



It's Not Your Father's Hard Drive, or Is It?

SSDs: A Transformational Storage Technology

**John Scaramuzzo
Senior VP/GM**





**TRANSFORMING
ENTERPRISE
STORAGE
PERFORMANCE.
ENDURANCE.
RELIABILITY.**



Transformational Technologies



**Disruptive
innovation is
transformational**



**Mass Adoption Requires a Tipping Point
Such as New Use Model or Price Point**



Storage State Disk I/O's for brand Drive



4 MPH
Horse & Buggy

Innovation
500x speed improvement



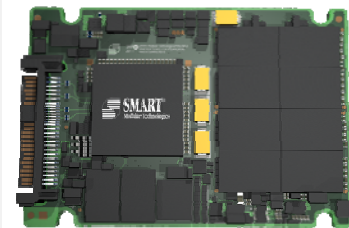
2000 MPH
Mach 3 Jet

Transformational Changes Create New Opportunities



15K RPM HDD

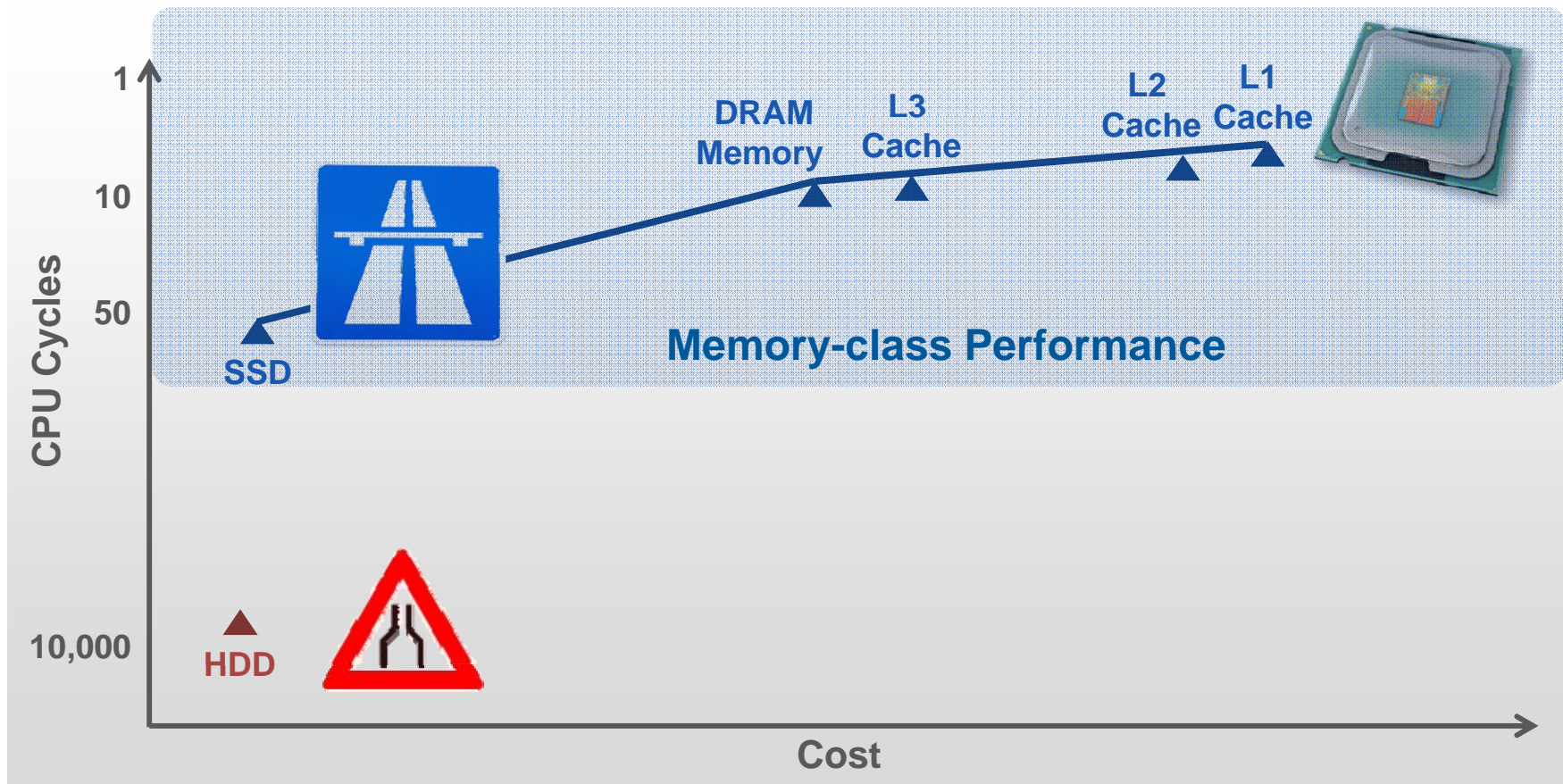
Innovation
500x IOPS improvement



Enterprise SSD



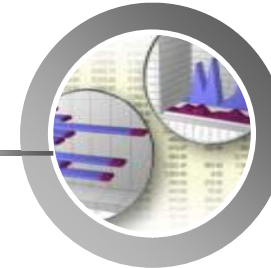
What Could You Do With SSD Performance?



SSD Solves the HDD IOPS Gap



IT Architects Are Showing the Way...



Business Intelligence



Real-time Data Analysis and Response



Real-time Simulation

New Applications are utilizing the Unmatchable Performance of SSD's to Change the Way the World does Business!



IT Architects Are Showing the Way...



