Innovation. Disruption. Revolution. Impact of Accelerating Data Flow

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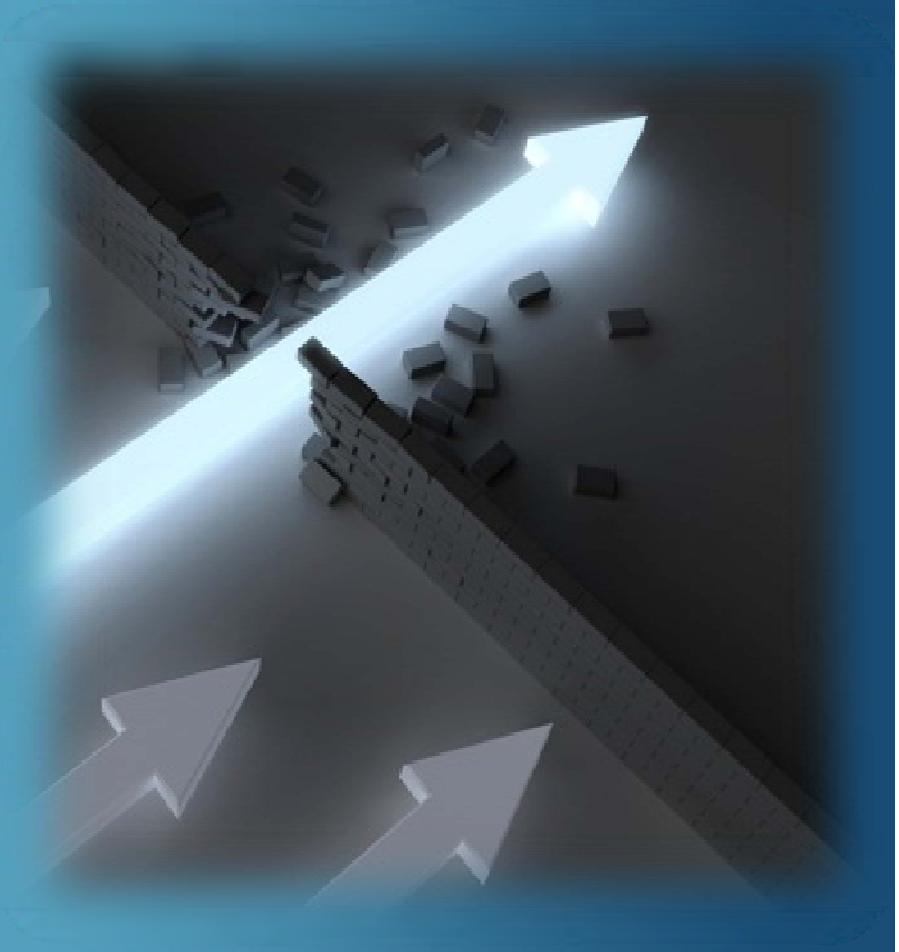
STEC, Inc.

SSD's Revolutionary Impact

- Changed performance from low 300 I/Os to >80,000 I/Os
- Created a new "Tier 0" Category
- Eliminated Storage Bottlenecks



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SSD's Innovation

- Driving system redesigns
- Enabled auto tiering software
- Reducing footprint and cost

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Technology Innovation Drives Change

- Solid-state solutions here to stay
- MLC is an enabling factor in solid-state solutions
- It takes revolutionary technology to enable MLC in the enterprise

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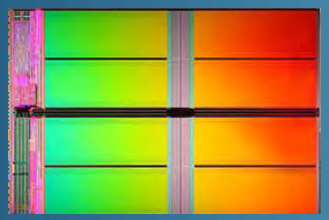
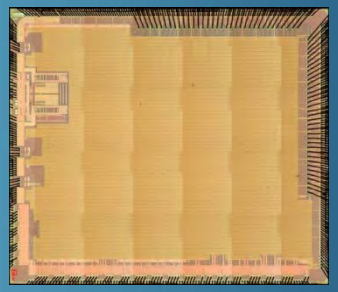
Importance of the Controller Platform

Flash gets all the press…



but…it's static, not intelligent and does not interact with the host.

