SSD Adoption Trends

August 13, 2013
frank.berry@itbrandpulse.com

This report includes charts without numbers. The report with numbers is available for $1,500. Contact cheryl.parker@itbrandpulse.com to order.

IT Brand Pulse

One Year Ago

2013 SSD Brand Leaders

2013 SSD Adoption Trends

A trusted source of product testing, IT pro research, and analysis about data center infrastructure

Selected IT Brand Pulse Customers

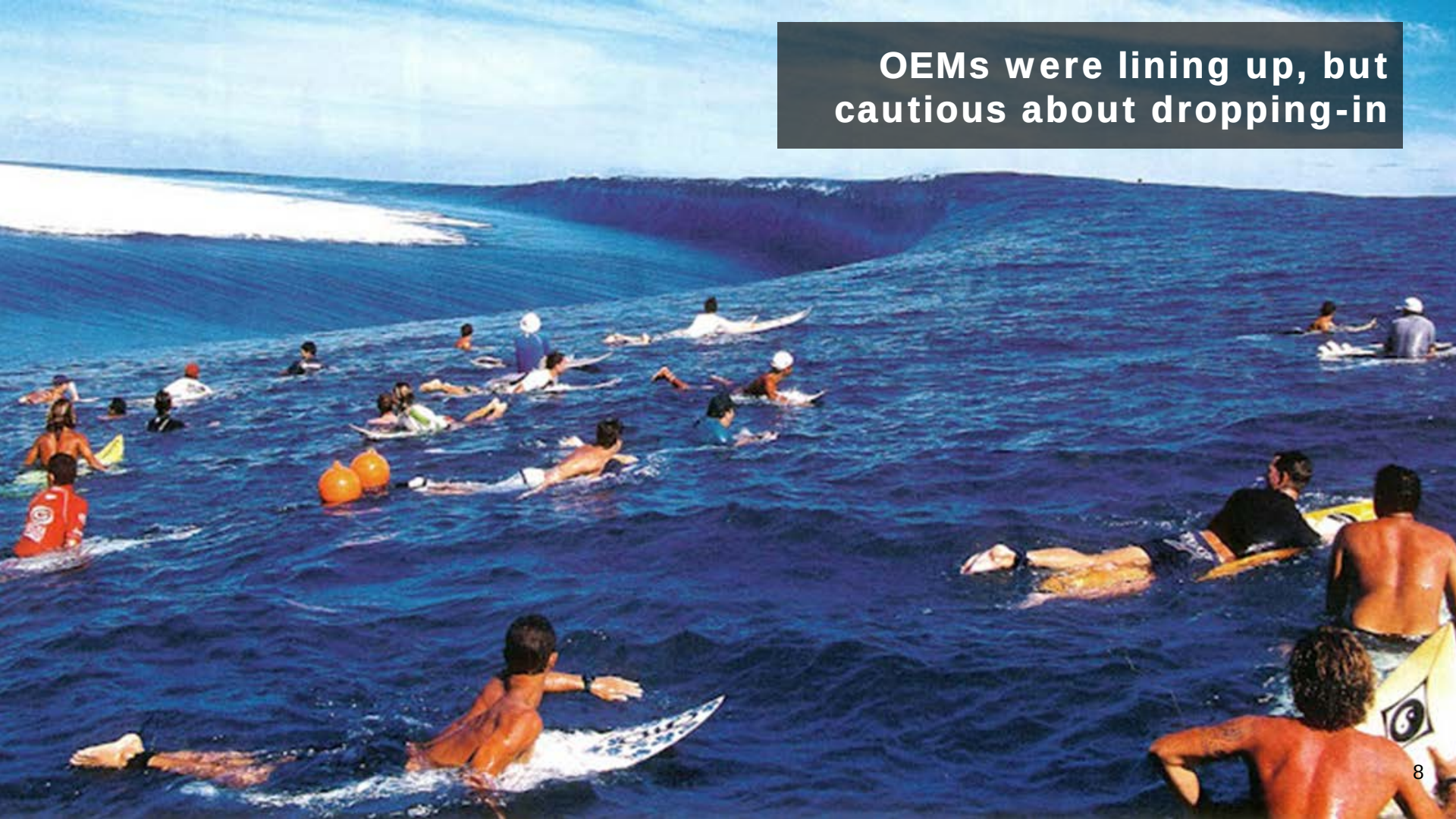
IT Brand Pulse

One Year Ago

2013 SSD Brand Leaders

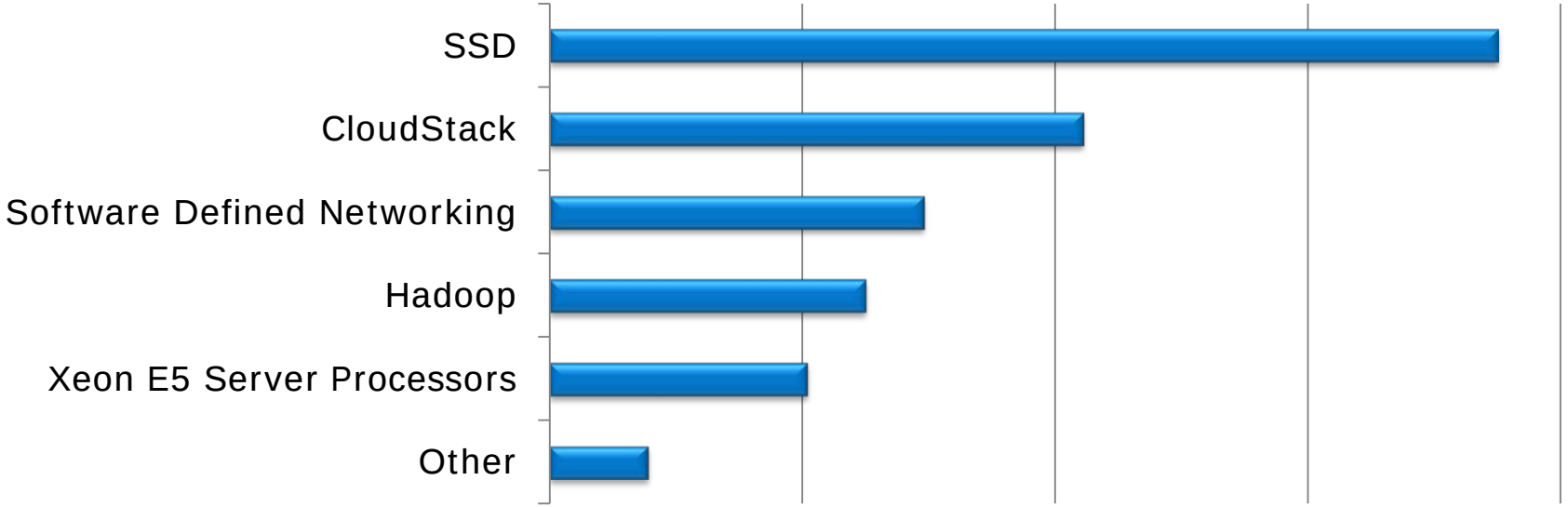
2013 SSD Adoption Trends


One Year Ago Today

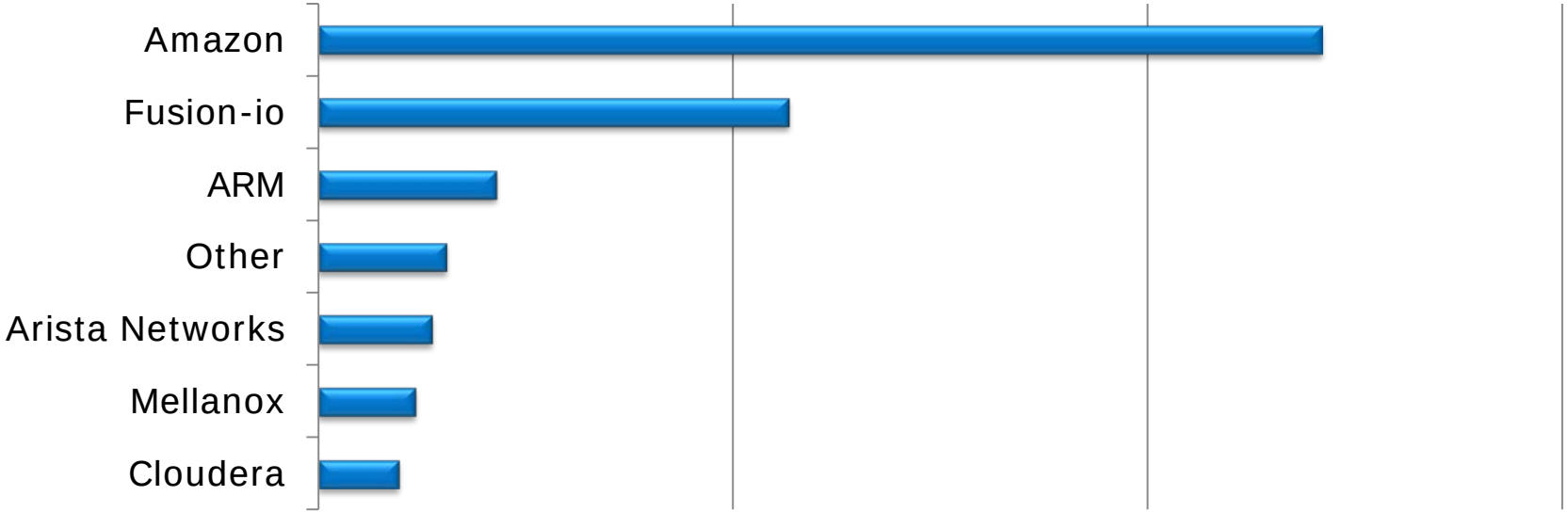

OEMs were lining up, but
cautious about dropping-in


Big OEM hybrid brands were surrounded
by start-up all-flash system brands

What do you perceive as the MOST GAME-CHANGING ENTERPRISE IT TECHNOLOGY of 2012?



Who do you perceive as the HOTTEST ENTERPRISE IT COMPANY in 2012?



IT Brand Pulse

One Year Ago

2013 SSD Brand Leaders

2013 SSD Adoption Trends

IT Brand Leader Program

- Annual surveys covering enterprise infrastructure
- Non-sponsored
- Respondents are IT professionals from large enterprise, SMB and HPC environments

The symbols for IT brand leadership

2013 SSD Brand Leader Survey Respondents

Acadient
ACCi
Accident Fund Insurance Co.
Acendex
Alba Health
Argonne National Labs
ARI Fleet Management
Artesian Water Co (DE State water utility)
AT&T
AWC
AXA Rosenberg Global Services LLC
Baylor College of Medicine
Berkshire Capital Securities
Boeing
Case Western Reserve University
Chevron Phillips Chemical
City of Mount Prospect, IL
City of Sun Prairie, WI
CitySquare, Dallas
Collette Vacations
CT Economic Resource Ctr (CERC)
Daimler AG
Dallas Nursing Institute
Delmont Laboratories
Deloitte Services LP
Deutsche Telekom NA
Disney Interactive
DT Productions
Duke University
Duquesne University
El Paso County Sheriff
e-Miles
Fairfield Residential Company LLC
GE Global Research
General Motors
Hire-Ability
Hormel Foods Corporation
Houghton Mifflin Harcourt
IDS Raytheon
Imagitas
Independence Blue Cross (IBX)
Institute of Geophysics and Planetary Physics
InterNexus
J. B. Hunt Transportation
Jamaica Hospital Medical Center
Kawasaki
KLA-Tencor
LA Dept. of Transportation
Lockheed Martin
Marriott International
Mimeo
Monsanto
NASA
Nat. Ctr for Atmospheric Research (NCAR/UCAR)
National Institute of Health (NIH)
National Institute of Standards and Technology
NAVMISSA - URS Federal Services
NBC Universal
New York Life Insurance Company
New York Stock Exchange
Northrop Grumman
Ogilvy and Mather
Owens Corning
PA Office of Administration
Pacific Northwest National Laboratory (PNNL)
Paramount Consulting LLC
Pitney Bowes
Purdue University
Raytheon
Reader's Digest
Rutgers Univ. Brain Imaging Center
S.F. Public Utilities Commission
Sonic Healthcare USA
Sony Online Entertainment
Sony Pictures
South Dakota Board of Regents
St. Luke's Hospital
Stanford University
Symcor Inc
Temco Service Industries
Transamerica
Unisys
United Health Services Credit Union
University of Florida Health
University of Minnesota Medical School
University of Virginia
University of Washington
UQM Technologies
Urban Retail Properties
USAN
Utah State Office of Education
Verizon Wireless
Virginia Tech
WC Bradley
Yale University
Zions Bancorporation

Quantum

PRODUCTS + SOLUTIONS + SUPPORT + PARTNERS + ABOUT US −

QUANTUM CERTAINTY

DIGIC is CERTAIN

StorNext enables award-winning graphics studio to stay ahead of competition with fast, flexible and scalable digital workflow processes.

READ MORE

"The kind of extreme and random workload that we demand is beyond what any ordinary file system can support, but StorNext handles it every day."

GABOR KALI
Head of Systems Administration for Digic Pictures

NETWORK computing AWARDS 2012 ★ WINNER ★ STORAGE PRODUCT OF THE YEAR

SVC awards 2012 WINNER

iF 2012 Innovation Awards Winner

IT BRAND PERFORMANCE LEADER Tape Libraries March 2012

STORAGE AWARDS THE STORRIES

Inside IT Storage

Seagate Enterprise

Do IT Professionals care what's under the covers when it comes to their equipment?

Yes they do! IT Pros know what drive brands are spinning inside their equipment. OEMs may want all of us drive guys to be strictly vanilla but to IT pros, there is a difference …especially when it comes to enterprise storage. Each month IT Brand Pulse selects a handful of product categories and asks IT professionals who they perceive as the leader in these particular enterprise categories in **5** critically important areas including:

About the Author

Barbara Craig
Senior Product Marketing Manager


Cisco Systems
Innovation Leader
Network Operating Systems
WLAN Controllers/Switches
Firewalls
FC Network Monitoring
Low Latency Switches
Ethernet Switches
ITBRAND PULSE
PERFORMANCE LEADER
WATCH ITBRAND PULSE
Claudio DeSanti
Fellow
Cisco Systems
Data Center Business Group
0:16 / 1:59

HP ProLiant Awards and Honors

» Servers

HP ProLiant products:

» ProLiant Servers
- » BladeSystem
- » ProLiant DL (Rack-Optimized)
- » ProLiant ML (Expansion-Optimized)
- » ProLiant SL (Scalable Systems)
- » ProLiant MicroServer (Just Right First Server)
- » ProLiant Solutions
- » Insight Software
- » ProLiant storage
- » Rack & Power
- » HP Qualified Options

Related information

- » Why Migrate to HP?
- » HP Customer References
- » Customer and Partner quotes
- » HP Power Advisor
- » ProLiant Training and Education
- » HP BladeSystem, VC/VCEM, Insight Control, Insight Dynamics and BladeSystem Matrix demos
- » ProLiant Advantage
- » Technology communications
- » Midsize Business Center
- » Listen to the podcasts
- » Recent server news
- » HP ProLiant Scale-up Solutions

Purchasing

» HP ProLiant Awards: What the industry is saying

» ProLiant Advantage

What's being said:
- » Awards and Honors
- » Customer case studies
- » Customer quotes
- » News
- » Customer Videos

Below, please find some of our latest customer case studies for the ProLiant portfolio. HP proudly presents its awards and honors for the ProLiant portfolio. Find the best servers, data centers, blade servers and more here in our HP awards center.

HP Proliant | Software | Channel Partners

ITBRAND MARKET LEADER Enterprise Servers April 2011

HP Enterprise Servers

HP Enterprise Servers voted Market Leader in the April 2011 IT Brand Pulse study. Also topped the Performance Leader, Reliability Leader, Services & Support Leader and Innovation Leader categories

» Read More

2013 SSD Leaders - IT Brand Pulse

This is a Press Release edited by StorageNewsletter.com on Thu, August 1st, 2013

IBM in DRAM SAN SSD systems, Nimbus Data in NAS and unified SSD systems, etc.

IT Brand Pulse, a source of data and analysis about IT infrastructure, announced the results of the recent *2013 SSD Brand Leader Survey*, as voted by IT pros.

Survey respondents were asked which vendors they perceive as the leader in eleven SSD product categories: All Flash SAN SSD Systems, All Flash NAS SSD Systems, All DRAM SAN SSD Systems, All Flash Unified SSD Systems, PCIe SSD DAS Adapters, PCIe SSD SAN Adapters, SAS/SATA SSD Modules, SSD DAS/SAN Cache, SSD NAS Cache Appliance, SSD Controller Chips, Hybrid

Trusted by Industry Leaders Worldwide

- **Enterprise Storage Technology** – HGST enter -critical appli served up fa ssed inform mal cost.

- **Clou** nternet searc king rely c best to tie public, priva vered to co n and energ

- **Broa** **Solu**) for ultra- at 15,000 RPM, small form factor 10,000 RPM, and 7200 RPM SATA, HGST Ultrastar™ storage drives deliver solutions for a broad range of mission-critical enterprise storage systems – from high-capacity storage applications to high-performance servers.

- **Award-winning HGST Enterprise Storage Drives** – Listed below are but a few of the accolades that HGST Ultrastar™ storage drives have received to date.

Ultrastar 7K3000
Editor's Choice Award
August 2011

Ultrastar SSD400S.B SSD
"Well-rounded offering ready for heavy enterprise use"
April 2012

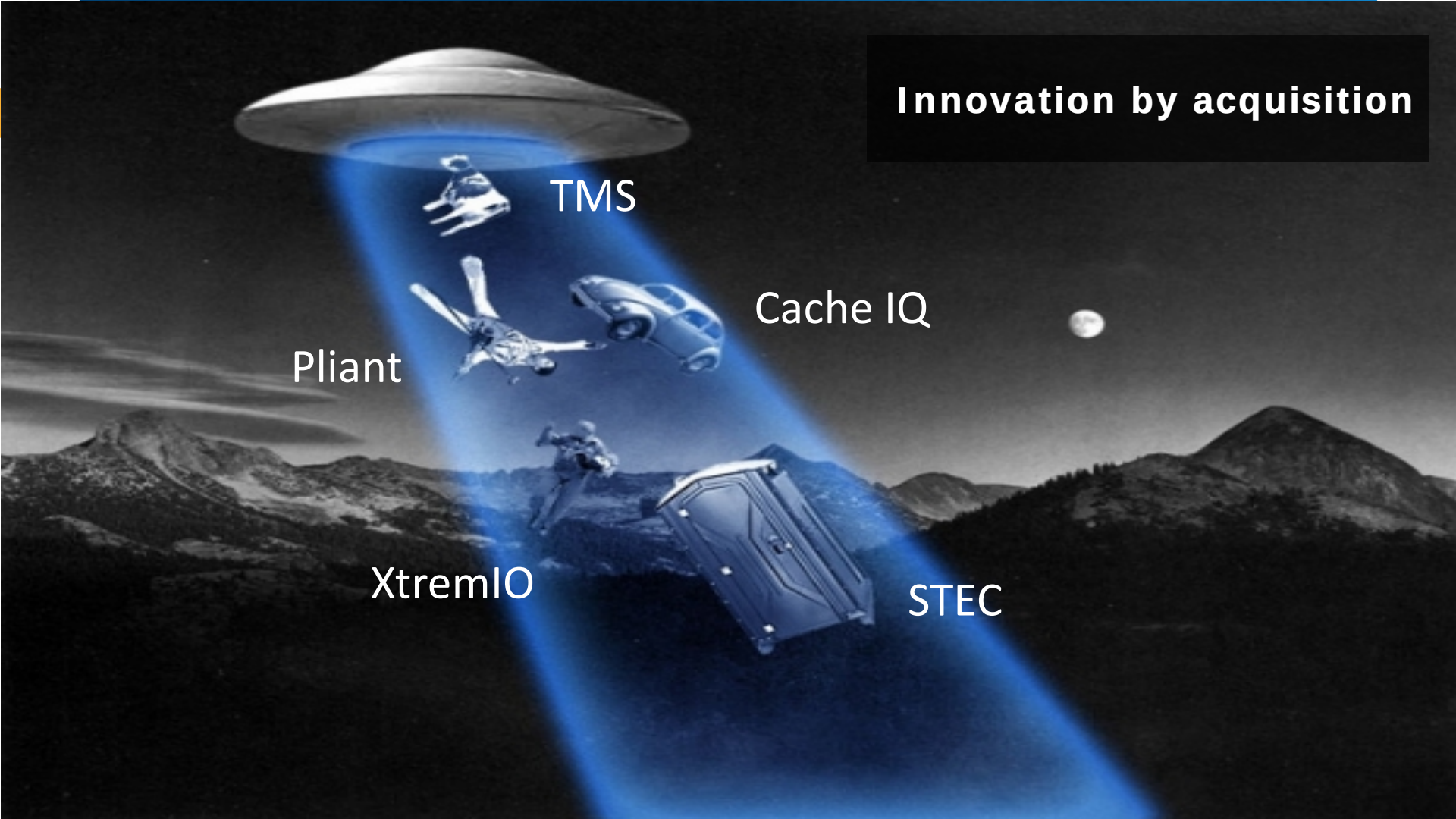
IT Brand Pulse
Market Leader Award
May 2012

IT Brand Pulse
Reliability Leader Award
May 2012

IT Brand Pulse
Performance Leader Award
May 2012

2012 SSD Brand Leaders

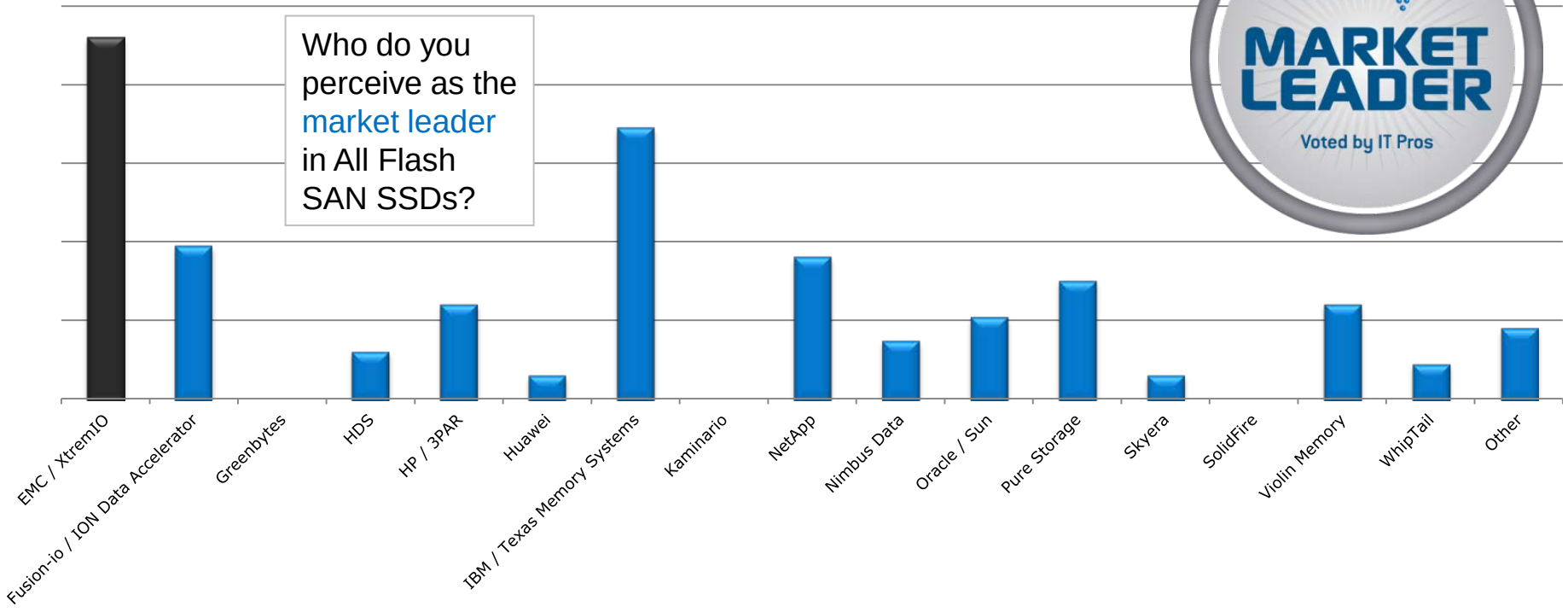
	ITBRAND PULSE MARKET LEADER Voted by IT Pros	ITBRAND PULSE PRICE LEADER Voted by IT Pros	ITBRAND PULSE PERFORMANCE LEADER Voted by IT Pros	ITBRAND PULSE RELIABILITY LEADER Voted by IT Pros	ITBRAND PULSE SERVICE AND SUPPORT LEADER Voted by IT Pros	ITBRAND PULSE INNOVATION LEADER Voted by IT Pros
All Flash SAN SSDs	TMS	TMS & NextIO	TMS	TMS	TMS	Pure Storage, Violin Memory & TMS
All Flash NAS SSDs	Nimbus	Nimbus	Nimbus	Nimbus	Nimbus	Nimbus
All DRAM SAN SSDs	TMS	TMS	TMS	TMS	TMS	TMS
All Flash Unified SSDs	Nimbus	Nimbus	Nimbus	Nimbus	Nimbus	Nimbus
PCIe Adapter SSDs	Fusion-io	Intel	Fusion-io	Intel	Intel	Fusion-io
SAS/SATA SSDs	Intel	Intel	Intel	Intel	Intel	Intel
Cache SSDs	EMC	EMC	EMC	EMC	EMC	Fusion-io
NAS Cache Appliances	Cache IQ	Cache IQ	Violin Memory	Cache IQ	Cache IQ	Violin Memory
SSD Controller Chips	LSI	LSI	Intel	Intel	Intel	LSI
Hybrid HDD/SSD Systems	EMC	EMC	EMC	EMC	IBM	IBM


