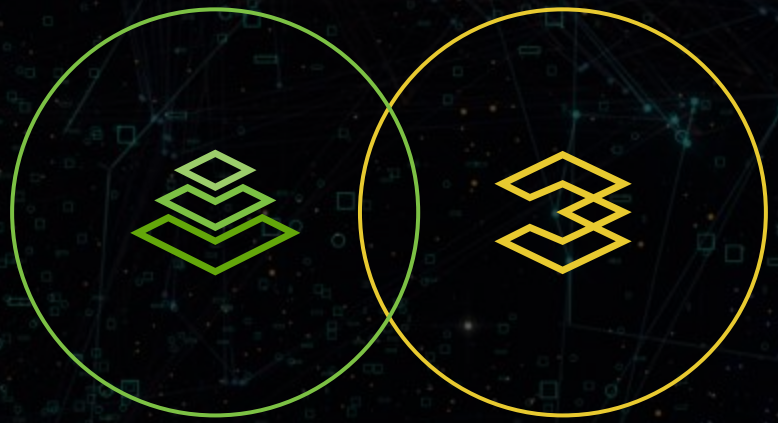
HPE Primary Storage Update

armin.kerl@sws.de

Januar 2021



PRIMARY STORAGE

HPE InfoSight

Artificial Intelligence beyond the conventional call-home

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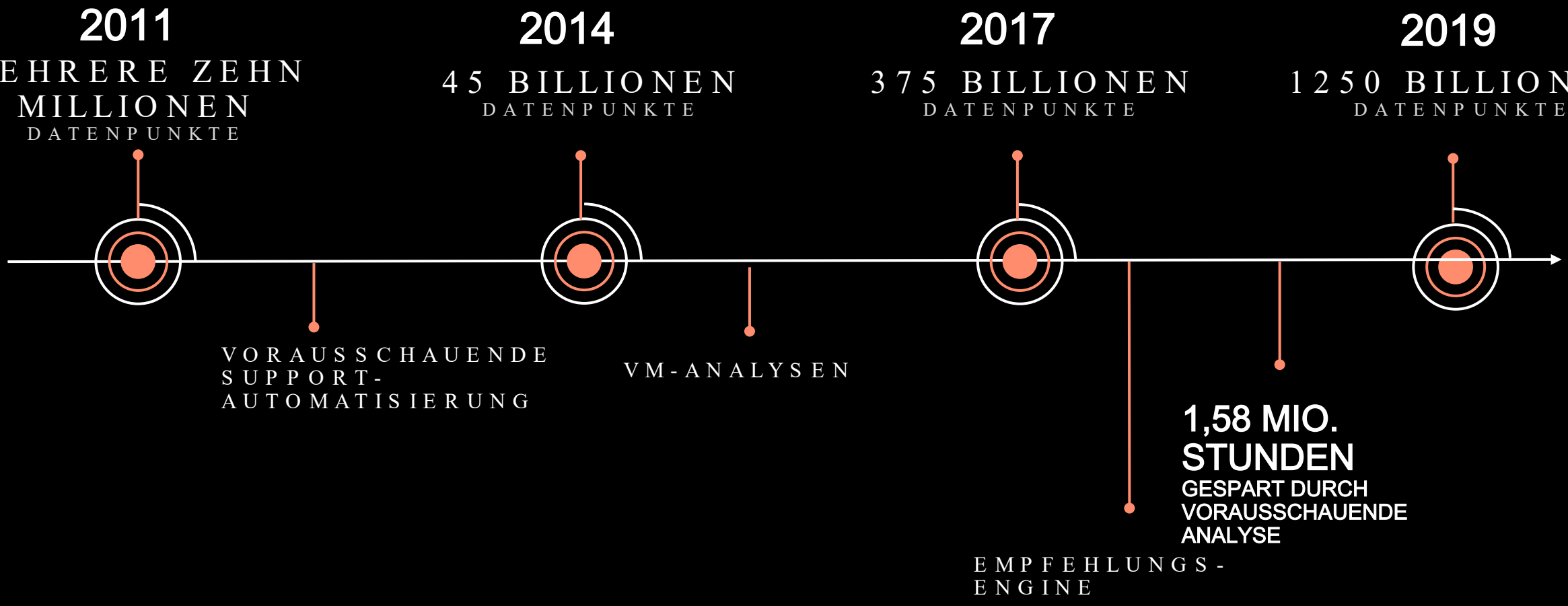
GESCHICHTE BAHNBRECHENDER INNOVATIONEN

HPE InfoSight



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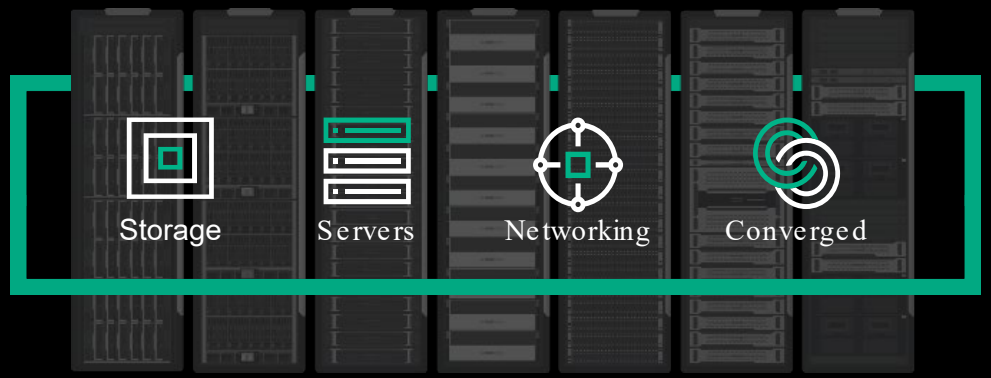
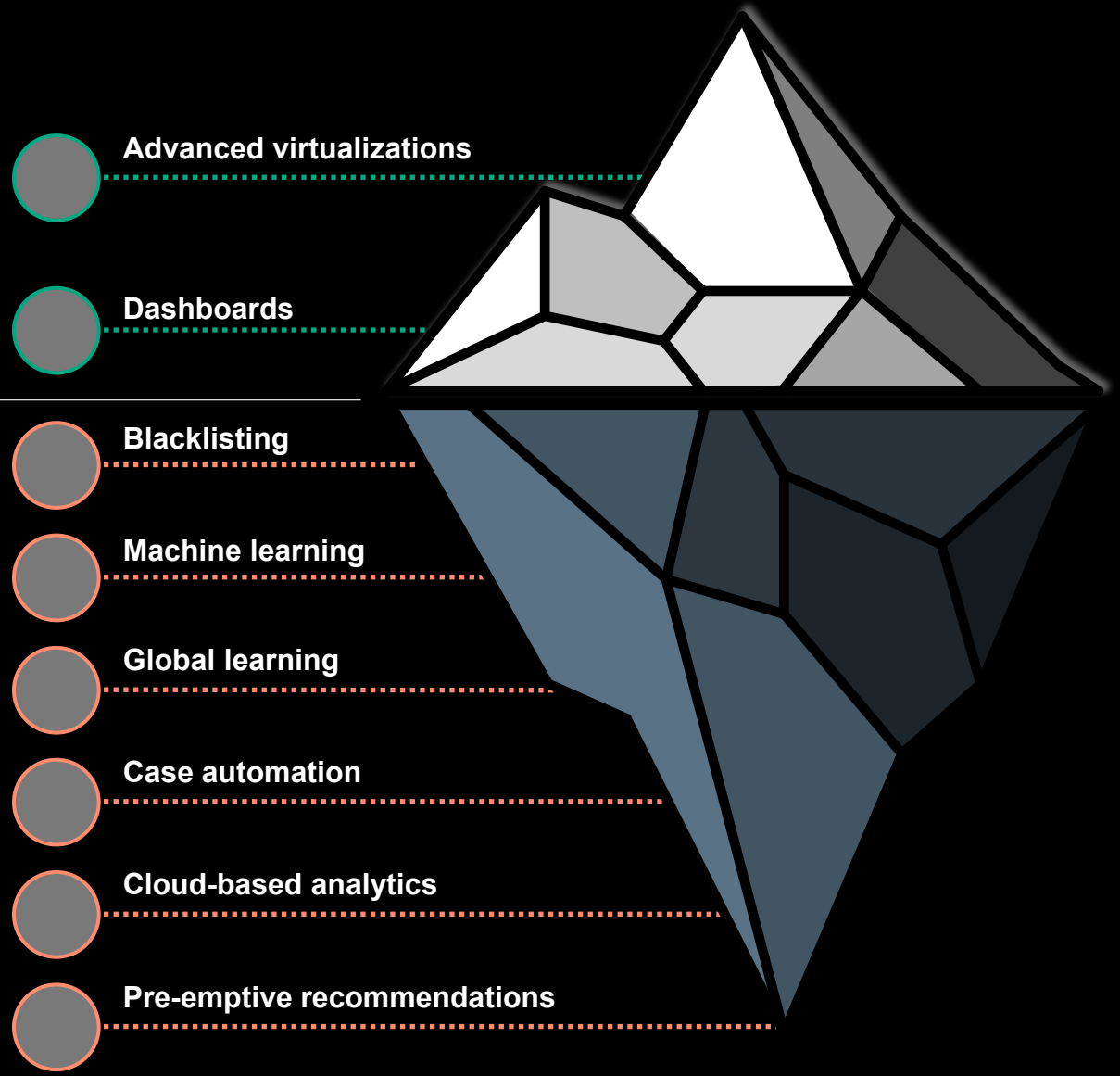
HPE InfoSight sees and predicts behind the scene

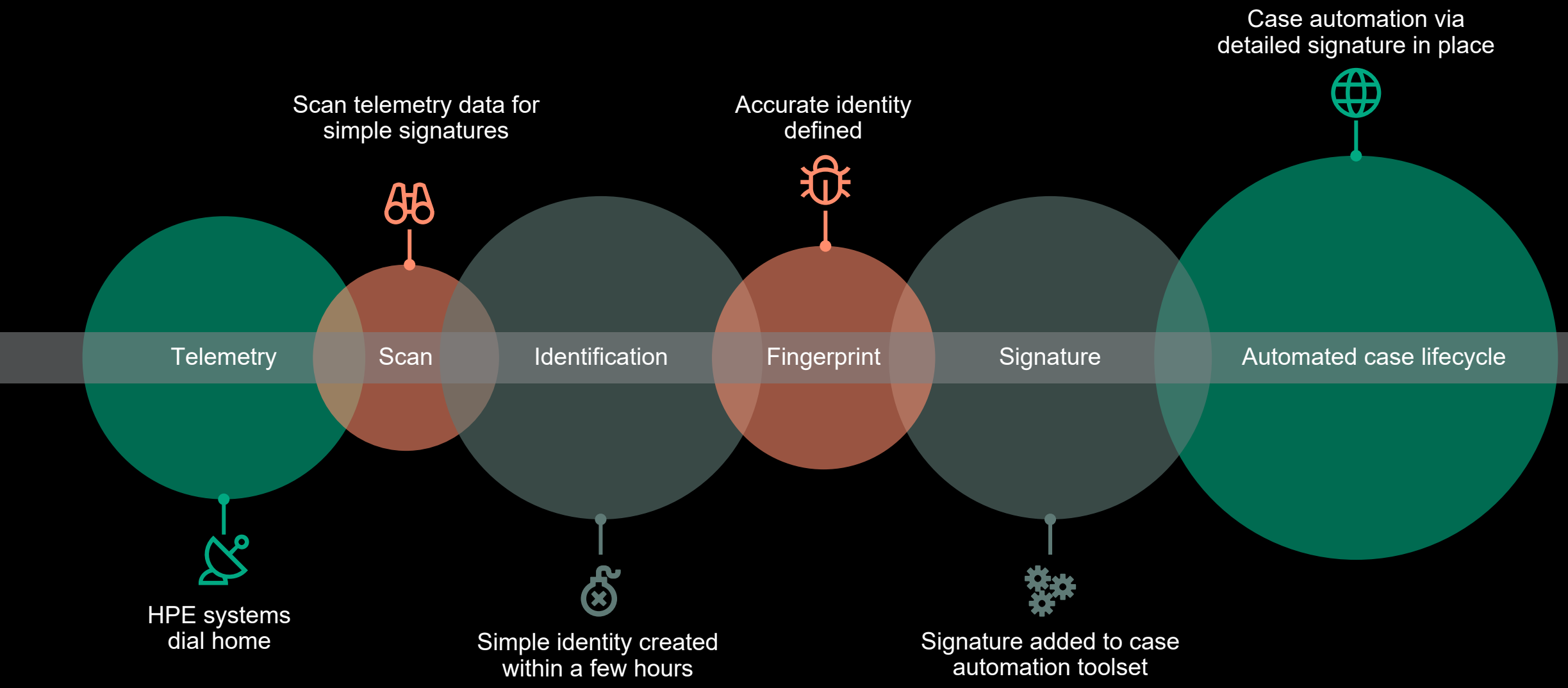
Customer portal

AI for infrastructure





The AI process for HPE self -healing storage



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Storage is entering a new era

Era of **Basic Storage**	Era of **Advanced Storage**	Era of **Intelligent Storage**
JBOD	Software defined or hardware enabled	Hewlett Packard Enterprise
RAID	Block/file/object	
Zoning	Spinning/ solid state/hybrid	
Fibre Channel, Ethernet SAN	Traditional/converged/ hyperconverged	

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HPE InfoSight

What's the point?

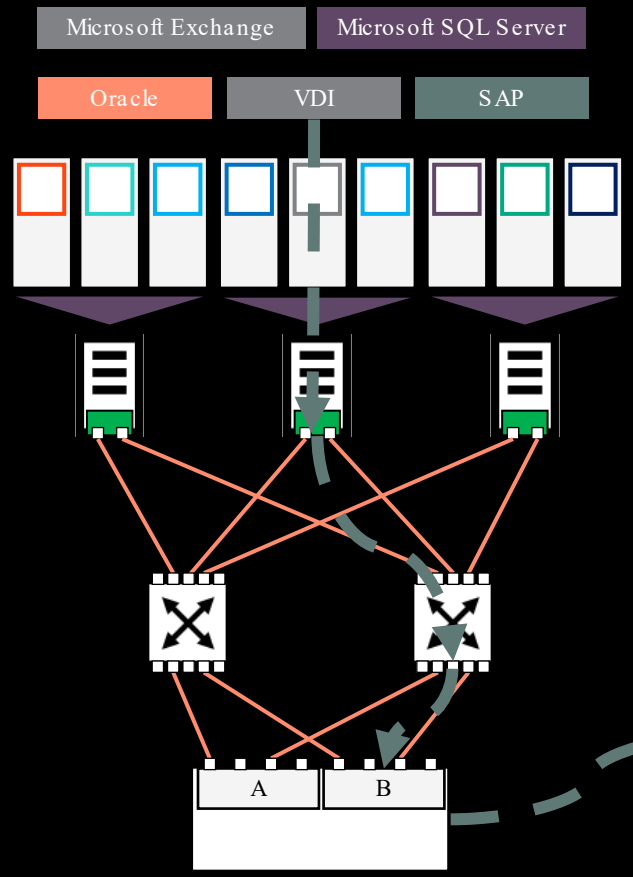
Apps

Virtual machines

Servers

Storage network

Storage array



HPE InfoSight —Big Data AIOps

Collecting infrastructure metadata

- **Global** visibility and learning
- **86%** of issues solved automatically
- **Eliminates** most Level 1 + 2 calls
- Level 3 response in **~1 min**
- Average time to resolution **43 min**
- **73%** fewer trouble tickets
- **79%** lower OPEX

For more information on AIOps, read the Gartner blog entry at: https://blogs.gartner.com/andrew-lerner/2017/08/09/aiops-platforms/

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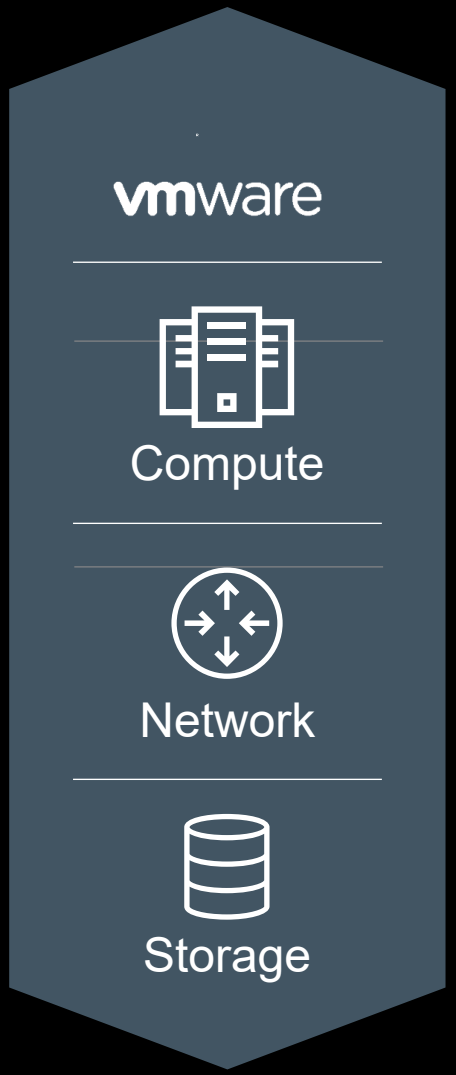
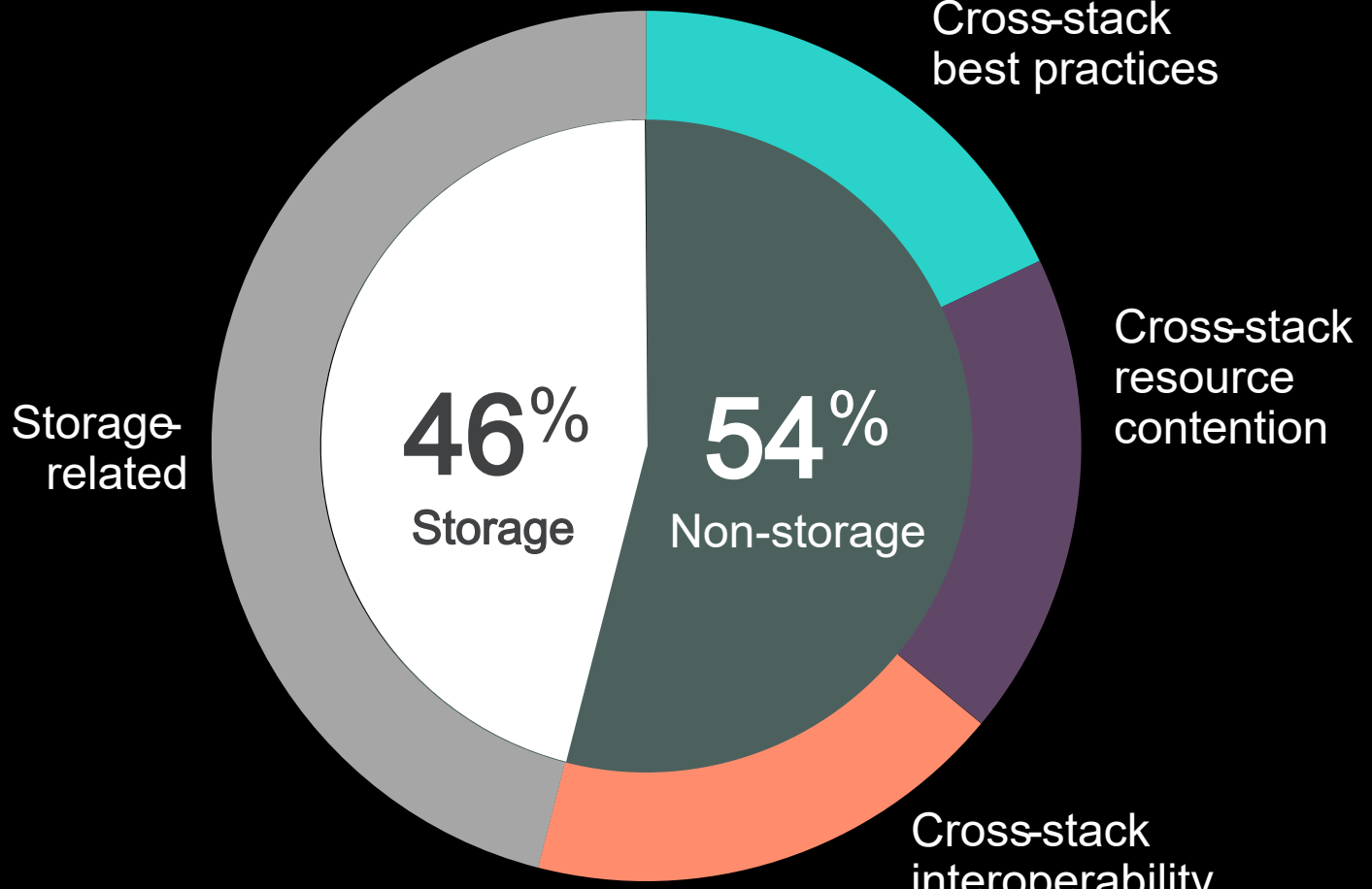
There is no one cause…
and it's too complex for humans to fix