Memcached:
Increased UDP
throughput 400%



SAP-HANA: Financial
management analytics –
reduced process from
month to days

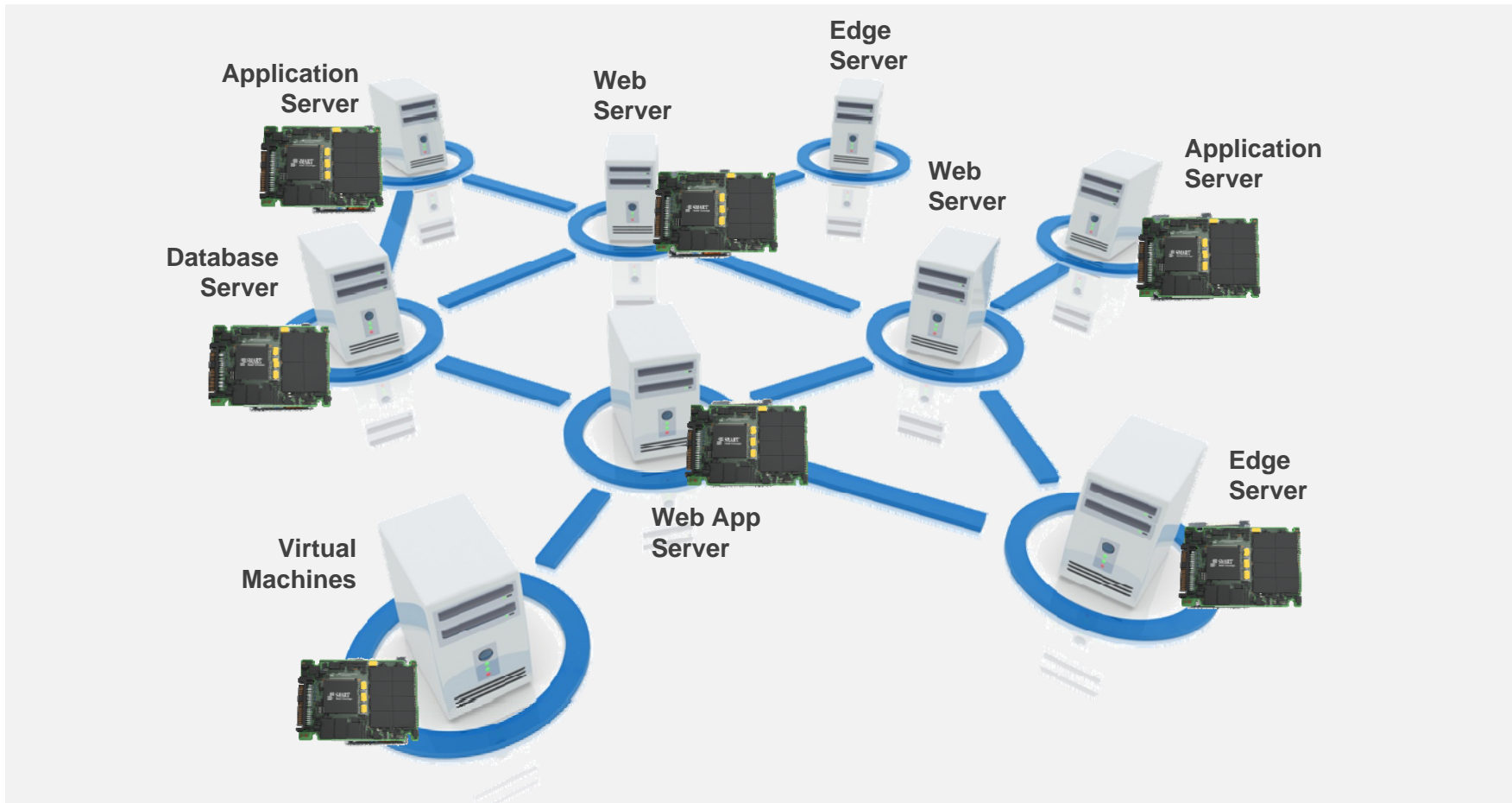


SAP-HANA: Workforce
planning – reduced queries
from 1 month to 3 hours

New Applications are utilizing the Unmatchable Performance of SSD's to Change the Way the World does Business!



