

Virtual Storage Platform One BLOCK

# Compact Simple Sustainable Safe

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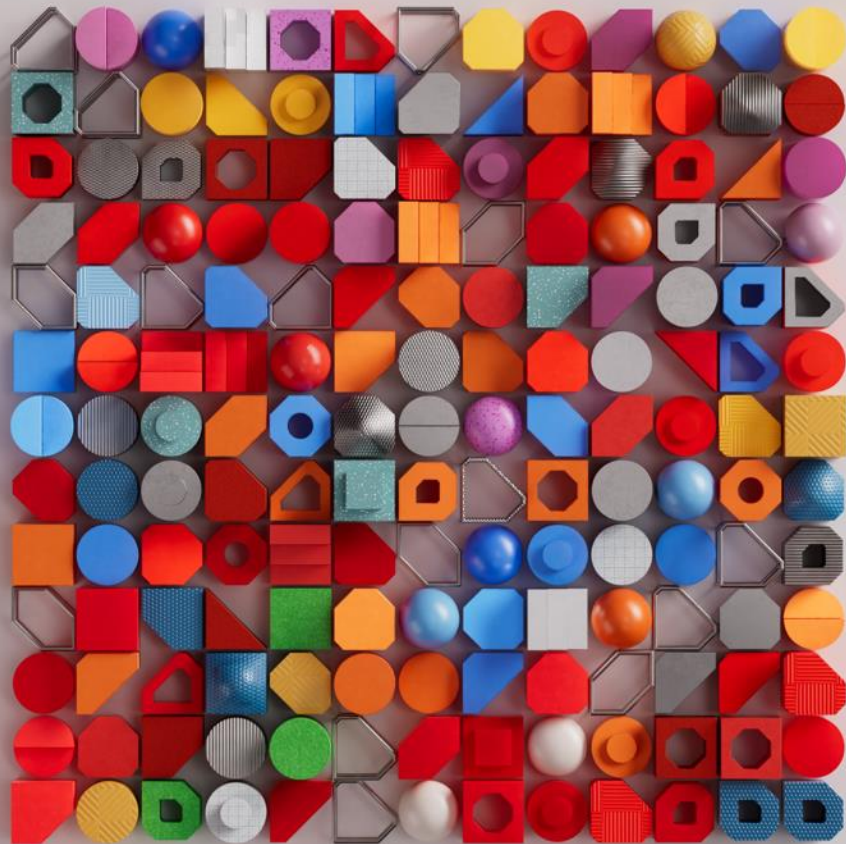
PosAm TechDays, 17.10.2024



*Virtual Storage Platform One*

# Achieve Total Data Freedom

- Consume the right solution at the right time.
- Enable siloed solutions to interact with each other.
- Govern one platform while applications manage it.





Block



File



Object



SDS

S  
V  
O  
S  
  
D  
N  
A

Modern  
Storage  
Assurance

Effective  
Capacity  
Guarantee

100% Data  
Availability  
Guarantee

### Clear Sight

Fleet management  
in the cloud

### Ops Center

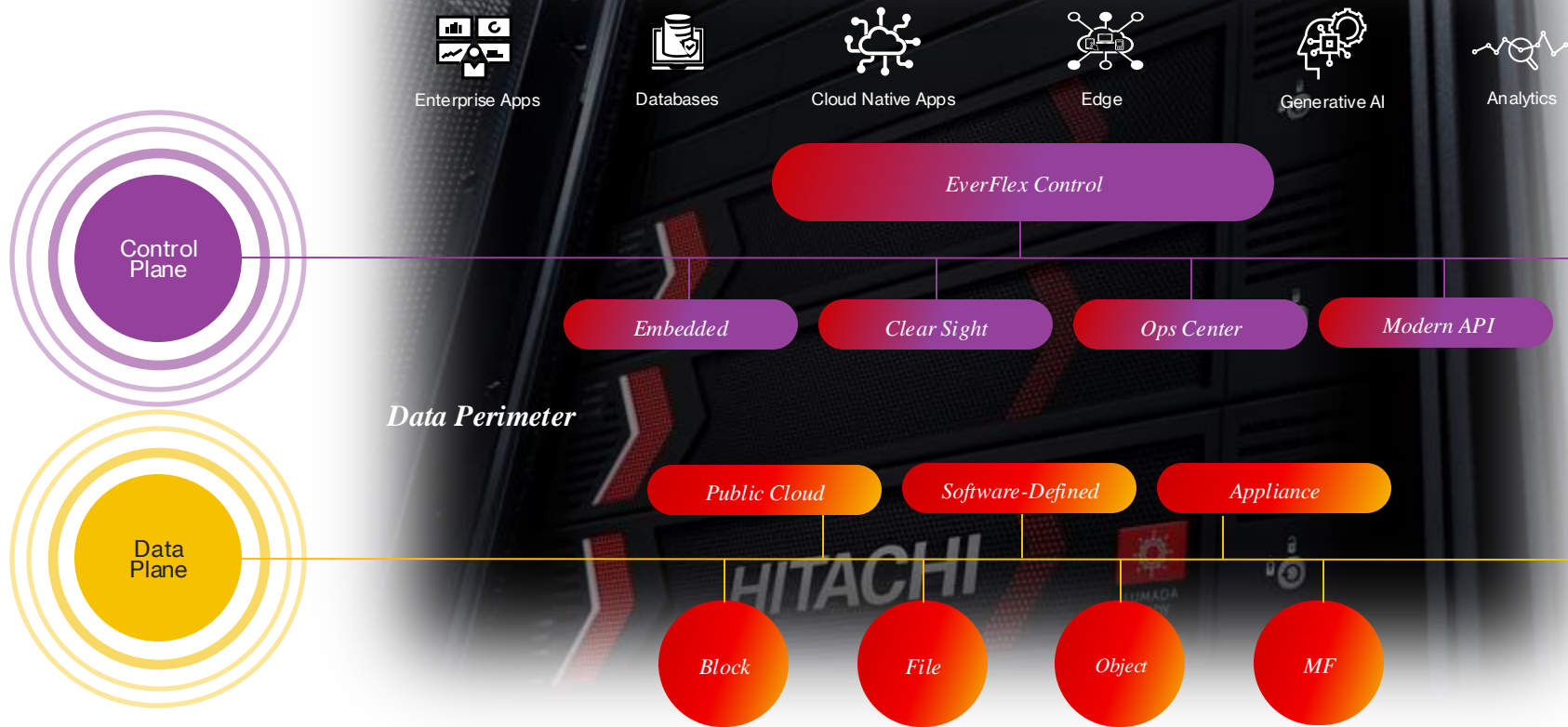
Fully featured  
AIOps management  
software suite

