



Delivering Hybrid Cloud Solutions at Scale

# Flexible Storage Solutions

Seagate  
AP Systems



Seagate  
JBODs



Seagate  
CORVAULT



Seagate+QuantaStor  
Scale-up  
File & Block  
Storage Clusters

Seagate+QuantaStor  
Scale-out  
Object, File & Block  
Storage Clusters

Auto Tiering



QuantaStor Storage Grid

**Storage Grid Technology**  
Grid technology unifies management of QuantaStor systems across racks, sites, and clouds.

**Security**  
Advanced RBAC, end-to-end encryption support, and compliance with NIST 800-53, 800-171, HIPAA, CJIS, & FIPS 140-2 L1 certified.

**Unified File, Block & Object**  
All major storage protocols are supported including NFS/SMB, iSCSI/FC/NVMeoF, and S3.

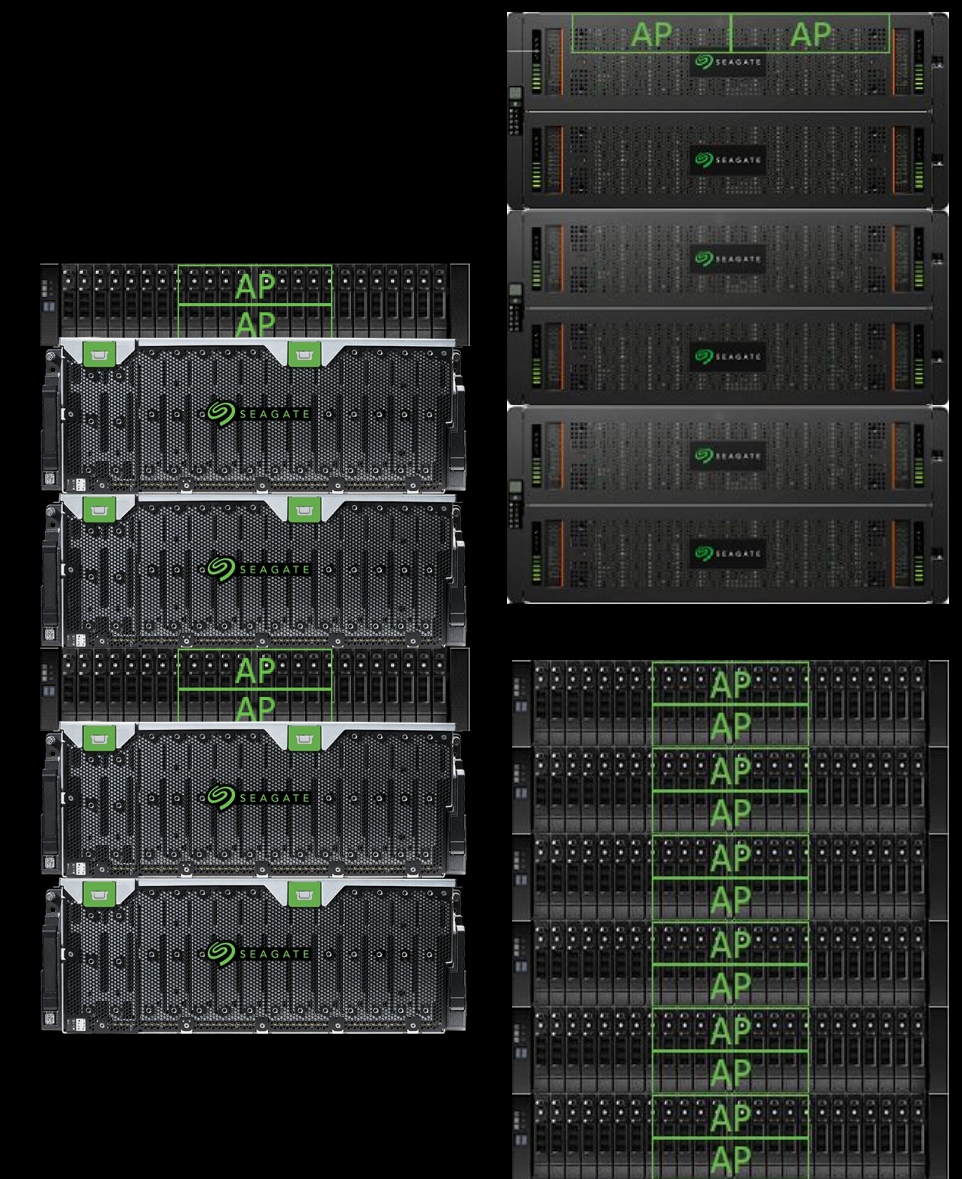
## What is QuantaStor?

