



2016 Flash Storage Buyer Behavior Survey

Frank Berry
Senior Analyst





IT Brand Pulse



Year in Review



2016 Flash Brand Leaders



2016 Buyer Behavior

Technology Research



50,000 IT pro subscribers
 Independent & customer technology research
 Surveys • Focus Groups • Interviews

Testing & Analysis



Testing • Competitive & Industry Analysis
 White Papers • TCO • Product Reviews

Industry Alliances



We do it all
 Invent • Build • Recruit • Manage
 Infrastructure • Program Collateral • Events

Digital Media

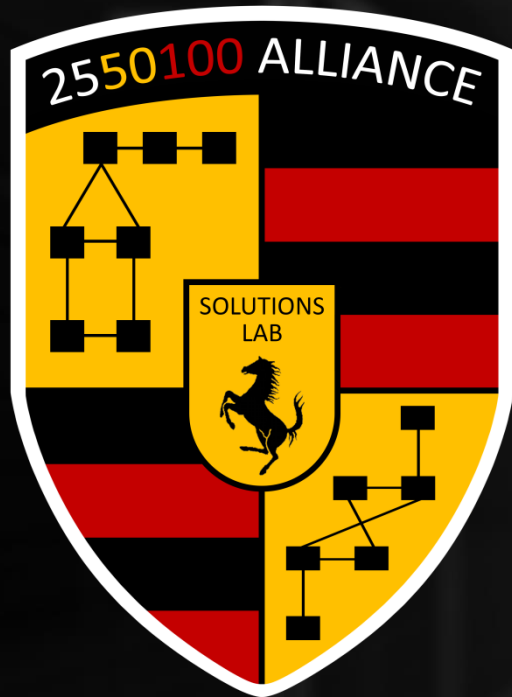
2550100
 ALLIANCE



World's Top Data Centers

The
 Fibre
 Channel

ITBR ND
PULSE



NVMe Solutions Lab

Tuesday, Wednesday & Thursday, Hall D

SSD controllers, SSDs, PCIe cards, RDMA NICs, servers with NVMe SSD inside, and all flash arrays connected via NVMe Fibre Channel and Ethernet fabrics.

A3 Cube, Aclectic Systems Inc., Broadcom, Chelsio, Envemio, HPE, Huawei, Intel, Kaminario, Mangstor, Mellanox, Memblaze, Lite-On Storage, Red Hat, Samsung, Seagate, Silicon Motion, Super Micro Computer, Inc., QLogic, Teledyne LeCroy, Microsemi, Micron Technology, One Stop Systems, Western Digital

2016 Flash/NVMe Innovation Leader Awards

Wednesday, August 10

Mission City Ballroom

2:30 – 2:40



2016 IT Marketing Survey

Secrets of the Flash Marketing Masters

Thursday, August 11

9:45 – 10:50

IT BRAND
PULSE

G2M
COMMUNICATIONS



IT Pro Perspective

Vendor Perspective



IT Brand Pulse



Year in Review



2016 Flash Brand Leaders



2016 Flash Adoption Trends

Big OEMs Proved Barriers are Small


Hewlett Packard
Enterprise



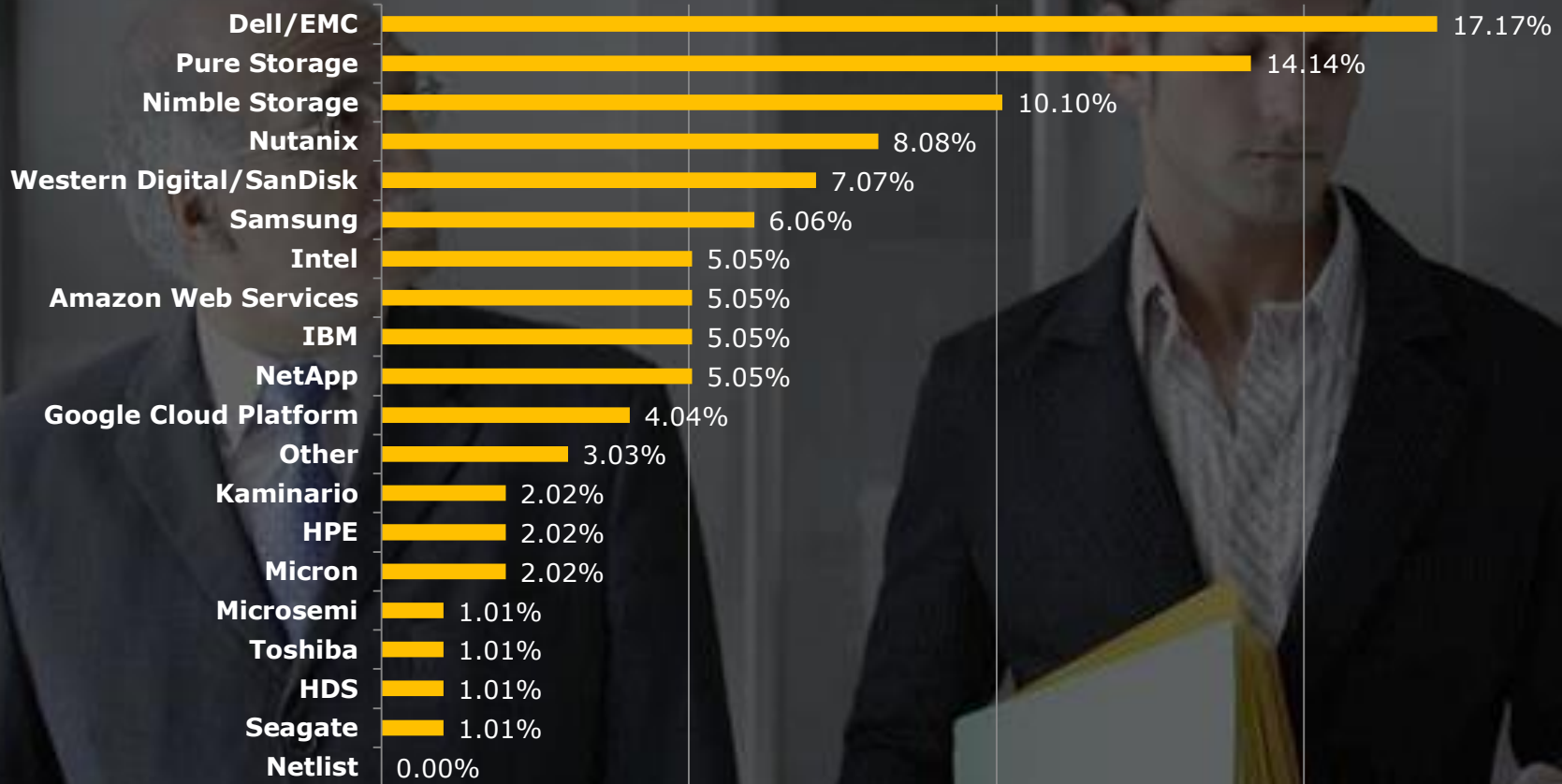
 NetApp®

 nimblestorage

 PURE
STORAGE

NUTANIX

I believe the hottest, non-volatile memory storage company over the last year was:



 Microsoft Azure

powered by
 amazon
web services


Google Cloud Platform

ORACLE®

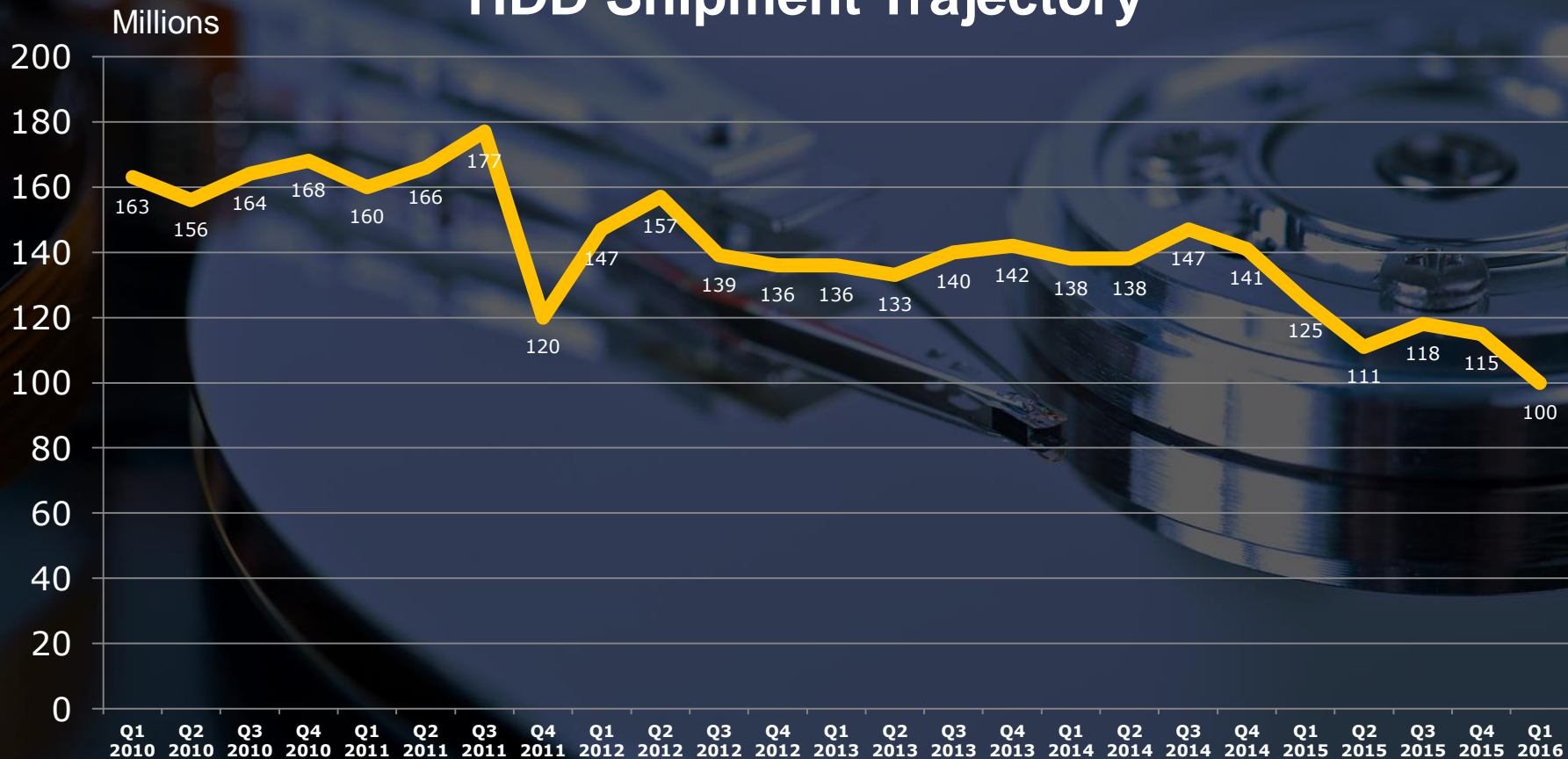
EMC²®


CISCO

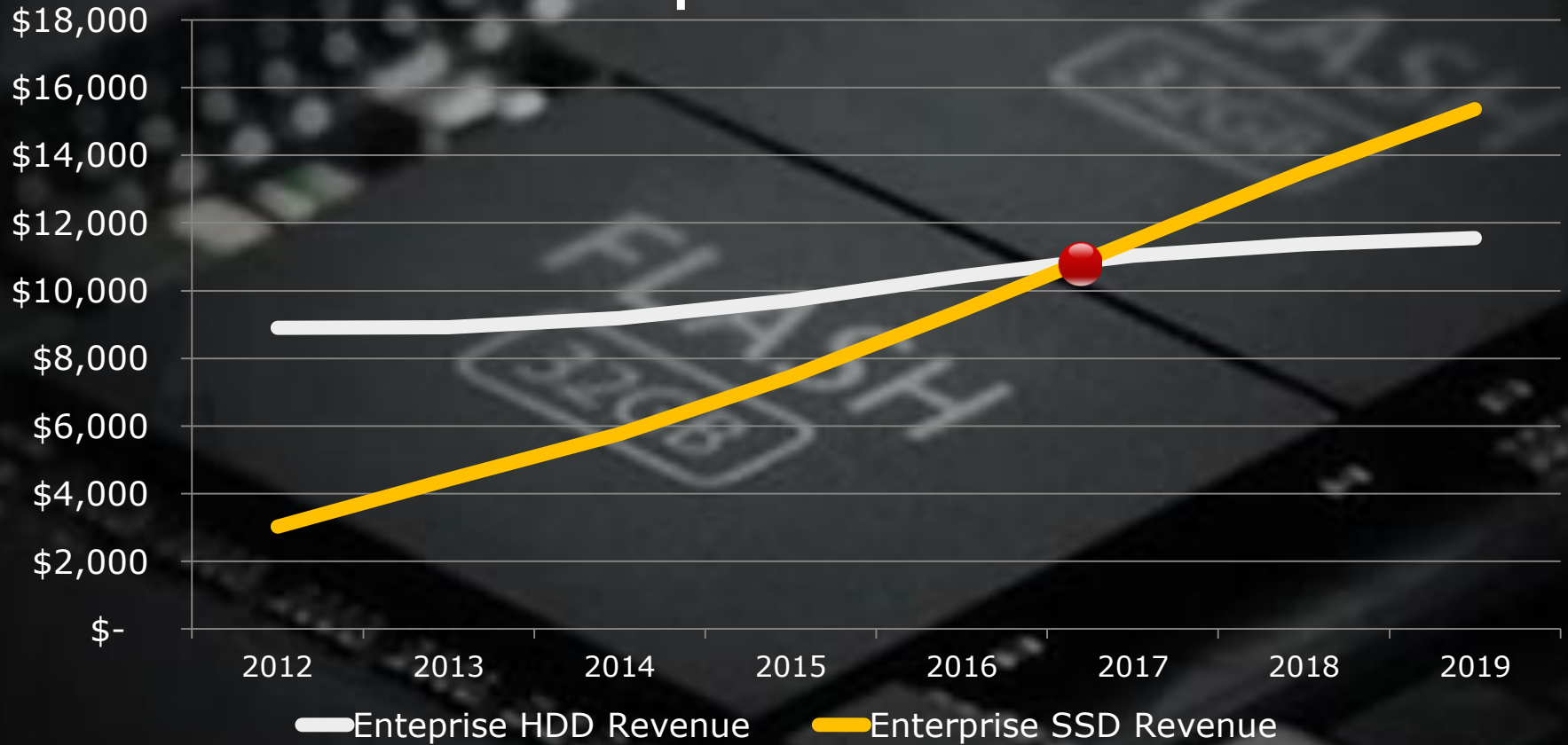

Hewlett Packard
Enterprise



HDD Shipment Trajectory



Enterprise HDD & SSD



http://www.theregister.co.uk/2016/01/07/gartner_enterprise_ssd_hdd_revenue_crossover_in_2017/

Time to start thinking about the next big thing

Flash

2015

WD

Pivotal time for HDD market. Flash market maturing fast.

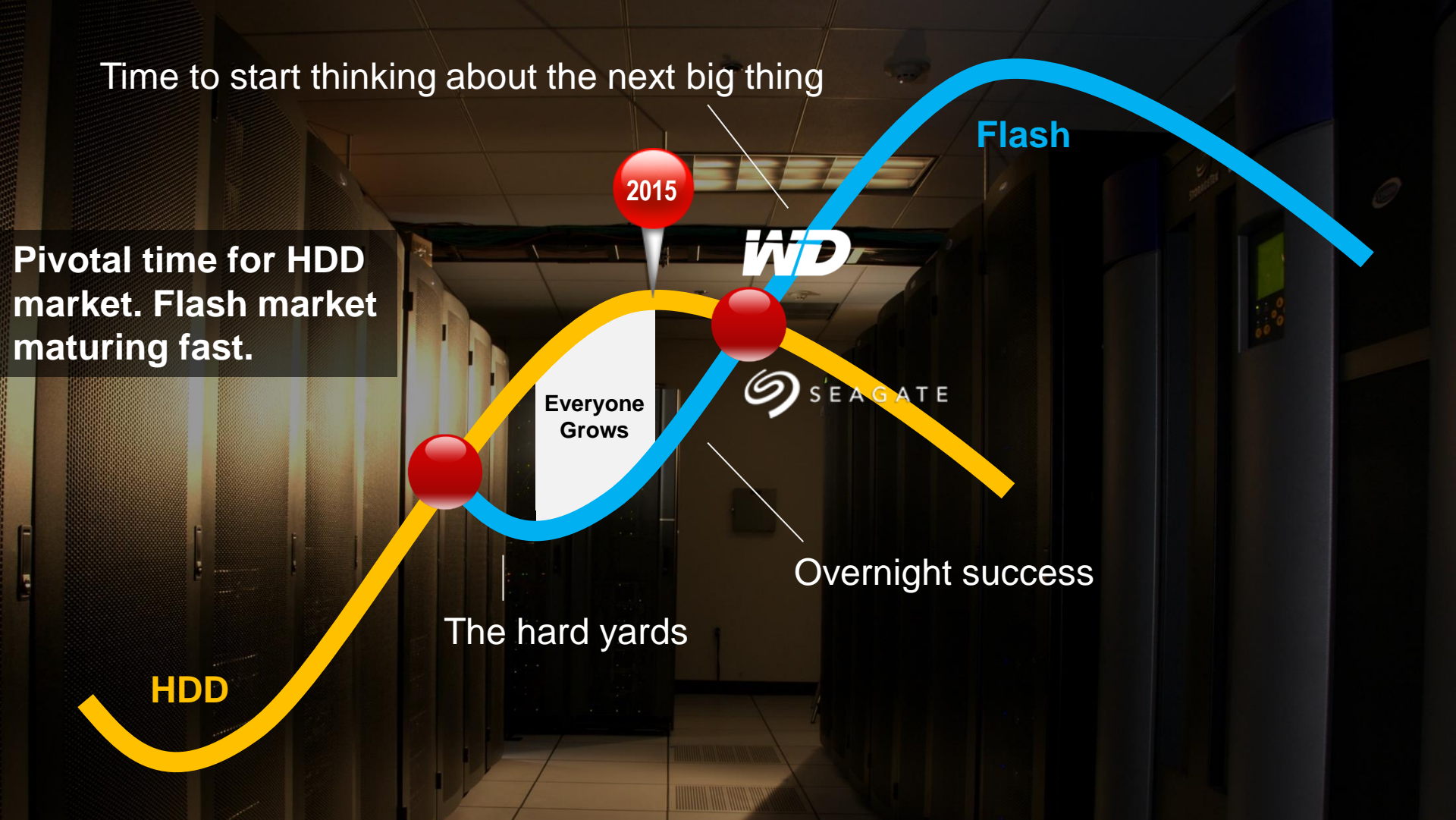
Everyone Grows

SEAGATE

Overnight success

The hard yards

HDD





IT Brand Pulse







Year in Review



2016 Flash Brand Leaders



2016 Buyer Behavior

2016 Flash Storage/NVMe Brand Leaders - Voted by IT Pros						
All Flash Converged System	HPE	HPE	HPE	HPE	HPE	HPE
All Flash FC Array	EMC	Dell Storage	EMC	EMC	EMC	EMC
All Flash Hyperconverged System	Nutanix	Nutanix	Cisco	VCE	Cisco	Nutanix
All Flash iSCSI Array	Dell Storage	Dell Storage	Dell Storage	Dell Storage	Dell Storage	Dell Storage
All Flash NAS Array	NetApp	NetApp	NetApp	NetApp	NetApp & EMC (tie)	NetApp
All Flash Unified SAN/NAS Array	NetApp	NetApp	NetApp	NetApp	NetApp	NetApp
Flash Cache Software	SanDisk	SanDisk	SanDisk	SanDisk	SanDisk	SanDisk
Hybrid HDD/SSD Array	EMC	Dell Storage	EMC	EMC	EMC	EMC
NVDIMM	Micron/Crucial	Micron/Crucial	Micron/Crucial	Micron/Crucial	Micron/Crucial	Micron/Crucial
NVMe SSD Modules	Samsung	SanDisk	Samsung	Samsung	SanDisk	Samsung
All Flash NVMe Fabric Attached Array	EMC/DSSD	EMC/DSSD	EMC/DSSD	EMC/DSSD	EMC/DSSD	EMC/DSSD
NVMe Network Adapters	Mellanox	Mellanox	Mellanox	Mellanox	Mellanox	Mellanox
All Flash NVMe PCIe Cards	SanDisk	SanDisk	SanDisk	Intel	SanDisk	SanDisk
Contributions to NVMe Technology (2012-2016)						Samsung
New Enterprise-Class NVM Product						Intel 3D XPoint NVDIMM

