THE NEXT WAVE OF FLASH STORAGE IN THE DATA CENTER – CAN IT BE CLIENT?

IRI TRASHANSKI

THE NEXT WAVE OF FLASH STORAGE IN THE DATA CENTER – CAN IT BE CLIENT?

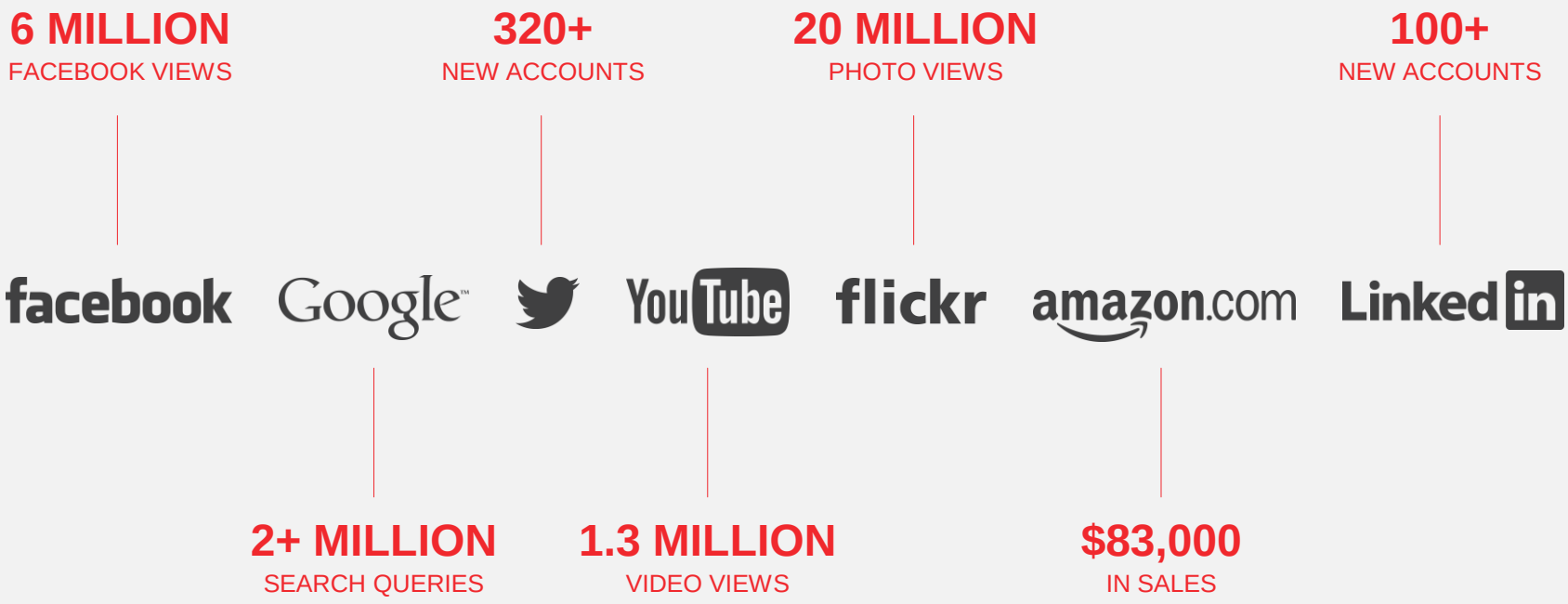
STORAGE DRIVERS

CLIENT MARKET UPDATE

HYPERSCALE DIRECTION

FUTURE TRENDS

WHAT HAPPENS ON THE INTERNET IN A MINUTE?



639,800 GB OF GLOBAL IP DATA TRANSFERRED

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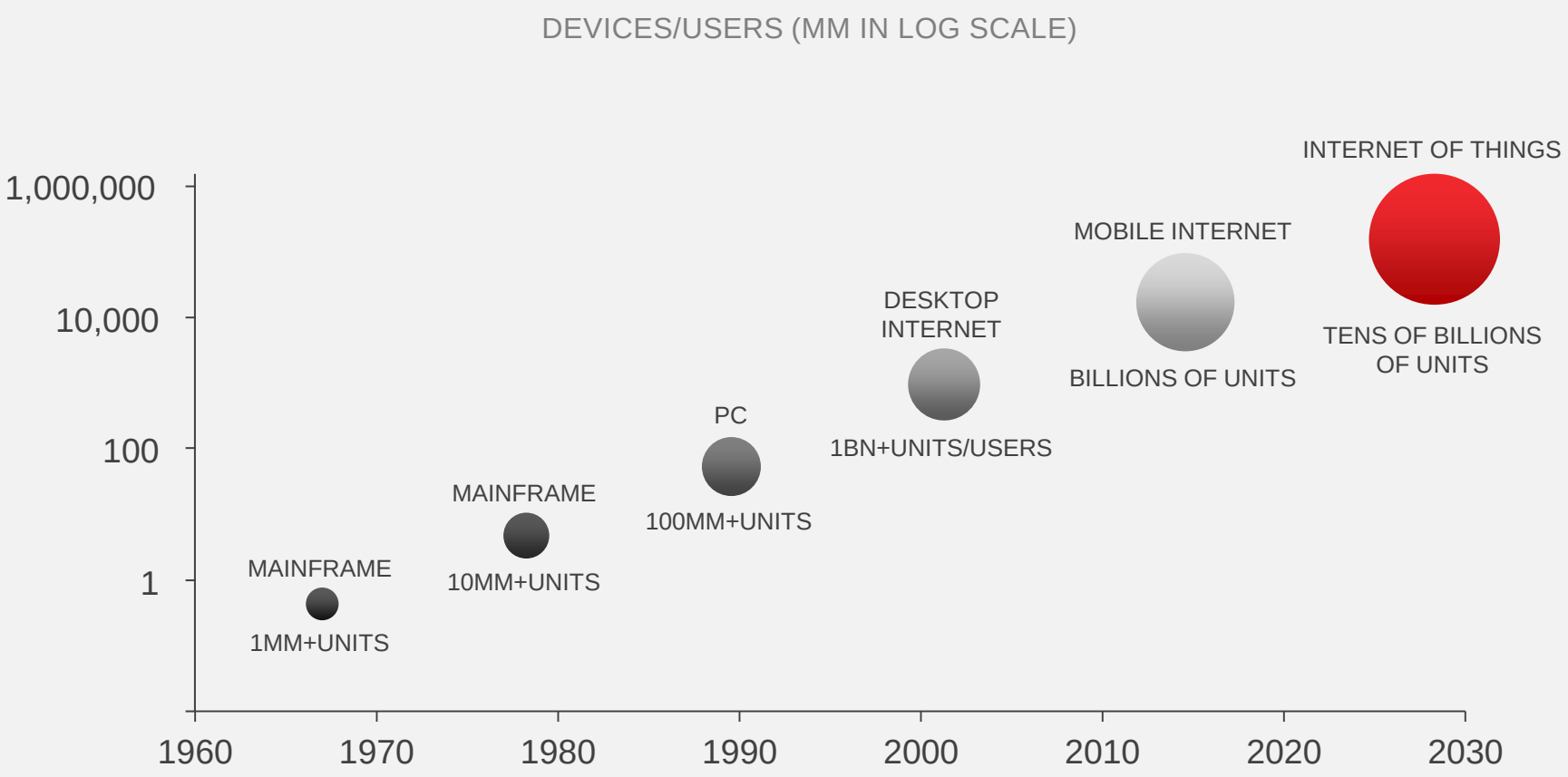
BILLIONS OF NEW DEVICES CREATING MORE DATA