### EverFlex

As-a-service for  
infrastructure  
consumption

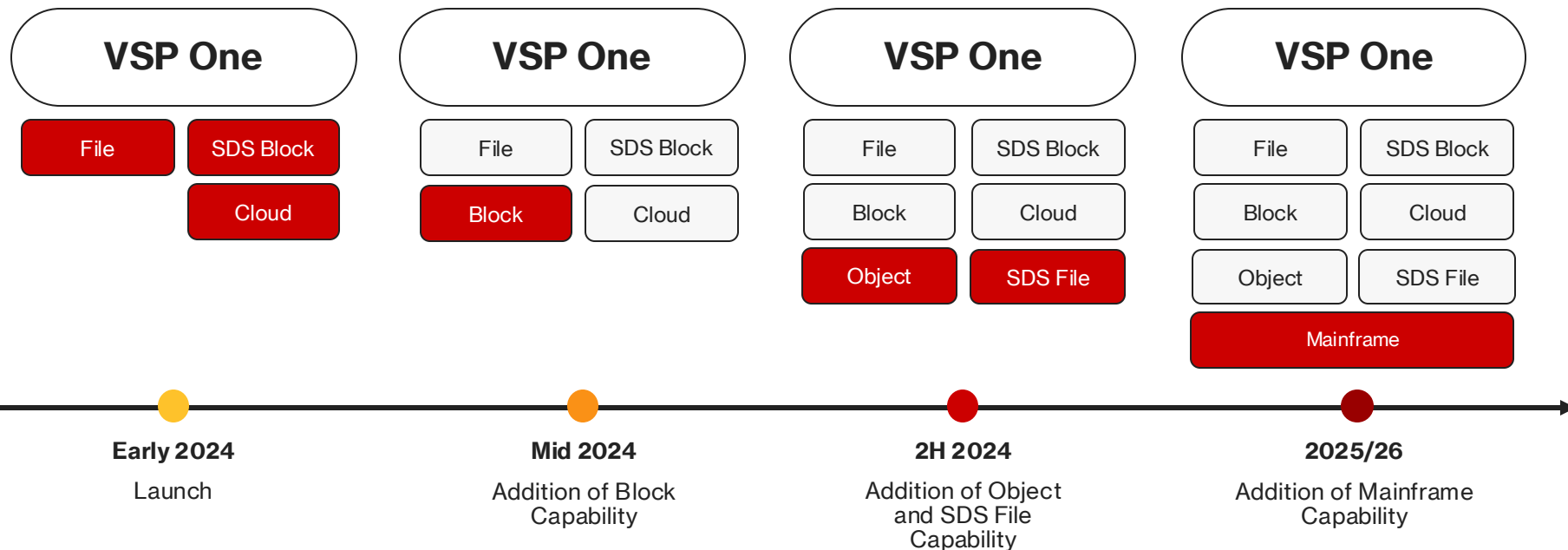


# Virtual Storage Platform One Ecosystem



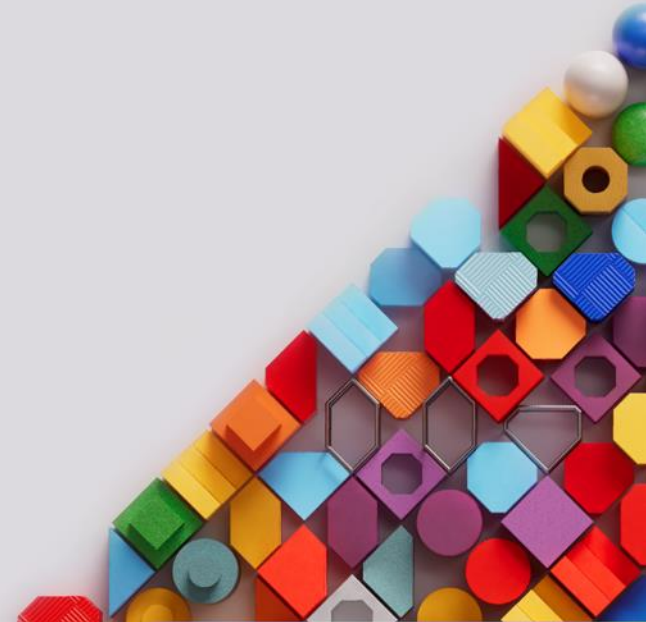
# Evolution of Capability

## Virtual Storage Platform One Community



*Virtual Storage Platform One B24/26/28*

# Block Storage Appliance



# Virtual Storage Platform One

## Block Storage Appliance

# Get the Statistics...

2U  
Controller  
with 24  
drives

All NVMe  
with up to 72  
drives

Add up to 2  
additional drive  
enclosures

NVMe-o-FC  
NVMe-o-TCP  
iSCSI & upto  
64GB FC

32 host  
ports in 2U

Up to 1.8PBe  
in 2U &  
10.5PBe  
possible

# Product Overview

## • 3 New models - 2U NVMe AFA flash system

- Latest Intel Xeon Gen 4 (Sapphire Rapids) processor with PCIe Gen4