SSD is not Flash alone.



It is an intelligent system.

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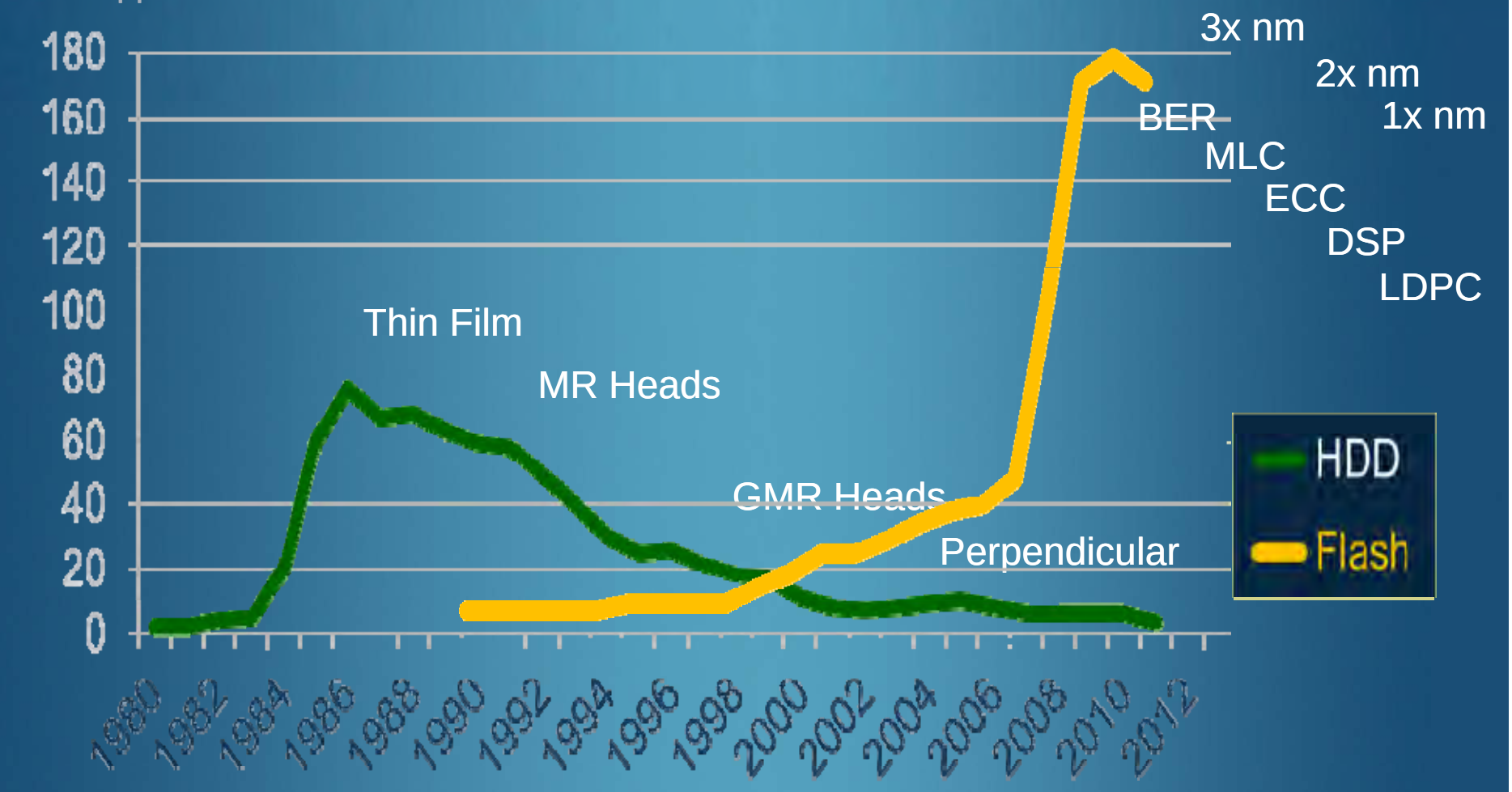
Technology Shifts
Impact of Changing Technology