SOURCE: MORGAN STANLEY

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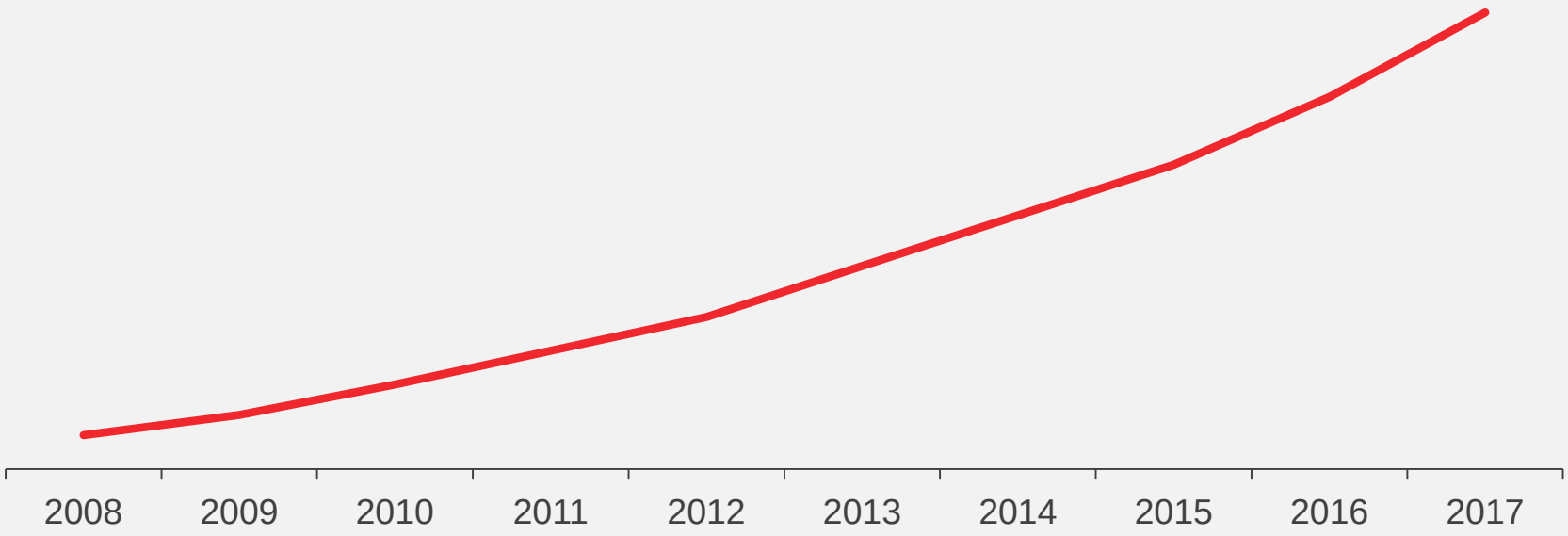
RESULTING IN HUGE DEMAND FOR STORAGE



SOURCE: IDC, CISCO VNI, GARTNER, MMI

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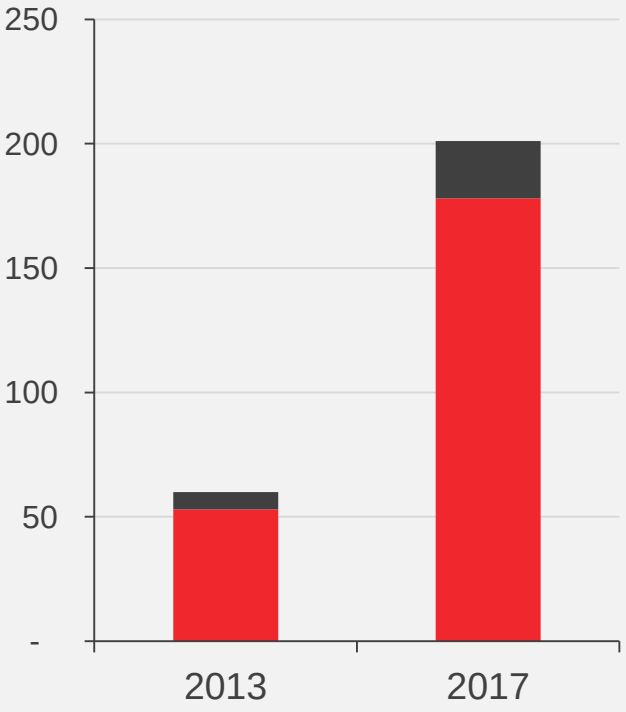
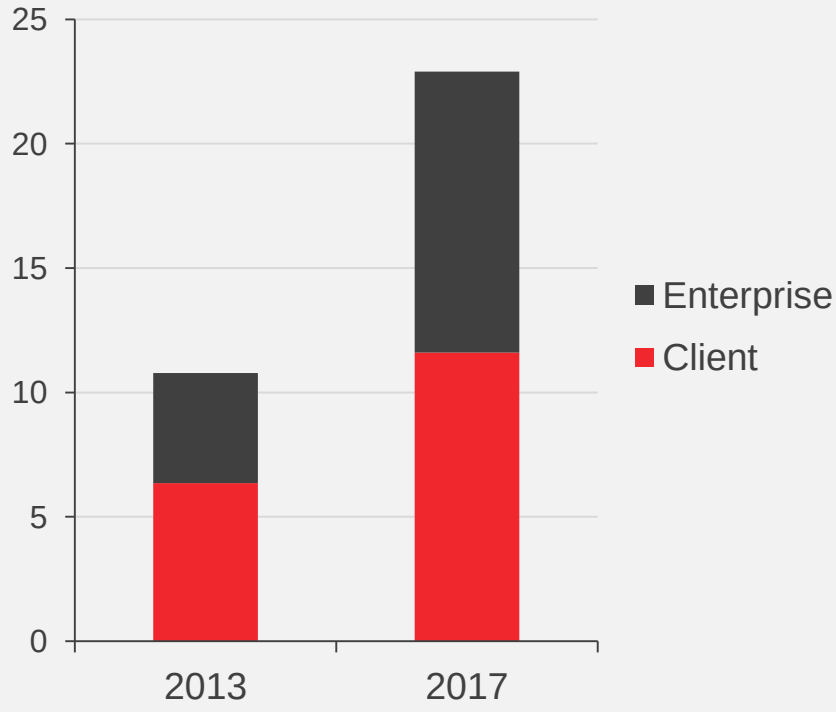
DRIVING SSD VOLUMES IN ENTERPRISE AND CLIENT



UNITS / MILLION



$ / BILLION

SOURCE: MARVELL MARKET INTELLIGENCE

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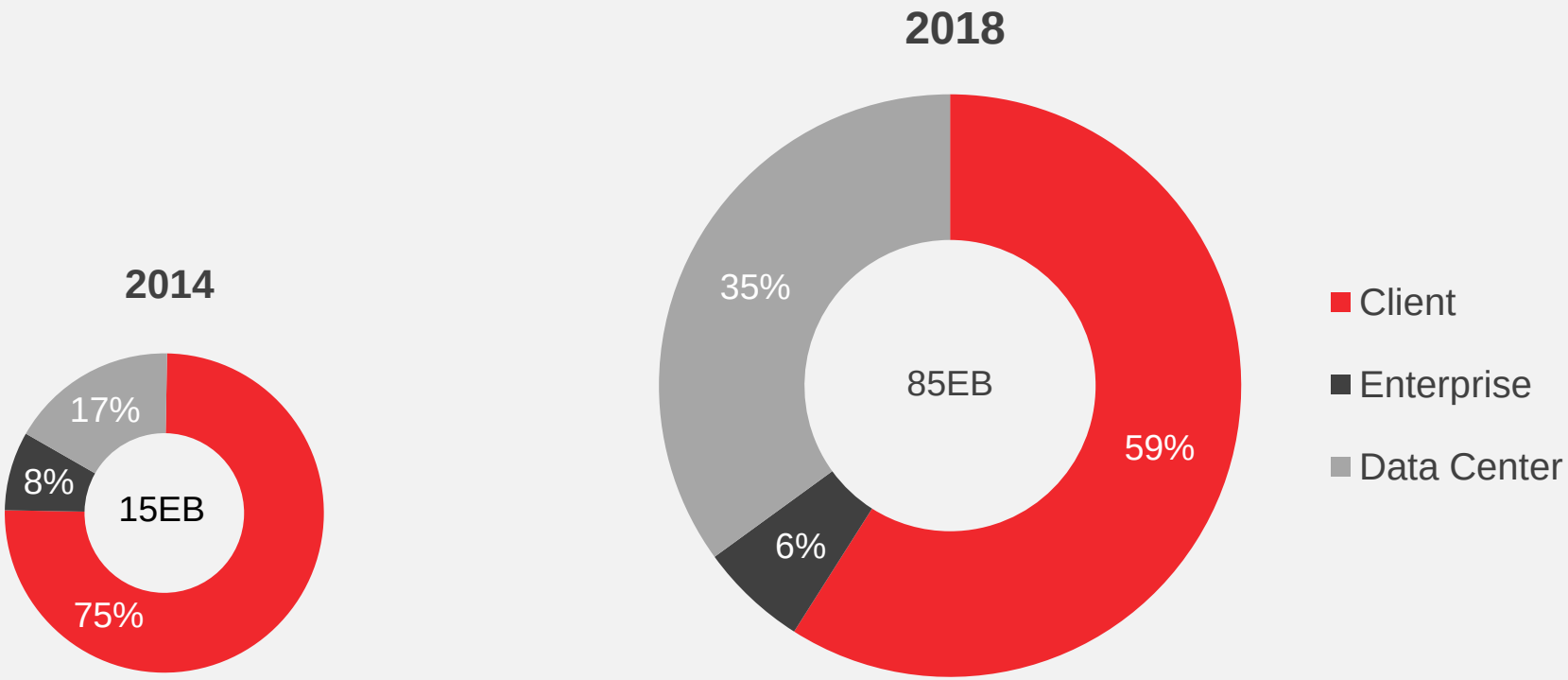
HUGE NAND GROWTH IN DATA CENTER SEGMENT



