

Conquer the 2026 Hardware Crisis: VMware Cloud Foundation 9.1 Optimization Strategies

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The Enterprise Hardware Landscape Is in a Structural Supply Crisis

Rising Hardware Costs



Skyrocketing DRAM prices:

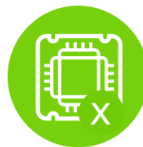
Standard DDR5 prices have more than doubled in 2025.



Sticker shock for servers:

Standard server components follow this trend due to component price inflation.

Widespread Server Shortage



Sold out inventory: Major suppliers report their capacity is effectively sold out through 2026.²



Structural shortage: Supply shortages expected to grow through 2027.²

Factors That Are Driving the Trend



Insatiable demand for AI infrastructure: Hyperscalers are rushing to build AI data centers and pre-purchasing entire years' worth of hardware capacity.



Pivot toward High Bandwidth Memory (HBM): Major manufacturers have converted DRAM production lines to build HBM for AI GPUs.



Few players in the DRAM market: 95% of the global supply is controlled by three players - Samsung, SK Hynix and Micron.



Data lake demand: Training modern AI models requires massive data lakes, which has caused a burn-through of Enterprise SSDs.



How VCF 9 helps Customers with the Hardware Crisis

Key messages to land with your
organizations

VCF 9 Helps Customers with Memory Cost and Server Supply Issues by Leveraging Existing Servers

- 1 Customers Can Adopt VCF 9 / vSAN 9 Using Their Existing Servers without the need of server refresh
- 2 VCF 9 NVMe Memory Tiering Reduces the Need to Buy More Memory, Reducing the Overall HW Costs
- 3 VCF 9 Delivers Better App Performance and Density to Maximize Hardware Utilization, Deferring New Server Purchases
- 4 vSAN in VCF 9 Delivers Expanded Flexibility and Choice to Maximize Resource Utilization

1

You Do Not Need to Wait for a Server Refresh to Adopt VCF 9.0

90%+
servers
qualified for
8.x are also
qualified for
9.x

- Certification with equivalency
- No recerts required for dot releases

vSphere
HCL and
vSAN HCL
are almost
the same

- 90% vSphere servers qualify for vSAN Ready Nodes
- Significant relaxation in HW requirements

Add NVMe
card to your
servers

- VCF 9.0 ready by just adding NVMe Memory
- As most servers will be vSphere and vSAN qualified

1

Customers Can Adopt VCF 9 / vSAN 9 Using Their Existing Servers

**Adopt VCF 9.x
using your
existing
servers**

Servers Support by type

8.X Certified

Cascade Lake-based

Sky Lake-based

VCF Support

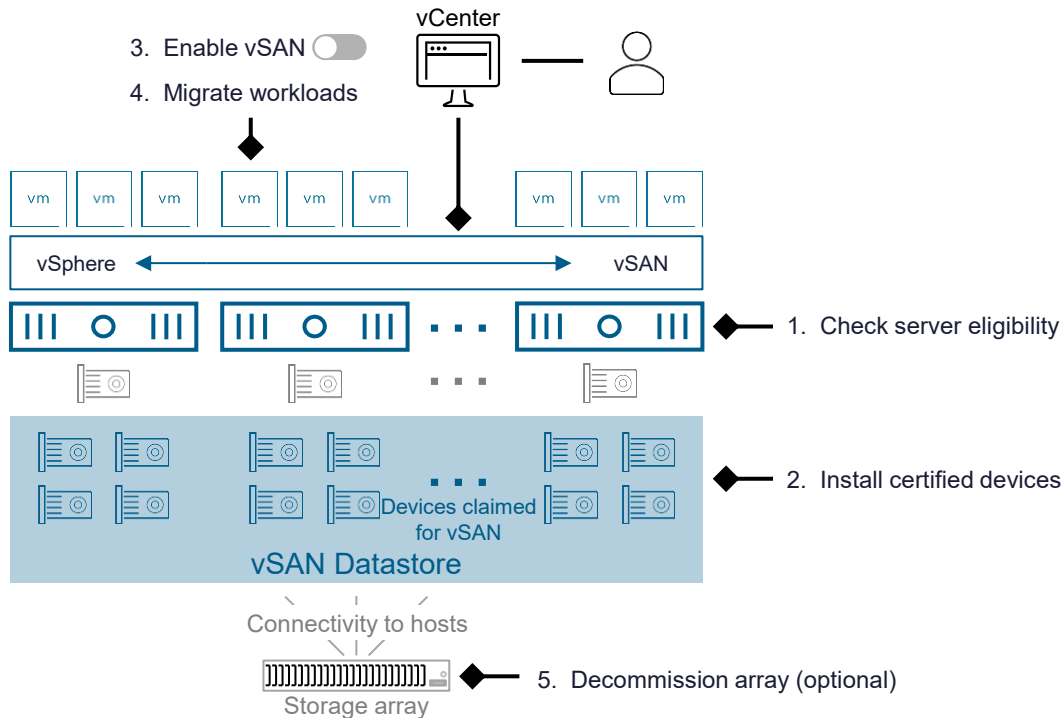
We support VCF 9.x on all 8.x certified platforms

