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2025 Users Conference

Test and Supply Chain Orchestration

Marc Jacobs

December 4, 2025

This presentation and discussions resulting from it may include future product features or fixes, or the expected timing of future releases. This information is intended only to highlight areas of possible future development and current prioritizations. Nothing in this presentation or the discussions stemming from it are a commitment to any future release, new product features or fixes, or the timing of any releases. Actual future releases may or may not include these product features or fixes, and changes to any roadmap or timeline are at the sole discretion of PDF Solutions, Inc. and may be made without any requirement for updating. For information on current prioritizations and intended future features or fixes, contact sales@pdf.com.

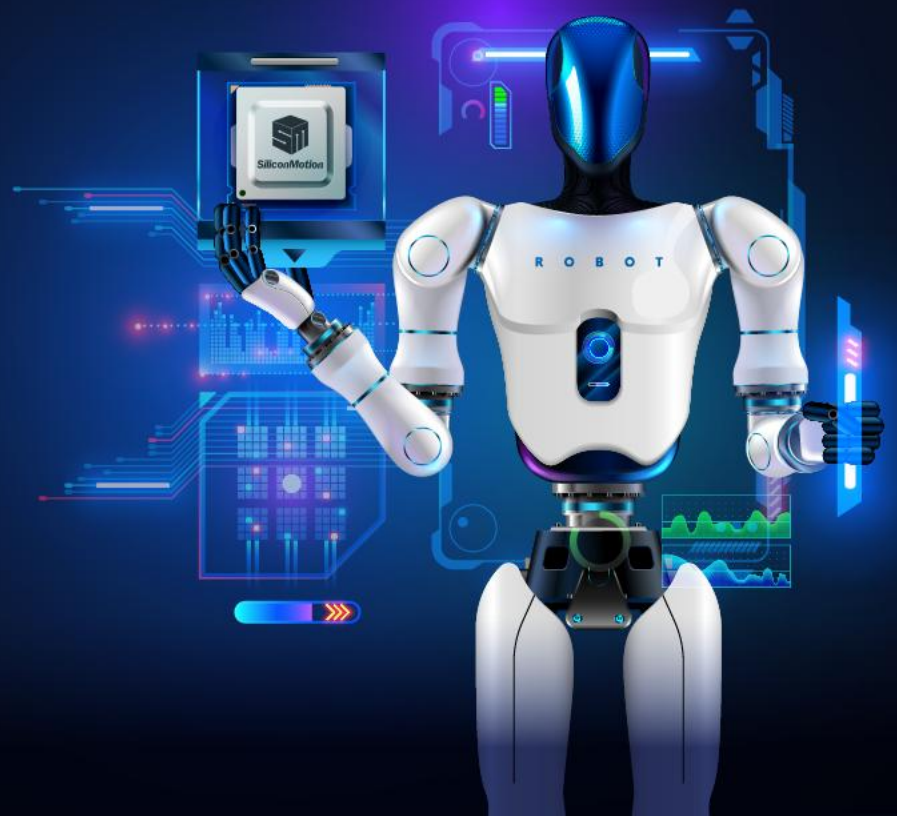
03.

SiliconMotion

Customer Presentation

From the Cloud to the Edge:

Silicon Motion AI Innovation X PDF Exensio Analytics



Silicon Motion Inc. (SMI)

VP of Manufacturing & Operation

Tao Cheng

New Era Storage Technology under AI

2021 Nov. ChatGPT

- Single modal data → Multi modal data
- LLM data: PB → EB
- Storage : Hot/Warm Storage (Low Latency, Concurrency)

2024 Jan. CES NVIDIA

- NVIDIA announced its Blackwell Ultra platform, which integrates BlueField-3 DPUs.
- To improve data transfer speeds.

2025 Jan. DeepSeek

- Training Dataset
- Checkpoints
- Storage : Tiered Storage (High Throughput, High Reliability)