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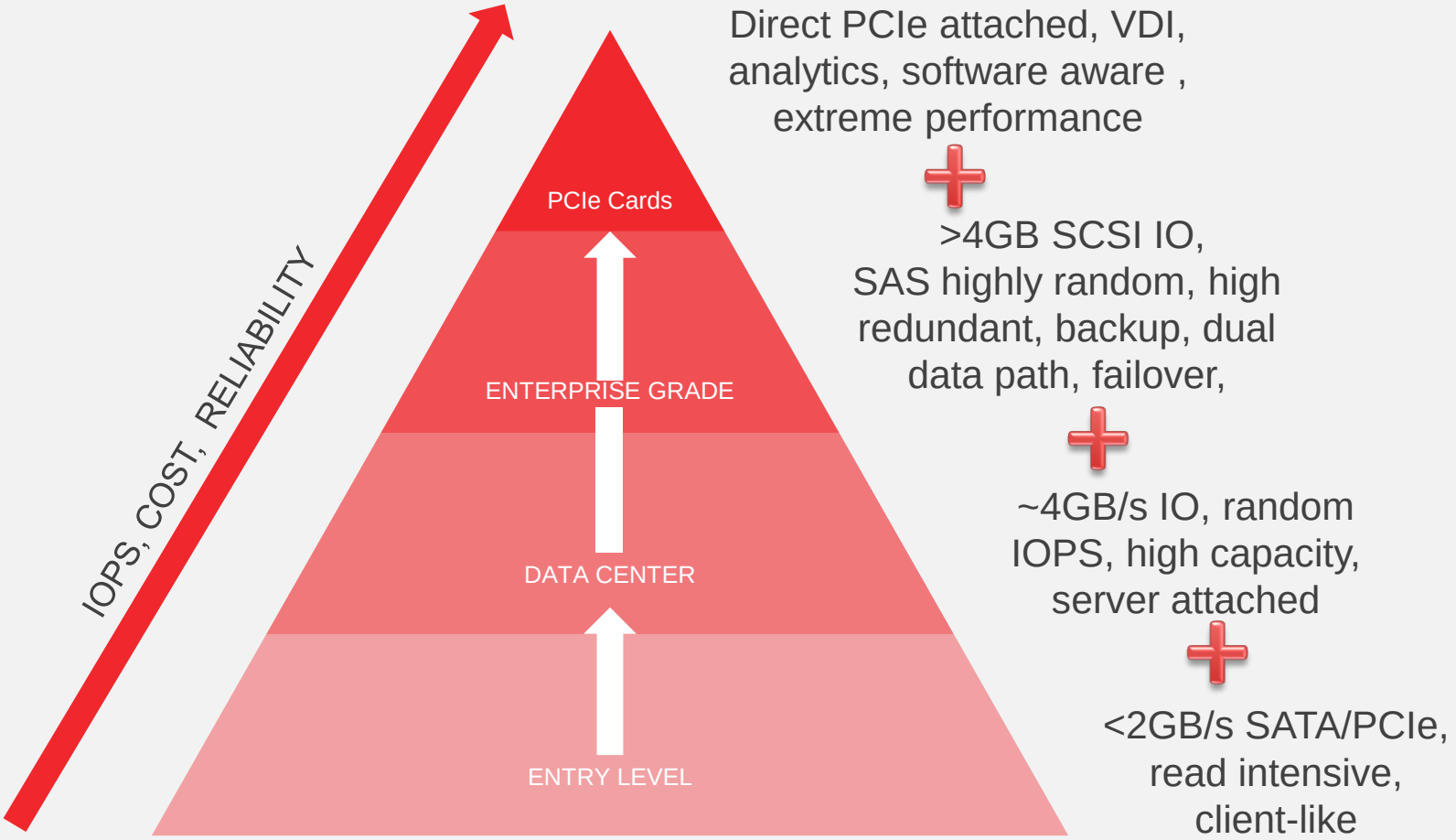
MULTIPLE SSD SEGMENTS



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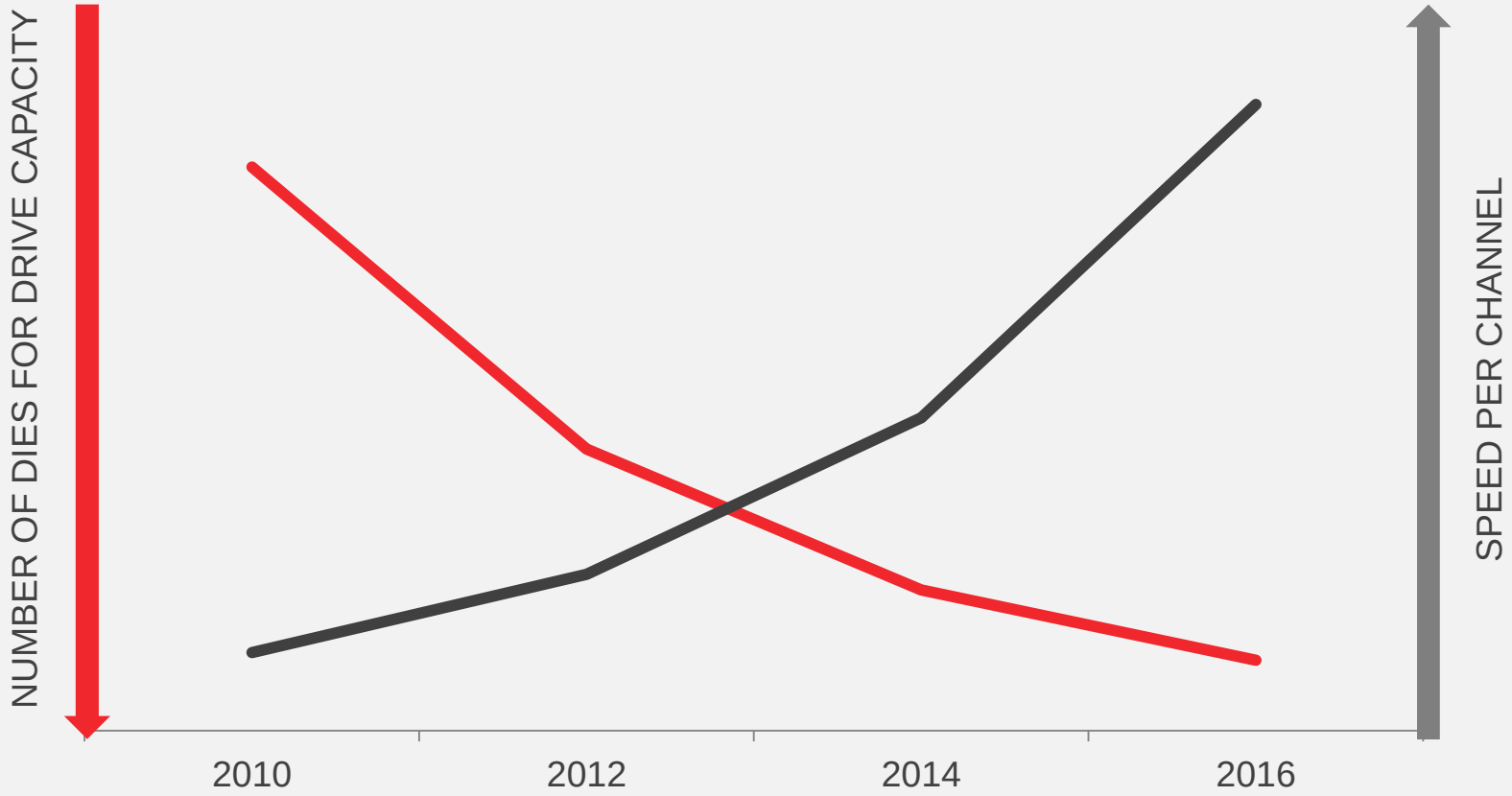
CLIENT: LESS BUT FASTER NAND CHANNELS