Software Defined Storage Platform

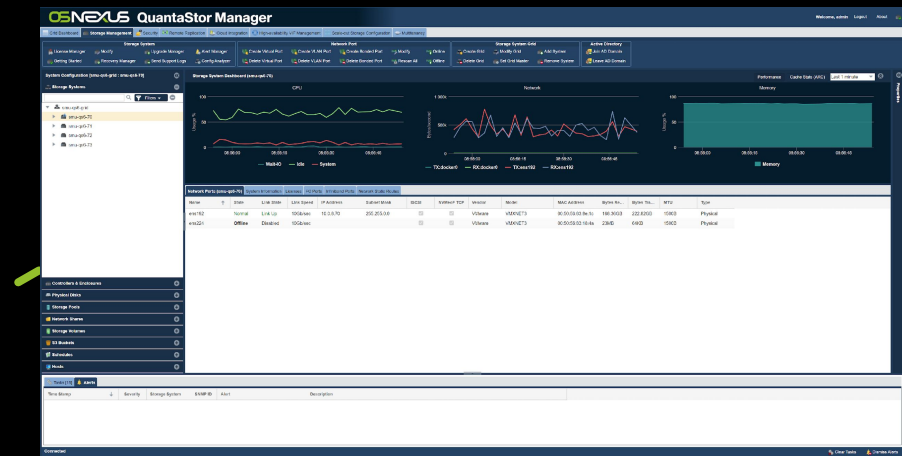
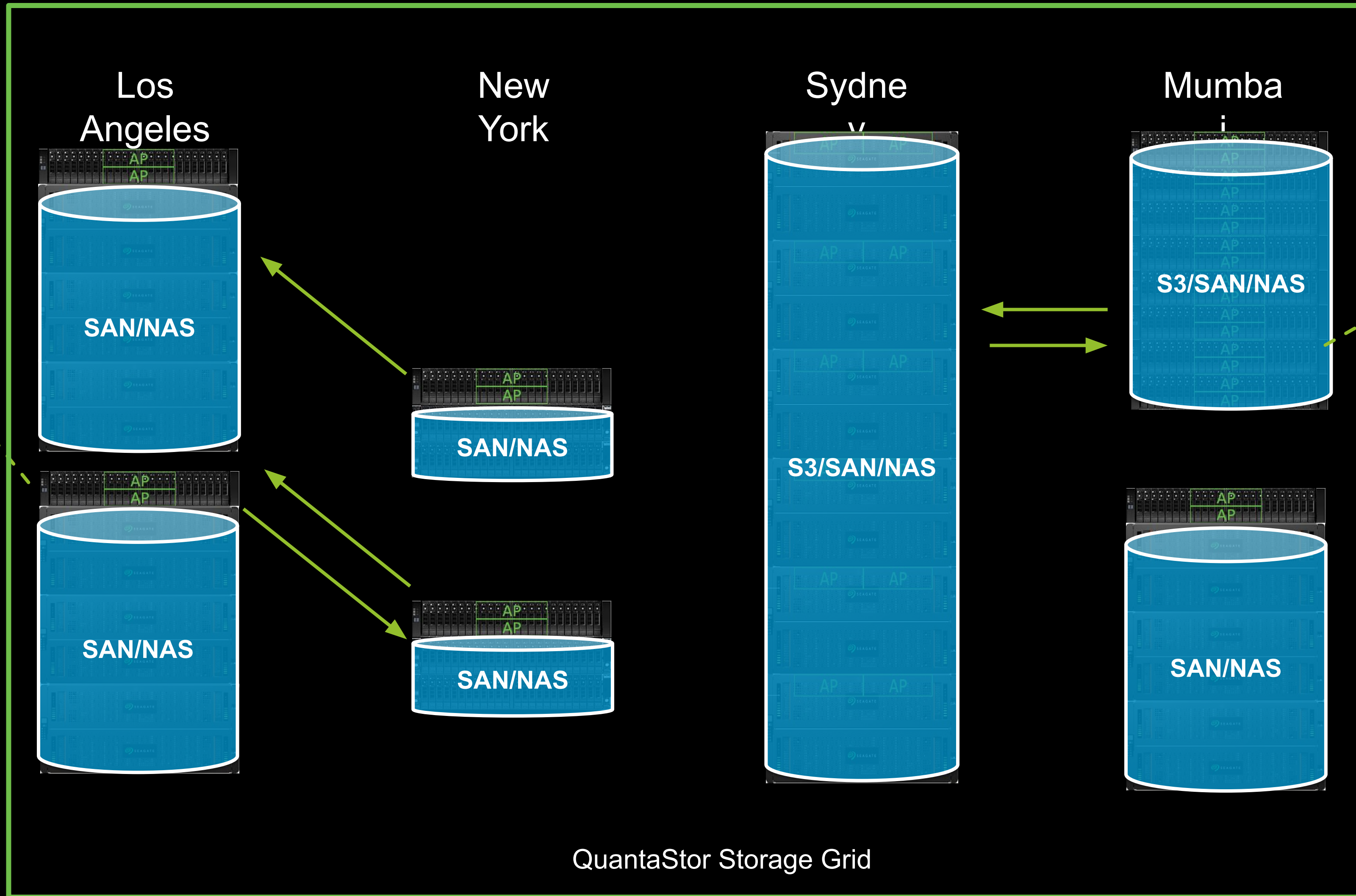
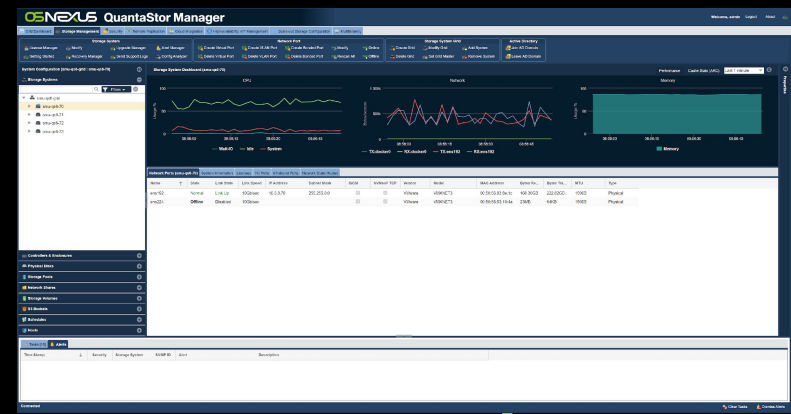