2025 Mar. GTC AI Data Platform

- Compute Storage Convergence
- Storage Next : GPUDirect, 100M/200M IOPS

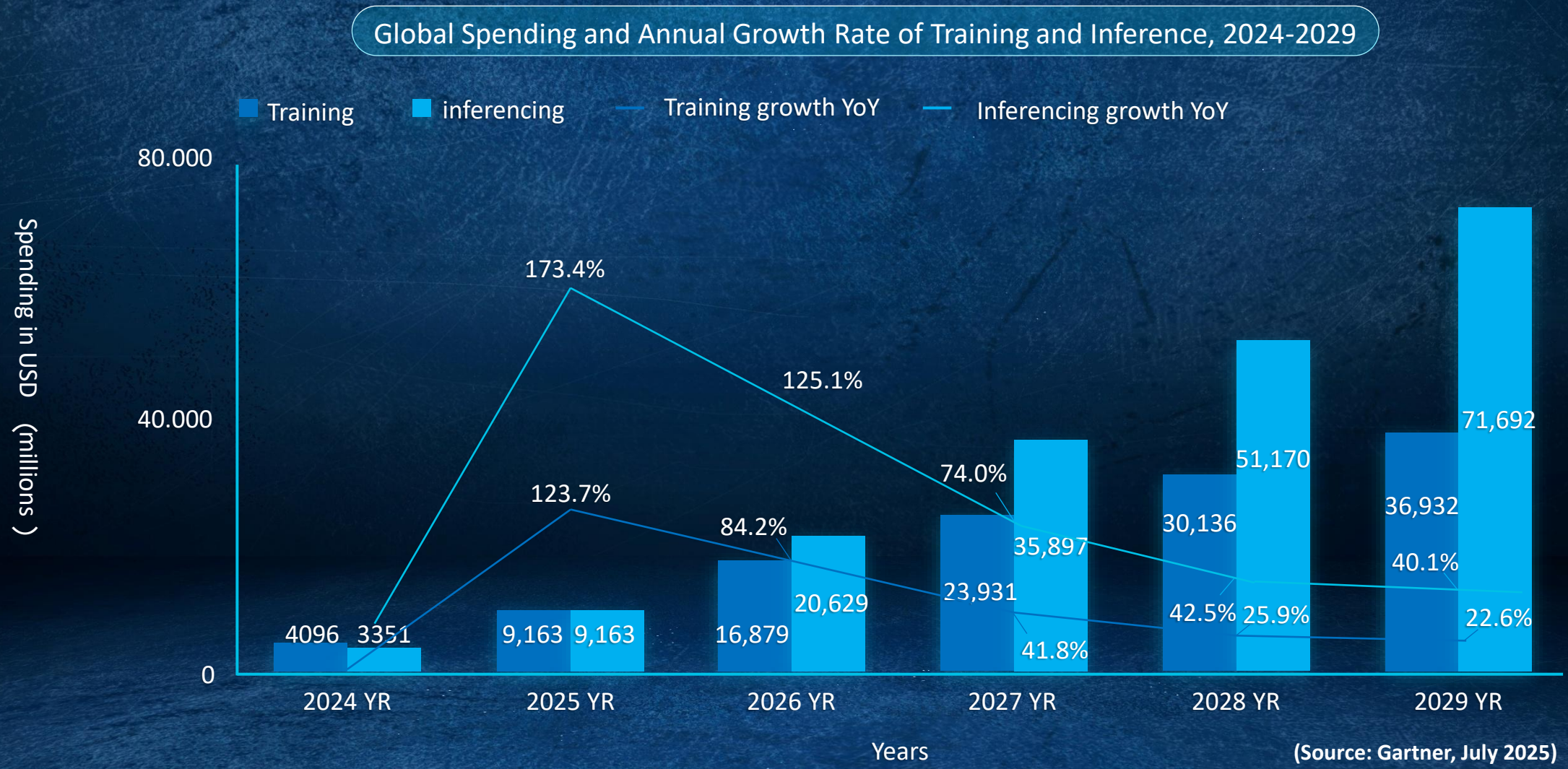
Intelligent Data Management

- Data : PB → EB → ZB
- AI Training → AI Inference
- Storage: Tiered → (Hot/Warm/Nearline/Cold) → Compute-storage Convergence → Processing-in-Storage

Compute

Compute + Storage

Inference will Take Lead for the AI Trend in 2026



(Source: Gartner, July 2025)

Inference AI Triggers Data Center HDD → SSD

- TrendForce news, Sept.-15., 2025.

TrendForce

Search market trends, insights...

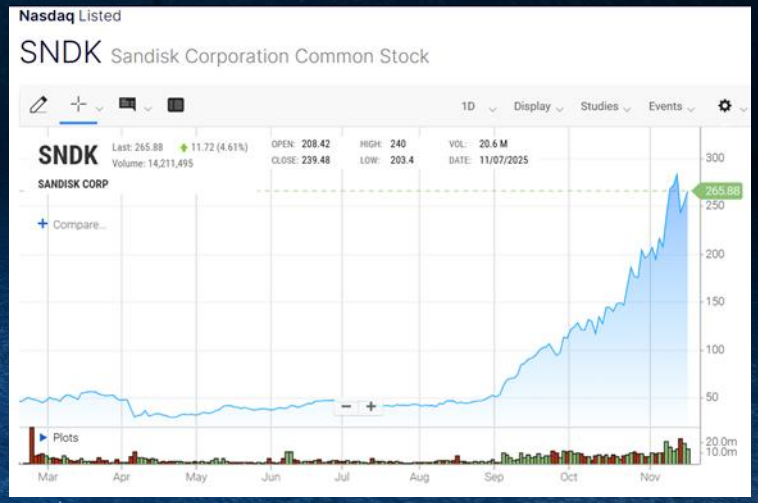
Research Report | Selected Topics | Membership | Price Trends | Press Center

Soaring Inference AI Demand Triggers Severe Nearline HDD Shortages; QLC SSD Shipments Poised for Breakout in 2026, Says TrendForce

15 September 2025 | Semiconductors | TrendForce

- HDD maker's stock price, YTD Nov.-18, 2025.

