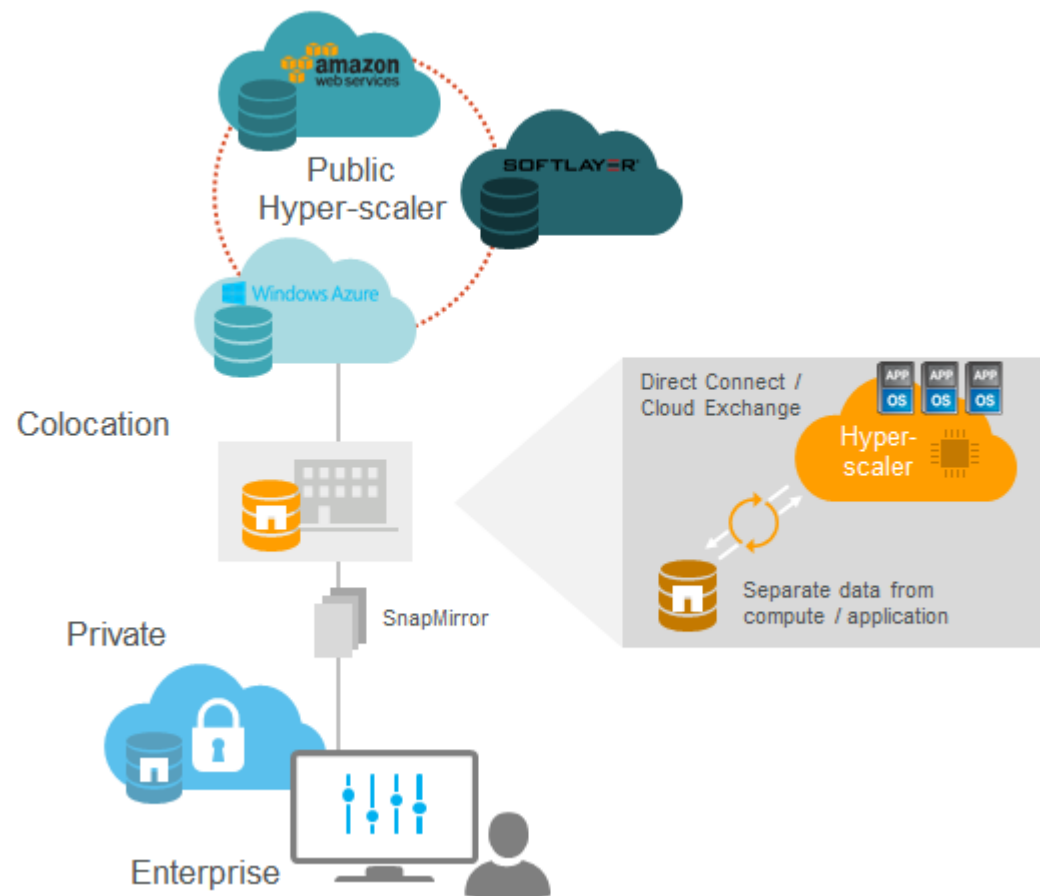
Performance



# NetApp Private Storage for Cloud

Cloud connected storage for data control, performance, and cloud choice

- Enable a safe first step and harbor for cloud
  - Migrate applications to the cloud when ready
  - Bring core IP or operations data back from the cloud
- Decouple compute, networking and storage
  - Use AWS, Azure, SoftLayer, etc. for compute
  - Place and control your data in FAS next to the cloud
  - Realize at least 36% faster performance than VPN
- Use industry-leading infrastructure
  - Cloud-connected All-Flash FAS, FAS storage systems
  - Cisco Nexus layer-3 switches (recommended)
  - Equinix cloud-connected colocation (recommended)



# NetApp Private Storage for Cloud Differentiation

- Integrates with a Data Fabric by NetApp
  - Flexibility to manage data across all clouds for new cost efficiencies and innovation capabilities
  - Use case choice with management consistency within the portfolio
- Leverages Data ONTAP and NetApp manageability capabilities
  - Extends secure multi-tenancy and Ethernet protocol leadership to the cloud
  - Applies FlexClone to cloud dev/ops uses
  - Enables storage-efficient data movement from on-premises to the cloud (and back) with SnapMirror
  - Single manageability model – same as on-premises FAS – re-use existing staff skills
- Eases hybrid cloud consumption
  - Flexible consumption models – from capital, leasing or provider based as-a-service