Selected Organizations Represented in the Surveys



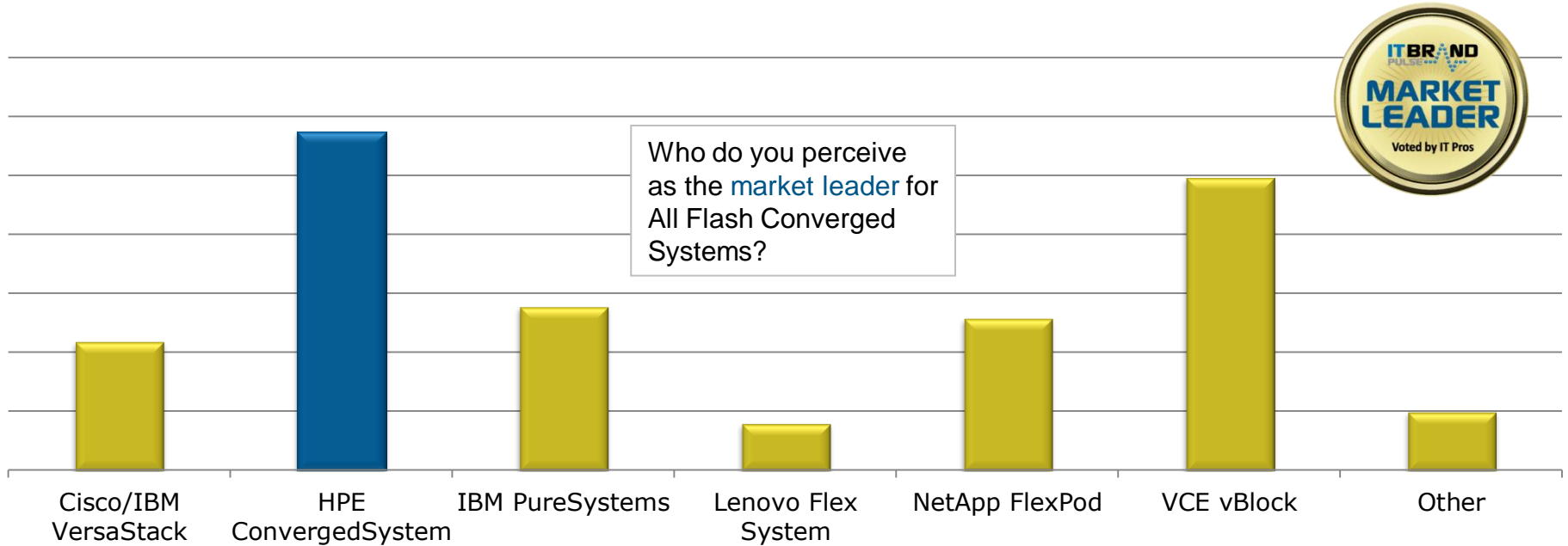
AAA
ABC Television
American Airlines
American Express
AT&T
Bank of America
Barnes & Noble
Baylor College of Med
BC Liquor Distribution Branch
Becton Dickinson
Belden
Bhabha Atomic Rsrch (BARC)
Blizzard Entertainment
Boeing
Blue Cross/Blue Shield
Boston Scientific
Bridgestone Corporation
Caltech
Caterpillar
Chanel
Chevron
Children's Hospital of Pittsburgh
Chubb
Citigroup
City of Los Angeles

ComEd
Cox Communications
C.R. BARD
Daybreak Game (Sony Online)
Delta Airlines
Detroit Medical Center
Deutsche Welle
Duke University
Egyptian General Petroleum Corp
Einstein Healthcare Network
Eletrobras
ExxonMobil
FAA
Fed. Home Loan Bank
FedEx
Ford Motor Company
GE
General Motors
General Dynamics
HCL
HSN
Huntington Bank
Intuitive Surgical
ITG
International Game Technology

ISRG
Johns Hopkins App. Physics Lab
J.P. Morgan-Chase
LafargeHolcim
Lockheed Martin
Lowe's
LRZ
Macy's
Mastercard
MIT
Morgan Stanley
NASA
Nationwide Insurance
NYC Transportation
Northrop Grumman
Oppenheimer & Co.
Optum (United Health Group)
Pacific Northwest Nat'l Lab
PepsiCo
Perrigo
Premier Foods
Prudential
Ricoh
SAIC Regus
Sandia National Labs

Shell Oil
Siemens
Stanford University
Staples
Surescripts
TJX
Torchmark Corporation
T-Mobile
Transamerica
Telos
UBS
Unisys
United Airlines
Universal Parks and Resorts
UNFCU
UPS
USPS
U.S. Air Force
USC
U.S. Census
Verizon
Vienna General Hospital
Walmart
Weizmann Institute of Science
Yale New Haven Health

2016 Market Leader All Flash Converged Systems

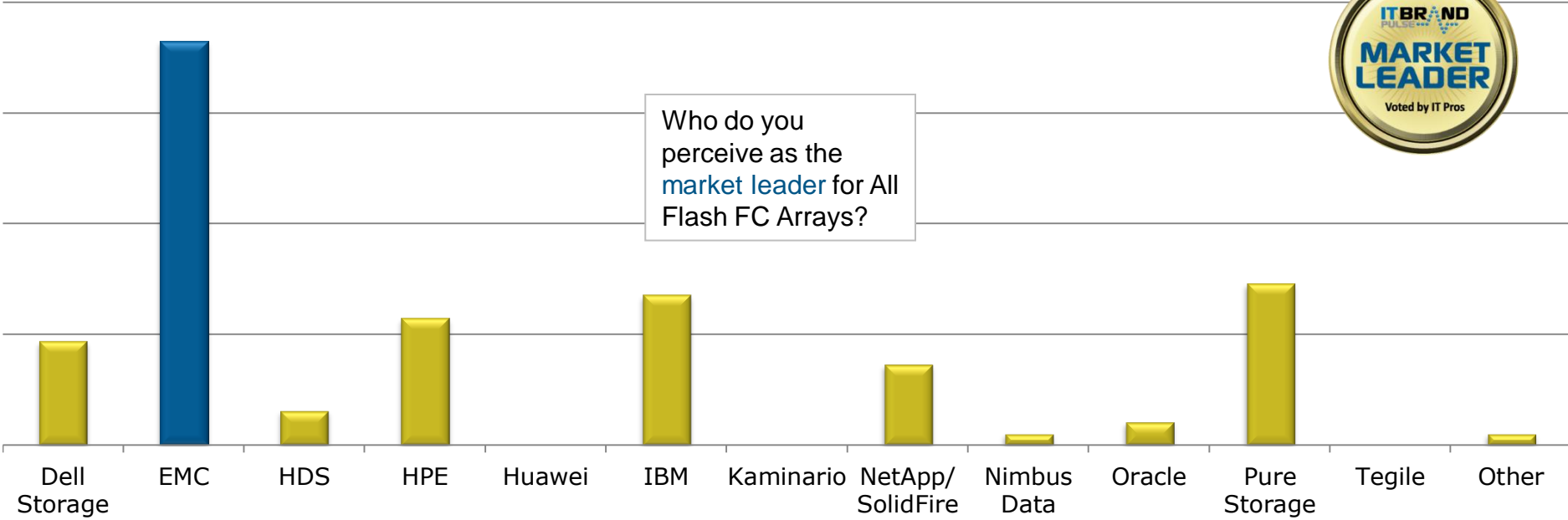


June 2016 Brand Leader Survey

2016 Market Leader All Flash FC Arrays

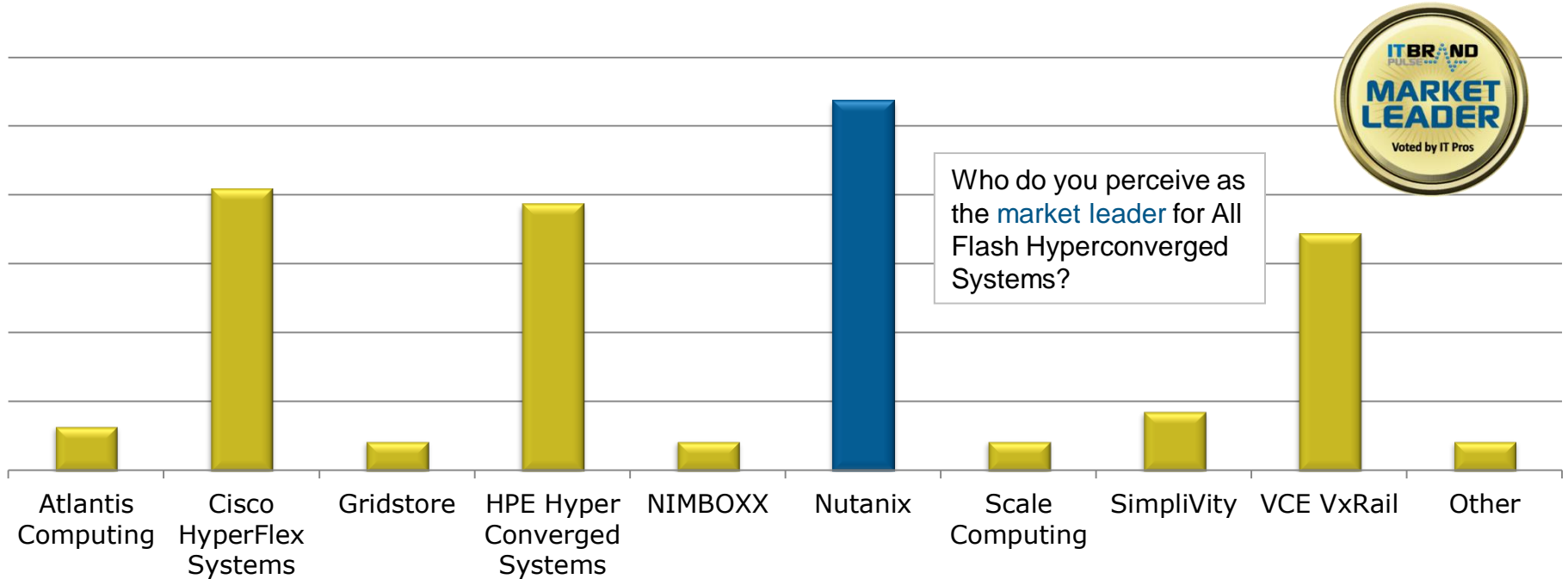


Who do you
perceive as the
market leader for All
Flash FC Arrays?



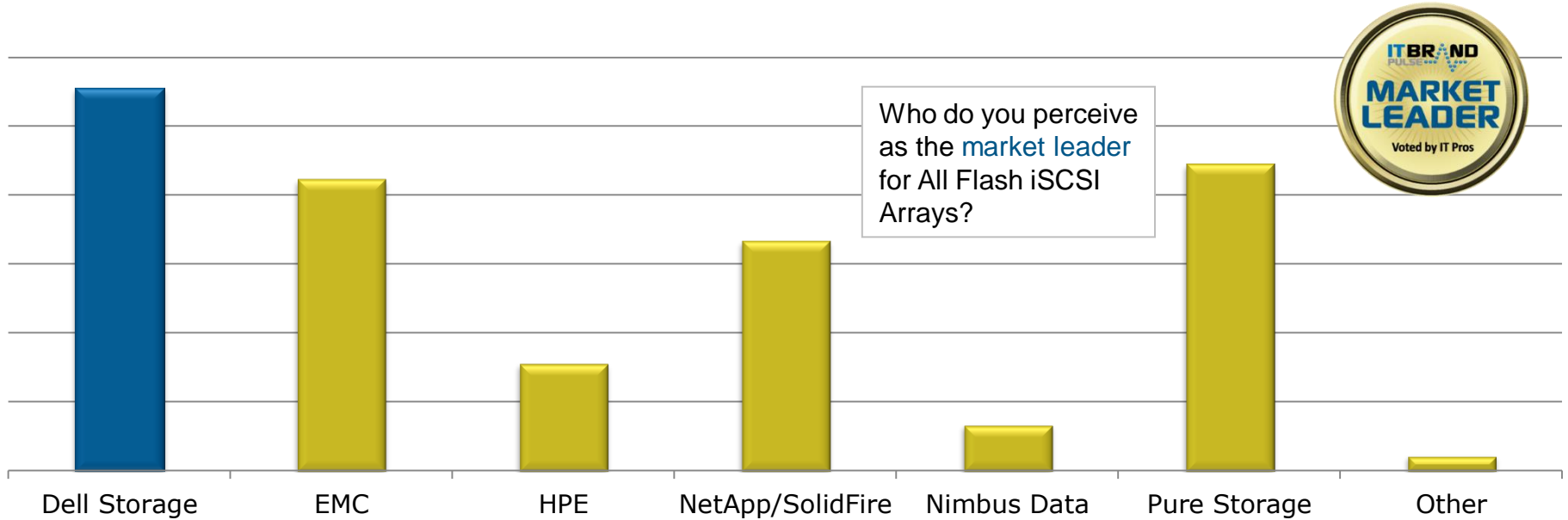
June 2016 Brand Leader Survey

2016 Market Leader All Flash Hyperconverged Systems



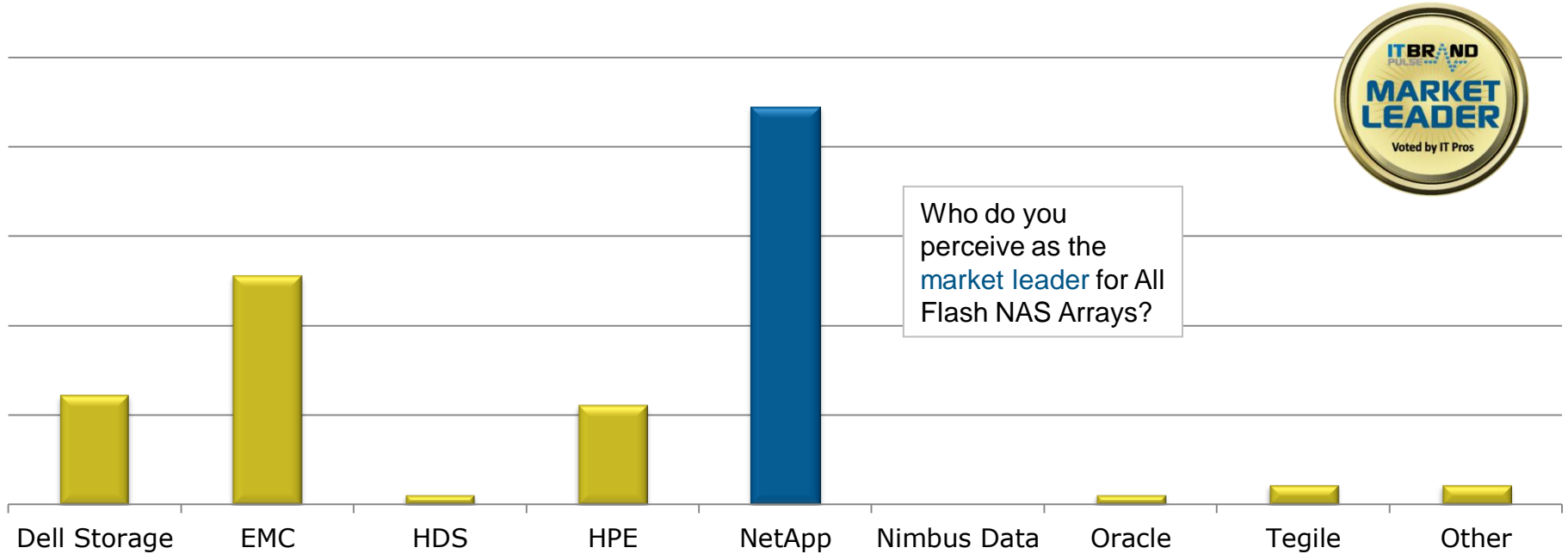
June 2016 Brand Leader Survey

2016 Market Leader All Flash iSCSI Arrays



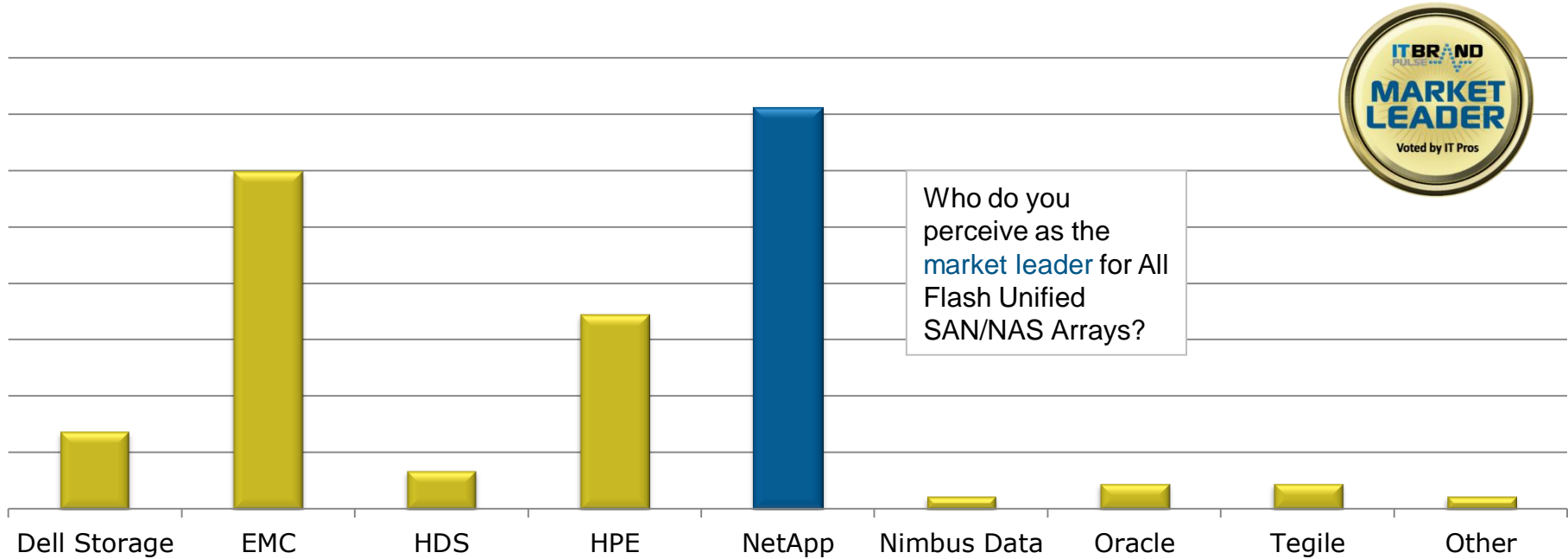
June 2016 Brand Leader Survey

2016 Market Leader All Flash NAS Arrays



June 2016 Brand Leader Survey

2016 Market Leader All Flash Unified SAN/NAS Arrays

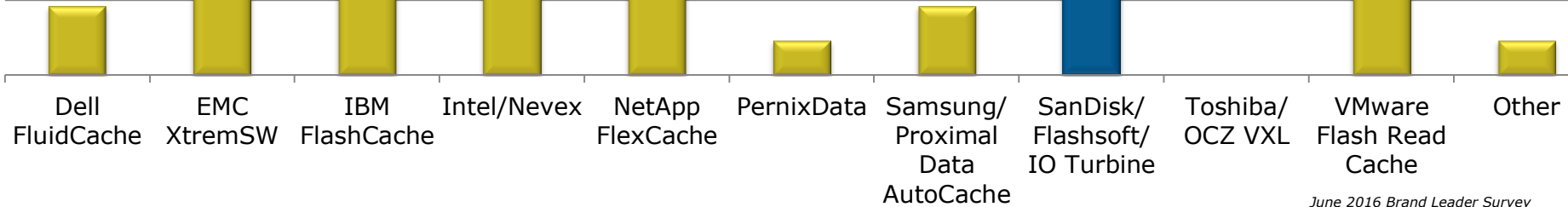


June 2016 Brand Leader Survey

2016 Market Leader Flash Cache Software



Who do you
perceive as the
market leader
for Flash Cache
Software?