- SSD maker's stock price, YTD Nov.-18, 2025.

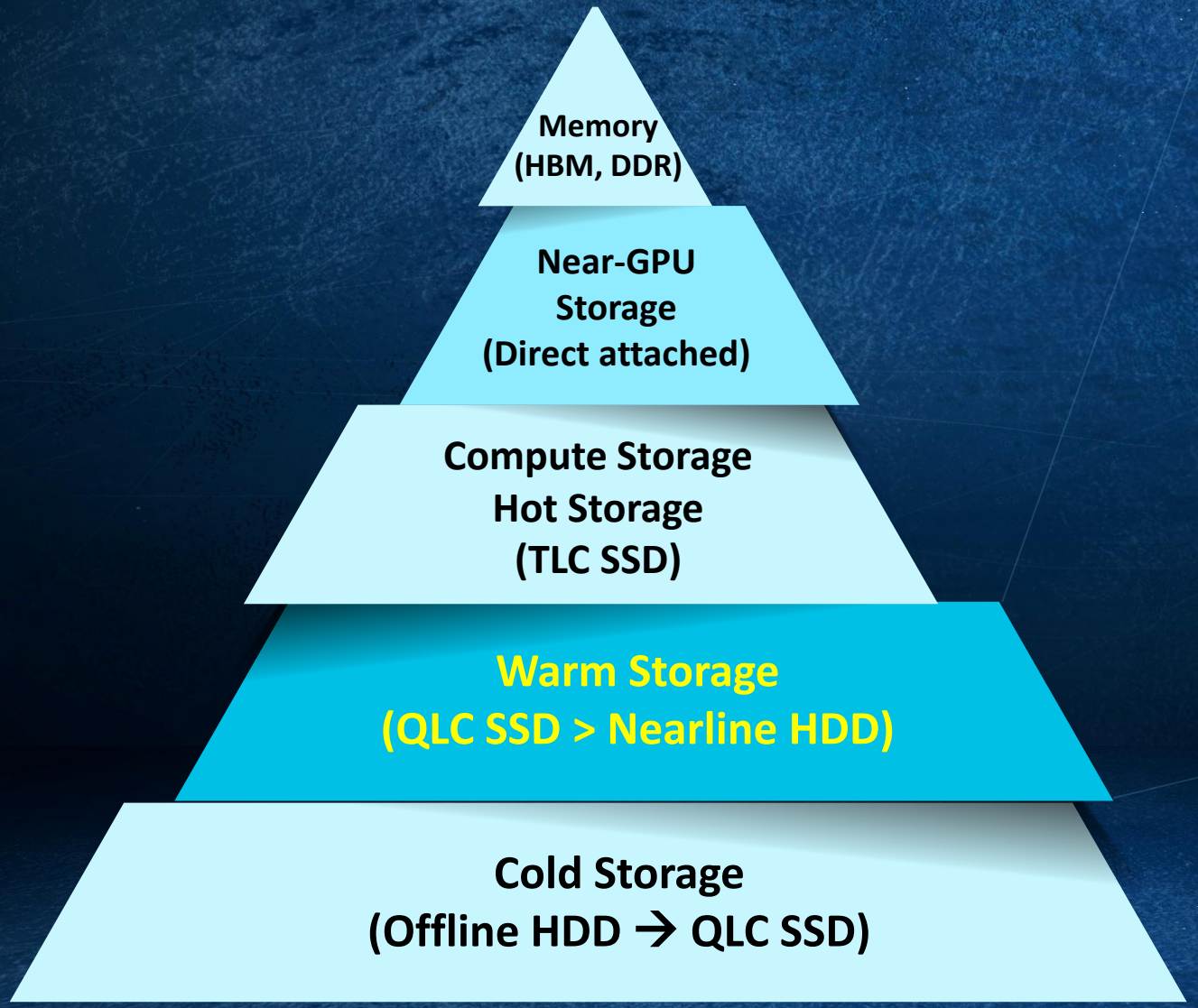


- Benchmarking of Nearline HDD vs. SSD (QLC)

Product	Lead Time	ASP (US$/GB)	Max. Capacity	Performance	Energy Efficiency
Nearline HDD	52 weeks	$0.015	32TB	Weak	Inferior
SSD (QLC)	8 weeks	$0.05-0.06	122TB	Strong	Superior

