# Scale-Out Enterprise Storage

# Kaminario Scale-Out (Scaled-Right) All Flash Array

- ## Headquarters in Boston
  - Customers Since 2010
- ## SPC-1 World Record Breaking Winner 2012
  - Performance 1.2M IOPS
  - Price/Performance - $0.40 per IOPS
  - Sustained Performance – 24 hours

- ## Scale-out Architecture
  - All flash
  - Global distribution of data
  - 35 patents in process
- ## 3D Consistent Performance
  - Low latency
  - High IOPS
  - High throughput
- ## Enterprise Class Resilience
  - No single point of failure

**SEQUOIA ❖ CAPITAL**
THE ENTREPRENEURS BEHIND THE ENTREPRENEURS

**TENAYA** CAPITAL

**Mitsui**

**GLOBESPAN** CAPITAL PARTNERS

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# Data Center Trends and Infrastructure Needs

Massive Data Growth

- Agility
- Elasticity
- Efficiency
- Performance Consistency
- Management Simplicity
- Data Protection

Consolidation
Virtualization
Modularity
Cloud Computing

# Storage needs a grounds-up design!
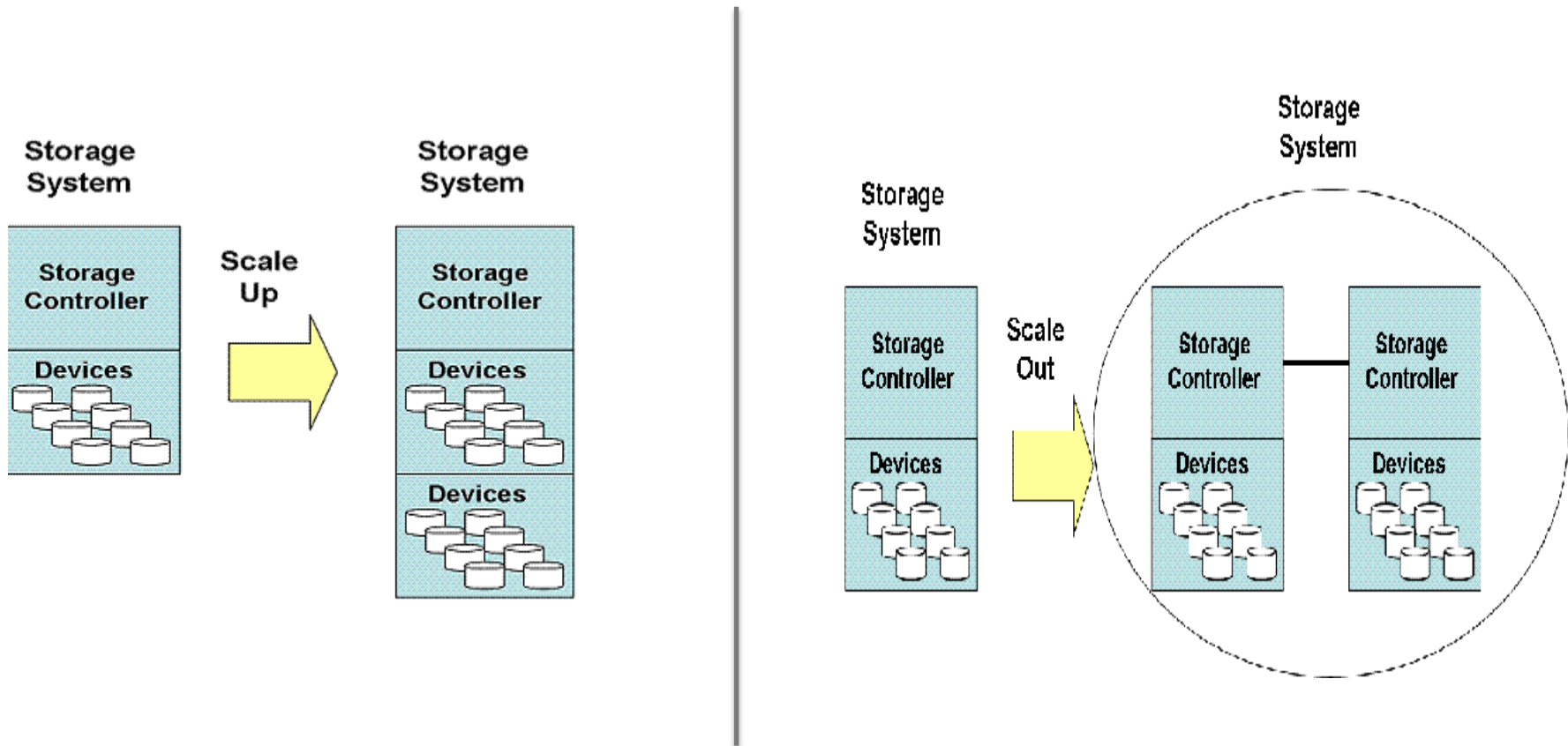
## Data centers today

### Have:

- ✓ Powerful servers
- ✓ Fast networks
- ✓ Efficient hypervisors
- ✓ Efficient databases & applications…

### but storage bottleneck..

- ❖ 20 year old technology
- ❖ Ineffective performance
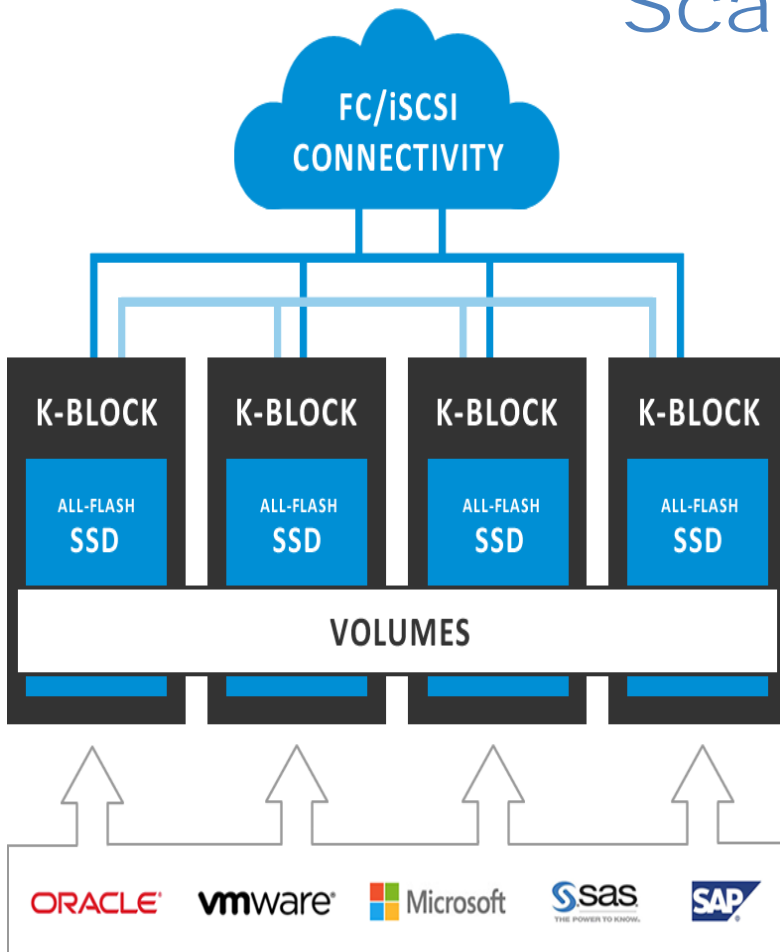- ❖ Operational complexity
- ❖ Growing footprint & power