Innovation by acquisition
TMS
Cache IQ
Pliant
XtremIO
STEC

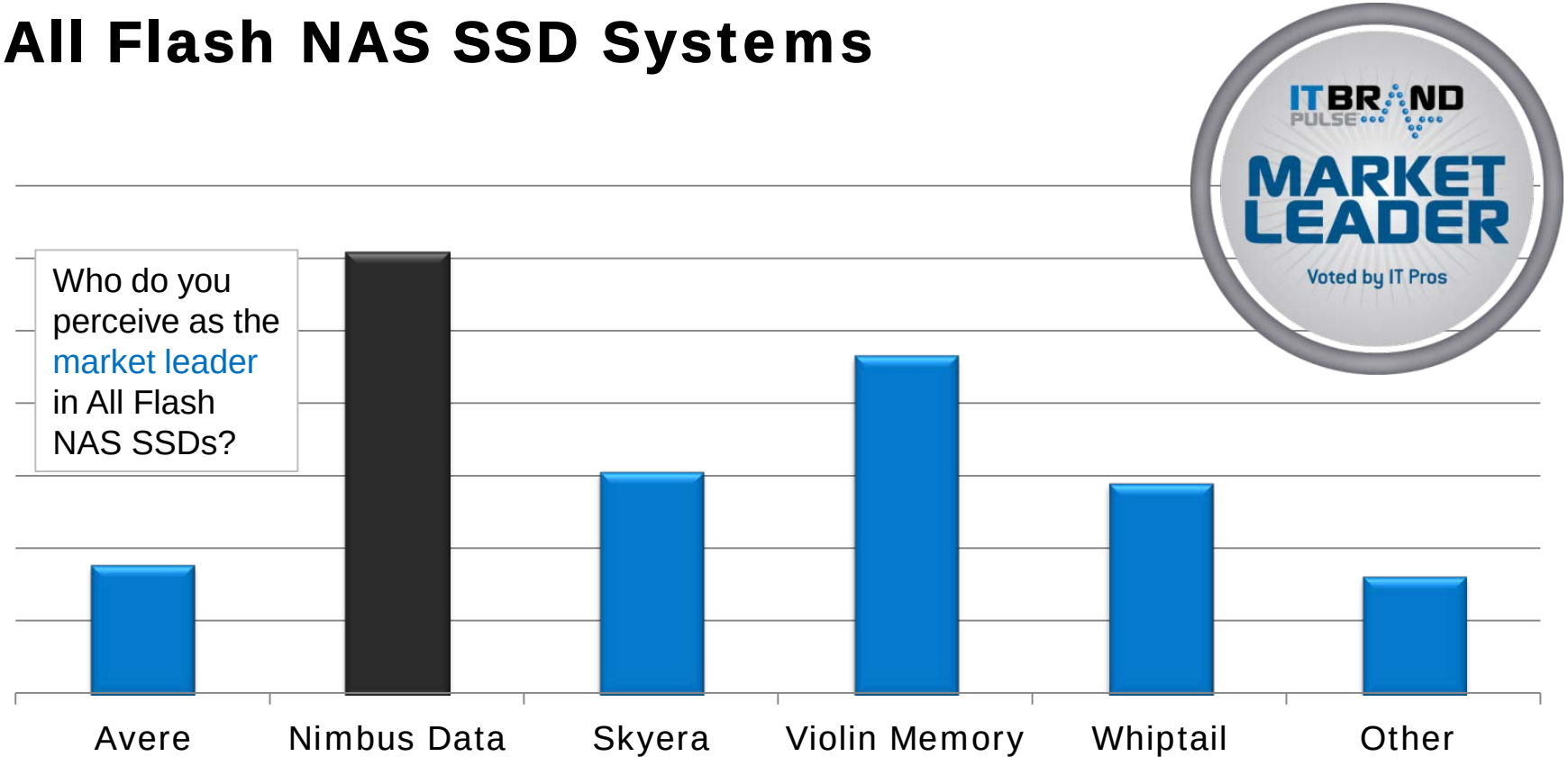

Brand leadership by acquisition

2013 SSD Brand Leaders						
All Flash SAN SSD Systems	EMC/ XtremIO	NetApp	EMC/ XtremIO	EMC/ XtremIO	EMC/ XtremIO	EMC/ XtremIO
All Flash NAS SSD Systems	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data
All DRAM SAN SSD Systems	IBM / TMS	IBM / TMS	IBM / TMS	IBM / TMS	IBM / TMS	IBM / TMS
All Flash Unified SSD System	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data	Nimbus Data
PCIe SSD DAS Adapters	Fusion-io	Fusion-io, Intel, SanDisk	Fusion-io	Fusion-io	Intel	Fusion-io
PCIe SSD SAN Adapters	QLogic	QLogic	QLogic	QLogic	EMC	QLogic
SAS/SATA SSD Modules	Seagate	Western Digital	Samsung	Intel	Intel & Seagate (tie)	Samsung
SSD DAS/SAN Cache	NetApp	NetApp, SanDisk, FlashSoft	Fusion-io/ IO Turbine	Fusion-io/ IO Turbine	EMC, NetApp	Fusion-io/ IO Turbine
SSD NAS Cache Appliance	NetApp / Cache IQ	NetApp / Cache IQ	NetApp / Cache IQ	NetApp / Cache IQ	NetApp / Cache IQ	NetApp / Cache IQ
SSD Controller Chips	LSI/SandForce	LSI/SandForce	LSI/SandForce	LSI/SandForce	LSI /SandForce	LSI/SandForce