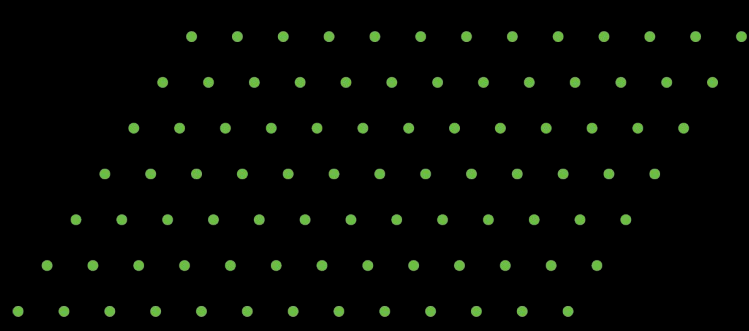
**Scale-up & Scale-out**  
Integrated with enterprise-grade open storage technologies (Ceph & ZFS).

**Hardware Flexibility**  
QuantaStor integrates with the entire line of Seagate AP Systems, Seagate Exos JBODs, and Seagate CORVAULT.



# Unified Multi-site Management & Security Enforcement

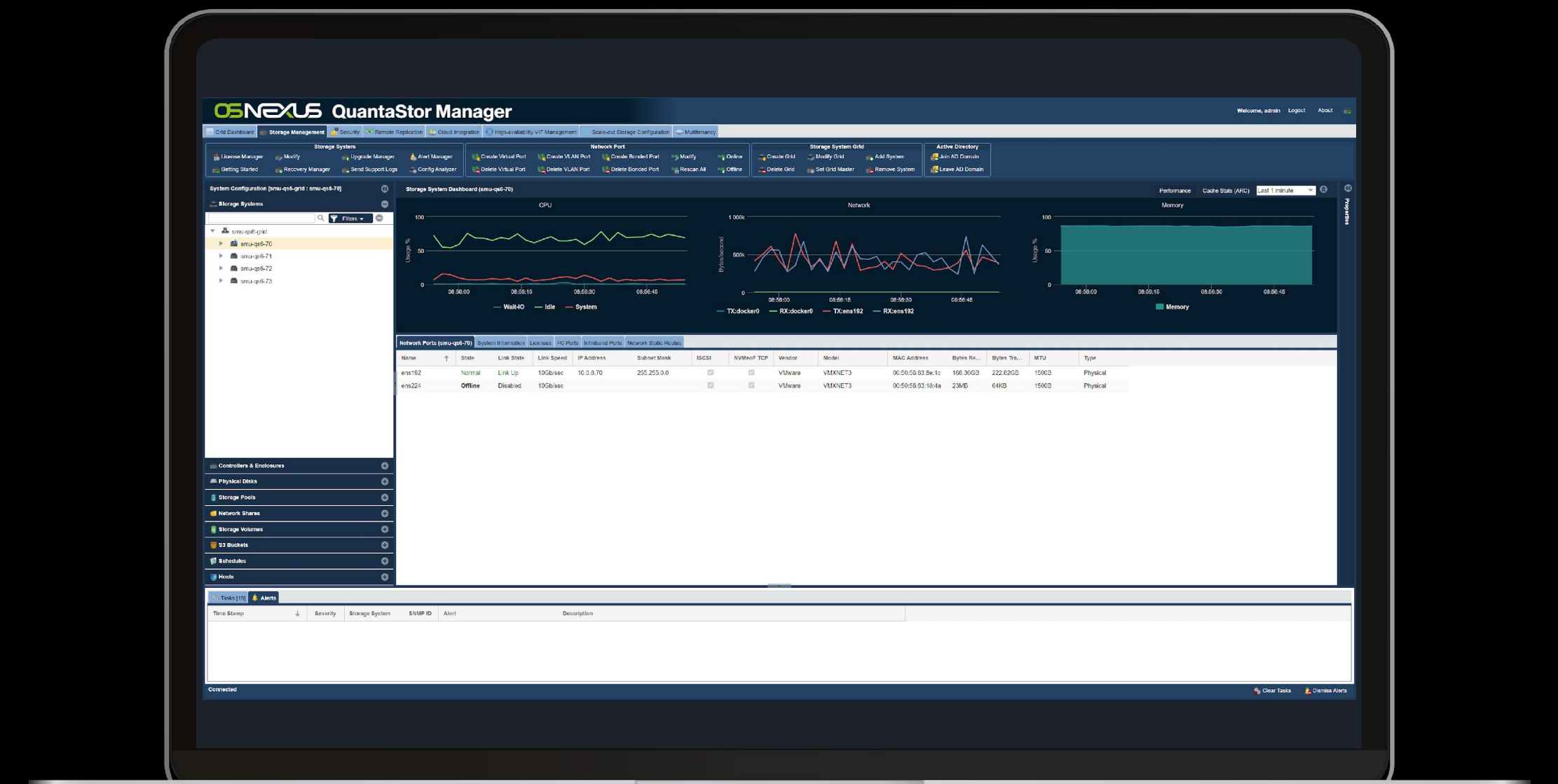




QuantaStor systems have a built-in distributed control plane referred to as the “storage grid”.

All systems within a storage grid provide web management, API, and CLI access simultaneously.

No additional software to install or maintain.



## Unified Storage Management

# Hardware Integrated for Easy Maintenance

Welcome, admin Logout About

Grid Dashboard Storage Management Security Remote Replication Cloud Integration High-availability VIF Management Scale-out Storage Configuration Multitenancy

**Storage System**

License Manager | Modify | Upgrade Manager | Alert Manager

Getting Started | Recovery Manager | Send Support Logs | Config Analyzer

**Hardware Controller**

Create RAID Unit | Create Pass-thru Units | Modify | Clear Events

Delete RAID Unit | Import RAID Units | Rescan | Silence Alarm

**Software Adapter**

Add Adapter | Add Configuration | Target Login