Source: InfoSight analysis of HPE customer base

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HPE Greenlake

THE MARKET IS SHIFTING TO AN IT CONSUMPTION DRIVEN MODEL

Simplification of IT

Scalable & Elasticity

Speed & Flexibility

Cost Control & Visibility

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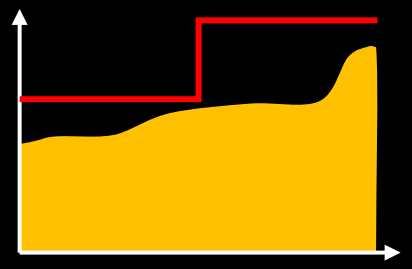
HPE consumption models

Purchase

CAPITAL AGREEMENT
Pay now

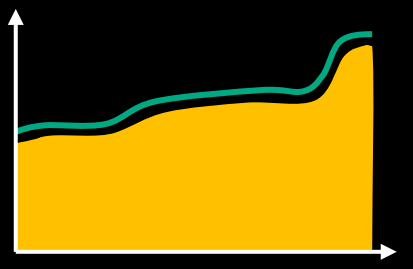
- Customer prefers CAPEX
- Customer has budget
- Customer owns systems



HPE GreenLake Services

SERVICES AGREEMENT
Pay as you go

- Customer requires best TCO
- HPE GreenLake provides the best of cloud and on-premises IT
- HPE owns systems
- Based on service agreement:
  customer pays average used capacity per month



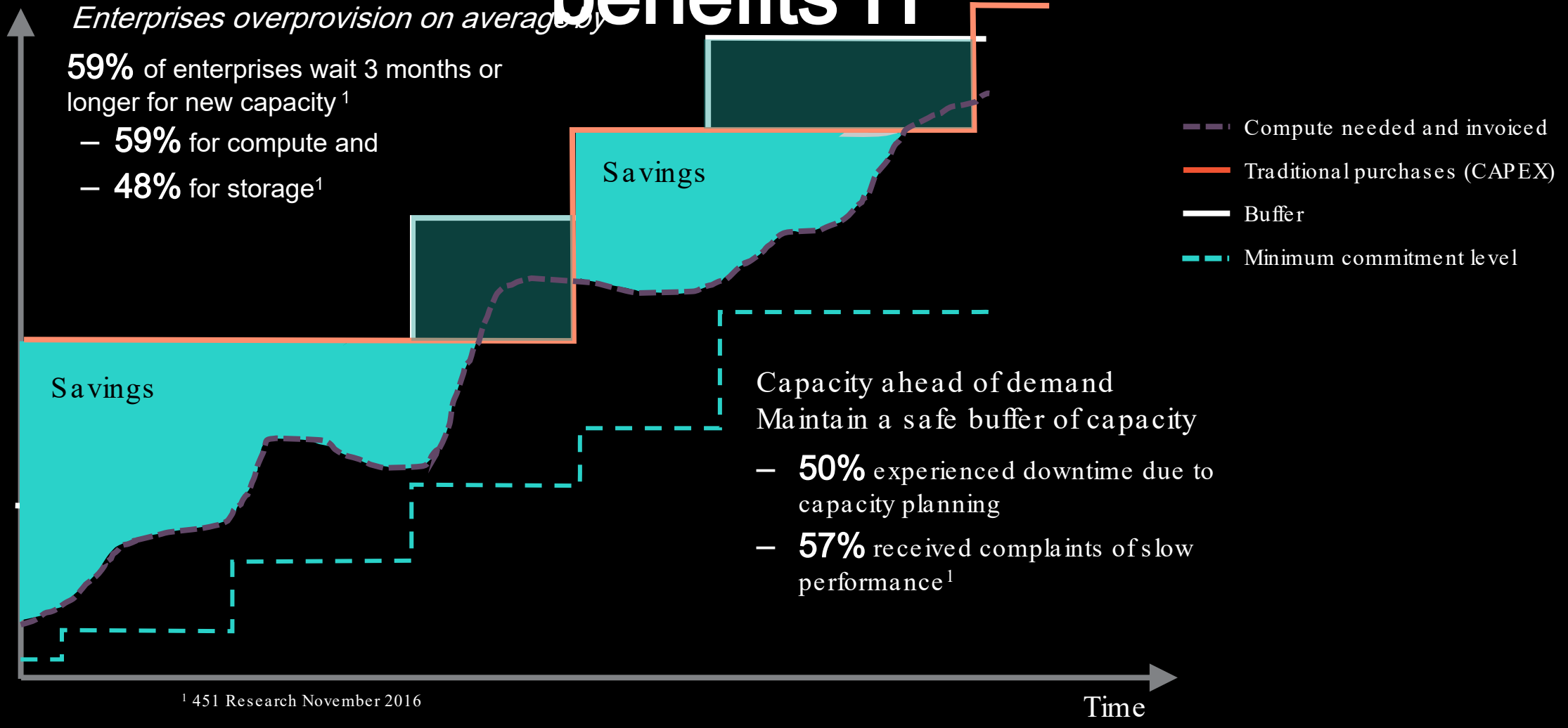
How HPE GreenLake Flex Capacity benefits IT

Save on costs due to overprovisioning

Enterprises overprovision on average by

59% of enterprises wait 3 months or longer for new capacity [1]

- **59%** for compute and
- **48%** for storage[1]



[1] 451 Research November 2016

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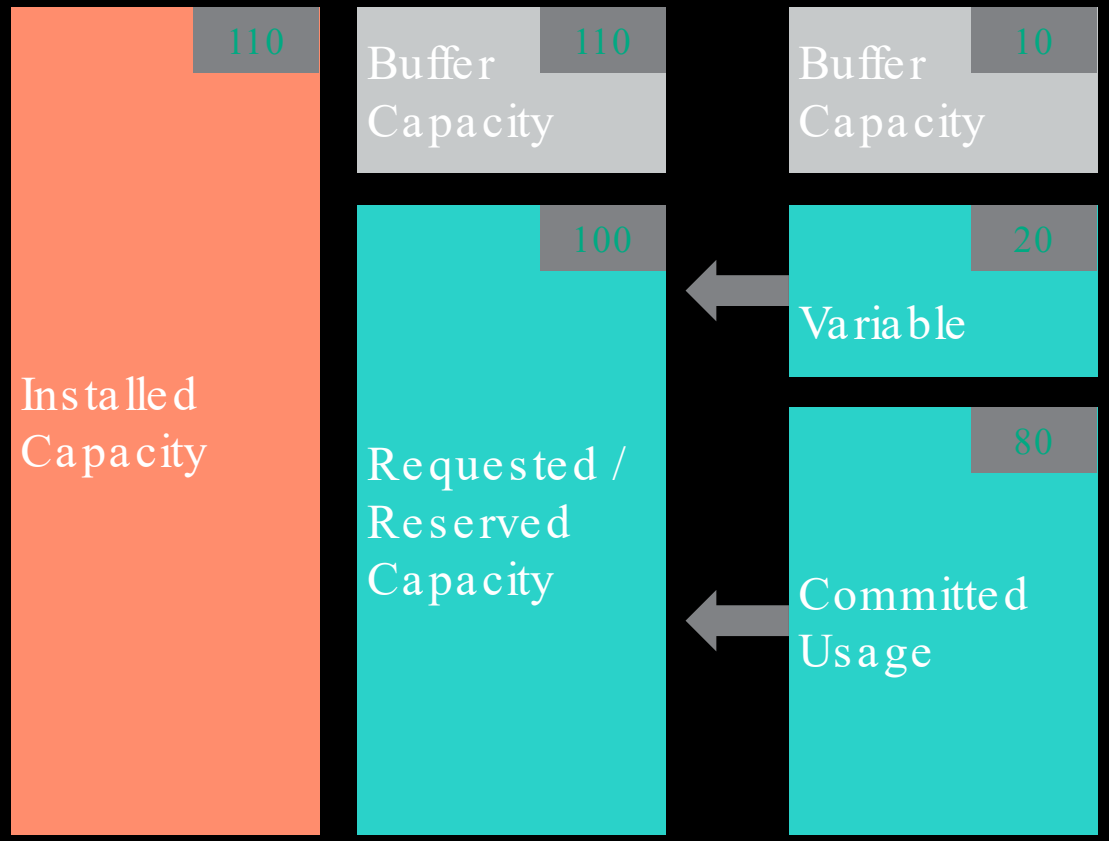
Greenlake Capacity



- Start with a pre-packaged configuration that meets required capacity
- We add buffer capacity that is not charged
- Establish committed usage – as agreed upon
- As you grow, use some of the buffer; monthly payment increases
- With active capacity management, we jointly plan, and increase the buffer with a simple change order

Results:

- Get started quickly with modular choices
- Add available capacity in minutes, not months
- Grows ahead of demand

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HPE GreenLake Central

- Dashboard
- Configure

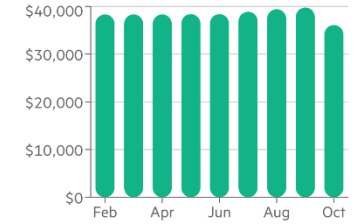
SPACE
Default

TENANT
HPE GLC Demo

Dashboard

Monthly Charges Summary
GreenLake Metering

$36,089 Month to Date



Details

Capacity Planning Summary
GreenLake Metering

3PAR SSD	98%
3PAR NL	97%
3PAR FC	74%
SYNERGYC San...	100%
SYNERGYC San...	43%
SAN 5700	39%
SYNERGYC Am...	21%

Details

All Tracked Cost
Consumption Analytics

Total by Provider
$181,053.02
Last 30 Days

$85,747.87 Azure
$53,823.23 Amazon
$41,481.92 HPE GreenLake

HPE GreenLake for private cloud

Consumption

CPU	Storage	Memory
59	2.47 TiB	215.00 GiB

17
Instances

Trial ends Dec 31, 2020 (65 days remain)

Continuous Compliance Open

Rules	Frameworks	Audits
987	**6**	**3**

Pass	**314**
Fail	**665**
Error	**8**

Next Audit ends in **17 days**

HPE GreenLake for containers
Clusters

4 Clusters

- 4 Healthy
- 0 Warning
- 0 Critical
- 0 In Progress

Trial ended on Jun 29, 2020

Pricing Requests

Total	Available
16	

Nearing Expiration
10

Request

AWS Access Manager
You have granted access to:

2 AWS Roles

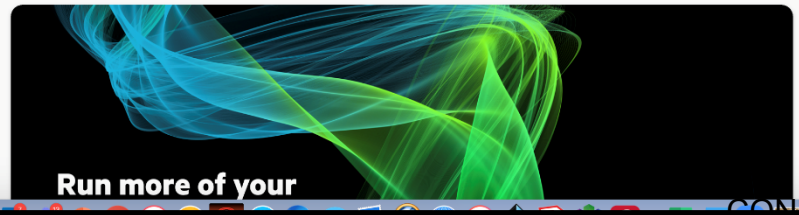
Open

Azure Access Manager
You have granted access to:

1 Service Principal

1 Active Directory

1 Subscription



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HPE Storage array positioning

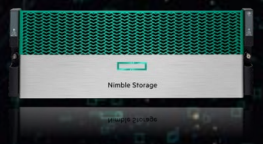
The industry's broadest and deepest flash portfolio

MSA

Affordable acceleration

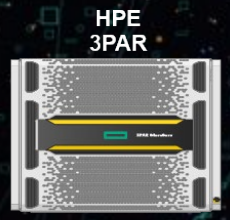
SimpliVity

Enterprise hyper converged infrastructure (HCI)



Nimble Storage

Simple and predictive flash for new-style deployments



3PAR StoreServ

Flexible Tier-1 features for the all-flash data center

Primera

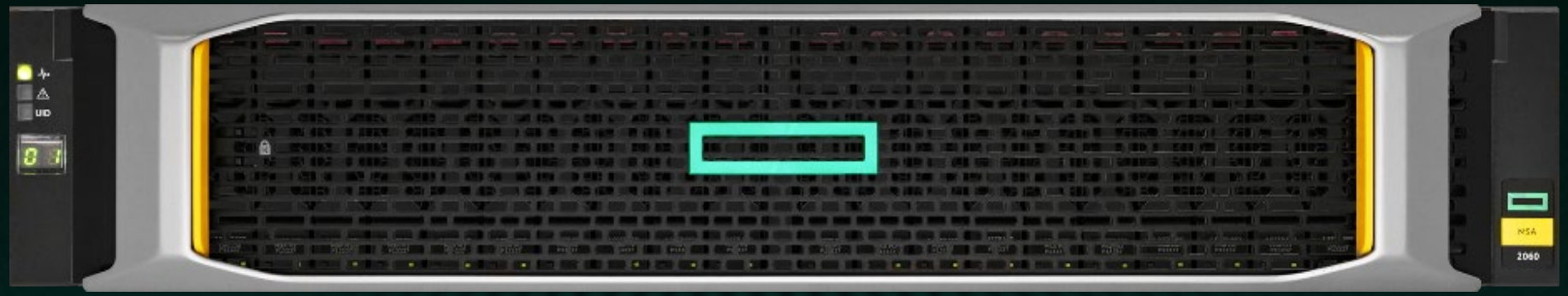
Flexible Tier-0 features for the all-flash data center

HPE XP8

For extreme performance and data availability needs

HPE GreenLake —Everything as a service

HPE MSA
GEN6



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HPE MSA 1060

Low-cost entry into SAN storage

Perfect for:

- Small deployments
- Static solutions w/fixed capacity, and performance needs
- Tight budgets

HPE MSA 2060

Flexible à la carte storage

Perfect for:

- Demanding and dynamic workloads
- Encrypted data storage
- Large-scale solutions such as CCTV

HPE MSA 2062

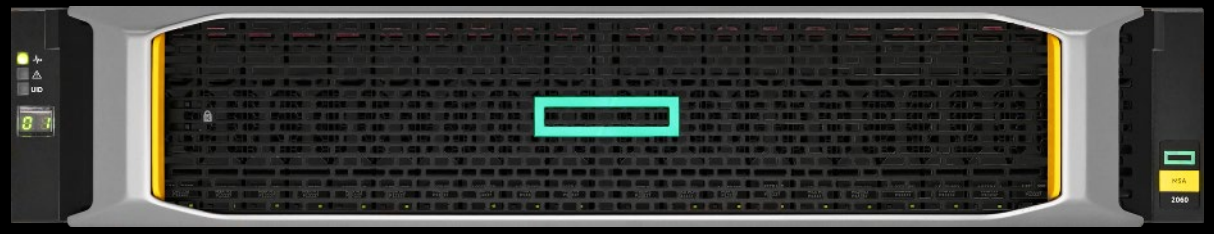
Cost effective hybrid storage

Perfect for:

- The SMB using a single array for everything
- High performance mixed workloads (random and sequential)
- High capacities

HPE MSA Gen6 array family

Front view



Rear view

Large form factor—12 drives

Small form factor—24 drives

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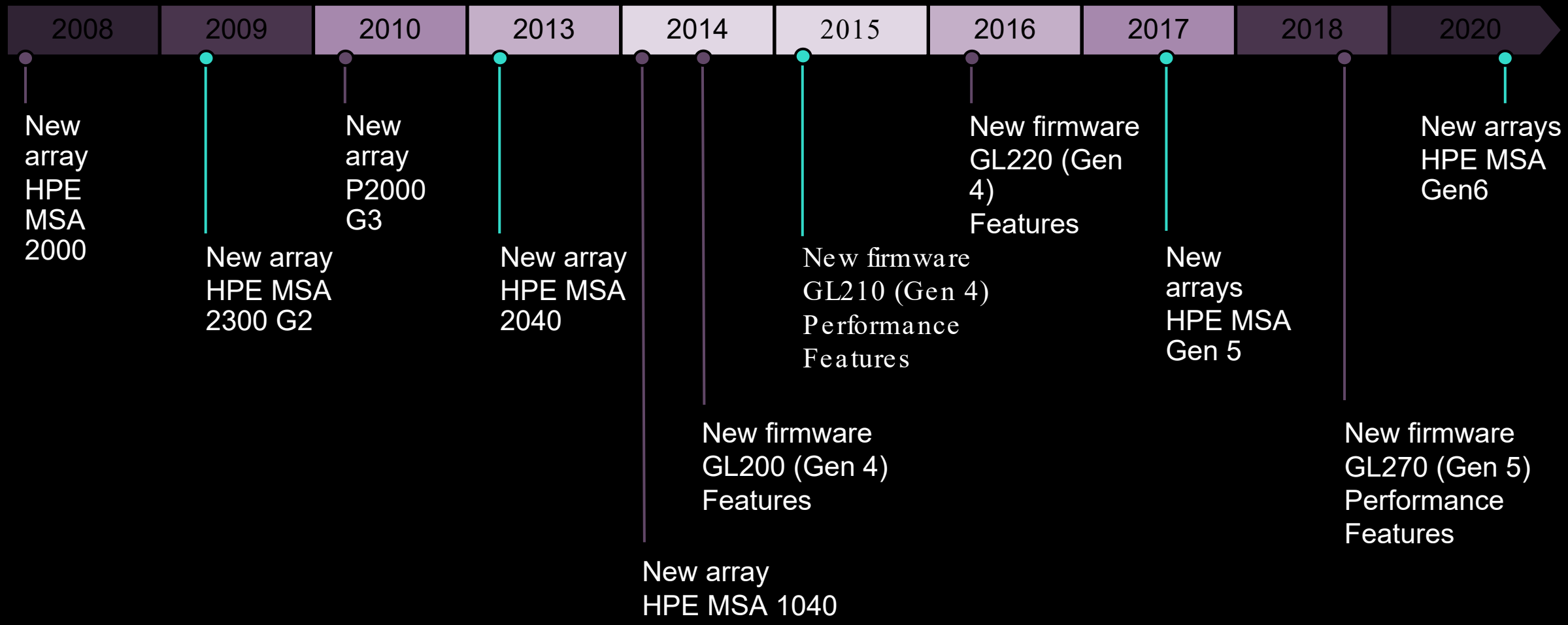
Consistent commitment to excellence

12 years of driving innovation and value



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Chassis

- New HPE MSA chassis with Gen 10 style bezel
- 2U array head and disk enclosures
- 12 drive LFF[1] and 24 drive SFF[2] disk enclosures
- 12Gb SAS midplane
- Next-generation drive modules
- New locking bezel kit

Controllers

- Dual controller active/active design[3]
- Next-generation RAID offload ASIC & CPU
- 12Gb SAS expansion ports
- 24GB system cache
- Support for Fibre Channel, iSCSI, and SAS protocols
- Controller per protocol (no converged SAN controllers)

[1] Large Form Factor
[2] Small Form Factor
[3] System can be configured as active/active (dual pool), or active/passive (single pool)

Storage services

- Virtual storage
  - Up to two pools (1PB each)
  - Automated tiering v2.0
  - SSD read cache extension
  - Thin provisioning
  - Volume Copy
- New disk group type (MSA-DP+) providing
  - Integrated sparing
  - Super-fast rebuilds
  - Improved sequential performance
  - Incremental disk group expansion
- Array-based asynchronous replication
  - Now supports failback