- New, always-on Compression Acceleration Engine<sup>1</sup> & Algorithm
- End-to-end NVMe with 100G NVMe TCP and 64G FC-NVMe
- Increased NVMe drive scalability to 72 drives and faster Gen 4 drives
- Dynamic Drive Protection (DDP) equivalent to RAID6 levels of data protection
- Increased front-end IO slots (up to 32 ports FC)
- QLC Media Support<sup>2</sup> Ready

## • Improved Ease of Use and Capabilities

- Embedded GUI (VSP One Block Administrator) and Virtual Storage Scale Out enhancements
- Thin Image Advanced Data and Ransomware Protection with Safe Snap
- Replication to VSP One in the Cloud<sup>3</sup>

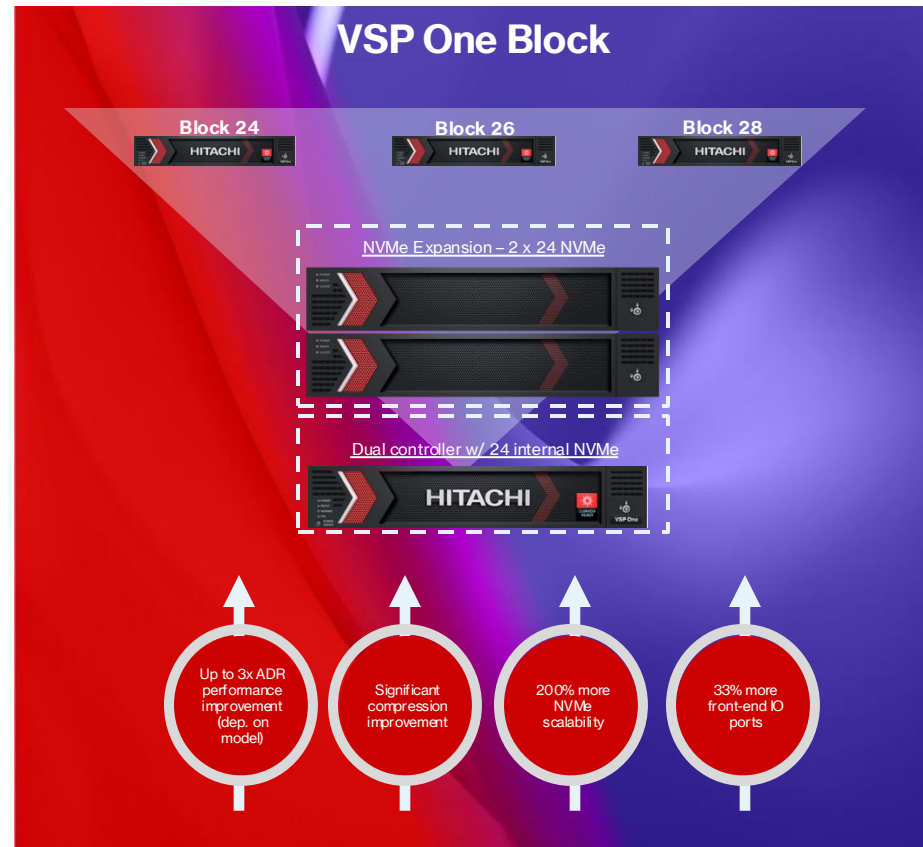
## • Lower Total Cost of Ownership

- Supports self-install
- Extended maintenance
- Hitachi Modern Storage Assurance program from VSP E790/E590 and to next-generation