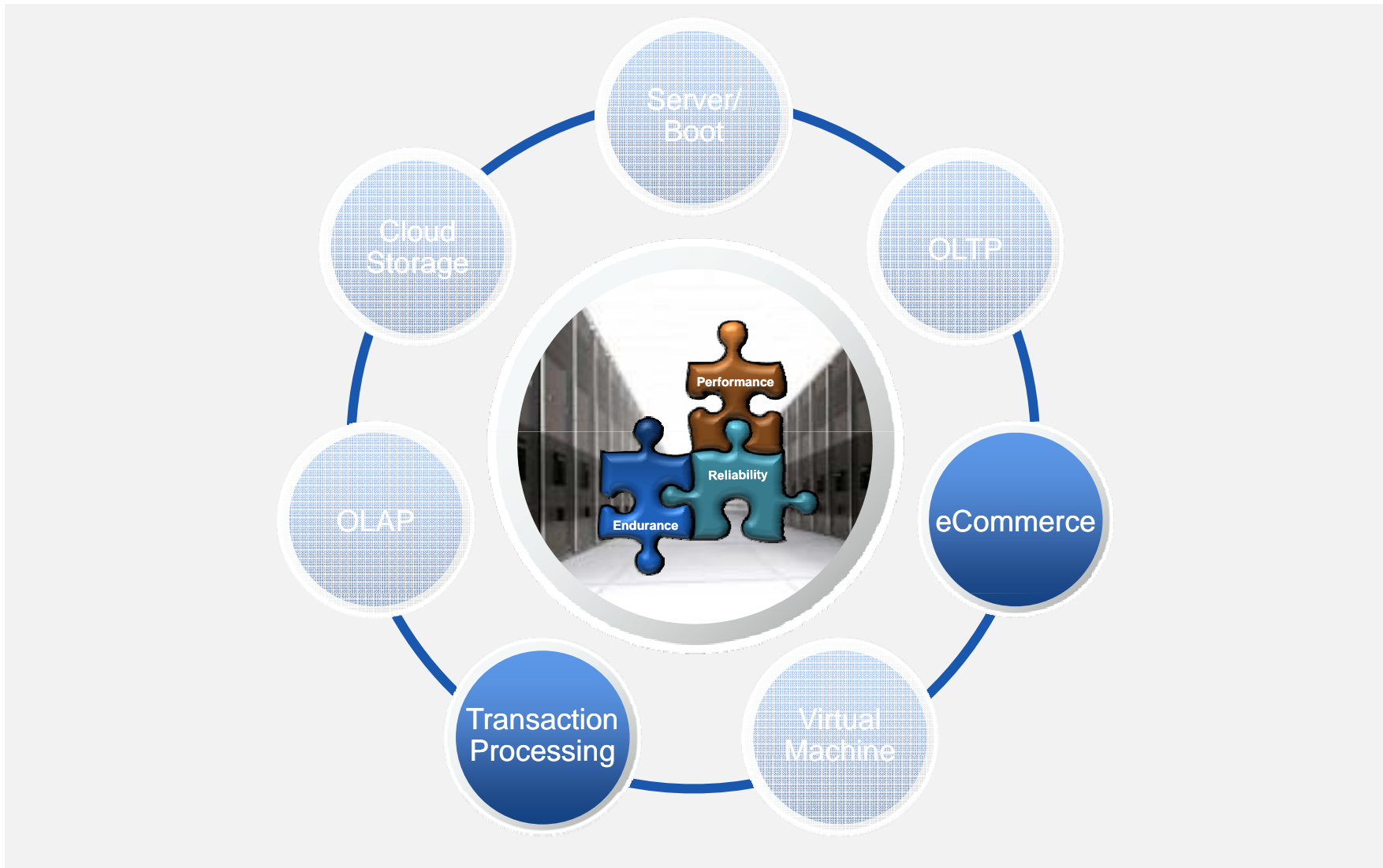
SSD Innovation Can Improve Every Segment of the Enterprise



New Applications Are Here. What is Needed to “Tip” adoption?

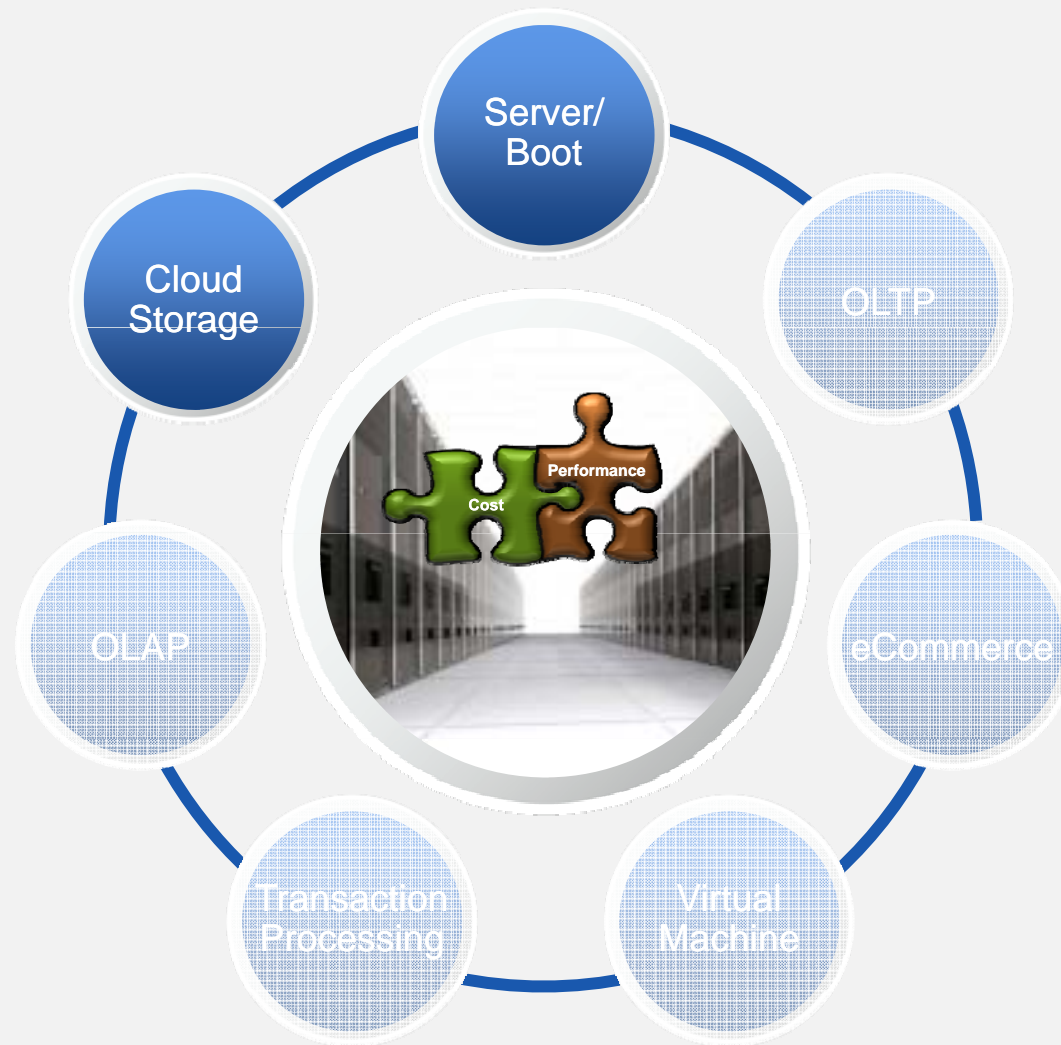


TCO Model Drove Early Adoption in the Enterprise





“Read Mostly” SSD’s are Driving Boot and Entry Server Adoption





The Answer Remains the Same...