Management

- New Storage Management Utility (version 4)
- Supported with HPE MSA Health Check
- New RESTful interface using the Redfish standard
- New alerting when new array firmware is available

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1 Power rocker switch

2 Redundant Power and Cooling Module[1] (PCM)

3 Controllers A (top) & B (bottom)

[1] AC model pictured, DC optional on all models

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1. 12Gb SAS expansion port
2. Out-of-band Ethernet management port
3. Mini-USB serial port (CLI)
4. Controller locking handle
5. 4x serial connections (not for customer use)
6. Host ports[1] (FC Pictured)

[1] Number of host ports depends on model

- Gen6 drives are not supported with previous generations of array or disk enclosures
- Previous generations of drives are not supported with Gen6 arrays or enclosures
- Adds support for 12Gb SAS internal connectivity

LFF Drive

SFF Drive

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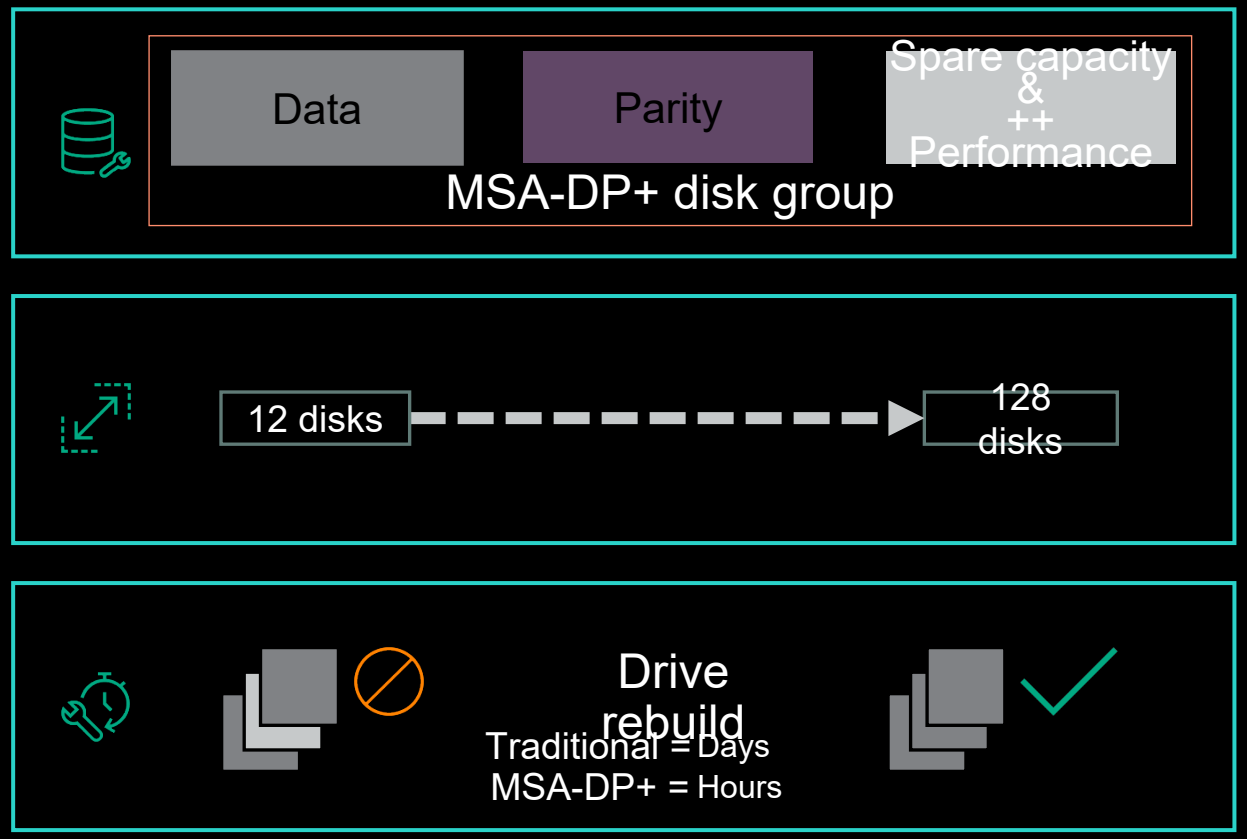
High performance and availability at lower cost

MSA-DP+ brings significant improvements upon traditional parity-based RAID disk groups, including:

- Higher performance[1]
- Higher availability
- Integrated sparing, and no inactive drives
- Flexible drive layout and expansion from 12 to 128 disks
- Support for different drive capacities within a disk group
- Super-fast rebuilds



[1] Up to performance maximums when comparing MSA-DP+ to RAID 6 with idle spares

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Downtime avoidance

Health Check interrogates logs for signs of non-compliance with 12 availability related best practices, including component firmware versions and physical health.

Advanced signature detection engine

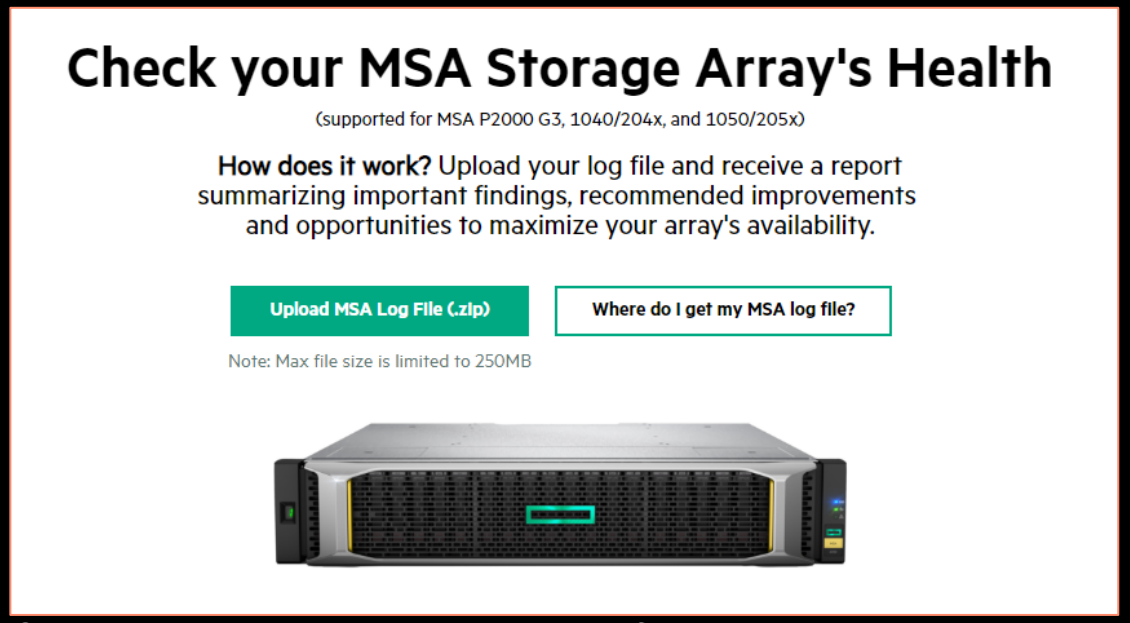
Searches sensor data for evidence of known issues

HPE hosted cloud -based tool

Remote, on-line and easy to access via a simple web UI, HPE MSA Health Check reduces local administrator overhead to manage

No support contract required

HPE MSA Health Check can be accessed by anybody, including customers at no cost, and without a current support contract[1]



Customer accessible web-based interface

[1] A support contract is still required for access to HPE support and firmware.

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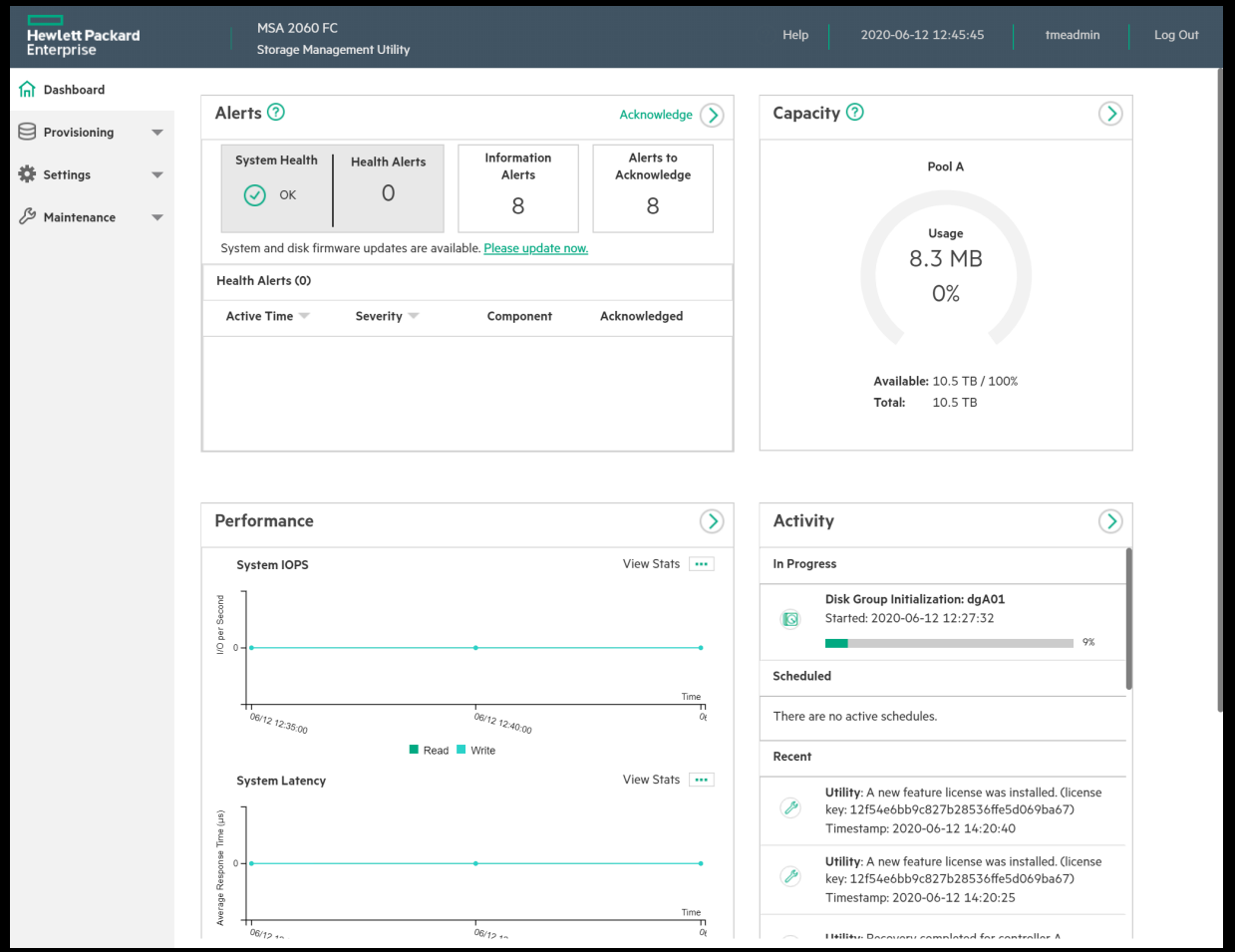
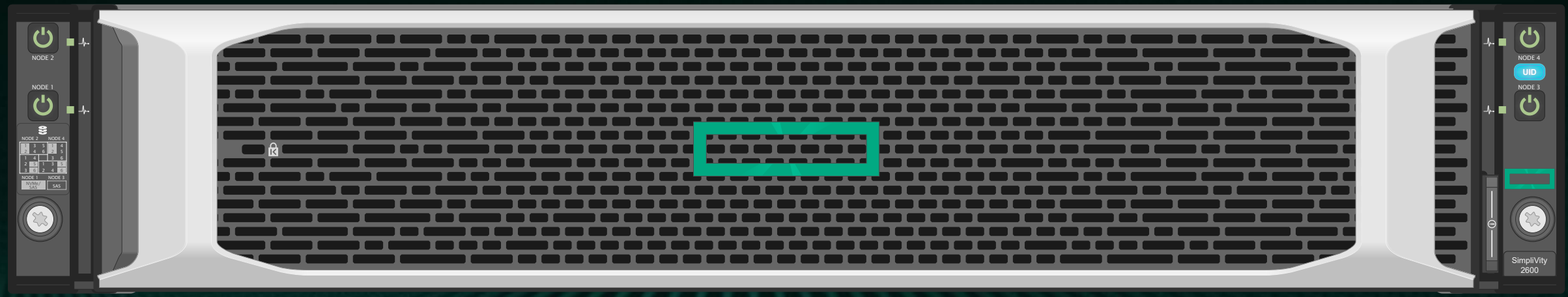
General

- The SMU is the web-based management interface for all HPE MSA arrays. Gen6 HPE MSA arrays are launching with v4 of the SMU, which includes new features and numerous improvements over prior HPE MSA arrays, including:
  - Polished OOBE[1]
  - Automated alerting of new recommended firmware
  - Simplified ‘Dashboard’
  - Dynamic informational screen updates
  - Logical activity grouping
  - Modernized look and feel, which keeps to HPE management software design concepts
  - Easy switching of active firmware versions

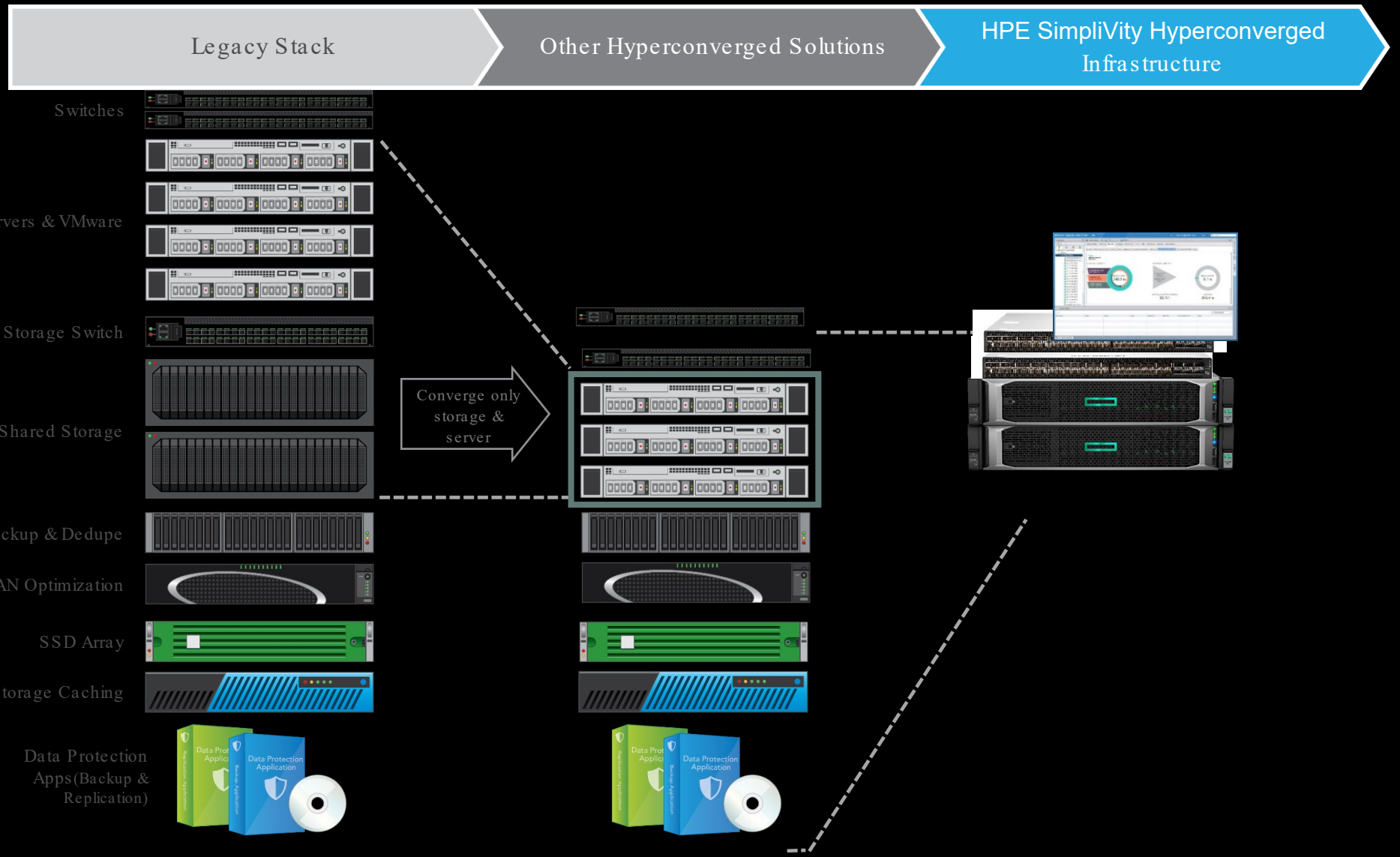
[1] Out of box experience: the first steps when setting up a new array.



HPE Simplifity



What's to simplify? Evolution of convergence



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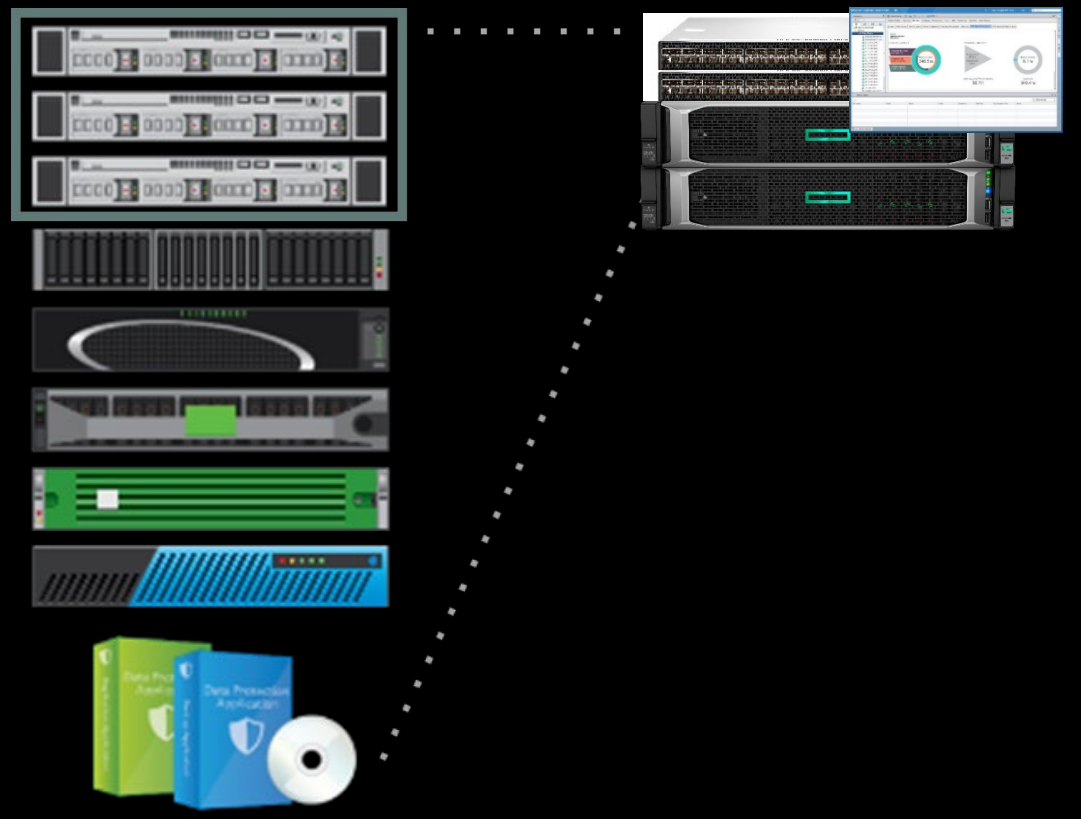
HPE SimpliVity: The powerhouse in hyperconvergence

The industry's most powerful hyperconverged platform for enterprise deployments, uniting best-in-class data services with the world's most secure server platform