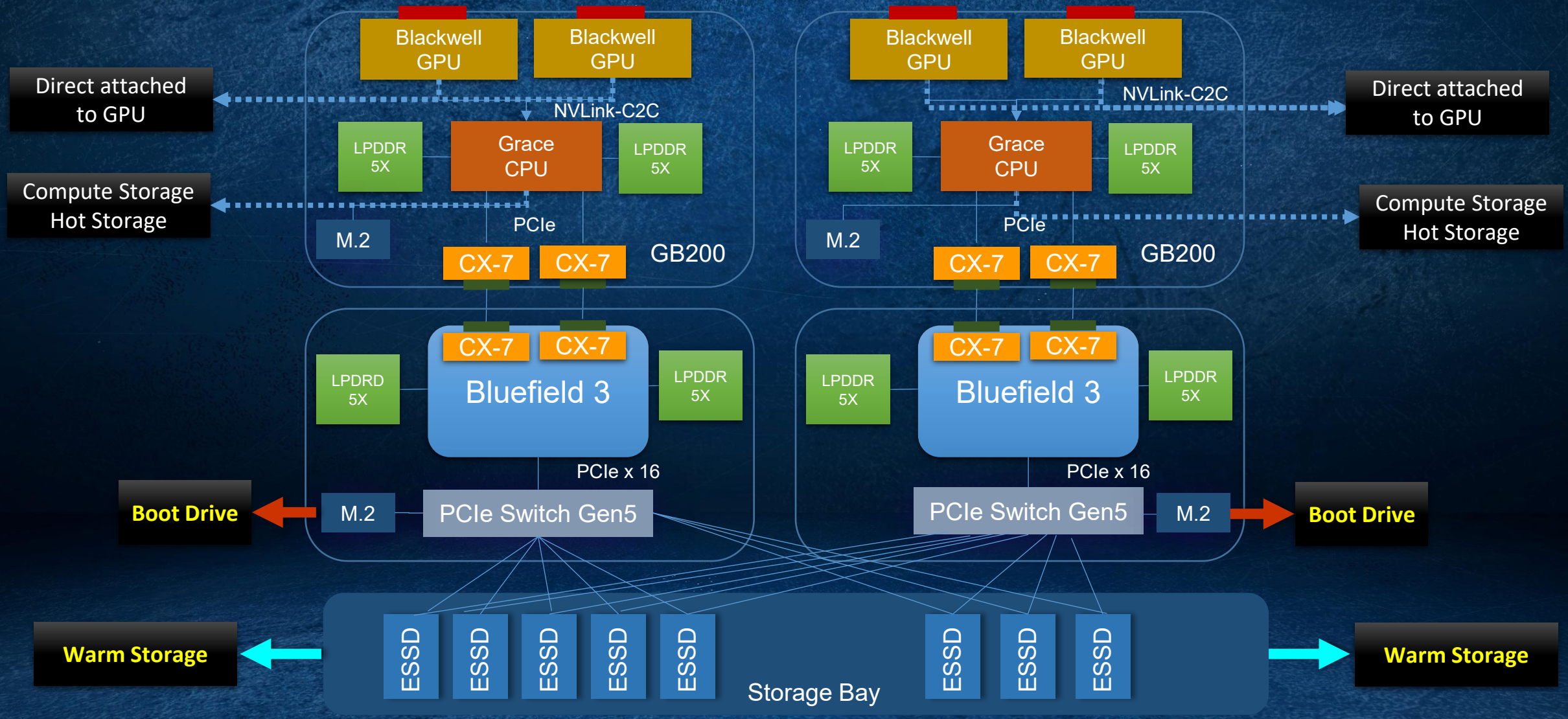
(Source: TrendForce, Sept. 2025)

Warm Storage by SSD Is Our Focus



- **Warm Storage Requirement in AI Era**
  - High Performance
  - High Power Efficiency
  - High Capacity
- **QLC SSD Much Fit to Warm Storage**
  - Better Performance than Nearline HDD
  - Lower Power
  - Much Higher Capacity
  - Better Total Cost Ownership (TCO)