Solid State Storage technology is already a game changer in *Performance, Power, and Storage Density*

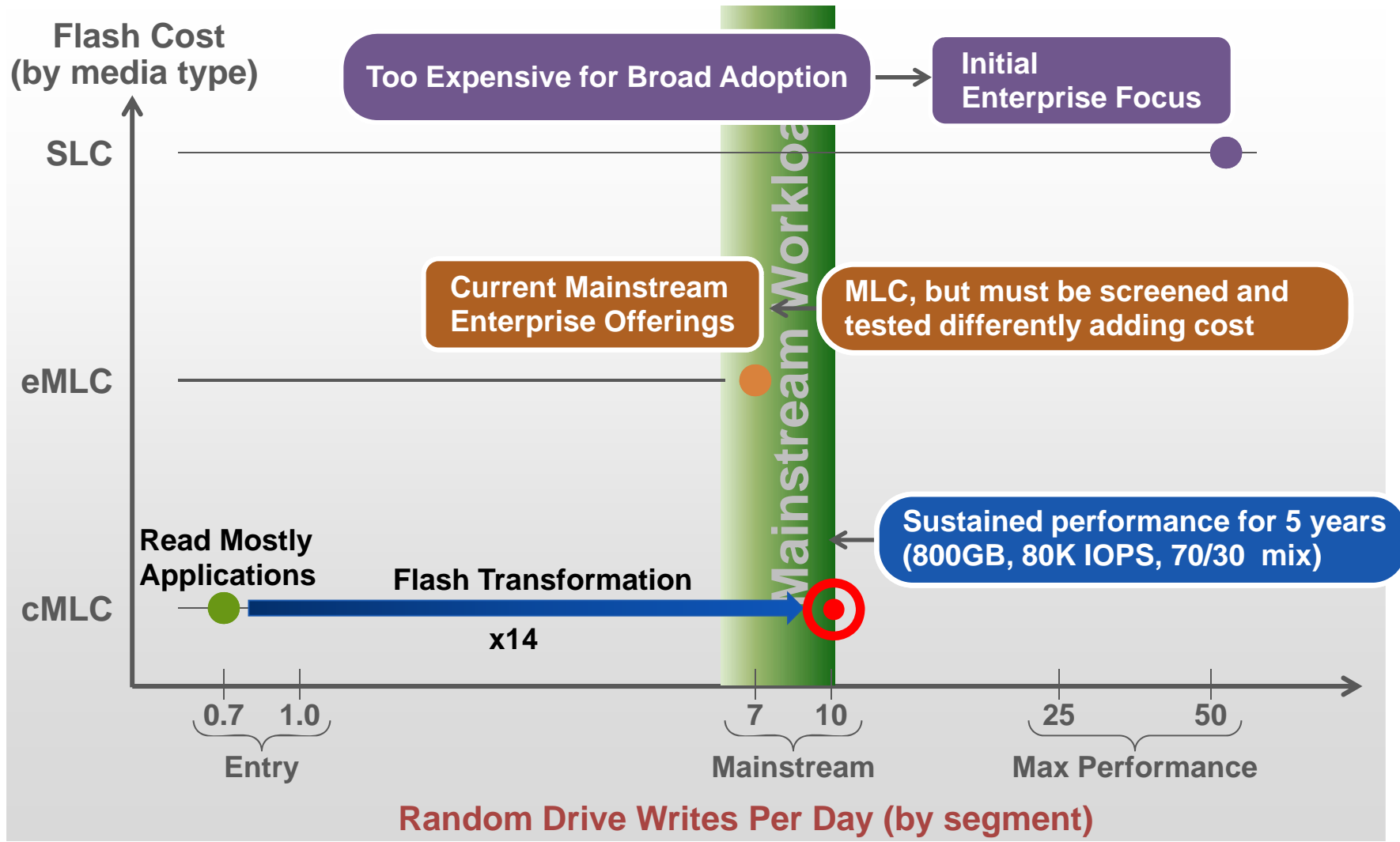


The key to massive adoption is continued cost reduction

Working together to create the best value for our customers will benefit the entire industry