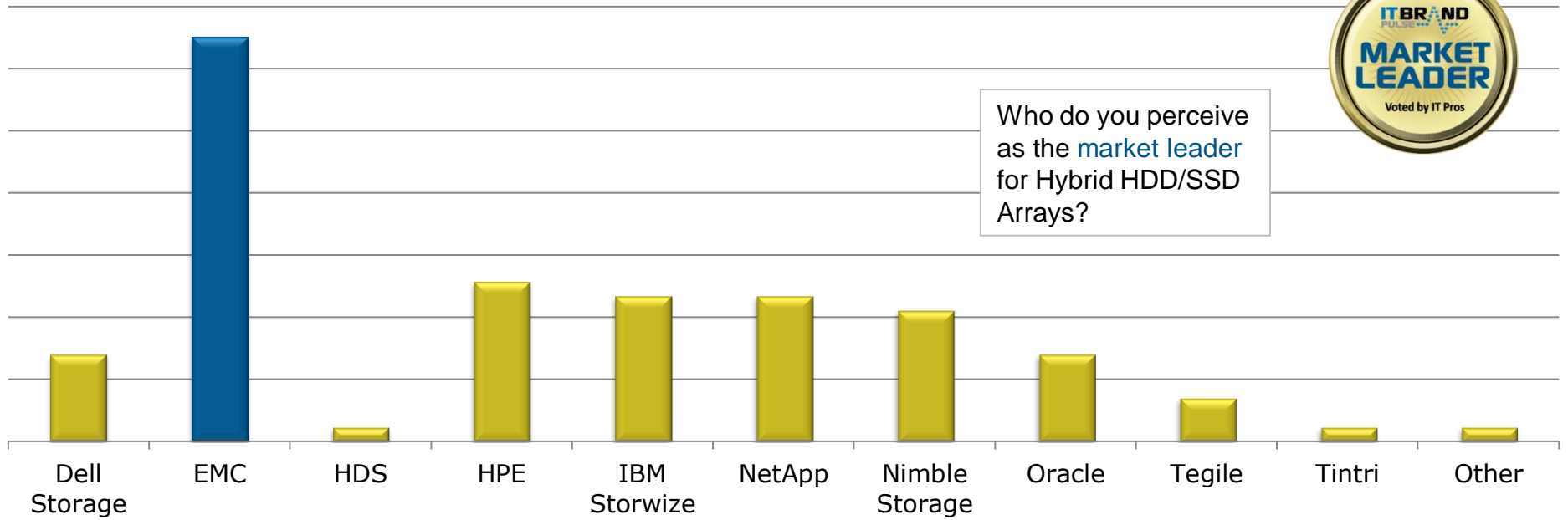


June 2016 Brand Leader Survey

2016 Market Leader Hybrid HDD/SSD Arrays



Who do you perceive as the market leader for Hybrid HDD/SSD Arrays?



June 2016 Brand Leader Survey

2016 Market Leader NVDIMM



Who do you perceive as the market leader for NVDIMM?

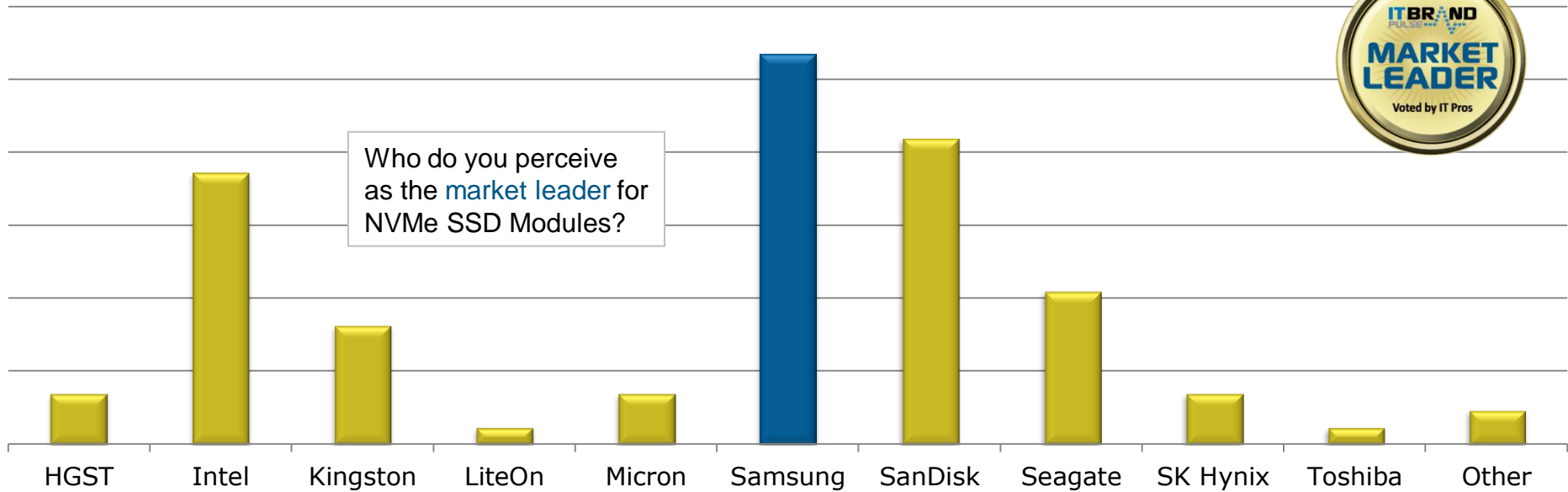
AgigA Tech Diablo Technologies Micron/Crucial NetList Viking Technology Other

June 2016 Brand Leader Survey

2016 Market Leader NVMe SSD Modules



Who do you perceive
as the **market leader** for
NVMe SSD Modules?

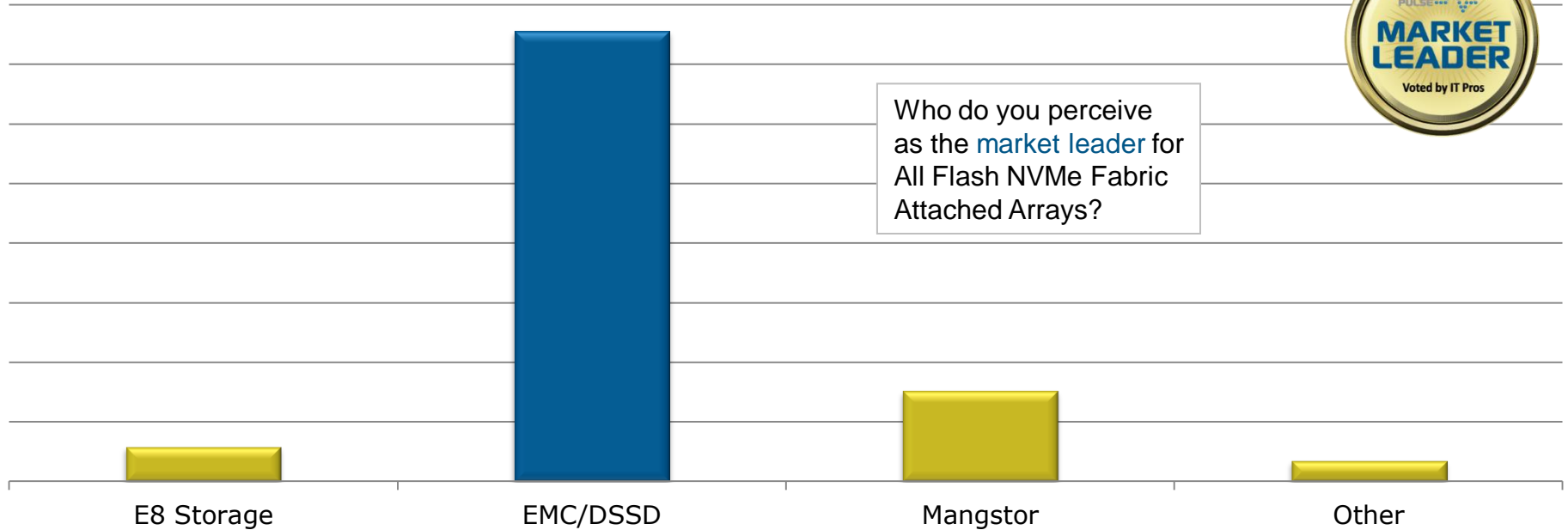


June 2016 Brand Leader Survey

2016 Market Leader All Flash NVMe Fabric Attached Arrays



Who do you perceive as the **market leader** for All Flash NVMe Fabric Attached Arrays?

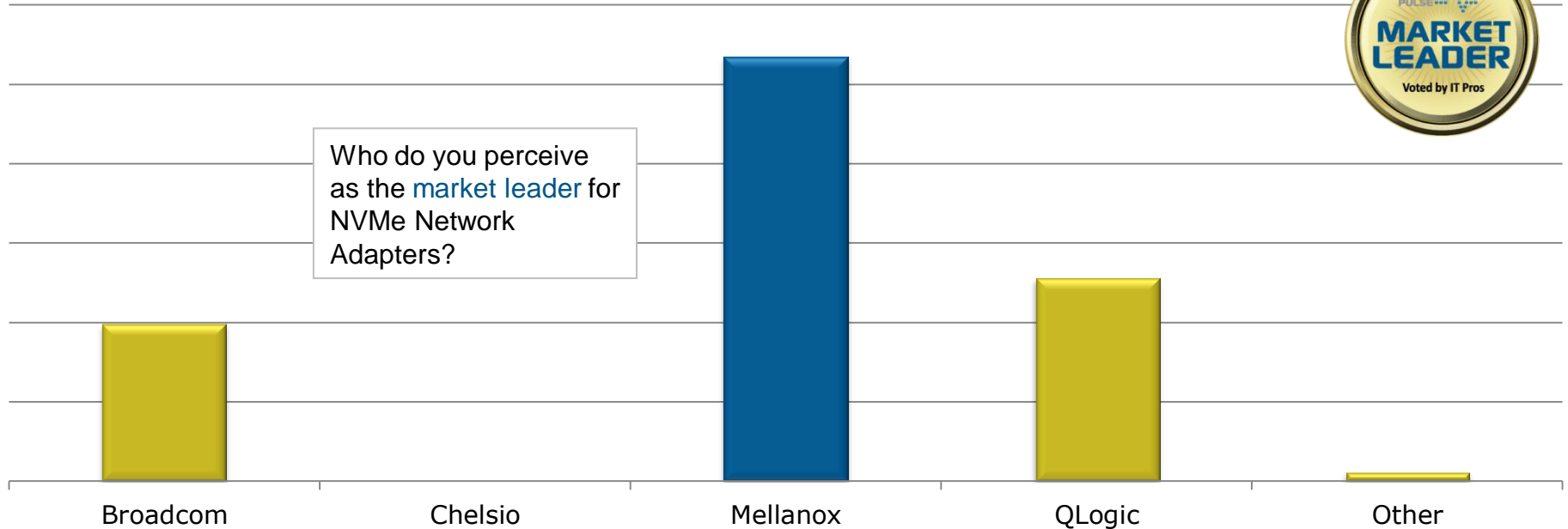


June 2016 Brand Leader Survey

2016 Market Leader NVMe Network Adapters



Who do you perceive as the market leader for NVMe Network Adapters?

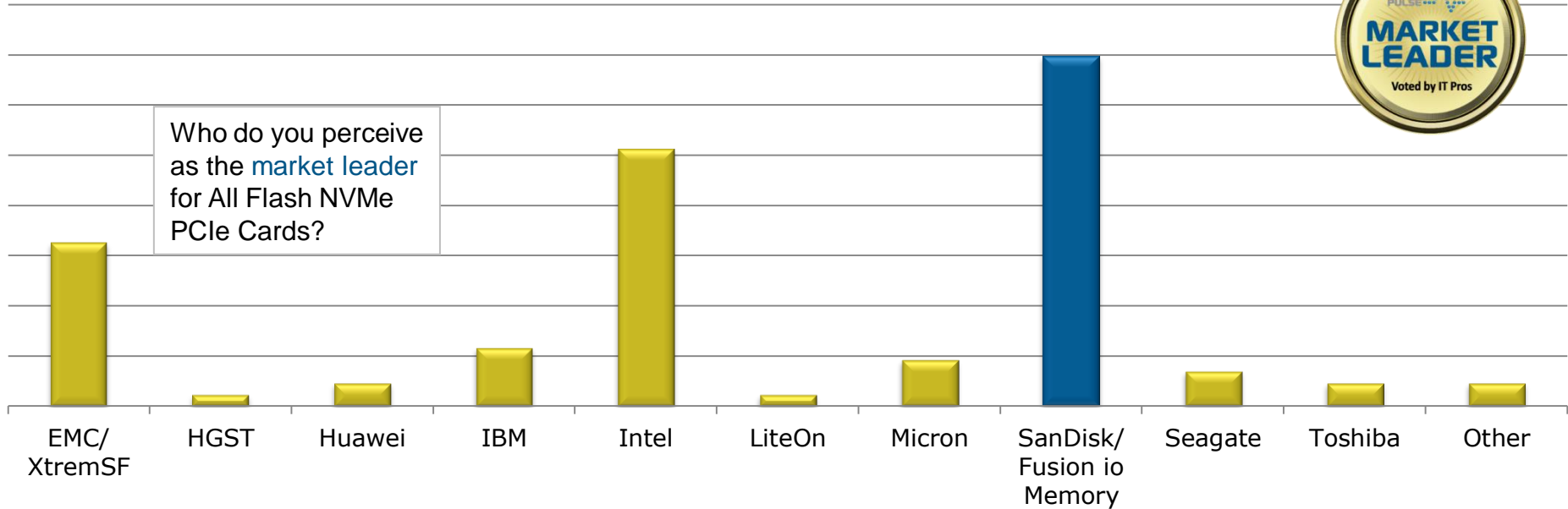


June 2016 Brand Leader Survey

2016 Market Leader All Flash NVMe PCIe Cards



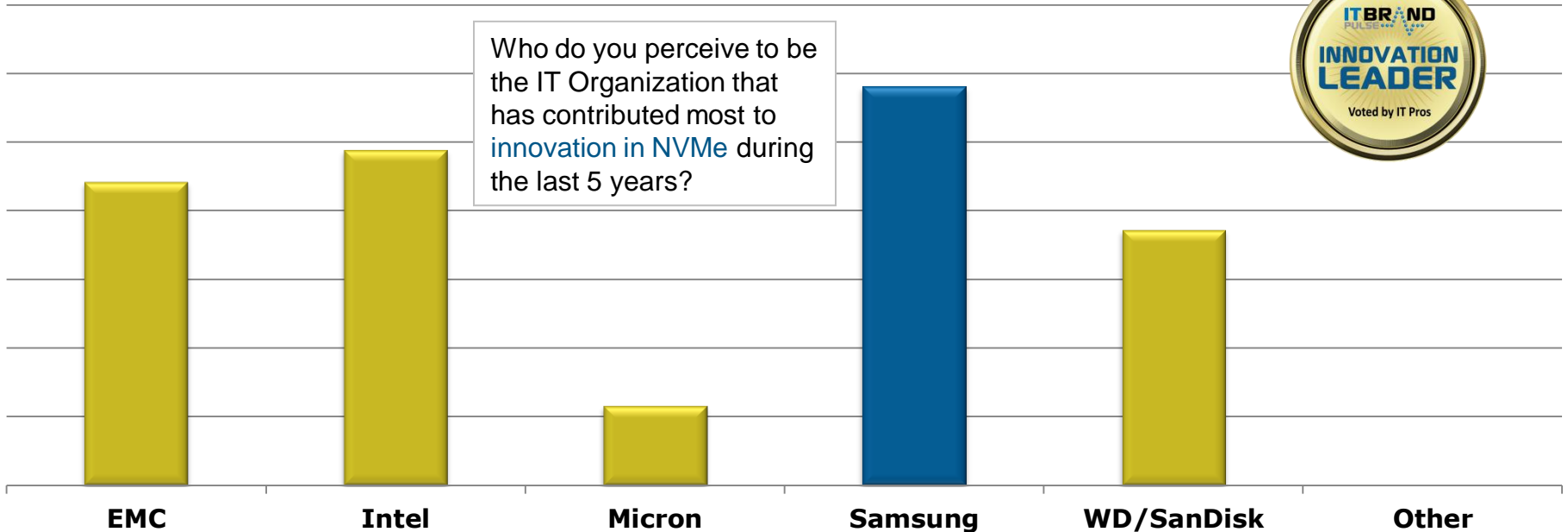
Who do you perceive as the market leader for All Flash NVMe PCIe Cards?