## Flash changes the game - but only an enabler!

# Scale-up vs. Scale-out basics
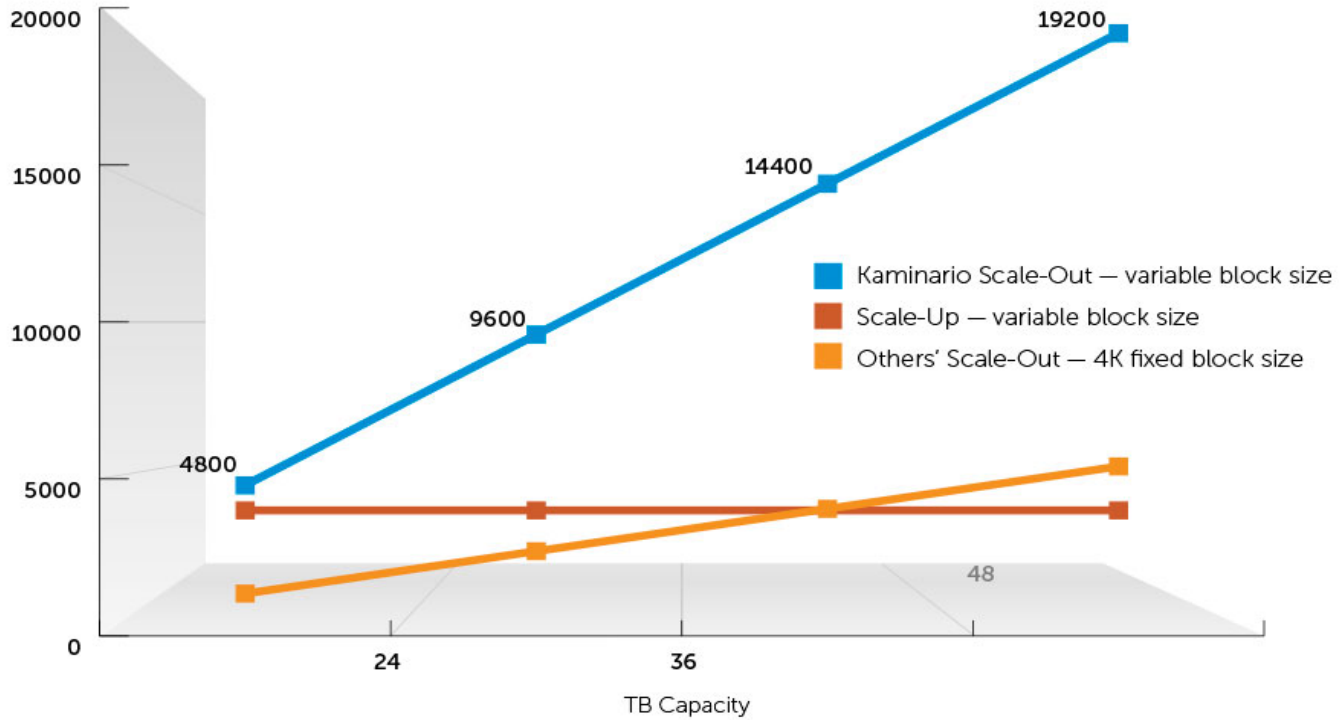


**Source: TechTarget**

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# Kaminario Scale-Out(Scaled-Right!) All-Flash Array

- IOPS Advantage
  - Scale-Out
  - Optimized internal network

- Throughput Advantage
  - Scale-out
  - 128 K stripe size – Variable block size

- Latency Advantage
  - Early acknowledgement
  - Optimized internal network

# MIXED DATABASE WORKLOAD — 32KB IO, 90% READ / 10% WRITE

Bandwidth MB/sec
for IO size 32k

20000

19200

15000

14400

■ Kaminario Scale-Out — variable block size

■ Scale-Up — variable block size

10000

9600

■ Others' Scale-Out — 4K fixed block size

5000

4800

48

0

24

36

TB Capacity

Enabling Elasticity and Efficiency…

Enabling Greater Business Agility…

Leading to a More Engaged, Productive Workforce

## 3D Consistent Performance

- Linear from 2 - 120 TB

- Lowest Latency (280 us)

- 200K- 3M+ IOPS, 3- 56 GB/s)