FEWER BUT BIGGER NAND DIES



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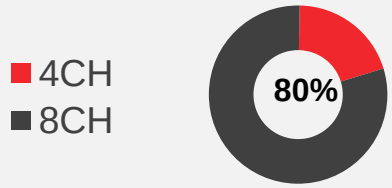
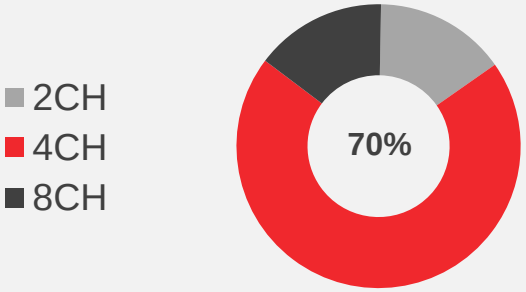
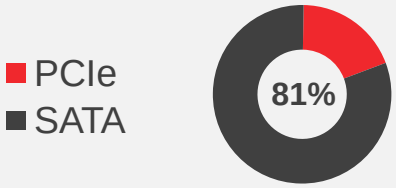
CLIENT MARKET TRENDS

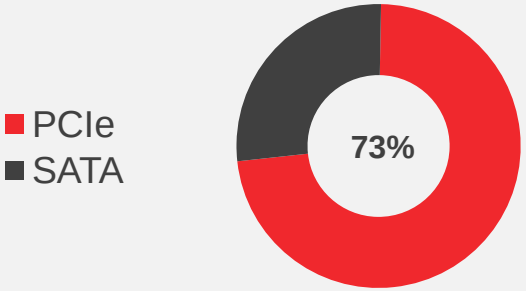
2013

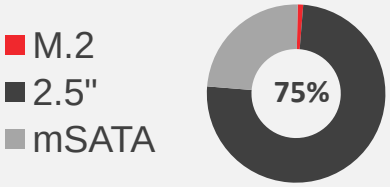


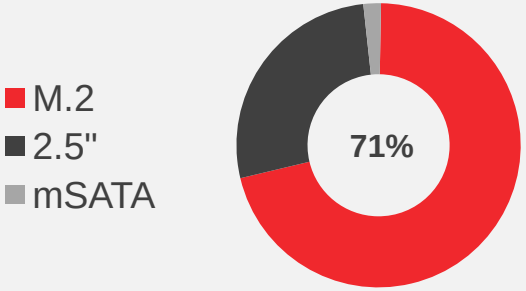
2017











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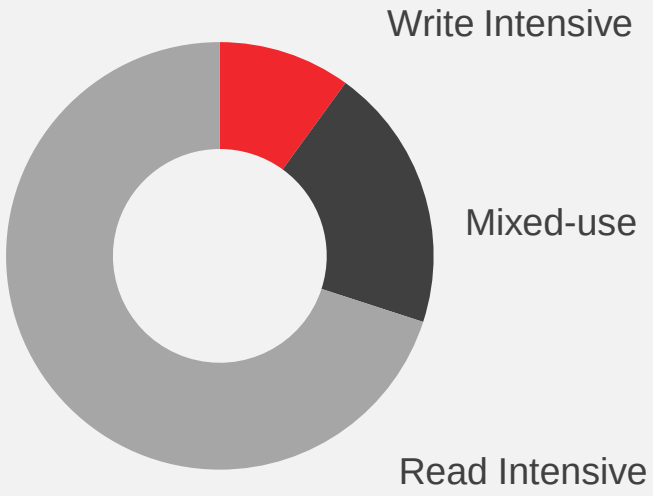
HYPERSCALE ≠ ENTERPRISE

- Spend time to save $ vs. Spend $ to save time
- Software orientated
- Huge Capacity Growth
- CapEx and OpEX → calls for efficiency
- Interactive applications support



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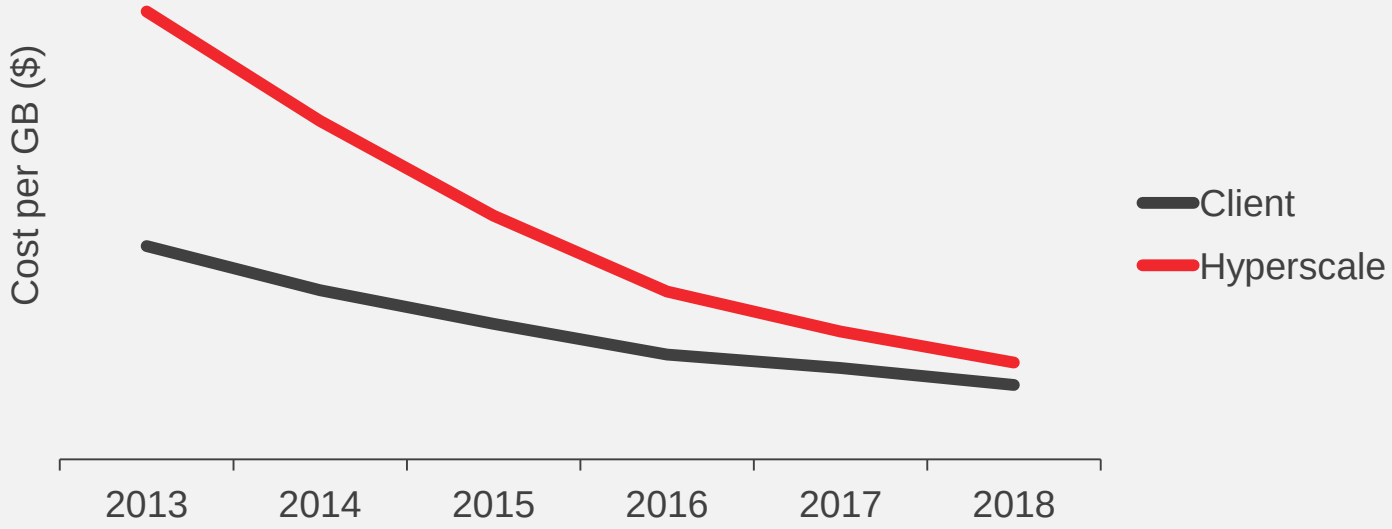
HYPERSCALE SSD PRICING
IS GETTING SIMILAR TO CLIENT

COST PER GB HIGHER THAN FOR CLIENT

- Demand for over provisioning and longer endurance NAND
- Specific FW features
- Power loss data protection
- Security