<sup>1</sup> HW accelerator available on Block 28 and Block 26

<sup>2</sup> Dual-port QLC planned, availability Q2FY25

<sup>3</sup> Availability TBD





# Hitachi Next Gen Technology

## Dynamic Drive Protection

- Distributed spare space and drive rebuild
- Single drive addition
- Slot efficiency

## Compression Accelerator

- 2<sup>nd</sup> Generation hardware offload
- FPGA with new compression algorithm
- Improved NQA data reduction ratio

## Thin Imaged Advanced

- Dramatic performance improvements
- Data reduction for snapshot data
- Ransomware protections with Safe Snap

## Connectivity

- 100Gb NVMe TCP SmartNIC
- 25Gb iSCSI
- 64G & 32G FC
- NVMe gen4 drive expansion

## Management Improvements

- Block Administrator with KMIP
- Hardware Root of Trust
- Clear Sight
- Ops Center

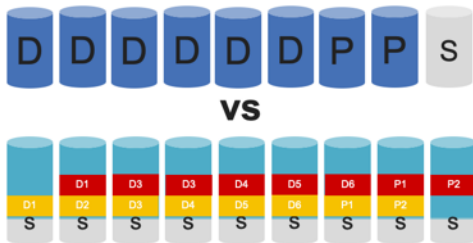
## Sustainability

- Dynamic Carbon Reduction
- Platinum power supplies
- Energy Star
- CFP certified

# Dynamic Drive Protection (DDP)

## What's New

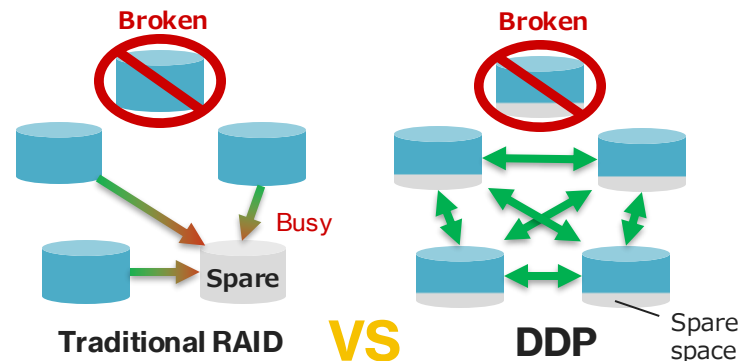
- Up to x3 times faster RAID rebuild time with DDP\*
- Efficient investment is possible by adding one drive at a time.
- Reduce maintenance and recovery time in the event of drive failure and improve reliability



## What is DDP

- Configure a DDP group with any number of devices, starting with a minimum of 9
- Distribute data and spares to each drive, no spare drive required
- Capacity can be added in units of 1 drive

## Drive Failure Behavior



- Spread rebuilds across multiple drives to reduce rebuild time and recover faster
- Distributes I/O across multiple drives in the event of a drive failure, providing stable performance

\* VSP E790 (Traditional RAID : 24 drives) vs VSP One Block28 (DDP : 24 Drives)

# Eco friendly

## Power Saving

Reduce environmental impact and running cost

- Smart power saving for HW components (FAN, CPU) according to environment temperature and IO traffic



FAN  
Fine Control



CPU  
Power Saving



Power Consumption  
Up to **-17%**



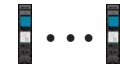
## Configuration Flexibility

Make less materials (drives) for needed storage capacity

- Expand system capacity flexibly with one-drive increase
- Better Compression & Dedupe also means you need less



Dynamic Data Protection  
(DDP)



Add 1 Drive



## High Efficiency

Minimize footprint by higher efficiency than competitors

- Consolidate storage system by more than twice efficiency to competitors



Performance Efficiency  
[IOPS/W]

x **2.7**



Capacity Efficiency  
[TB/U]

x **2.2**



Power Efficiency  
[W/TB]

x **2.0**

# VSP Sustainability Leadership

Energy  
Star



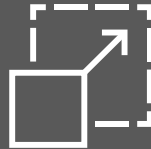
Ranked  
**number #1** for  
IOPS per  
WATT

Carbon  
Footprint of  
Products



The only vendor  
with entire  
circular  
economics  
measured

Automated  
Compression  
Switching



Switch between  
in line and post  
process on the  
fly

Dynamic Carbon  
Reduction



Automatically  
lower power  
consumption  
on the fly

Modern Storage  
Assurance



Controller  
upgrades while  
extending  
media life

Patented

Patented

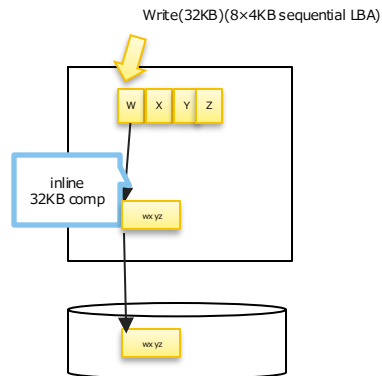
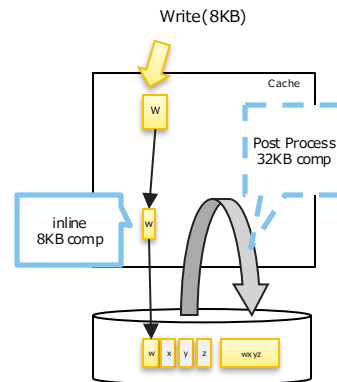
Patented