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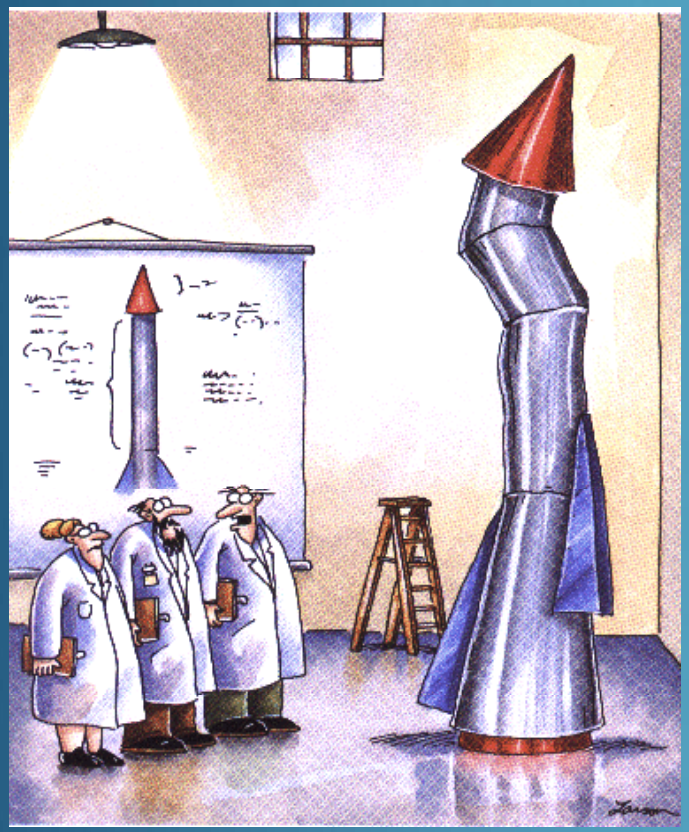
SSDs as a Technology Platform



When we say:
"it isn't Rocket Science"
we mean it's something
more complicated

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CellCare™ Technology Fills the Gap Between eMLC and SLC Flash