June 2016 Brand Leader Survey

Innovation Leader

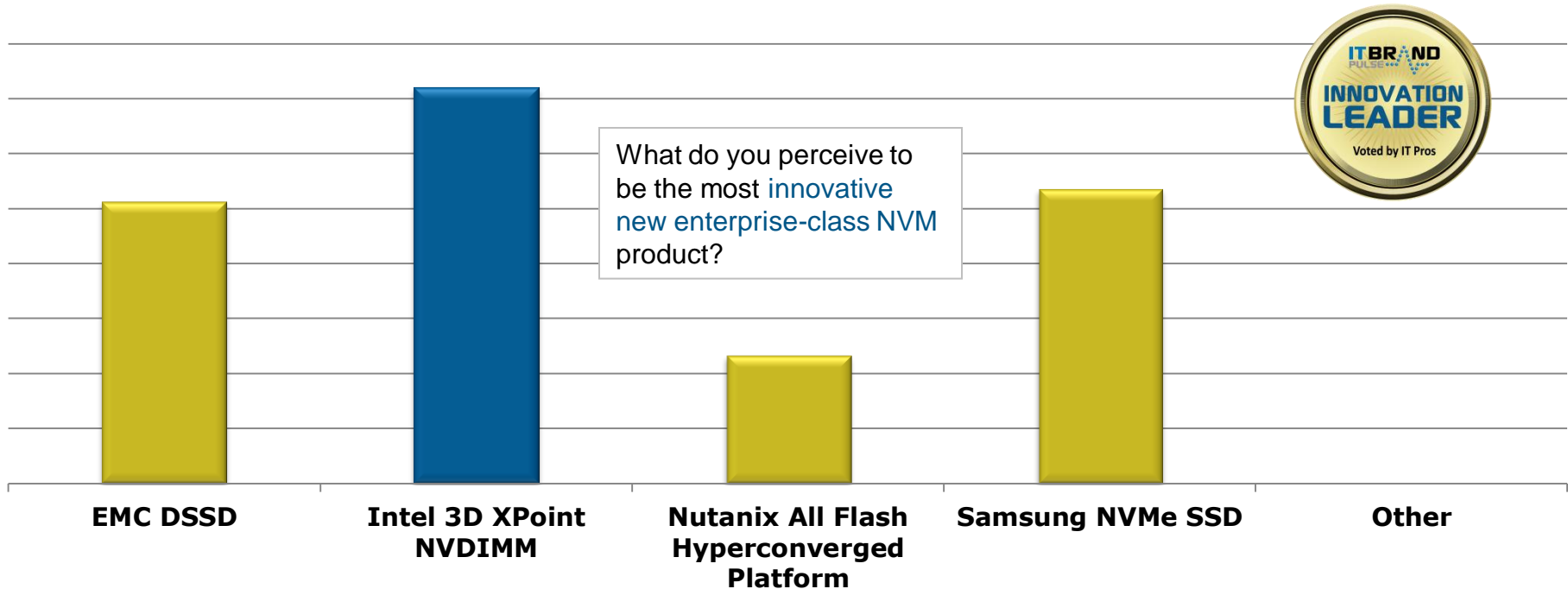
Contributions in NVMe Technology (2012-2016)



June 2016 Brand Leader Survey

Innovation Leader

2016 New Enterprise-Class NVM Product



June 2016 Brand Leader Survey

Comparing Perceptions of On-Premise and Cloud Infrastructure

The Best of The Best









Cloud

On-Premise

Enterprise IT Pro



2016 Cloud & On-Premise Voted by IT Pros						
Cloud Backup & Archive as a Service	AWS	AWS	AWS	AWS	AWS	AWS
Cloud Dedicated Enterprise Servers	AWS	AWS	AWS	AWS	AWS	AWS
Cloud Enterprise Class Storage	AWS	AWS	AWS	AWS	AWS	AWS
Cloud SSD Storage	AWS	AWS	AWS	AWS	AWS	AWS
Cloud Virtual Desktops	VMware	VMware	VMware	VMware	VMware	VMware
Cloud Virtual Servers	AWS	AWS	AWS	AWS	AWS	AWS
Cloud Unified Communications	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft
On-Premise vs. Cloud Backup & Archive	EMC & Veeam ^(tie)	AWS	EMC	EMC	AWS	AWS
On-Premise vs. Cloud Dedicated Enterprise Servers	HPE	AWS	HPE	HPE	AWS	HPE
On-Premise vs. Cloud Enterprise Class Storage	EMC	AWS	EMC	EMC	AWS	AWS
On-Premise vs. Cloud SSD Storage	EMC	Pure Storage	EMC	EMC	EMC	EMC
On-Premise vs. Cloud Virtual Desktops	VMware	VMware	VMware	VMware	VMware	VMware
On-Premise vs. Cloud Virtual Servers	VMware	VMware	VMware	VMware	VMware	VMware
On Premise vs. Cloud Unified Communications	Cisco	Cisco	Cisco	Cisco	Cisco	Cisco



IT Brand Pulse



Year in Review



2016 Flash Brand Leaders

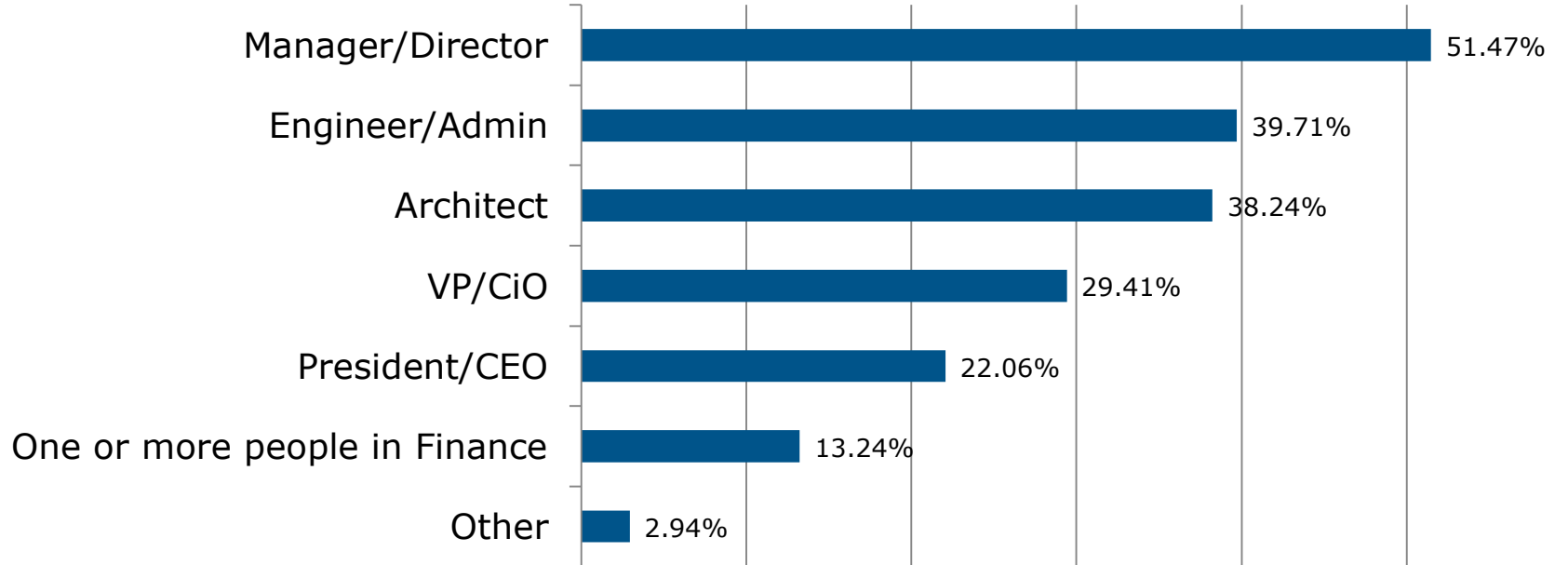


2016 Buyer Behavior

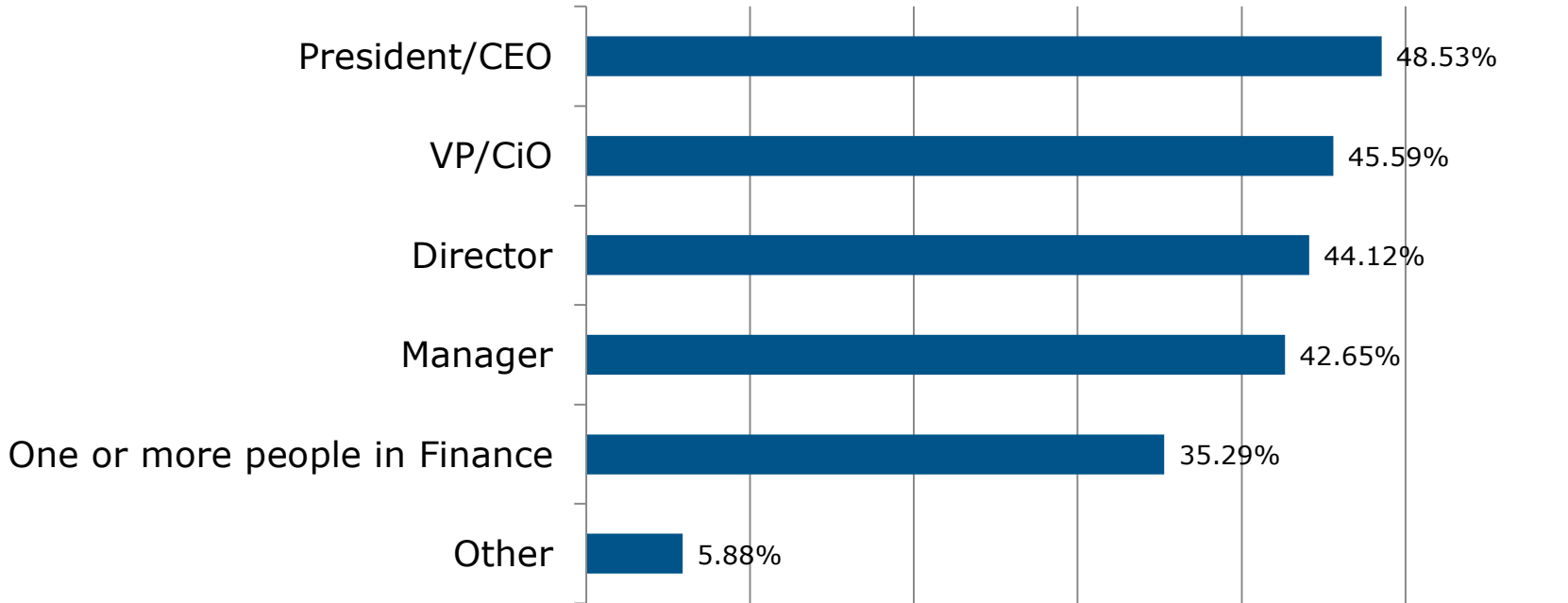
Anatomy of an Enterprise IT Customer



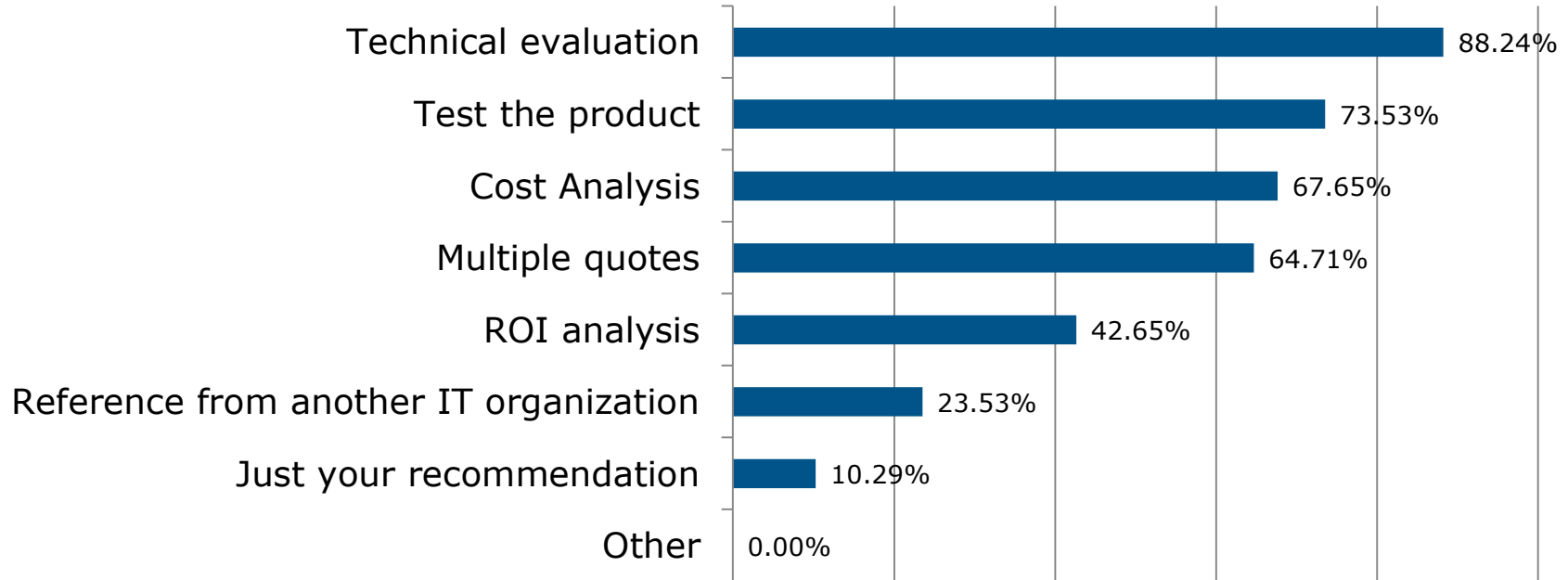
This person is primarily responsible for leading the selection process for IT products costing \$100,000 (select all that apply):



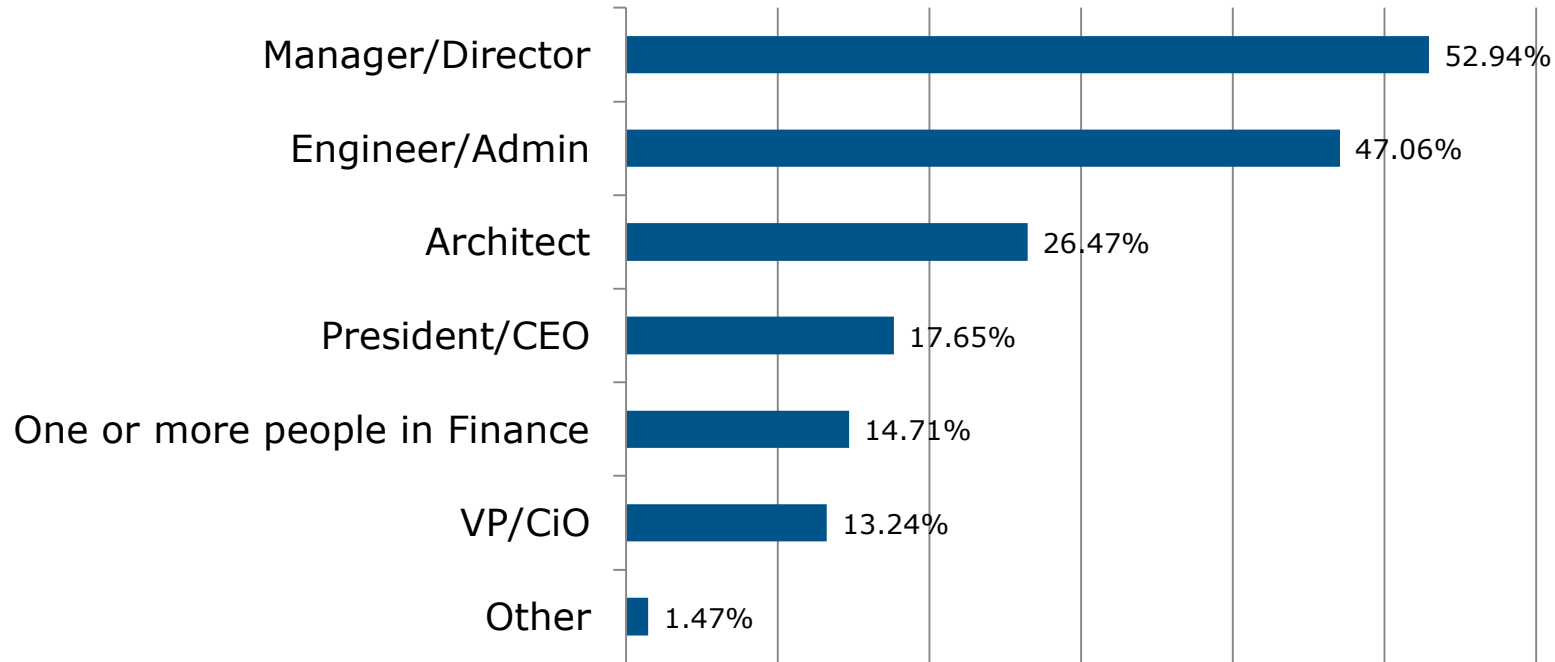
The following approvals are required for IT to purchase IT HW, SW or services costing \$100,000 (select all that apply):



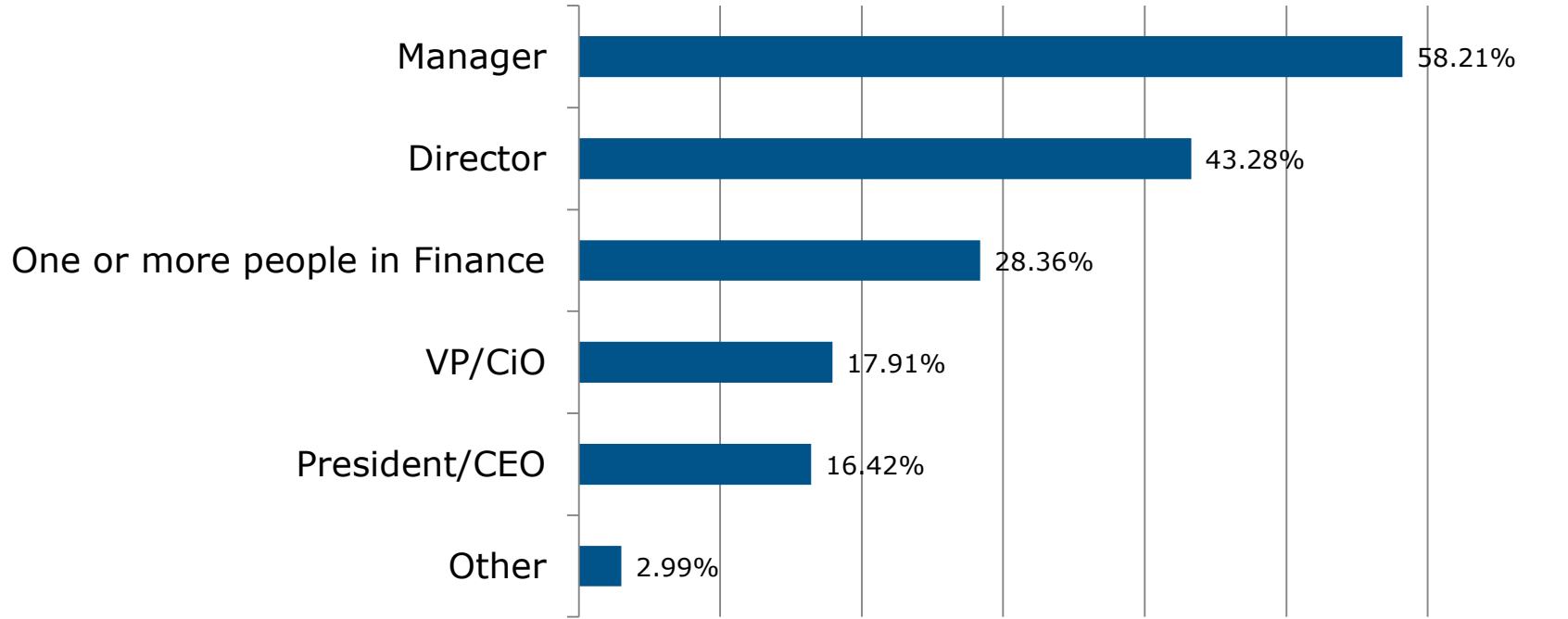
The following evaluations are required for IT to purchase IT HW, SW or services costing \$100,000 (select all that apply):