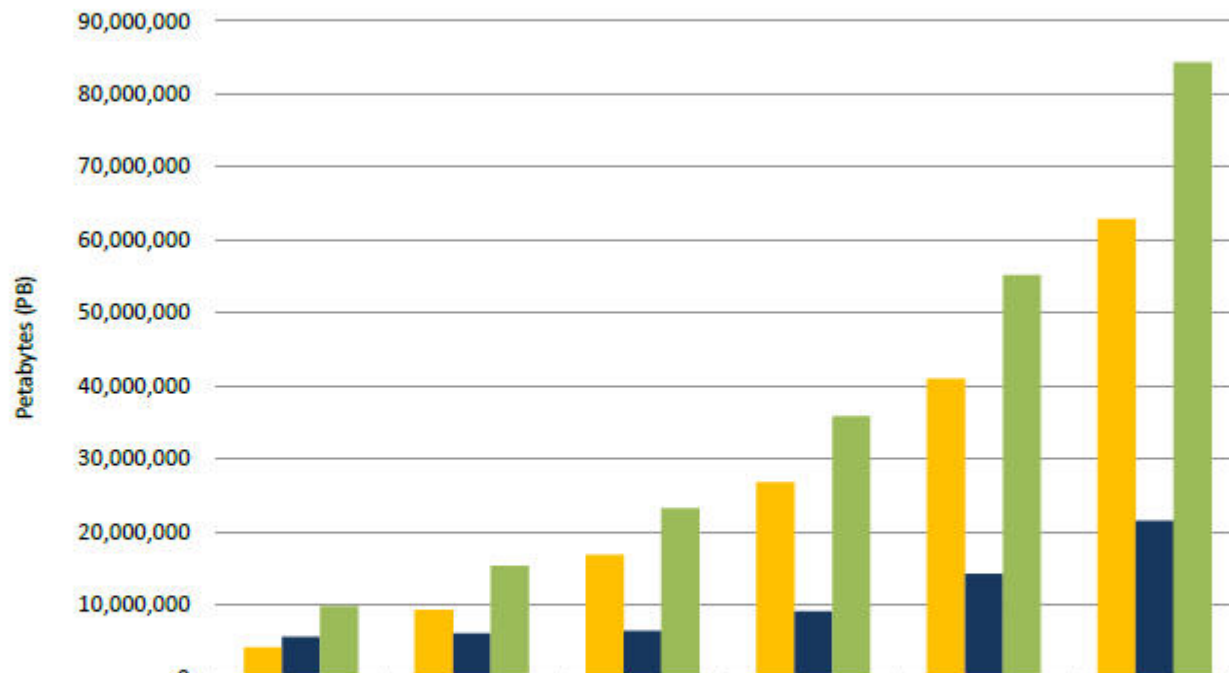- Any Mixed Workload

- Performance Guarantee

## Resilient

- No Single Point of Failure

- Self healing – N+1

- Efficient snapshots

- Non disruptive upgrades

- Intuitive Global Management

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# ESG forecast for Scale-Out Storage



Figure 3. Scale-out Capacity vs. Non-Scale-out and Total Networked Storage Addressable Market

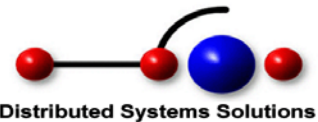Worldwide Storage Capacity Shipped, 2010-2015, Petabytes (PB)

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Scale-Out Storage Systems | 4,188,823 | 9,274,841 | 16,822,993 | 26,808,584 | 40,937,723 | 62,834,420 |
| Non-Scale-Out Storage Systems | 5,588,174 | 6,043,544 | 6,410,547 | 9,042,696 | 14,266,786 | 21,475,853 |
| Total Addressable Networked Storage Market | 9,776,997 | 15,318,385 | 23,233,539 | 35,851,281 | 55,204,509 | 84,310,272 |

Source: Enterprise Strategy Group, 2011.

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# 100% Customer Satisfaction

# Thank You.