Supported in VCF 9.x

Supported in VCF 9.x

Submit through this [RPQ form](#) if
any hardware is not in BCG

Repurposing Existing Servers for vSAN



Take advantage of your **existing vSAN storage entitlements** with your VCF

Retrofit eligible servers with as little as additional certified storage devices*

Extend life of existing servers during industry shortages of servers

Functionally equivalent to **vSAN ReadyNode** and **fully supported**

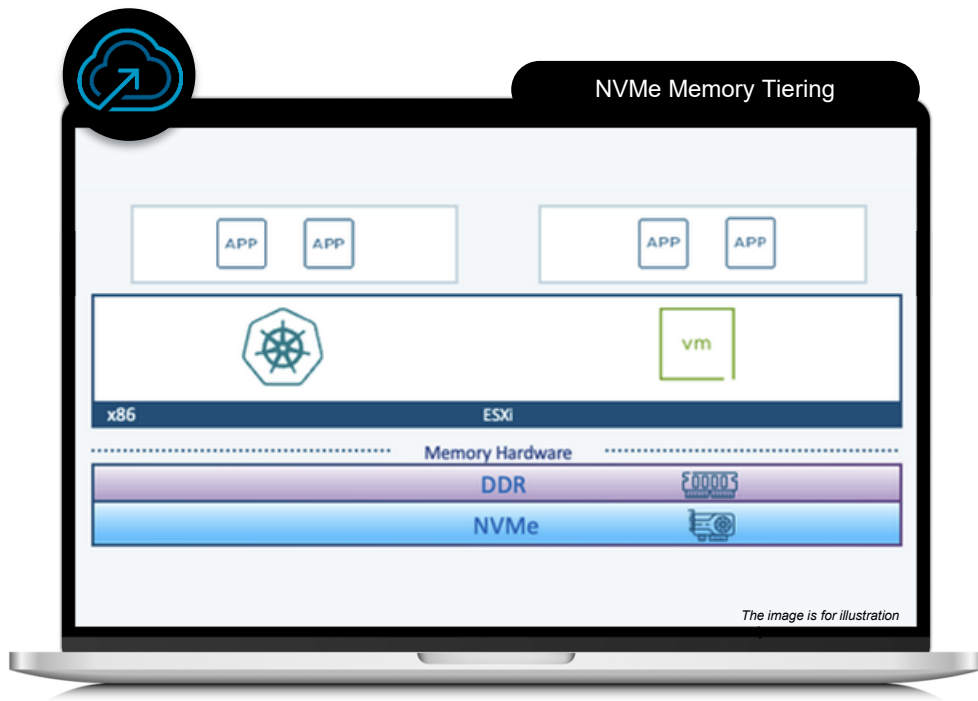
Old CPU Support: Intel Cascade Lake & SkyLake support is available