Other hyperconverged solutions

HPE SimpliVity



Simple

Intuitive per-VM management with rapid deployment and scale

Powerful

All IT infrastructure and advanced data services in a single building block

Efficient

Scale easily while saving 90% capacity, guaranteed 69% TCO savings compared to traditional infrastructure

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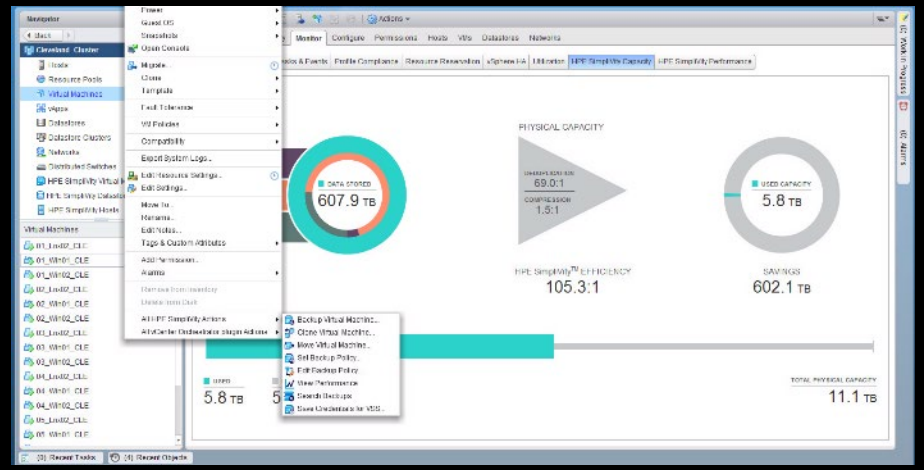
HPE SimpliVity: Powerhouse hyperconvergence

The industry's most powerful hyperconverged platform for enterprise, uniting best-in-class data services with the world's most secure server platform

Simple	Powerful	Efficient
Intuitive per-VM management with rapid deployment and scale	All IT infrastructure and advanced data services in a single building block	Scale easily while saving 90% capacity, guaranteed 69% TCO savings compared to traditional infrastructure

VM-centric management

Alignment of data to VMs managed through vCenter



Just a few clicks to…

IDC Analyze the Future

Over half (57%) of customers benefitted from an average of

53%

increase in **staff productivity**

- Simple, intuitive interface
- No LUNs, shares, or volumes
- Empowers IT generalists and VM admins
- Familiar tools and interfaces like VMware vCenter® and vRealize®

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HPE SimpliVity Data Virtualization Platform

Built-in resiliency, backup, and disaster recovery

- Full, logical backups with near-zero overhead
- Guaranteed 60-second restore of a 1 TB VM
- Granular RTOs and RPOs from hours to seconds
- Simple, affordable offsite DR
- RAIN and RAID protection of data

51%

of customers using HPE SimpliVity built-in data protection **retired existing third-party backup or replication** (IDC)[1]

70%

improvement in backup/recovery and DR reported by HPE SimpliVity customers (IDC)[1]

57%

of HPE SimpliVity customers **reduced recovery times** from days or hours to minutes (TechValidate)[2]

TechValidate™

IDC Analyze the Future

[1]IDC white paper, "HPE SimpliVity Hyperconvergence Drives Operational Efficiency and Customers are Benefiting " August 2018

2016 TechValidate survey of HPE SimpliVity infrastructure customers

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HPE SimpliVity: Powerhouse hyperconvergence

The industry's most powerful hyperconverged platform for enterprise, uniting best-in-class data services with the world's most secure server platform

Powerful	Simple	Efficient
All IT infrastructure and advanced data services in a single building block	Intuitive per-VM management with rapid deployment and scale	Scale easily while saving 90% capacity, guaranteed 69% TCO savings compared to traditional infrastructure

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Top use cases

Data center consolidation	SMB/ROBO	VDI	Cloud computing

Tier-1 applications	Data protection	Test/dev

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The HPE SimpliVity Data Virtualization Platform

Global VM-Centric Management and Mobility

- Policy-based, VM-centric management
- No LUNS, shares, or volumes
- Right-click operations
- Native tool integration
- Single view of all data centers and ROBOs

Built-in resiliency, backup, and disaster recovery

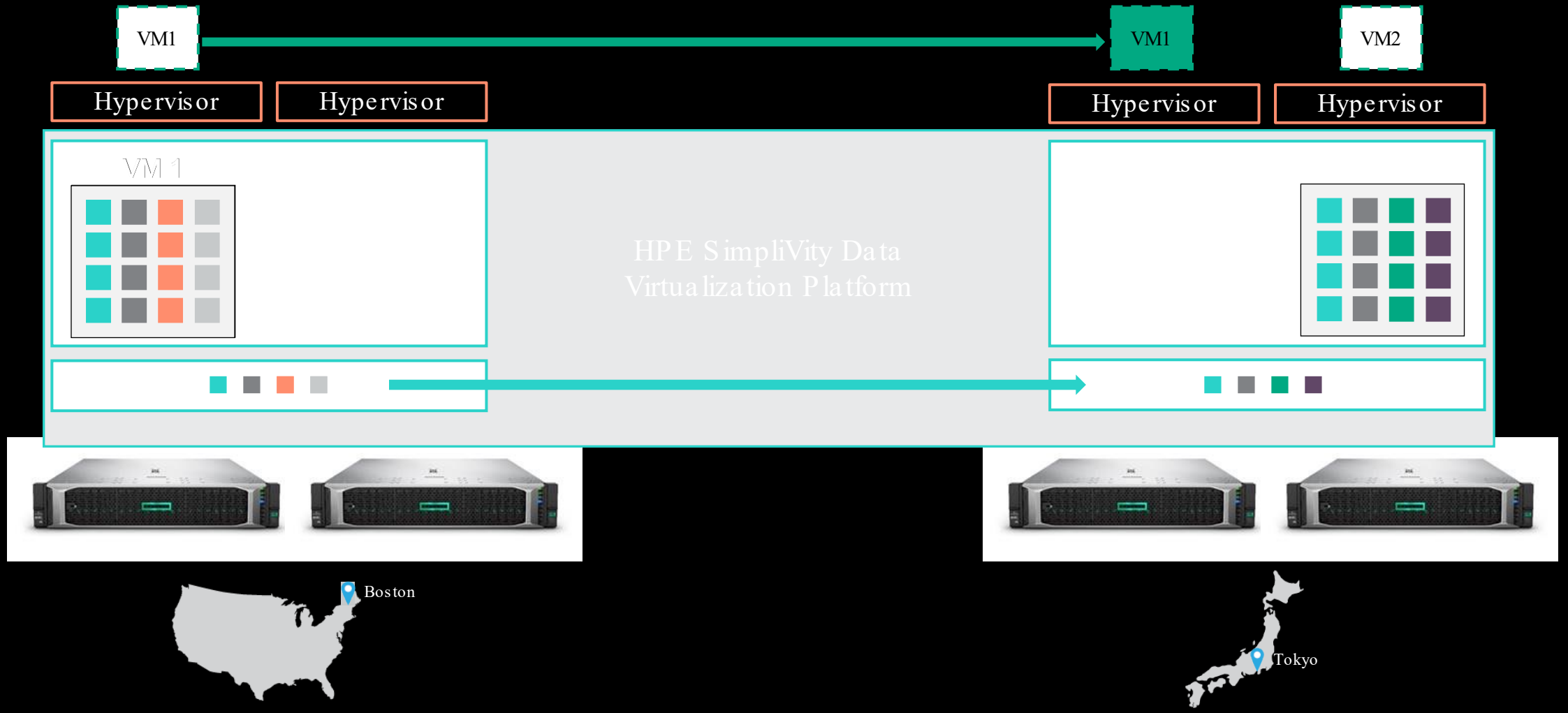
- Full logical backups with near zero overhead
- Guaranteed 60-second restore of 1TB VM
- Granular RTOs and RPOs from hours to seconds
- Simple, affordable offsite DR
- RAIN + RAID protection of data

Guaranteed Data Efficiency

- Always-on compression and deduplication
- All data at inception, globally
- Offloaded to OmniStack Accelerator
- Guaranteed 90% capacity savings across primary storage and backup

Maximize efficiency and effectiveness of existing WAN

Remote backup and replication in seconds. Enabled through globally aware deduplication.



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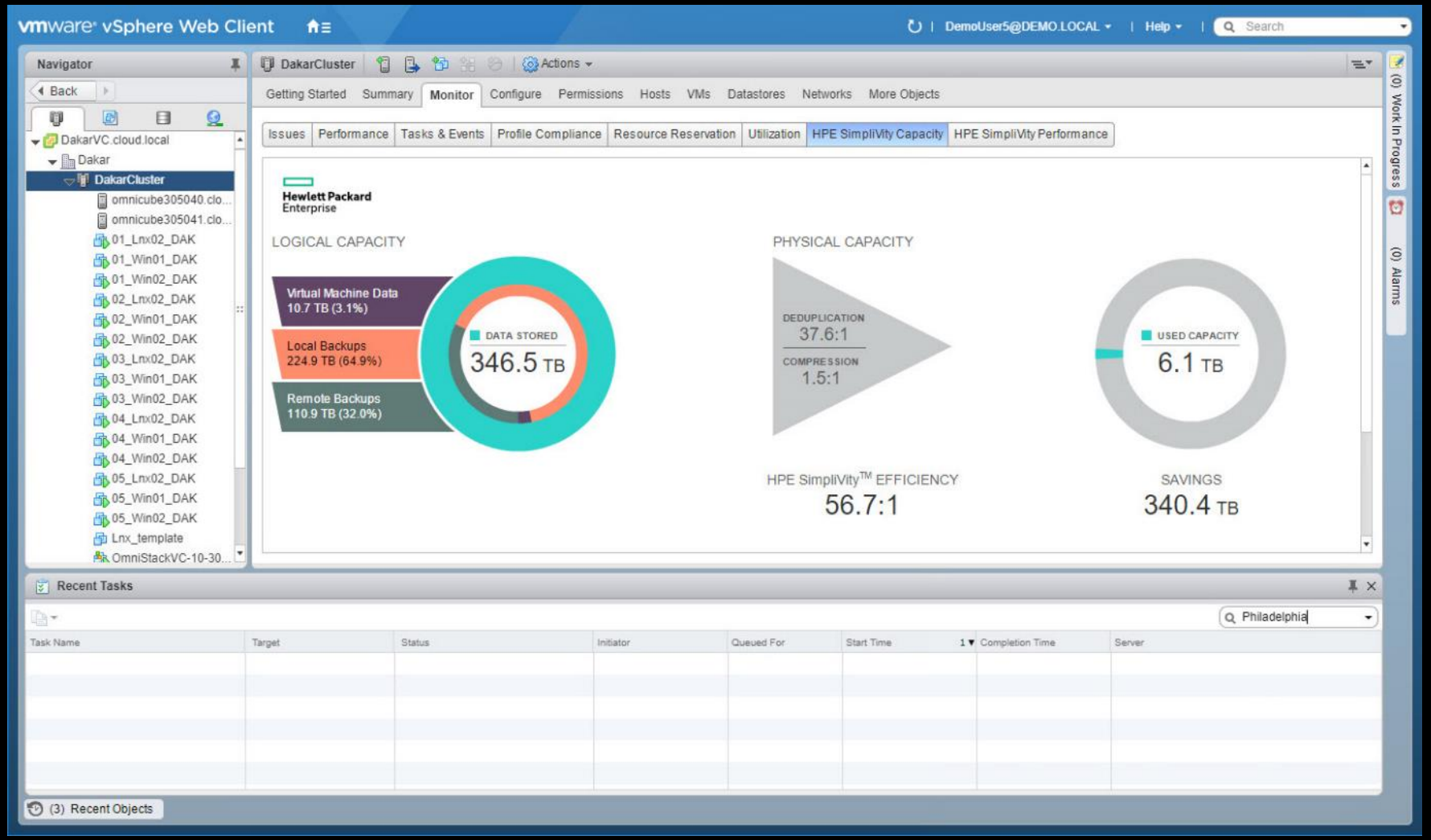
Demo video link

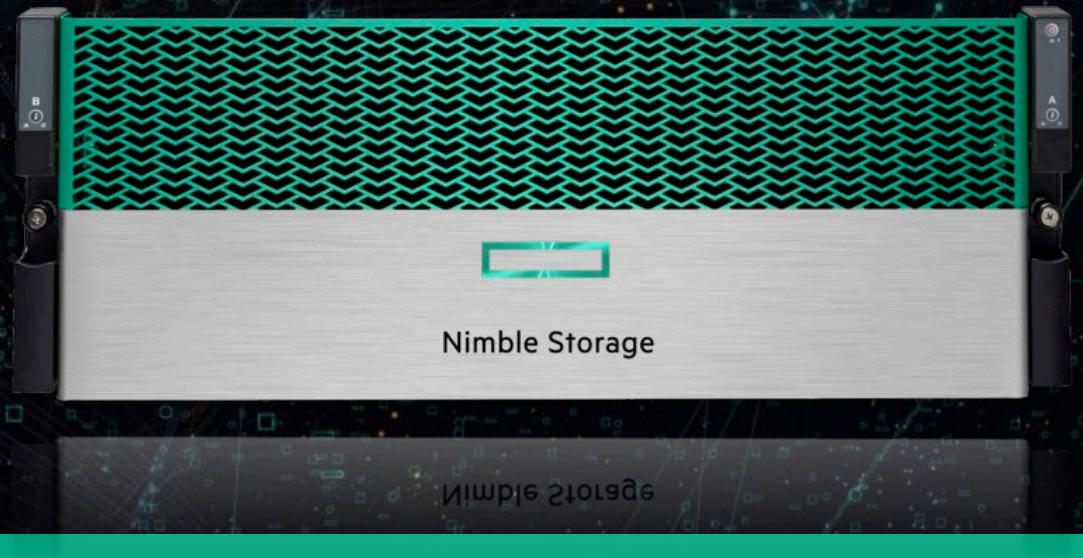
https://www.youtube.com/watch?v=xa99wcQNoJk



HPE Nimble

HPE NIMBLE STORAGE

DATENSPEICHER NEU DEFINIERT



INTELLIGENT UNKOMPLIZIERT ZEITLOS

Hewlett Packard Enterprise

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10 Years of Proven Market Success

45,000+

Solutions deployed globally

20,000+

Deployed customers

>100.00%

Measured data availability across installed base

4.91 out of 5

Global customer support rating (anything above 4 is world class)

Top 1%

Business to Business NPS within Storage Industry

Hewlett Packard Enterprise

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SELBSTKORRIGIEREND

86 %

der Probleme werden vorhergesagt und behoben

SELBSTVERWALTEND

79 %

niedrigere Datenspeicher-Betriebskosten

SELBSTOPTIMIEREND

99,9999 %

nachweisliche gemessene Verfügbarkeit – **Garantiert**

*Basierend auf Daten der Installationsbasis und Untersuchungen Dritter zu HPE Nimble Storage

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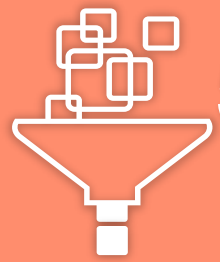
Erstklassige Dateneffizienz

- Deduplizierung Inline + variabler Block
- Komprimierung Inline + variabler Block
- Beseitigung von Nullmustern
- + Thin Provisioning + Zero-Copy-Klone
- NimbleOS: Erweiterte Flash-Architektur Effiziente Datenspeicher-Grundlage



Durchschnittlich 5:1 oder mehr Datenreduktion*

*Bei der HPE Nimble Storage AFA-Installationsbasis ergibt sich eine durchschnittliche Datenreduzierung im Verhältnis von 5:1, einschließlich Thin Provisioning. Bei einigen Workloads wie VDI resultiert daraus sogar eine Datenreduzierung im Verhältnis von bis zu 21:1

Starten Sie mit 20 % mehr nutzbarer Kapazität

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Q1 FY21

NimbleOS 5.3.1.0 released as GA Candidate.

NimbleOS 5.2.1.x designated as GA, now default shipping NimbleOS release for HPE Nimble Storage & dHCI arrays.

NimbleOS 5.0.10.0 designated as LTSR.

Many new AI-driven integrations for HPE InfoSight.

Cross-Generational platform upgrades for Gen3 customers (AFx000 / CSx000).

New Remote Data Migration Services from HPE Pointnext Services for migrating HPE 3PAR & Dell EMC arrays to HPE Nimble Storage.

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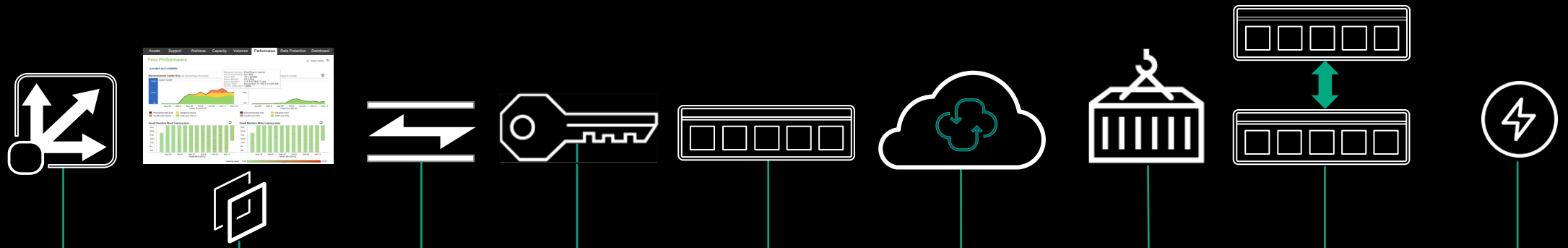
NimbleOS release history, complimentary to customers—always



2012	2013	2014	2015	2016	2017	2018	2019	2020
Scale-to-Fit (Performance and/or Capacity)	HPE InfoSight RAID-3P+	Fibre Channel	SmartSecure Encryption at Rest	All Flash Inline Dedupe Quality of Service VMware VVols	HPE Cloud Volumes Hyper-V Secondary Flash	Containers and K8s HFA Dedupe	HPE Nimble Storage dHCI Peer Persistence Multi-Protocol	Storage Class Memory Fan-Out Replication Enhanced Encryption
1.4	2.0 & 2.1	2.2	2.3	3.0	4.0	5.0	5.1	5.2 & 5.3

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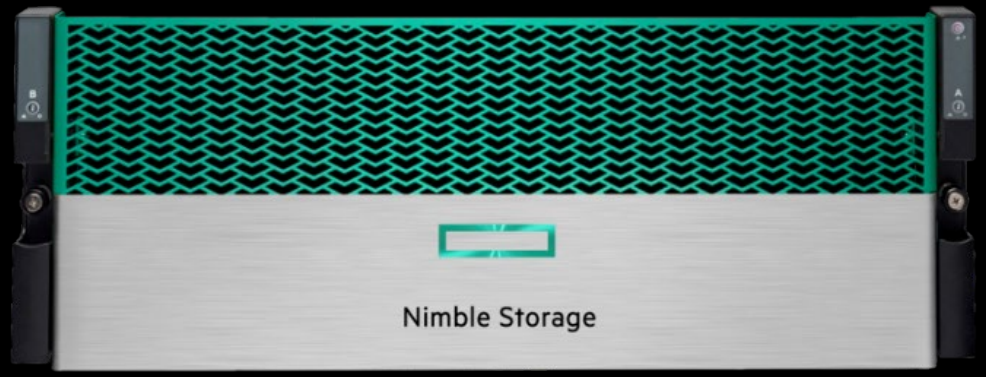
HPE Nimble Storage

Summary:

Nimble Storage delivers a radically simpler storage and support experience and 6-9s availability. Nimble provides the best price for performance and capacity efficiency – in a common experience across AFA, hybrid, and cloud.



