Western Digital.

The Future of Data Infrastructure

Stefaan Vervaet – Sr. Director. Solutions & Market Development

Forward-Looking Statements

Safe Harbor | Disclaimers

This presentation contains forward-looking statements that involve risks and uncertainties, including, but not limited to, statements regarding our data center products and technologies, expectations regarding data usage and storage, our business strategy, growth opportunities, and demand and market trends. Forward-looking statements should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of the times at, or by, which such performance or results will be achieved, if at all. Forward-looking statements are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in or suggested by the forward-looking statements.

Key risks and uncertainties include volatility in global economic conditions, business conditions and growth in the storage ecosystem, impact of competitive products and pricing, market acceptance and cost of commodity materials and specialized product components, actions by competitors, unexpected advances in competing technologies, difficulties or delays in manufacturing, and other risks and uncertainties listed in the company's filings with the Securities and Exchange Commission (the "SEC") and available on the SEC's website at www.sec.gov, including our most recently filed periodic report, to which your attention is directed. We do not undertake any obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future developments or otherwise, except as required by law.

from the inventors of

*...**D**ATA **D**EFENDERS...*

Application Landscape is Changing

Databases

ERP / CRM / Financial

LOB Apps

Virtualization

Mobile

Social Media

Big Data Analytics

Machine Learning

Modern Apps drive New Ways to Provision Storage

MONOLOTHIC → **DISSAGREGATED**

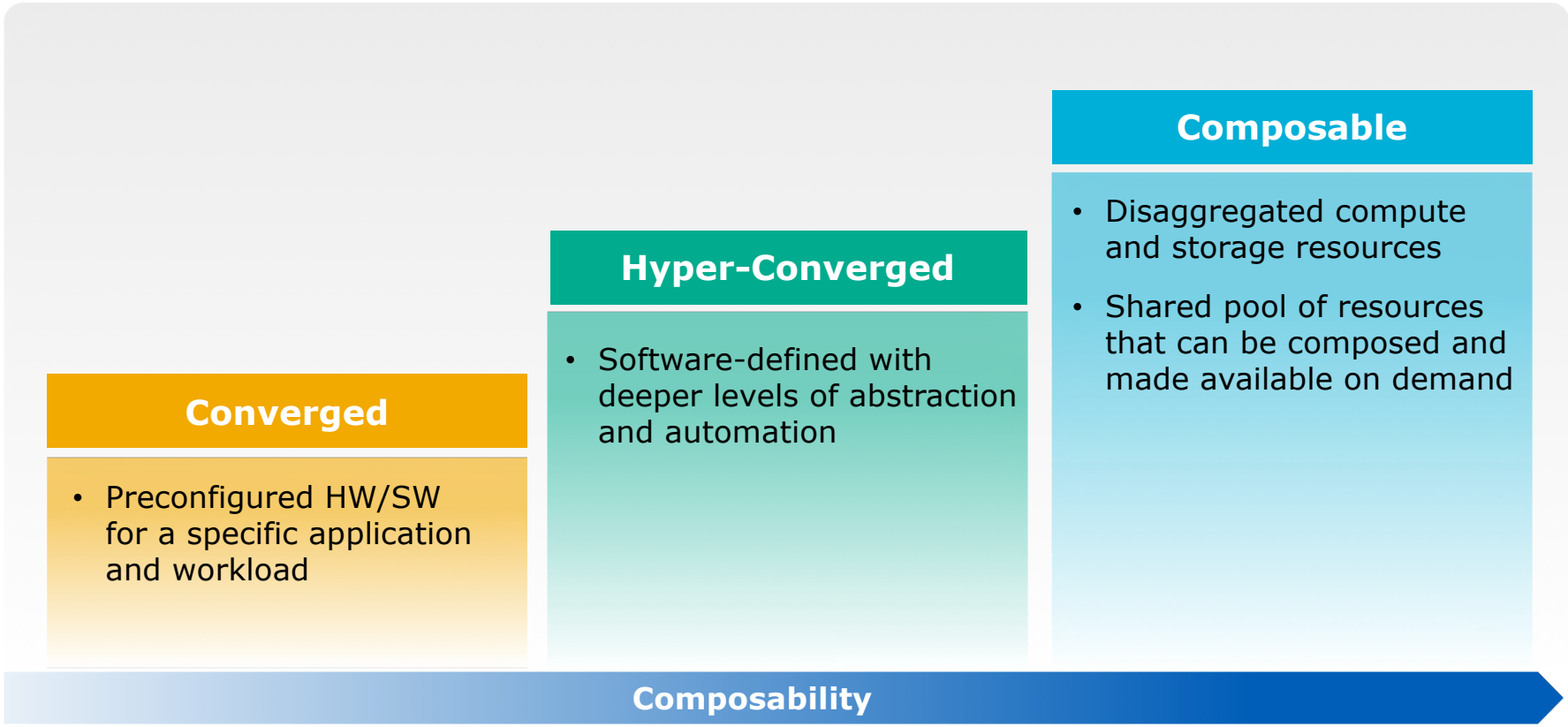
FAST
Milli to Nano seconds
NMVe-oF

BIG
ExaByte Scale-out
Analytics

API
Composable
Microservices
REST based

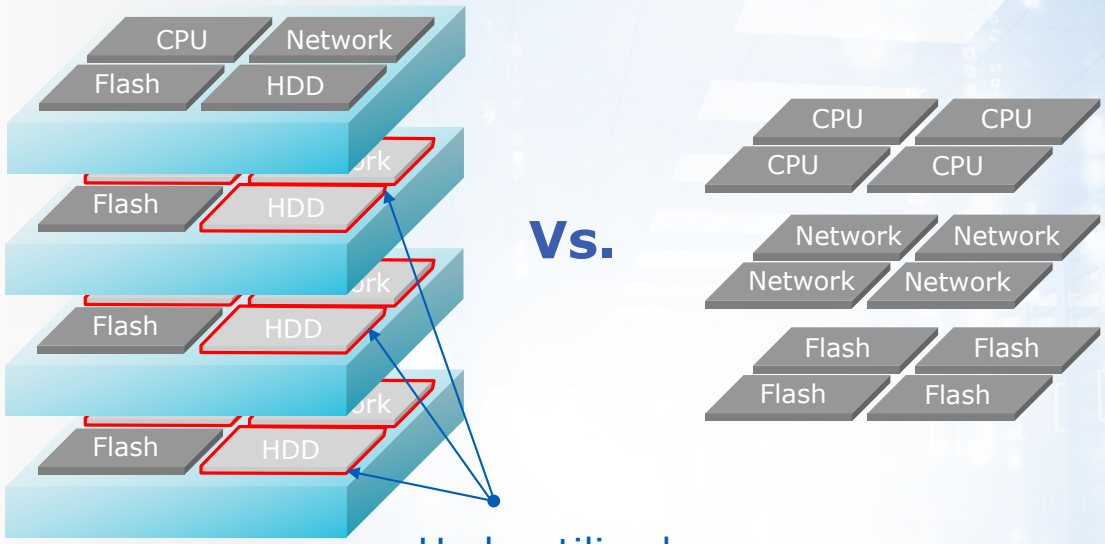
CLOUD
Elasticity, OPEX
Hybrid
Container support