Remove Adapter | Scan Targets | Target Logout

**Composable Storage / External System Management**

Manage Credentials | Rescan External Systems

Configure Media Connectivity | Modify External System Port

System Configuration [quantastor-grid : quantastor2]

Storage Systems

Controllers & Enclosures

- ▶ quantastor1
- ▶ quantastor2

Physical Disks

Storage Pools

Network Shares

Storage Volumes

S3 Buckets

Schedules

Hosts

**Hardware Controllers** | Software Adapters | External Systems

Controller	State	Model	Firmware
quantastor1			
HBA 9500-16i (50050cc130804770)	Normal	HBA 9500-16i	19.00.00.0
quantastor2			
HBA 9500-16i (50050cc1308047f0)	Normal	HBA 9500-16i	19.00.00.0

**Hardware Enclosures** | Hardware RAID Units | Controller Disks | Controller Events & Alerts

Hardware Enclosure	State	Storage System	Vendor
HBA 9500-16i (50050cc130804770)			
Enclosure (01:0)	Normal	quantastor1	Seagate

**Enclosure Diagram [quantastor1]**

**Enclosure Hardware**

Seagate AP Exos (5U84)

Properties

Tasks | Alerts [4]

Start Time	Task	Status	Detail	Storage System	User	Progress

Connected

Clear Tasks Dismiss Alerts

# Auto-Tiering to Seagate Lyve Cloud

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## NAS to Cloud Storage Gateway