We Need to Solve the Media Paradox with Innovation



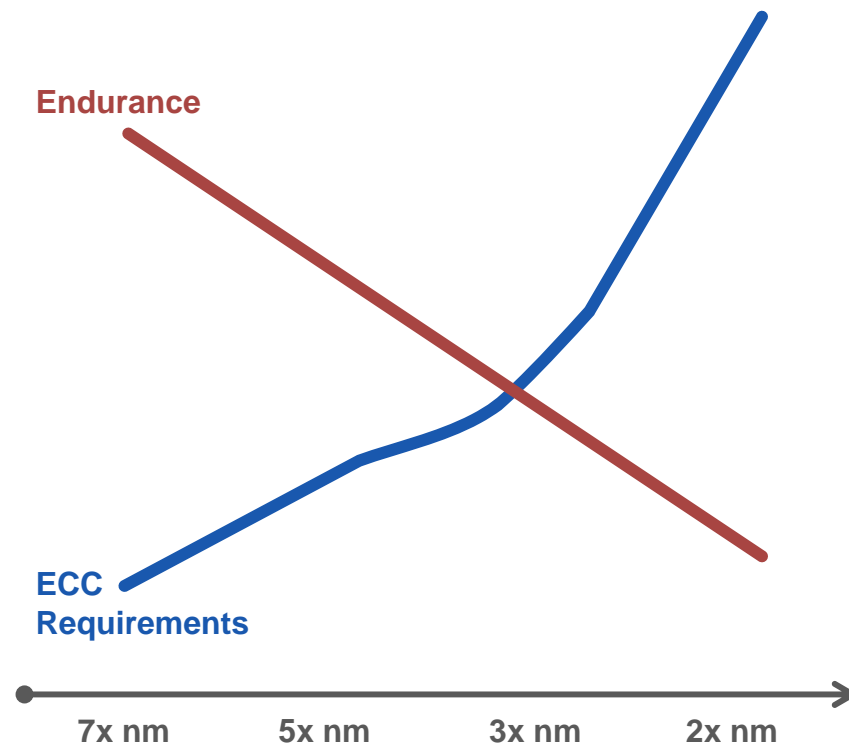


The Conventional Media Paradox



NAND flash
roadmap
continues to
drive down
cost...

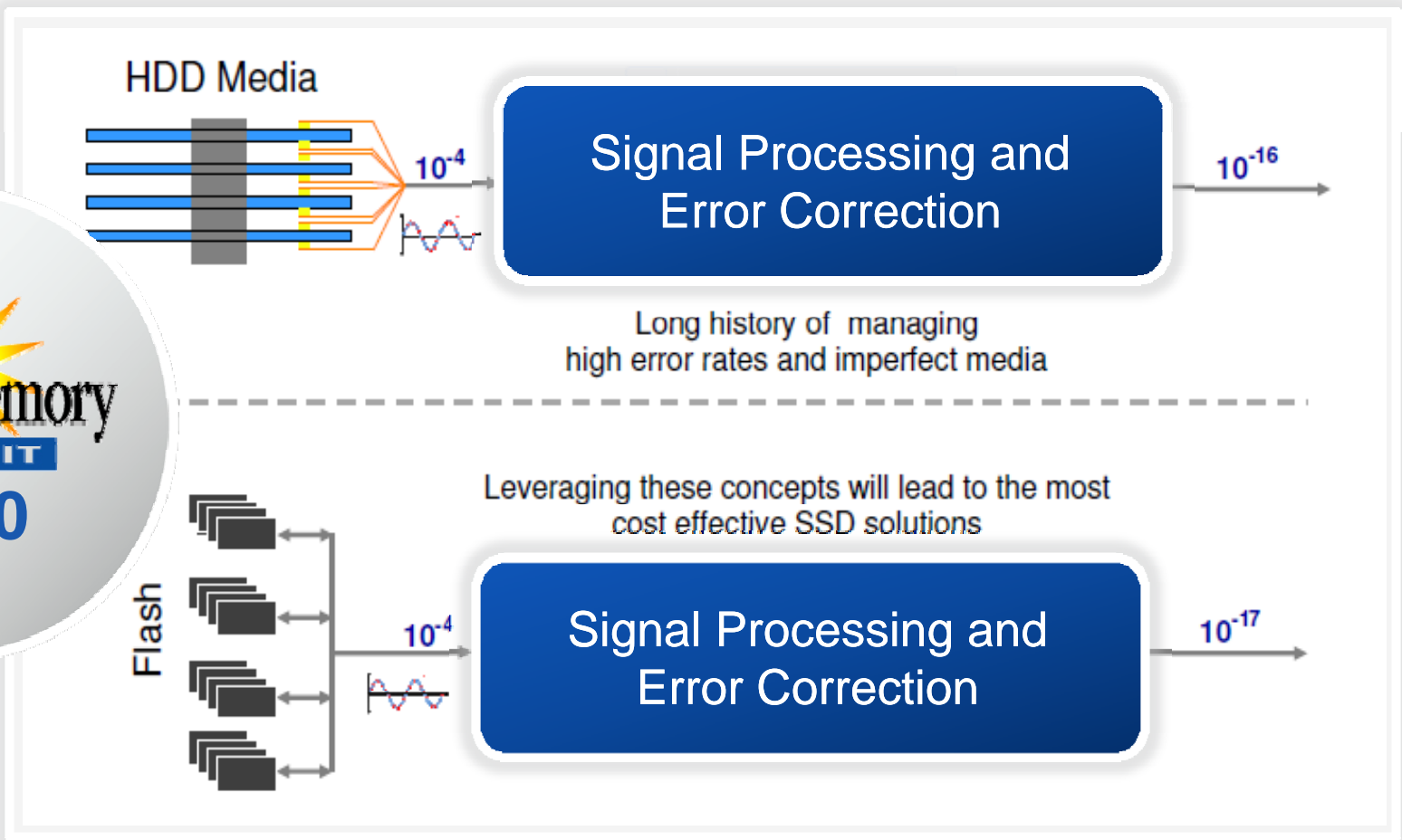
...But NAND
scaling makes
it difficult for
adoption in
Enterprise
applications