*38% Less CO2 Compared to Any Vendor*

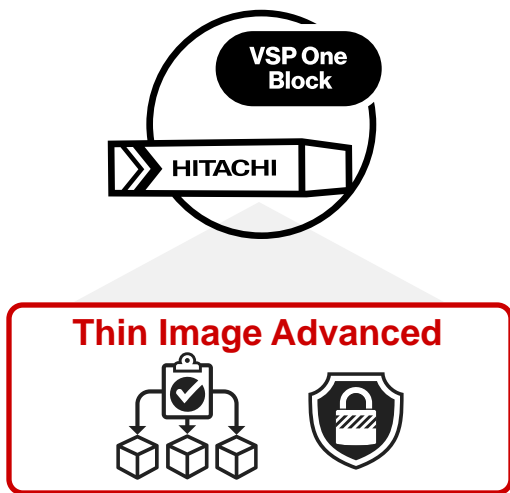
# Hardware Compression Accelerator

- Compression Accelerator Module (CAM) is new hardware with new compression algorithm operating on up to 32K at a time
- Available on Block 28 and Block 26
  - 4 x CAM on Block 28
  - 2 x CAM on Block 26
- Significant improvement in compression attainment and performance particularly large block workloads

| Model                   | Compression algorithm   | ADR Ratio |
|-------------------------|-------------------------|-----------|
| VSP E 790               | ADR software            | 2.51:1    |
| VSP E 1090              | ACLF (FMD)              | 2.62:1    |
| VSP One Block 28 and 26 | ACLB (Updated hardware) | 4.19:1    |



# Built-in Ransomware Protection & Fast Recovery



## Safe Snap (New in VSP One Block!)

- Snapshot protection feature for floating device and SVOL mapped floating device
- **Immutable and cannot be deleted until retention period has expired**
- Use case – ransomware protection

01

## Improve Backup Operations

*Copy data without affecting production applications and create point-in-time data snapshots for backup*

02

## Ensure Business Continuity

*Reduce recovery time with immediate restores from point-in-time data snapshot copies*

03

## Data Protection Efficiency

*Enhance data protection operations with always-available copies of production data*

04

## Reduce OPEX Costs

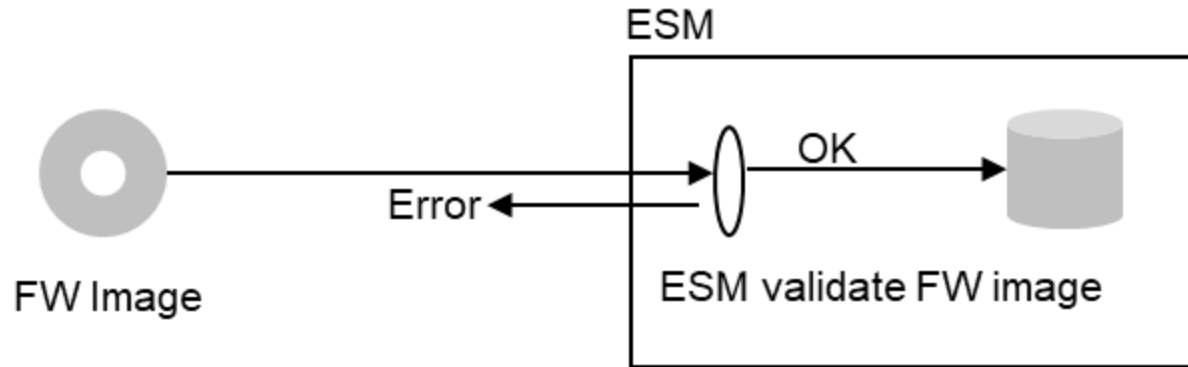
*Maximize disk utilization by storing only reduced, changed data blocks (up to 90% reduction!)*

# Encryption on by default

- **Some customers have specific data sanitization requirements which are not debatable**
  - Comply and move on
- **Many customers do not plan ahead, then reactively find a solution at the time of disposal**
  - Volume Shredder is not effective for flash media
  - Third party sanitization before disposal is expensive, intrusive and time consuming
  - Encryption before disposal is time consuming and wastes all the benefits of having data encrypted during the lifecycle
  - Drive retention is done proactively but it is expensive and prevents analysis of failed drives
- **Proactive encryption is the best sanitization option for most customers**
  - We plan to ship all systems with encryption enabled to provide a better out of box experience
  - Customers who don't want encryption can reformat on site or disable encrypted build via configurator
  - Customers who want to use a Key Management Server to:
    - To backup the encryption key do not need to re-encrypt
    - To create the encryption keys will need to re-encrypt, but this is no more work than starting with an unencrypted system