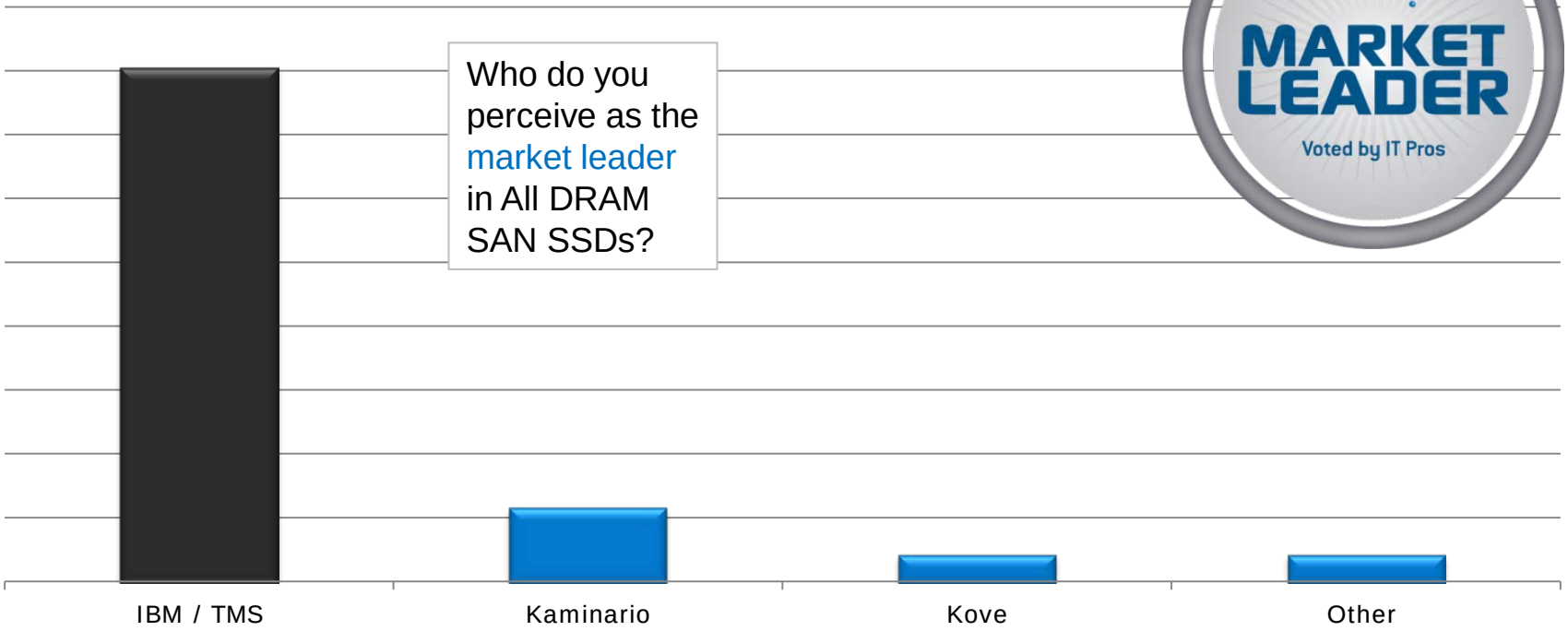
All Flash SAN SSD Systems



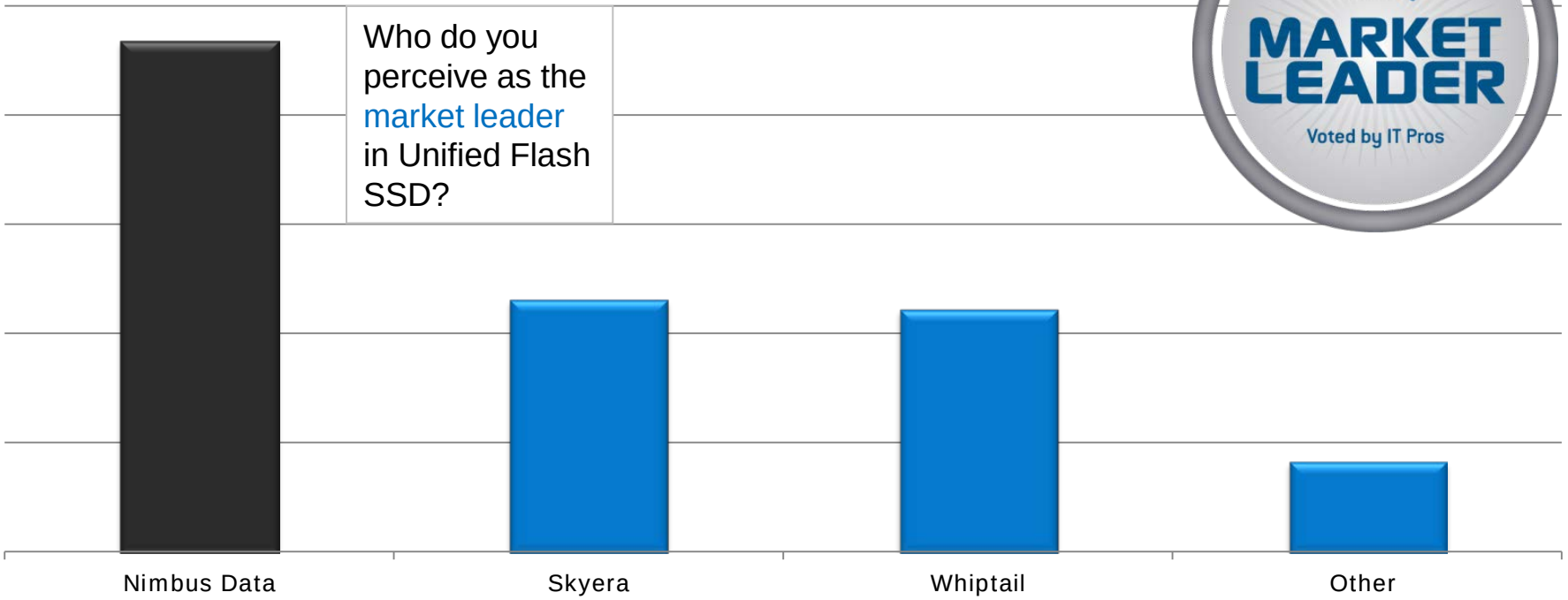
All Flash NAS SSD Systems



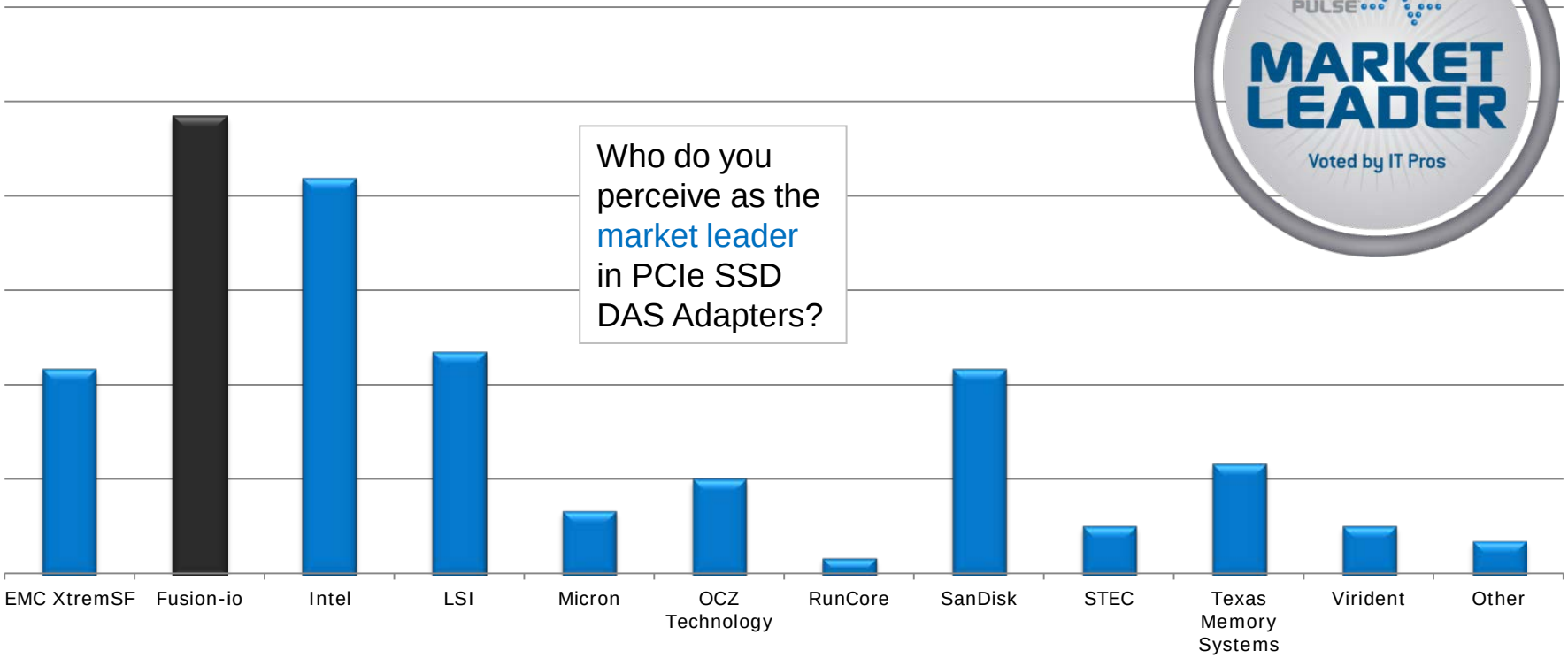
All DRAM SAN SSD Systems



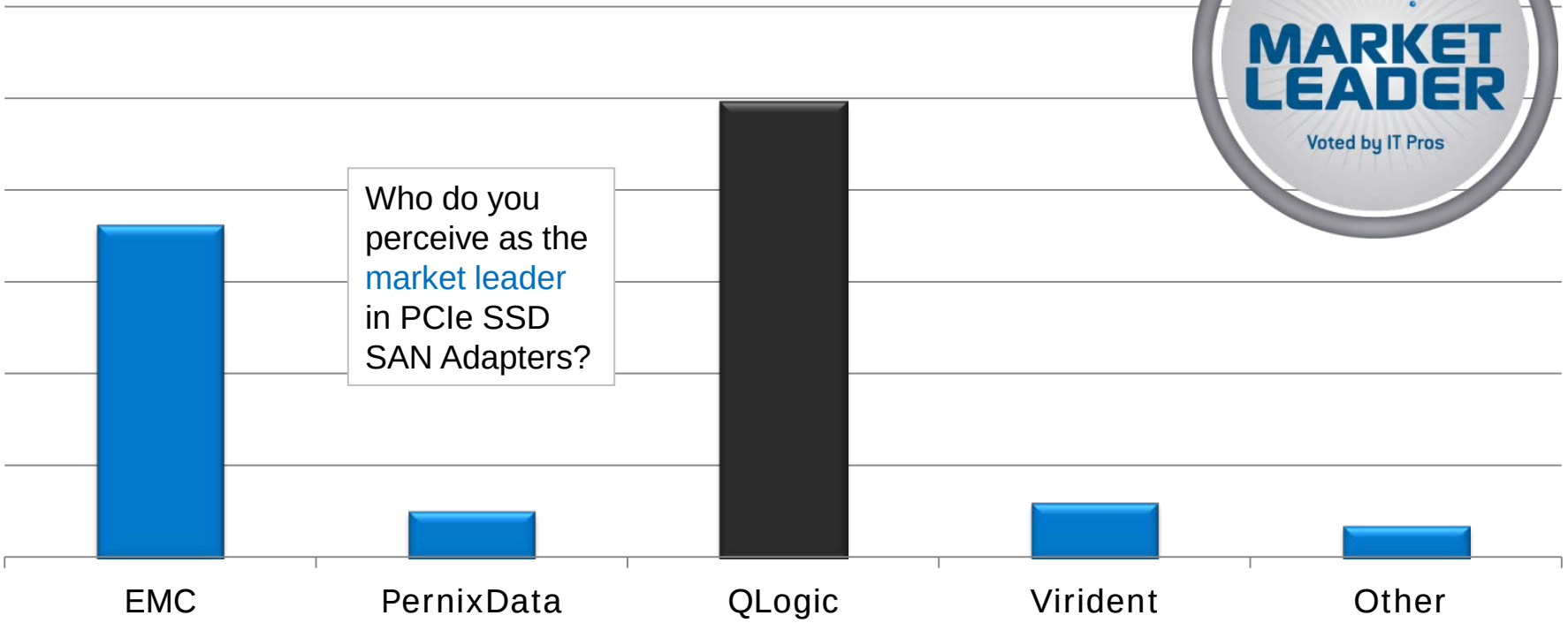
All Flash Unified SSD System



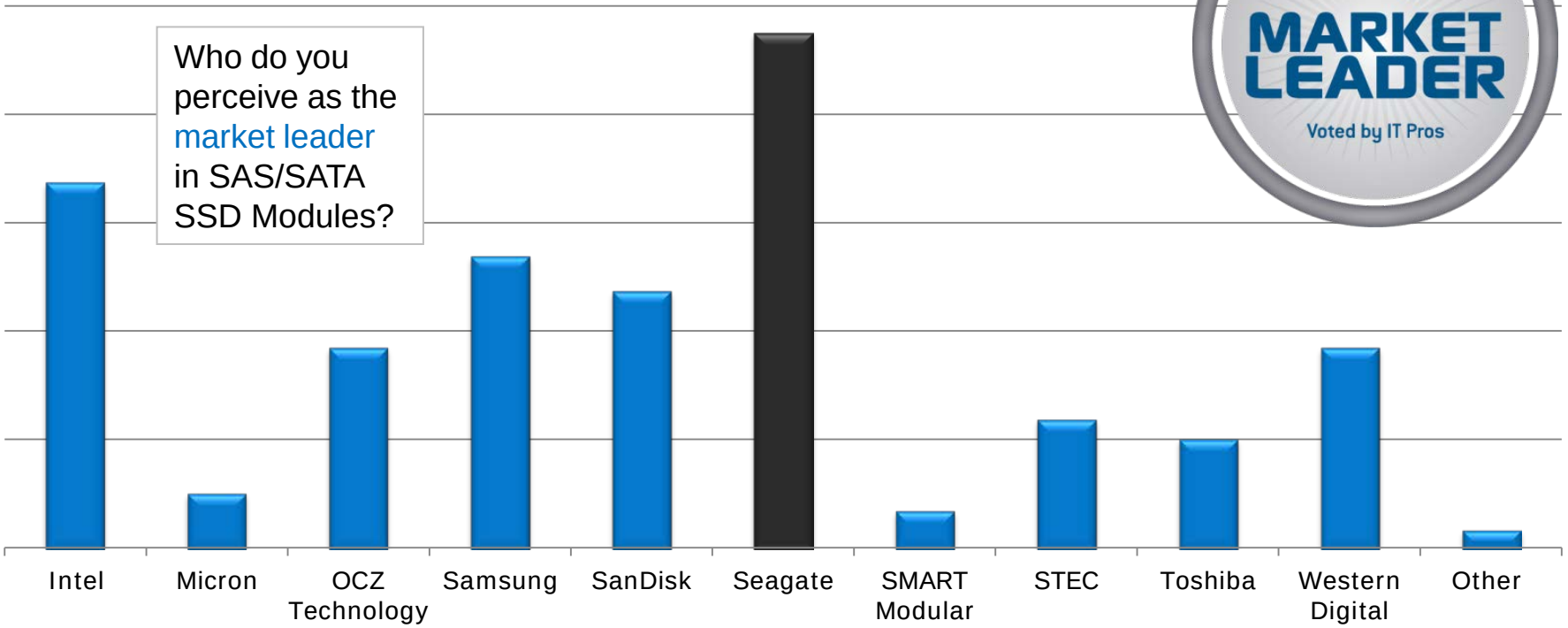
PCIe SSD DAS Adapters



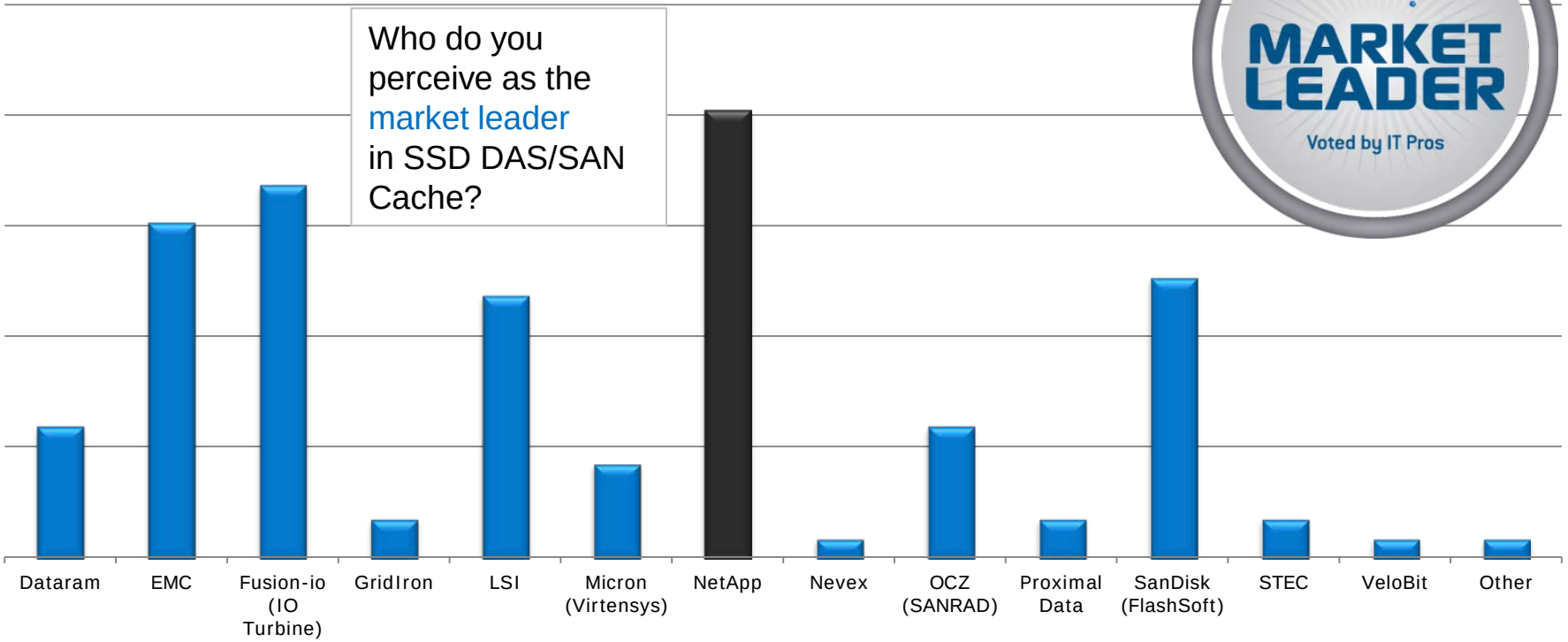
PCIe SSD SAN Adapters



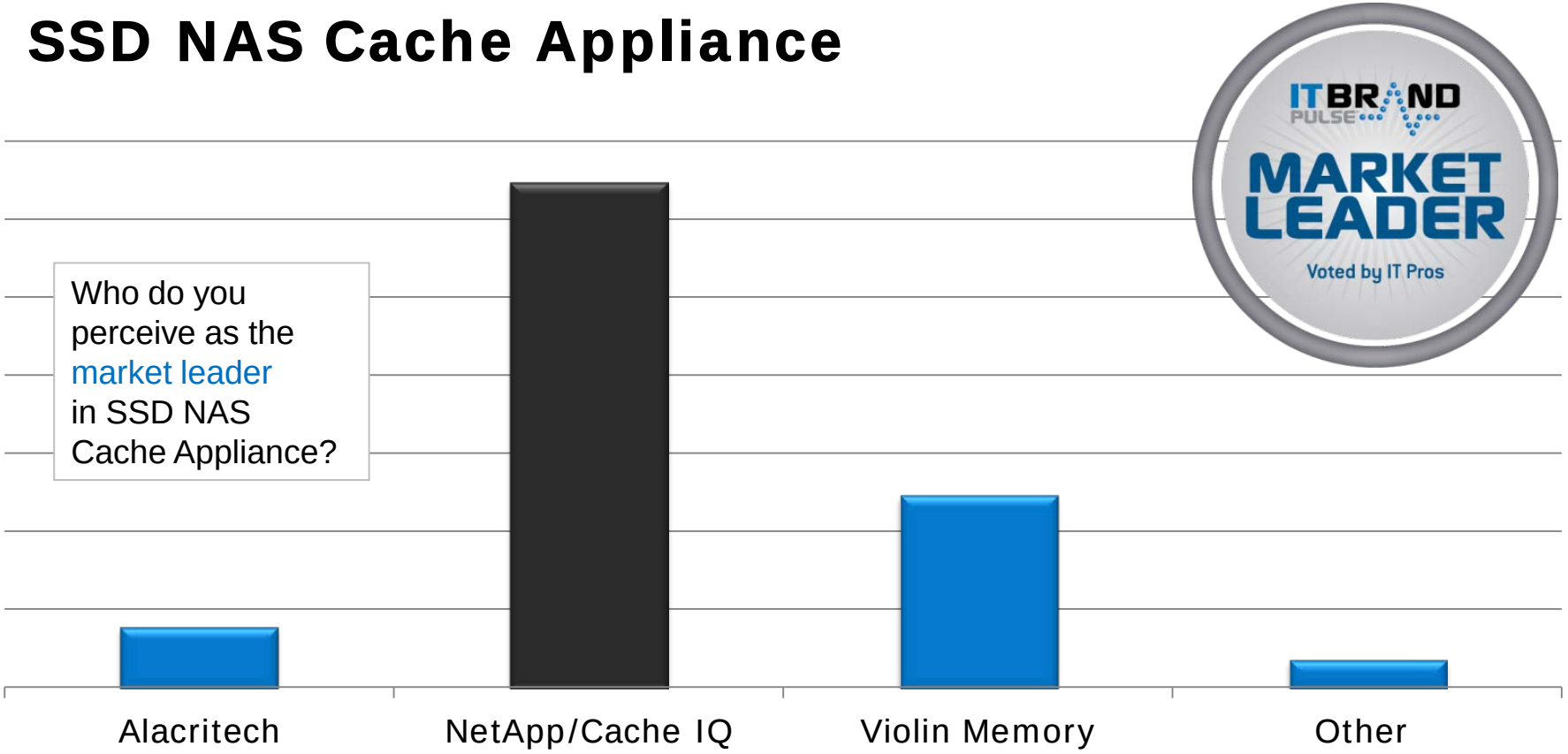
SAS/SATA SSD Modules



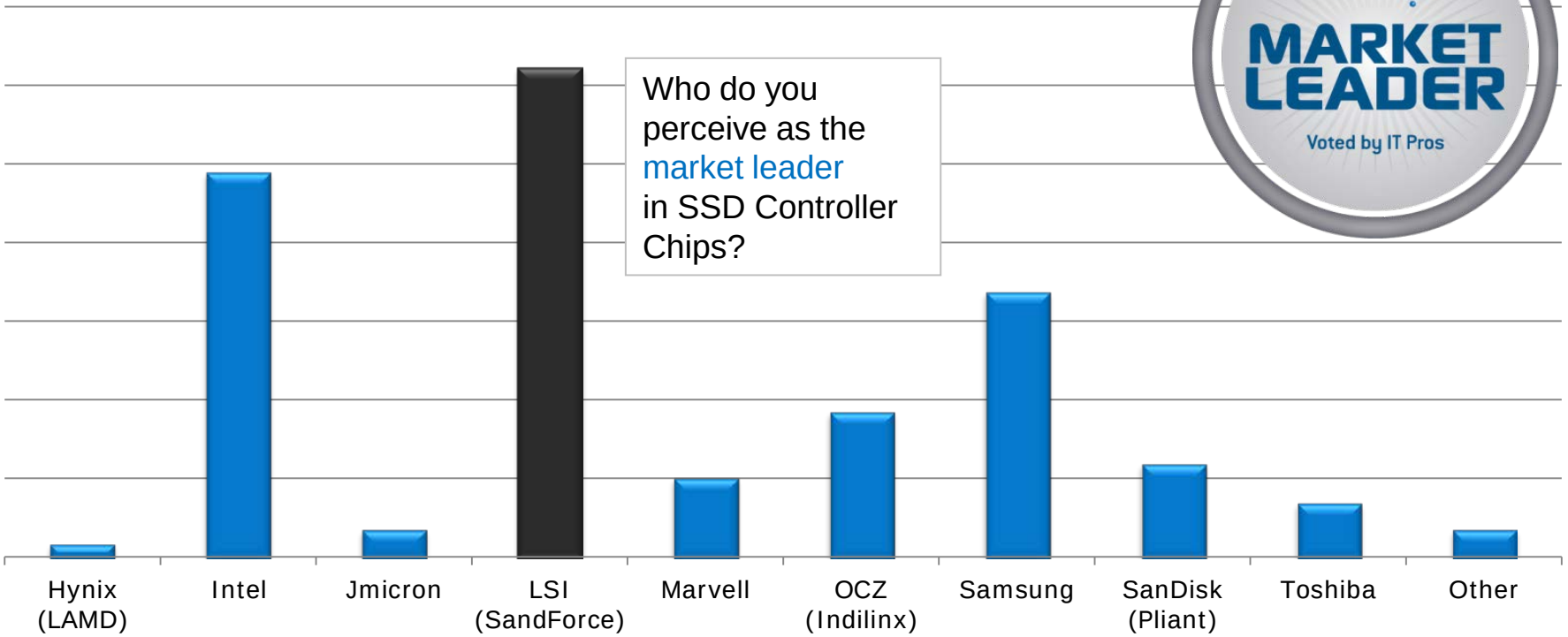
SSD DAS/SAN Cache



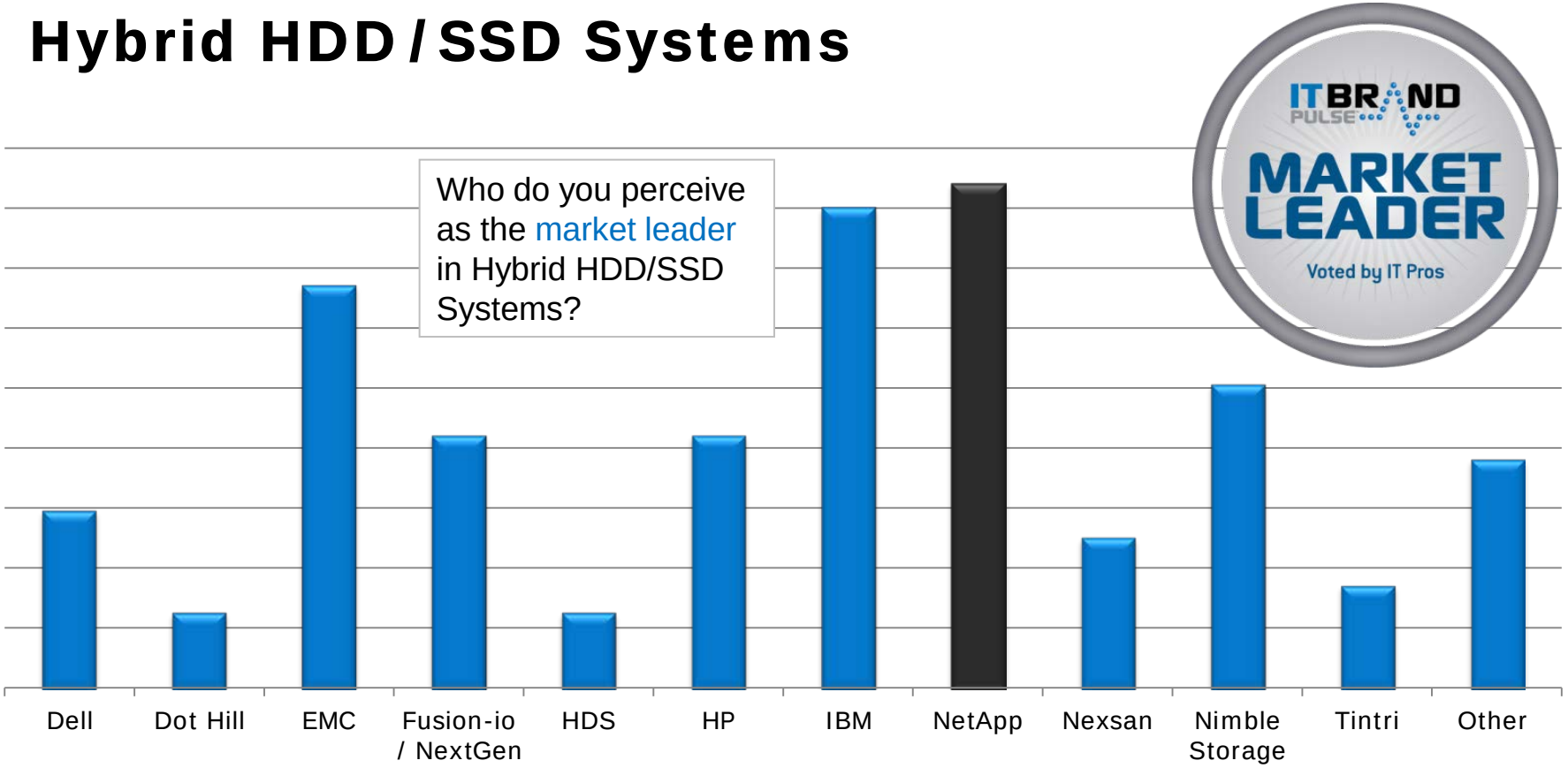
SSD NAS Cache Appliance



SSD Controller Chips



Hybrid HDD/SSD Systems



IT Brand Pulse

One Year Ago

2013 SSD Brand Leaders

2013 SSD Adoption Trends

SOMETIMES YOU CAN’T

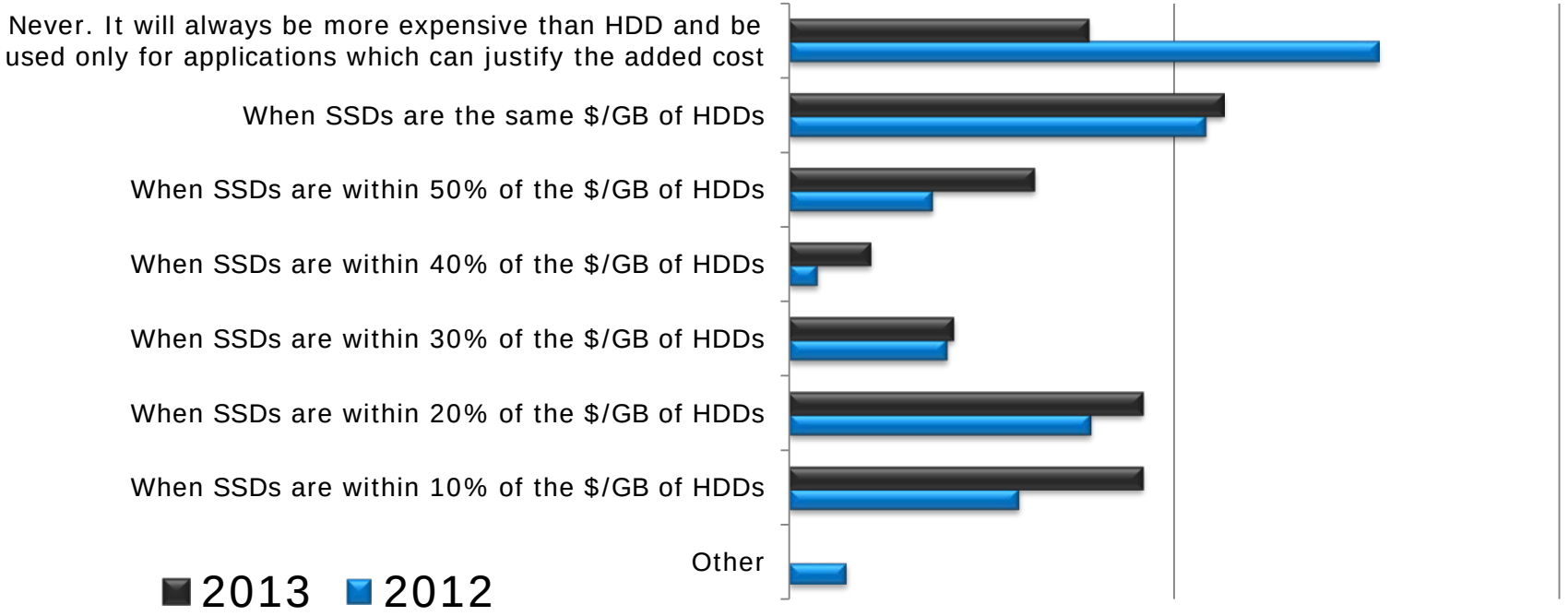
If there is not enough supply

The capacity optimized HDD dance

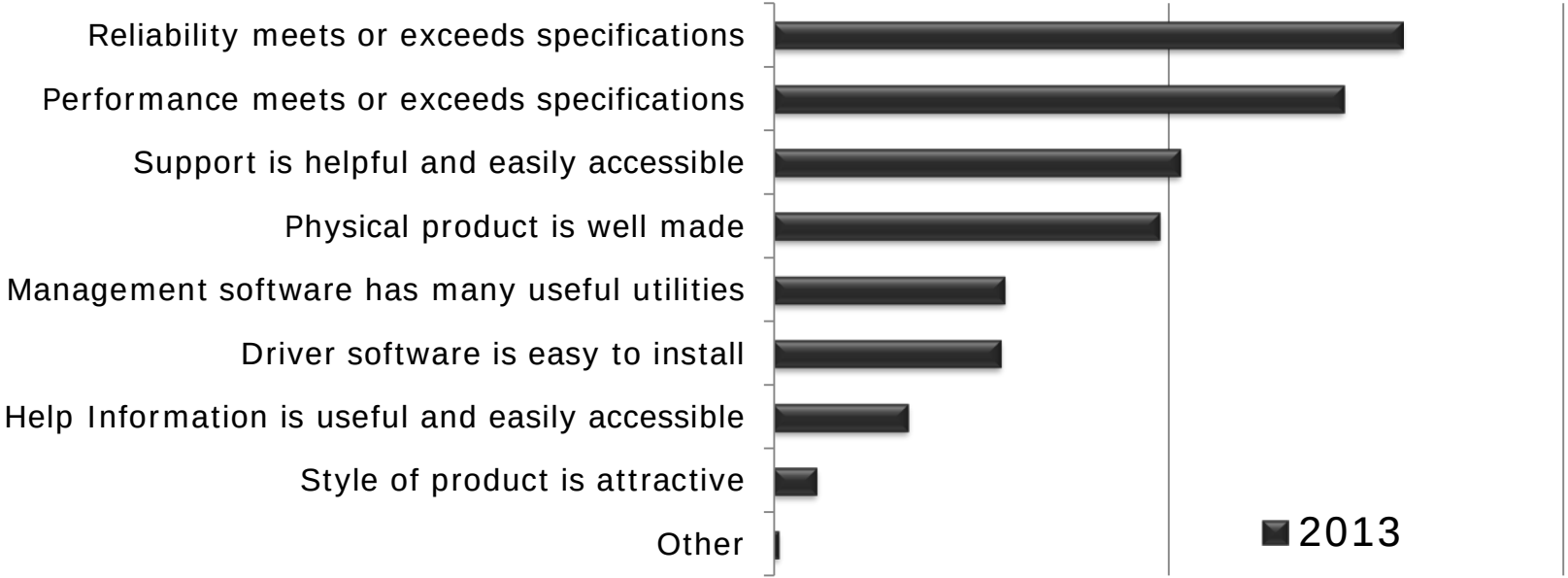
“If you can't get rid of the skeleton in your closet, you'd best teach it to dance.”

George Bernard Shaw

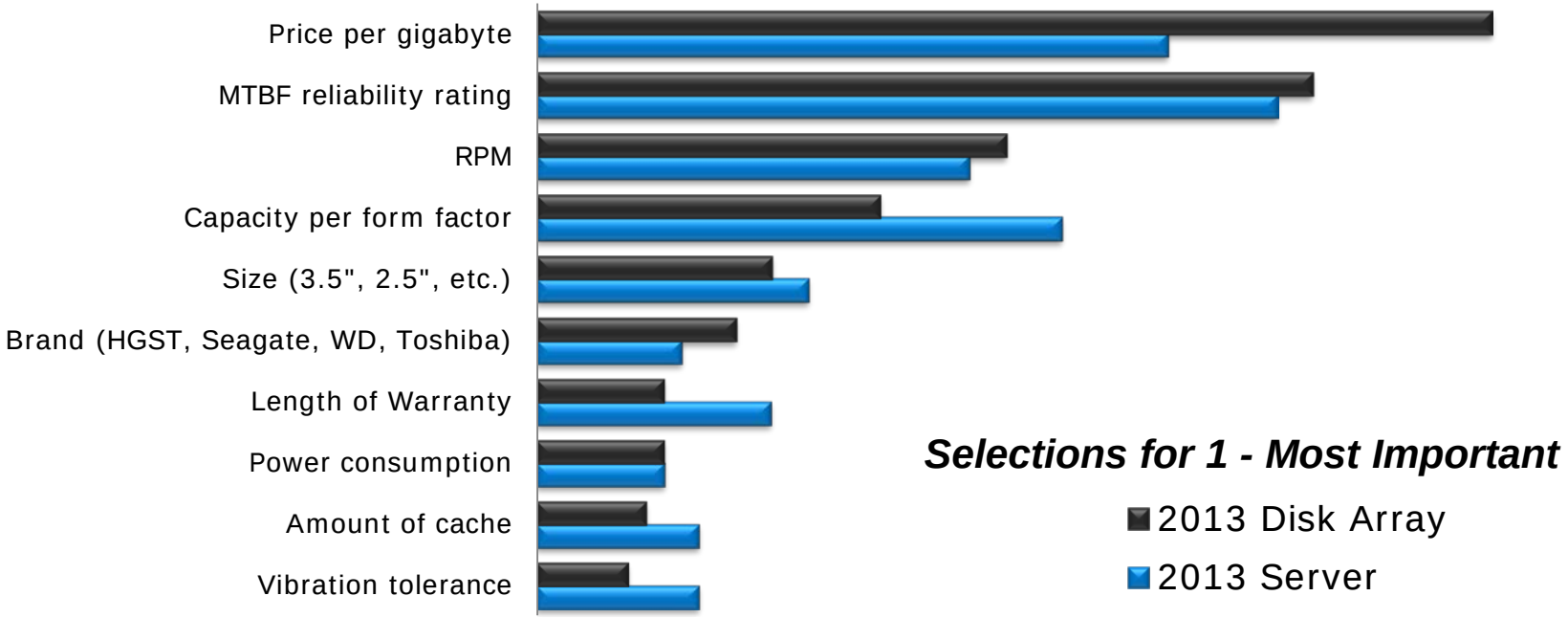
My organization plans to completely replace HDDs and deploy SSD as primary storage:



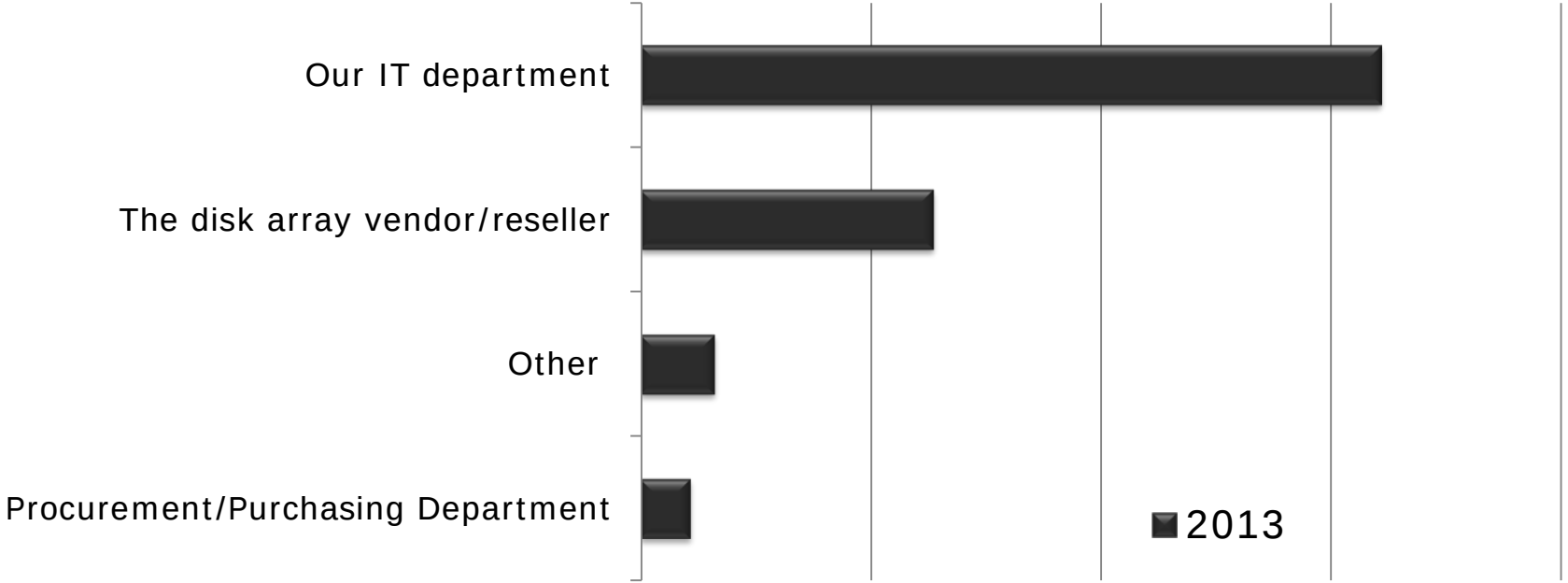
If QUALITY is defined as the ability to meet or exceed its intended purpose, which of these features are metrics for ENTERPRISE HDD QUALITY (select all that apply):



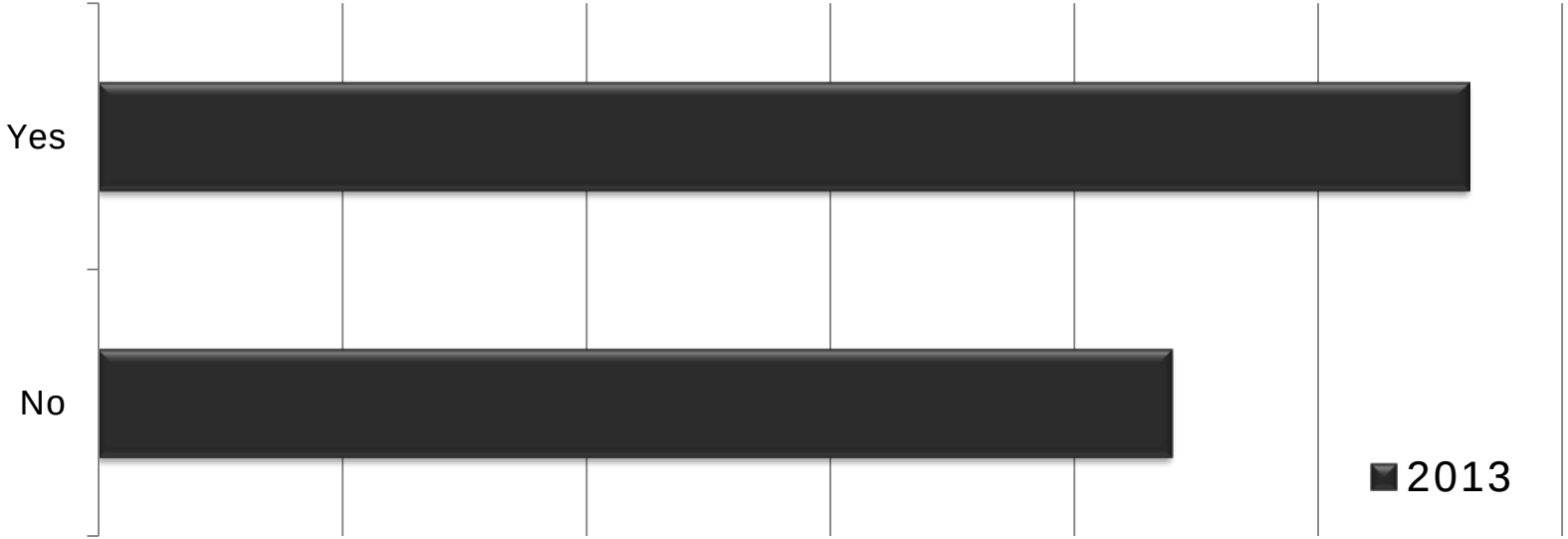
Rank the importance of these features when you select an Enterprise HDD:



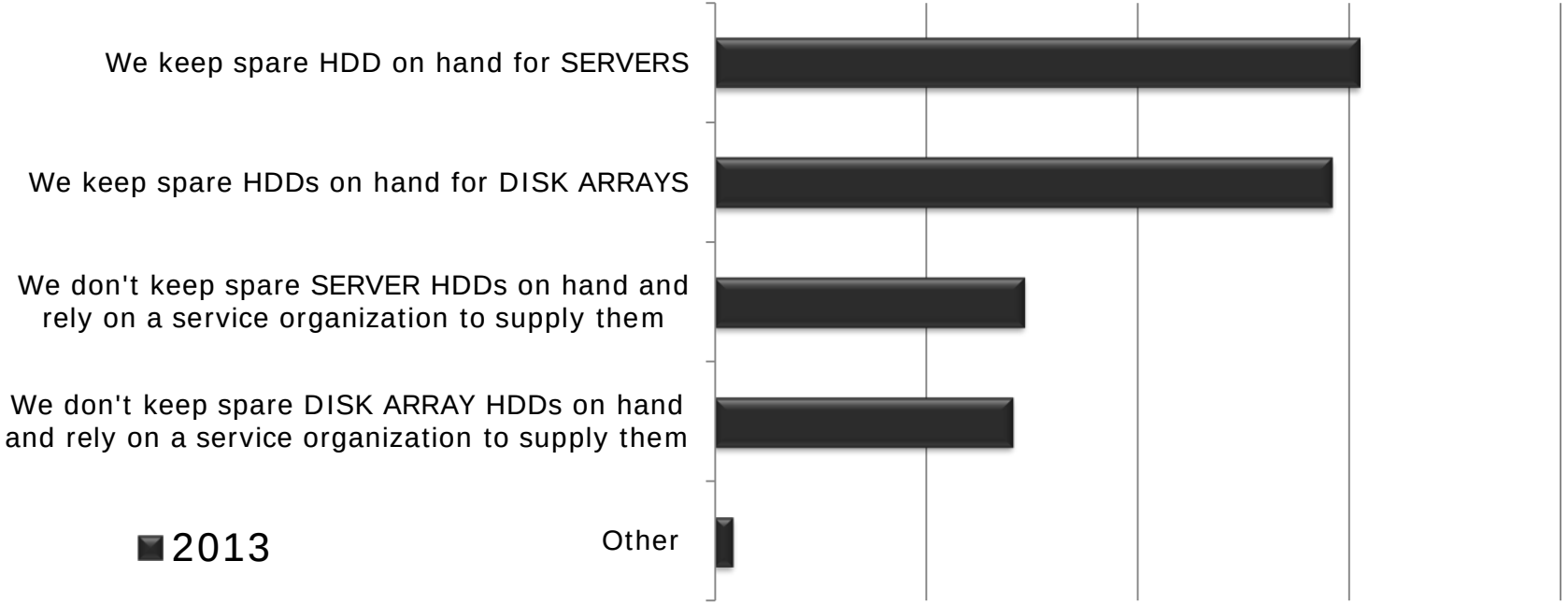
HDDs inside my organization's DISK ARRAYS were selected by:



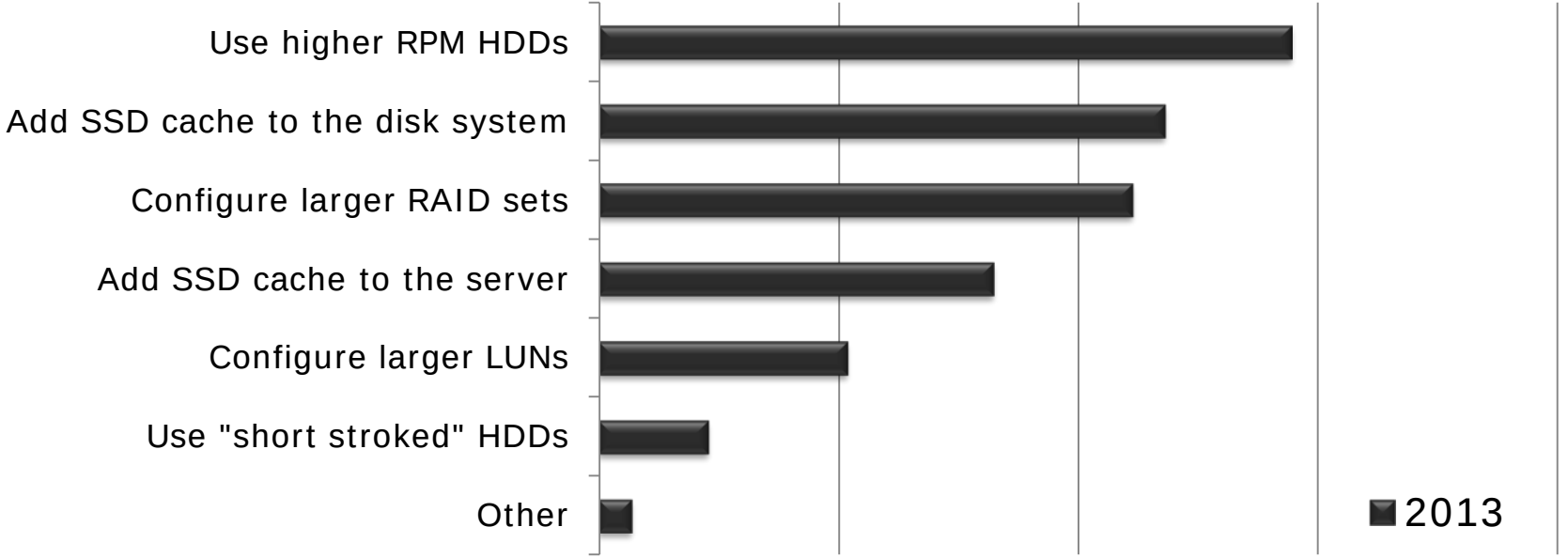
My organization mixes different types of disk drives in our disk arrays in order to achieve the best cost for the reliability, capacity and performance we require:



We use the following strategies for maintaining spare Enterprise HDDs (select all that apply):

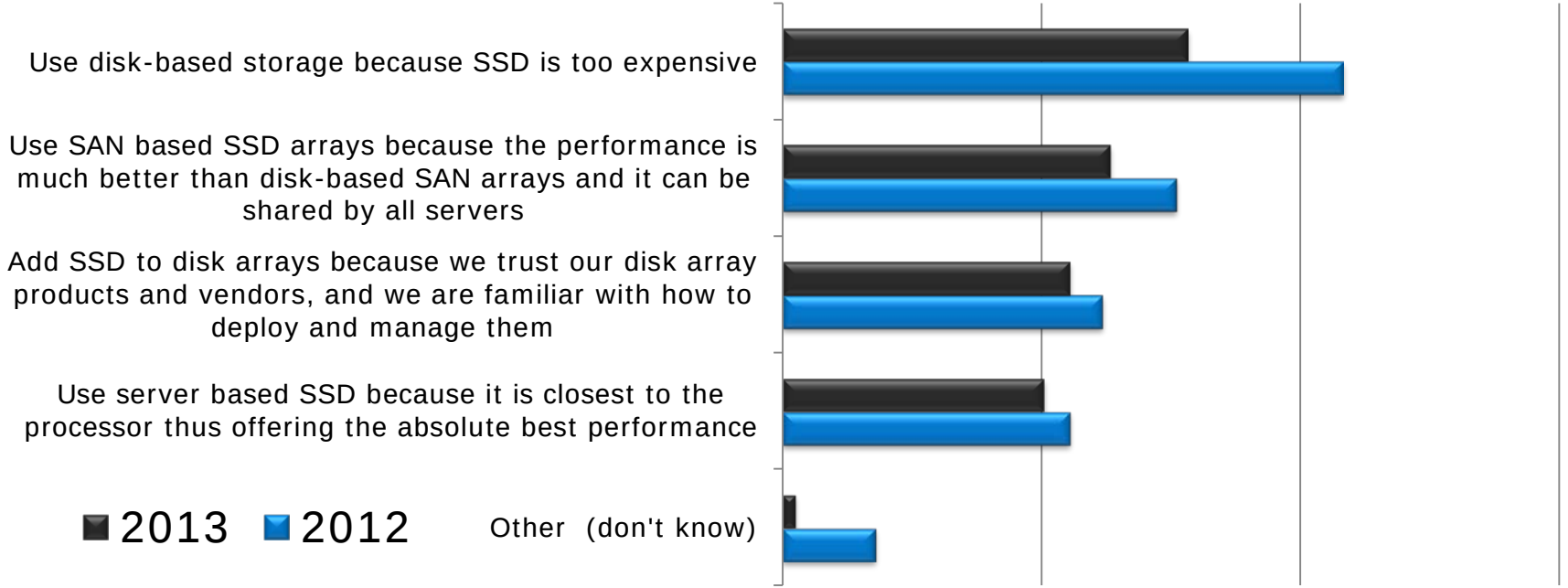


What I do to increase the performance of my disk arrays is (select all that apply):

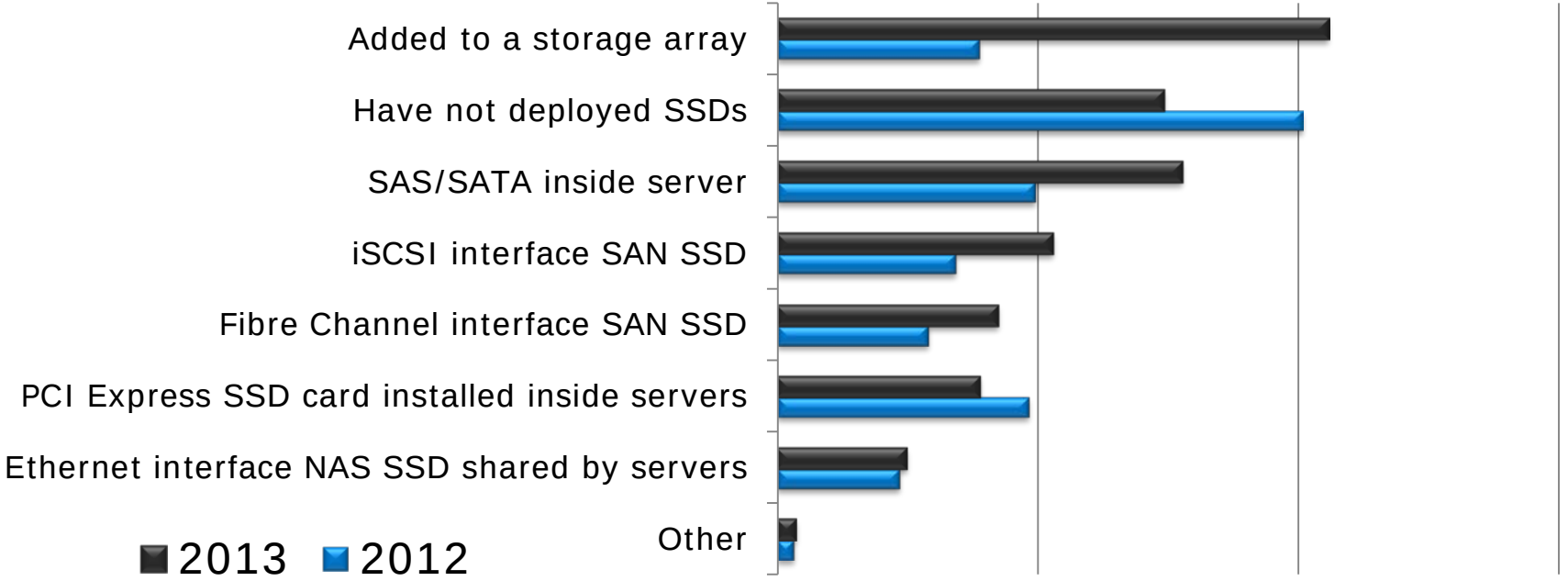



Driving SSD Adoption
Trust

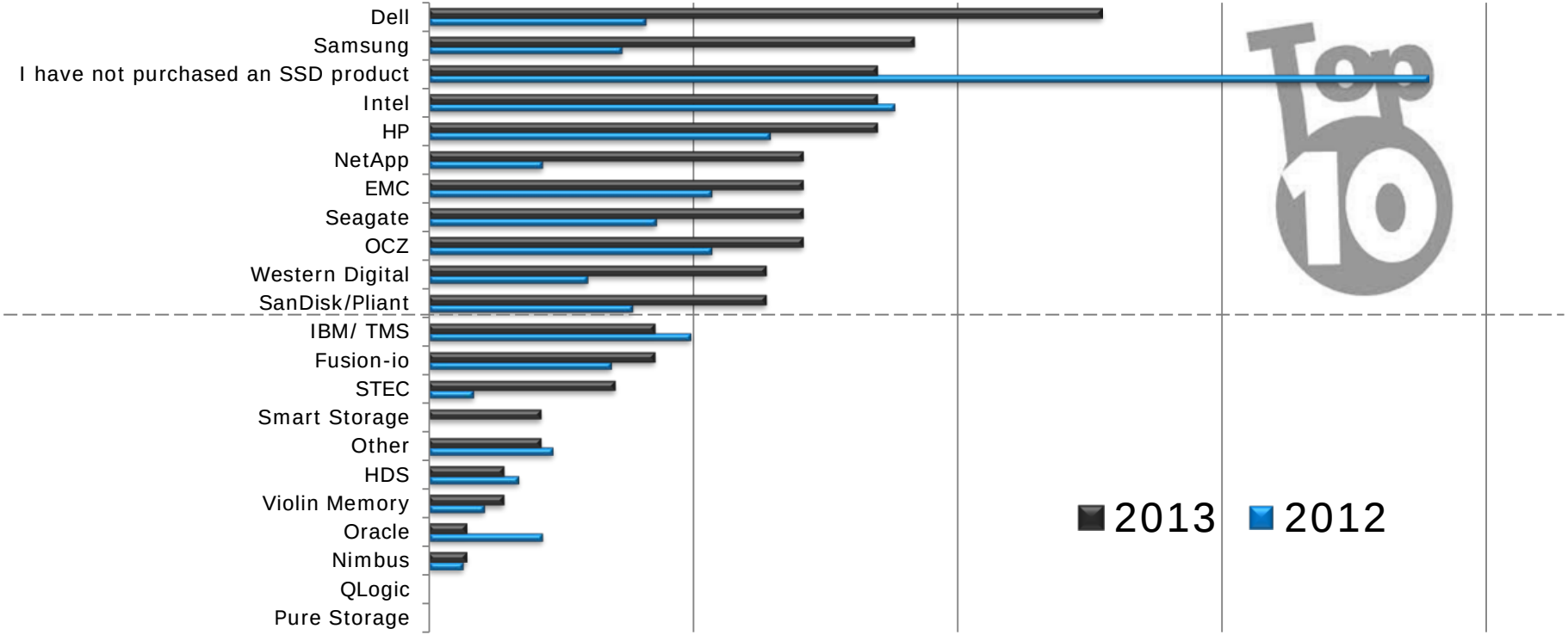
My organization uses the following SSD strategies (select all that apply):



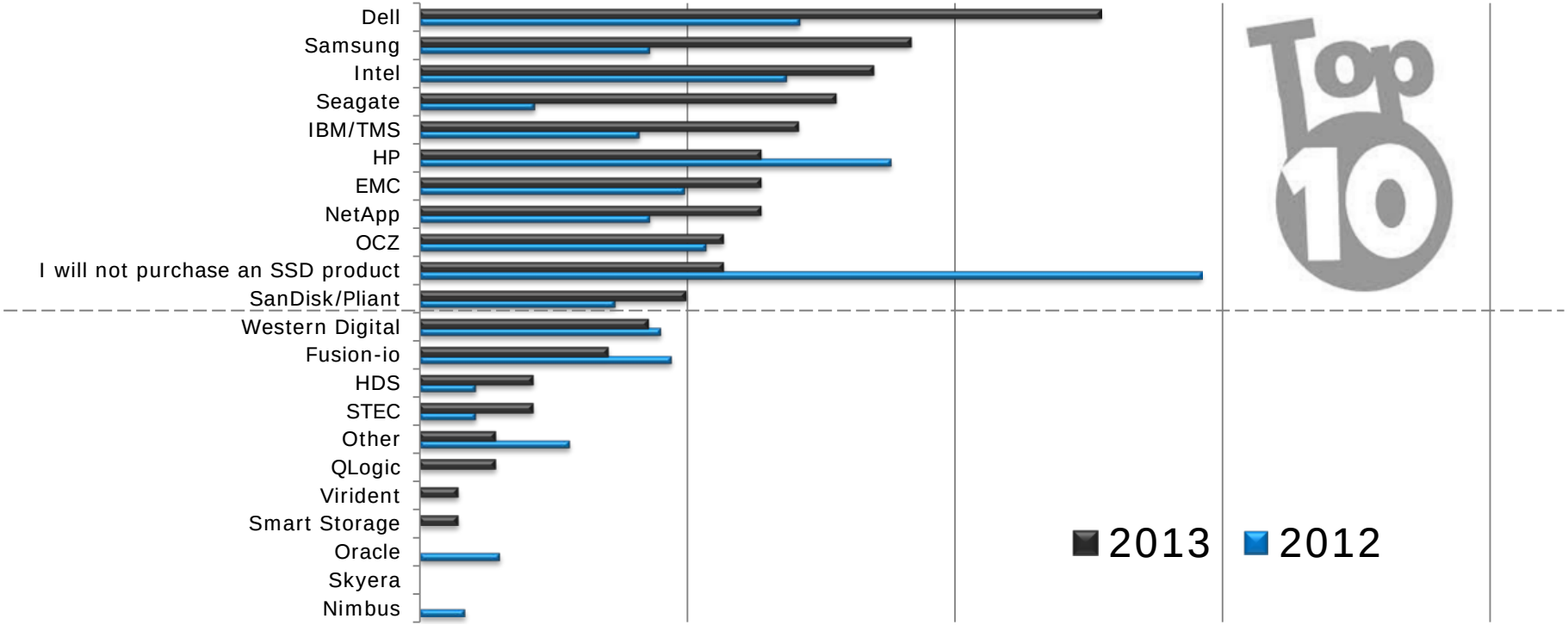
My organization has deployed the following types of SSD products (select all that apply):