Requires

- Advanced Flash mgmt
- Digital Signal Processing

Enables MLC with

- Improved endurance
- Improved performance
- Increased reliability

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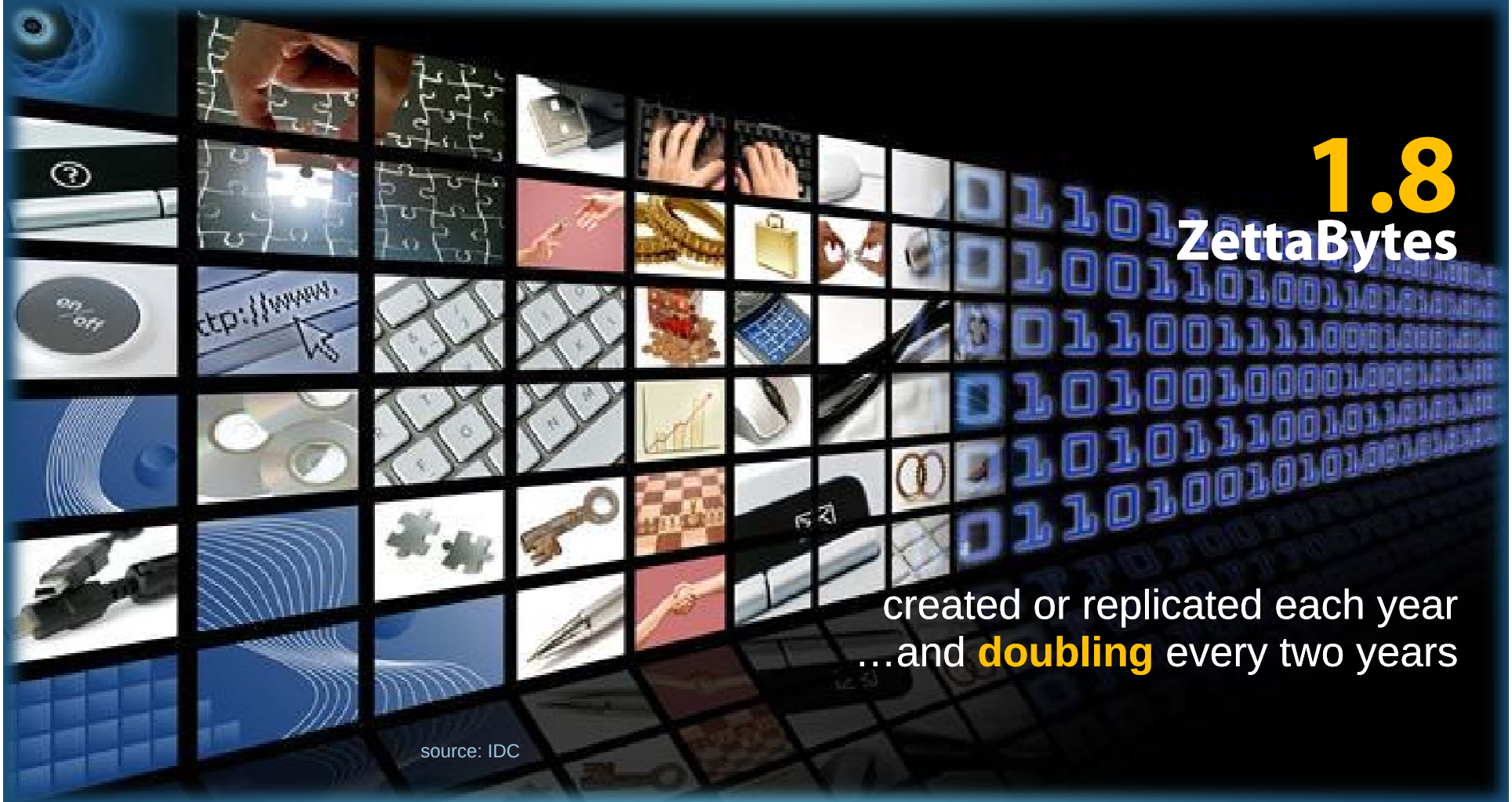
Welcome to the World of Big Data

1,800,000,000,000,000,000,000,000



Just how big is 1.8 ZB?

200 billion HD Movies

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Impact of the Data Explosion = Opportunity

Server Platforms

Storage Platforms

$49 billion

Server-related enterprise spend

$28.7 billion

Storage-related enterprise spend

source: IDC

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How do we Drive Efficiency?

- Integrating solid-state technology for data access
- Increasing overall performance
- Re-architecting drive implementation
- Removing costs from the equation