PSO Offering includes server eligibility assessment & migration planning

2

Leverage Memory Tiering to Drastically Reduce Your Cost

Unblock the CPU resources with low cost NVMe



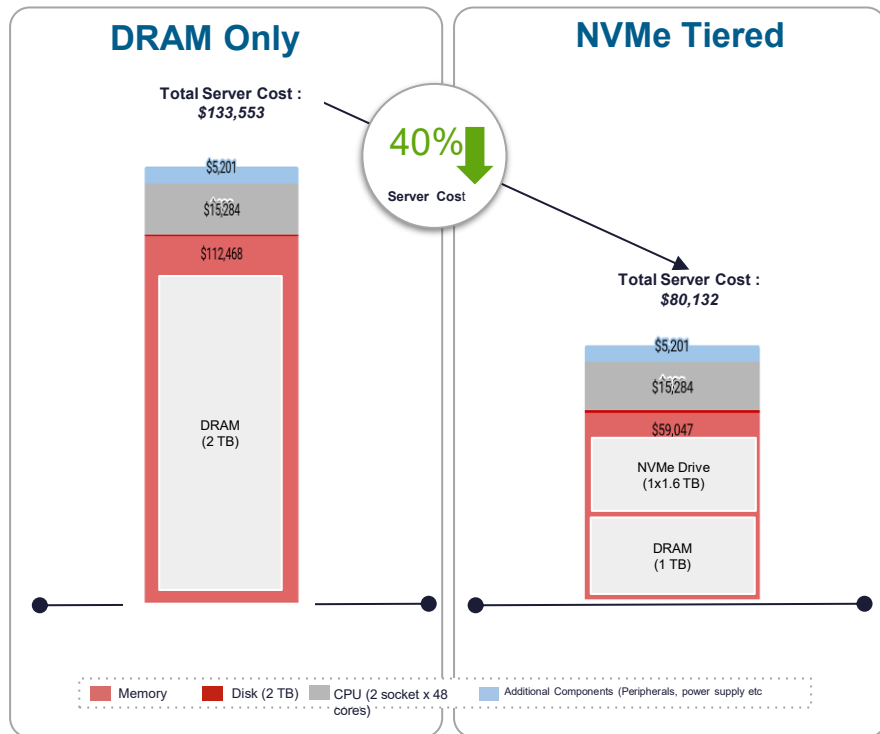
Reduce TCO by up to 40%

- Utilize NVMe as a second-tier memory to lower overall memory costs.
- Leverage existing server slots for NVMe devices, maximizing hardware investment.
- Larger available memory pool provides better VM consolidation.

2 Memory Tiering Business Benefit

Replace expensive DRAM scaling with cost-efficient NVMe memory tiering

Per-Host Hardware Cost Optimization



~40% Hardware savings

(Net new/Server Refresh)

- Shifting from a DRAM-only approach to a tiered memory architecture reduces per-host **costs** by **40%** while sustaining enterprise-grade performance
- High-cost DRAM is reduced and complemented with NVMe to deliver the required performance at a significantly lower hardware cost
- Supports future capacity growth without the linear cost increases associated with traditional DRAM scaling

Financial Impact at Scale

At a deployment of 100 hosts, this approach delivers up to \$5.34M in savings on hardware cost

Key Considerations/Assumptions

- Financial estimates derived from the PCMO tool
- Applies to suitable workloads such as databases, VDI, and modern application platforms. Latency-sensitive and mission-critical workloads remain fully in DRAM
- Savings reflect avoided DRAM expansion on memory-constrained hosts
- Pricing based on street price for Dell DDR5 RAM Module (16 × 64GB at \$3,628 per module)
- Core server components (CPU, base memory, peripherals) remain unchanged

VCF 9 Delivers Better Density and App Performance

Extend the Life of Your Existing Servers with VCF 9.0

Key Technologies

- NVMe memory tiering
- Advanced memory oversubscription
- CPU/NUMA scheduler optimizations
- NSX for compute density optimization
- vSAN dedupe and compression

Outcomes

Traditional Workloads:

Up to **1.5x**
higher VM
density¹

Modern Workloads:

Up to **80%**
higher
performance²

Maximizes utilization of your existing hardware to address procurement delays

Cut

HW
Requirement
or Price

- Cut RAM requirement by upto 67%
- Consider Cost-effective OEMs

Extend

life of existing
servers or HCI
systems

- Repurpose existing servers for vSAN without forcing a refresh
- 5.2.2 VxRail on VCF upgrade to 9.1