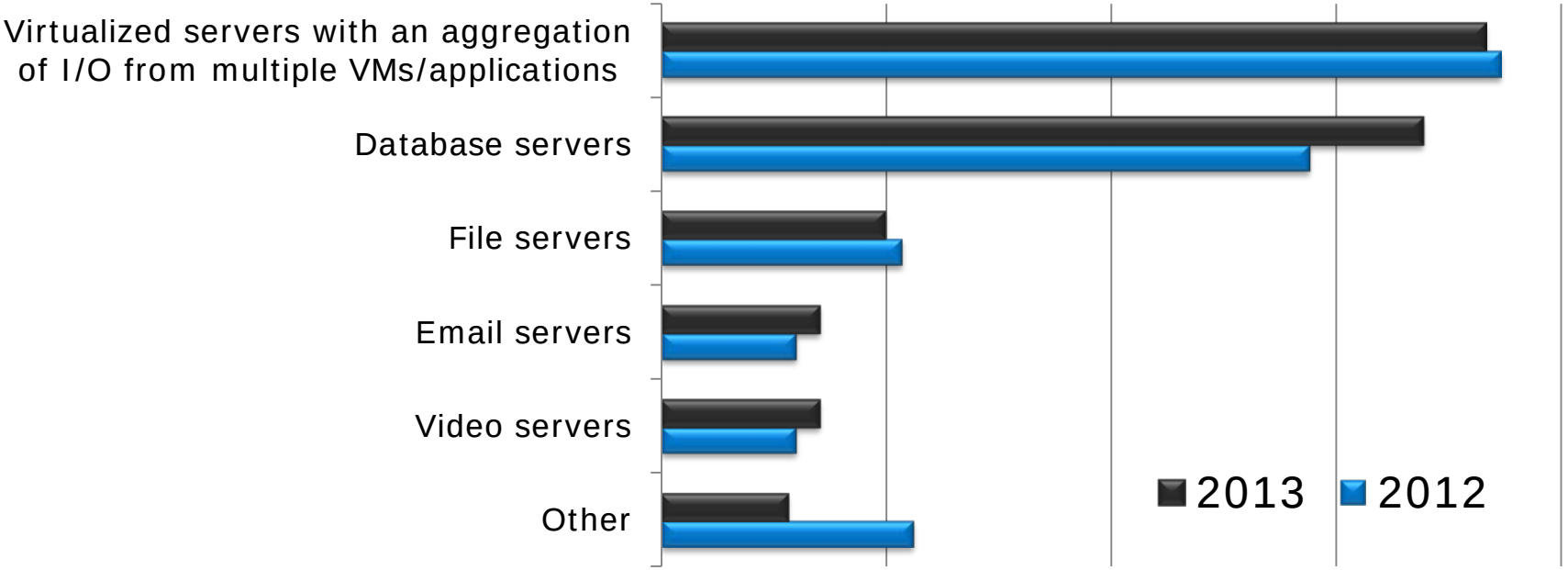
I have already purchased the following brands of SSD:



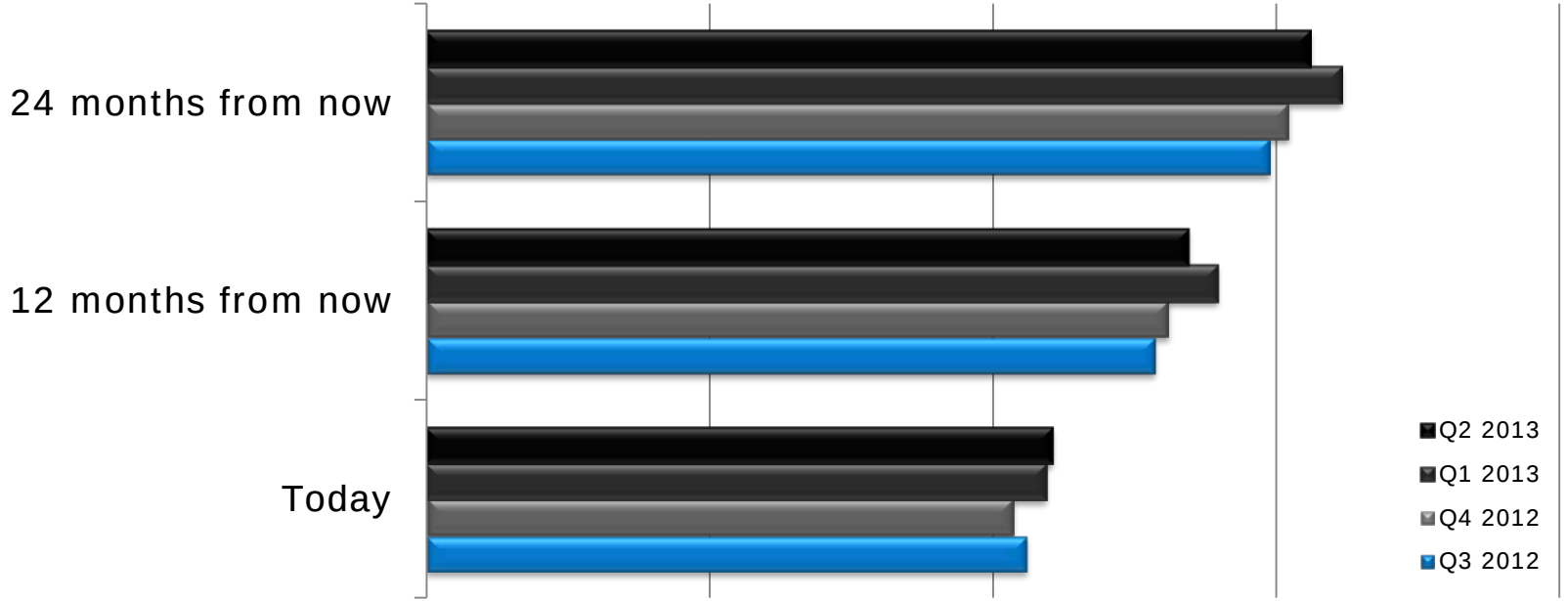
I will purchase the following brands of SSD in the next 12 months:



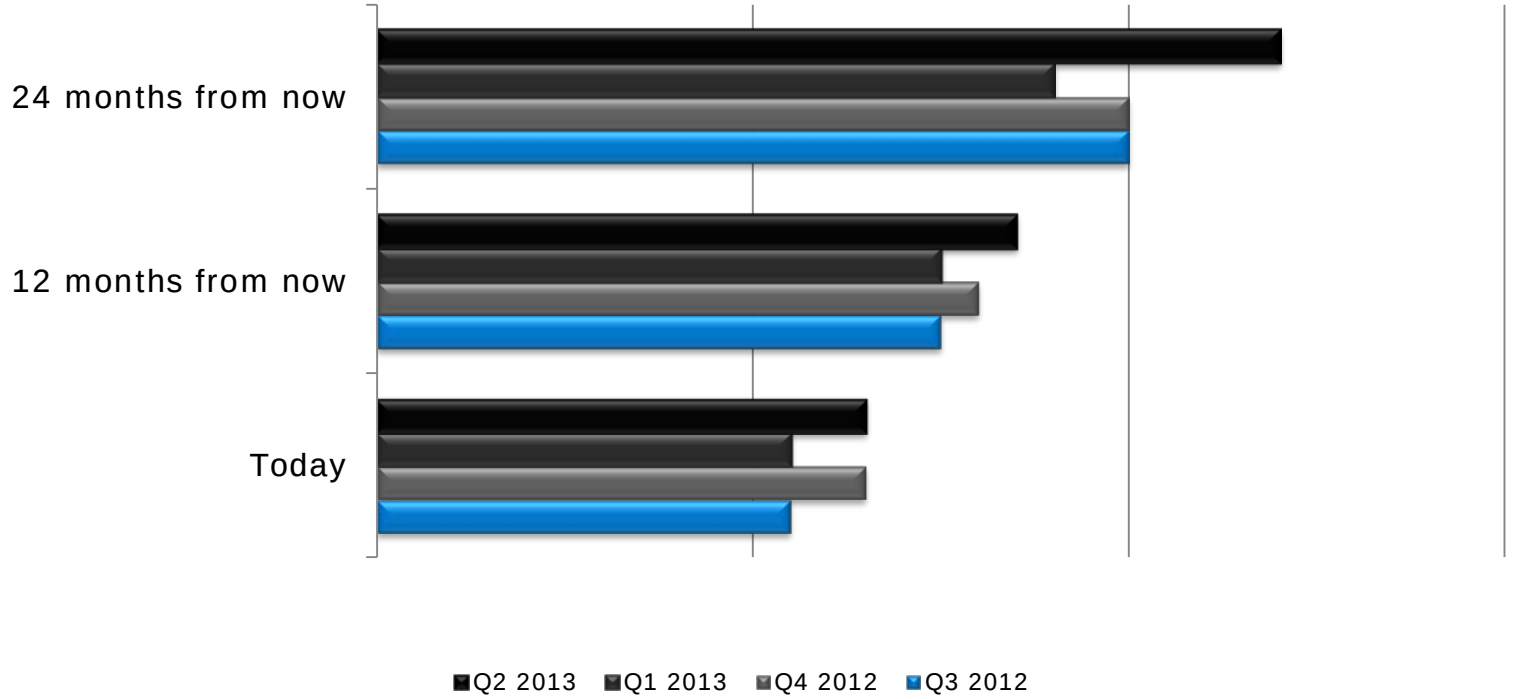
The following type of server most driving the adoption of SSD in my environment is:



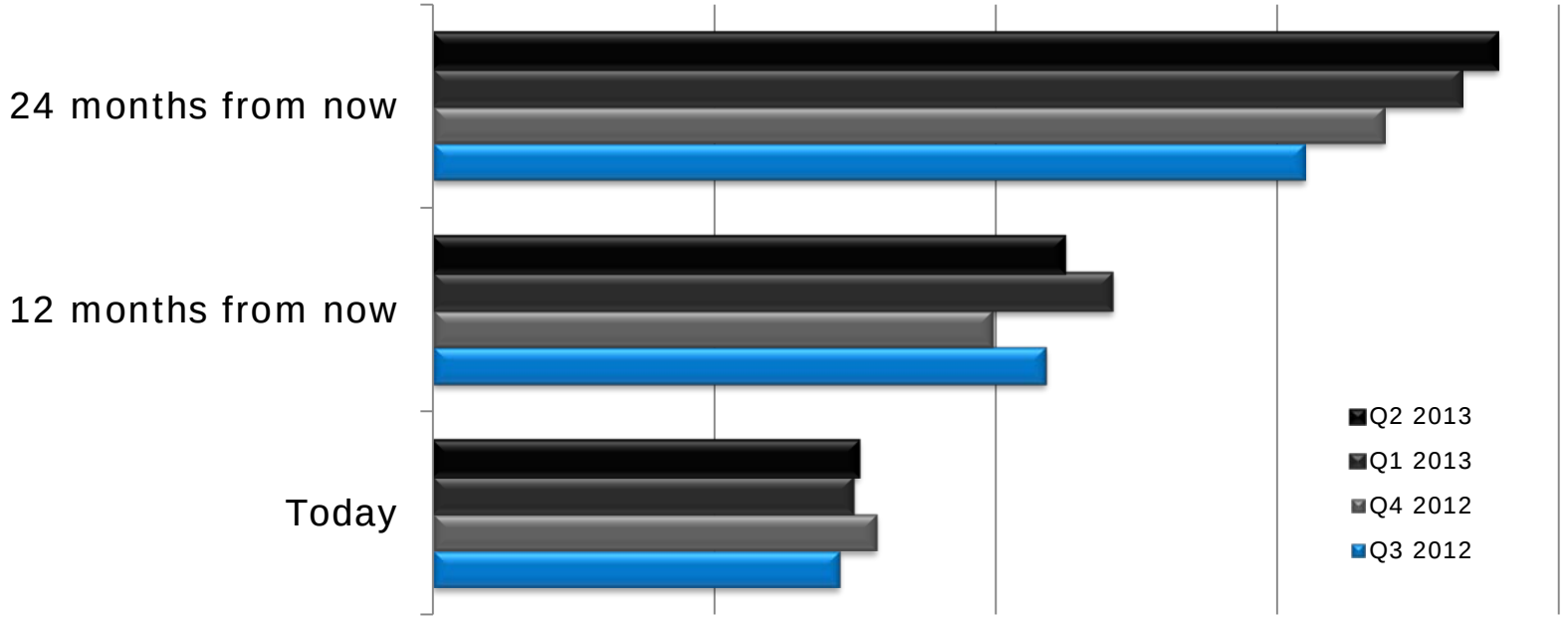
The percent of physical servers in my environment which are virtualized:



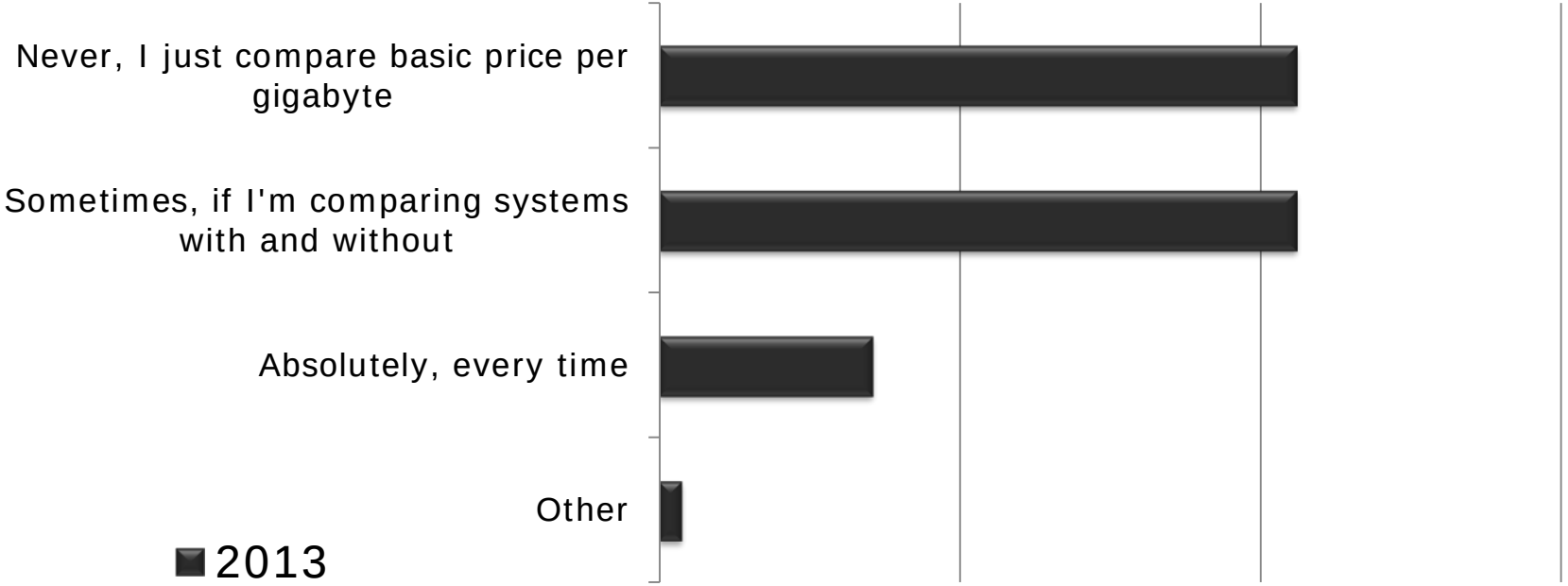
The average number of VMs per server in my environment:



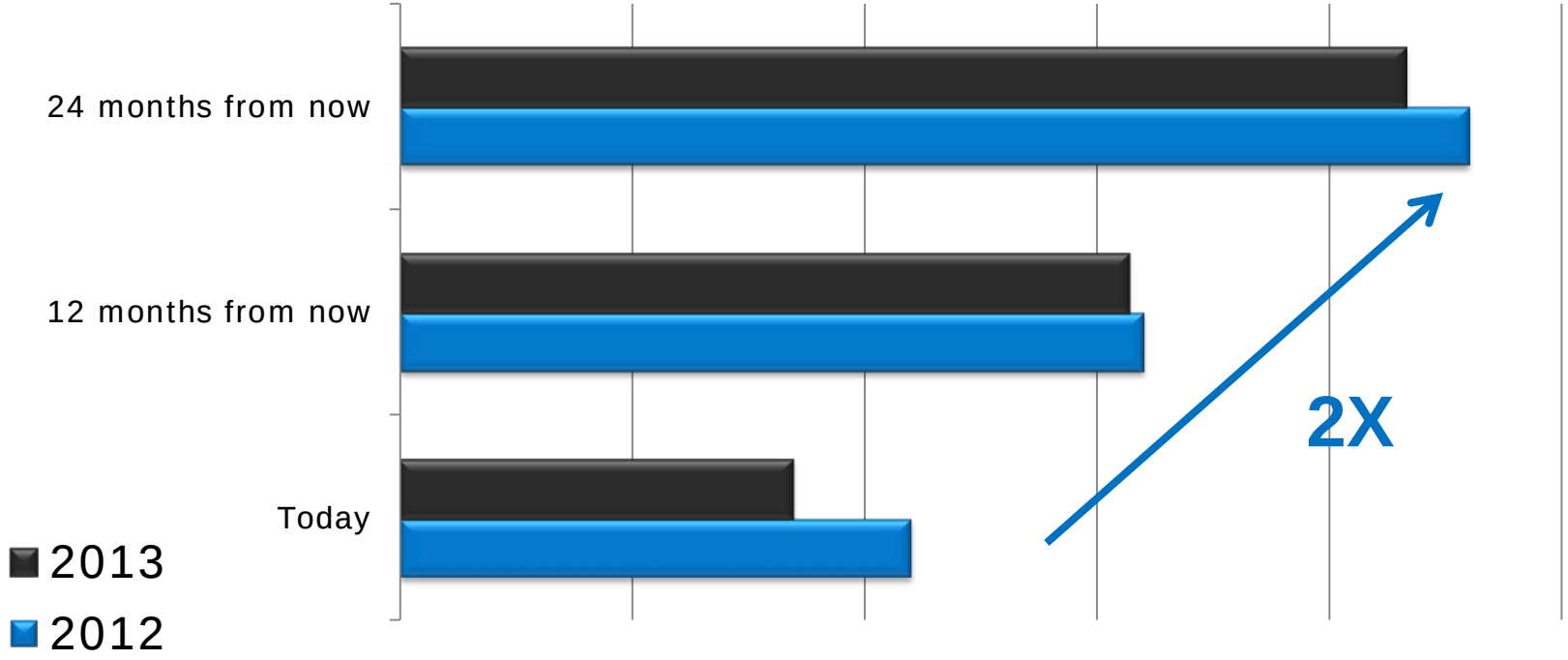
The percent of clients in my organization using virtual desktops:



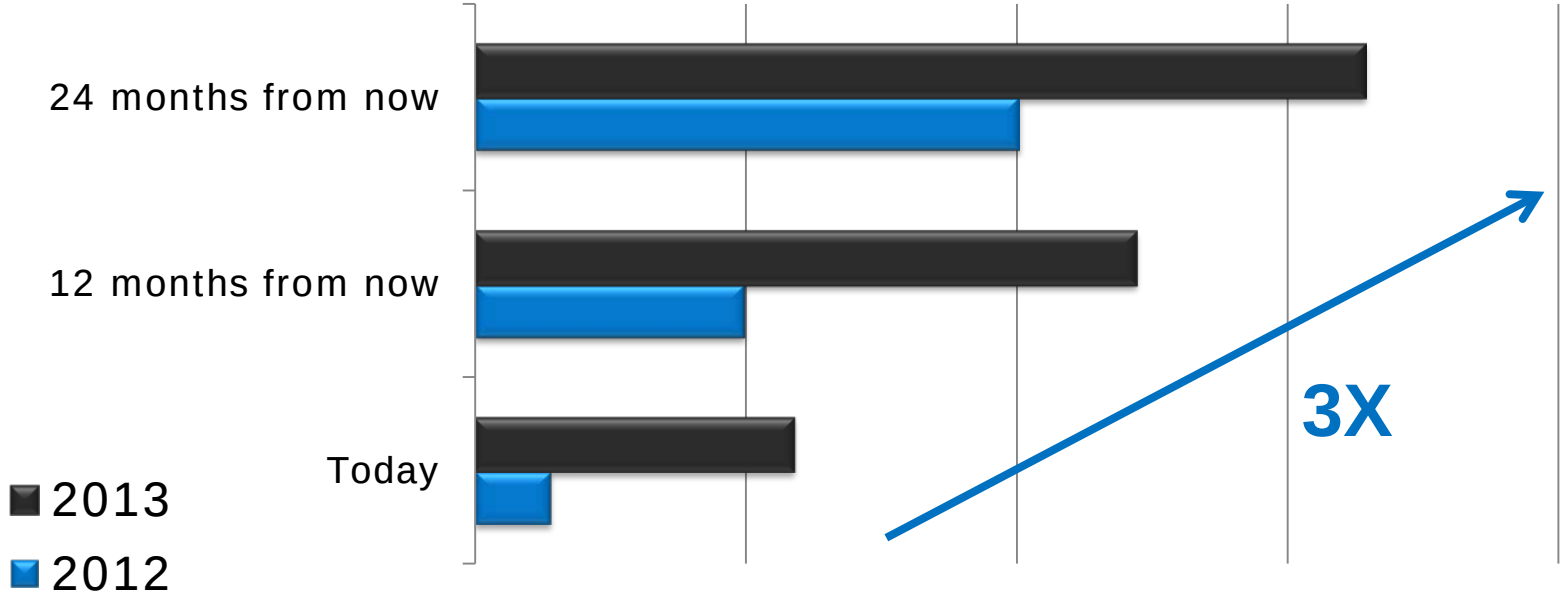
When I purchase HDD and SSD storage, I factor in compression, de-duplication and thin-provisioning to calculate my price per "usable" gigabyte:



Percent of servers in my environment accessing some type of SSD storage:

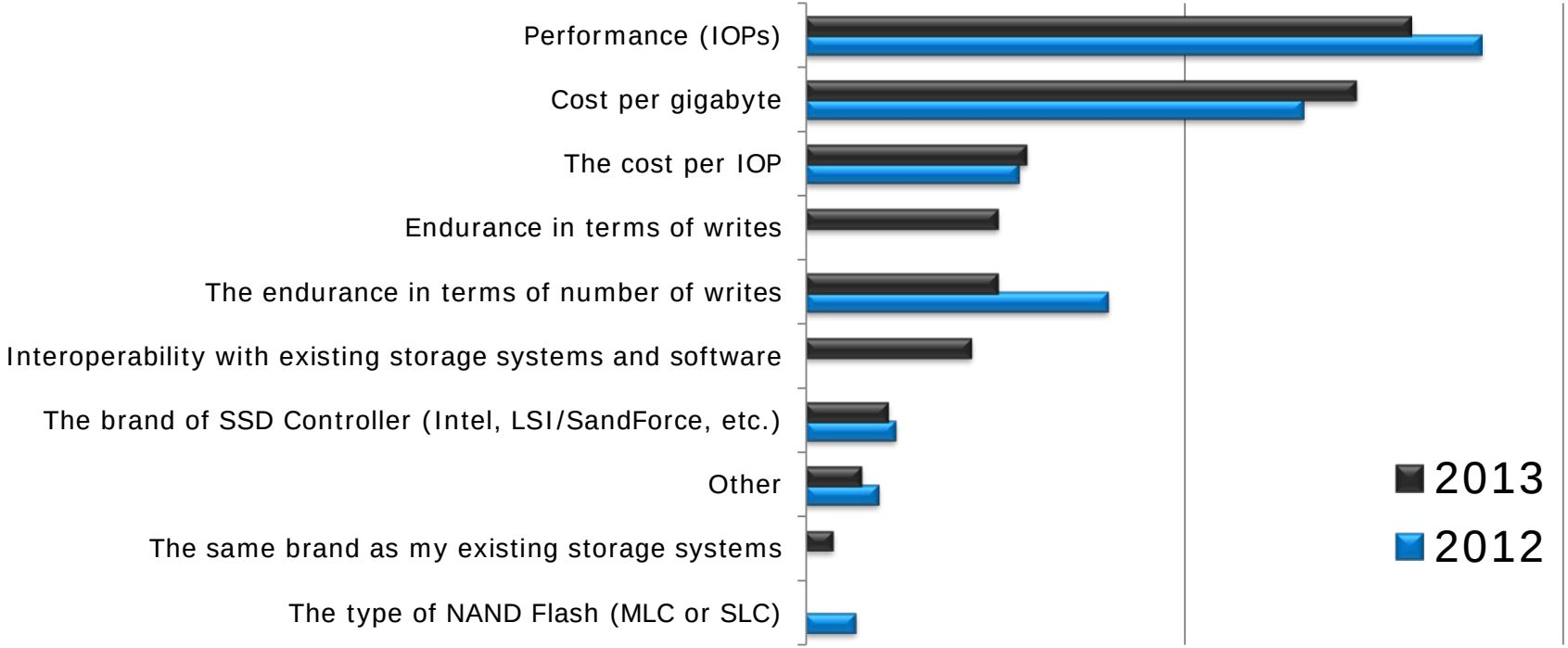


SSD will comprise approximately this percentage of my organization's combined SSD and HDD disk capacity:

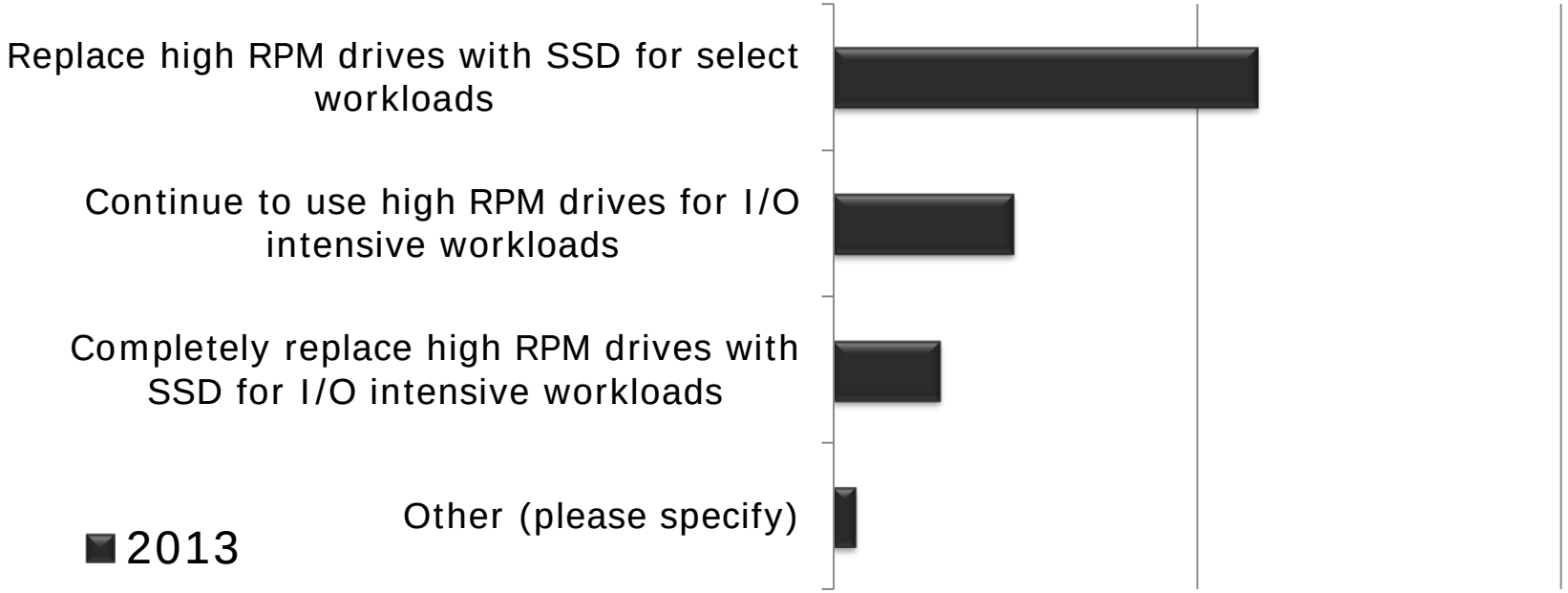



IT Priorities: Protect data and keep it flowing

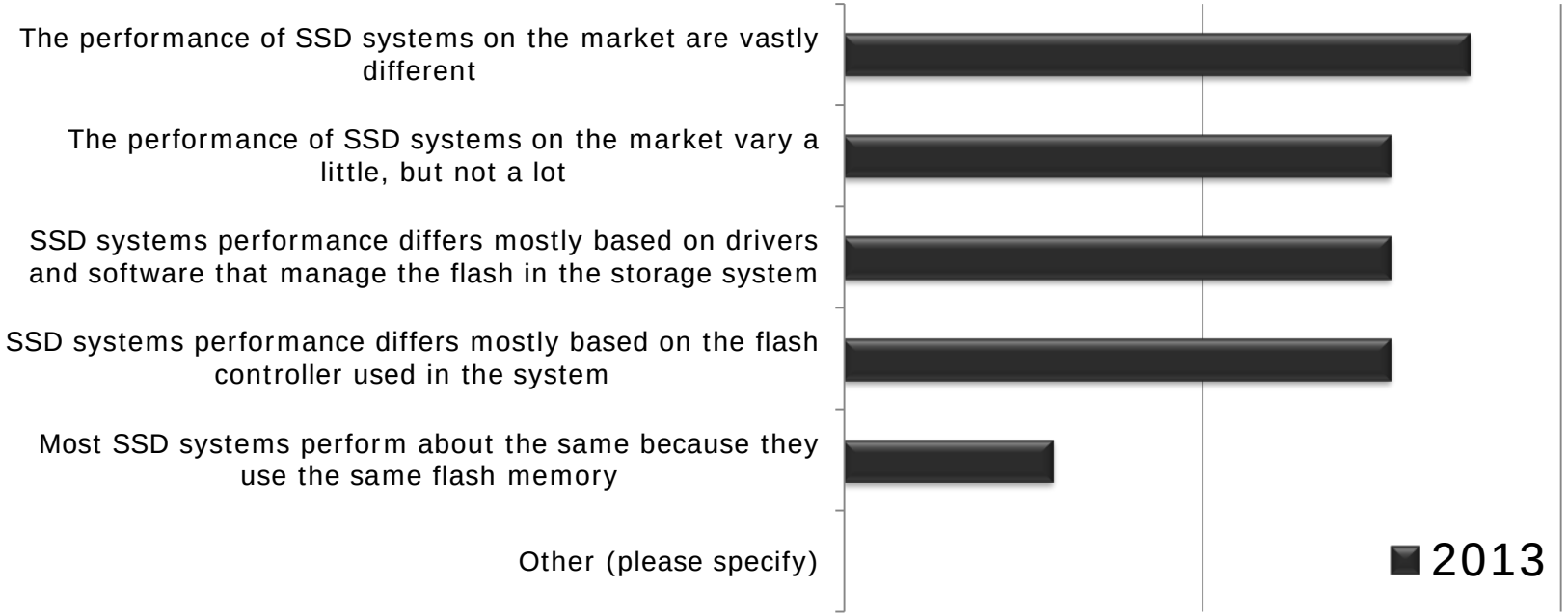
The most important feature of an SSD for my environment is:



My organization's strategy for SSDs vs. High RPM Drives:

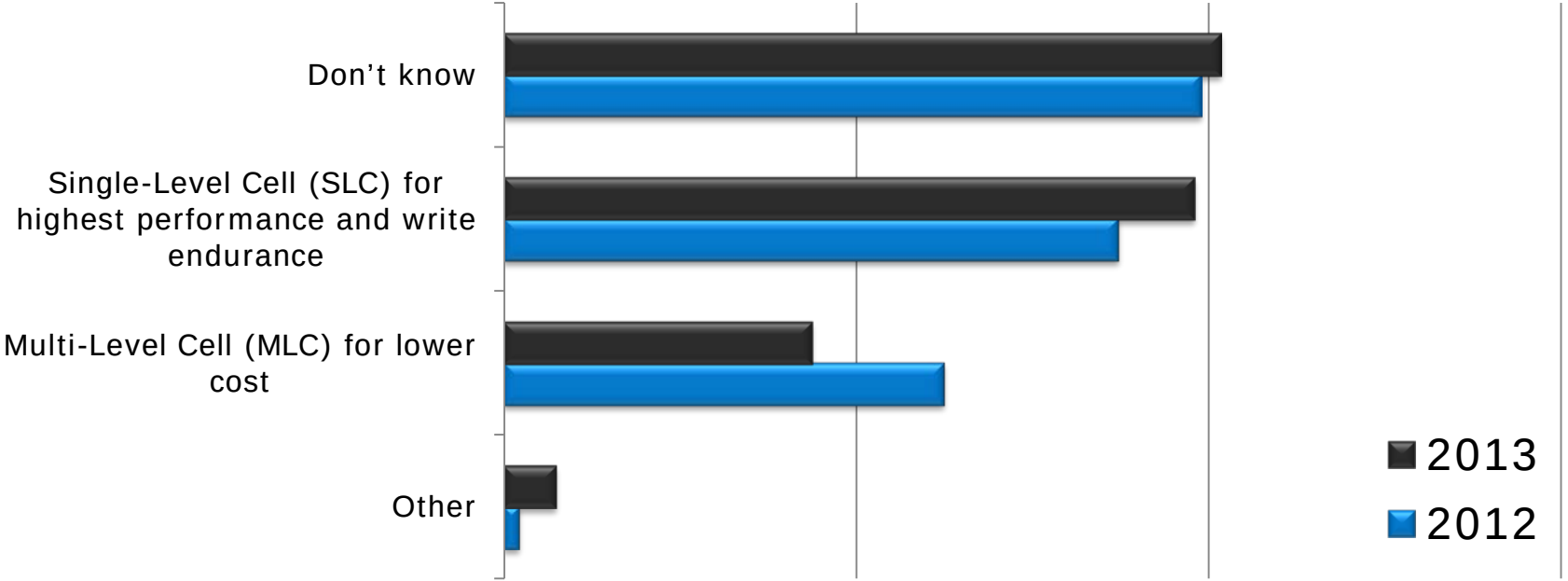


Regarding the performance of SSD systems, I believe (select all that apply):

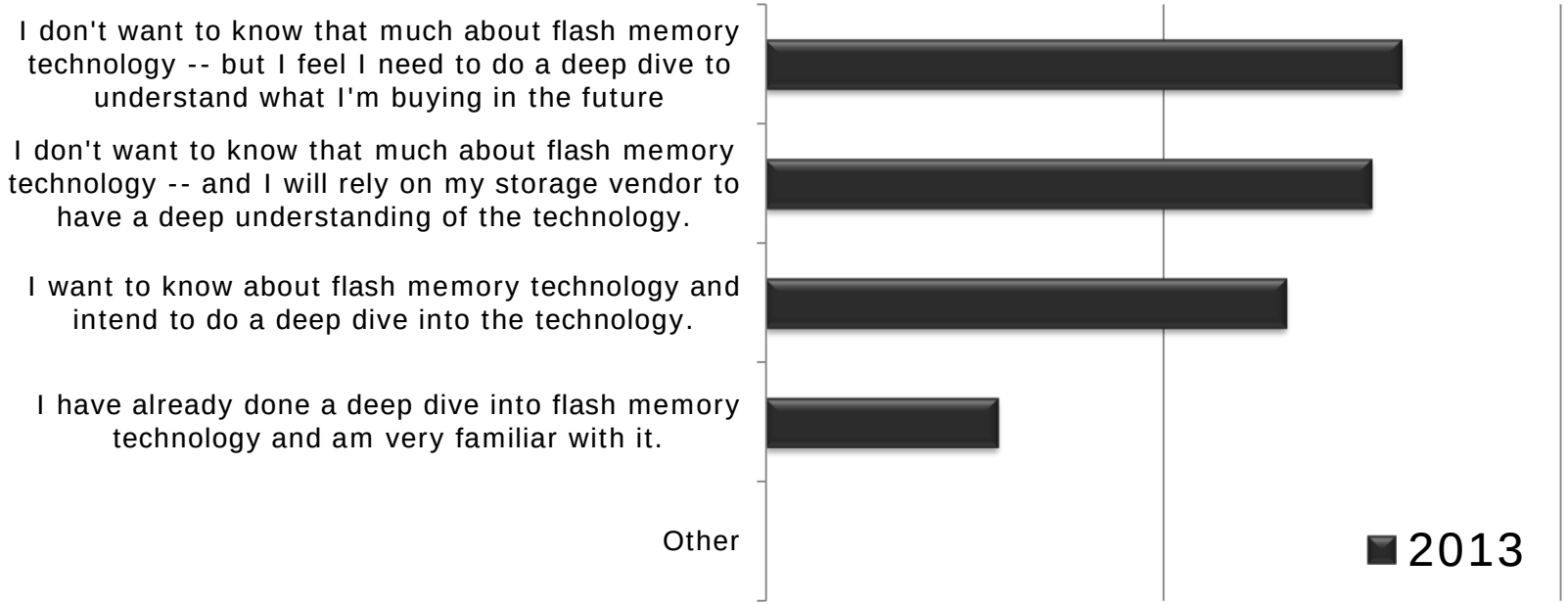



IT doesn’t want to know
how to build the watch

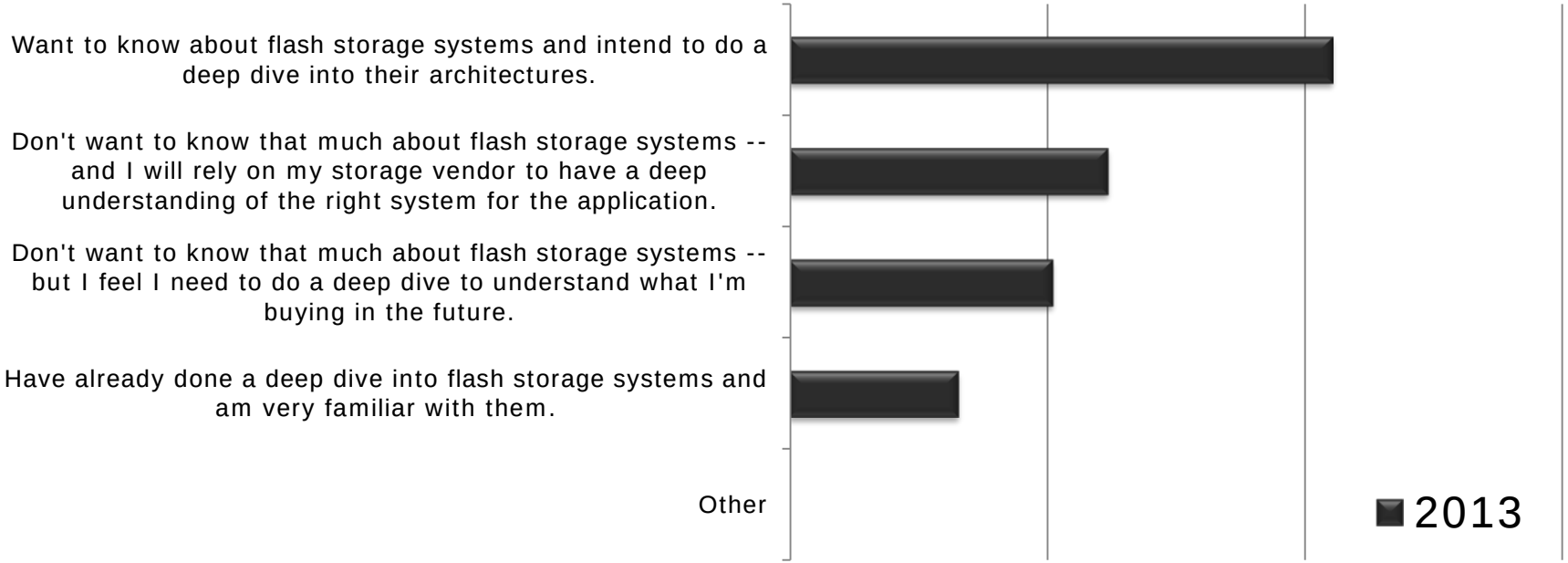
SSDs with the following type of NAND Flash are best suited for my environment:



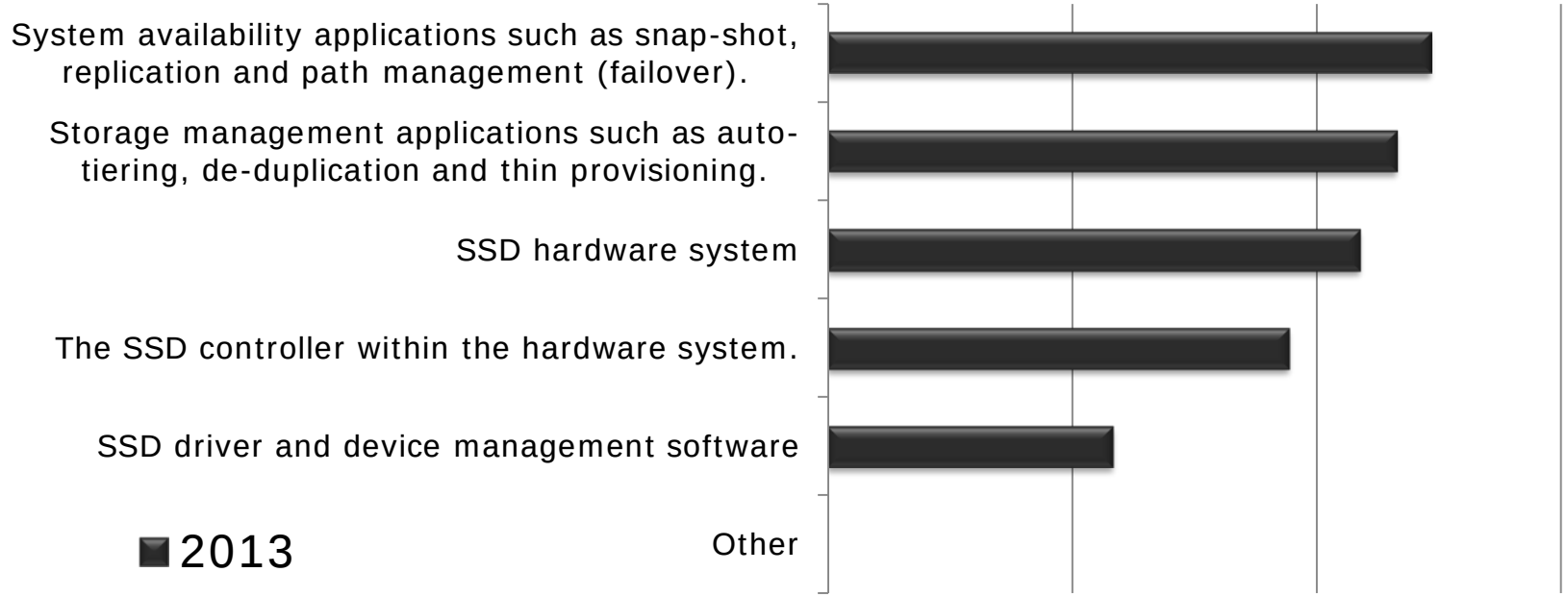
There are different types of Flash Memory (MLC, SLC, TLC, etc.) with new characteristics that define how it works in the data center (wear leveling, write endurance, etc.):



There are different types of Flash Storage systems (All Flash Arrays, Hybrid Arrays, PCIe cards, etc.) with new characteristics that define how they work in the data center (software defined vs. plug-and-play SSD, captive PCIe vs. shared PCIe SSD, permanent storage vs. cache, etc.). I:

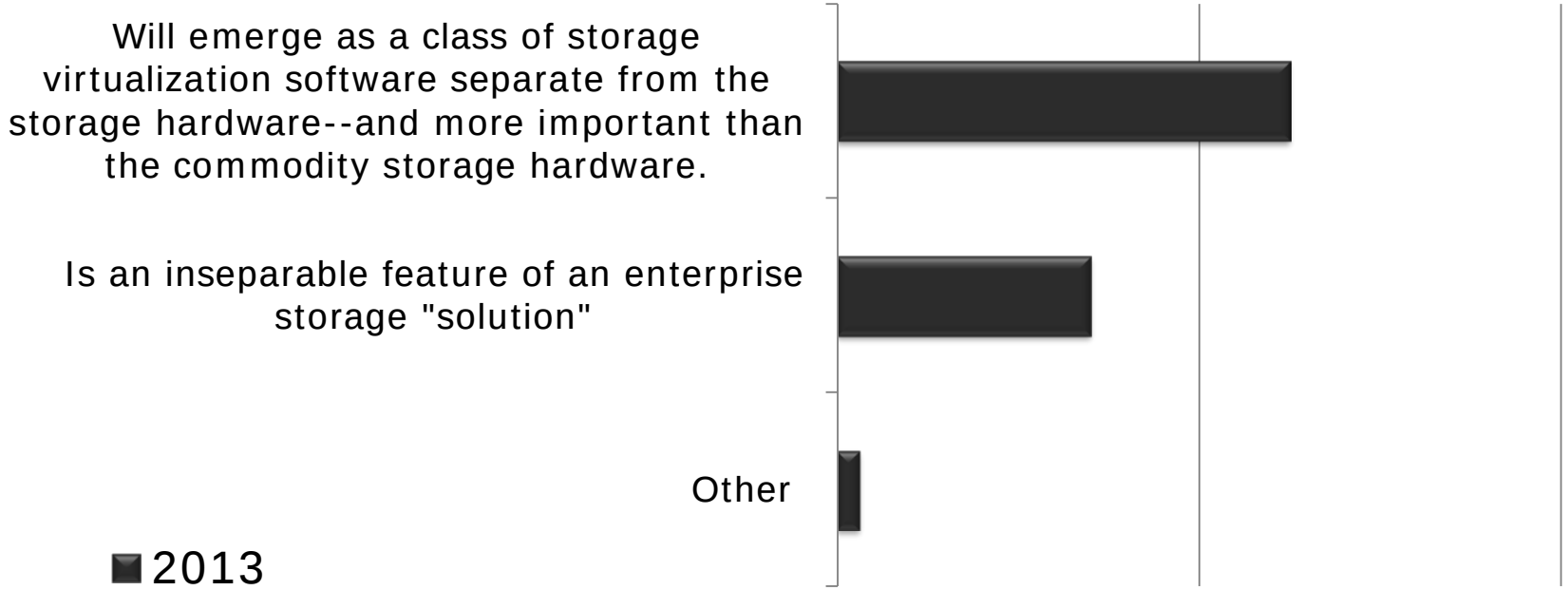


The most strategic (irreplaceable) component of a complete SSD storage solution is the:

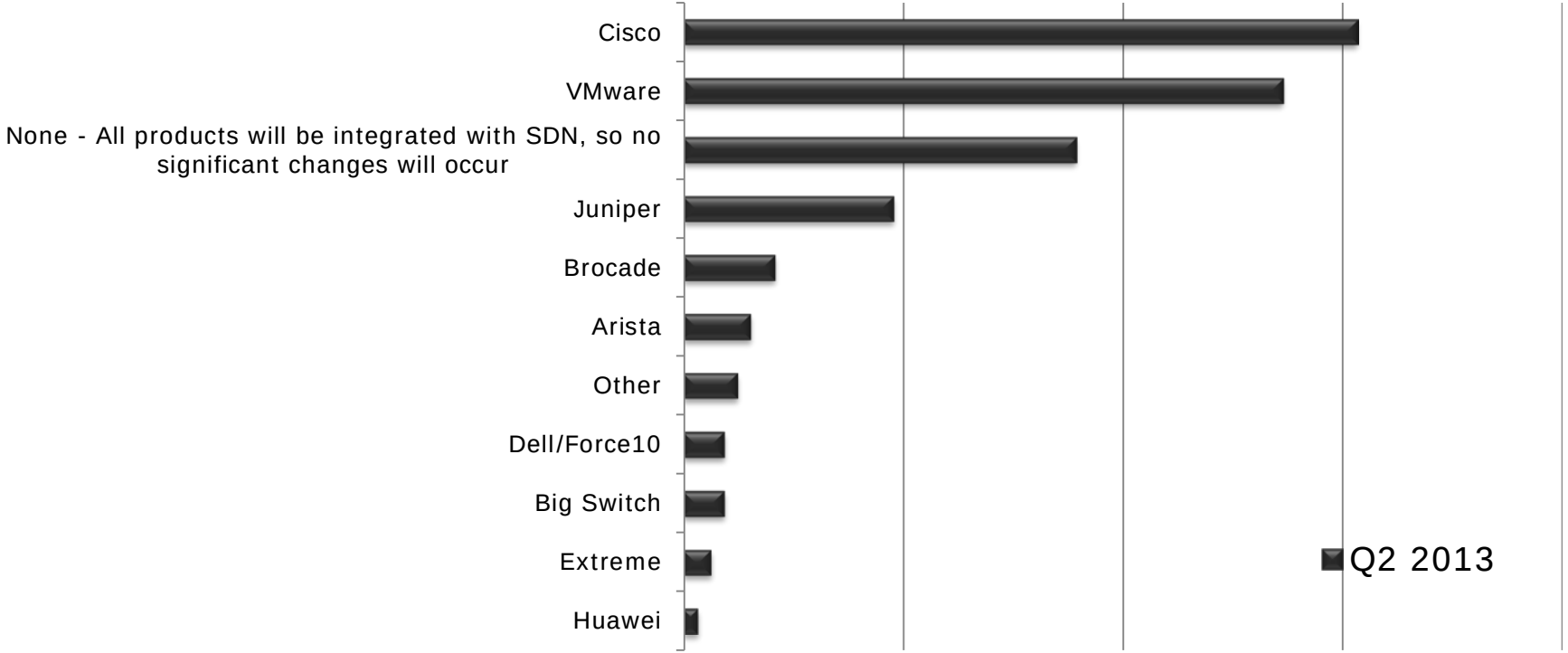


Potential blind spots in the future

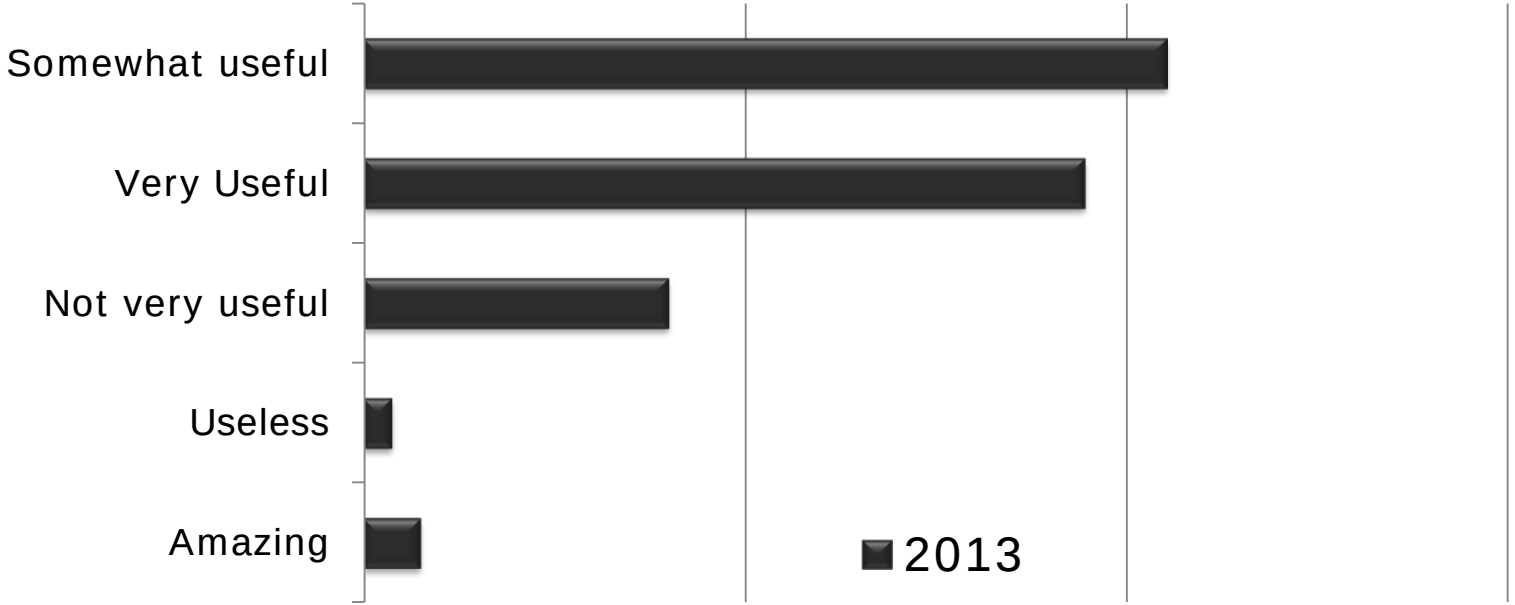
I see Software Defined Storage as a technology that:



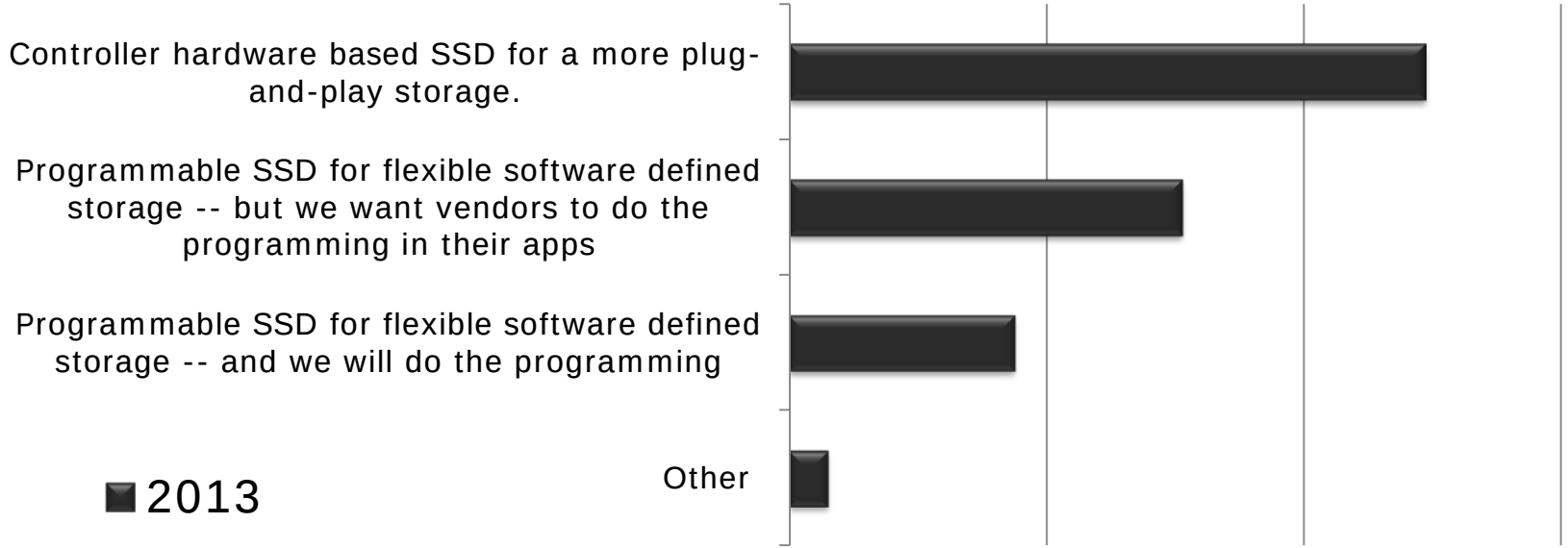
The following company is most likely to gain significant market share as a result of the transition to software defined networking (SDN):



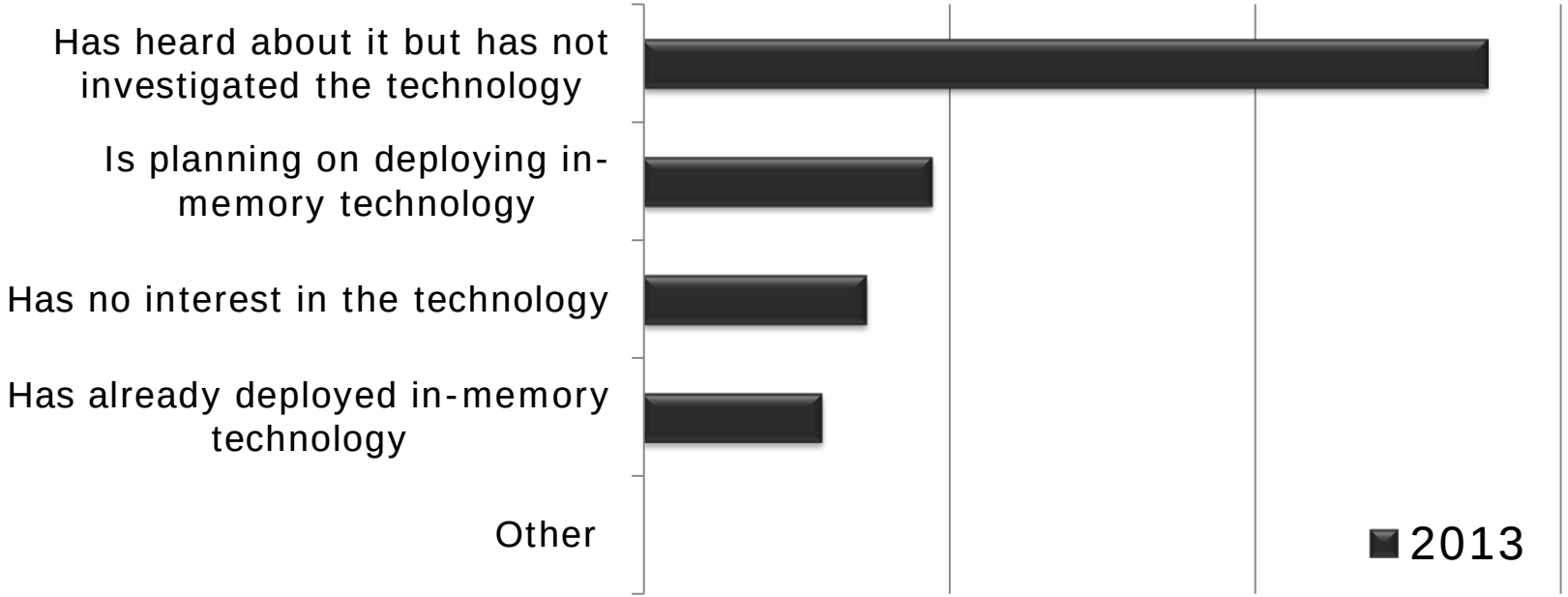
Technology is emerging which allows cache across PCIe SSD cards in different servers to be pooled in a SAN, and provisioned as needed in LUNs. Pooling PCIe SSD cache across servers. I consider this technology:



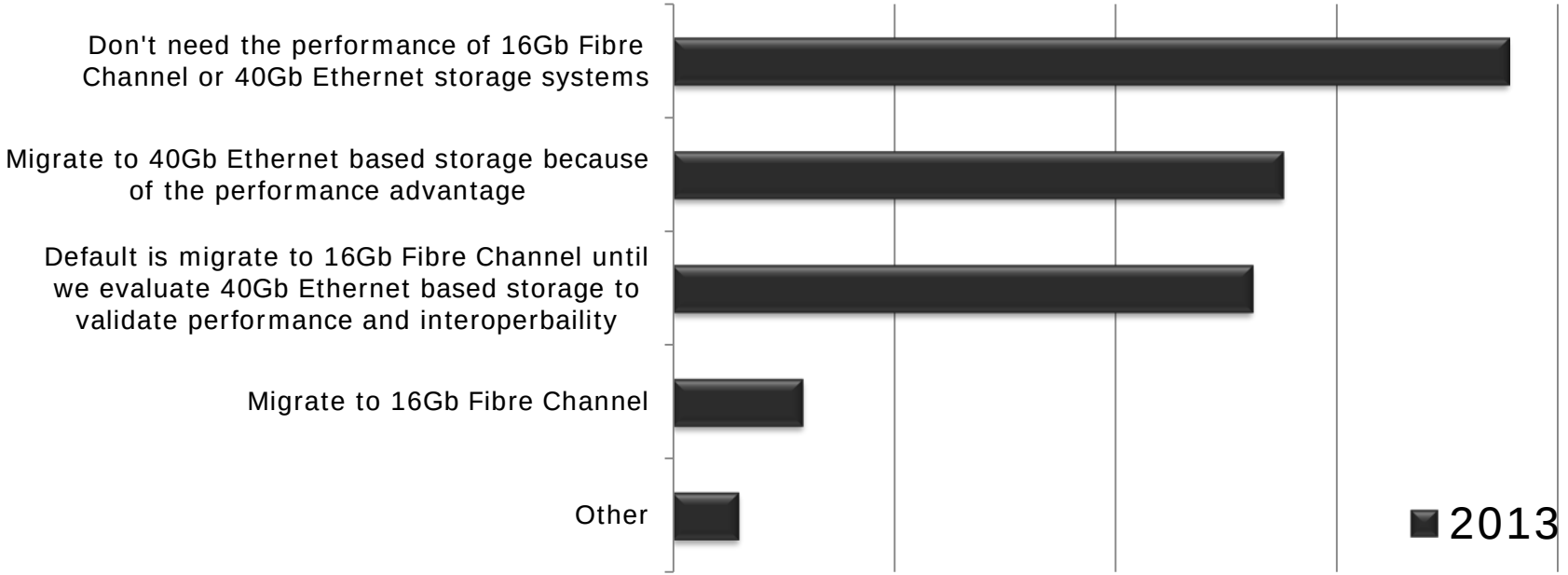
Some SSD products are "programmable" so they fit into a software defined storage environment. Other SSD products have most functions embedded in the controller hardware. What is best for my organization in the future is:



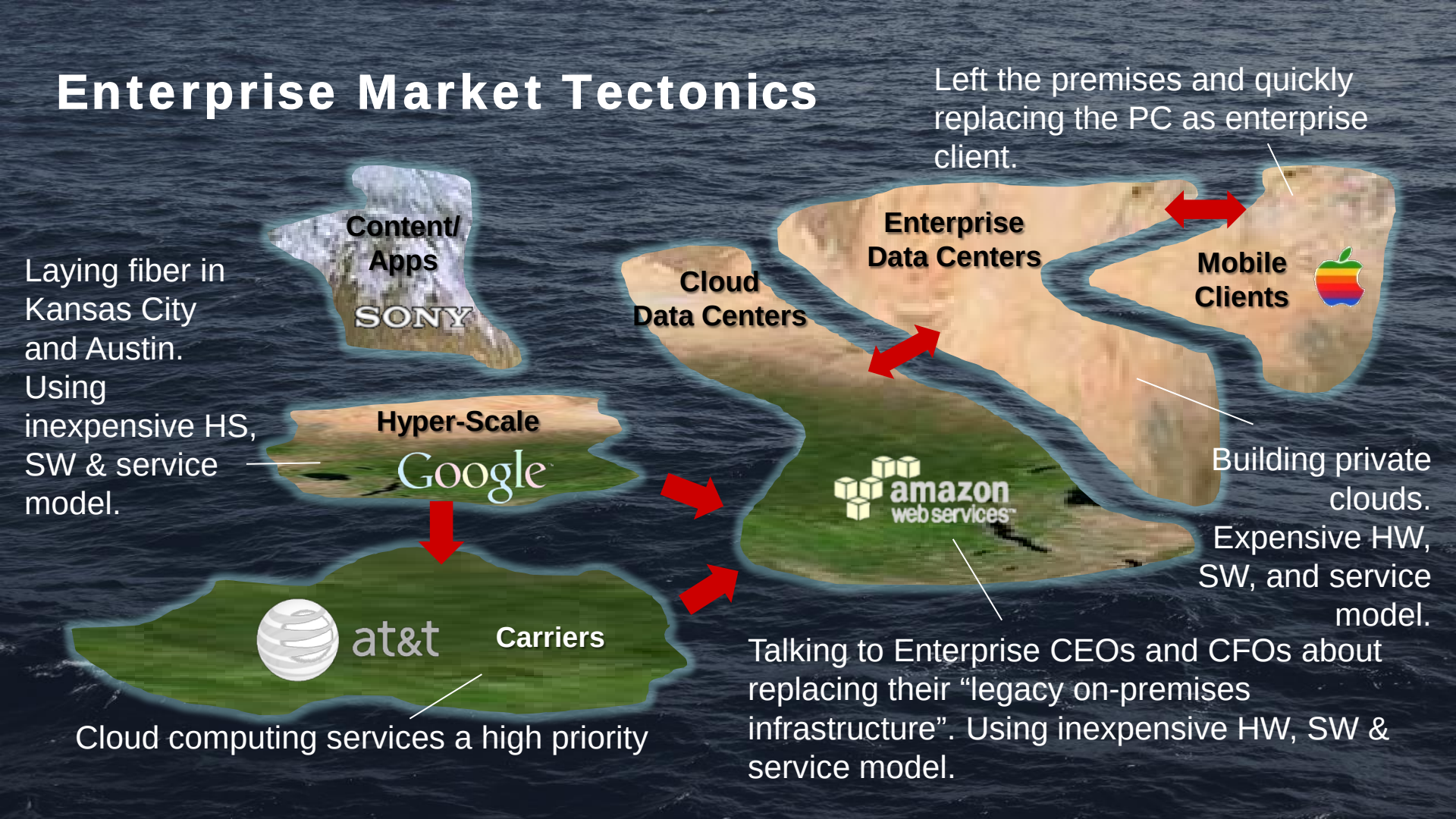
In-memory processing is where data is loaded into DRAM (or flash memory) instead of hard disks so IT spends less time on data modeling, query analysis, cube building and table design. My organization:



Storage system network interfaces are making speed jumps in the next year to 16Gb Fibre Channel and 40Gb Ethernet (NAS, iSCSI and FCoE). I would describe my organization's strategy for next generation storage to be:



Enterprise Market Tectonics



Left the premises and quickly replacing the PC as enterprise client.

Laying fiber in Kansas City and Austin. Using inexpensive HS, SW & service model.

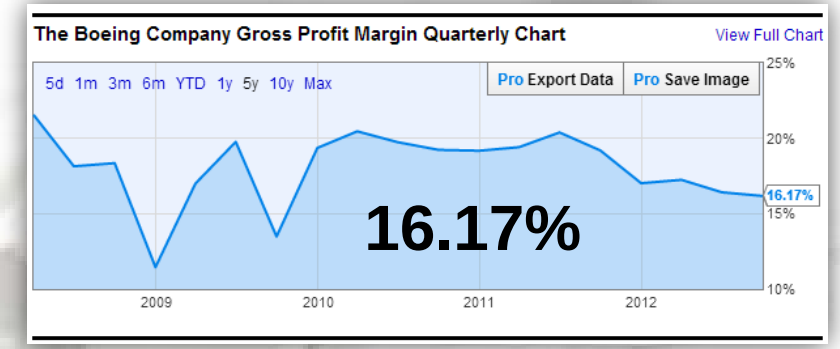
Building private clouds. Expensive HW, SW, and service model.

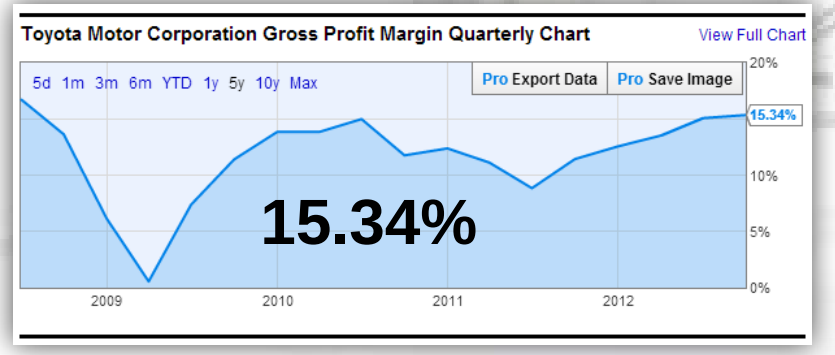
Talking to Enterprise CEOs and CFOs about replacing their “legacy on-premises infrastructure”. Using inexpensive HW, SW & service model.

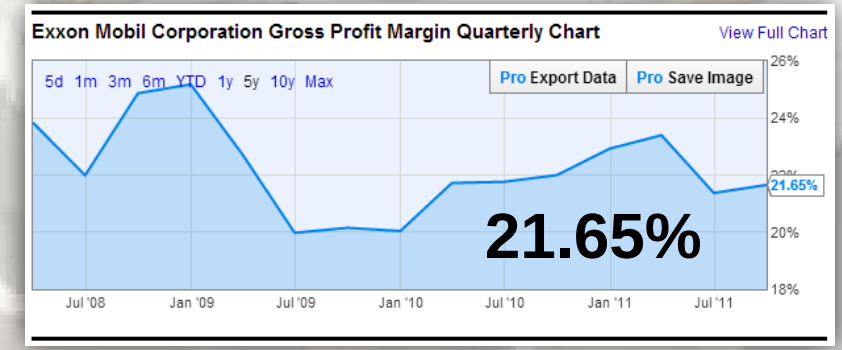
Cloud computing services a high priority

IT sees they're paying a higher toll

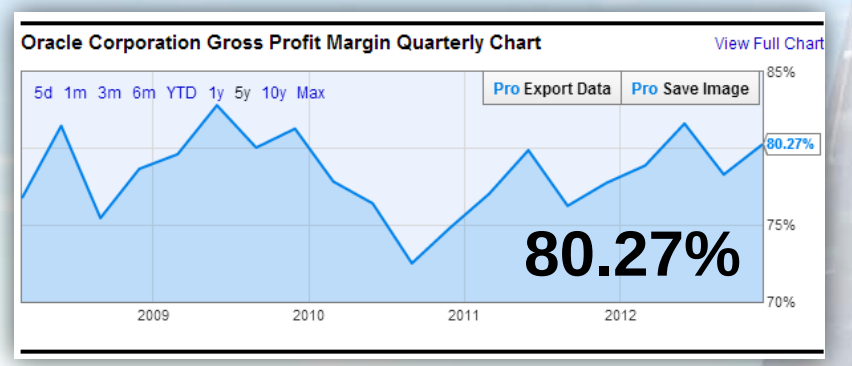
Mature Global Industries

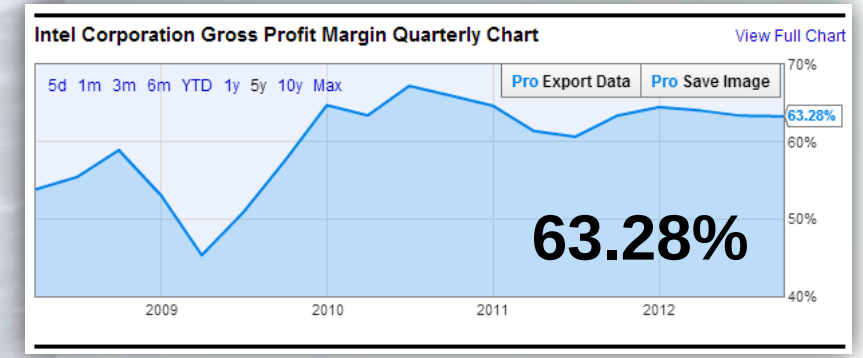


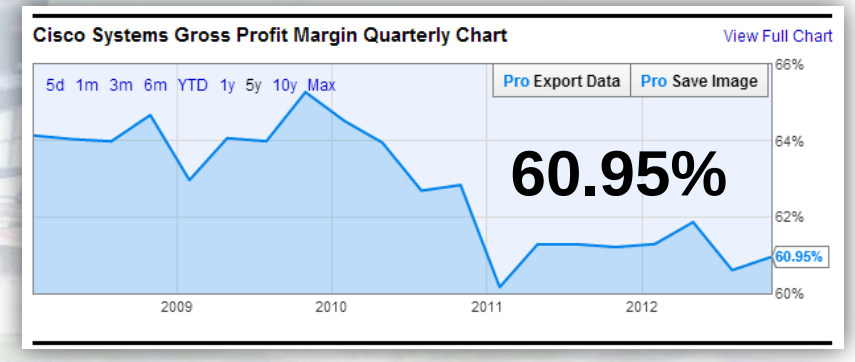




Enterprise IT Industry







Inflection Point

Business goes on the new heights

ICT
Cloud
Big Data
Globalization

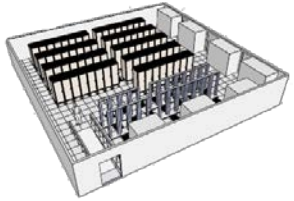
10x change in an element of the business.
What worked before doesn't work now.
The executives are the last to know.