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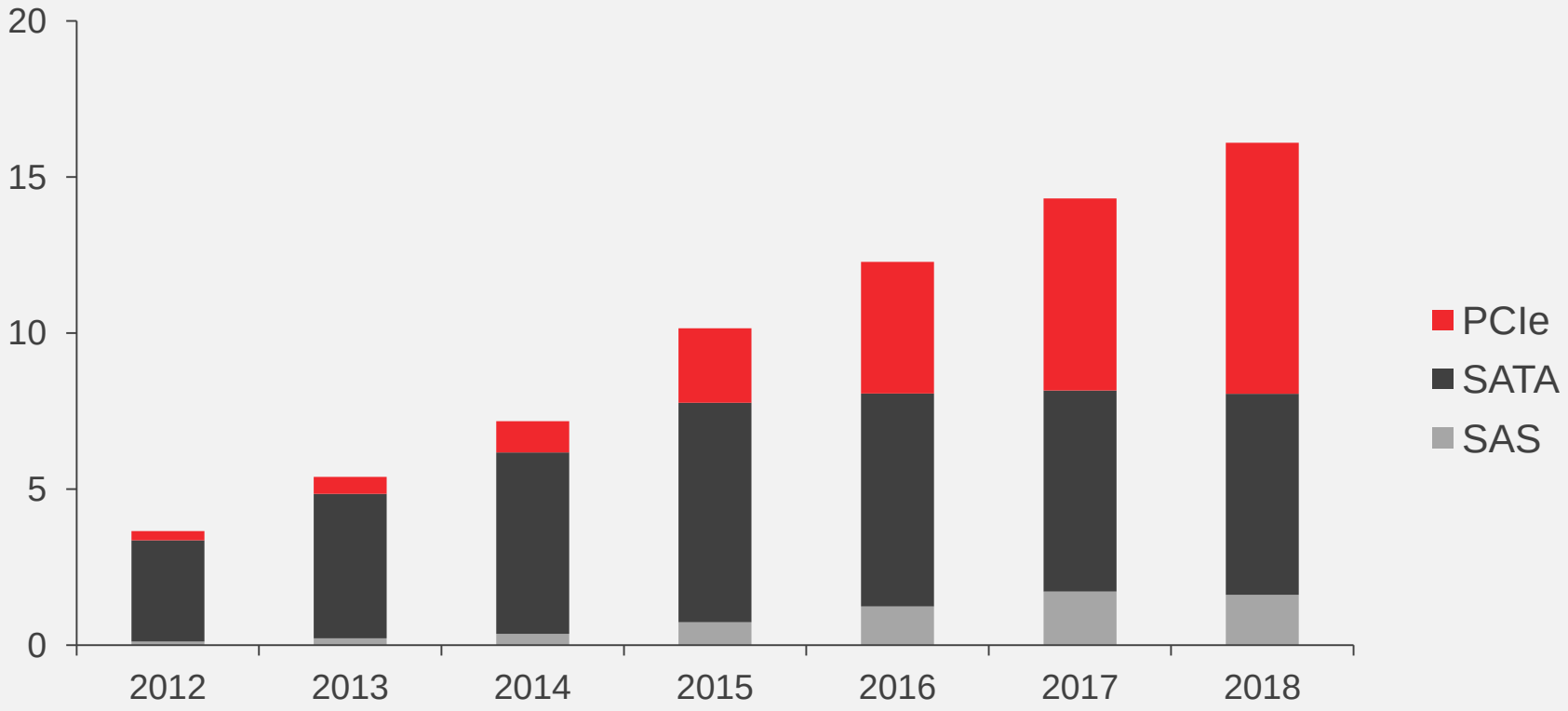
SERVER ATTACHED TO DRIVE BULK OF UNITS



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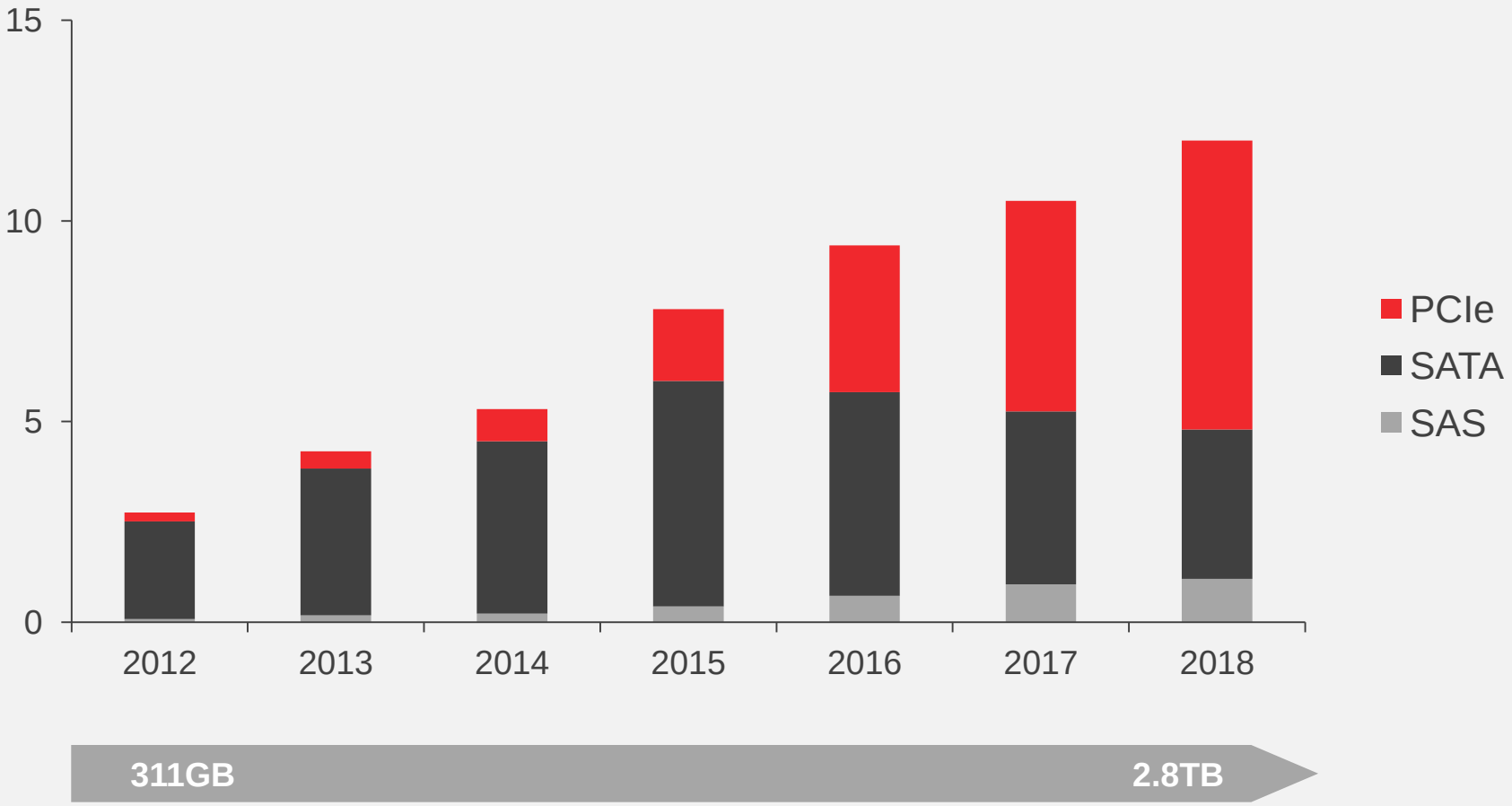
WITH 75% OF THE VOLUME
GOING TOWARD HYPERSCALE



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SSD NEEDS: HYPERSCALE IS NOT ENTERPRISE

ENTERPRISE	HYPERSCALE	CLIENT
SAS Enterprise SSD Controller	SATA/PCIe Client SSD Controller	SATA/PCIe Client SSD Controller
Dual path	Cloud redundant data	Single path
SLC/eMLC	LDPC MLC/TLC	LDPC MLC/TLC
Advanced processor and data flow	New adaptive multi-core/DMA architecture	Dual/ Tri-Core
Complex SCSI protocol	ATA and New defined Flash-optimized SSD protocol for all SSDs: NVM Express	Simple ATA command and NVMe
RAID host bus adaptor	Direct PCIe interface, SATA	SATA and PCIe
IOPS centric	Highly sequential, high random	User experience