Flash Storage in NVIDIA's AI Eco System



SMI's NAND Controller for AI Transformation across All Spectrum

Data Center

Near GPU

Storage Next …

GPU Direct Attached

SM8466
SM8566

Compute

DPU-based Storage Server

Enterprise Compute Storage

SM8466
SM8366
SM8308
SM8388
SM8008

Warm Data

FlashBlade

122TB SSD

SM8466
SM8366
SM8388

Edge Server

All-in-one Server

DeepSeek Integrated Server

SM8366
SM8388
SM8008
SM2508

Edge Device & IoT

AI PC

NPU > 40 TOPS

SM2508
SM2504XT
SM2524XT
PCIe Gen6

AI Phone

NPU > 5 TOPS

SM2752
SM2753
SM2754
SM2755
SM2758

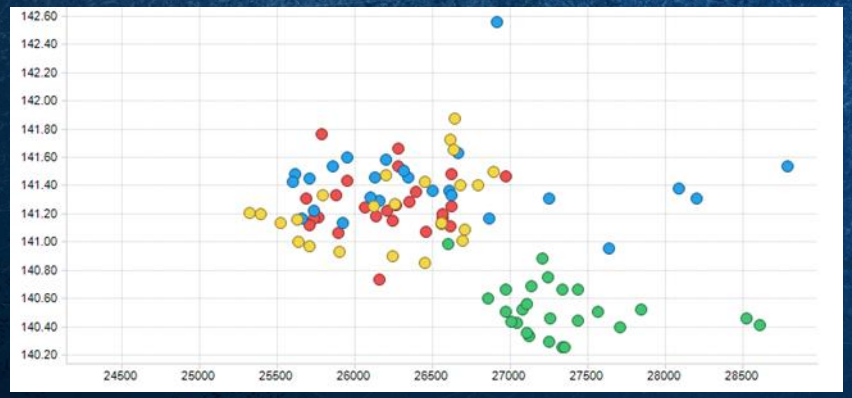
Automotive

Cockpit/ADAS

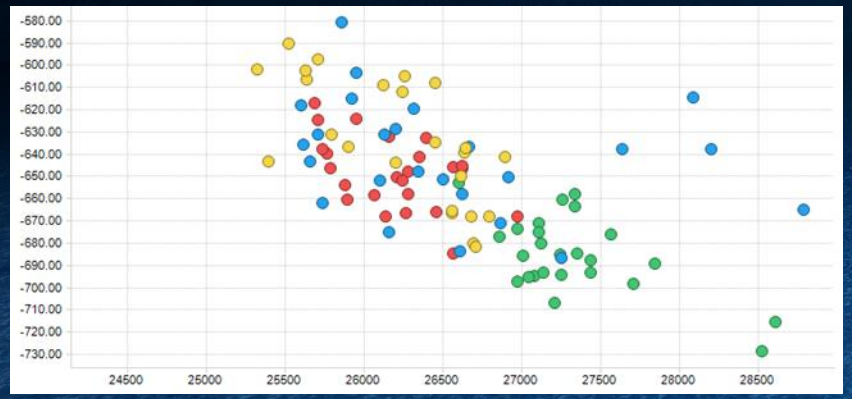
SM2264XT-AT
SM2268XT2-AT
SM2514-AT

Simulation to Silicon (S2S) Characterization by PDF Exensio

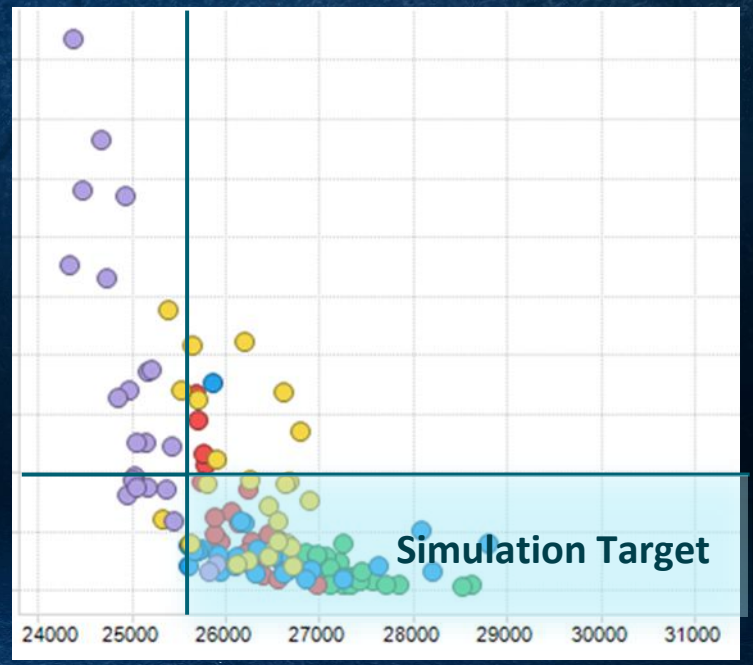
- Fab In-Line vs. WAT



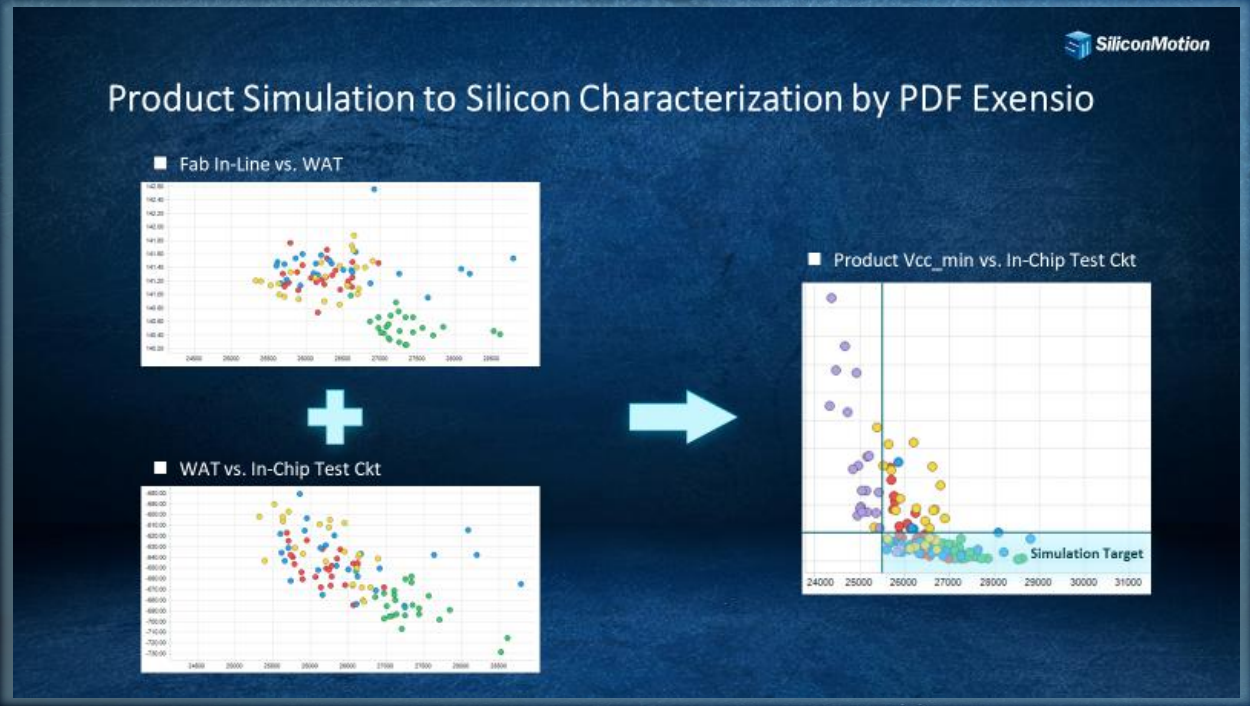