The Data Infrastructure (R)evolution



Hyperconverged vs. Composable

Flash Intensive Workload



Underutilized resources

Scalability

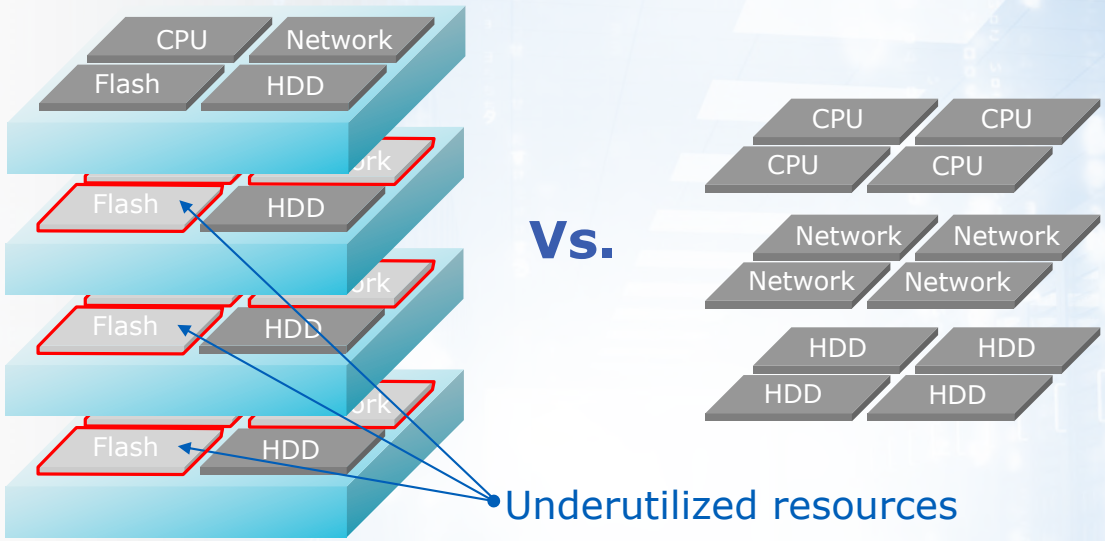
Efficiency

Agility

Performance

Hyperconverged vs. Composable

Capacity Intensive Workload



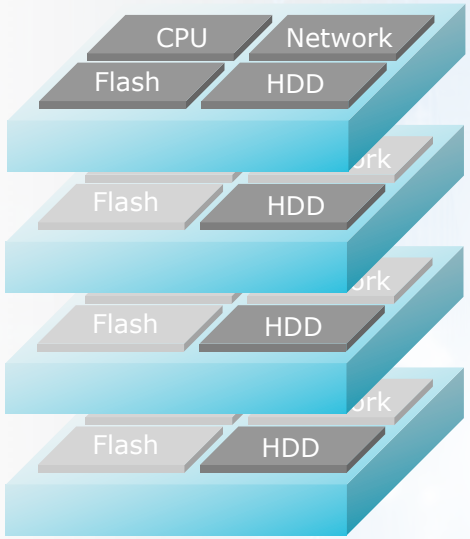
Scalability

Efficiency

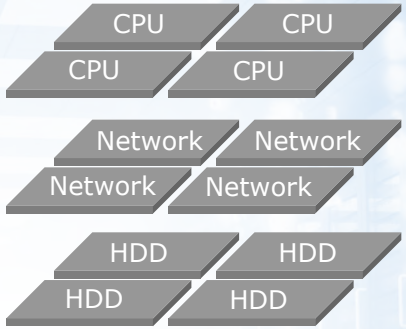
Agility

Performance

The Benefits of Composability



Vs.



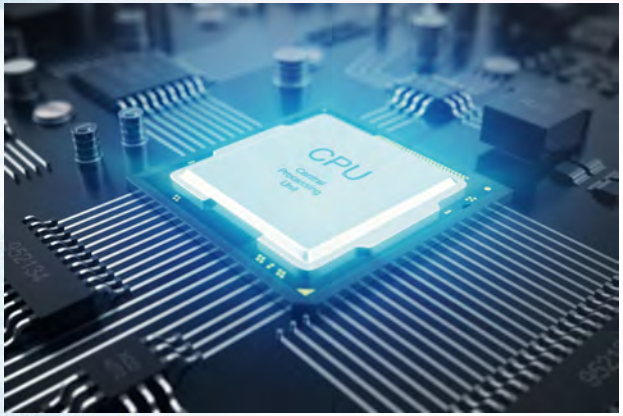
Greater economics, agility, efficiency and simplicity at scale