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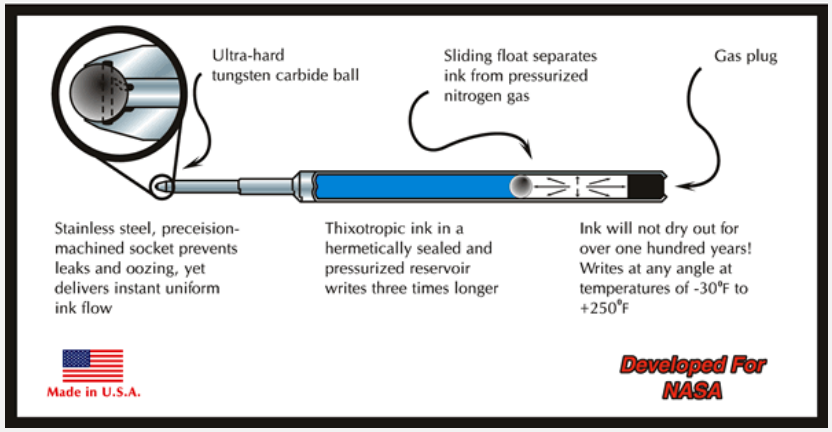
LEVERAGING ENTRY LEVEL MASS MARKET TECH

THE FISHER SPACE PEN
SEALED PRESSURIZED INK
CARTRIDGE



RUSSIANS USED
A PENCIL

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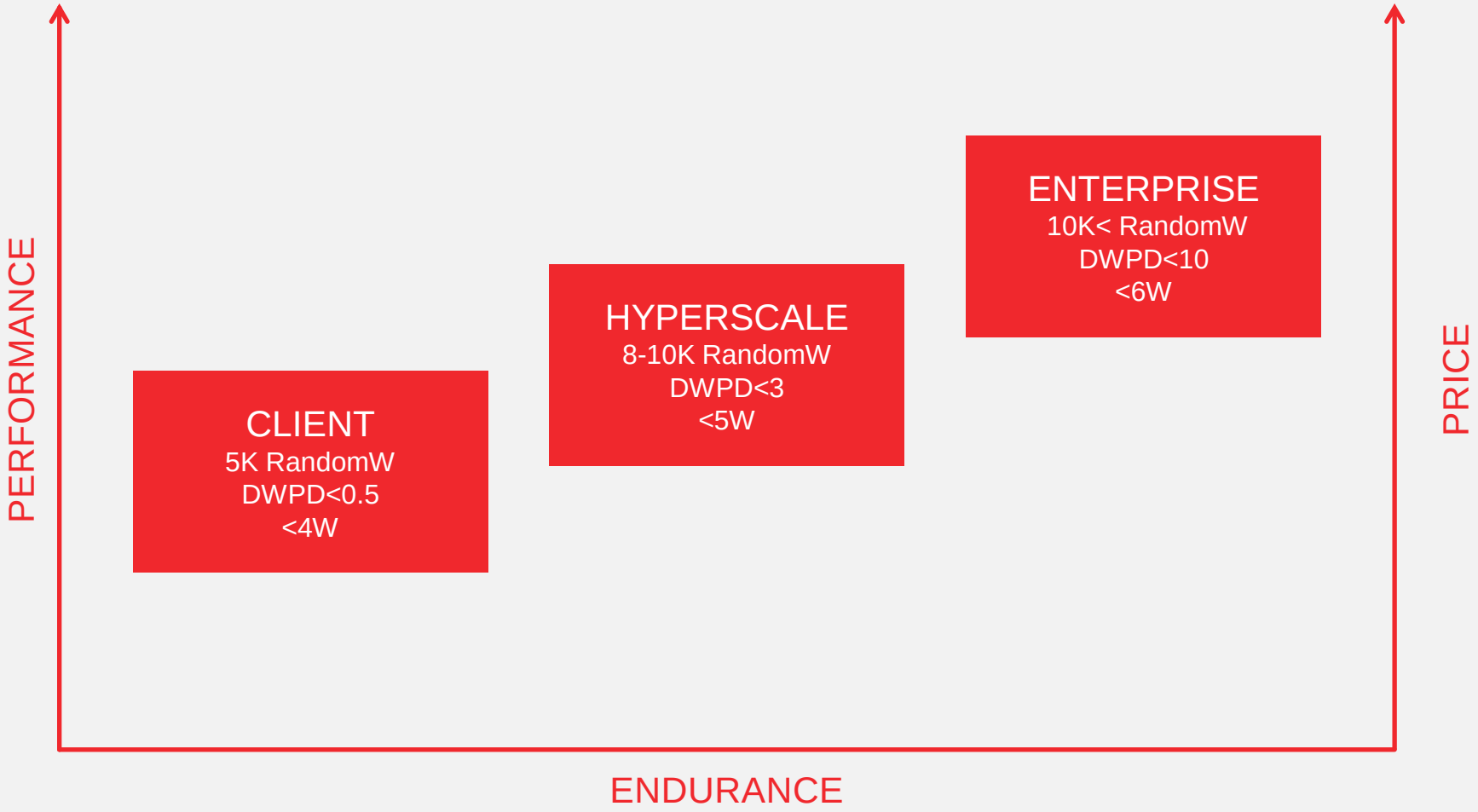
SATA: VARIOUS TIERS BASED ON CLIENT HW



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NVMe TO DRIVE ADOPTION OF PCIe SSDs

6 X BANDWIDTH
4 X IOPS
8 X IMPROVED LATENCY
EQUIVALENT POWER
STANDARD BASED

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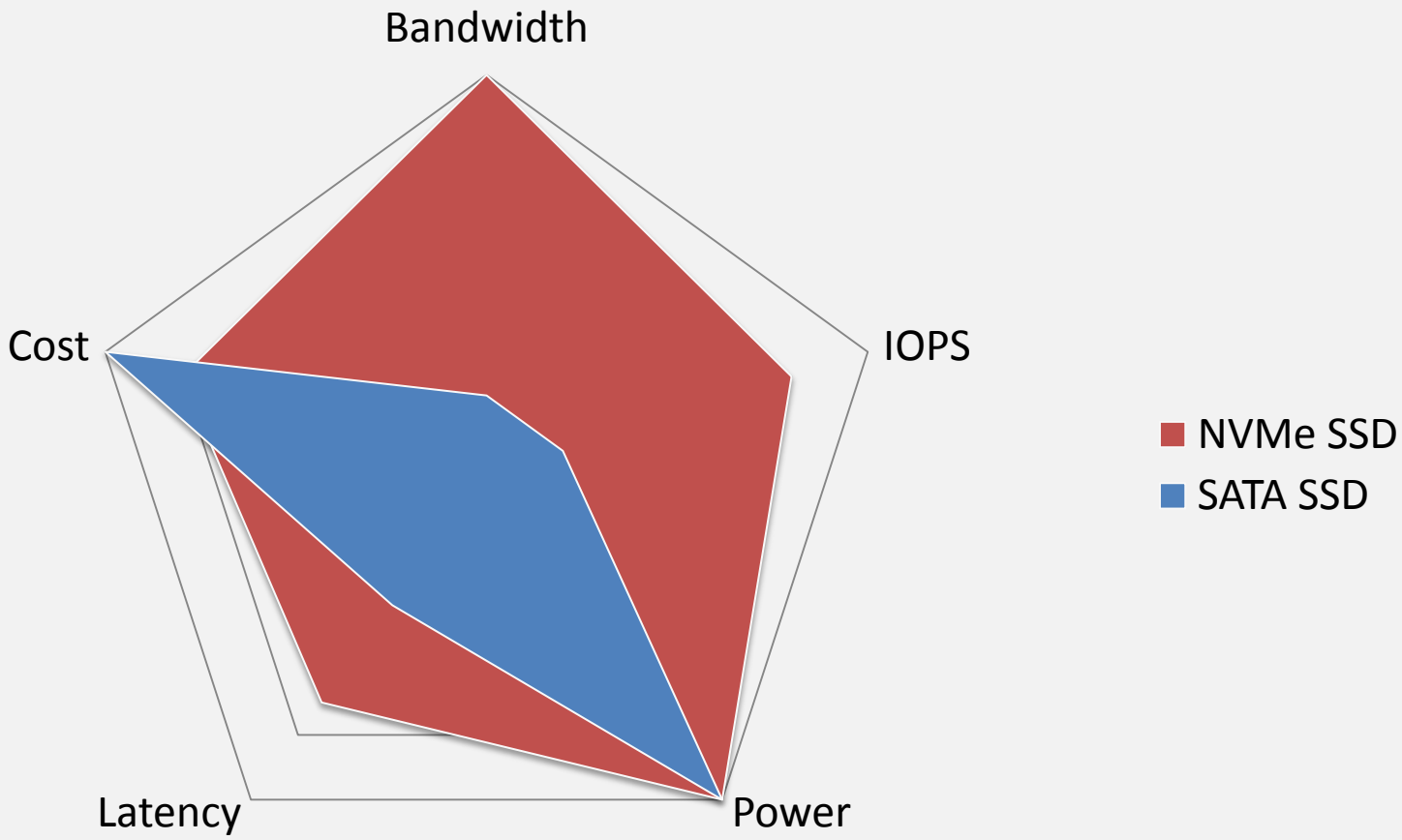
NVMe PCIe vs SATA SSD