# NetApp ONTAP Cloud

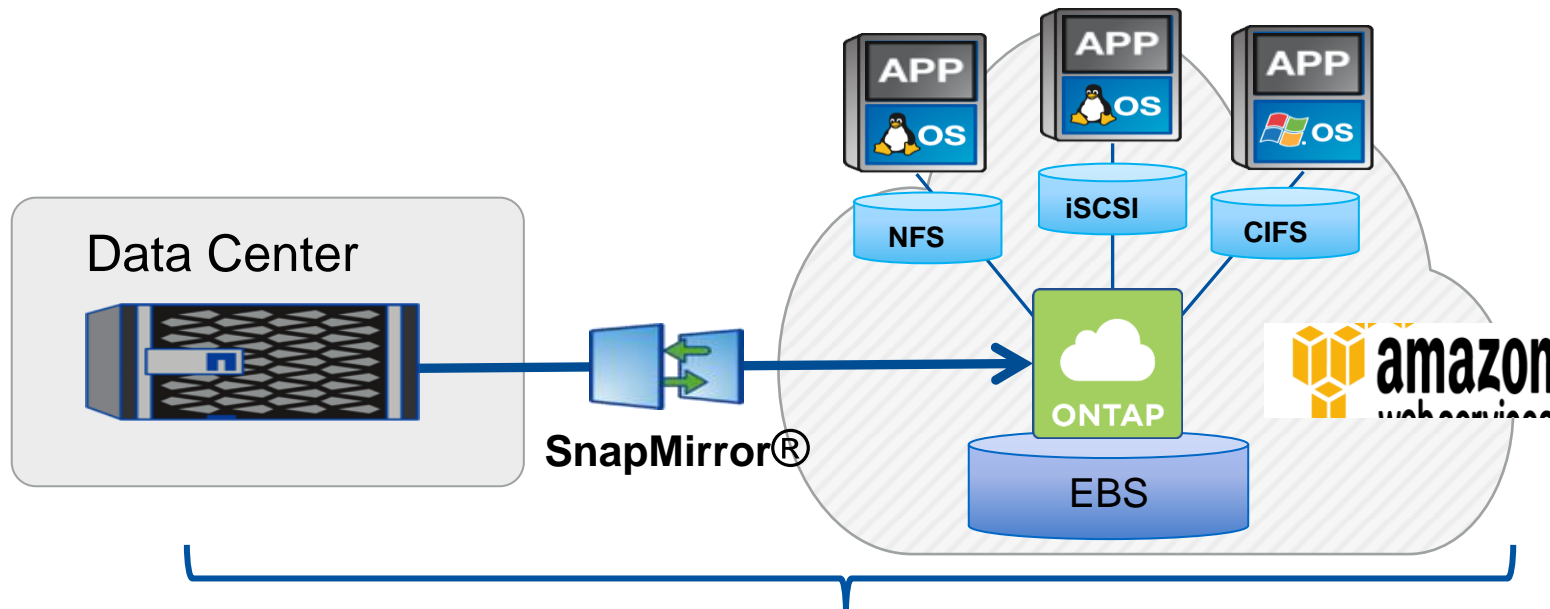
Cloud economics with enterprise data management



- What is NetApp® ONTAP® Cloud?
  - Software-defined storage in the cloud
  - Pay-as-you-use flexible cost structure
  - High-availability option (2-node HA)
- What problems does ONTAP Cloud address?
  - Quick deployment; great for DevOps
  - Enhance cloud storage with NAS, snapshots, clones, and so on
  - Minimize cloud footprint with advanced data reduction
  - Enable easy data movement between on-premises storage and the cloud

# NetApp ONTAP Cloud for AWS

Expand your storage options in the cloud



- Snapshot® copies
- Deduplication
- Compression
- Encryption
- SnapMirror and SnapVault®
- FlexClone® volumes
- NFS/CIFS/iSCSI