Maximize

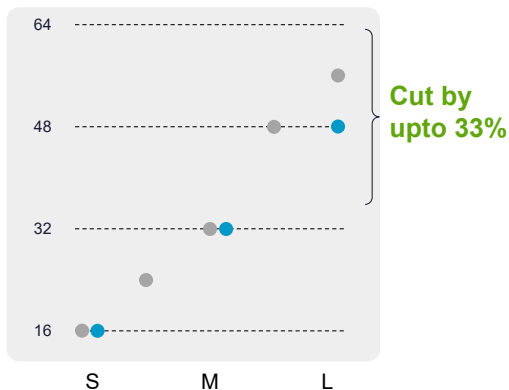
effective
storage from
raw

- Improved Dedupe & Compression in 9.1

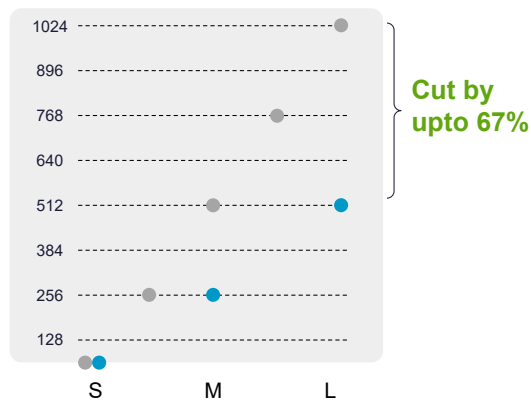
Upto 67%
RAM
Requirement
Cut

Old vs New ReadyNodes Guidance

CPU Cores per host



RAM per host (GB)



Recommendations:

- **128GB-256GB is good enough** for most workloads
- **24 - 48 cores per host** is what most strategic customers use
- **25GbE NIC** does the job fine, 100GbE NIC give best performance if you can get.
- Try to **align core count and capacity per host** to optimize license usage. i.e. 32 cores brings 32 TB vSAN capacity.

VCF 9 supports existing VxRail deployment

**\$0 CAPEX
with
extending
VxRail use
on VCF**



Greenfield-Only VxRail on VCF 9.0

- New model treats VxRail the same as vSAN ReadyNodes
- SDDC-Mgr. manages LCM of the full stack instead of VxRail Mgr.
- VxRail Mgr. only functions as HSM for HW upgrades



Delivered

Existing VCF on VxRail Can Upgrade to VCF 9.1

- Upgrade existing VCF on VxRail 5.2.2+ deployment to new VCF 9 model
- Removes old integration between VxRail & VCF and converts to new ReadyNode model

Roadmap

Existing VxRail HCI Can Convert to VCF 9.1.2

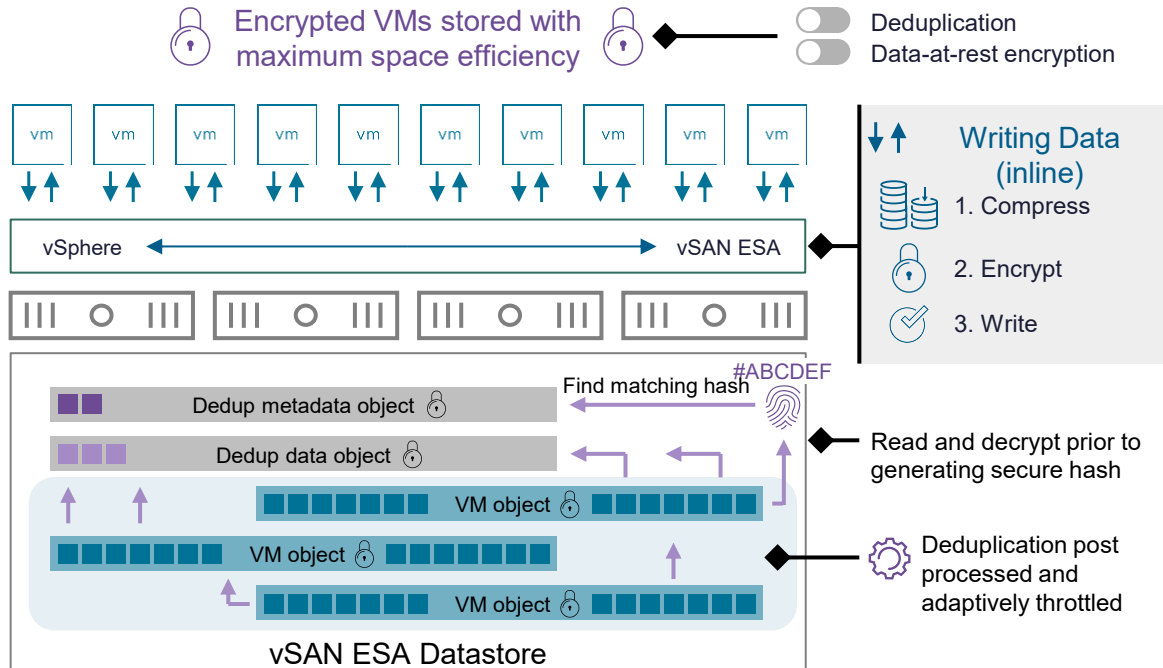
- Import/Convert non-VCF VxRail deployment to new model in VCF 9.1.2
- Dell PSO must first convert old VxRail deployment to the new model
- Standard VCF workflows are used for the Import/Convert
- Full support for Stretched cluster