**Traditional Approach of Adding ECC Capability
is Not Sufficient**



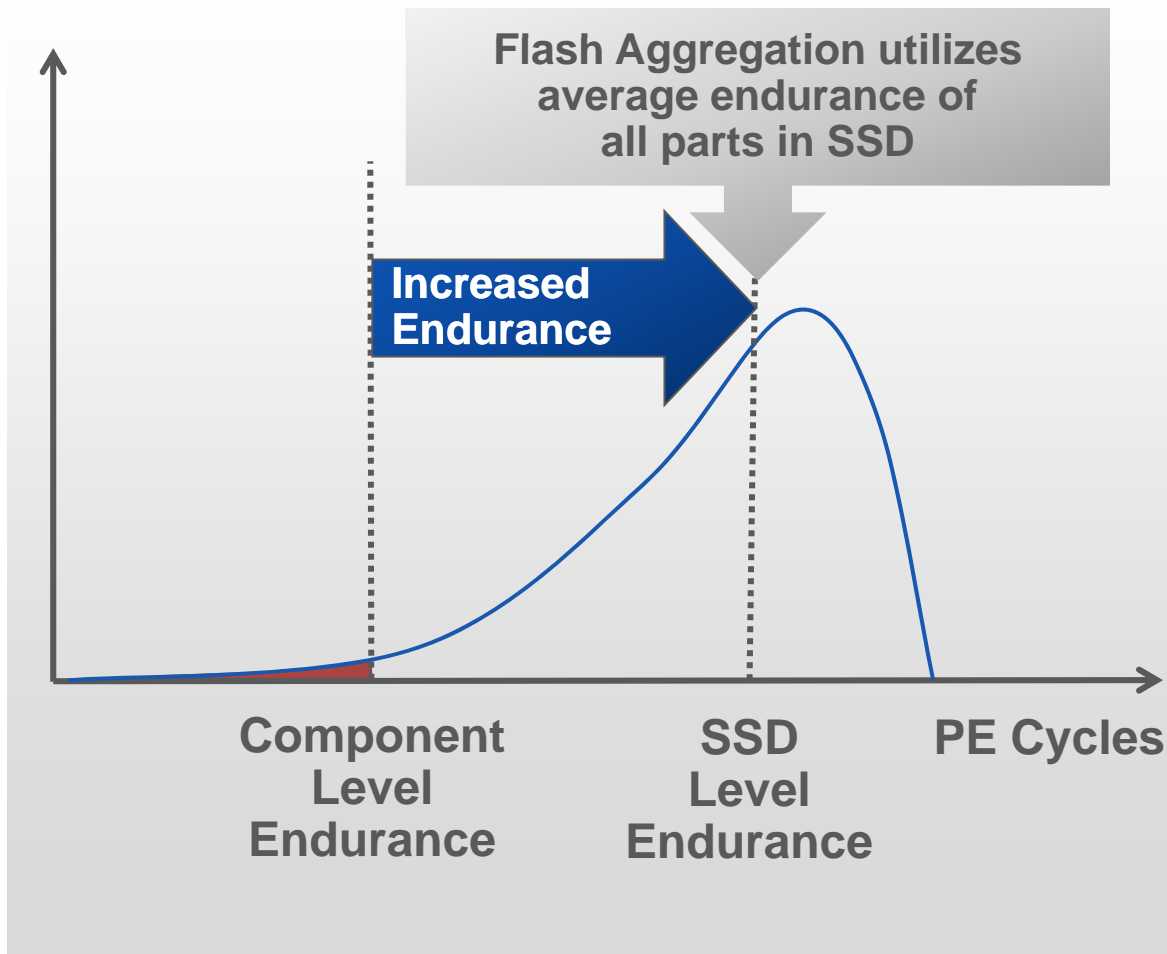
What Storage Appears as HDD?