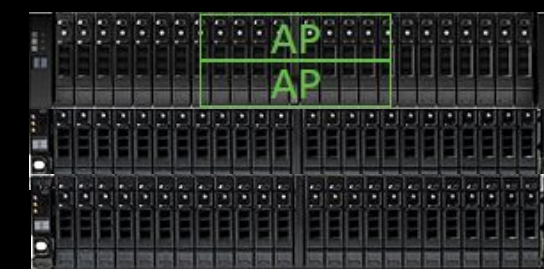
- Access cloud object storage via NFS & SMB

## NAS to Cloud Storage Tiering

- Auto-copy and tiering of files to the cloud

## NAS to Cloud Backup Policies

- Setup auto copy and move schedules for easy backup and migration to/from cloud and 3<sup>rd</sup> party NAS



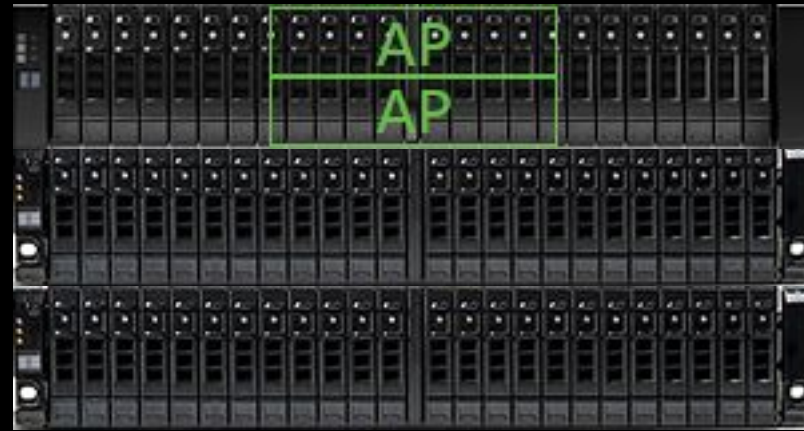
Backup Policies

Auto Tiering

File Gateway



# QuantaStor + Seagate Scale-up Solutions



**QuantaStor  
All-Flash Performance  
NAS/SAN Cluster**

Common Use  
Cases  
**vmware**  
**ORACLE**  
Microsoft  
Hyper-V

## All-Flash Performance

~250K IOPS per pool, ~500K IOPs per cluster



**QuantaStor  
Hybrid Performance  
NAS/SAN Cluster**

Common Use  
Cases  
**VEEAM**  
**COMMAULT** **VERITAS**  
NetBackup

## Hybrid Performance

~4GB/sec per pool, 8GB/sec per cluster





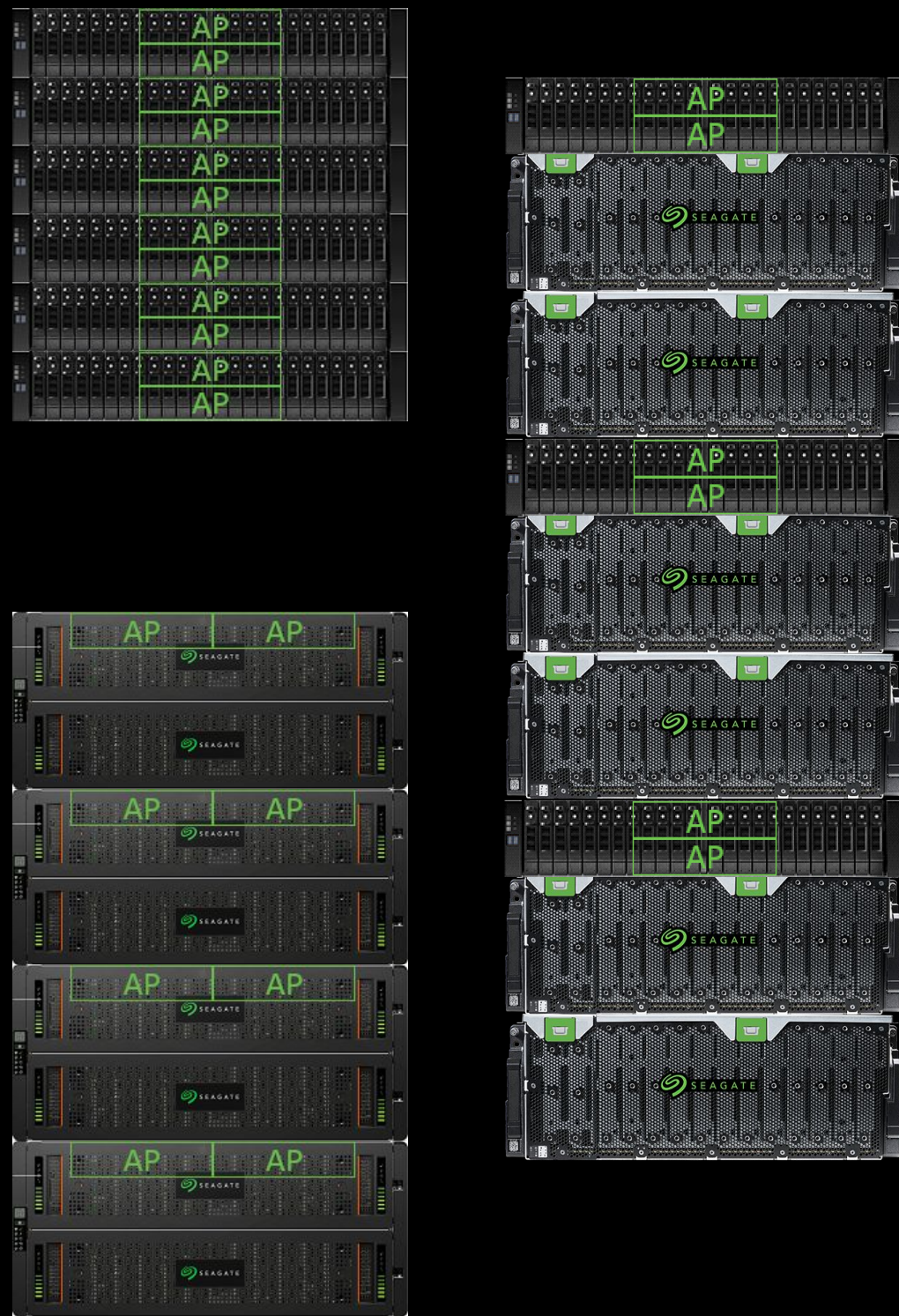
# QuantaStor + Seagate Scale-out Solutions