Reasons to Believe:

- 79% lower management OpEx
- Store More Guarantee on AFA + hybrid
- Simple integrated data management
- Non-disruptive scale & upgrades across models
- Integrated data protection
- 100% predictive Level 1 and 2 support

Distinct Use Cases

- Multicloud flash fabric
- Very high performance and efficient hybrid
- Secondary storage target (with Veeam)
- VDI

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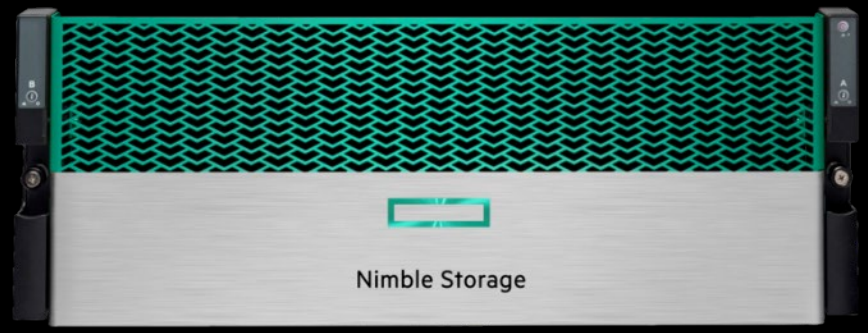
KMIP-compliant 'SmartSecure' Encryption at Rest

25Gb Ethernet NICs

X-Generational Platform Upgrades (Gen3->Gen5)

NOS



HPE InfoSight ™

Peer Persistence Resync Performance Enhancements

HPE Nimble Storage dHCI Enhancements

Available to HPE Nimble Storage arrays under HPE Nimble Storage Support contract
As part of our Timeless Storage guarantee

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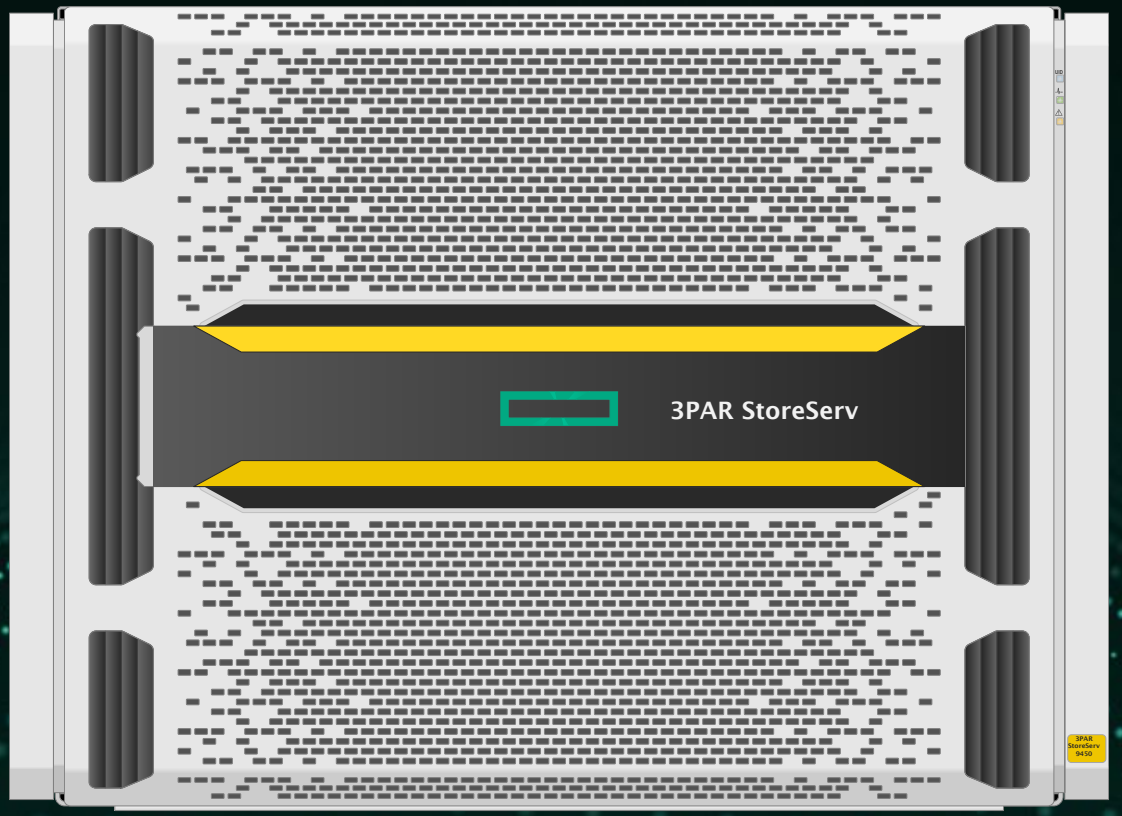
Array Features:

- KMIP-integrated encryption for enterprise key managers
- 25Gb dual-port Ethernet NIC support (Gen5 only)
- Gen3 -> Gen5 cross-generational upgrade kits (with Timeless subscription included)
- Peer Persistence resync performance enhancements
- HPE Nimble Storage dHCI-specific enhancements:
  - Segregated ILO network support
  - 1-click upgrades for ProLiant SPP
- Secure password enhancements for root & HPE Nimble Storage support accounts (for dark sites)

NEW Application Integration (not formally tied to 5.3)

- VMware vRealize Operations Manager (vROps) pack
- HPE Nimble Storage Ansible collection
- NWT enhancements for host log collection for HPE Nimble Storage Support troubleshooting (NWT -> Array -> HPE InfoSight)

HPE 3PAR



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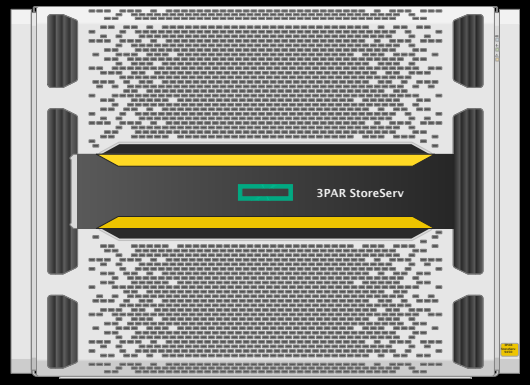
HPE 3PAR

Summary:

3PAR delivers proven Tier 1 performance and resiliency with simplified management. 3PAR provides the fastest raw performance, meets the most demanding SLAs, and guarantees 6-9s availability.



Reasons to Believe:

- Fast failover
- Multi-site replication
- Zero RPO disaster recovery
- Persistent Ports (NPIV)
- Secure multi-tenancy with latency target QoS
- Active/Active architecture

Distinct Use Cases

- Multitenancy/service provider
- Multi-app consolidation
- Synergy attach
- HANA at scale
- Unified block and file

HPE Primera

INTELLIGENCE

VERÄNDERT ALLES

Intelligenteste Datenspeicher -Lösung weltweit

für geschäftskritische Anwendungen

HPE Primera

On-Demand
Erfahrung

Anwendungsorientierte
Zuverlässigkeit

Nachhaltiges
Ownership

100 % Verfügbarkeit garantiert
Kein Vertrag. Keine Einschränkungen. Keine Ausfallzeiten.

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UNTERBRECHUNGSFREIE ONLINE- UND INLINE-UPGRADES MIT DATE-IN-PLACE

KLEIN anfangen

630

Hinweis: Das Modell 630 muss als 4U-Rack ausgeführt sein, damit ein Data-in-Place Upgrade auf das Modell 650 möglich ist

VERTIKAL skalieren HORIZONTAL skalieren

650 2N

650 4N

VERTIKAL skalieren HORIZONTAL skalieren

670 2N

670 4N

Effiziente Skalierung

Leistungs- und Kapazitätsskalierung bei mehreren Knoten

Einfache Aktualisierung

Keine vergeudeten Investitionen durch Data-in-Place Upgrades

Keine Unterbrechungen

Upgrades, die für Sie und Ihre Anwendungen transparent sind

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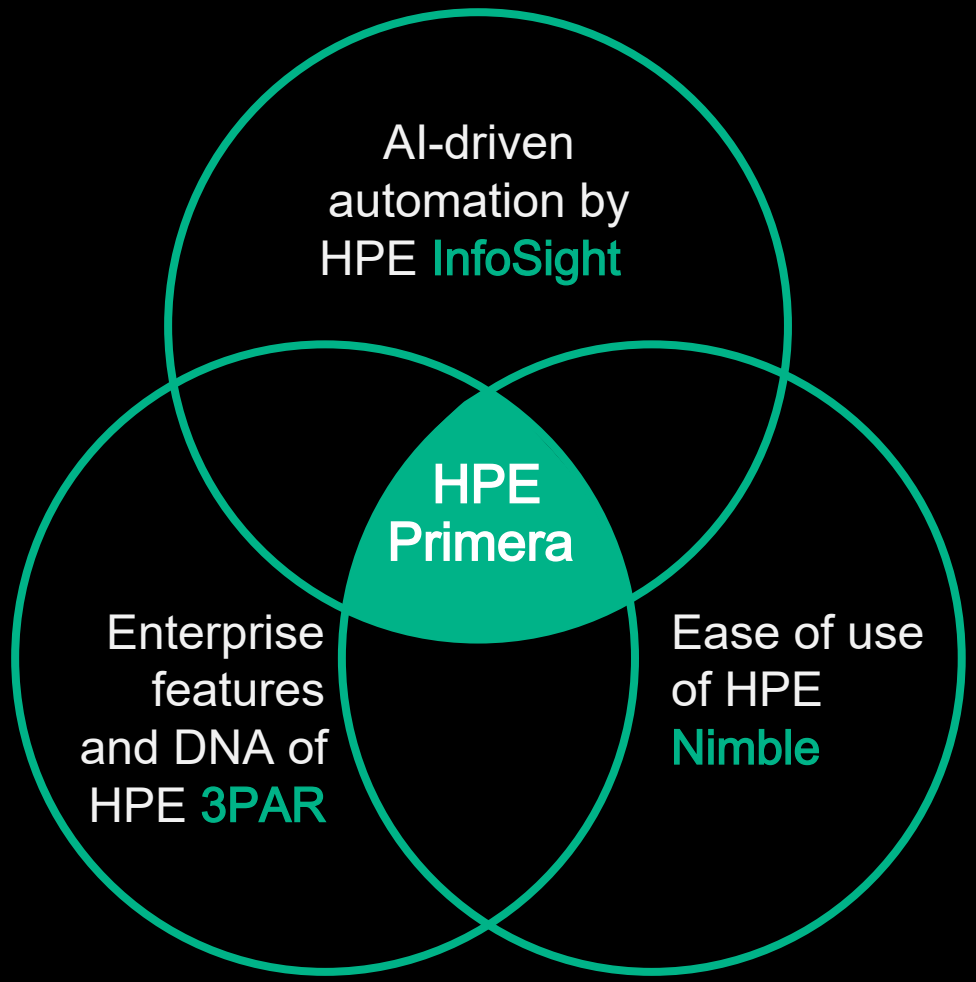
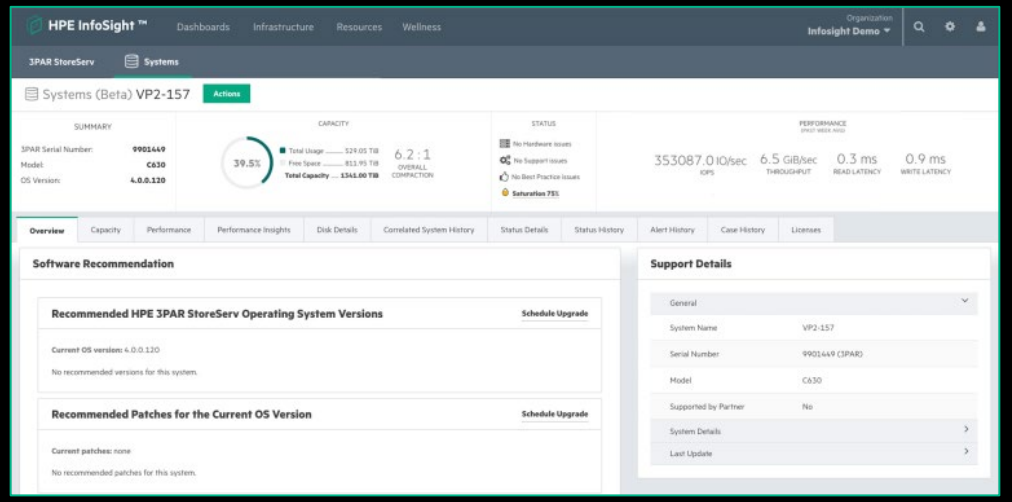
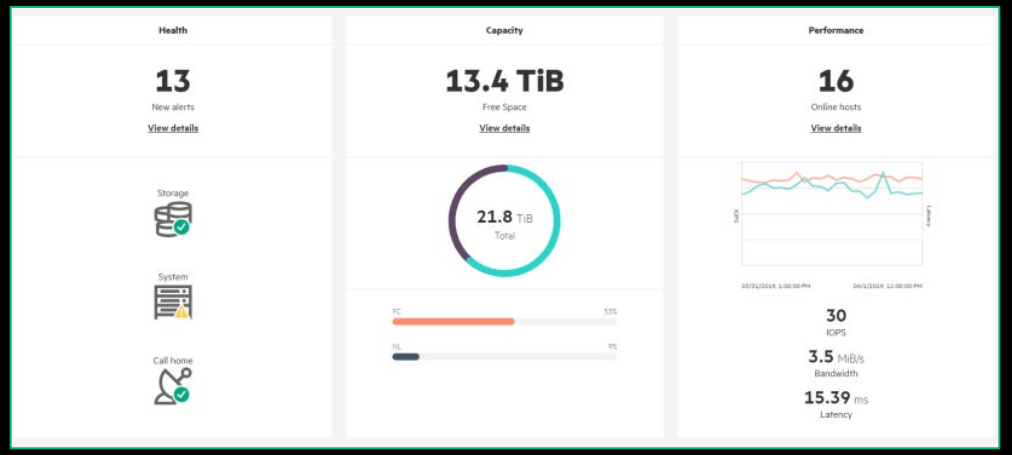
HPE Primera —The new measure for mission -critical storage

Combines the best technologies of HPE







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HPE Primera storage platform

Predictive
Gets smarter every second

Simplicity
Installation, setup, operations

Timeless
An experience that keeps getting better

Resilient
Nondisruptive easy updates and upgrades

Intelligent storage

HPE Primera

Flexible to easily adapt to any environment | **Powerful** to handle anything | **Resilient** for end-to-end data protection

Highlights of the HPE Primera arrays

Constant HPE innovation

- Gen6 ASIC, Intel Skylake CPU
- 32 Gb Fibre Channel / 25 Gb IP support
- All-inclusive software
- Operating system embedded SP and management
- Online node conversion
- 100% Availability Guarantee
- Extreme ease of use
- Customer self install/update
- RAID 6 only
- Deep InfoSight integration

Hewlett Packard Enterprise

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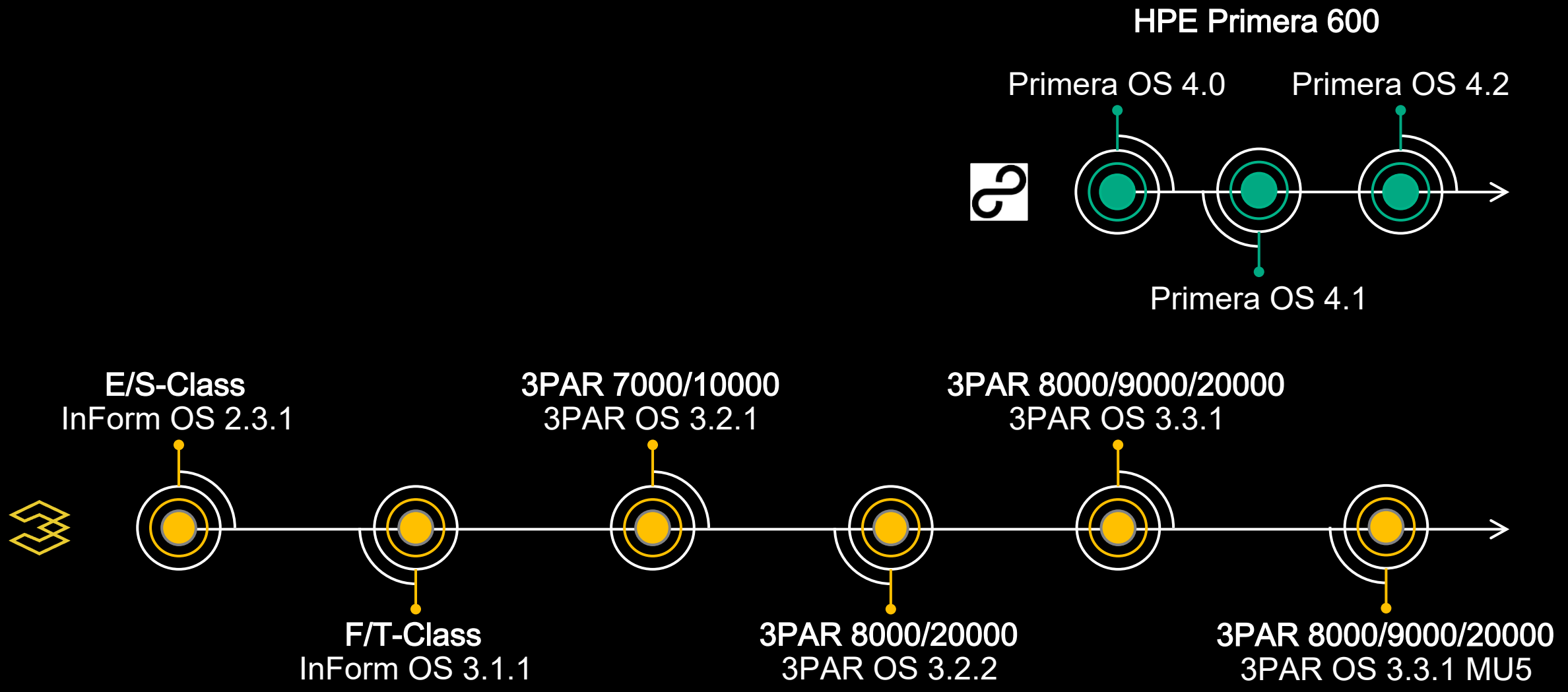

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HPE Primera OS 4.x feature roadmap

4.0 At launch

Initial support

- Intel Skylake multi-core CPUs
- HPE Primera ASICs
- Built in 10 GbE RCIP port
- 16 and 32 Gb Fibre Channel host ports
- Fast updates
- Self-telemetry
- API first
- Auto-CPG
- RAID 6 only
- On-node management
- On-node service processor
- Remote Copy
  - Synchronous RCIP
  - Asynchronous Periodic RCIP
- Peer Motion HPE 3PAR → HPE Primera

4.1 ~6 months after 4.0

New

- NVMe MDF (3D cache)
- 25 GbE HBA
- iSCSI support
- Remote Copy
  - RCFC support
  - RCIP using PCIe CNA
  - Many-to-many replication
  - Multimode replication
  - Encrypted replication
- Active/active Peer Persistence
- Peer Persistence (Linux)
- Cloud Quorum Witness
- Configure replication and provisioning via on-node management
- VMware VVol support
- VVol QoS
- Online import
- Data in-place node upgrades

4.2 December 2020

New

- Simple QoS
- On-node analytics
- VVol Peer Persistence
- Replicate compressed data
- NVMe over Fabrics (NVMEoF)
- RDMA-based IP replication
- Asynchronous streaming Remote Copy
- Peer Persistence (AIX)

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Software-defined

For features and functionality, software implementations provide flexibility, simple delivery, and easy maintainability, but
software-only platforms are held back by general-purpose hardware performance