Applicable to all environments – virtual, containers, bare metal – and applications

~40% lower TCO than traditional HCI architectures

~50% savings in initial CapEx investment

NVMf Fabric Devices

Flash	Disk	Compute
		

The New World of NVMf Fabric Devices

Simpler building blocks

Maintains multiple paths to the device

Network matched to media performance

Faster Time-to-Market of innovation

Introducing OpenFlex™

Modular storage building blocks unified on a single fabric

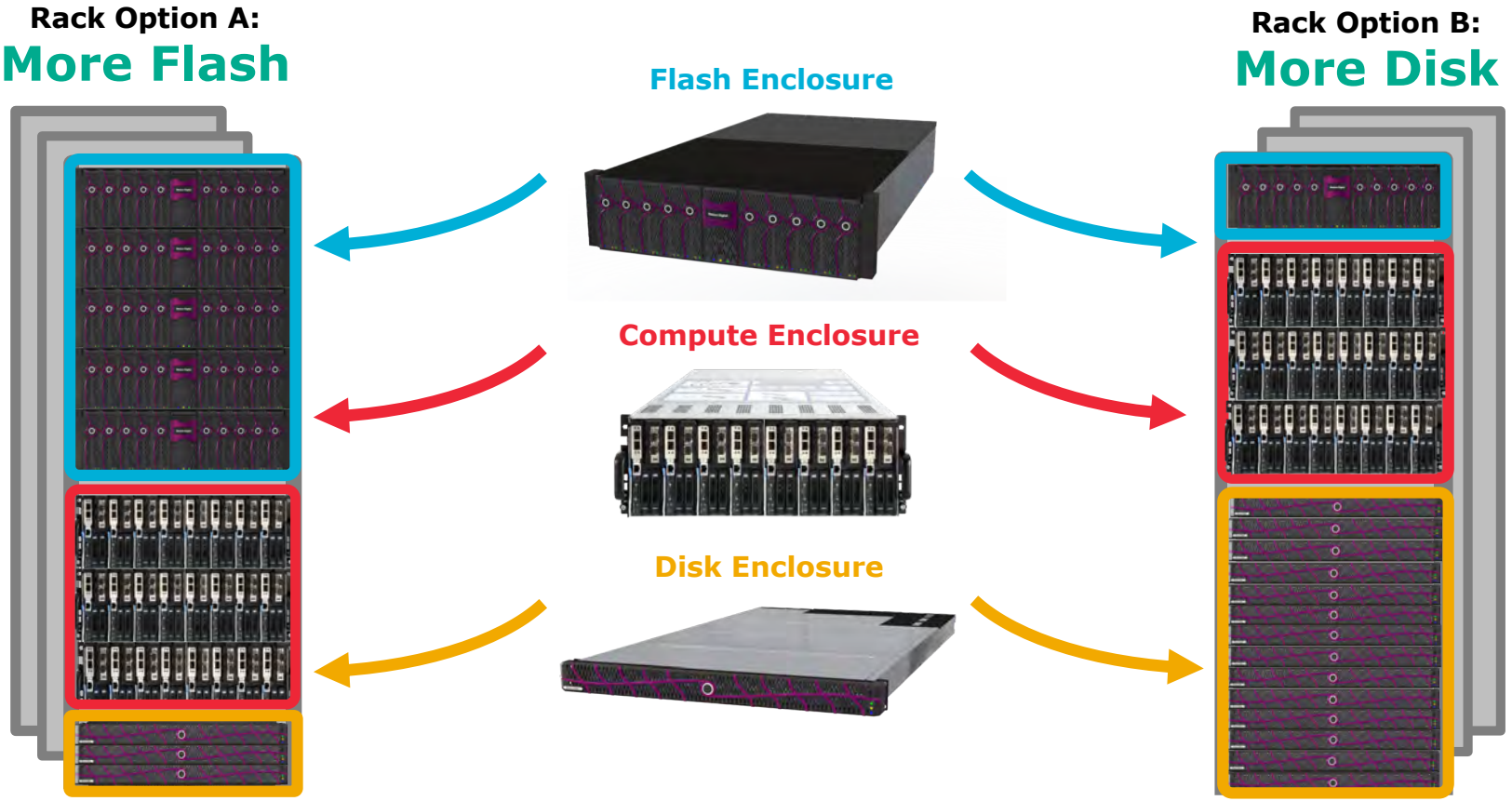
OpenFlex™ F3000 Fabric Device and E3000 Fabric Enclosure