## All-Flash Performance

~300MB/sec per SSD added to cluster (eg. 60GB/sec for 200x SSD cluster)

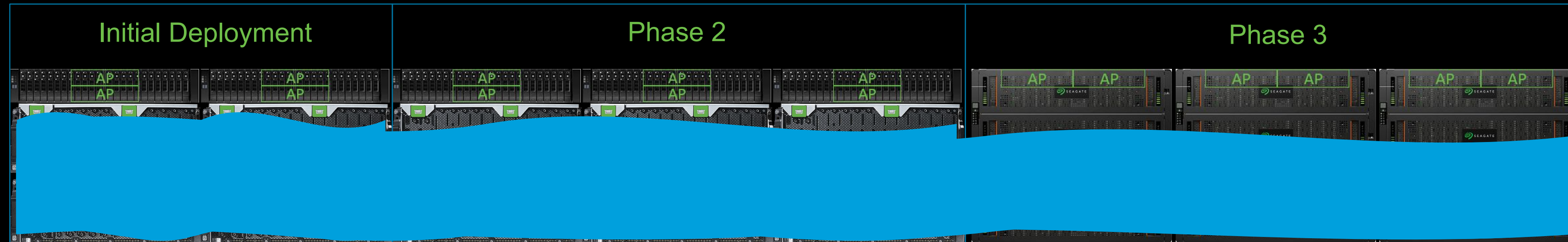
## Hybrid Performance

~60MB/sec per HDD added to cluster (eg. 12GB/sec for 200x HDD cluster)



QuantaStor Scale-out  
File, Block & Object

# Eliminate Complex Upgrades & Data Migration



Expand with new systems and larger media while phasing out old systems.

No more complex data migration projects.

# CORVAULT

Exos CORVAULT™ is a high-performance block storage system with multi-petabyte capacity, five-nines reliability, hyperscale efficiencies and groundbreaking self-healing technology.