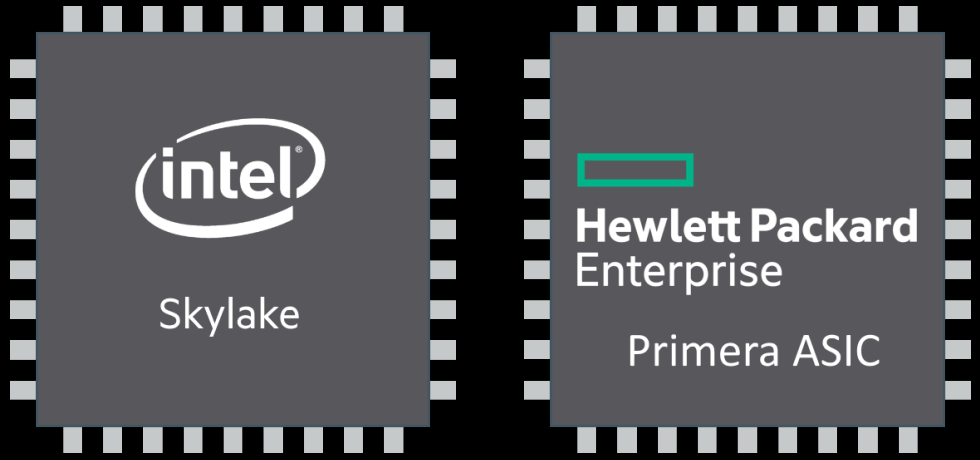
Hardware-defined

Custom hardware solutions provide the highest possible performance, but lack flexibility and can be complex to maintain;
it is often difficult, if not impossible, to add new features

HPE Primera

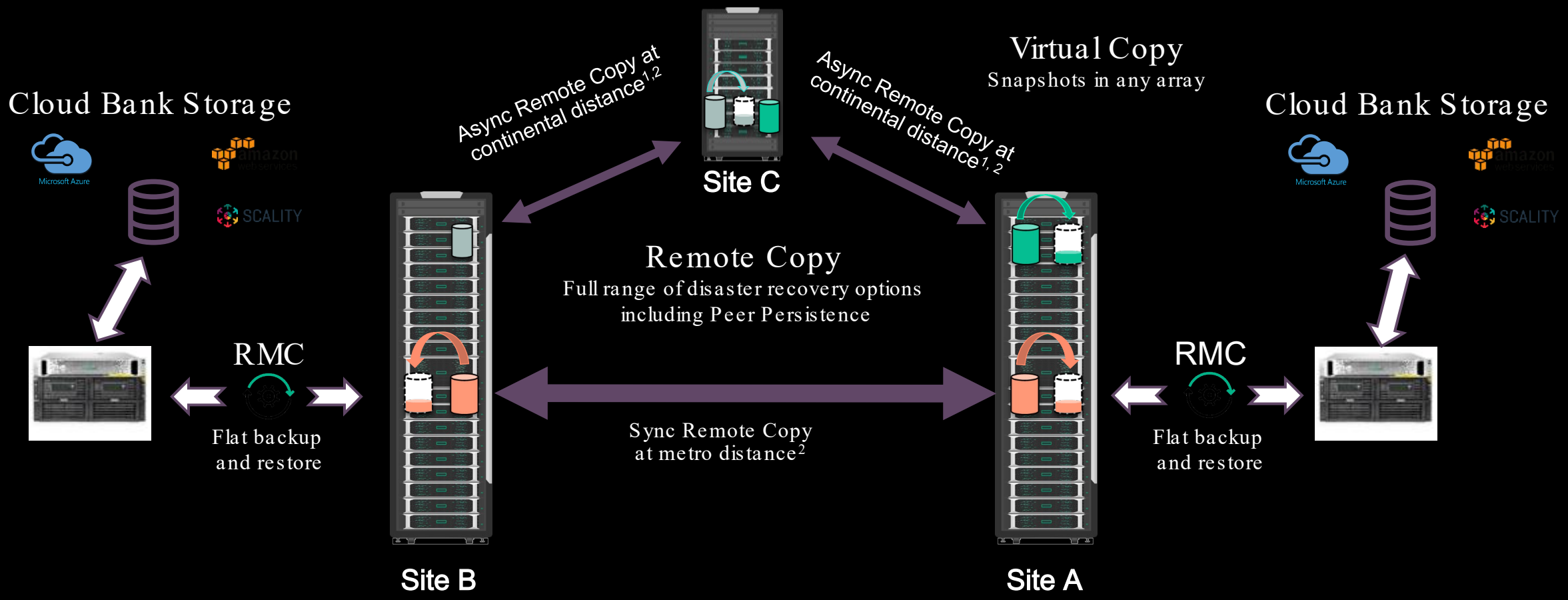
Software-defined, hardware-enabled

Extending general-purpose hardware with custom ASIC acceleration allows for extreme performance without the complexity by enabling features through software



HPE Primera leadership —Replication

Full set of replication and recovery options

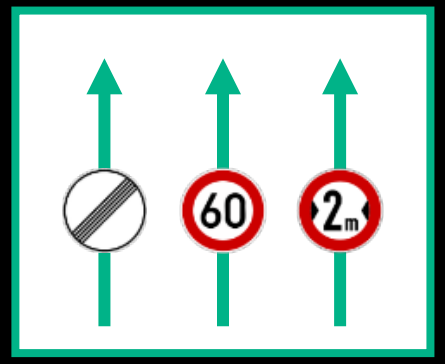


1. 3DC Peer Persistence support for HPE Primera is planned with HPE Primera OS 4.1
2. HPE Primera OS 4.0 only supports RCIP; Remote Copy over Fibre Channel (RCFC) is planned for HPE Primera OS 4.1

HPE Leadership -Efficient

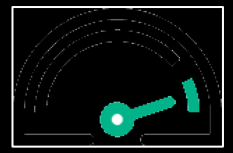
HPE Primera customers reduce TCO by more than 50%

Quality of Service



Priority Optimization
Built-in QoS and
mixed-workload support

Flash -optimized



High performance @ < 1ms latency

Data reduction

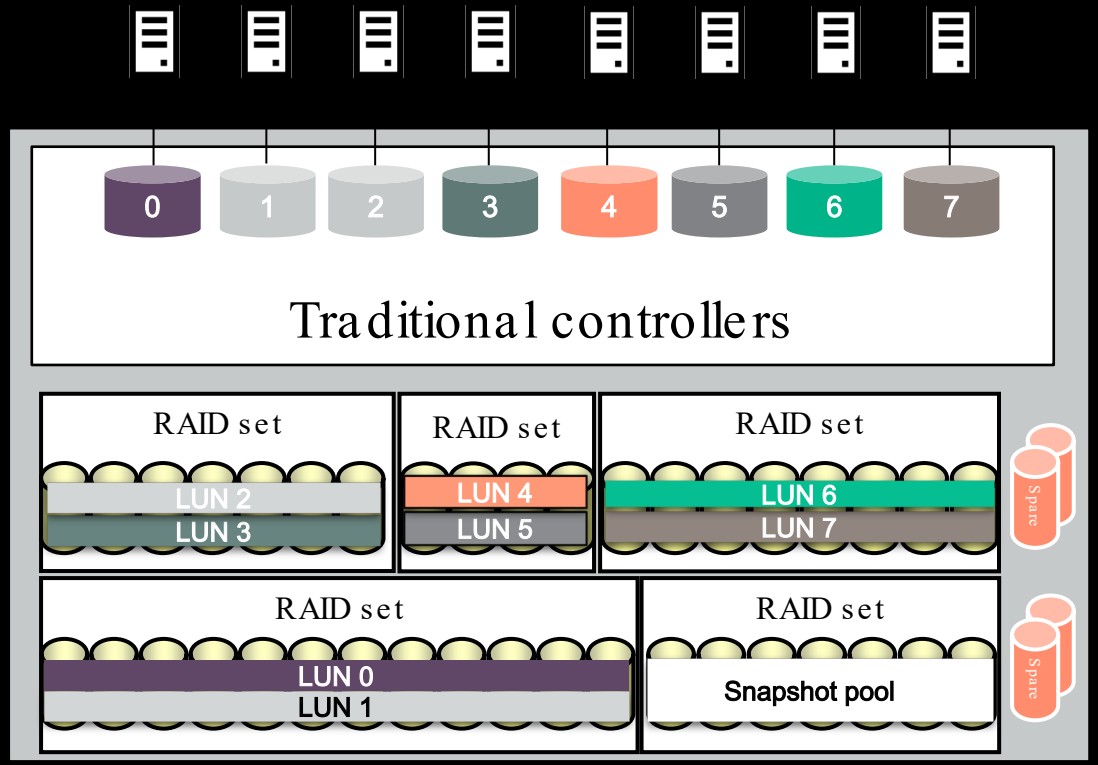
Wear-out optimization

Get the most out of your systems

HPE Primera OS virtualization advantages

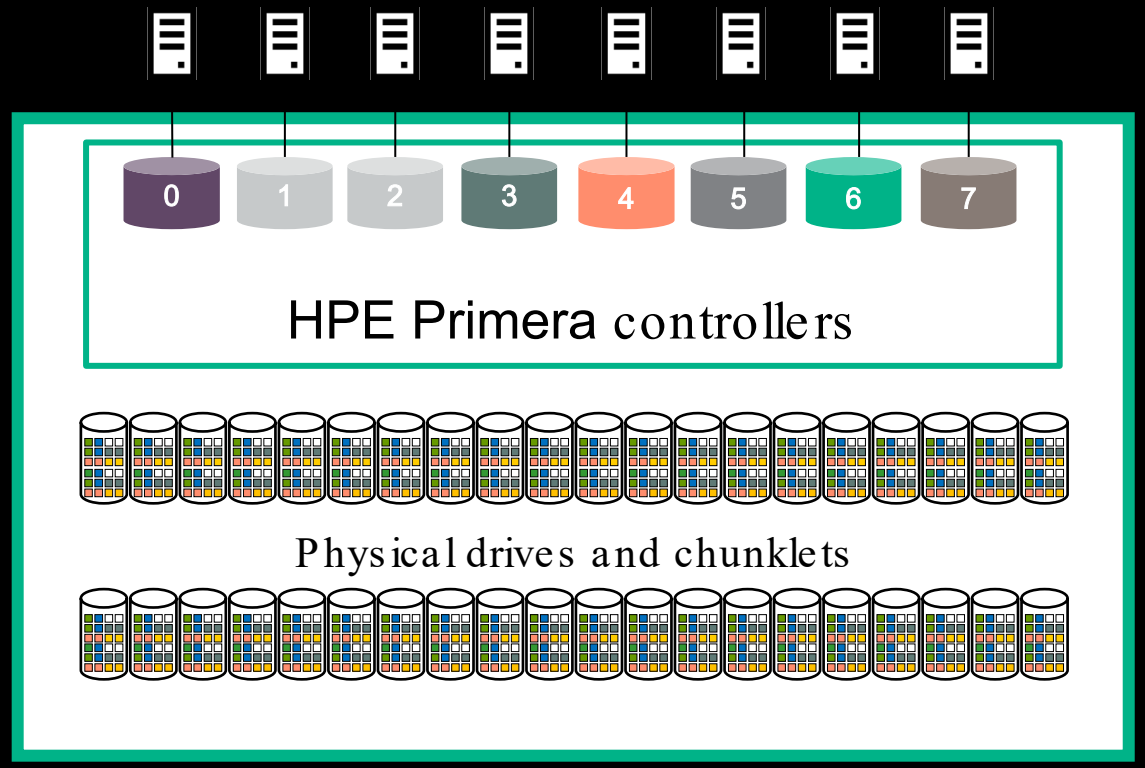
Traditional arrays

- Drives are added in groups of RAID sets
- Provide limited single LUN performance
- Require dedicated spare drives
- Some require dedicated snapshot pool drives



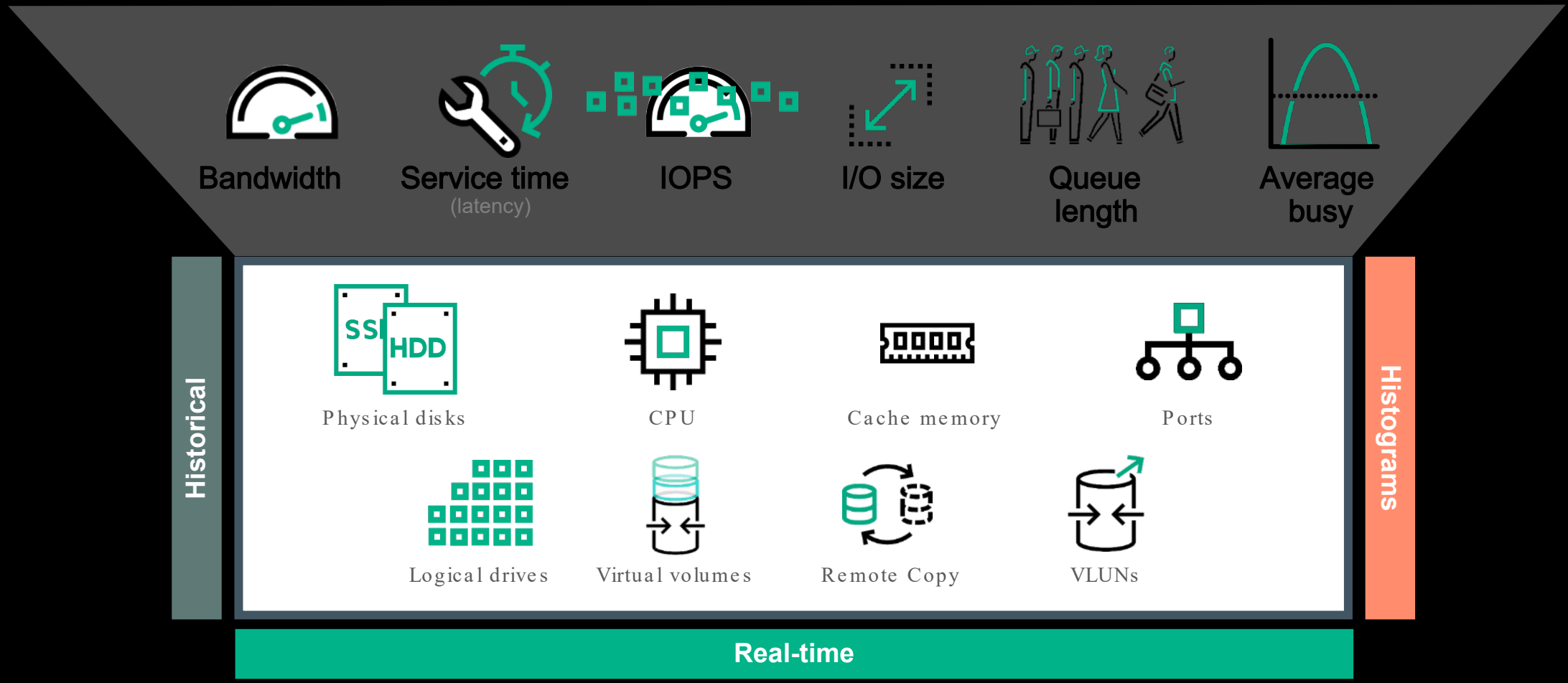
HPE Primera

- All drives are concurrently used and virtualized
- Built-in wide-striping based on chunklets
- Distributed sparing, no dedicated spare drives
- No pools or reservation required



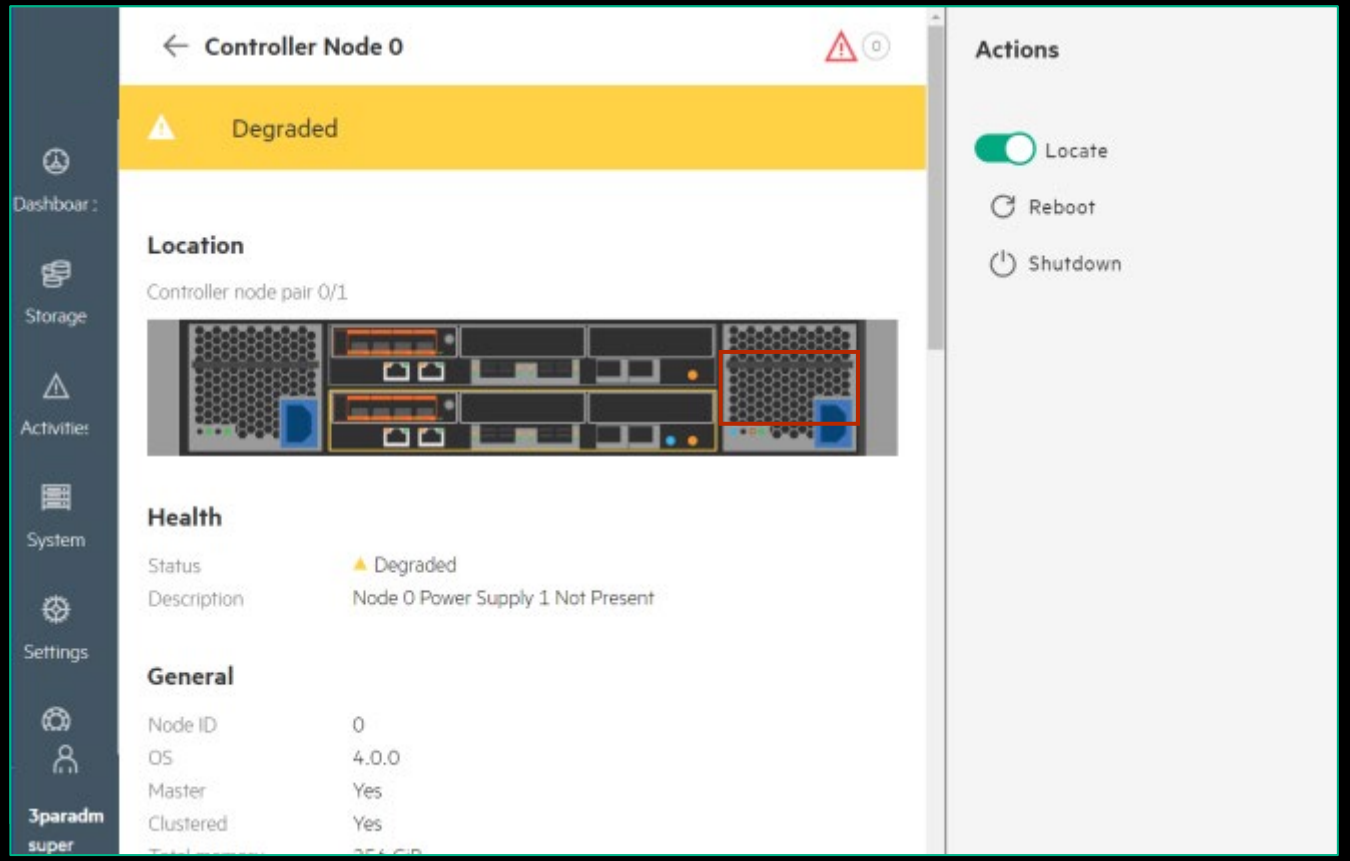
Performance metrics available using API, GUI, CLI, PowerShell

Reports can be automated, scheduled, and exported via email or as a PDF



Customer self repair option

- Guided within the on-node management GUI
- Array components that can be serviced by the customer
- Controller:
  - Controller node
  - Node boot drive
  - Node memory DIMM
  - Node coin battery
  - Node power, cooling, battery module
  - PCIe adapter and SFP
- Drive enclosure:
  - Enclosure I/O module
  - Enclosure power, cooling module
  - Data drive



