The Future of Data Infrastructure

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The Evolving Role of Data

Creating the data-driven economy

Data as a record

Data as communication

Data as efficiency

Data as currency

Richness

Value
Diverse and Connected Data Types

Tight coupling between Big Data and Fast Data
Past
Data Held Captive by Single Application

Current and Future
Data Pooled and Shared by Multiple Applications
Increasingly Dynamic Workloads

A survey of mid-sized and large-enterprise IT users found...

- **45%** of compute hours and storage capacity are utilized.
- **70%** report inefficiencies in the time required to provision compute and storage resources.

*Source: IDC White Paper, sponsored by Hewlett Packard Enterprise, Quantifying Datacenter Inefficiency: Making the Case for Composable Infrastructure, Doc #US42318917, Mar 2017*
Driving New Demands on Data Infrastructure

- Scalability
- Efficiency
- Agility
- Performance
The Data Infrastructure (R)evolution

**Converged**
- Preconfigured HW/SW for a specific application and workload

**Hyper-Converged**
- Software-defined with deeper levels of abstraction and automation

**Composable**
- Disaggregated compute and storage resources
- Shared pool of resources that can be composed and made available on demand

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Hyperconverged vs. Composable

Flash Intensive Workload

Vs.

Underutilized resources

Scalability

Efficiency

Agility

Performance

HCI

SCI

Compute

Network

Flash

HDD

Compute

Network

Flash

HDD

Compute

Network

Flash

HDD

Compute

Network

Flash

HDD

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Hyperconverged vs. Composable

Capacity Intensive Workload

**HCl**
- Flash
- Network
- Compute
- HDD

**SCI**
- Flash
- Network
- HDD

Underutilized resources

**Scalability**

**Efficiency**

**Agility**

**Performance**
The Benefits of Composability

- ~40% lower TCO than traditional HCI architectures

- ~50% savings in initial CapEx investment

Greater economics, agility, efficiency and simplicity at scale

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

¹TCO and CapEx estimates based on internal analysis, utilization estimates and component pricing as of July 2018.
Our Composable Infrastructure Vision

1. Open
2. Scalable
3. Disaggregated
4. Extensible
Enabling Composable Infrastructure

Data Fabric

- No physical systems – only composed systems
- No established hierarchy – CPU doesn’t ‘own’ the GPU or the Memory
- All elements are peers on the network and they communicate with each other
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
Purpose-Built Disaggregated Infrastructure

Rack Option A: More Flash

Rack Option B: More Disk

Flash Enclosure

Compute Enclosure

Disk Enclosure
Introducing OpenFlex™

Open standards enable vendor-neutral solutions

OpenFlex™ F3000 Fabric Device and E3000 Fabric Enclosure

High-performance, low-latency fabric device for Fast Data: AI, real-time analytics, IoT

OpenFlex™ D3000 Series Fabric Device

High-capacity fabric device for Big Data: batch analytics, machine learning, predictive modeling
OpenFlex Management API

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

Rapid composability

New instances in seconds

Optimize to the unique needs of an application or workload
Broad Ecosystem Support

Focused on software composability tools and interoperable hardware
Western Digital OpenFlex

Positioned to Accelerate Market Adoption

1. Open
   Firm commitment to an open standards-based approach

2. Ecosystem
   Strategic position in the ecosystem to help accelerate market adoption

3. Trust
   Trusted leader in data center products, technologies and infrastructure
Innovating for a Data-Centric World

Visit Western Digital at booth #207 for an OpenFlex demo

wdc.com/opencomposable to learn more