# Secure firmware update

- VSP One B20 ESM supports below secure boot features.
  - Secure Firmware Update
    - ESM FW uses digital signature to verify the integrity and authenticity of all firmware images when ESM download firmware





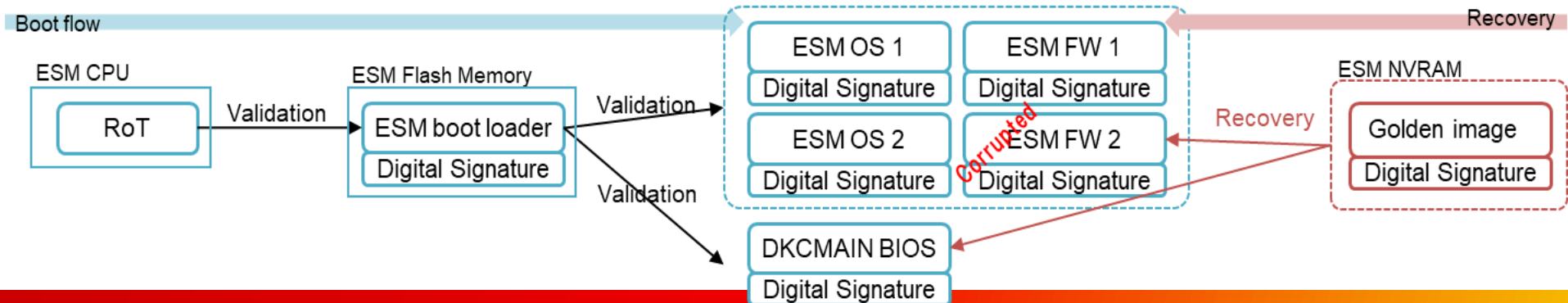
# Secure Boot (Root of trust)

## ■ Secure boot

- In general, **secure boot detects firmware corruption and prevents the booting of corrupted firmware.**
- The firmware targeted for this secure boot includes the ESM boot loader, ESM OS, ESM FW, and DKCMAIN BIOS.
- ESM secure boot
  - When the ESM CPU is turned on, the Root of Trust (RoT) validates the ESM boot loader. Then, the validated ESM boot loader verifies ESM OS and ESM FW.
  - ESM OS and ESM FW have 2 images for redundancy. The validated ESM boot loader verifies both images.
- DKCMAIN BIOS secure boot
  - The validated ESM boot loader verifies the DKCMAIN BIOS.