## Cloud Manager

Manage and monitor cloud storage on site or directly in the cloud

## OnCommand® Management Suite

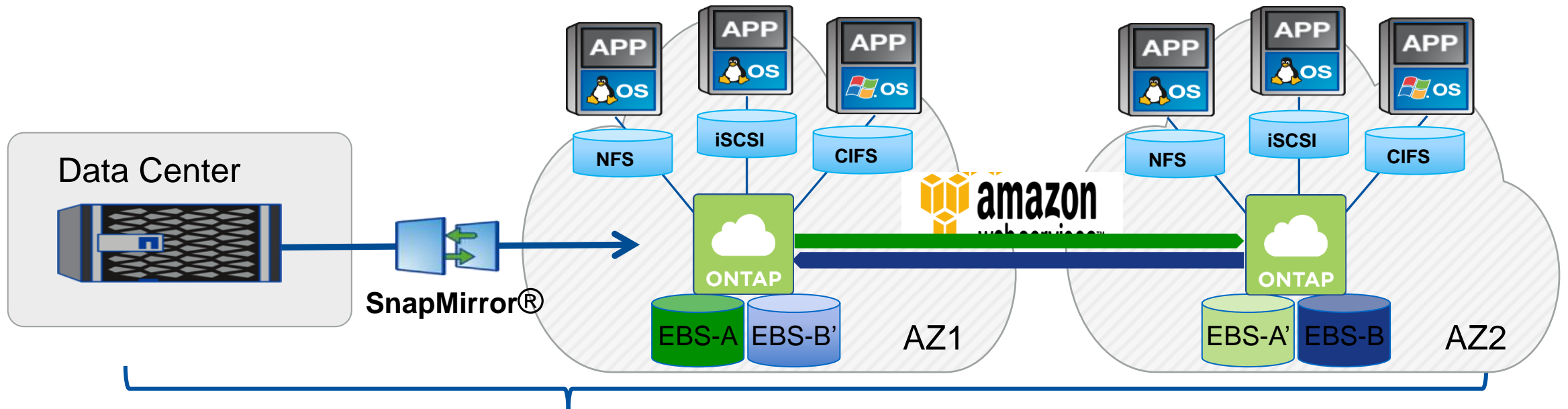
System Manager

Unified Manager

Insight

# NetApp ONTAP Cloud for AWS: high availability

Expand your storage options in the cloud



## Cloud Manager

Manage and monitor cloud storage on site or directly in the cloud

## OnCommand® Management Suite

System Manager

Unified Manager

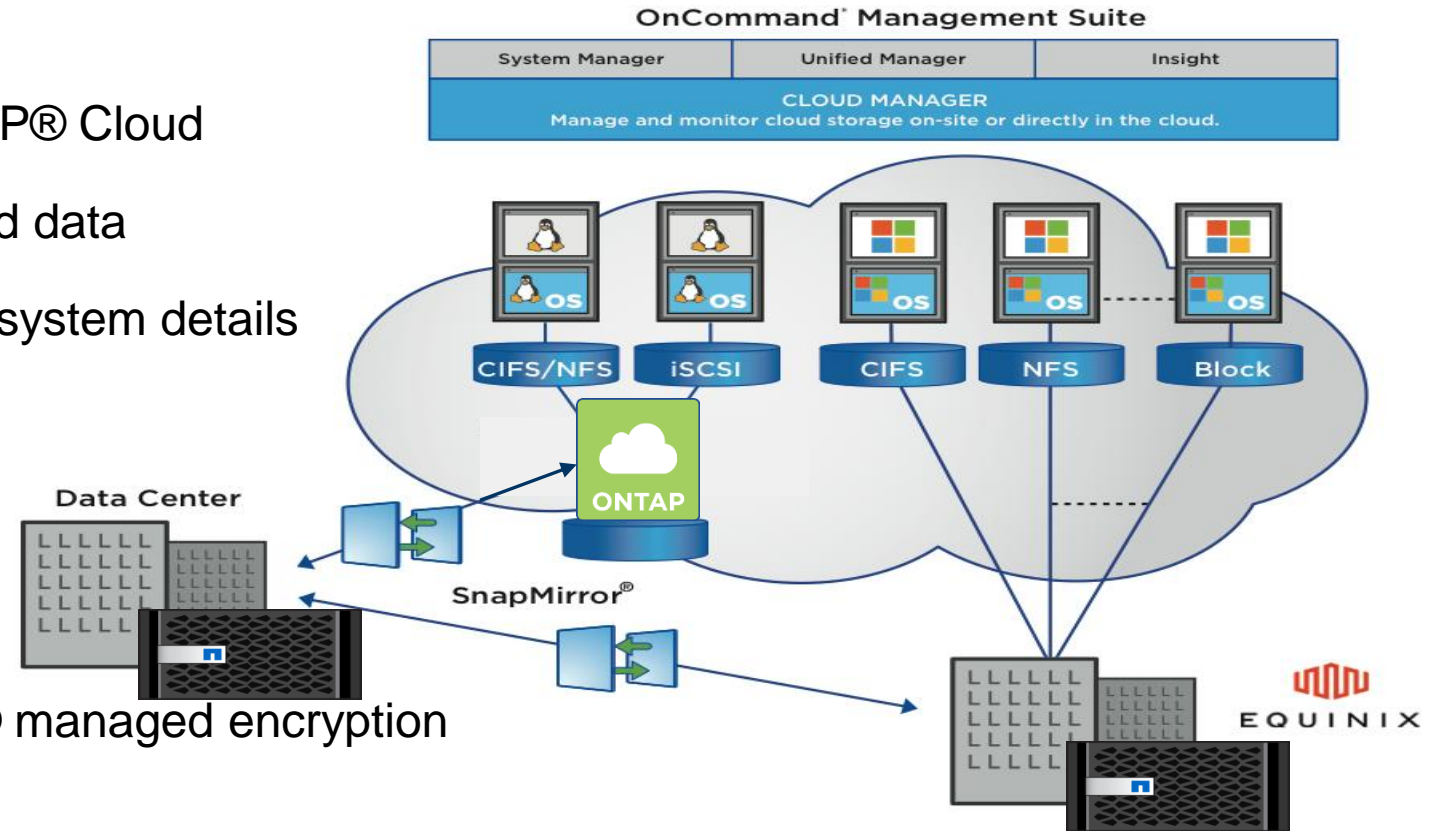
Insight



# OnCommand Cloud Manager

Simple data fabric deployment and management suite

- Ease deployment and configuration of ONTAP® Cloud
- Provides a central point of control for all cloud data
- Simplified Volume View mode hides storage system details
- Manages your data replication to and from the data center and the cloud
- Provides AWS cloud resource cost monitoring
- Offers data security choice through NetApp® managed encryption
- Eases license and entitlement management
- Facilitates management of the data fabric, including NetApp AFF, FAS, and ONTAP Cloud environments



# Try ONTAP Cloud free




<http://aws.amazon.com/marketplace>

aws marketplace Amazon Web Services Home

Sign in or Create a new account Your Account | Help | Sell on AWS Marketplace

Shop All Categories ▾   ▶ Your Software



## ONTAP Cloud for AWS

Sold by: NetApp, Inc. | [See product video](#)