Key Takeaways:

1. Existing VCF on VxRail (5.2.2 or plus) are able to upgrade to VCF 9.1 directly
2. vSAN ReadyNode BCG will publish supported VxRail models in 2-3 weeks.
3. Plan to support non-VCF VxRail deployment import/convert to VCF 9.1.2

vSAN Global Deduplication

Support of vSAN data-at-rest encryption with vSAN Global Deduplication



Fully Available - Easily enable using **cluster-based toggles**

Run **vSAN Data-at-Rest encryption** on clusters with **vSAN Global Deduplication**

Encrypt data **without any negative impact** on data reduction ratios offered by vSAN

New enhancements for **improved processing efficiency** and **durability** of deduplication

Deduplication now supports between 3 and 64 hosts

Maximize
effective
storage

Raw Capacity

384TB

(10 hosts,
38.4TB/Host)

Key Functions	Function Brief	Proportion to Raw	Multiplier
Data Reduction	Dedupe + Compression across data	2.8:1	2.8X
Failure Tolerance Level	2 Host Failures (4+2)	33%	0.67X
System overhead	Global metadata to run vSAN data path	10%	0.9X
Reserved capacity	Ops reserve, 1 host rebuild reserve	8% - 12%	0.9X
Effective Capacity vs. Raw (With Dedupe/compression)			1.5X
Effective Capacity vs. Raw (without dedupe/compression)			0.5X

Effective
Capacity

688 TB

Key Takeaway:

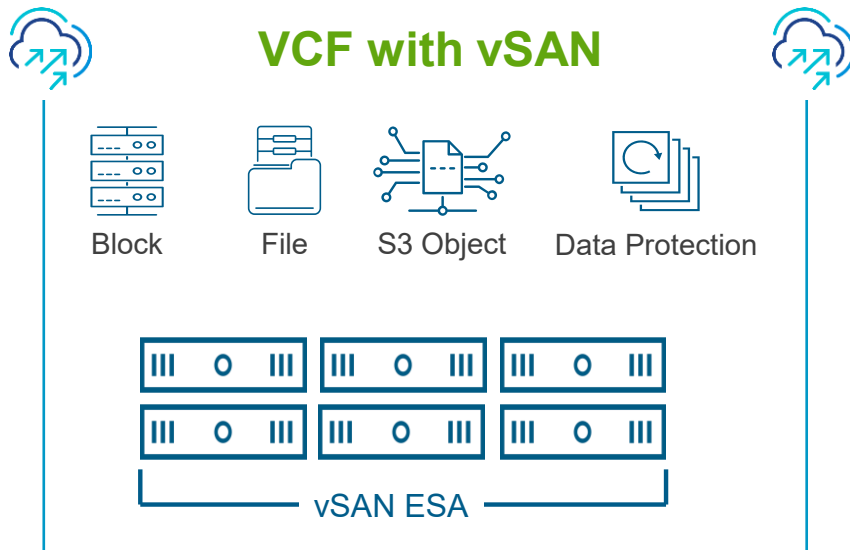
1. vSAN can deliver effective capacity 1.5X of raw capacity
2. Data reduction 2.8X is what we collected from telemetry in avg
3. Increase 70% to 80 - 90% as new "slack space". 70% is way too conservative (was mainly used for OSA guidance)