High-performance, low-latency fabric device for Fast Data: AI, real-time analytics, IoT - **610TB of NVMe Flash**

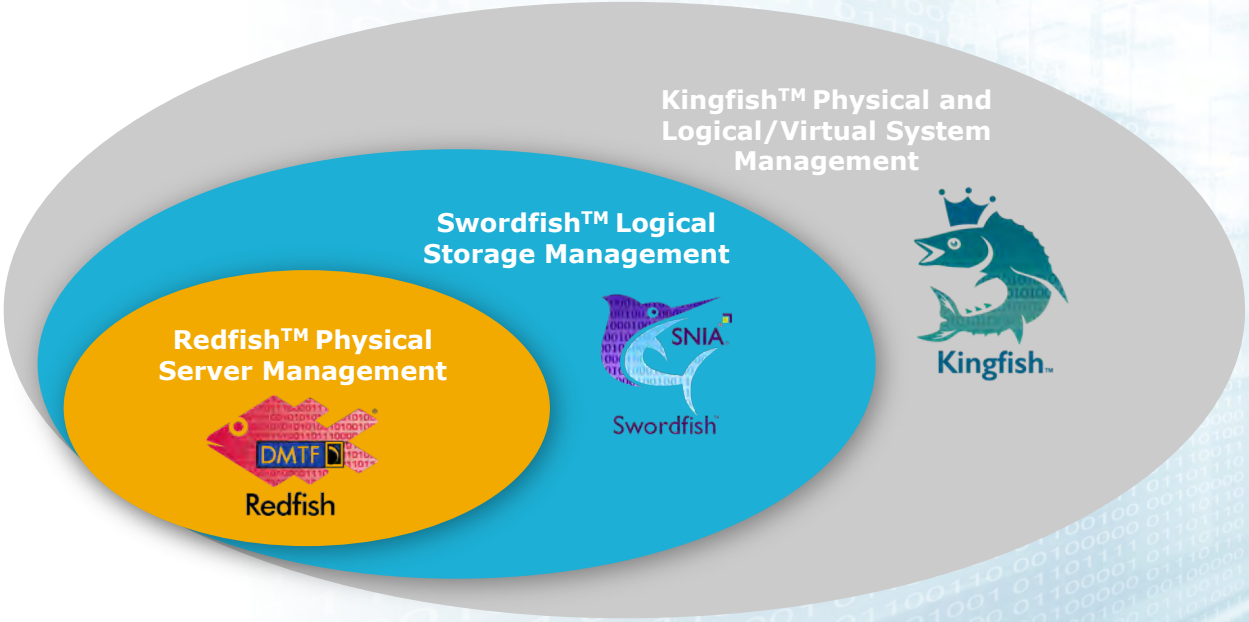
OpenFlex™ D3000 Series Fabric Device

High-capacity fabric device for Big Data: batch analytics, machine learning, predictive modeling – **168TB**

Purpose-Built Disaggregated Infrastructure



OpenFlex Management API



- Kingfish Open API builds on existing open standards
- Unified across entire data infrastructure for delivering simplicity at scale
- Contributing APIs to the public domain to accelerate innovation and market adoption