**30 Day Free Trial Available** - The leading enterprise storage operating system providing secure, proven NFS, CIFS, and iSCSI data management in the cloud. **IMPORTANT:** Must be installed by OnCommand Cloud Manager at <http://aws.amazon.com/marketplace/pp/B00OMA42XU>. Cloud ONTAP is a software-only storage service running the clustered Data ONTAP storage operating system, offering you control of your data with the power of an enterprise storage software solution. Building your cloud storage environment on Cloud ONTAP provides enterprise-class storage features across all protocols. You get zero-impact NetApp Snapshot copies with ... [Read more](#)

<b>Customer Rating</b>	Be the first to review this product
<b>Latest Version</b>	8.3.1 RC1
<b>Base Operating System</b>	Linux/Unix, Other Cloud ONTAP 8.3.1
<b>Delivery Method</b>	64-bit Amazon Machine Image (AMI) ( <a href="#">Learn more</a> )
<b>Support</b>	<a href="#">See details below</a>
<b>AWS Services Required</b>	Amazon EC2, Amazon EBS General Purpose Storage, VPC
<b>Highlights</b>	<ul style="list-style-type: none"><li>Protect your data with fast, efficient SnapShot copies and NetApp managed storage encryption. Replicate across availability zones or to and from your data center with SnapMirror technology</li><li>Reduce your storage consumption with efficiency features:</li></ul>

You will have an opportunity to review your order before launching or being charged.