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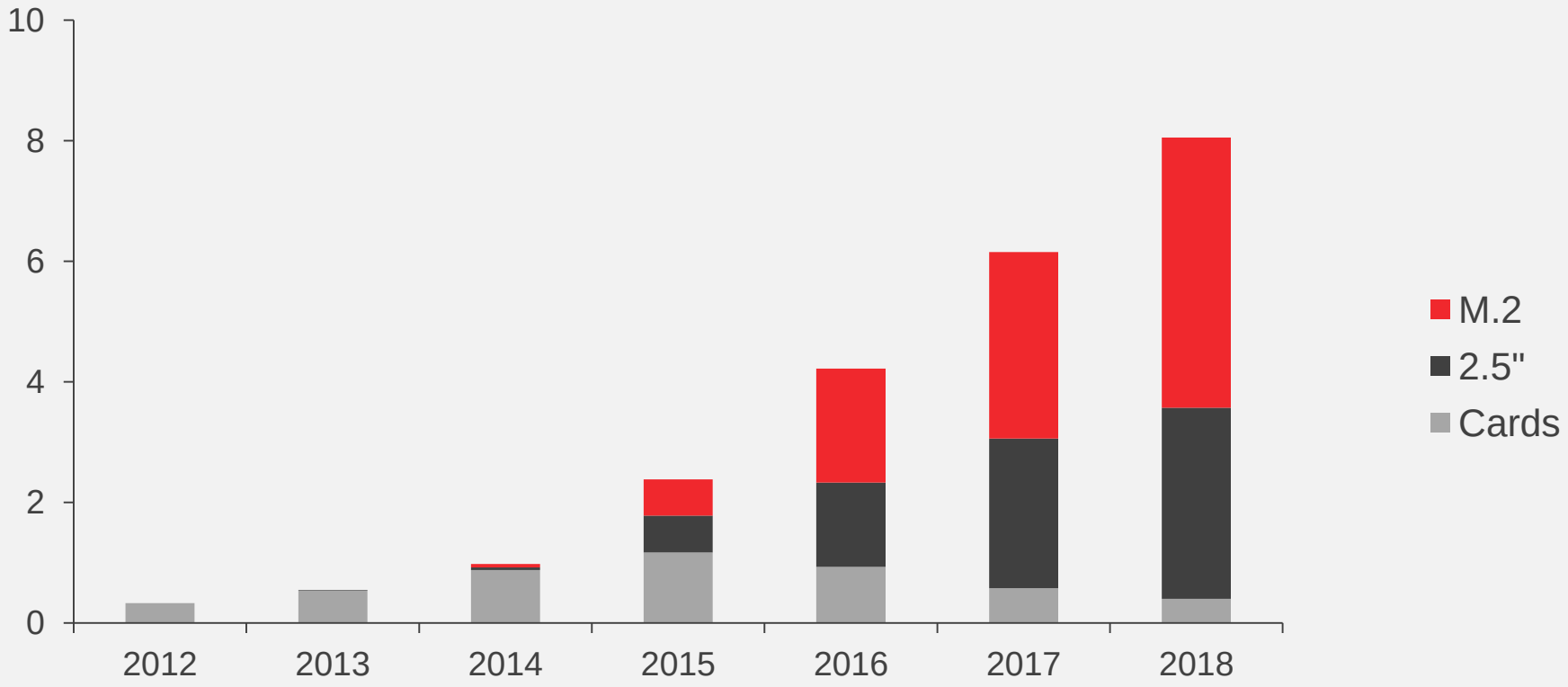
M.2 & 2.5 TO DRIVE PCIe ADOPTION IN HYPERSCALE



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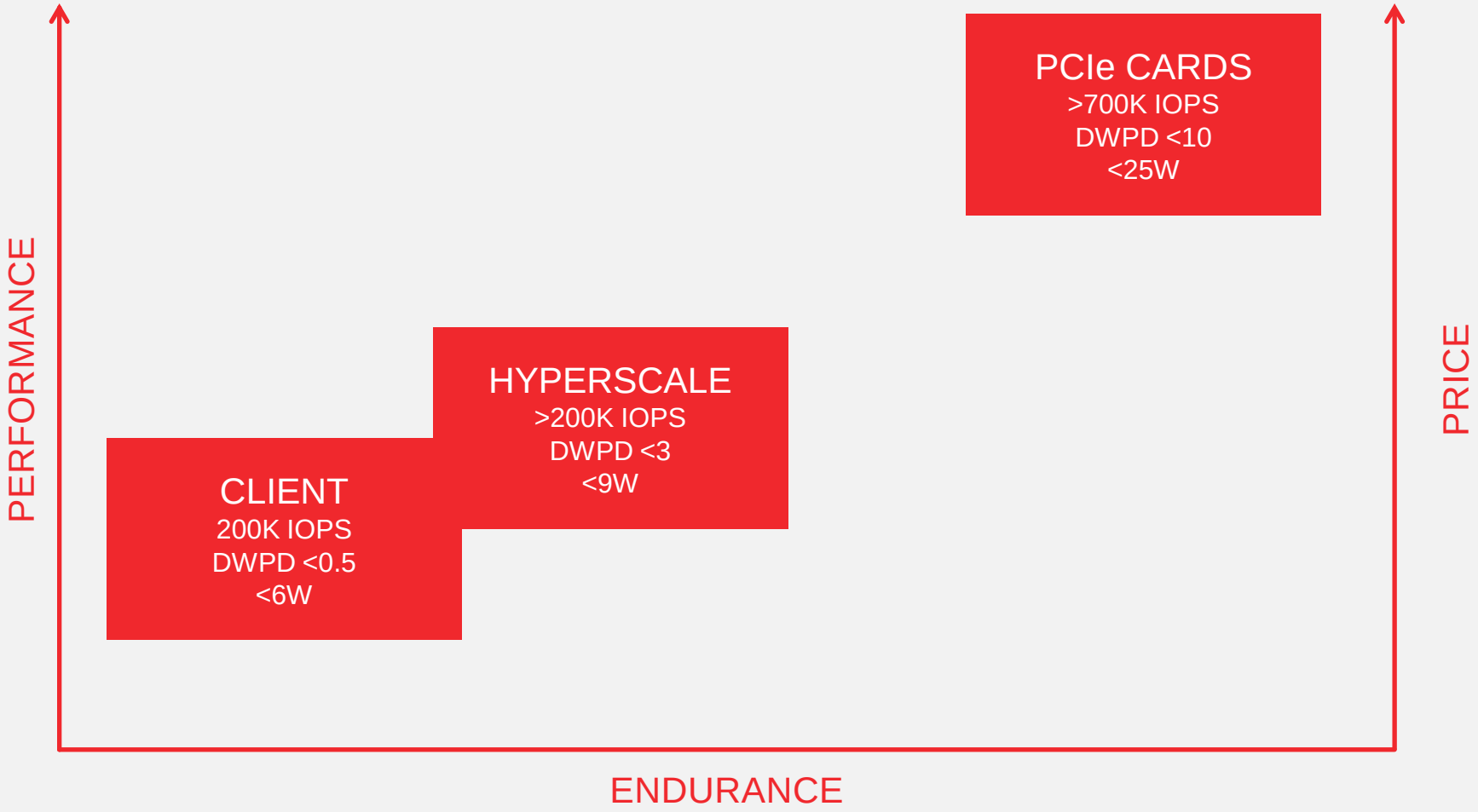
PATH TO LEVERAGE CLIENT TECHNOLOGY IS OBVIOUS