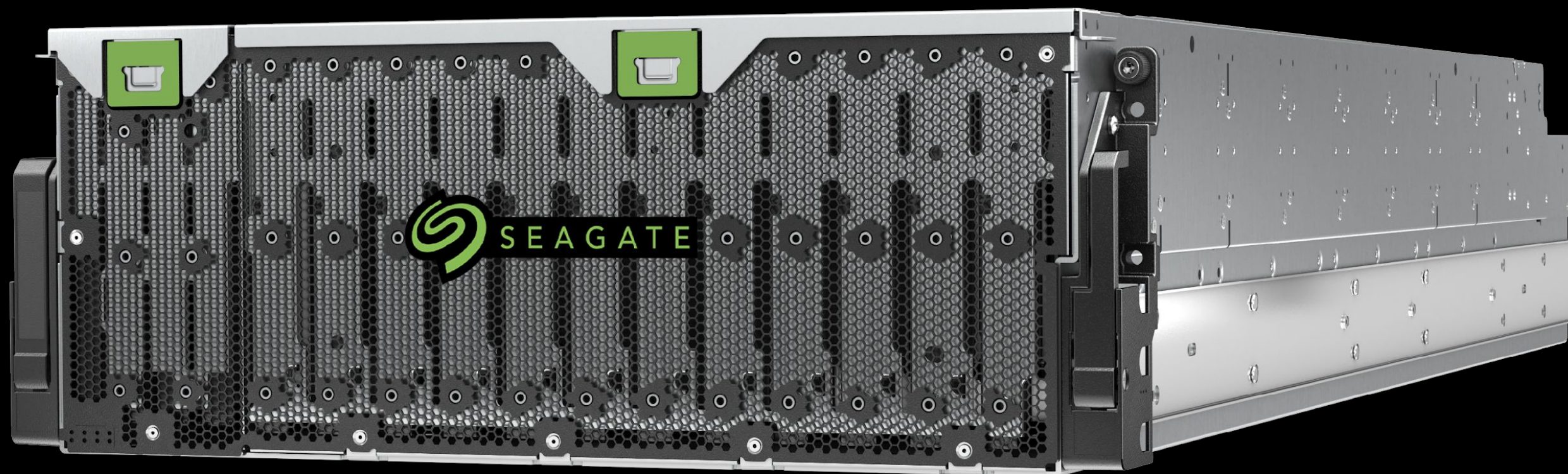


## Self-Healing

Seagate's ADAPT (Autonomic Distributed Allocation Protection Technology) with Autonomous Drive Regeneration (ADR) minimizes system downtime with ultra-fast drive rebuild rates.

## High Capacity, Maximum Density

2.120 Petabyte raw capacity in a single 4U enclosure.



# EXOS™ CORVAULT™



## Managed Storage

Automated drive and enclosure management with a simple user interface and robust reporting framework. Non-disruptive system firmware updates.

## Predictable Cost

Pricing equivalent to the Seagate Exos E 4U106 JBOD. Managed storage benefits available without additional cost.