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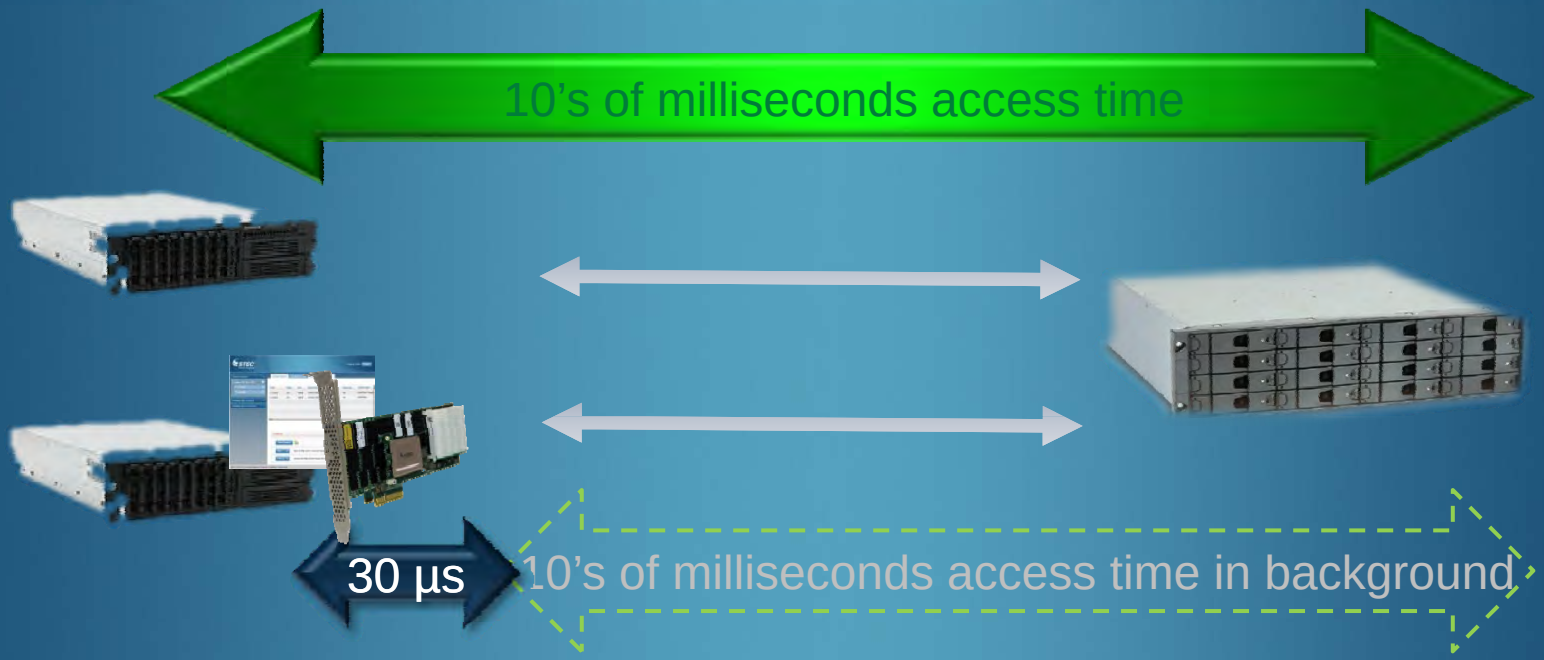
Modernizing DAS Servers Accelerating Access to Data

Direct-Attached Storage and Disk Arrays



EnhanceIO™ SSD Cache Software

Accelerating Time to Data Means Accelerating Time to Money

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10TB DAS Hardware Solution

2X-10X Performance at 1/2 the Price

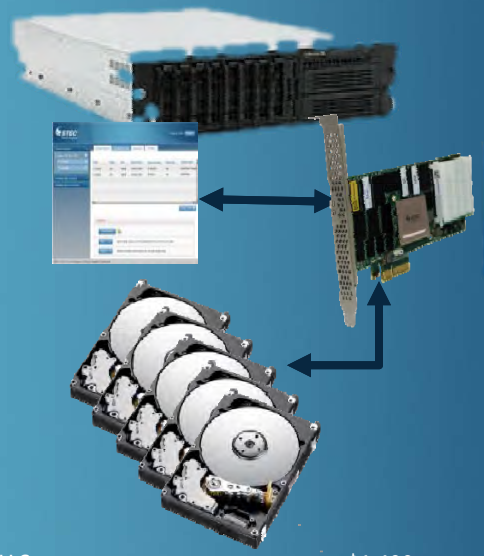
HDD Solution

~4K IOPS
70/30 4K blocks
$3.90 / IO

3U Server	= $1,400
(16) 600GB 15K HDD @$607	= $9,700
3U 16 bay Storage Chassis	= $2,500