### Pricing Details

For region

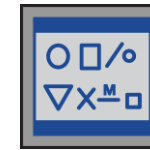
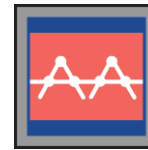
**Free Trial**  
Try one instance of this product for 30 days. There will be no hourly software charges for that instance, but AWS infrastructure charges still apply. Free Trials will automatically convert to a paid hourly subscription upon expiration. Note that Free Trials are only applicable for hourly subscriptions, but you can opt to purchase an annual subscription at any time.

**Hourly Fees**

# Simplify data management across the NetApp ONTAP experience

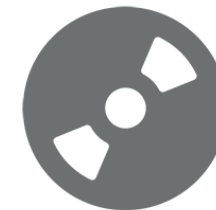
Reduce time managing and deploying

- 10 minutes from powering on to serving data
- Global management of data across flash/disk/cloud
- Consolidate workloads with secure separation and performance
- Empower application admin with role-based data management
- Simple automation using standardized services
- Mobile NetApp® AutoSupport® tool for system health monitoring

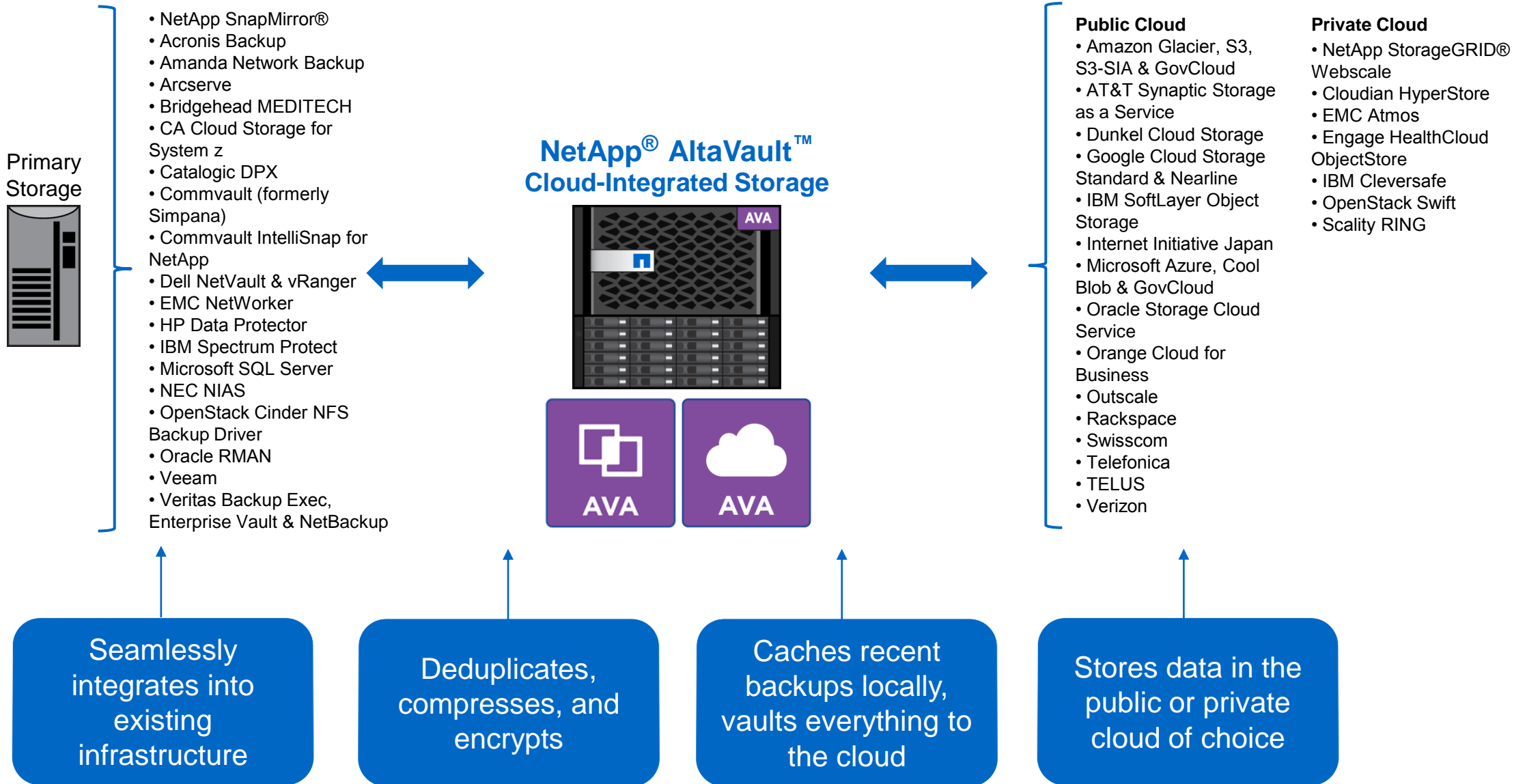


NetApp OnCommand® Management Software

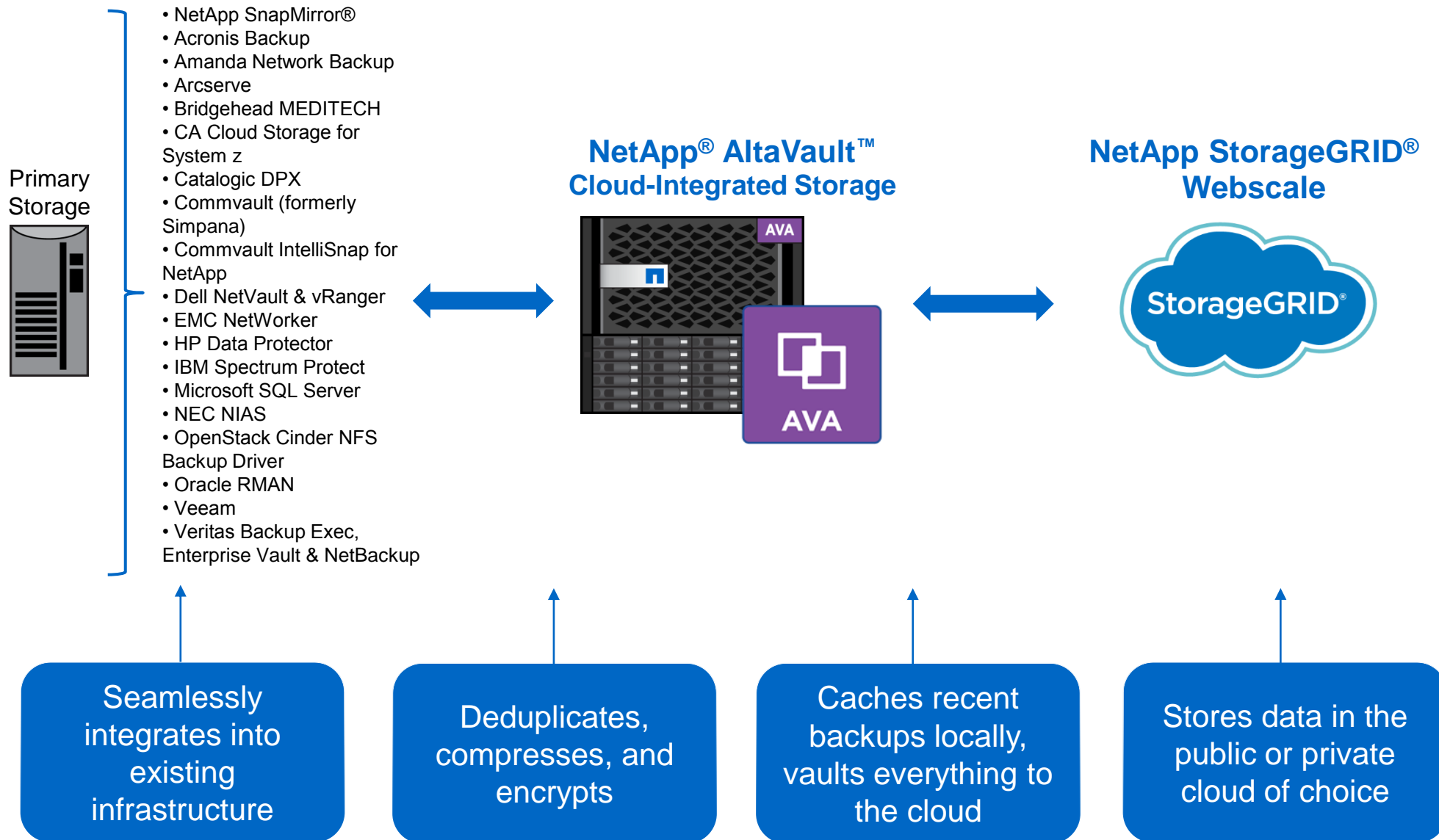
NetApp ONTAP® Software



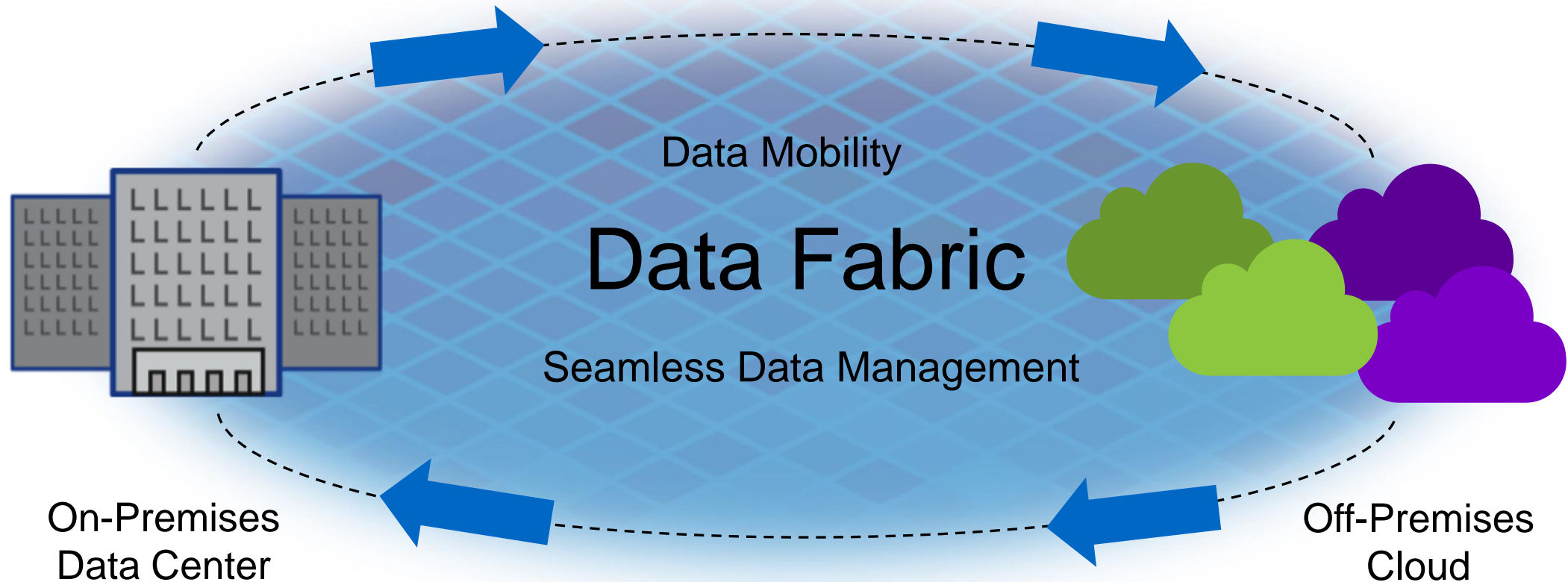
# Backup to Cloud with AltaVault



# Webscale storage for on-premises archives



# NetApp ONTAP is the foundation for your Data Fabric







# Thank You