Value is Created by Enhancing the Capability of the Raw Media at the Drive Level



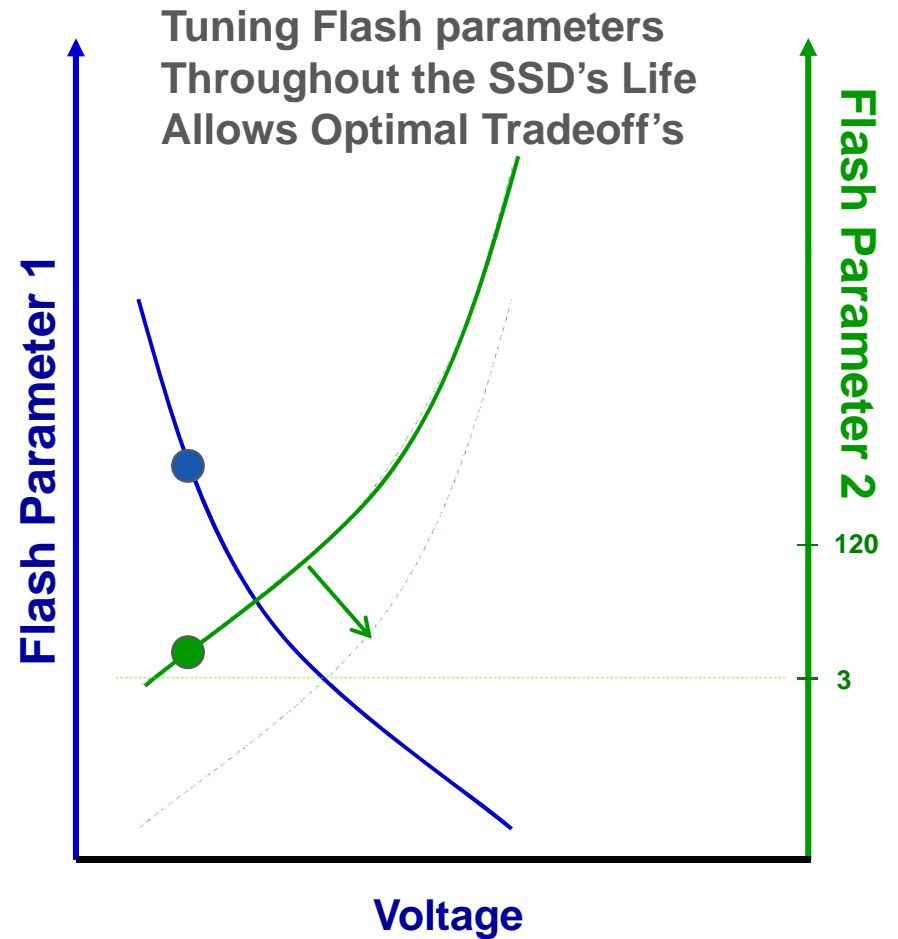
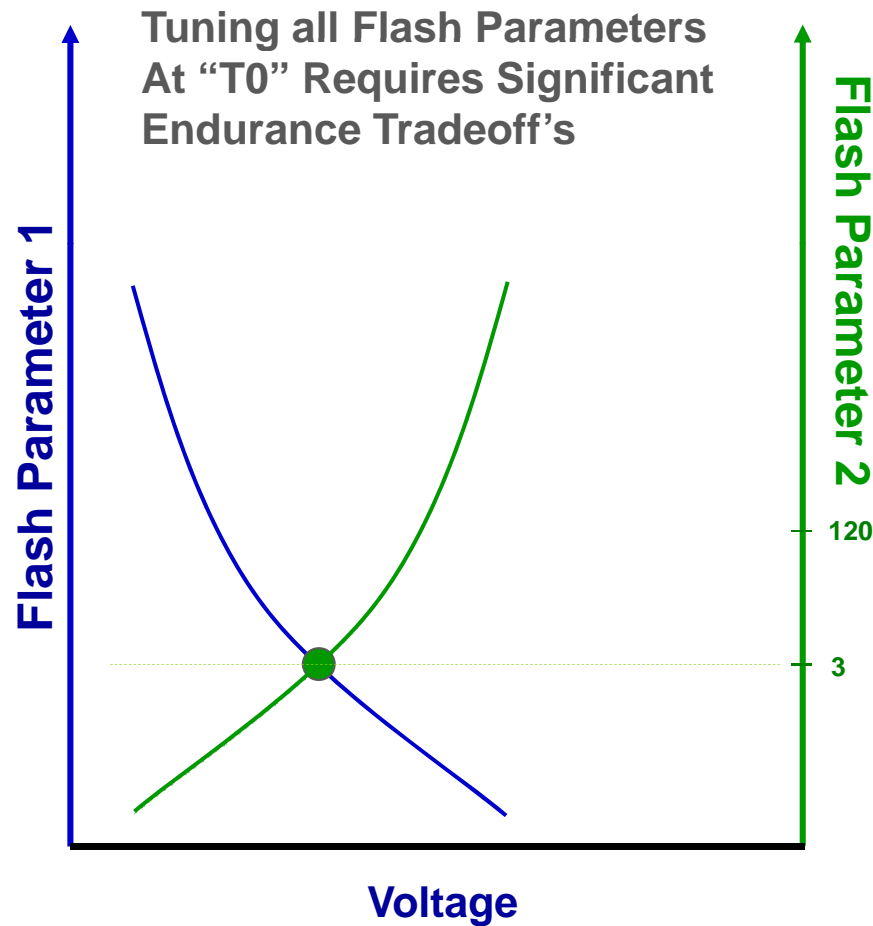
Aggregated Media Strategy



- Take advantage of population statistics
- Analogous to variable density techniques in HDD
- Aggregate capability >> capability of each component