4

Competitive Advantage: Multi-Purpose, Unified Storage with vSAN

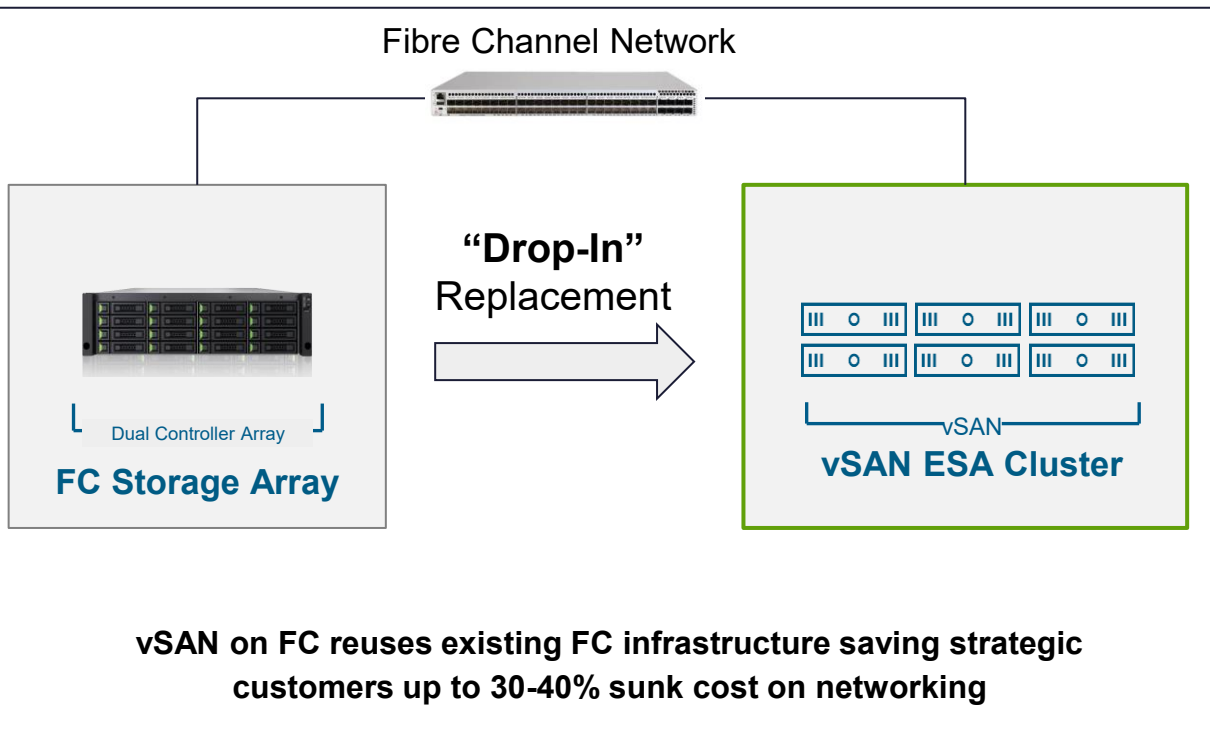


**4 Storage Solutions, 4 Vendors,
4 Renewals, 4X Complexities**



**4-in-1 Solution with Multi-Purpose Storage
Larger Deal, Longer Relationship**

Use vSAN with Your Existing Fibre Channel Network



Feature

- Software-defined scale-out vSAN on FC
- Customers can reuse existing FC infra
- Interop with any FC HBA or Switch

Benefits

- **70% higher performance & 30% lower TCO** than storage arrays on FC
- Save **30% sunk cost** by reusing existing **FC infrastructure**
- **Identical experience with flexible transport options:** Ethernet or FC
- Simplified storage mgmt: **No LUNs**
- **ESA-based snapshots & data services**
- **Unified Ops & Lifecycle Mgmt** on VCF

Increase Effective Capacity / Storage Efficiency Future

#	New Capability	Key Innovation in vSAN	Customer Benefits
1	Lower vSAN memory reservation	Optimize reserve memory required to run vSAN without impact to apps	• 10-20% less RAM used by vSAN, more workload consolidation
2	Wider Strip RAID	Enable wider stripe like 8+2 as cluster scales to 10+ nodes	• 20% more usable capacity than 4+2 RAID 6 in vSAN ESA 9.1
3	Compression with variable-block size	Optimize compression ratio with aligning with variable content block	• 15-20% more effective capacity than 9.1
4	QLC for production	Metadata coalescing to minimize write amplification wearout on low-endurance QLC	• Cut \$/TB by 20% vs. TLC SSD • Cut server cost by 30%-50%

YOUR FEEDBACK MATTERS

SHARE YOUR THOUGHTS.
SCAN THE QR CODE.



Thank you!



THANK
YOU!

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