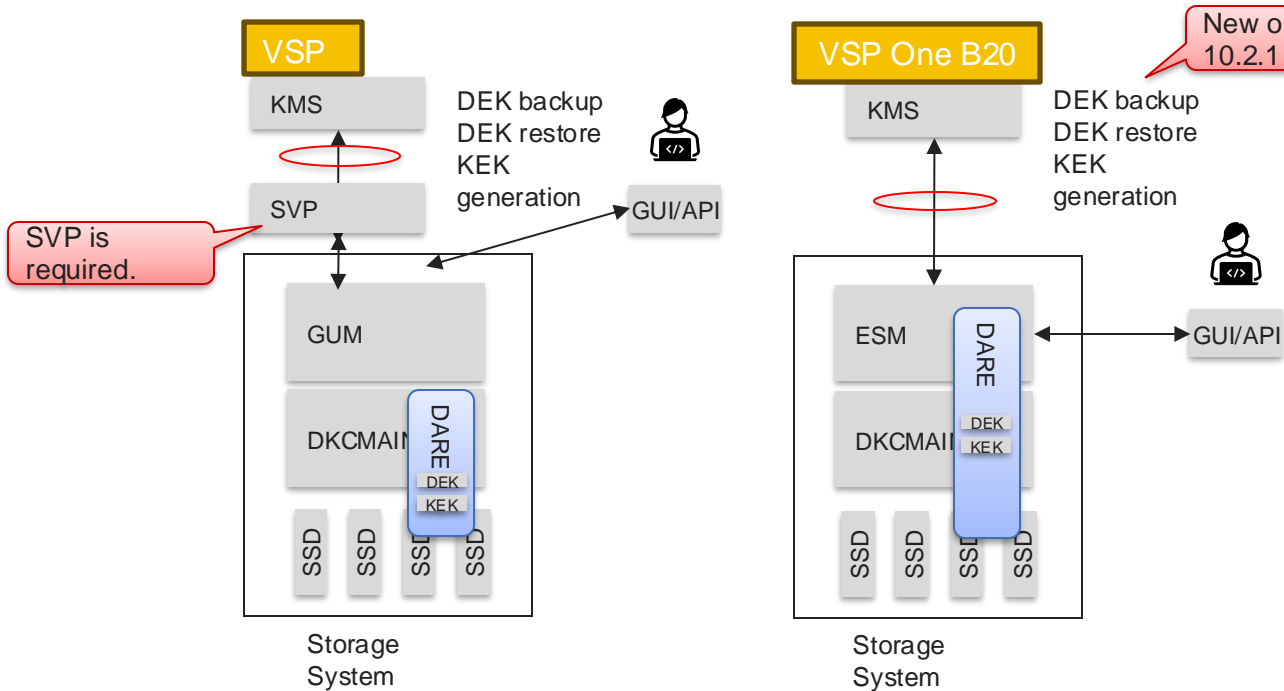
## ■ Firmware recovery

- When the ESM boot loader detects FW corruption, **ESM will restore the firmware image from golden image after booting with redundant normal FW. The golden image also has a digital signature.**



# KMIP Support

- Added capability to manage encryption keys with Key Management Server (KMS) **without SVP**.



## Key differences

- KMIP configuration is allowed only through APIs. GUI will be supported in upcoming releases.
- 2 python scripts will be provided to perform the initial setup.
  - Initial Setup script
  - Reset settings script

# Unbreakable Core

*Extend trusted guarantees across the entire data plane*

## Modern Storage Assurance

Future-proof VSP One solution technology without data migrations.

## 100% Data Availability Guarantee

Meet service level agreements with continuous access to VSP One data. Guaranteed.

## Effective Capacity Guarantee

Lower storage costs by increasing capacity while protecting performance.

*Coming Soon : Cyber Resiliency Guarantee*

# Coming soon

## *60TB NVMe SSD (TLC)*

- Higher density SSD to increase max. capacity of the system

## *Dynamic Drive Protection (DDP)*

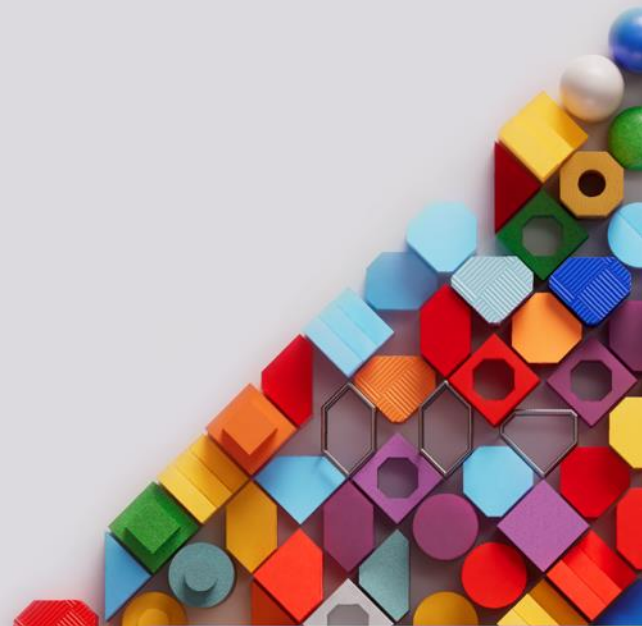
- Single drive addition
- > 32 drives per group

## *QLC drive support*

- Dual-port 30TB QLC
- Capacity optimized NAND memory option to deliver a lower per-terabyte cost closer to that of HDD's.

*Virtual Storage Platform One*

# Deployment & Licensing



# Licensing

| Appliance Software Licenses           | ALL INCLUSIVE APPLIANCE | ESSENTIALS APPLIANCE |
|---------------------------------------|-------------------------|----------------------|
| SVOS RF                               | X                       | X                    |
| Local Replication                     | X                       | X                    |
| Ops Center Administrator              | X                       | X                    |
| Ops Center Analyzer                   | X                       | X                    |
| Ops Center Automator                  | X                       | X                    |
| Ops Center Predictive Analytics       | X                       | X                    |
| Ops Center Protector (Full Function*) | X                       | X                    |
| Ops Center Clear Sight                | X                       | X                    |
| Data Mobility                         | X                       | X                    |
| Universal Vol Manager                 | X                       | X                    |
| Remote Data Protection                | X                       |                      |
| Global Active Device                  | X                       |                      |

## External Node and 3<sup>rd</sup> Party Licenses

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Ops Center Automator (Direct, Proxy nodes)

Ops Center Analytics (3<sup>rd</sup> Party, Nodes)