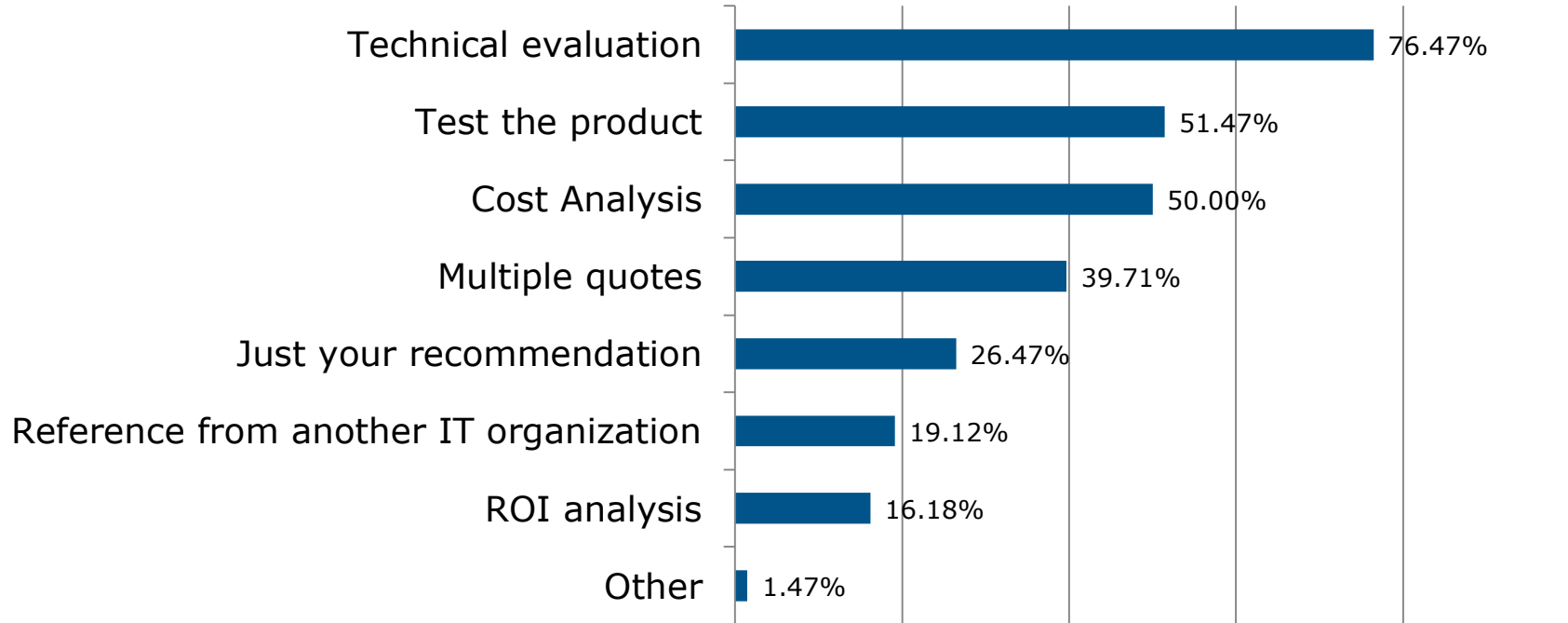
This person is primarily responsible for leading the selection process for products costing \$1,000:



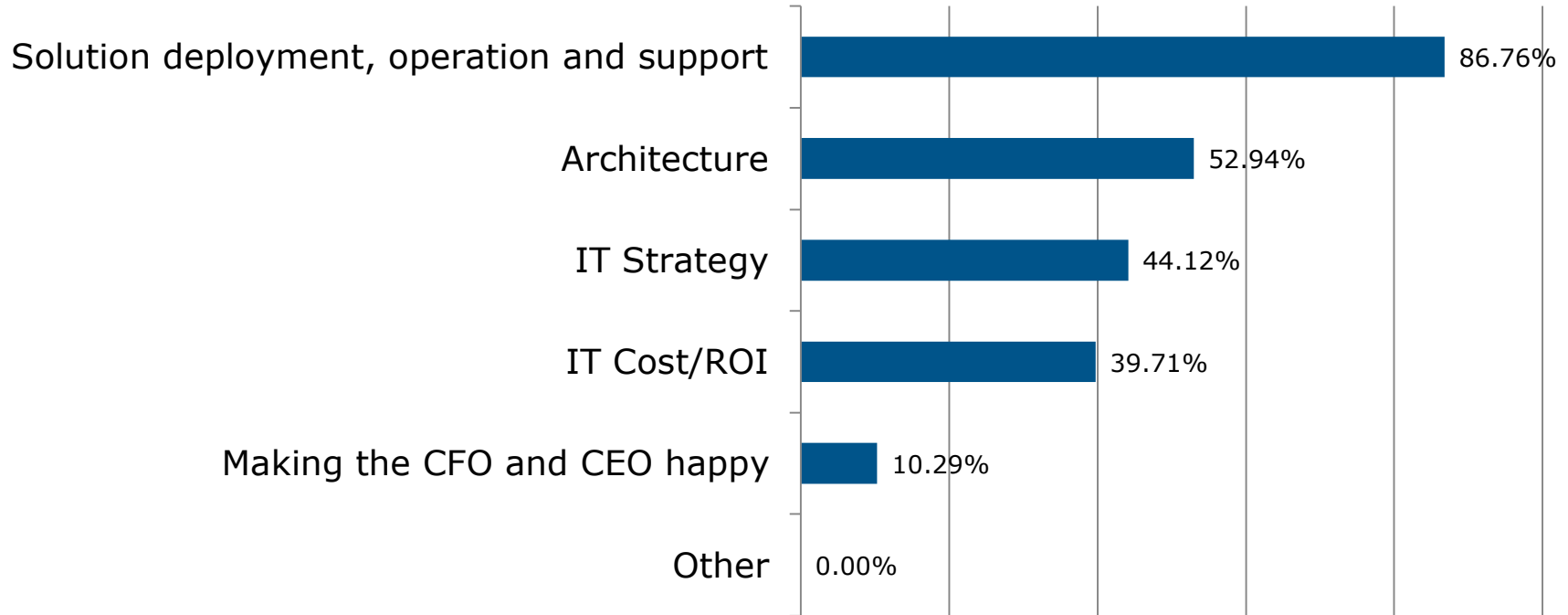
The following approvals are required to purchase IT HW, SW or services costing \$1,000 (select all that apply):



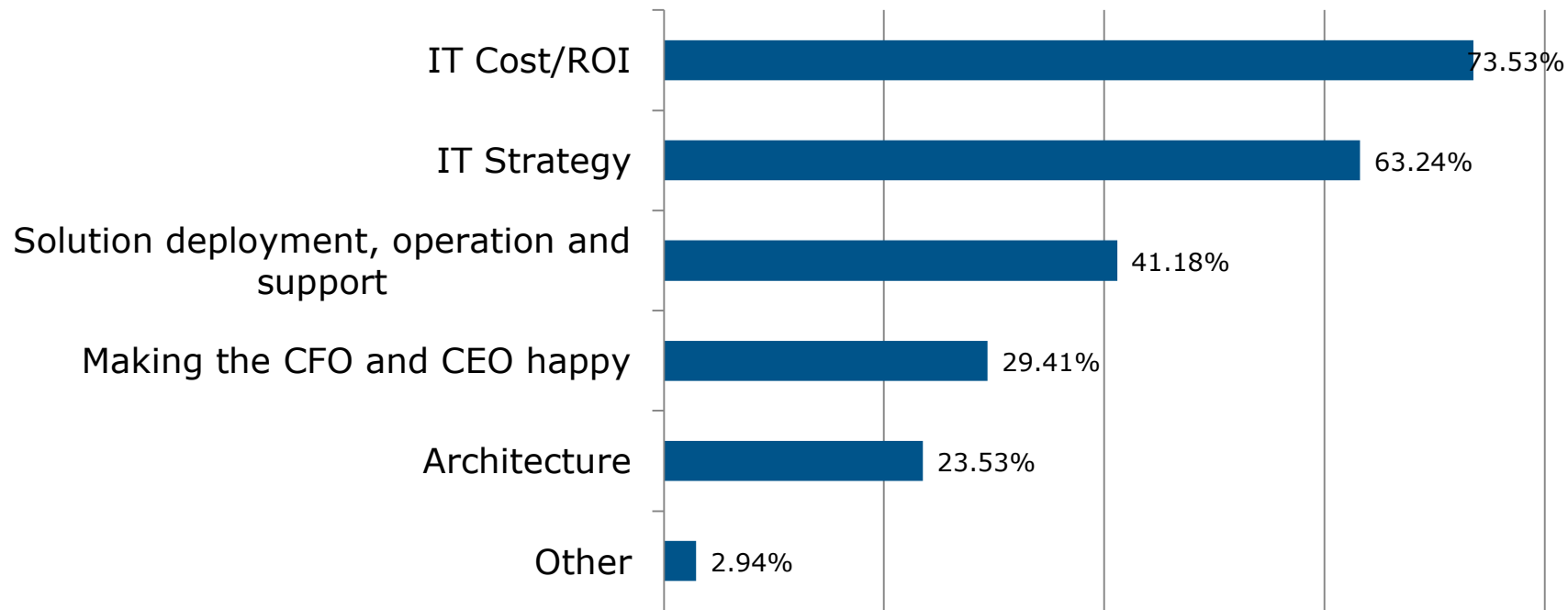
The following evaluations are required to purchase IT HW, SW or services costing \$1,000 (select all that apply):



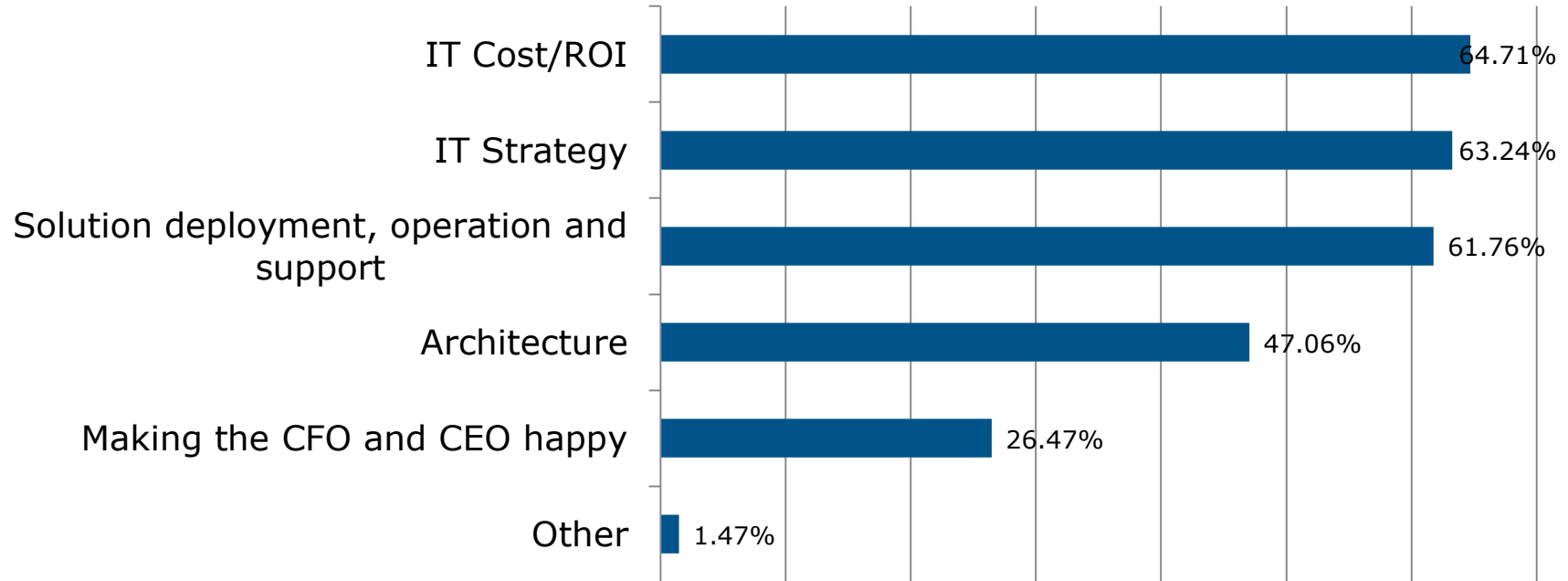
Server/Storage/Network Engineers care mostly about (select all that apply):



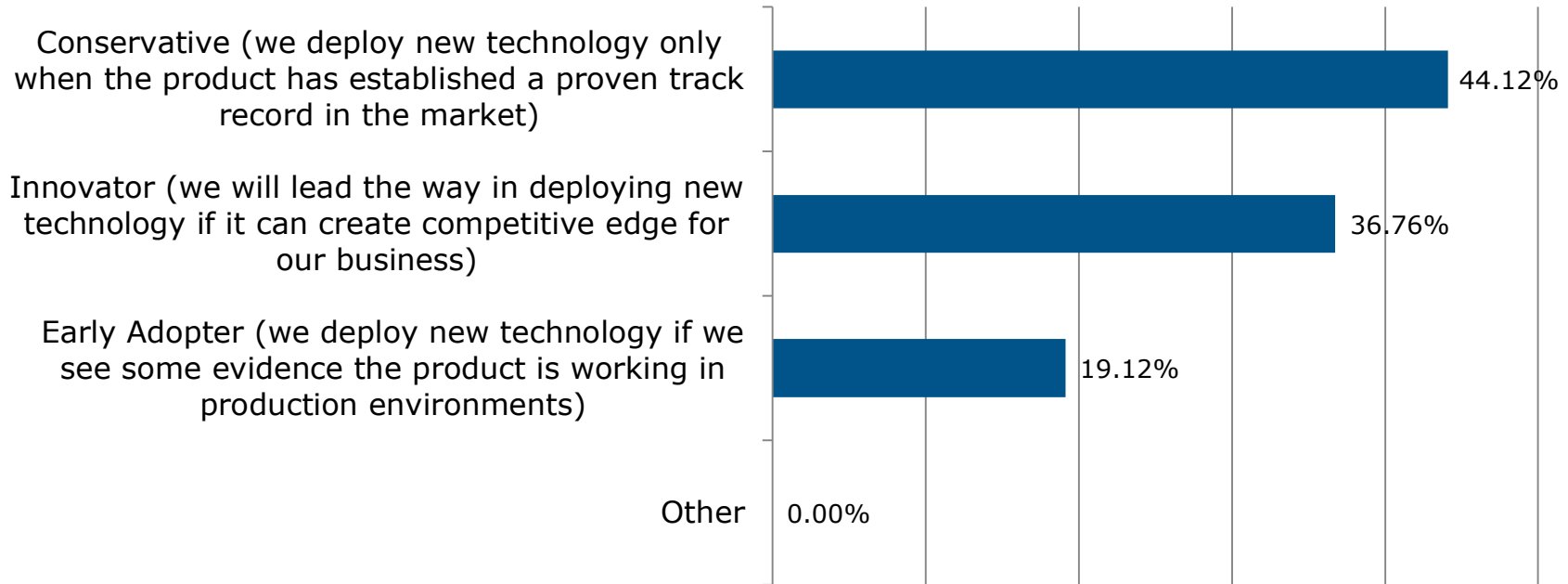
IT VPs and the CIO care mostly about (select all that apply):



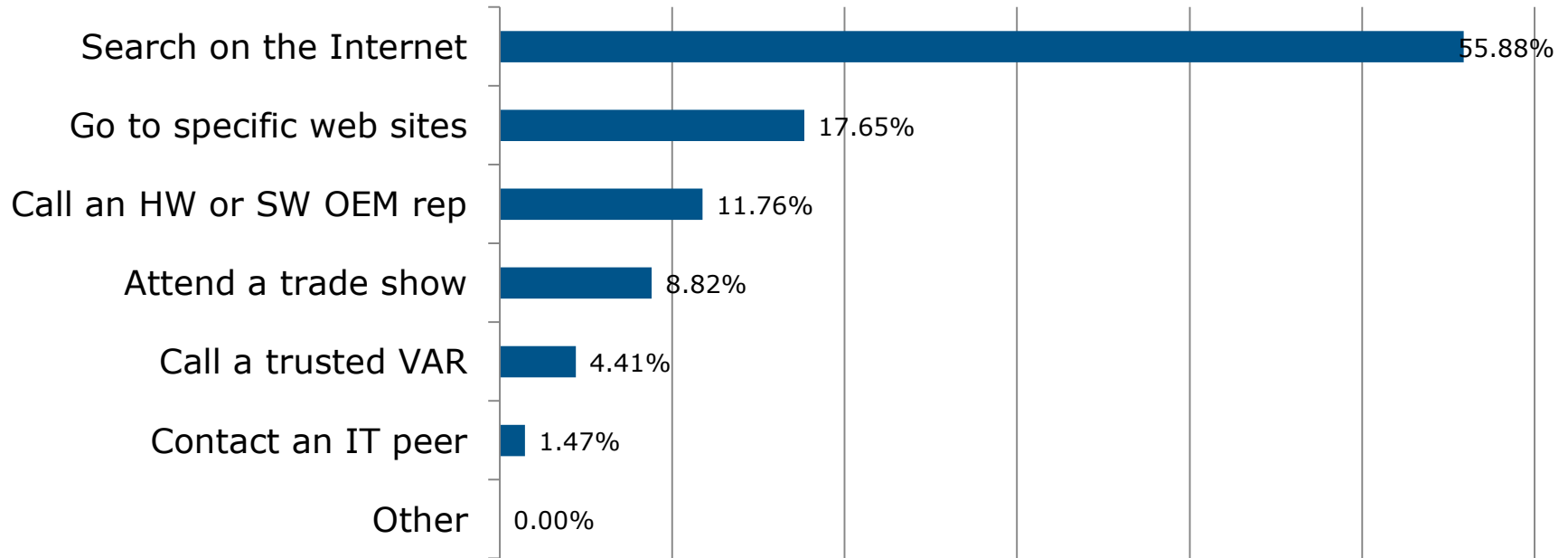
IT Managers & Directors care mostly about (select all that apply):



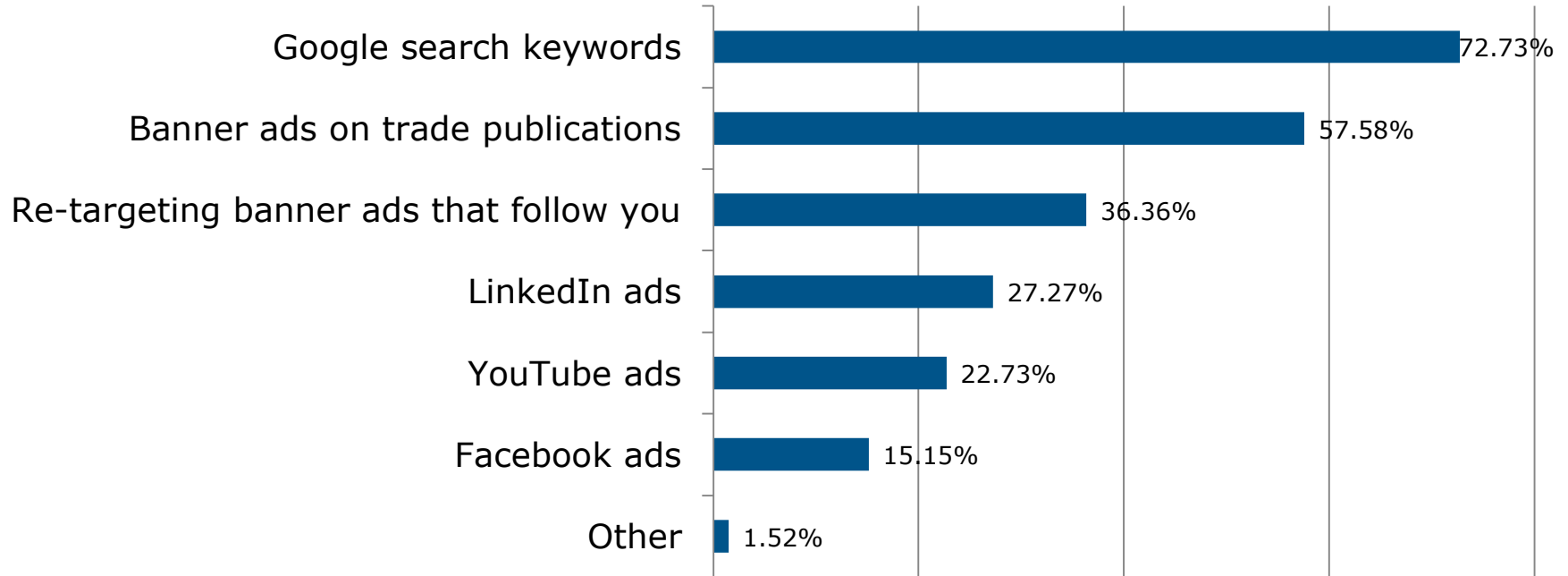
I would characterize my IT organization as a:



The first thing (I/IT Pros) do to investigate a new technology or product is to:



I believe vendors invest most in the following Internet advertising (select all that apply):



EMC Flash Storage - EMC.com

Ad www.emc.com/FlashStorage ▼

Increase the Value of Your Apps and Your Business w/EMC All Flash!