Business declines

Source: Only the Paranoid Survive, by Andy Grove

Wanted: A New Class of Enterprise Infrastructure

Traditional Enterprise IT



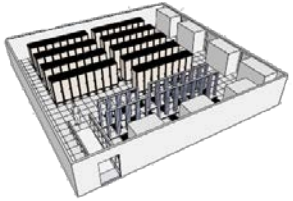
hp

EMC²

CISCO

ORACLE

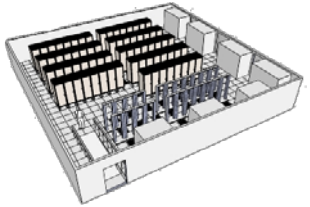
Private Cloud IT



Enterprise Ready
Cost Competitive
Forward Looking

<Your name here>

Public Cloud Open-Source



OPEN Compute Project

OpenFlow

openstack CLOUD SOFTWARE

hadoop

Customers will figure it out

The bottom line

Want

Need

Media player customers recognize the added value of solid-state and pay a premium up to 10x (1,000%)

CD Player

(~$40)

Sony DEJ011 CD Walkman« Portable CD Player by Sony

~~$39.95~~ **$38.94**

Order in the next **30 hours** and get it by **Tuesday, Aug 21**.

More Buying Choices
$38.94 new (3 offers)
$19.95 used (11 offers)

(131)

Eligible for **FREE** Super Saver Shipping.

Electronics: See all 17,594 items

Solid State Media Player

(~$400)

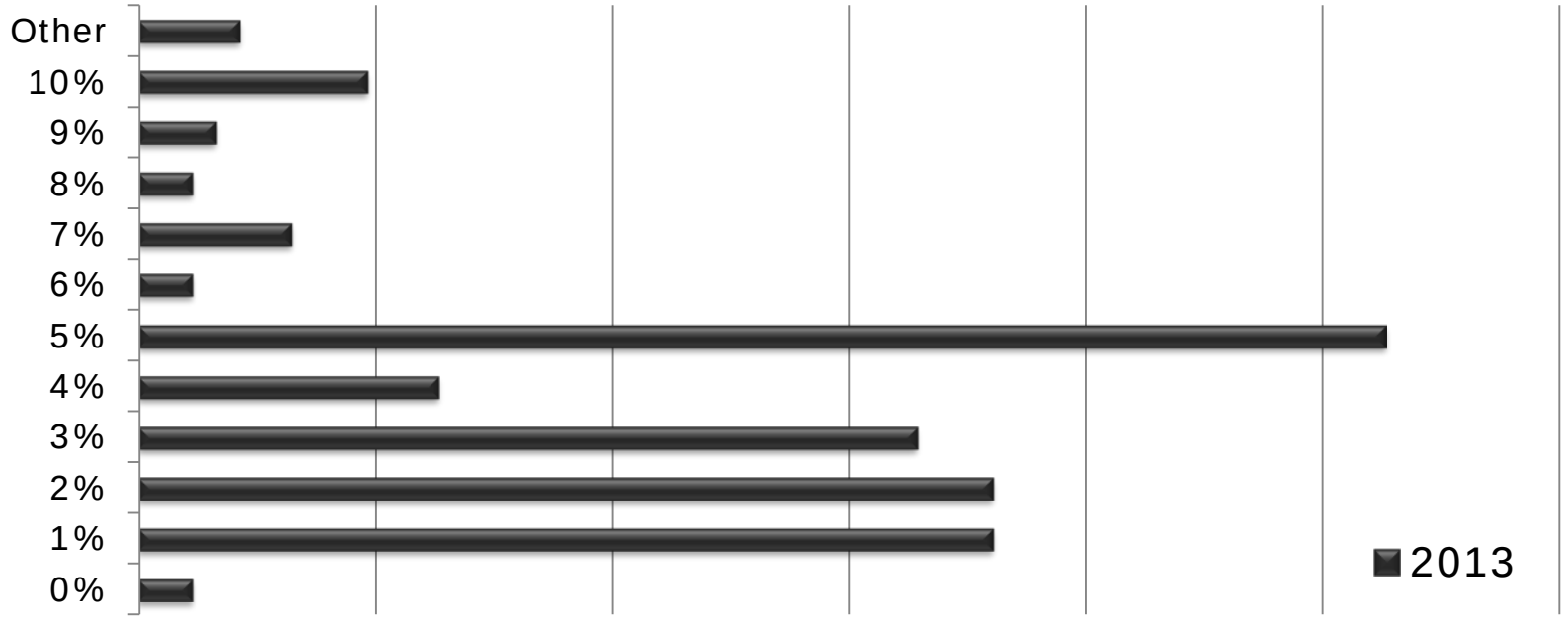
iPod shuffle
$49

iPod nano
From $129-$149

iPod classic
$249

iPod touch
From $199-$399

I estimate approximately this percentage of Enterprise HDDs in my organization's SAN arrays and servers will FAIL every year:



Describe the "perfect" HDD for your Enterprise server and storage systems:

- One that **doesn't fail** in say 8 - 10 years and create less heat for the server room.
- **24 hour up time**, low heat, highest throughput
- high rpm, medium capacity (so i can get more read-write h
- Both high capacity capacity SSDs.
- cheap, fast, good, to only two of thes
- zero latency, low power, high mtbf, low cost, high capacity.
- Reliable , ease to manage and price sensitive
- Included in a server or a SAN
- Free, fast, and big
- All SSD's!
- High MTBF
- Low cost/GB
- Small form factor
- Low power consumption"
- Highest reliability in a high temp environment with a cost effective deployment
- fast, huge, power thrifty and reliable
- Not sure
- High MTBF, low price, state of art capacity
- Fast, reliable, inexpensive
- **never fails**
- Reasonable price and fast that can be used for tiering data on storage arrays
- Very reliable
- Inexpensive
- high capacity, large cache, low power, great reliability, medium speed
- High rpm, high mttf and low cost
- Fast, reliable, inexpensive per GB
- full SSD san and nas
- Fast, reliable, cheap
- Fast, Reliable and Inexpensive

- All 100% SSD when the prices are reasonable.
- Fast, large and reliable.
- High performance SSD for those applications that would benefit the most. HDD for those applications that are not disk heavy and can do very well with slower low cost

NEVER FAILS

ailures and longer warranty
ıty, low power consumption,
like SATA - good luck

- It should be scalable and sustainable
- Reliable with good warranty.
- High performance, high MTBF.
- Good performance, high capacity, never crashes
- Fast, reliable, and cheap.
- None
- Fast, Ch
- High perf
- speed & HDD
- No comment
- **never fail**
- Fast, cheap and reliable.
- Don't know
- ultra fast, high capacity, extremely high throughput
- The perfect HDD would be fast, reliable, and self-monitoring to allow for proactive maintenance.
- "Infinite space. infinite reliability.
- My concerns are really SMART predictive drive failure, low power, medium high performance, medium high reliability. My systems are redundant, so a blown drive is not a big hiccup, as long as I don't lose to many at once. Predicative failure via SMART has really changed how I feel about drives and drive maintenance."
- Low cost, high capacity, low MTF
- high rpm, lots of cache
- Meets the criteria listed above.
- Low cost, high cap, SSD
- Integrates with our current storage architecture.
- one that is fast and **never fails**

- 10K 900GB SAS 2,5"
- Large SSD, Low Price
- Reliable and self-healing.
- Largest capacity, fastest, highest cache, lowest price, reliable.
- Cheap and lasts forever.
- One that is donated, and support is provided as well, and works well for us.
- WD has a high reliability for us and is a solid brand that our vendor carries.
- Fast, reliable and inexpensive
- One that you put into the device and **never have to worry about.**
- Faster
- SSD drive form factor 2.5 inch. low power

NEVER CRASHES

, highest IOPS, largest

fast

ıd price with a long MTBF.

- High tolerance
- Replace all HDD with SSD
- high performance and low price
- Long lasting, inexpensive, fast, stable.
- Fast, cool, reliable
- Reliable, adequate performance (seek time and transfer

NEVER HAVE TO WORRY

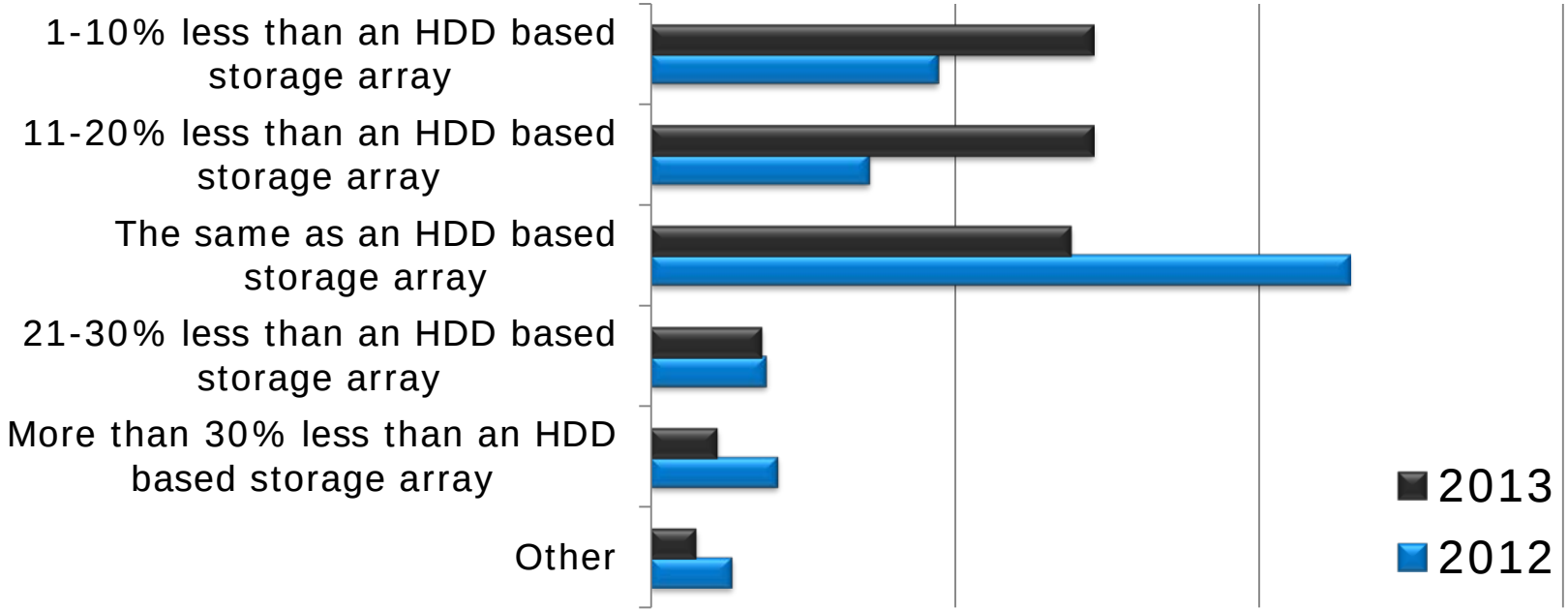
st of a spinning

- Fast and reliable.
- Not sure
- high performance
- Fast, large, reliable, inexpensive application to allow for my department to acquire the five (9's).
- reliable and cheap
- Fast I/O, cheap price per GB, reliability

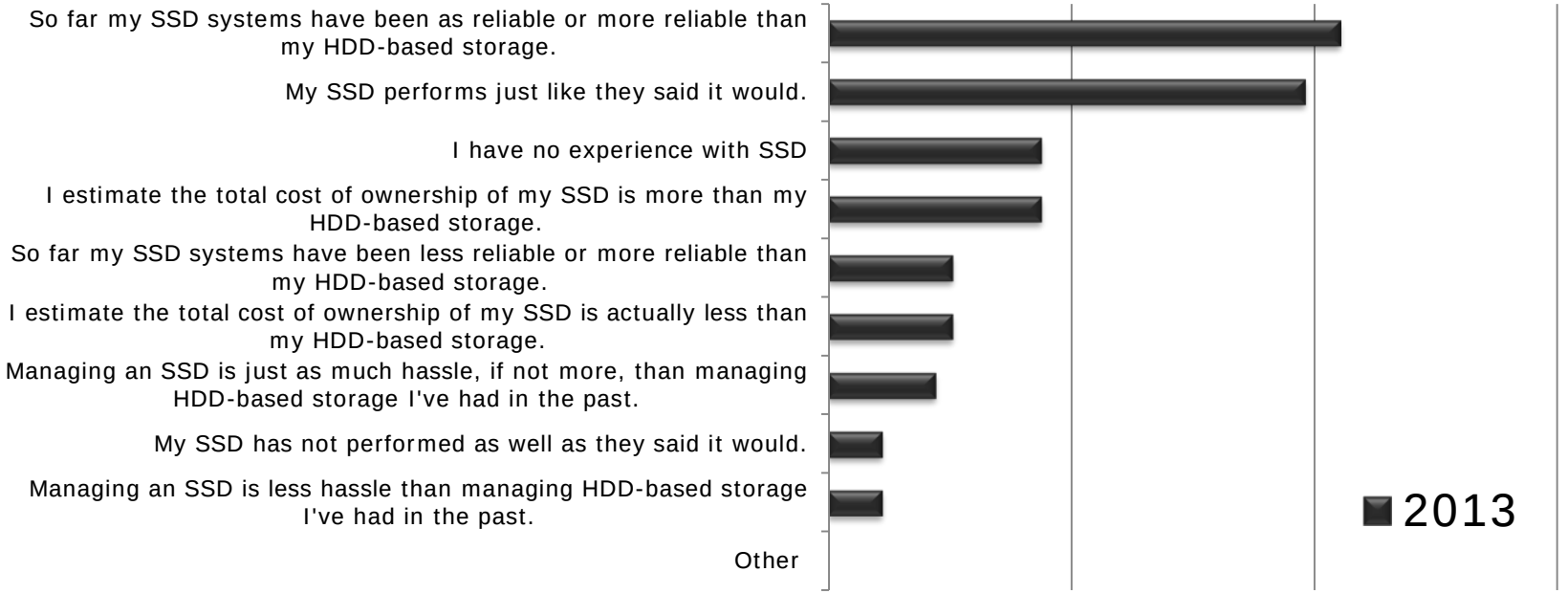
- **Lasts forever** and then some while giving me constant performance.
- big fast and cheap :)
- Reliable
- High performance, Low cost, **No failure**
- two builds,: 1 based on capacity & 1 on performance
- cheap and fast
- Fast and reliable
- Fast, reliable, cheap
- Low cost/GB and high reliability
- Fast data throughput and high MTBF.
- reliable and cheap
- High reliability and capacity at a quality price.
- Very reliable, fast RPM, high capacity, low latency
- fast, reliable and cheap
- Reliable / MTBF high, Excellent support / maintenance, cost, security / encryption features, ease of use
- Low cost, SSD high capacity
- MTTF of 10 years.
- 7200 RPM or greater.
- 2.5"" form factor.
- 3+ TB."
- Huge capacity, fast speed, large cache, **never breaks**, uses very little power, quiet operation.
- An HDD that delivers the performance and reliability our organization requires.

- A low cost, high capacity SSD
- Adaptable hybrid
- None.
- fast and reliable!
- 15k RPM, 2.5" form factor, 900G, 16G cache
- NA
- Cheap and **never fails**, no latency, 25K RPM
- High bandwidth, IOPS and MTBF

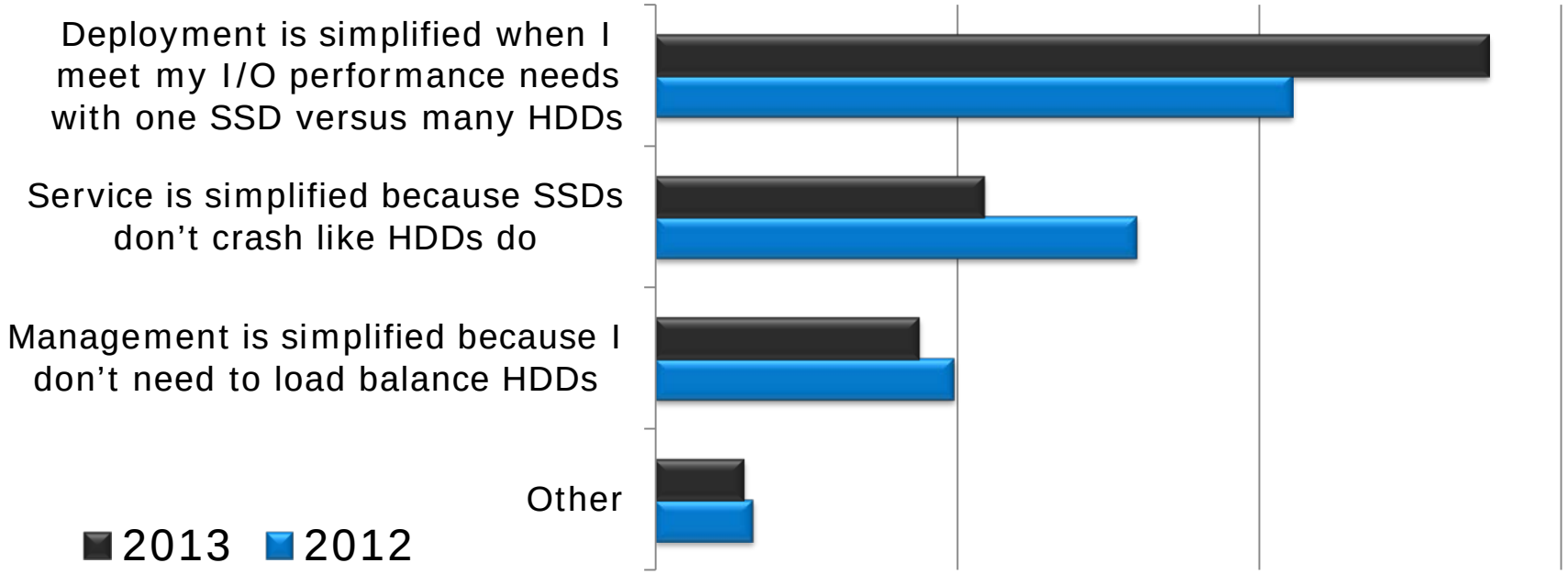
By eliminating HDD crashes, I expect the operating costs of SSD based storage arrays to be:



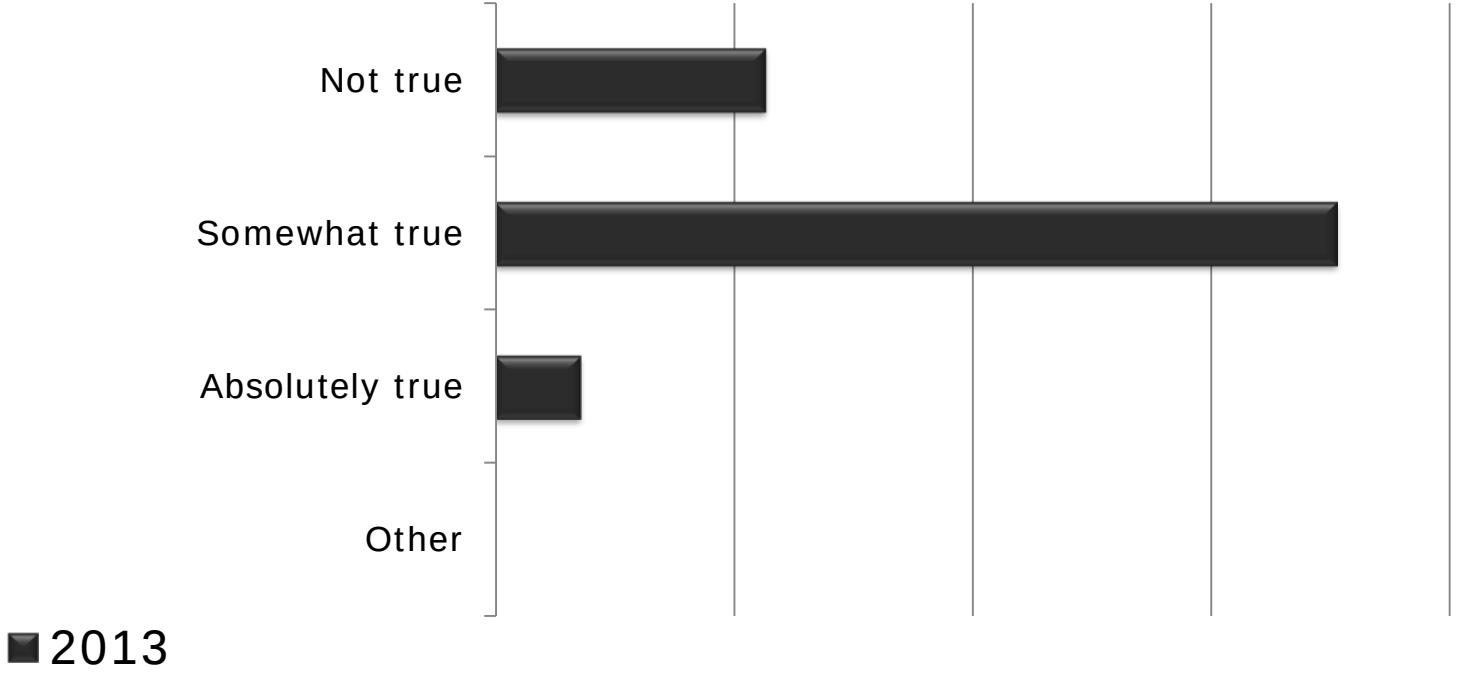
My experience with SSD so far (all that apply):



What I value most from SSDs is:



A substantially longer warranty period for SSD storage systems is a strong indicator that SSD technology is more reliable than HDD storage systems. I believe this is:




SHARP
10
X
HDD
The
Magic
Number

About the Authors

Frank Berry
CEO and Senior Analyst
Frank Berry is a senior analyst with IT Brand Pulse. Prior to founding IT Brand Pulse, Frank was vice president of product marketing for QLogic, vice president of corporate marketing for QLogic, and vice president of worldwide marketing for Quantum.
frank.berry@itbrandpulse.com

Cheryl Parker
Director and Senior Analyst - End User, Channel, and OEM Research
Cheryl Parker oversees the End User Research practice for IT Brand Pulse. Cheryl and her team conduct IT Brand Leader Surveys, Technical Product, Customer Satisfaction Surveys, Focus Groups and custom research, as well as compile Product Databases. Cheryl has more than 20 years in sales/marketing/research, and is a former reporter/sportswriter for the *Los Angeles Times.*
cheryl.parker@itbrandpulse.com


ITBRND
PULSE™