# Scale-out w/ Double-layer Data Protection

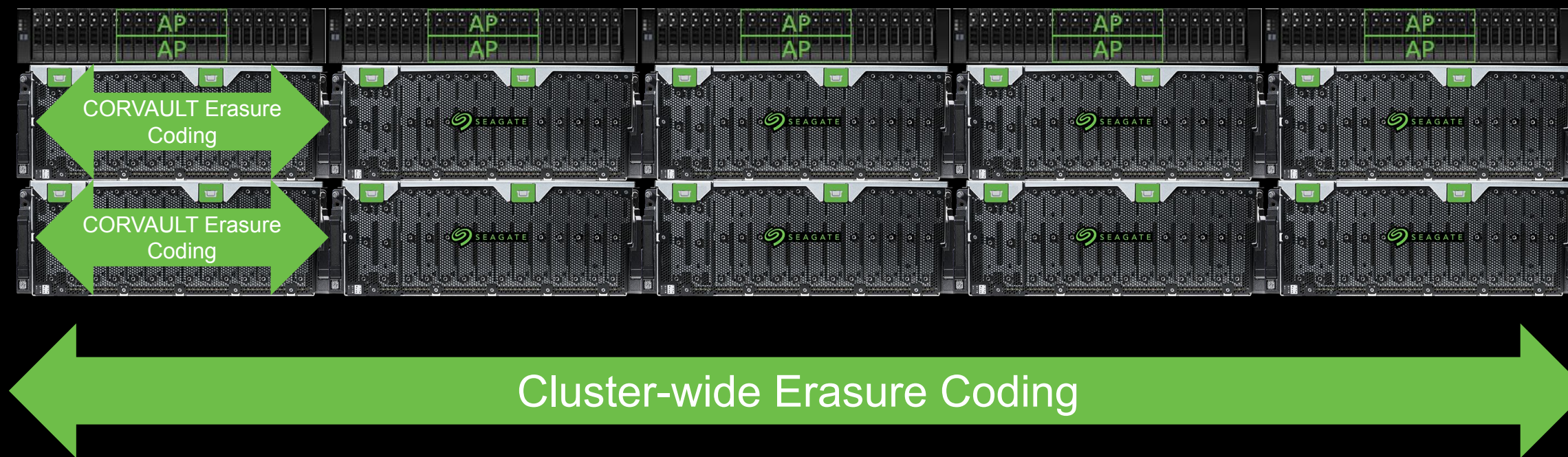
99.9999% uptime

+

99.9999% uptime

=

99.99999999999999% uptime



## Localized Rebuilds

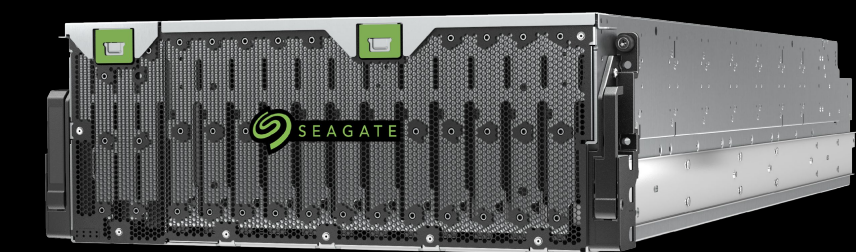
Seagate's ADAPT (Autonomic Distributed Allocation Protection Technology) localizes rebuilds and greatly accelerates them.

## Self-Healing

Autonomous Drive Regeneration (ADR) can recover and repair failed media automatically which reduces maintenance costs and time.

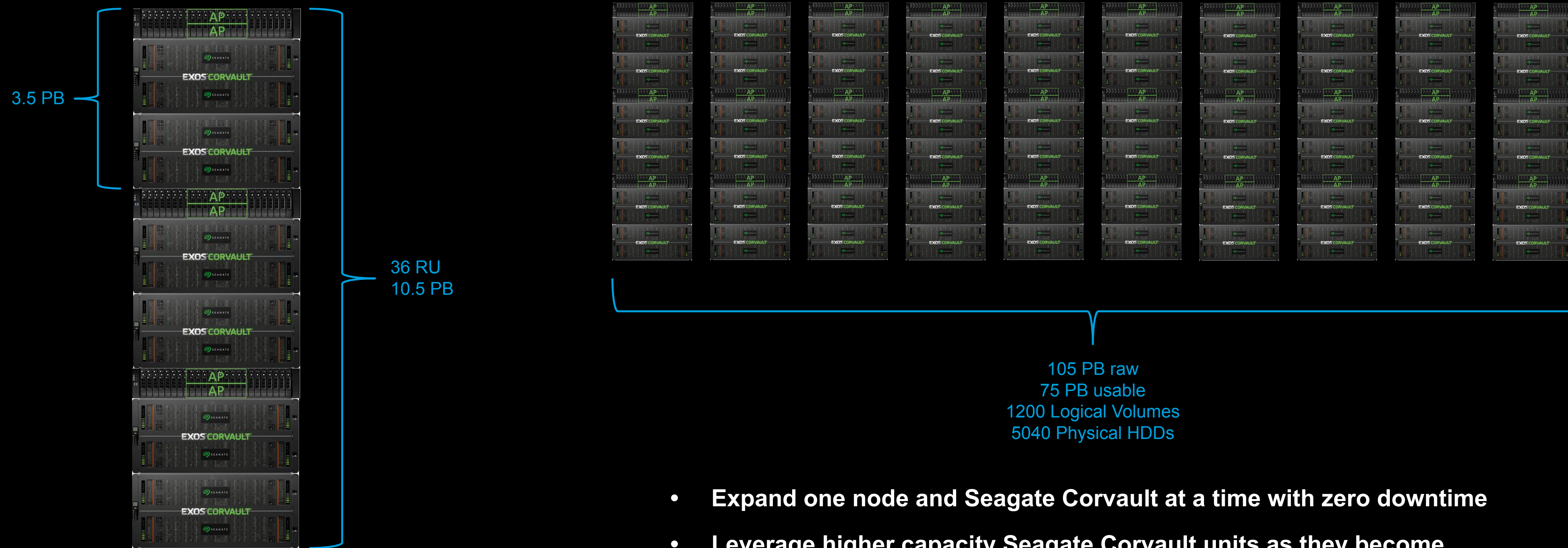
## Reduce Hardware & Power

Scale-out clusters leveraging CORVAULT systems require 50% less CPU and RAM which greatly reduces up-front hardware costs and delivers long term power savings.



EXOS CORVAULT™

# Scaling-out from 10PB to 100PB+



## Expansion Procedure using QuantaStor web UI

- Add new AP storage node(s) into storage grid
- Add node(s) to scale-out cluster within the grid
- Add new Corvault unit(s) into storage grid
- Apply auto-configuration profile to Corvault unit(s) to provision and assign logical devices to node
- Add new Corvault logical devices to scale-out cluster
- Expand one node and Seagate Corvault at a time with zero downtime
- Leverage higher capacity Seagate Corvault units as they become available
- Seagate Corvault localizes drive rebuilds which speeds auto-healing, reduces network load, boosts performance, and reduces maintenance.