- WAT vs. In-Chip Test Ckt



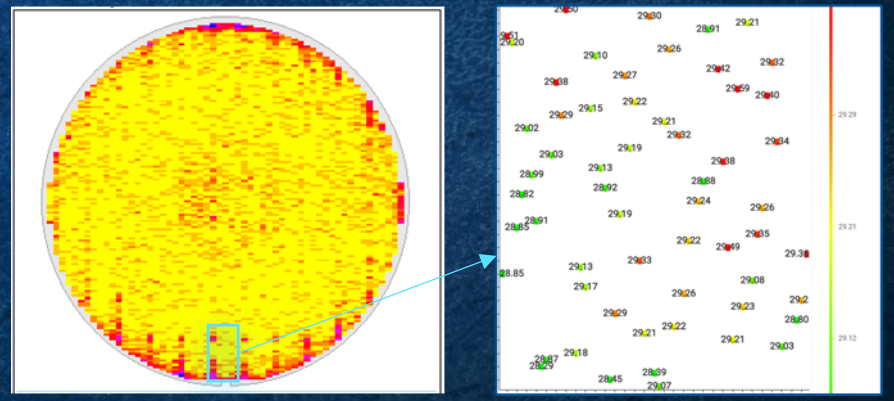
- Product Vcc_min vs. In-Chip Test Ckt



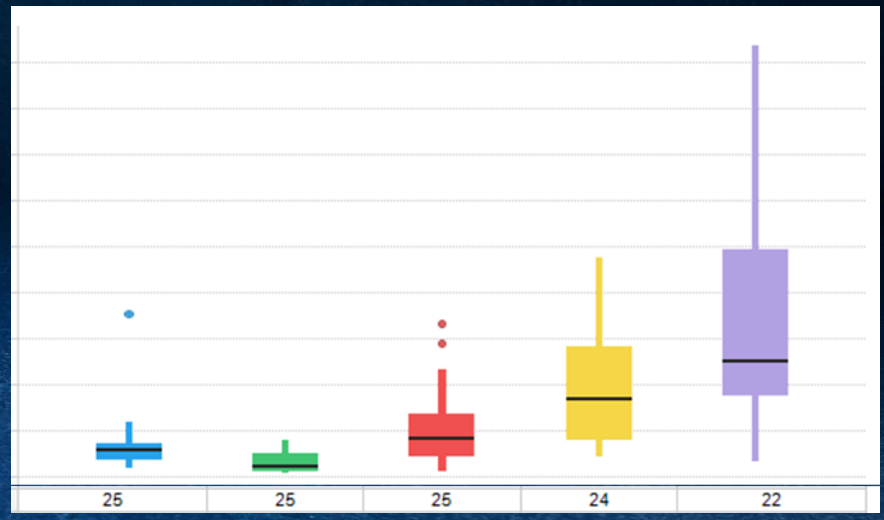
Performance Boosting by PDF Exensio



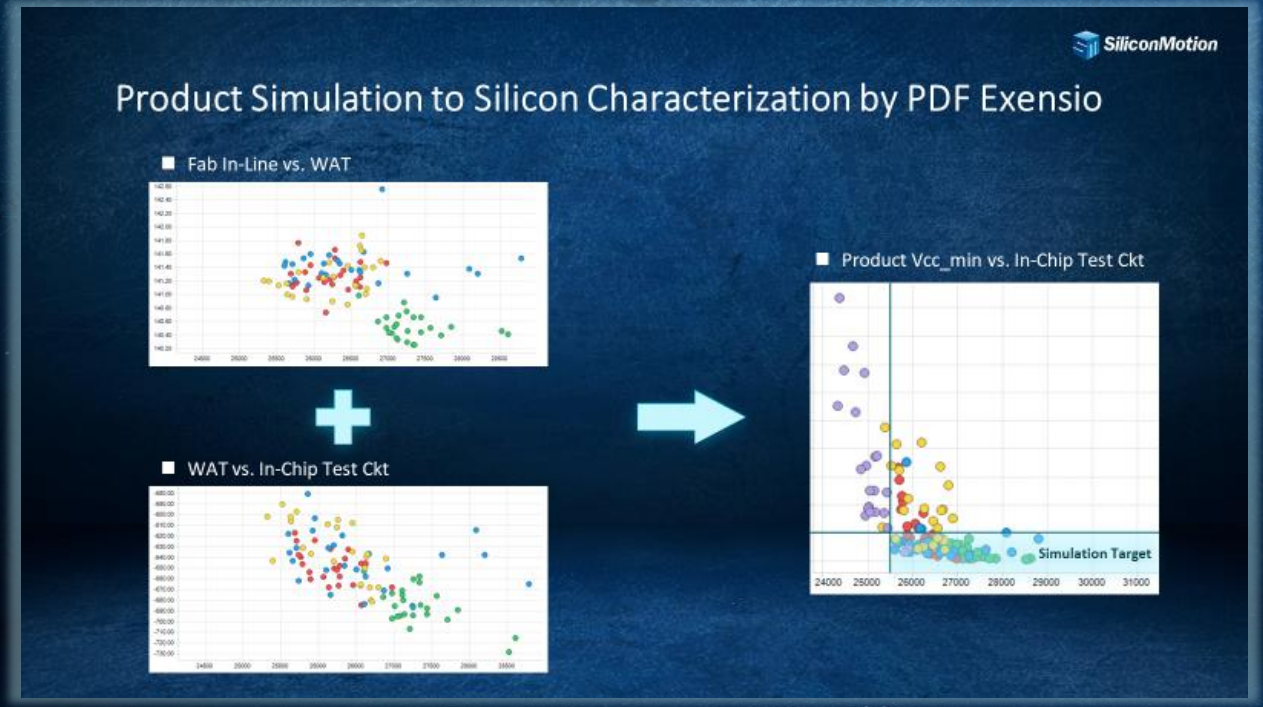
- Within Wafer Uniformity Improvement



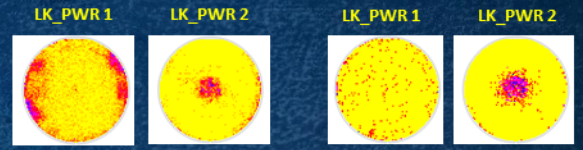
- Performance Binning Improvement

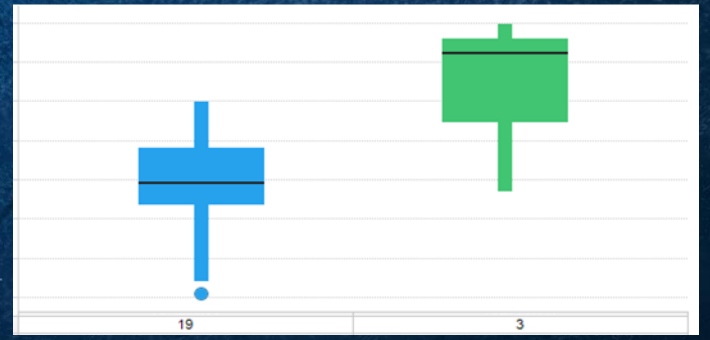


Power Optimization by PDF Exensio

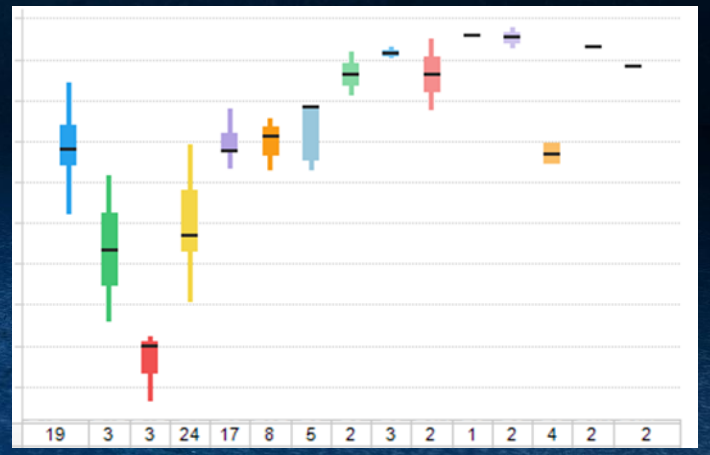


- Leakage Power Improvement





- Yield Improvement



SM8466 : SMI's First PCIe Gen6 SSD Controller

High Performance
Low Power

- TSMC 4nm
- Support SCA Interface
- Up to 512TB Capacity

» Performance

- ✓ Sequential : 28 GB/s
- ✓ Random : 7M IOPS (4KB)

» Features

- ✓ PCIe Gen6
  - ➢ SRIOV / MPF
  - ➢ ATC/PRI
  - ➢ IDE
- ✓ NVMe 2.0+
- ✓ OCP NVMe SSD Spec 2.5
- ✓ 4KiB/16KiB (CoCo ™) LDPC