Storage Approach to Endurance

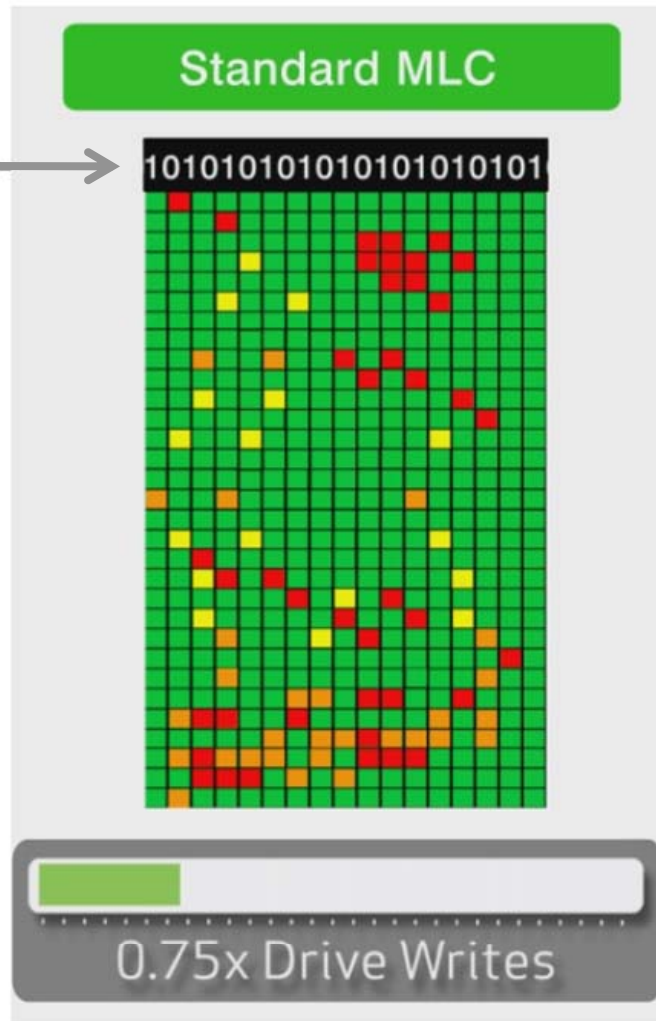




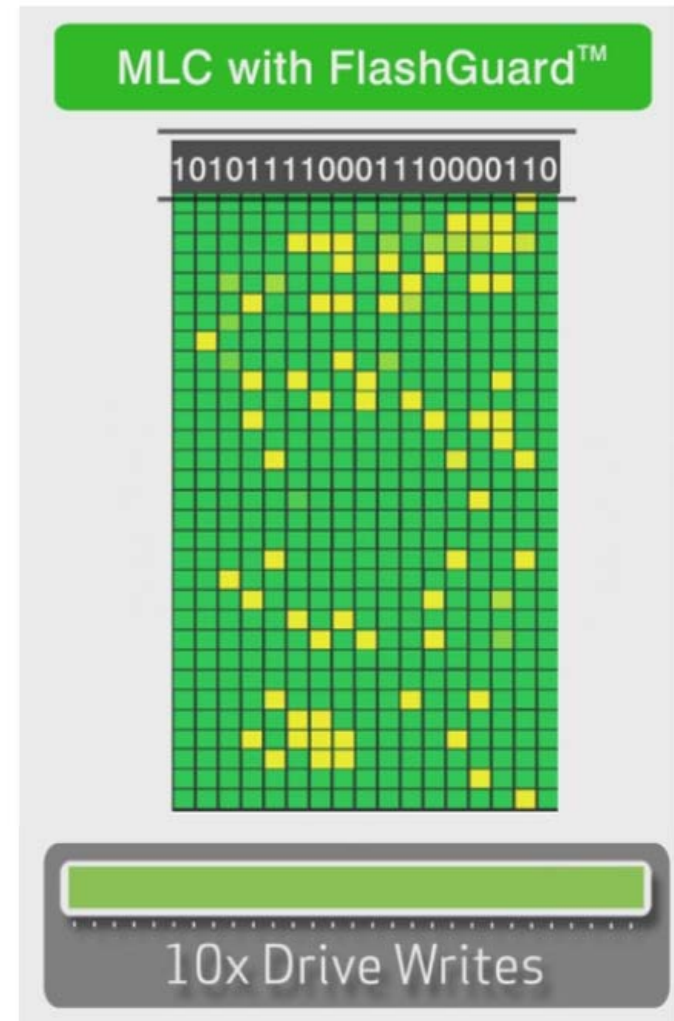
The Storage Approach to Endurance



Flash Settings →



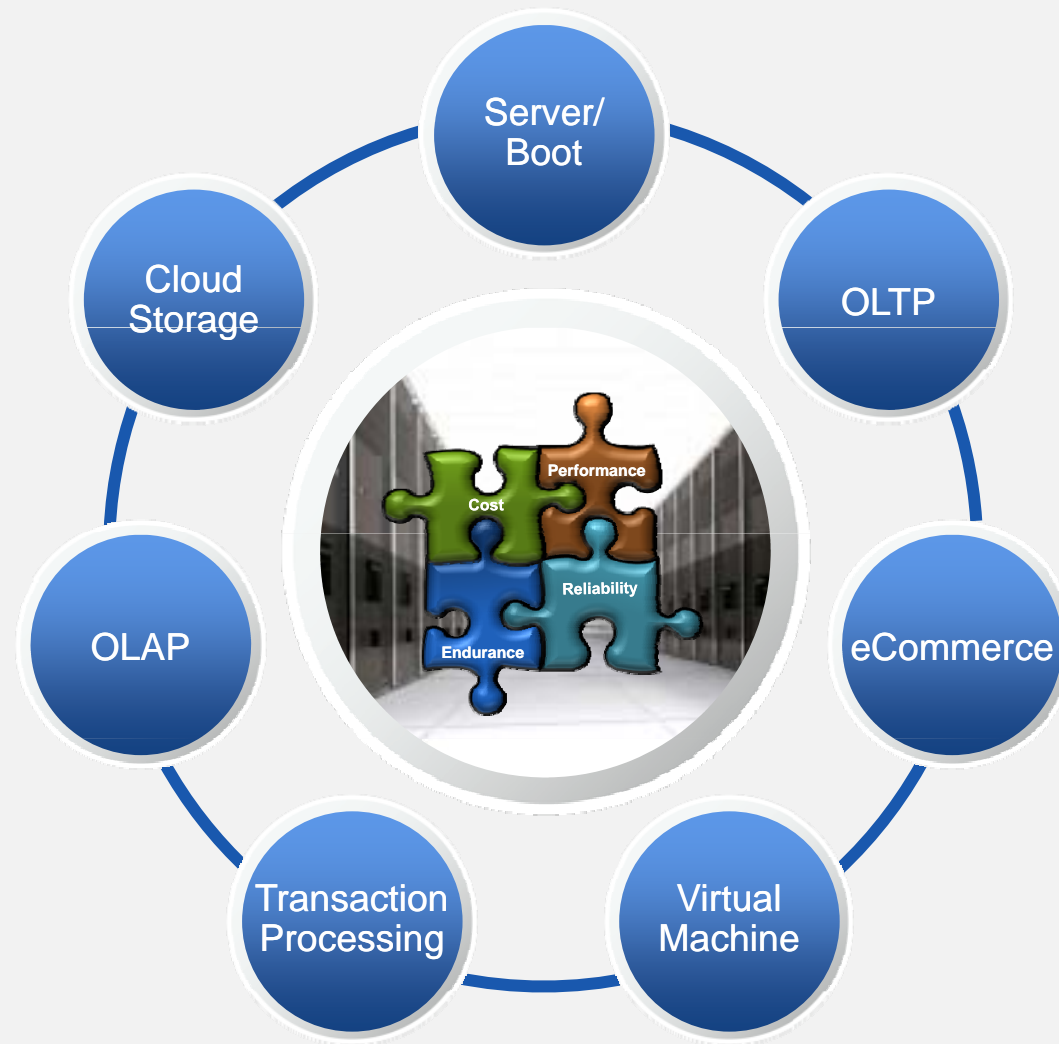
5 years



5 years



Need all the Pieces of the Puzzle to Drive Mainstream Adoption



**TRANSFORMING
ENTERPRISE
STORAGE
PERFORMANCE.
ENDURANCE.
RELIABILITY.
AND VALUE.**

Thank You!