	$13,600

Modernized SSD Server Solution



~80K IOPS
70/30 4K blocks
$0.05 / IO

3U Server	= $1,400
(1) Kronos PCIe SSA	= $4,000
(5) 2TB 7.2K HDD @ 175	= $ 875

	$6,275

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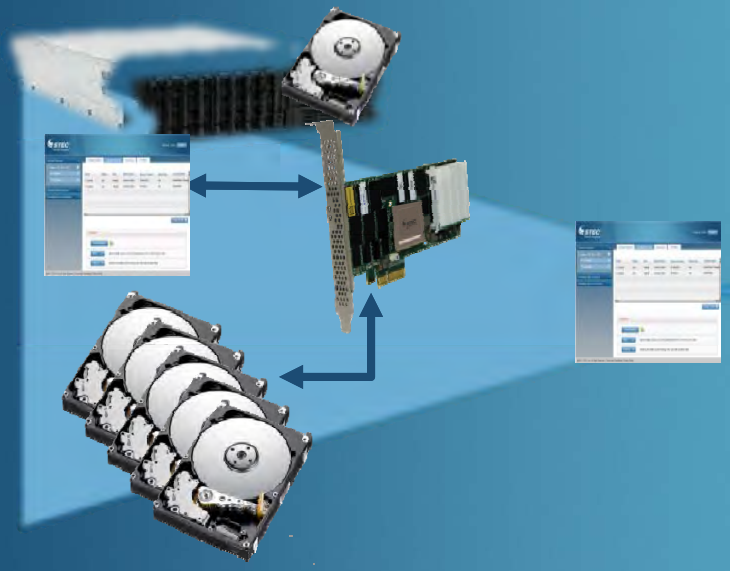
Impact to Server Platform Spend

Modernized SSD Server Solution



~~$49~~ billion

$25 billion

Saving
$24 billion
to reinvest in
IT infrastructure

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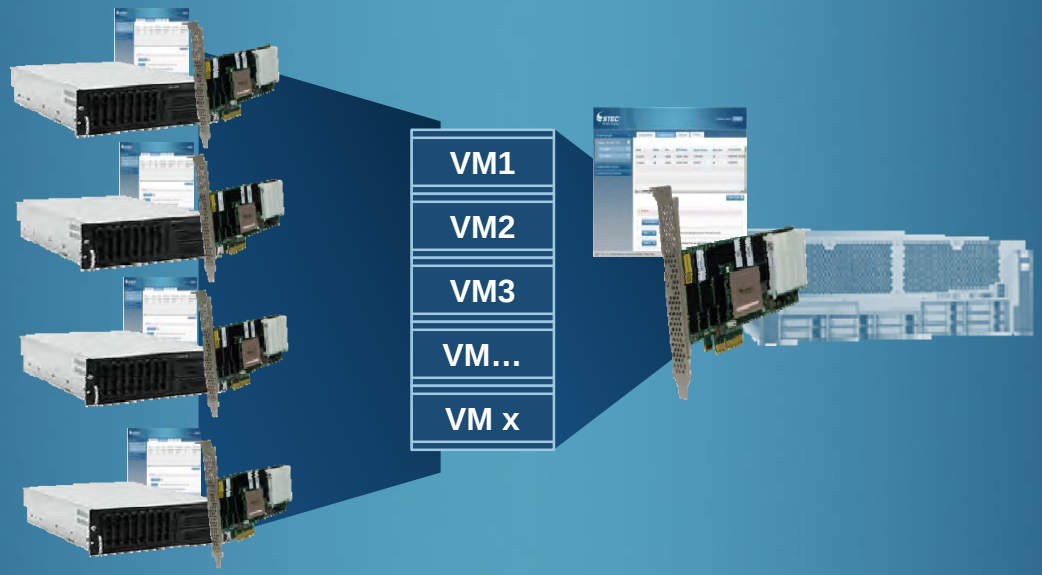
SSD's in Virtual Machines

- Caching solutions need to enable VM's
- Services storage for all virtual machines
- Enables Caching, Tiering and Virtual Storage from one service



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Impact of the Data Explosion = Opportunity

Server Platforms

$49 billion

Server-related spend

Storage Platforms

$28.7 billion

Enterprise storage-related spend

source: IDC

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SSDs Modernize the SAN

30TB Storage Solution

Shrinking the Footprint

Reduce rack space and cost:

Maintain capacity, reduce drives, power & cooling

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SSD's Saving TCO

30TB Storage Solution

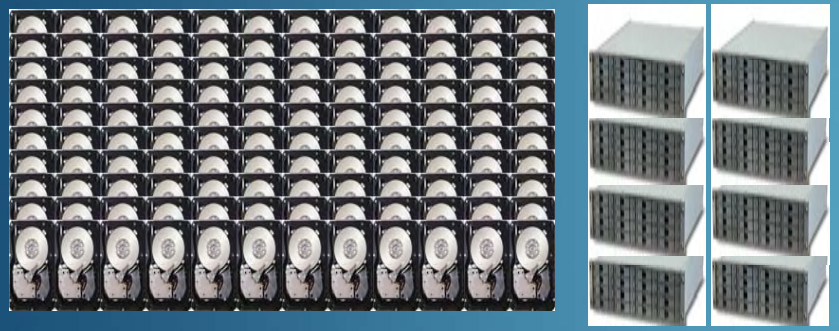
Modernized SAN configuration

32-1TB HDDs | 10-15K HDDs | 4-200GB SSDs | 3 arrays

SSD & HDD Deployment		TCO(estimated)
32ea – 1TB SATA HDDs 10ea – 300GB 15K HDDs +4ea – 200GB SSDs	35.6TB	28,000 12,000 20,500
3ea – 15 bay arrays	9U rack space	28,000
6 – 450watt supplies (1 year power & cooling)	power cooling	3,500 1,700
aggregate IOPS 158K	***$0.59**/ IO*	**$ 93,700**

Traditional SAN configuration

120 15K RPM HDDs | 8 arrays



HDD Deployment		TCO(estimated)
120ea – 300GB HDDs	36TB	145,000
8ea – 15 bay arrays	24U rack space	75,000
16 – 450watt supplies (1 year power & cooling)	power cooling	9,500 4,700
aggregate IOPS 36K	***$6.50** / IO*	**$ 234,200**

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Impact of the Data Explosion = Opportunity

Storage Modernization

~~$28.7~~ billion

$15 billion

Saving
$14 billion
to reinvest in
IT infrastructure

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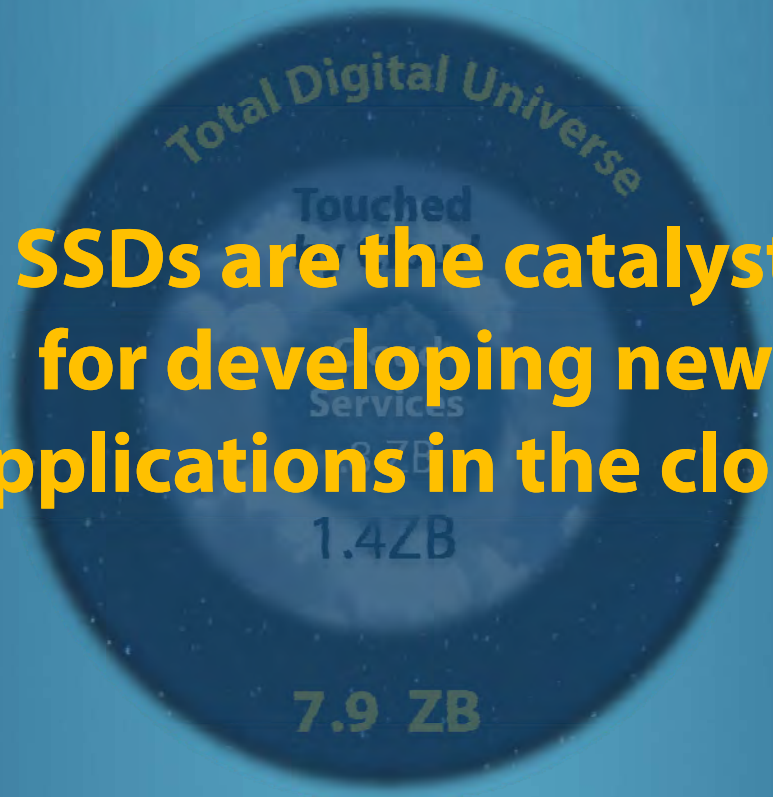
Growth of data in the cloud by 2015