Broad Ecosystem Support

Focused on software composability tools and interoperable hardware

Western Digital®

The Future of HDD

Driving Leadership Through Proven Execution

The last five years of innovations are a foundation for the future

Helium

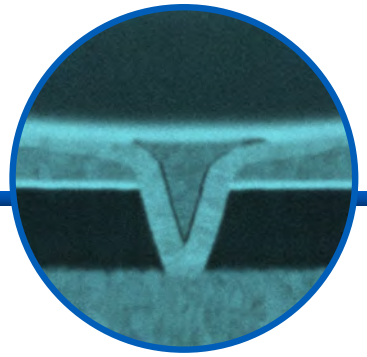
Reduced turbulence for maximum head stability

Micro Actuator

Provides finer control and supports higher track density

MAMR

Enables higher areal density at lower cost and higher reliability

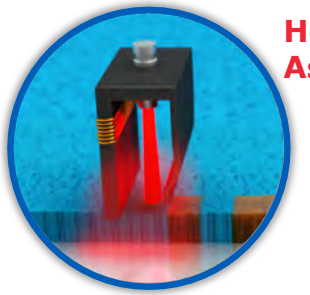


These technologies enable higher capacity and reliability

Why We Chose MAMR Over HAMR

Energy-Assisted Recording: Required for Writeability at High Track Densities

Microwave Assisted



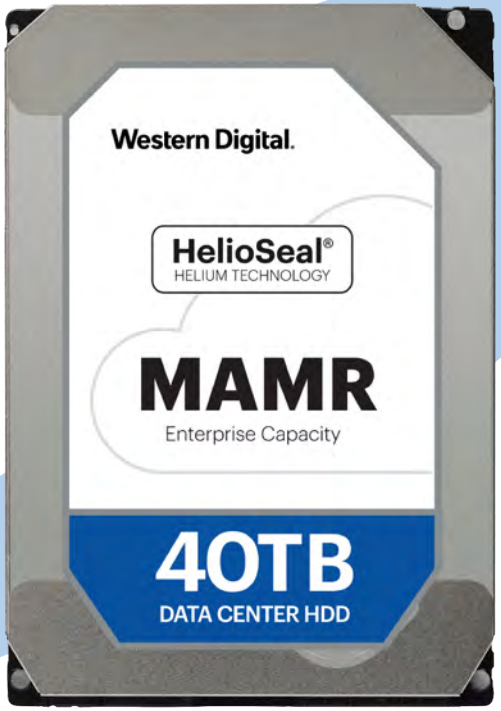
Heat Assisted

	MAMR	HAMR
Complexity	Leverages current technology	New materials and supply chain changes
Reliability	No heat, similar to PMR	Heat dramatically degrades reliability
Ecosystem Ready	Plug and Play	Host SW changes to manage wear leveling
Manufacturability	Production in 2019	Unknown – cost & reliability challenges
Cost	Approaches PMR	Significantly higher than PMR