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88SS1093 – PCIE GEN3X4 NVMe SSD CONTROLLER

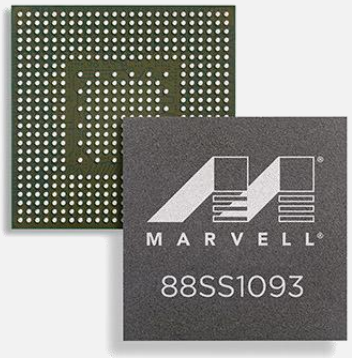
MARVELL

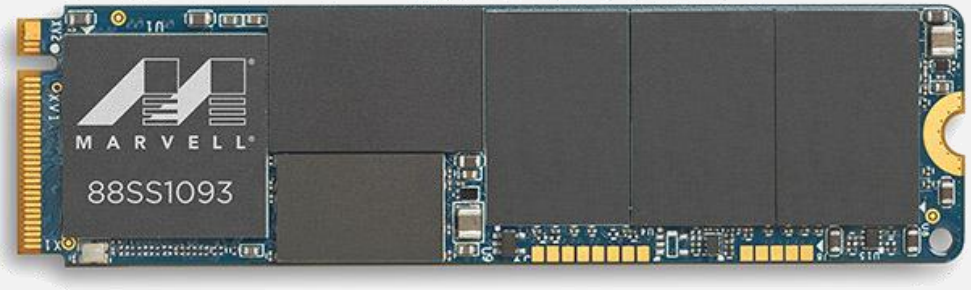
For Further Information Contact:
Marvell Media Relations:
Sue Kim
(408) 222-1942
suekim@marvell.com

Marvell Extends Leadership in SSD Market with Groundbreaking PCIe 3.0 NVM Express SSD Controller

The Marvell 88SS1093 delivers high-performance data center and client solid-state storage solutions with new Flash-optimized architecture and advanced NANDEdge LDPC technology

SANTA CLARA, Calif. – (Aug 5, 2014) – Marvell (NASDAQ: MRVL) today announced the introduction of its first native Non-Volatile Memory Express (NVMe) solid-state drive (SSD) controller, the 88SS1093. The Marvell® 88SS1093 NVMe SSD controller delivers high-performance solid-state storage solutions with a fully Flash-optimized architecture overcoming the SAS/SATA performance limitations by optimizing hardware and software to take full advantage on NAND and addressing the needs of data centers and client systems that utilize next-generation PCIe 3.0 SSD storage. The 88SS1093 also integrates Marvell's third generation NANDEdge™ error-correcting, low-density parity check (LDPC) technology for higher reliability and endurance boost that was previously announced with Marvell's fifth generation SATA SSD controller, the 88SS1074.





PCIe Gen 3x4	NVMe 1.1	LDPC

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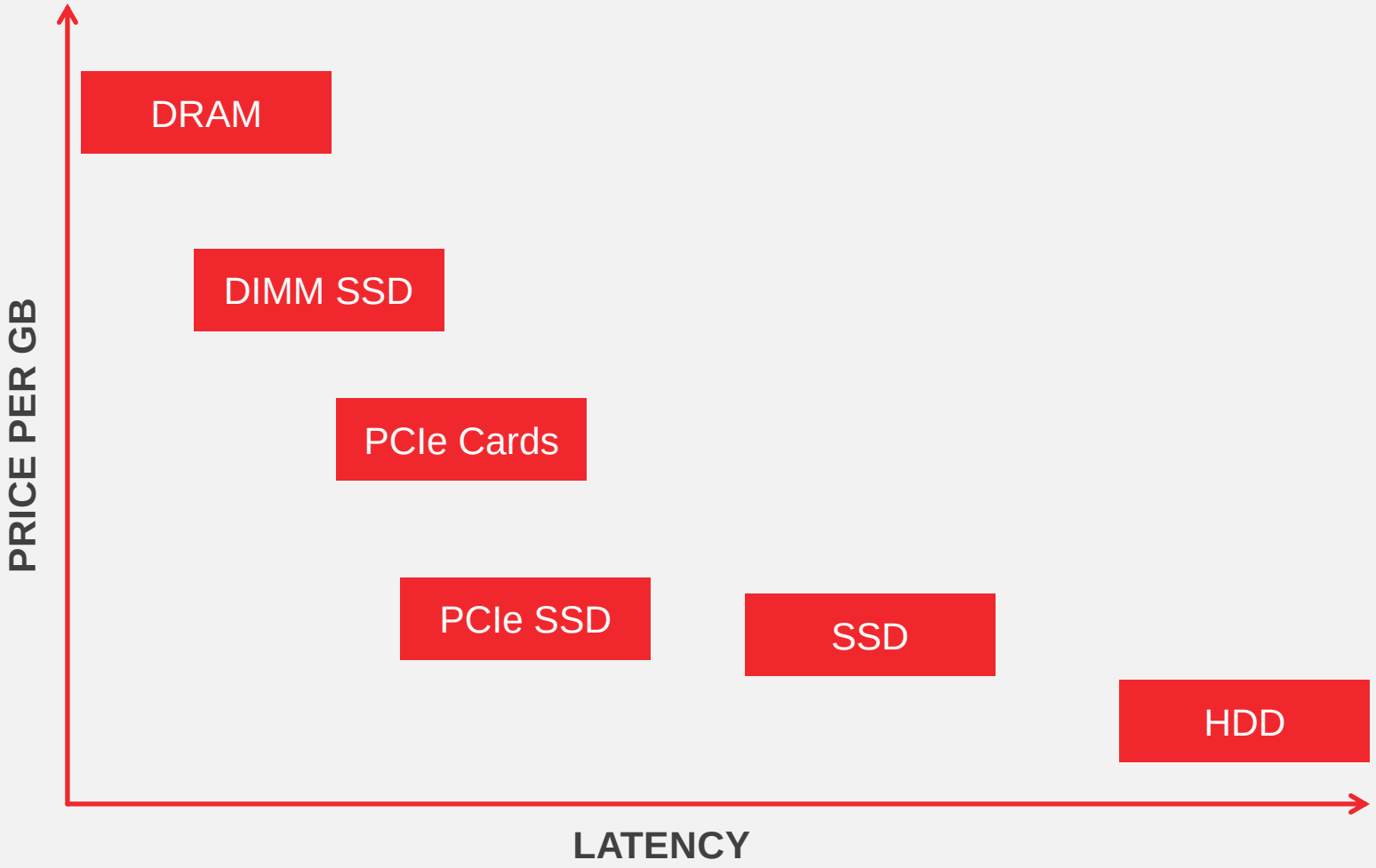
NEW TECHNOLOGY DRIVING INNOVATION AND LOWERING PRICES



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FUTURE INNOVATION

INTEGRATION

M.2 AGGREGATION

STORAGE SEPARATION

REPURPOSING

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FUTURE OF DATA CENTER

COMMODITY HARDWARE

OPEN SOURCE SOFTWARE

ubuntu Linux

hadoop

ceph

GLUSTER

Distributed	Efficient	Reliable	Scalable	Economical

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THANK YOU!