SSDs are the catalyst for developing new applications in the cloud

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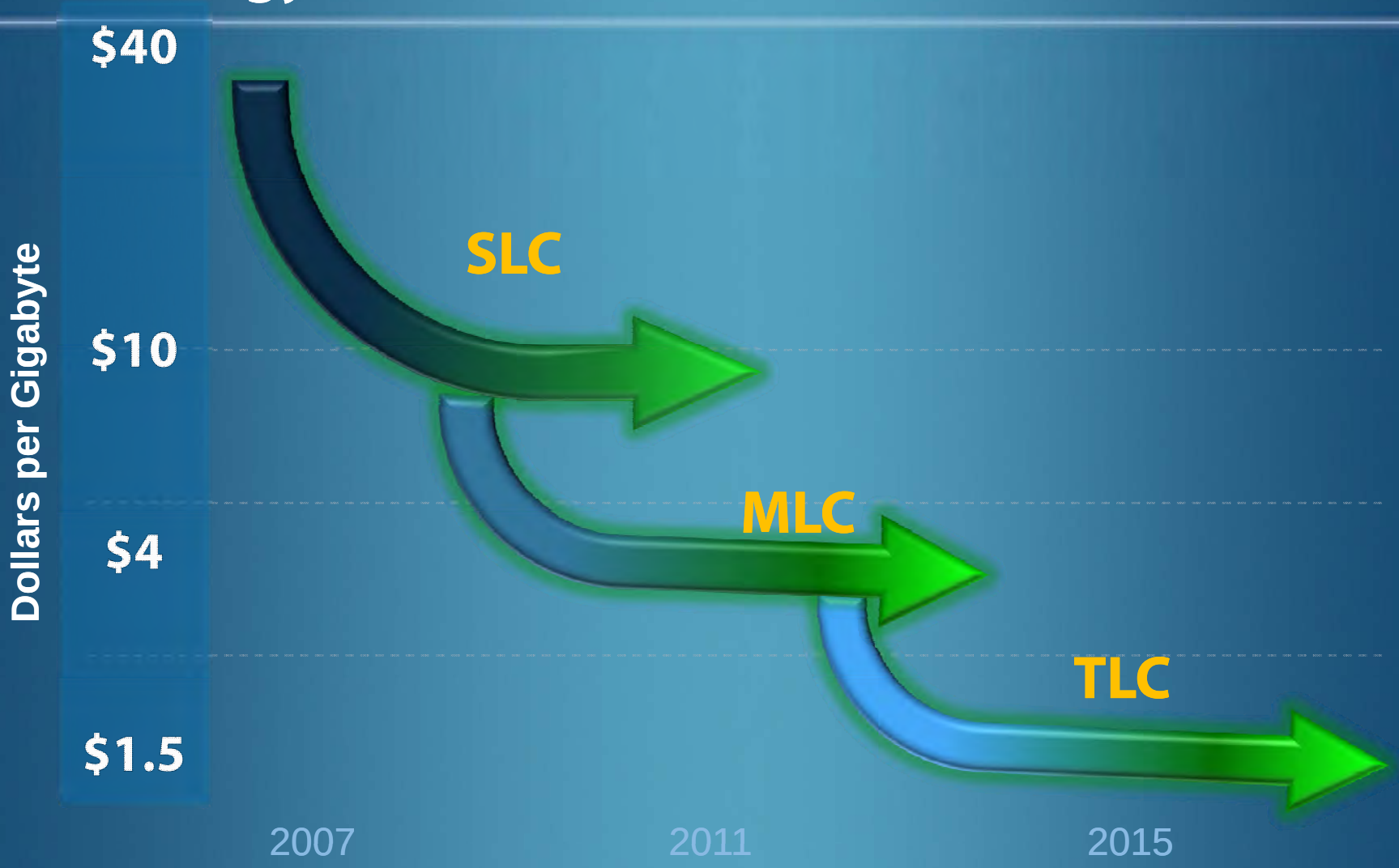
Enabling an All-SSD Storage Platform
Technology Shifts Drive Cost Reductions



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A Potential all-SSD Solution

- TLC – Three Bits per Cell
- Enabling an all SSD solution
- Delivering:
  - Competitive Advantages
  - Huge IOPS
  - Lower cost/GB

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