Capacity Enterprise HDDs are the Foundation

MAMR technology will enable 40TB by 2025 and even higher beyond

MAMR will Fuel the Next Decade of Big Data

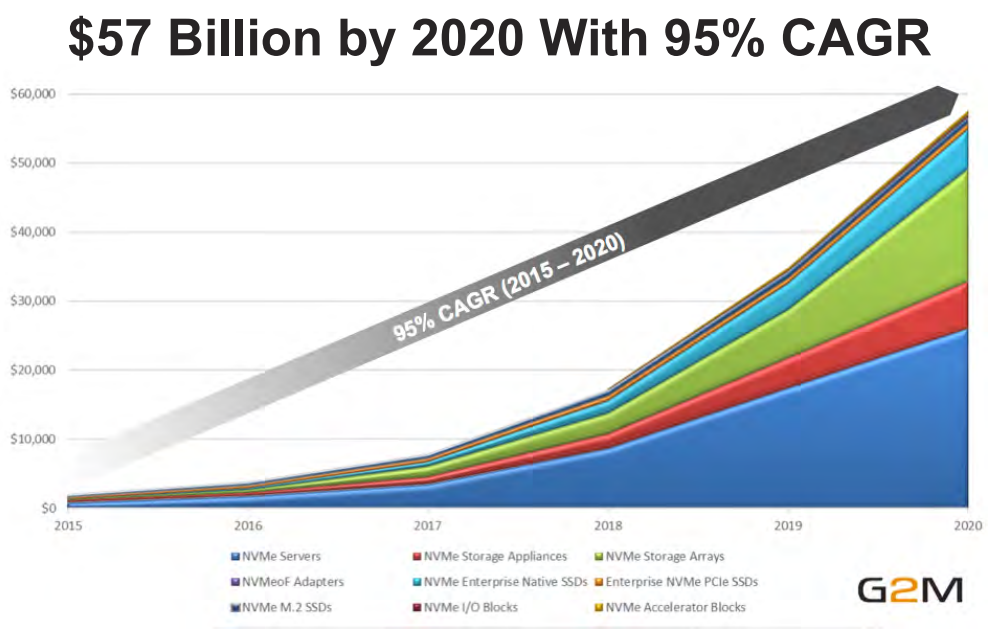


Western Digital®

The Future of NVMe

NVMe Market Growth

Key Market Trends – NVMe infrastructure

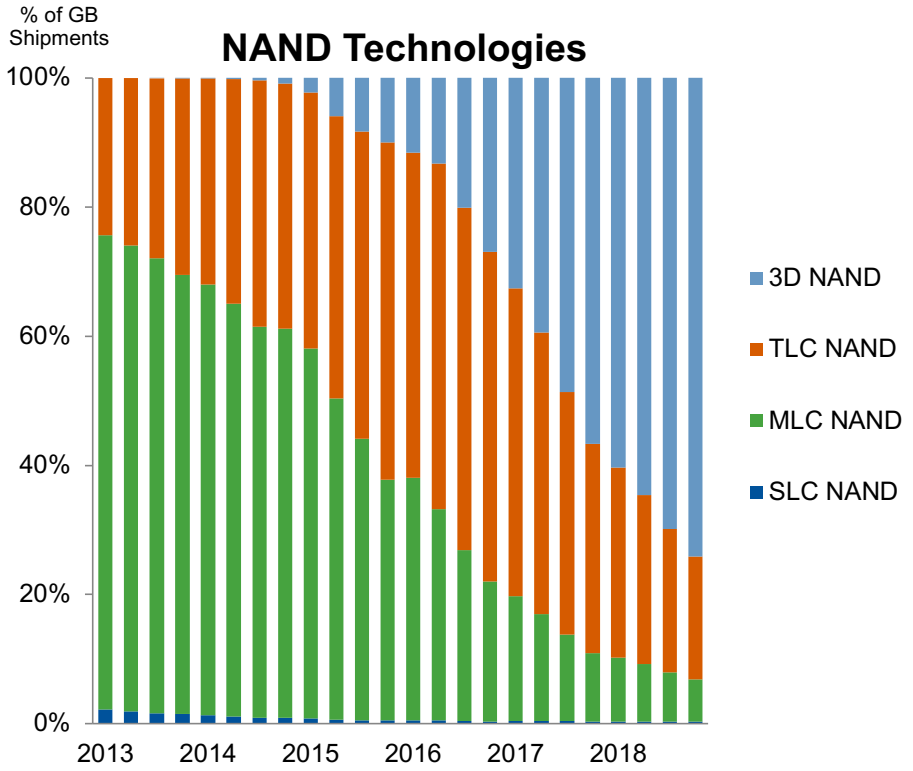


Source: "NVMe Ecosystem Market Sizing Report", G2M, http://www.storagenewsletter.com/rubriques/market-reportsresearch/nvme-market-at-57-billion-by-2020-with-95-cagr-g2m-research/