- ✓ Performance Shaping
- ✓ E2E Data Protection
- ✓ SMART Monitoring
- ✓ IF chip support
- ✓ Crypto Functions: CNSA 2.0, PQC
- ✓ Data Security: TCG Opal
- ✓ Root of Trust: Caliptra
  - ➢ Secure Boot & Attestation
- ✓ Attestation

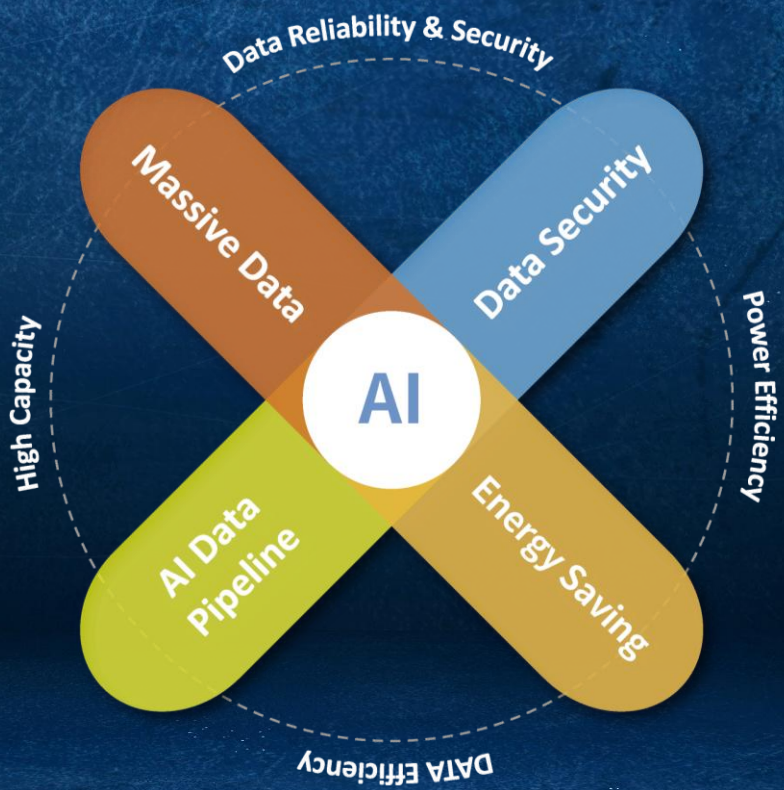
Core Competence with SMI's Controller for Data Center SSD

Achieve High Capacity

- High density architecture
- Up to 128/256/512TB enterprise SSDs with QLC
- 16K LDPC in Gen 6

Better Data Efficiency

- Up to 1.6X of Cosmoflow Test
- Up to 2X of Resnet50 of MLPerf storage
- Extremly low latency by patented PerformaShape™ QOS technology



Enable Data Security

- Advanced encryption standards
  - NIST / FIPS (USA) standards
- NIST symmetric / Asymmetric crypto functions
- Root of trust

Better Power Efficiency

- Best in class: 4nm, 6nm
- Smart low power design
  - Purpose-build modules
  - Clock gating and power domain planning
- Smart power mode switching
  - Flexible host commands
  - Dynamic FW tuning

Summary

- 2026 is expected to be a healthy and growth year for the global semiconductor industry.
- AI inference will take over from AI training. The notebooks, smartphones, IoT, and wearable devices will grow as well.
- From the cloud to the edge, from AI servers to AI PCs & AI phones, from EV to IoT, wearable devices, all require a wide range of storage products and technologies.
- The storage industry has become a critical link in the AI industry. Whether it‘s warm storage, compute storage, near-GPU storage, or other new technologies and breakthrough which plays a crucial role in the era of “Compute + Storage”.

SiliconMotion X PDF/SOLUTIONS™

Smart Storage in Motion

Thank You

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