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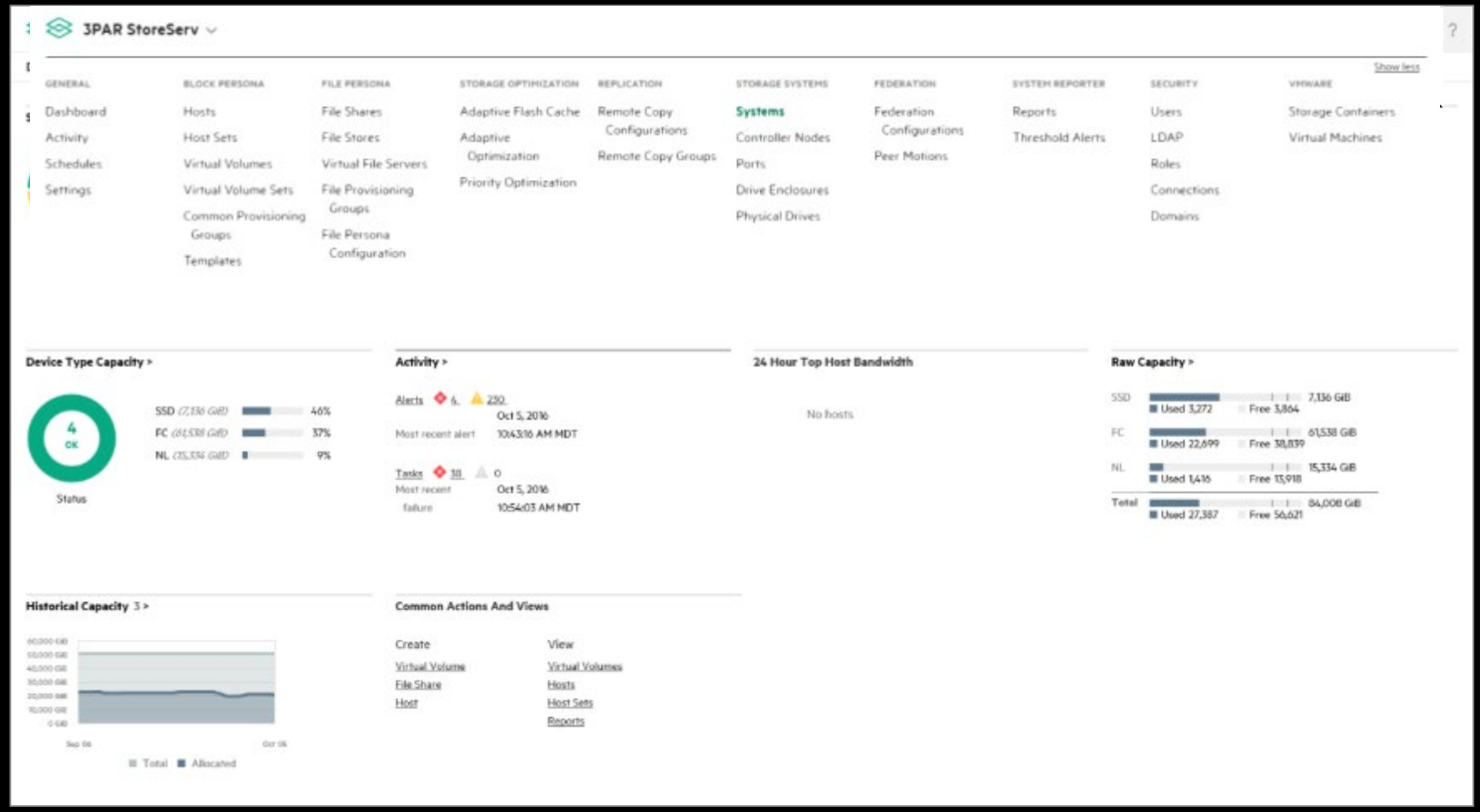
StoreServ Management Console (SSMC)

HPE OneView look and user experience—Dashboard and Mega Menu



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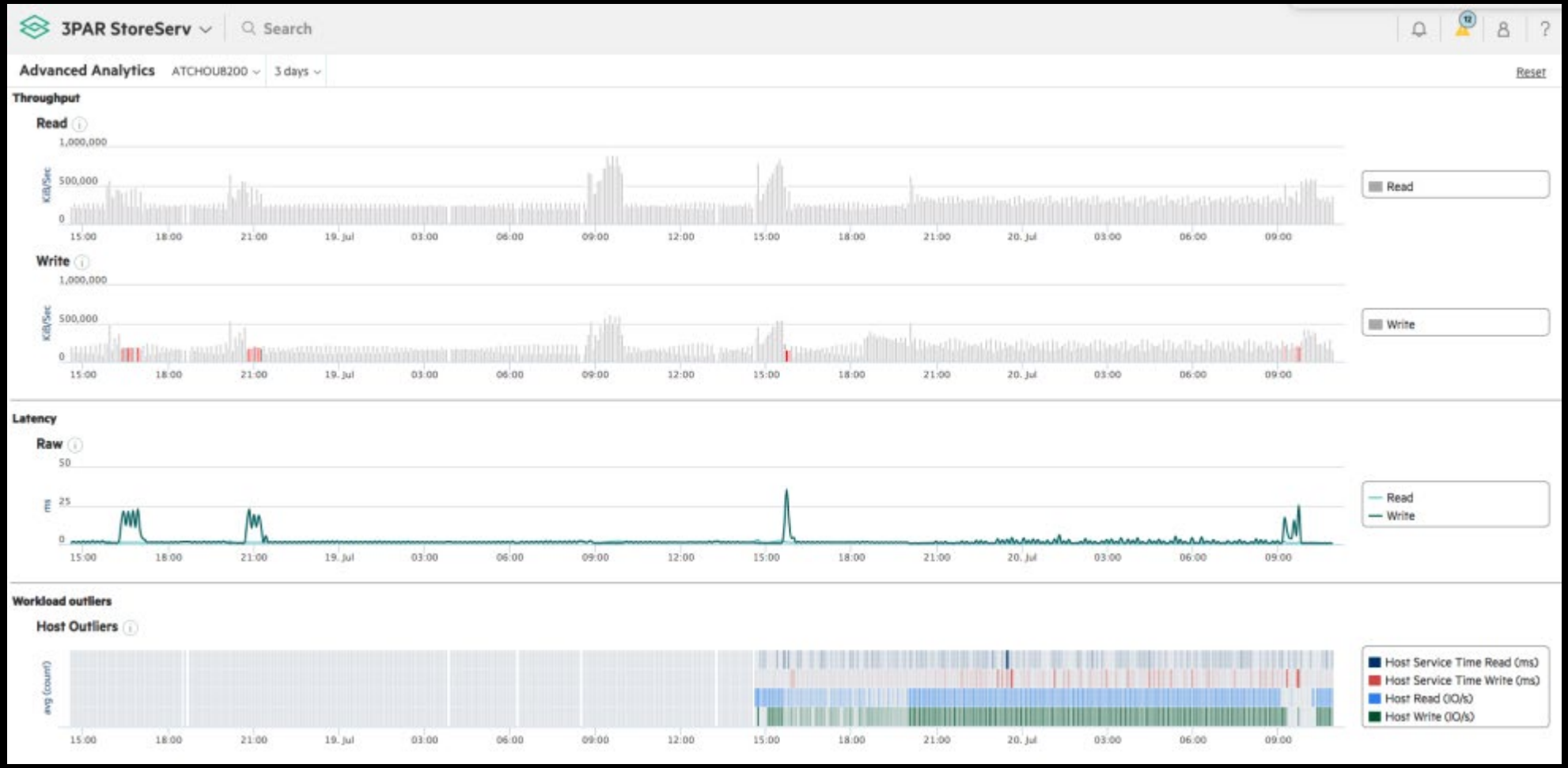
SSMC Advanced Analytics system page

Giving you even more insights



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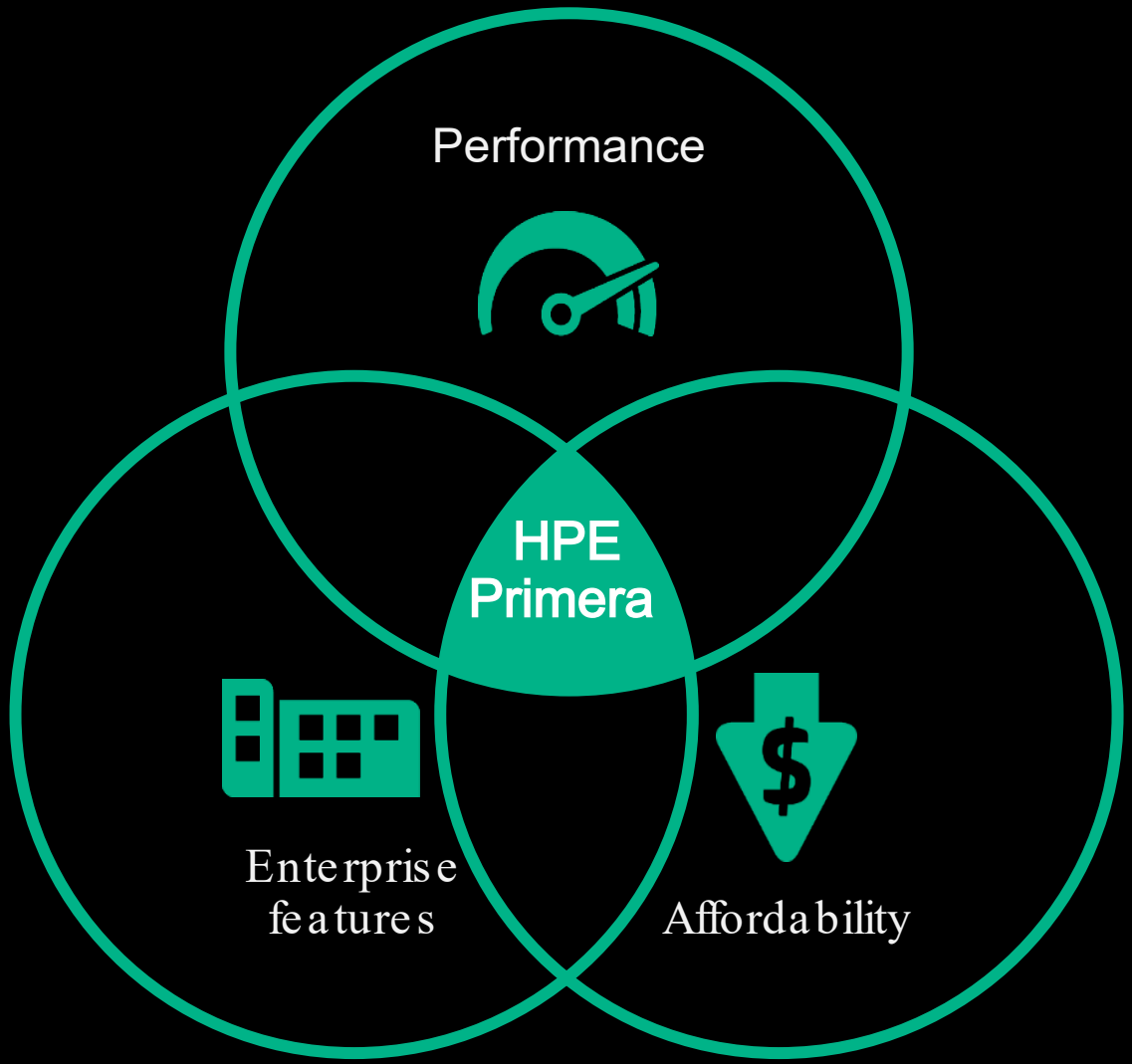
Why HPE Primera?

- Has high performance benchmarks
- Provides all critical capabilities Gartner expects from an enterprise system
- Offers five years unconditional SSD warranty and seven years wear-out protection for SSD[1]



1. All HPE Primera SSDs with life left less than 5%, with drive age less than seven years from warranty start date and no interruption in HPE support coverage are eligible for free replacement

HPE Primera SSD advantages over 10K rpm SAS disks

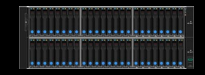
Large-capacity SSD with data reduction is a game changer enabled by HPE

Delivering high and consistent system **performance** and very low **latencies**

\+ 5 Year **Unconditional** drive warranty **7 years** with support contract

\+ big data center **cost savings**

HPE Primera 670 providing 1.71 PiB of usable capacity [1, 2, 3]			
2.4 TB/10k SAS	Drive type	15.36 TB SSD	All-flash difference
900	Number of drives	48	- 94 %
12046 Watts	Power consumption	2098 Watts	- 82 %
41102 BTU	Thermal output	7157 BTU	- 82 %
76U	Rack space	4U	- 95 %
1018.8 kg	Weight	29.3 kg	- 97 %
95,000 IOPS	Performance[3]	295,000 IOPS	+211%



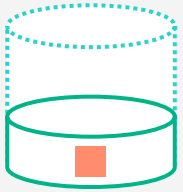
1. RAID 6 (10+2)
2. SSD with 3 :1 data reduction
3. 8 KB random 60/40 read/write

HPE Primera data reduction

Designed for total system efficiency to lower TCO without compromise

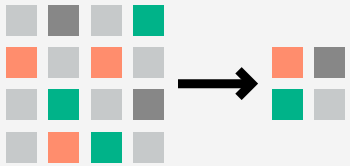
- Available on any HPE Primera system
- Data reduction can be enabled by volume
- Savings estimation and modeling built into the SSMC
- Guaranteed data reduction

1



Thin provisioning
Reservation-less

2

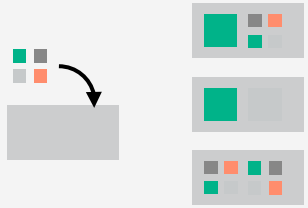


Deduplication including Zero Detect
Prevent storing duplicate data

3

Compression
Reduce data footprint

4

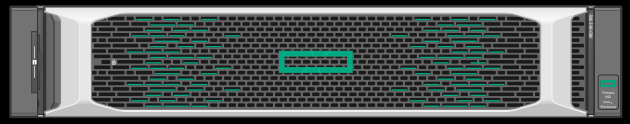


Data packing
Pack multiple pages together

Express Indexing + Express Scan

HPE Store More Guarantee Solution brief

HPE Primera 2U controller enclosure



The 2U enclosure can hold two nodes and up to 24 drives

16 x 12 Gb SFF SAS SSD/HDD[2] slots

Eight dual-use SFF slots
- 12Gb SAS SSD/HDD[2] or
- NVMe SCM[1]

1. Planned with HPE Primera OS 4.1.0
2. HDD are only available through an HPE exception process

HPE Primera 4U controller enclosure

16 x 12 Gb SFF SAS SSD/HDD[2] slots for nodes 2/3

8 x dual-use SFF slots for **nodes 2/3**
– 12 Gb SAS SSD/HDD[2] or NVMe SCM[1]

8 x dual-use SFF slots for **nodes 0/1**
– 12 Gb SAS SSD/HDD[2] or NVMe SCM[1]

16 x 12 Gb SFF SAS SSD/HDD[2] slots for nodes 0/1

1. Planned with HPE Primera OS 4.1.0
2. HDDs are only available through an HPE exception process

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HPE Primera 630 system

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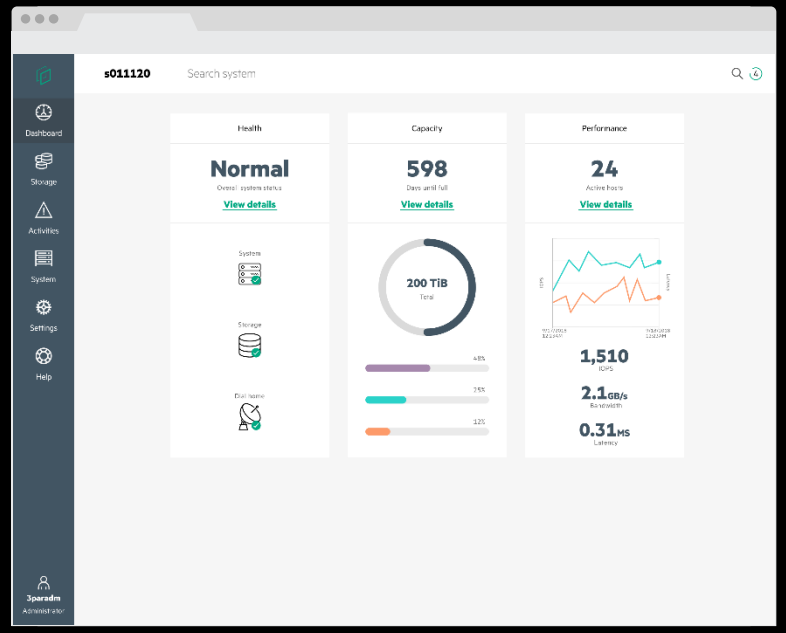
ON-ARRAY MANAGEMENT

RADICAL SIMPLICITY

DASHBOARD



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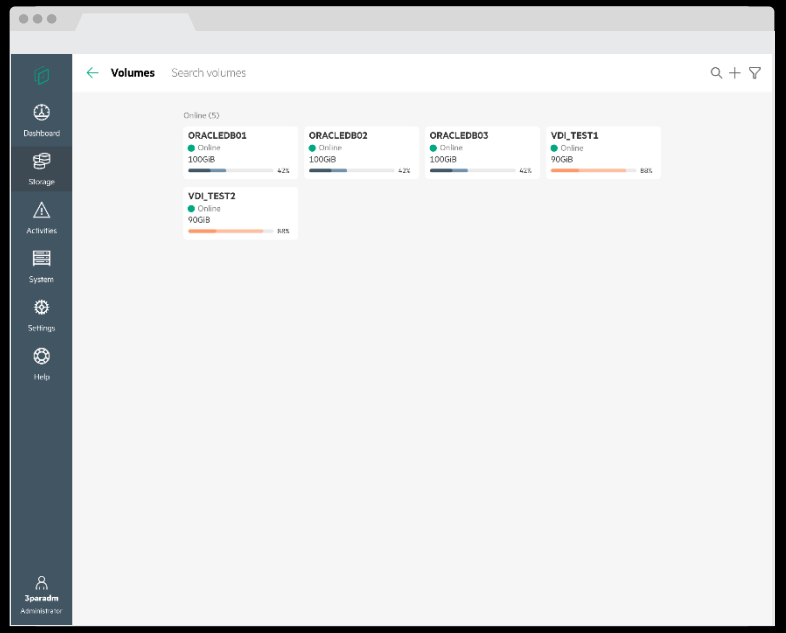

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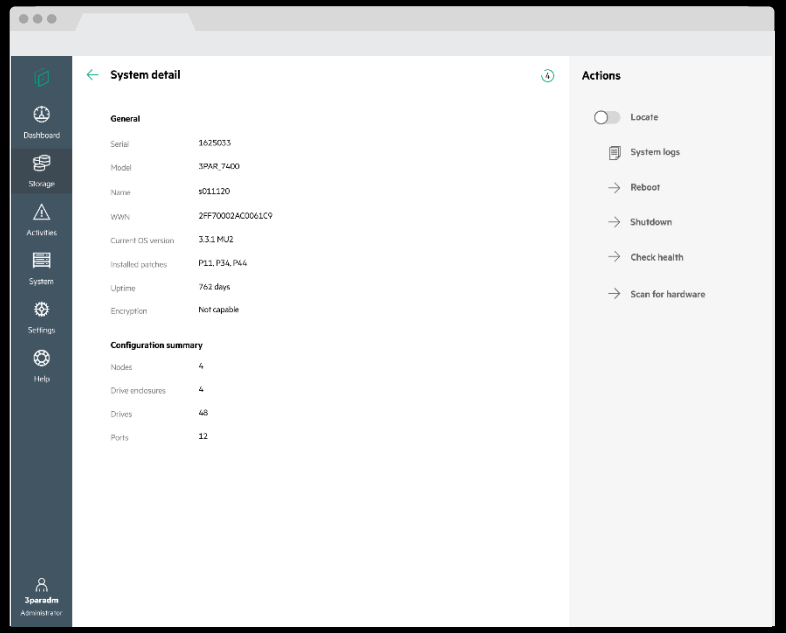