- Worldwide shipments of NVMe SSDs will grow to more than **25 million units by 2020**
- More than **50% of enterprise servers** will have NVMe bays by 2020
- **60% of enterprise storage appliances** will have NVMe bays by 2020
- Nearly **40% of all-flash arrays** will be NVMe-based by 2020

NAND Technology Evolution:

3D NAND and 3bits per Cell are Focal Points today

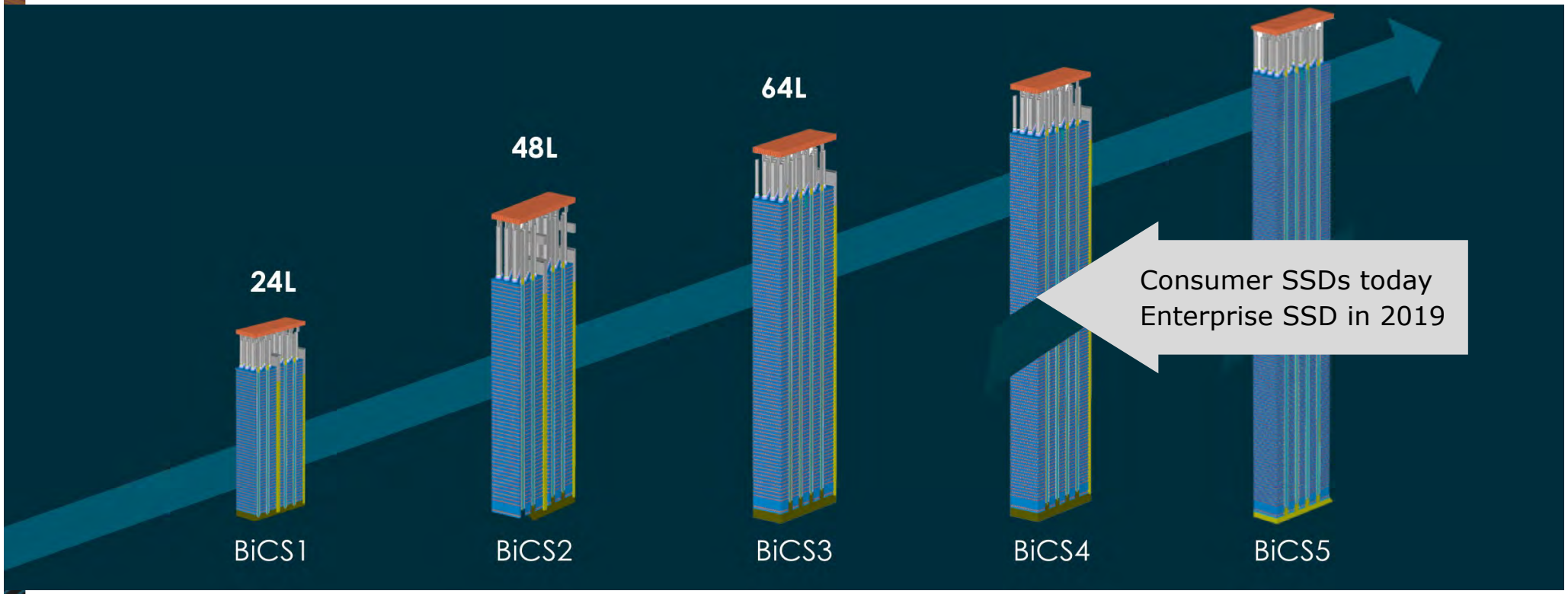


- 2Q17 3D NAND has 39.4% of all GB output
- 4Q18 grows to 74.2% of all GB
- 3D NAND TLC is Majority of Output
- QLC in 2018 and grows to ~10-15% output in 2020

Source: Gartner, June 2017
"NAND Flash Supply and Demand, Worldwide, 1Q16-4Q18, 2Q17 Update"

64-Layer 3D NAND moving to 96-Layer

First commercially viable 3D NAND technology



Source: WDC

...*DATA DEFENDERS*...

...To be Continued...

Our Unique Position