Ops Center Analyzer Viewpoint

External Storage Optimization

# Current Midrange Portfolio Positioning

| Platform             | Application/Use case   | Workload/Characteristics   |
|----------------------|--|--|
| <b>VSP One Block</b> | <ul style="list-style-type: none"> <li>• Tier 1 databases (Oracle/SQL)</li> <li>• Tier 1 virtual machines datastore</li> <li>• Large scale virtual desktop infrastructure</li> <li>• Test and development environment (high performance on Flash)</li> <li>• SAP HANA</li> <li>• Epic (electronic health records system)</li> </ul>                          | <ul style="list-style-type: none"> <li>• Transactional workloads (real-time, low-latency, random IO)</li> <li>• ERP (low-latency, high throughput, mixed read/write)</li> <li>• CRM (read intensive, mixed block sizes)</li> <li>• E-commerce (real-time, low-latency)</li> <li>• BI (large database, complex/adhoc queries, millions of records)</li> <li>• VDI (small block 4k, write-intensive, susceptible to boot storm)</li> <li>• Email (large block, balanced sequential/random)</li> </ul>    |
| <b>VSP E Series</b>  | <ul style="list-style-type: none"> <li>• Tier 2 databases (Oracle/SQL)</li> <li>• Tier 2 virtual machines datastore and boot disks</li> <li>• General purpose virtual desktop infrastructure</li> <li>• Test and development environment (low cost on HDD)</li> <li>• Containers</li> <li>• Backup target</li> <li>• Archiving target (incl. HCP)</li> </ul> | <ul style="list-style-type: none"> <li>• Business processing (real-time or batch processing)</li> <li>• Data warehouse (requires high IO bandwidth)</li> <li>• Data Mart (batch, bulk, sequential, parallel processing)</li> <li>• DevOps (multiple, up to date copies, scale quickly, cost effective)</li> <li>• End user support (mixed block sizes)</li> <li>• Data backup/restore (sequential write, large block 256k)</li> <li>• Disaster recovery</li> <li>• Archives (e.g. database)</li> </ul> |
| <b>VSP G/F</b>       | <ul style="list-style-type: none"> <li>• Remote office apps and data store</li> <li>• Backup target</li> <li>• Archiving target (incl. HCP)</li> </ul>   | <ul style="list-style-type: none"> <li>• Data backup, restore (sequential write, large block 256k)</li> <li>• Disaster recovery</li> <li>• Archives (e.g. database)</li> </ul>   |

# Virtual Storage Platform: Enterprise Storage for Everyone

## Unbreakable for Over 20 Years

### **Fastest**

- World's fastest enterprise array
- 33M IOPS
- As low as 39us latency

### **Scalable**

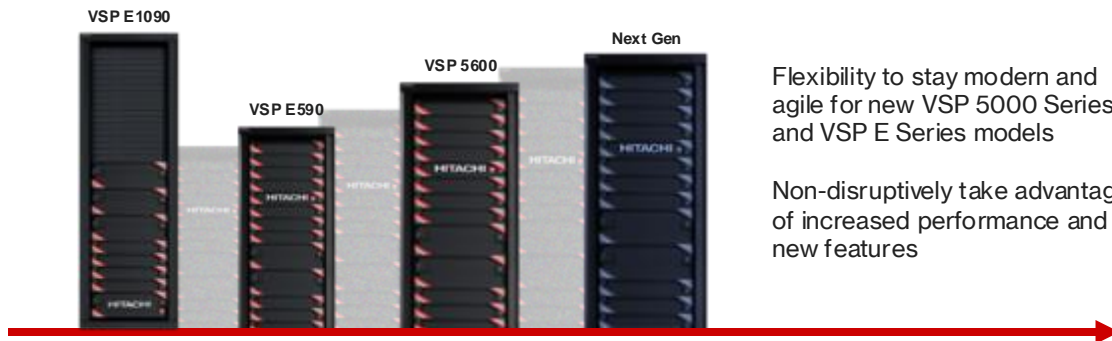
- Start small 2 controllers
- Scale massive 12 controllers
- Scale to 69PB

### **Flexible**

- NVMe lowest latency
- SSD best price/performance
- HDD best \$/GB

### **Resilient**

- Eight 9s availability
- 100X more reliable than competitors
- 100% data availability



Flexibility to stay modern and agile for new VSP 5000 Series and VSP E Series models

Non-disruptively take advantage of increased performance and new features

- Leader in Gartner MQ – primary storage
- 9/10 Top Banks and manufacturers and 10/10 top insurers and telcos trust Hitachi Vantara
- Leader in sustainability by core design in storage infrastructure
- Modern Storage Assurance extends infra life without disruption

*The Fastest and Most Resilient Storage Platform that 76% of the Fortune 500 Trust*



# Key Points to Remember

01

## Compact

*The all-flash NVMe design with always-on Adaptive Data Reduction (ADR) technology*

*Starts as a single, compact, 2U appliance with up to 1.8PBe and scales up and out to 65 systems – fast.*

02

## Simple

*All-inclusive Appliance*

*Automated storage operations using AI-enhanced software*

*Ops Center Clear Sight provides automated monitoring, predictive analysis, and fully observable cloud-based management*

*DDP for maximized storage efficiency and lower TCO*

03

## Sustainable

*ENERGY STAR and CFP certified*

*38% Less CO2 Compared to Any Vendor*

*Modern Storage Assurance upgrades controllers while extending media life*

04

## Safe

*Hardware Root of Trust - built in protection*

*Enhanced protection by integrating with snapshot ecosystems*

*Guaranteed Immutable snapshots with retention*

*100% Data Availability Warranty - Continuous data access for databases, applications, and users*

# *Follow Us*



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# Thank You