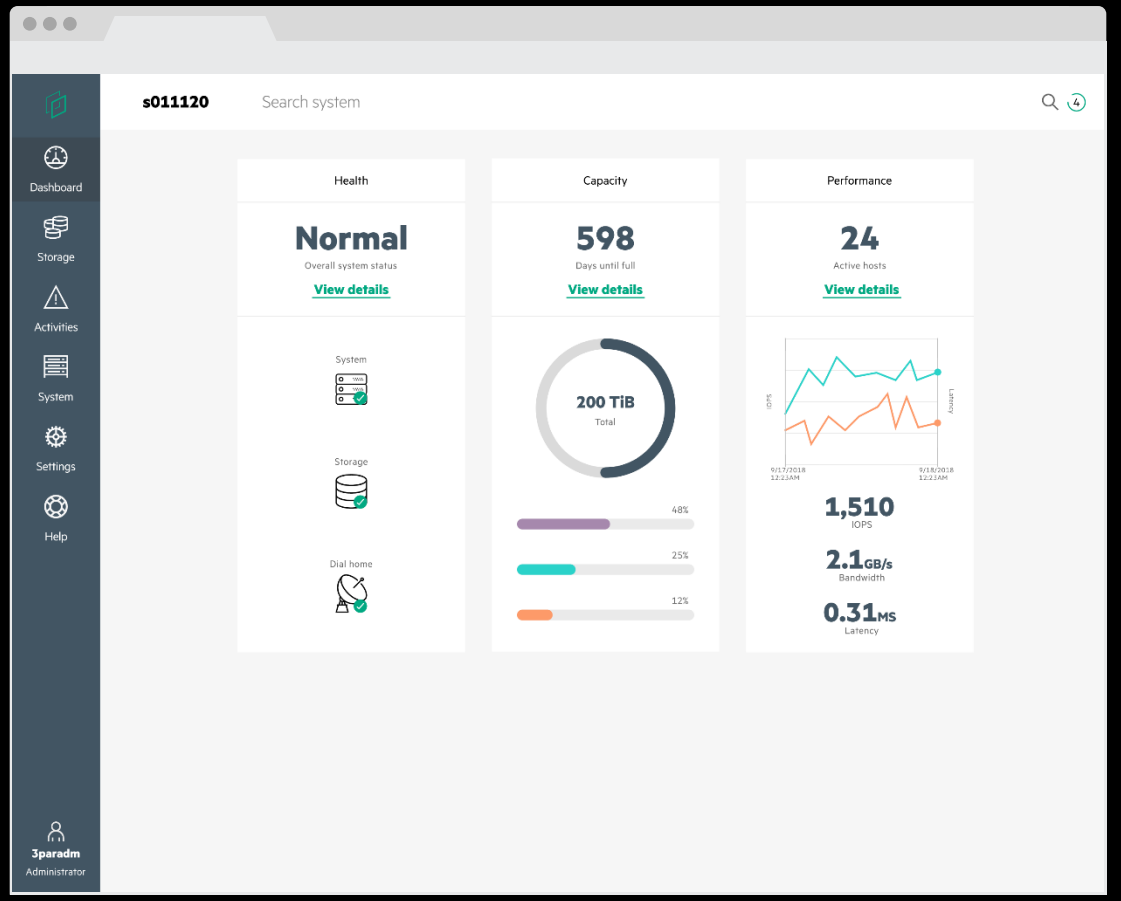
Hewlett Packard Enterprise

SWS COMPUTERSYSTEME Member of ACP Group

ON-ARRAY MANAGEMENT

RADICAL SIMPLICITY

DASHBOARD



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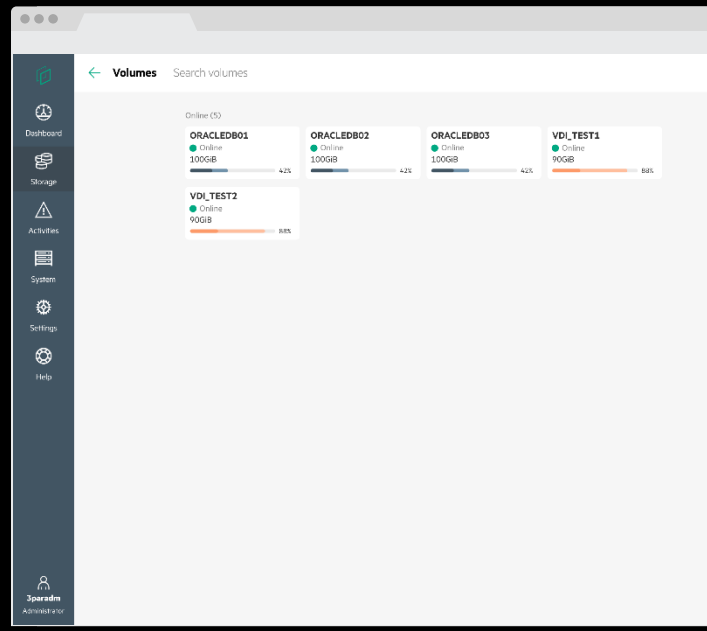

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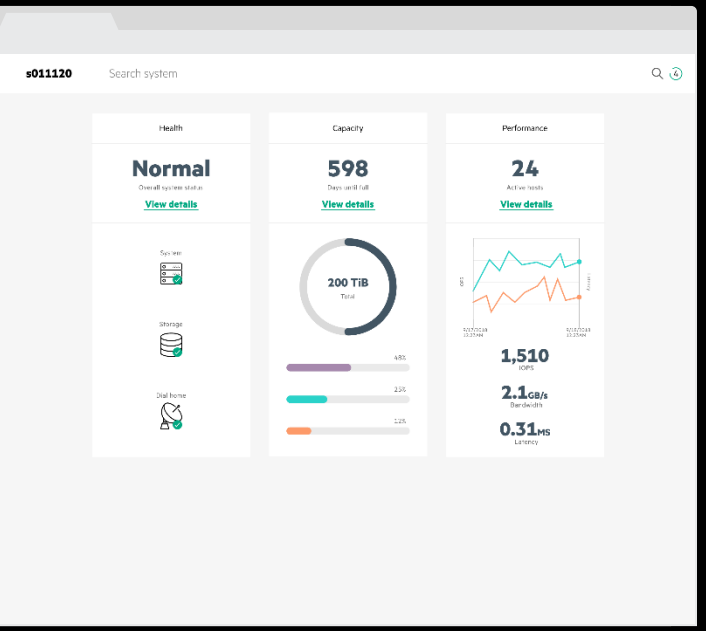
ON-ARRAY MANAGEMENT

RADICAL SIMPLICITY

DASHBOARD



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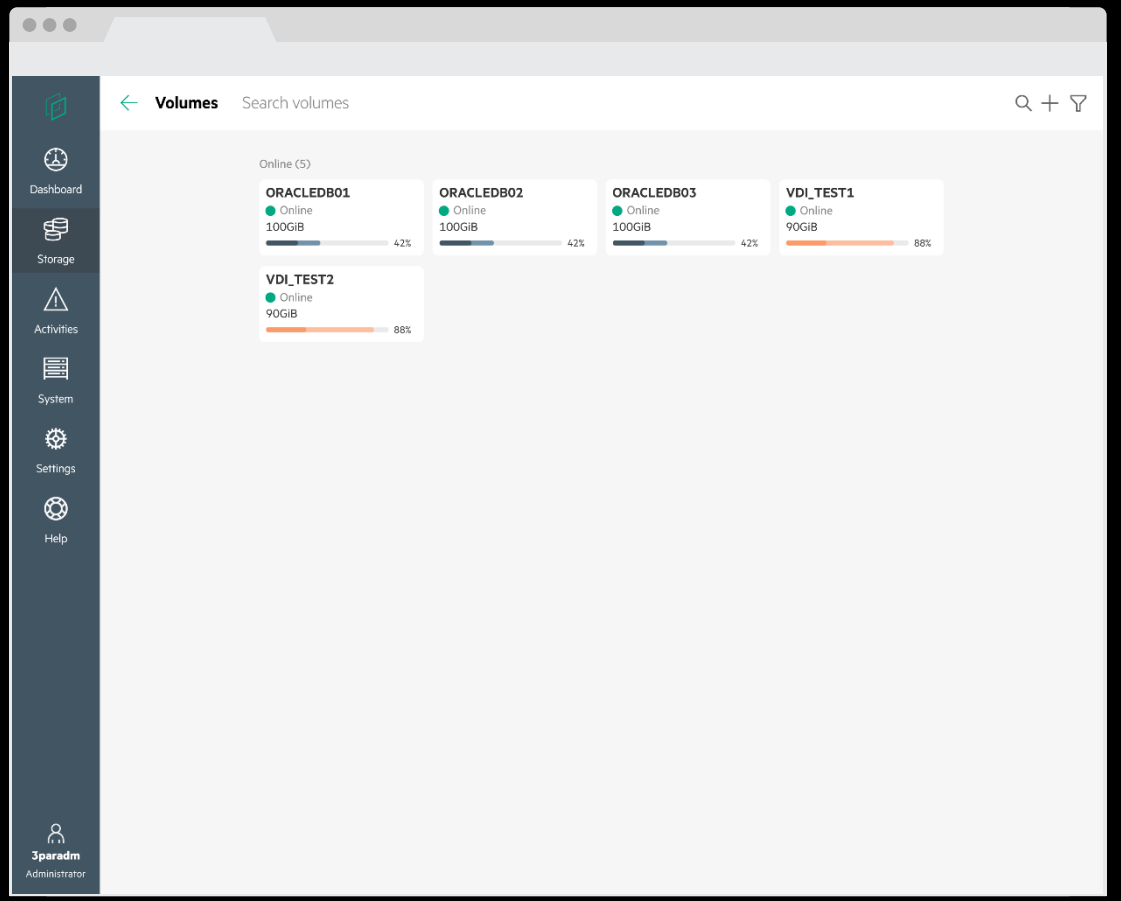

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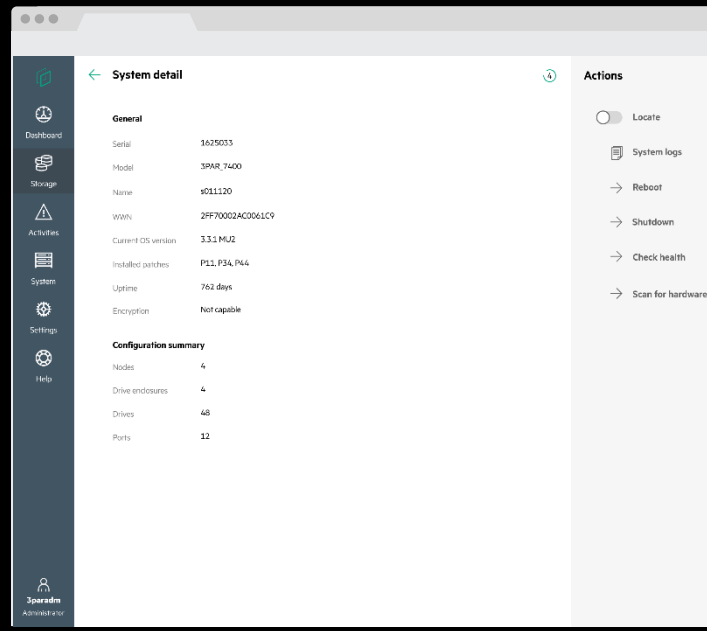

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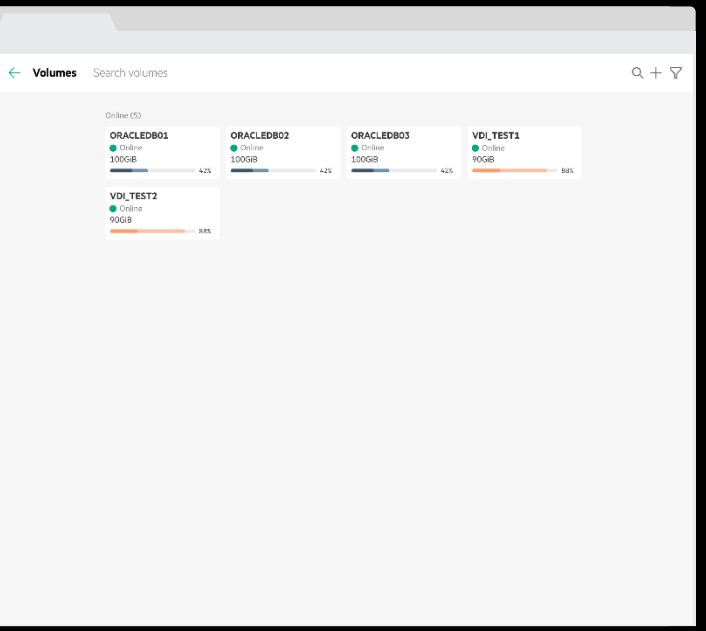
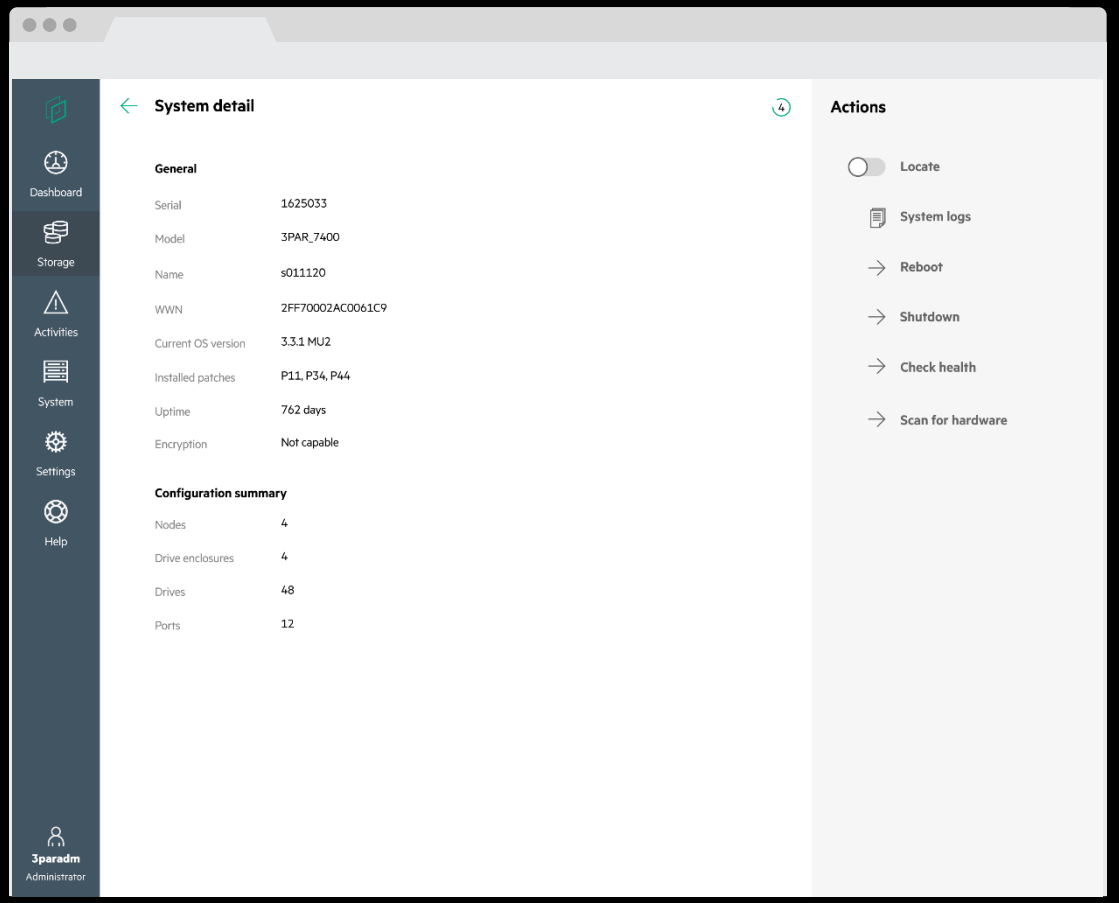
ON-ARRAY MANAGEMENT

RADICAL SIMPLICITY

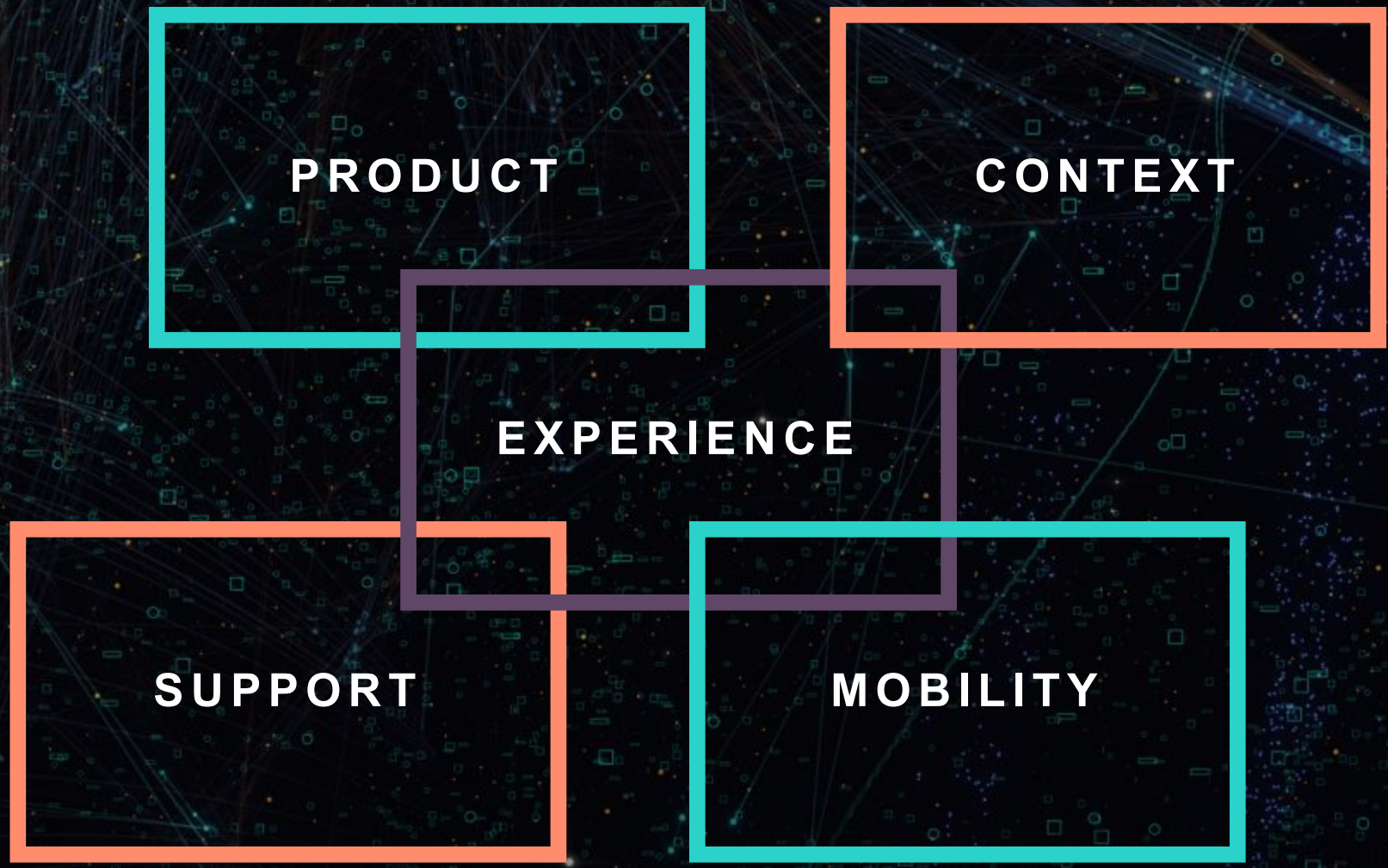
SYSTEM

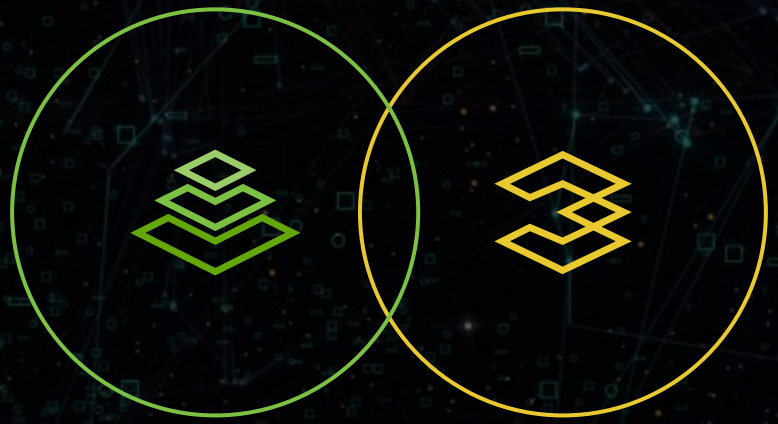
VOLUMES





DELIGHTING CUSTOMERS





FOLLOWTHEWORKLOAD