Backup 50% faster · Affordable Flash Storage · Manage storage 8x faster · Predictable

Products: Database, Virtual Storage Infrastructure, Virtual Desktop Infrastructure...

Shop EMC Flash Products · Shop for Unity Products · The Modern Data Center · Contact EMC

HPE All-Flash Arrays - hpe.com

Ad www.hpe.com/flash ▼

Go All-Flash: Affordable Speed For Any Demand. Learn More Today.

Protected Storage · Join The Flash Revolution · Enterprise Storage

Featured: HPE 3PAR StoreServ 20000, HPE 3PAR StoreServ 8000, HPE XP7...

HPE: Accelerating Next · Moving From EMC To 3PAR?

SolidFire All-Flash Array - solidfire.com

Ad www.solidfire.com/Flash-Comparison ▼

Evaluating All-Flash Array Vendors? See the Architectural Comparisons.

Schedule a Live Demo · Storage Vendor Comparison · Gartner Storage Report

NetApp® All Flash Array - NetApp.com

Ad www.netapp.com/Flash ▼

Increase Enterprise App Performance with Flash Storage. Get it Now.

Protect your Data · NetApp® Customer Stories · Flash Storage Solutions

XtremIO is the world's #1 **All-Flash Array**. DEFINITION: An **All-Flash Array** is a data storage system that contains multiple. **flash** memory drives in place of spinning hard disk drives, allowing for much. faster data transfer rates, and more efficient use of data center resources.

All-Flash Array Definition – XtremIO | EMC US

<https://www.emc.com/en-us/storage/xtremio/definitions.htm> EMC Corporation ▼

Shop for All Flash Array on Google

Sponsored ⓘ



HPE Modular Smart Array 2040 SAN ...

\$9,265.99

CDW



Iron Networks J420-B, All Flash Disk Array

\$37,350.00

Iron Networks

Special offer



"Nimble Storage CS215 iSCSI ...

\$48,753.00

Corporate Armor



"Nimble Storage CS300 iSCSI ...

\$76,215.00

Corporate Armor



Drobo 5D Diskless Storage Array

\$788.99

CDW

★★★★☆ (12)

Google search results for All Flash Arrays

Google search results for SSD

Shop for SSD on Google

Sponsored ⓘ



SAMSUNG
PM863 MZ-...
\$1,901.08
Newegg.c...



Samsung 850
EVO MZ-...
\$99.99
Dell



SanDisk - SSD
Plus 240GB ...
\$64.99
Best Buy



Samsung 850
PRO MZ-...
\$94.99
Dell



Samsung 750
EVO MZ-...
\$74.99
Dell



Kingston
SSDNow ...
\$37.99
Newegg.c...

★★★★★ (1k+) ★★★★★ (1k+) ★★★★★ (77)

An mSATA **SSD** with an external enclosure. A solid-state drive (**SSD**, also known as a solid-state disk although it contains neither an actual disk nor a drive motor to spin a disk) is a solid-state storage device that uses integrated circuit assemblies as memory to store data persistently.



[Solid-state drive - Wikipedia, the free encyclopedia](https://en.wikipedia.org/wiki/Solid-state_drive)
https://en.wikipedia.org/wiki/Solid-state_drive Wikipedia ▾

About this result • Feedback

Shop for NVMe on Google

Sponsored ⓘ



Intel 750 Series AIC 400GB ...
\$309.99
Newegg.c...
★★★★★ (24)



Intel 750 Series AIC 1.2TB ...
\$849.99
Newegg.c...
★★★★★ (7)



Samsung 950 PRO MZ-...
\$199.99
CDW
★★★★★ (117)



SAMSUNG 950 PRO M.2 ...
\$317.99
Newegg.c...
★★★★★ (173)



Samsung - MZ-...
\$212.72
Jet.com



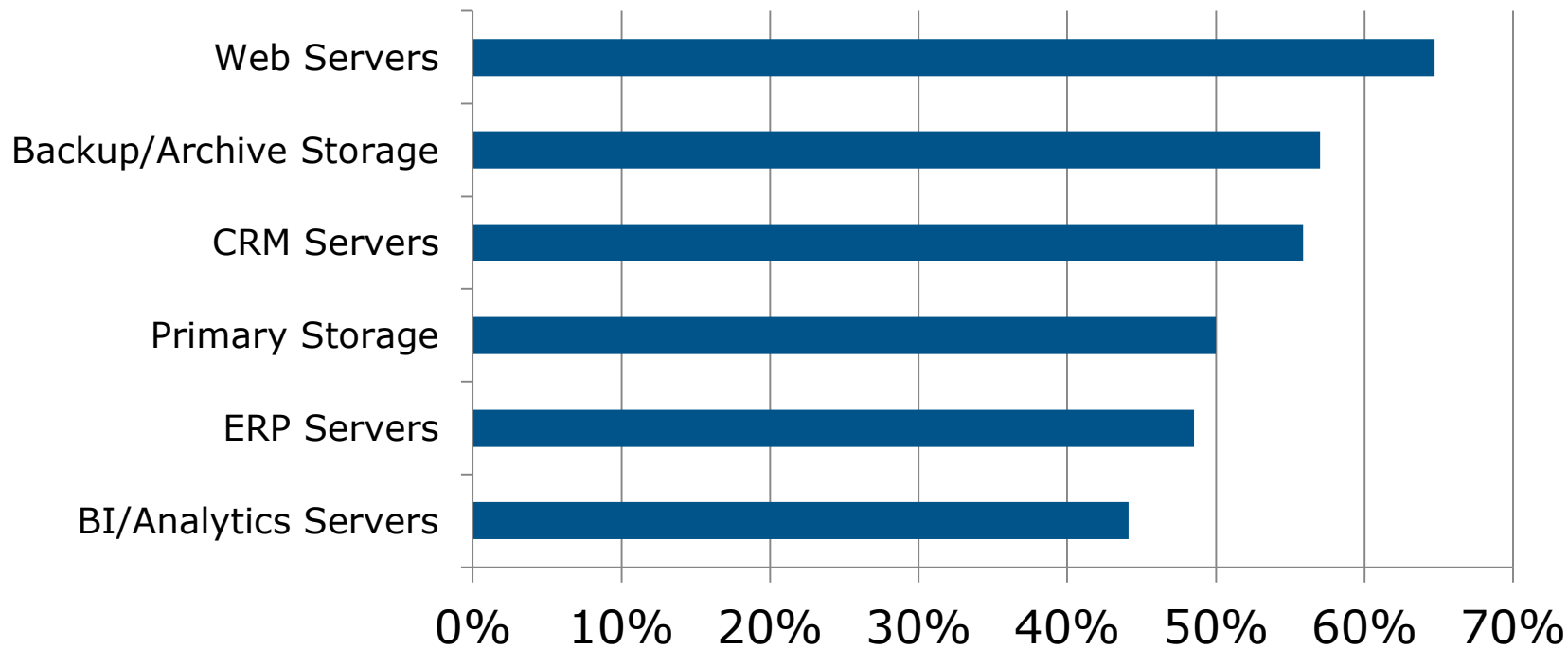
Samsung 512GB 950 ...
\$318.99
B&H Photo-Vi...



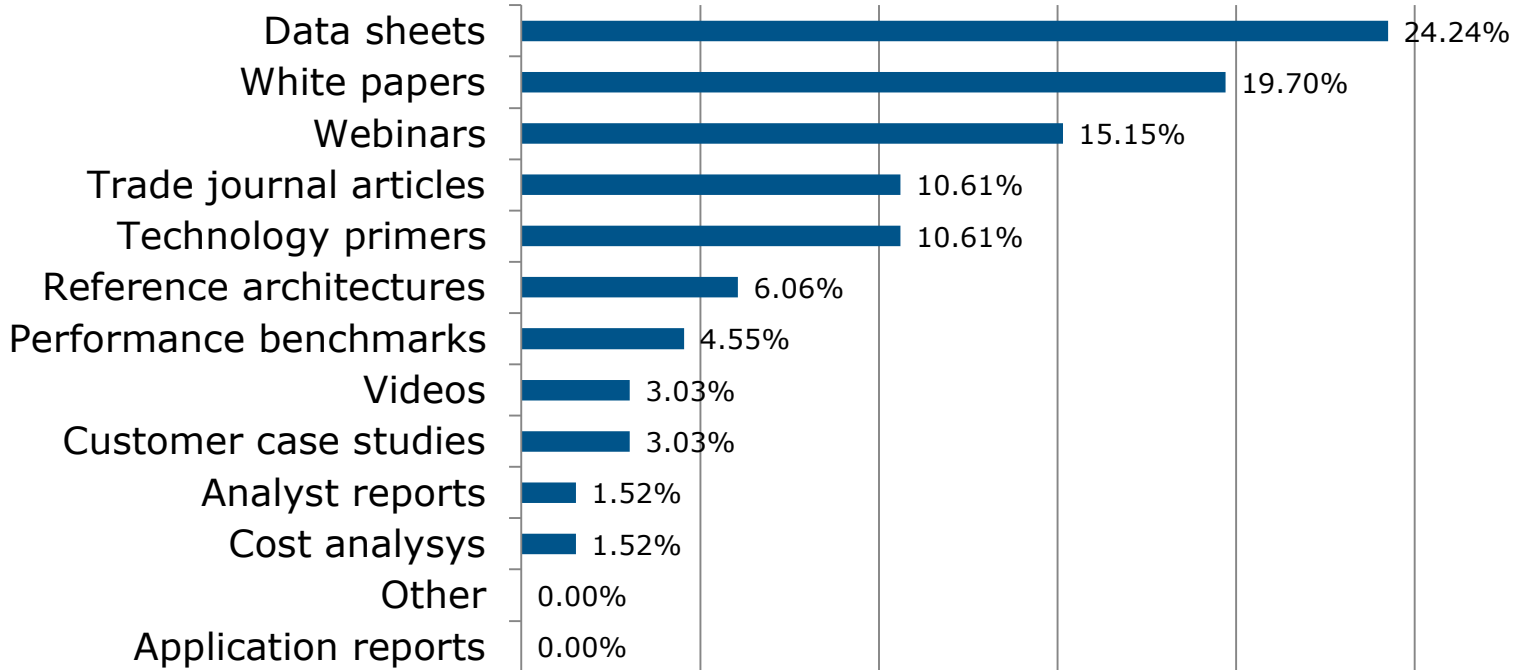
Intel 750 Series 2.5" 400GB ...
\$357.99
Newegg.c...
★★★★★ (5)

Google search results for NVMe

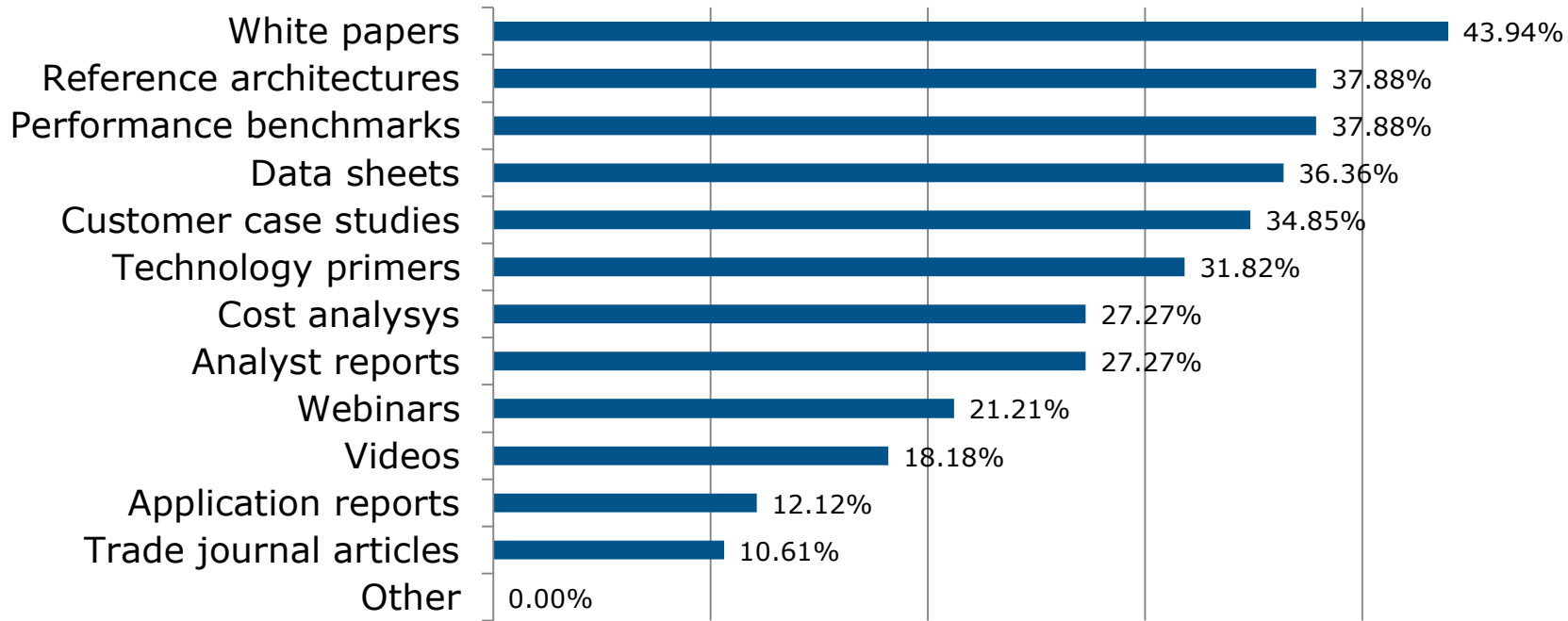
When I'm done investigating the following products, I will have compared the cost of buying hardware and software versus buying a cloud service for:



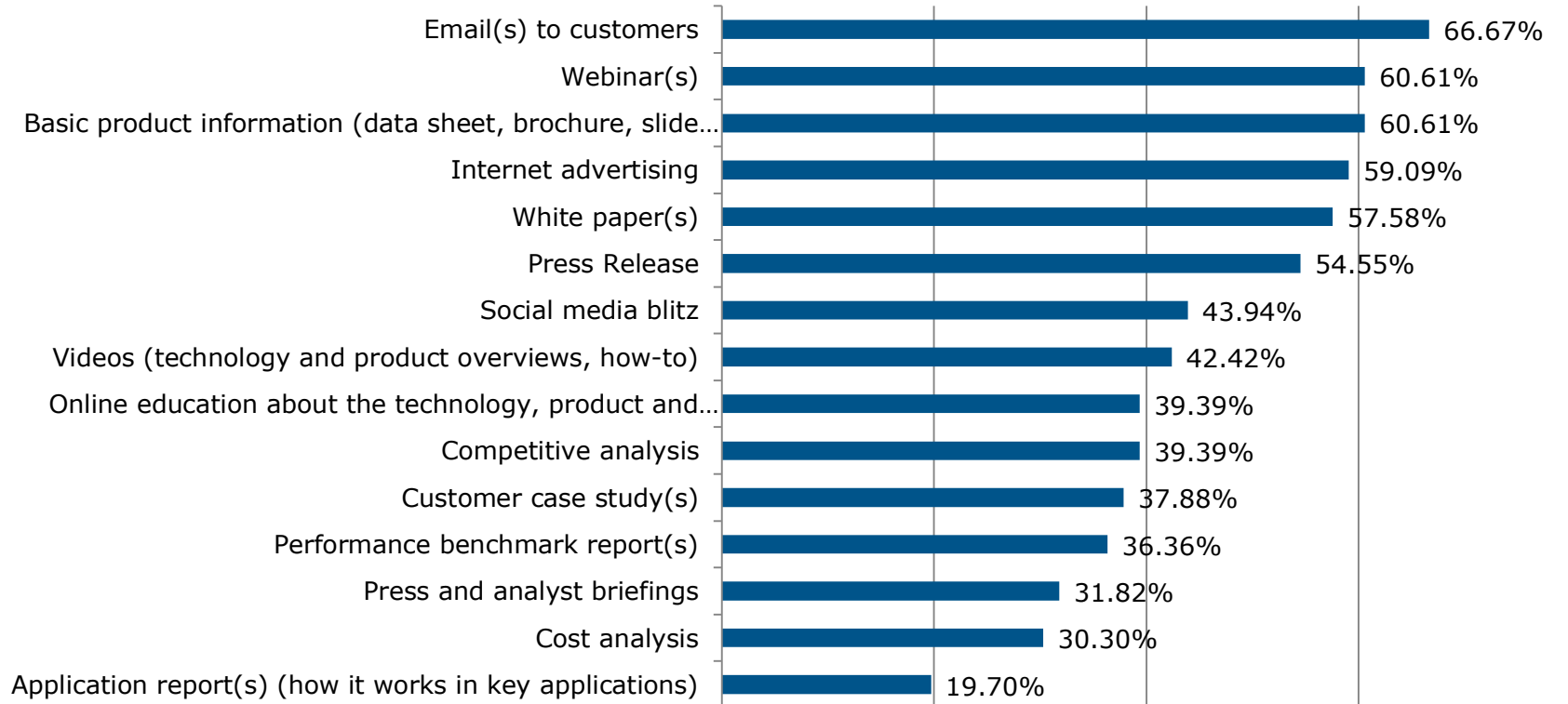
During the last 12 months, I have used this content most frequently:



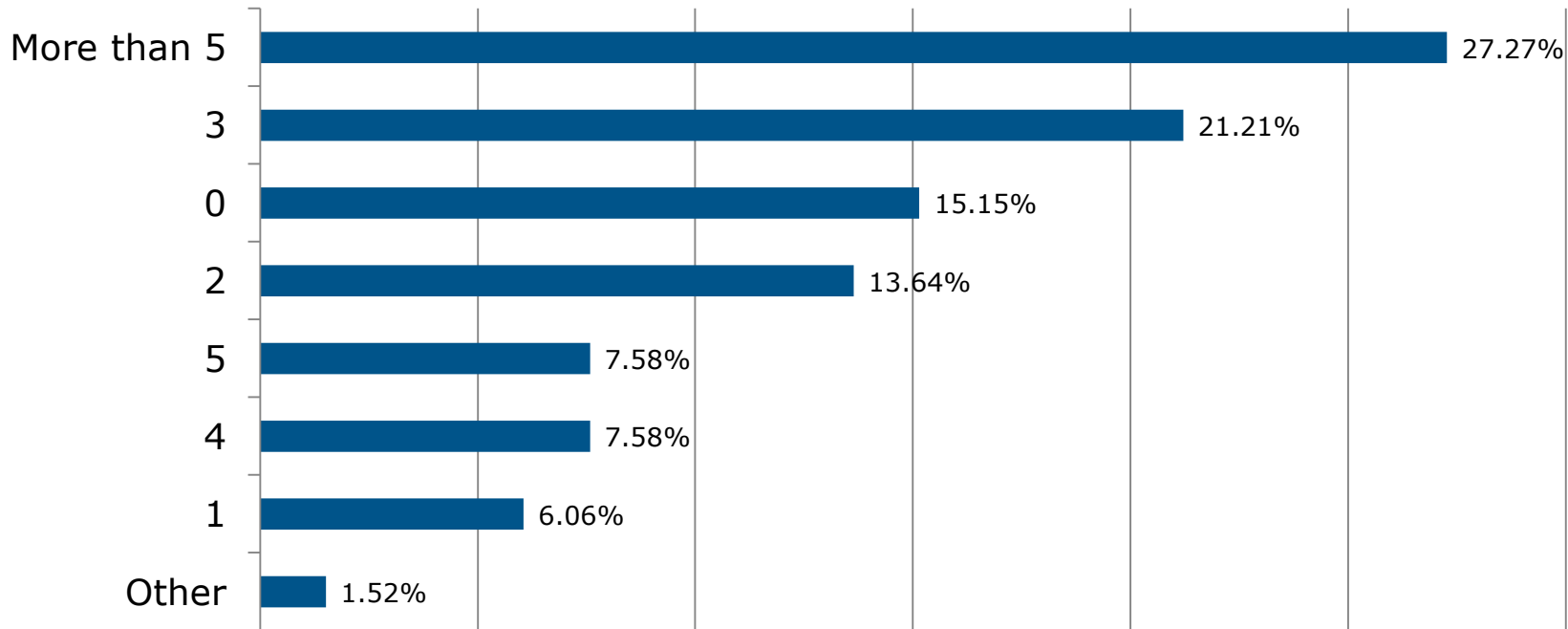
The most important content to me covering an important new technology is (select all that apply):



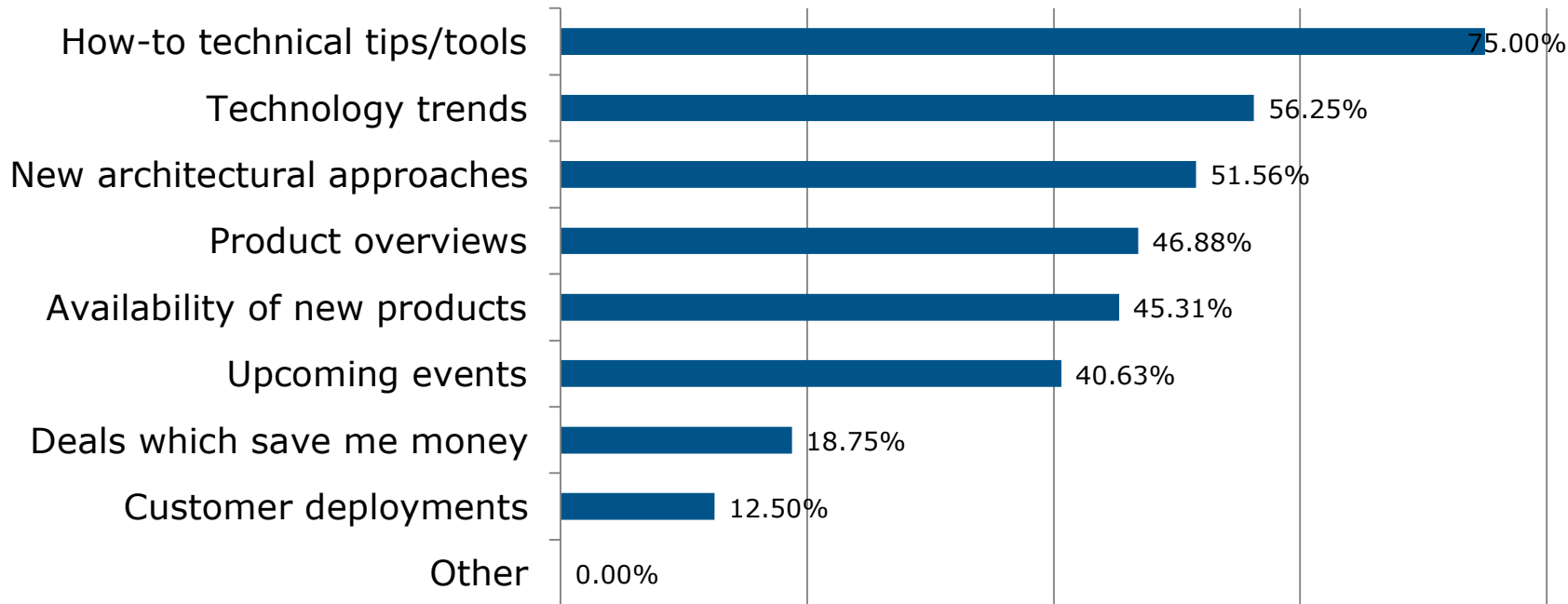
The typical product launch from IT vendors includes (select all that apply):



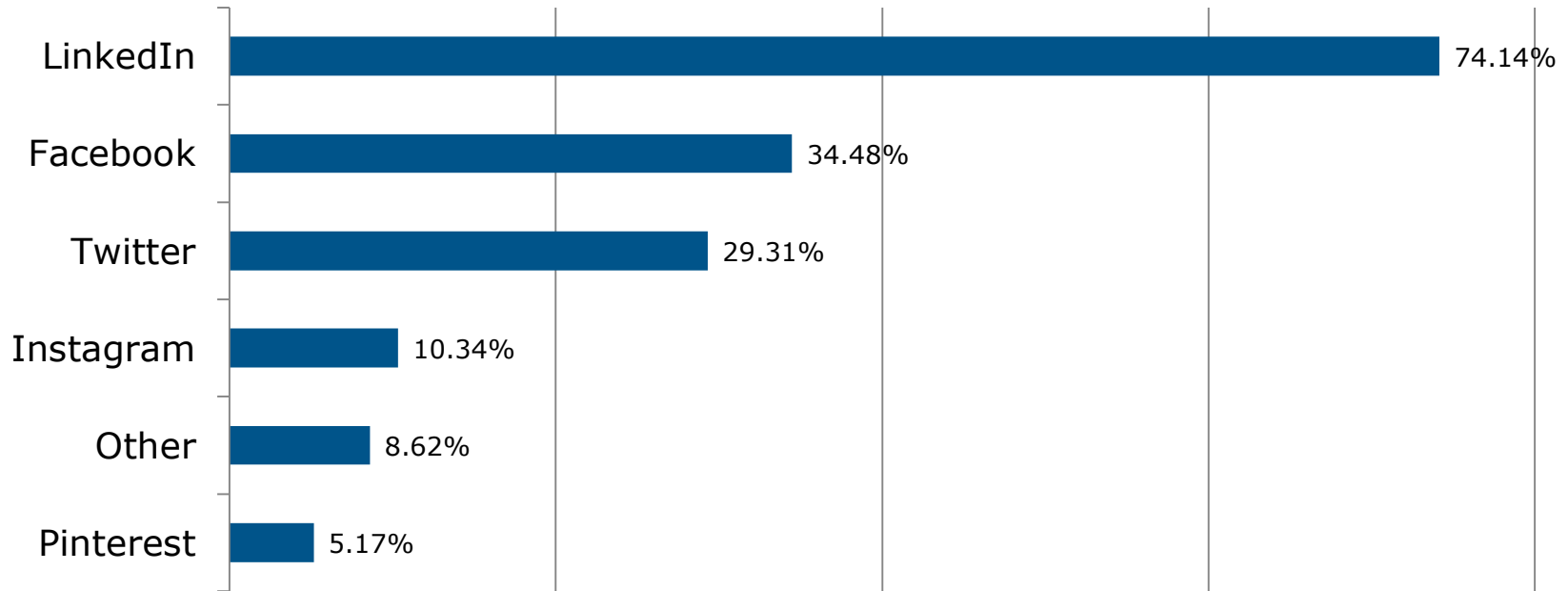
I read this many vendor email newsletters:



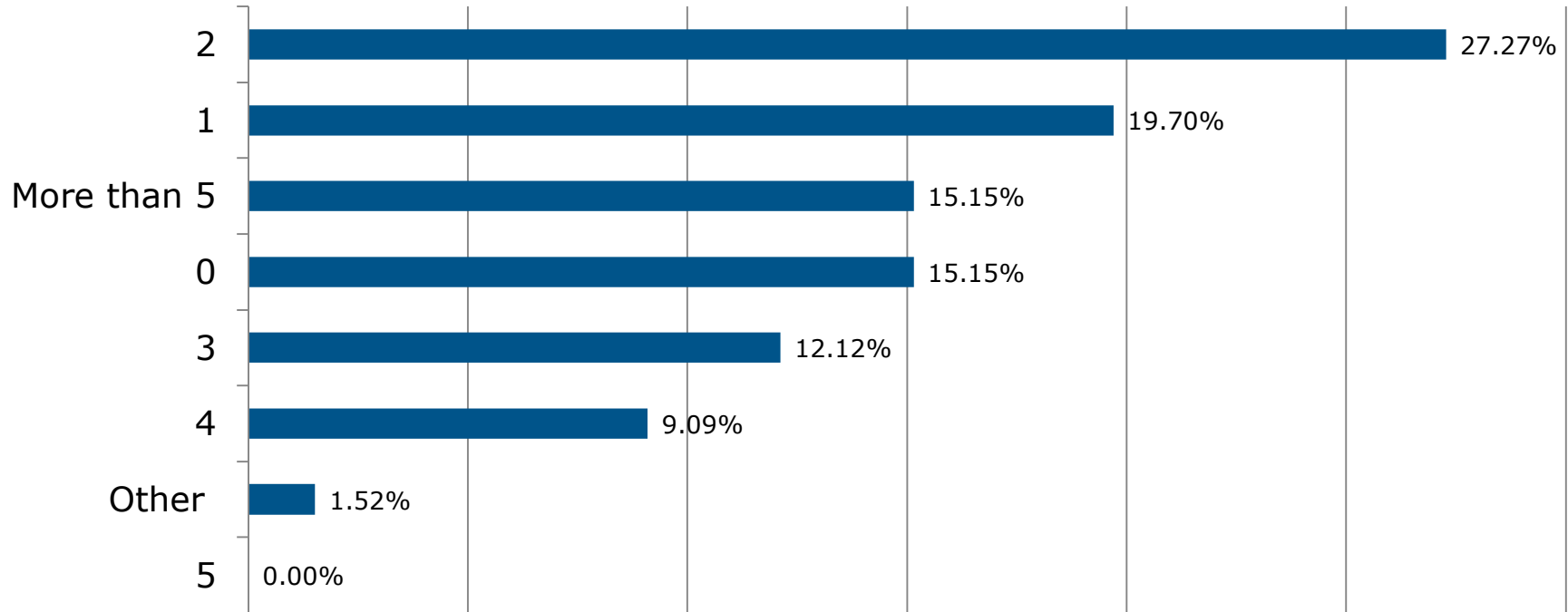
The email news I value from vendors are (select all that apply):



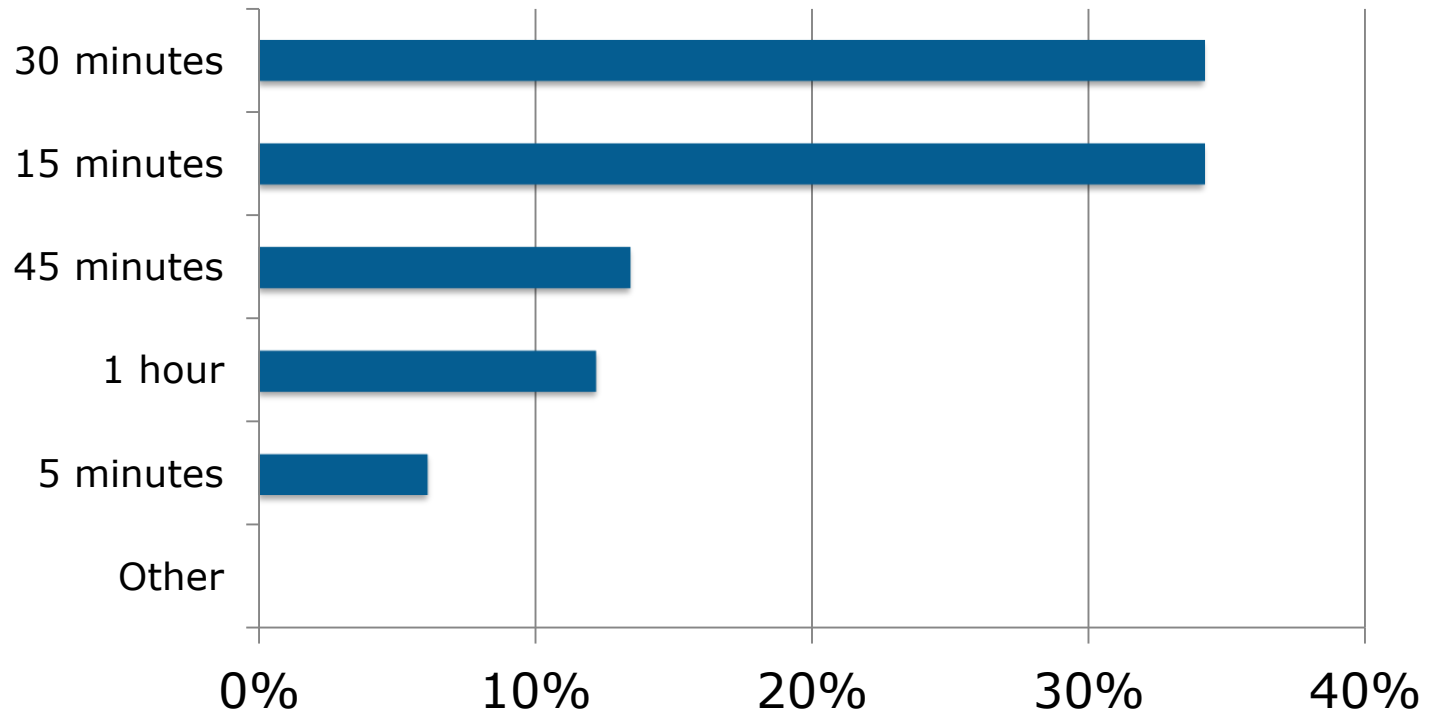
I regularly use this social media for information about IT (select all that apply)



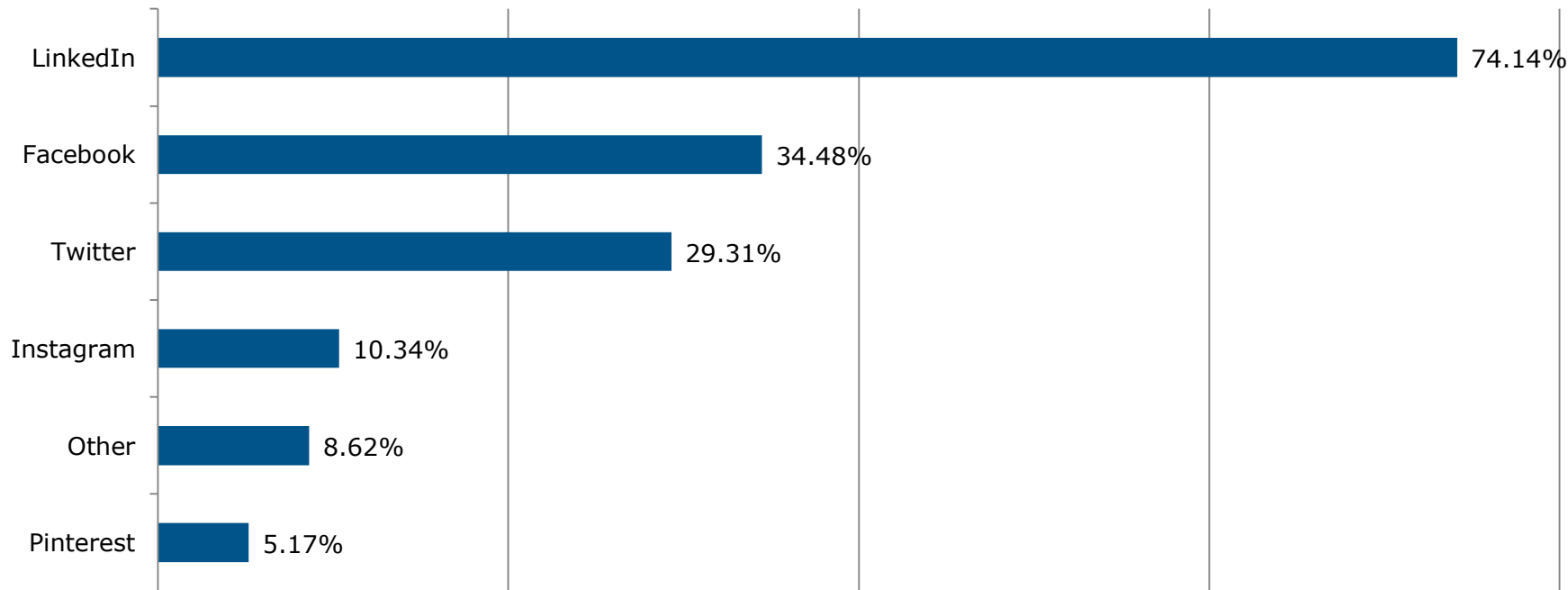
I have completed this many online courses during the last year:



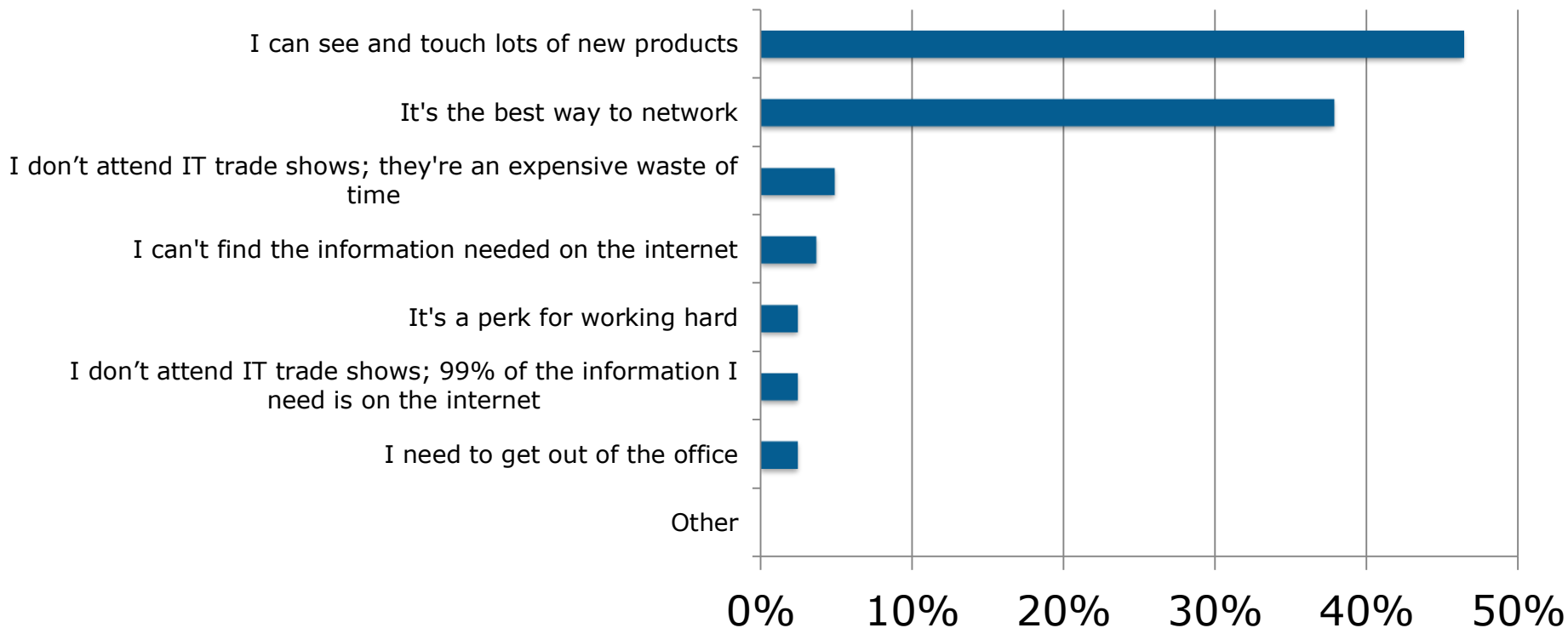
The right amount of time for an online technology primer is:



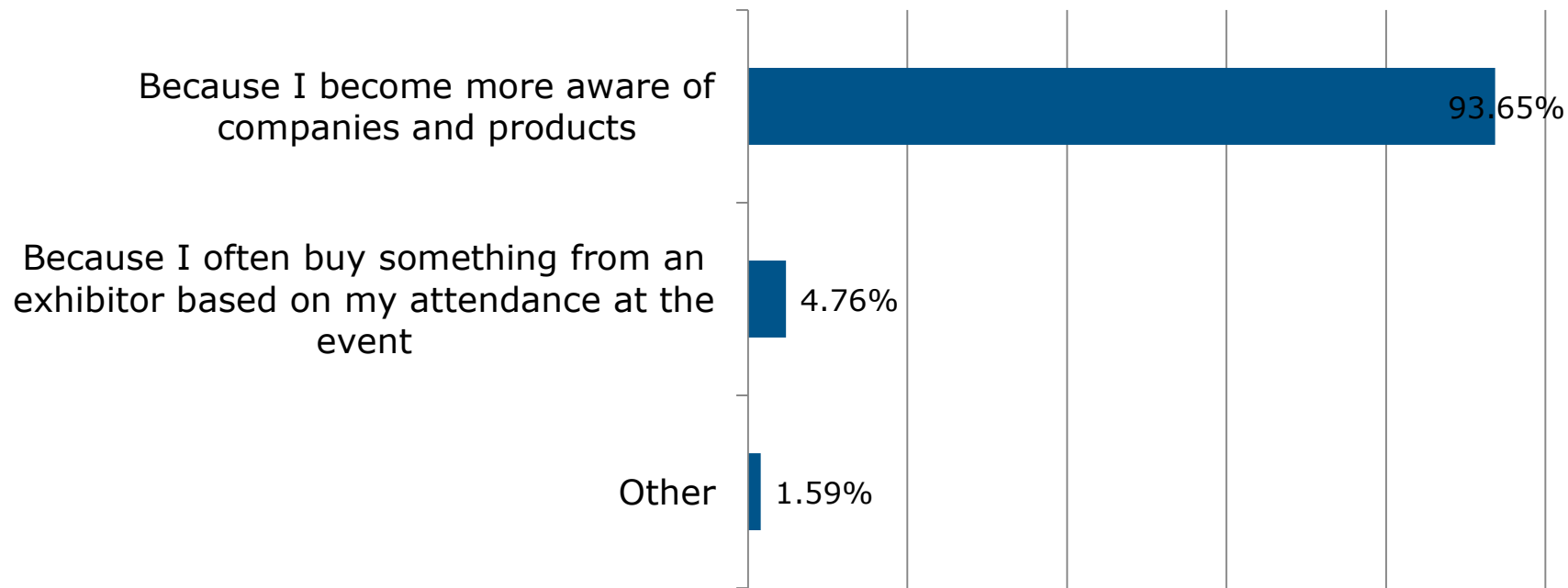
I believe IT vendors systematically reach out with the following social media (select all that apply):



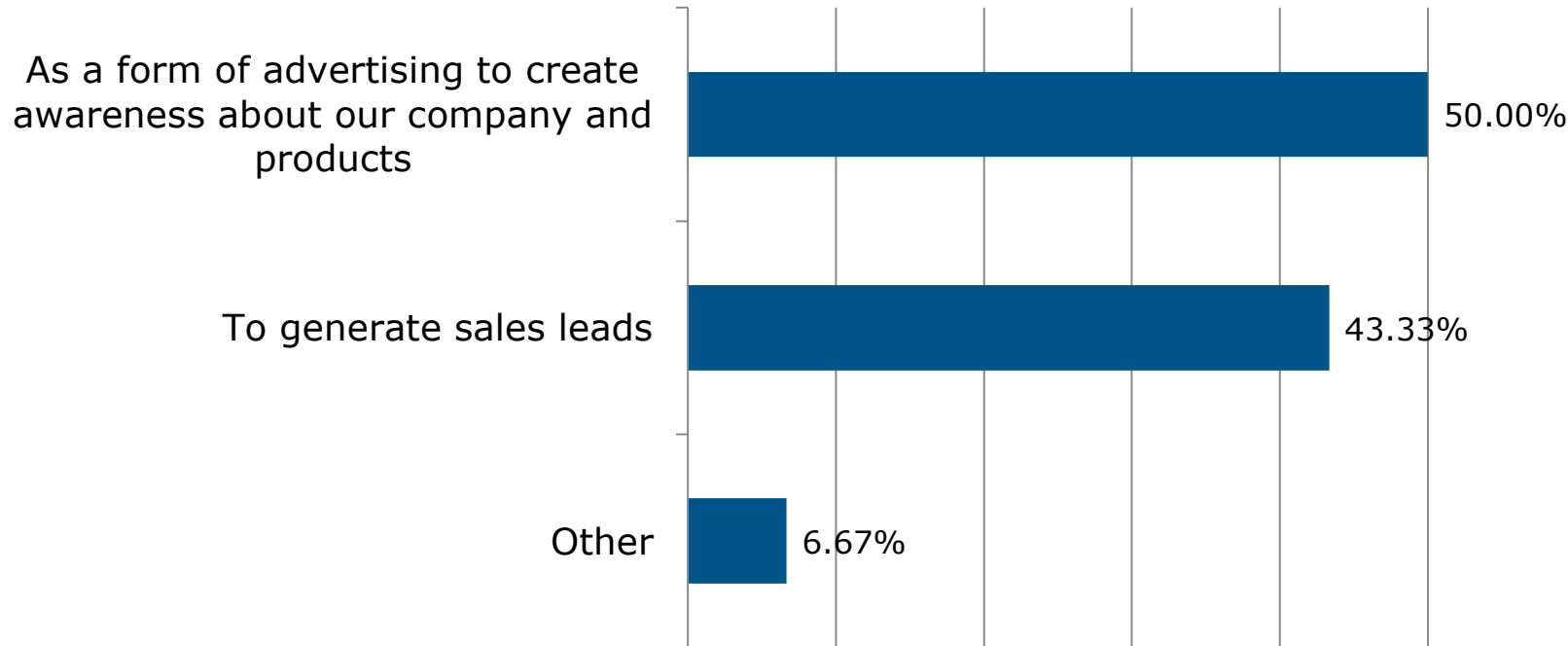
I attend IT trade shows mostly because:



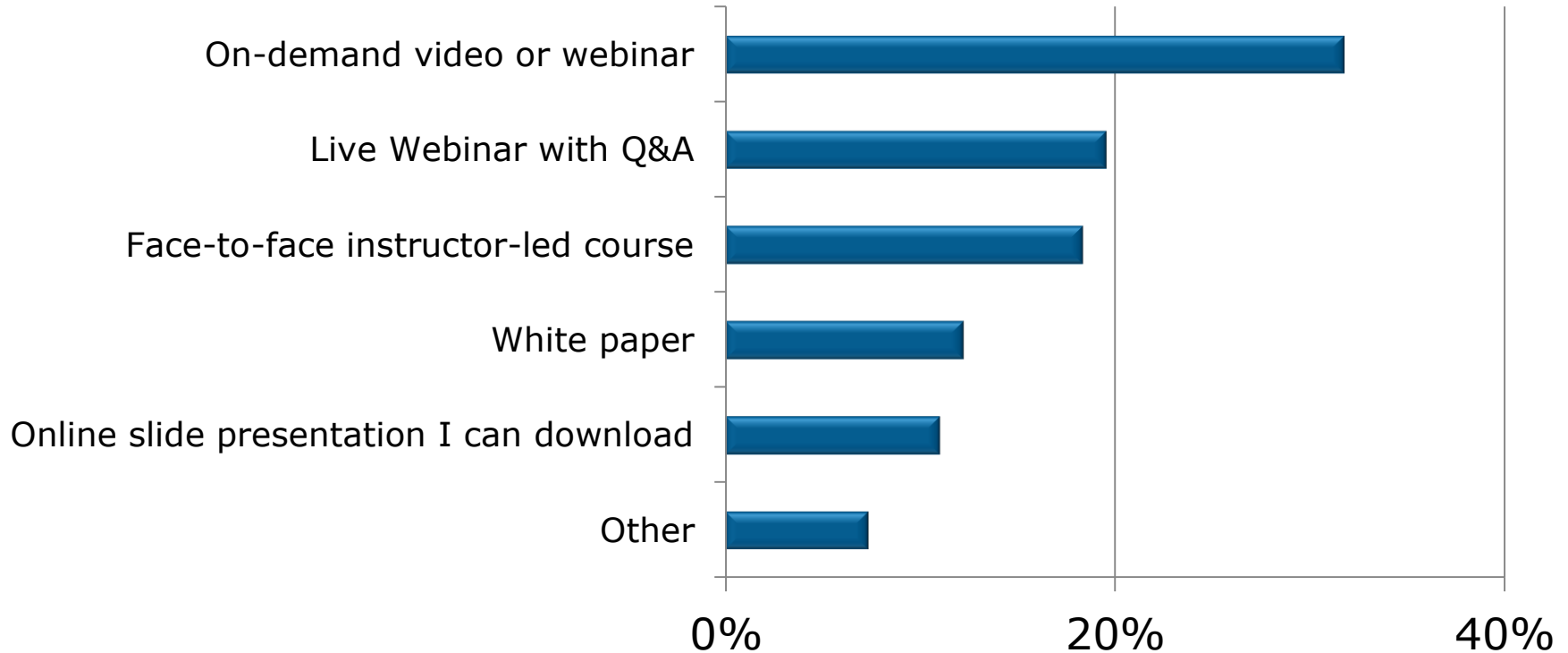
My presence at a trade show is most valuable:



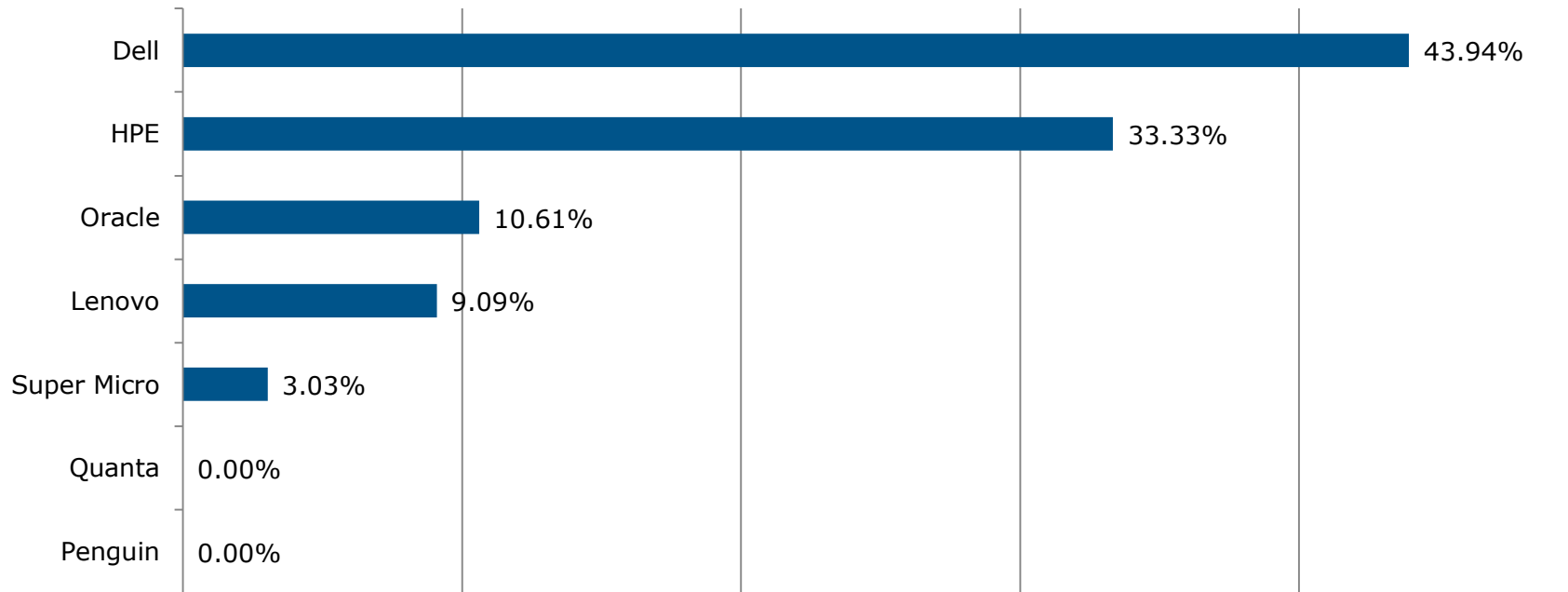
My presence at a trade show is most valuable:



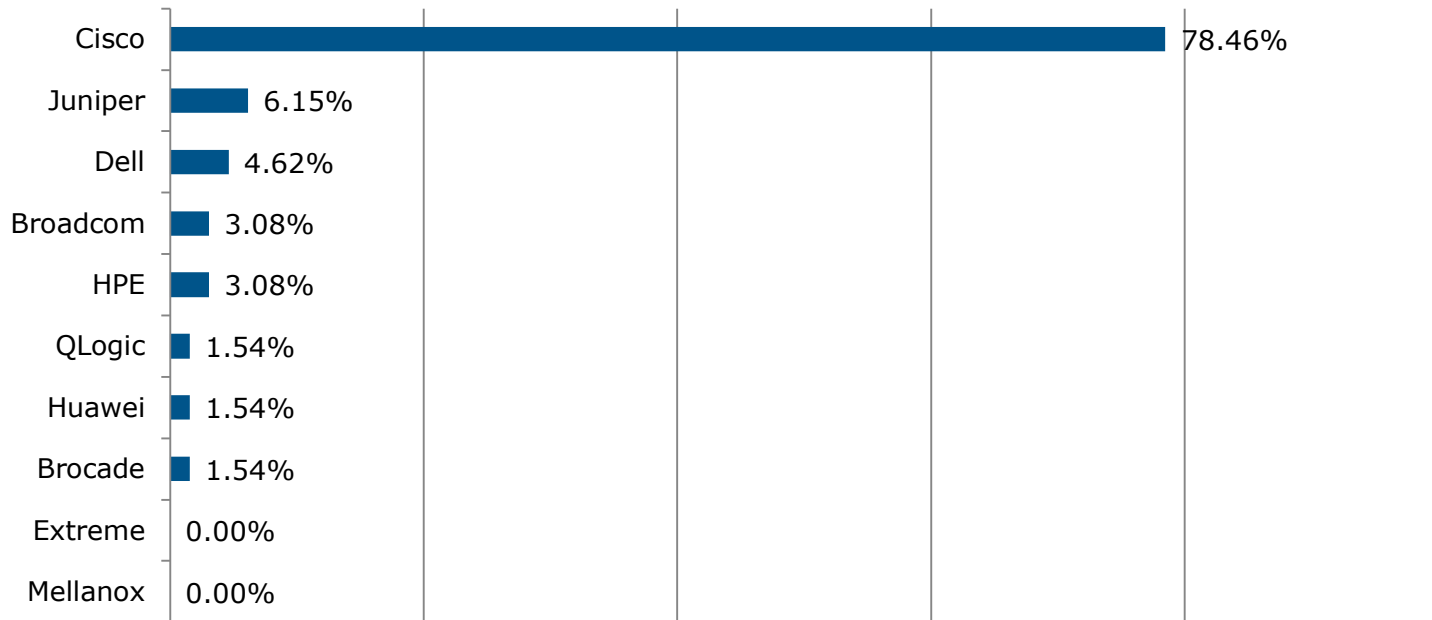
My favorite way of learning about a new technology is:



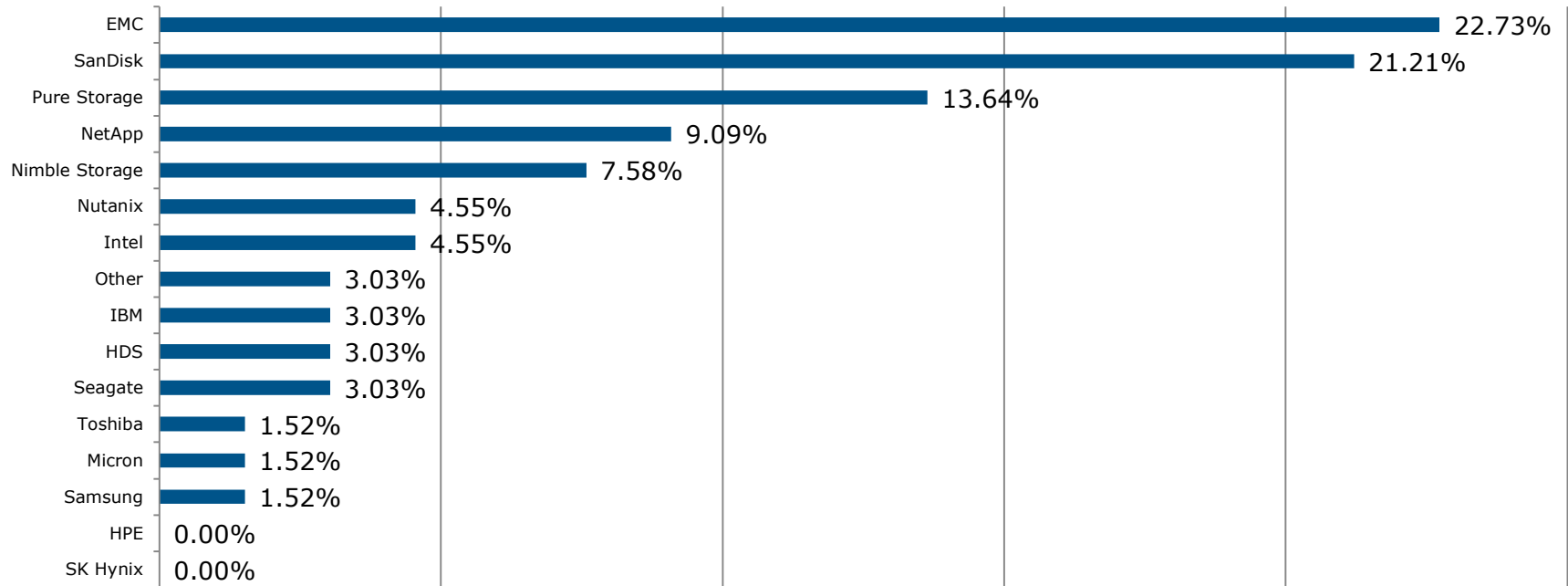
All things considered, this server vendor does the best job of marketing:



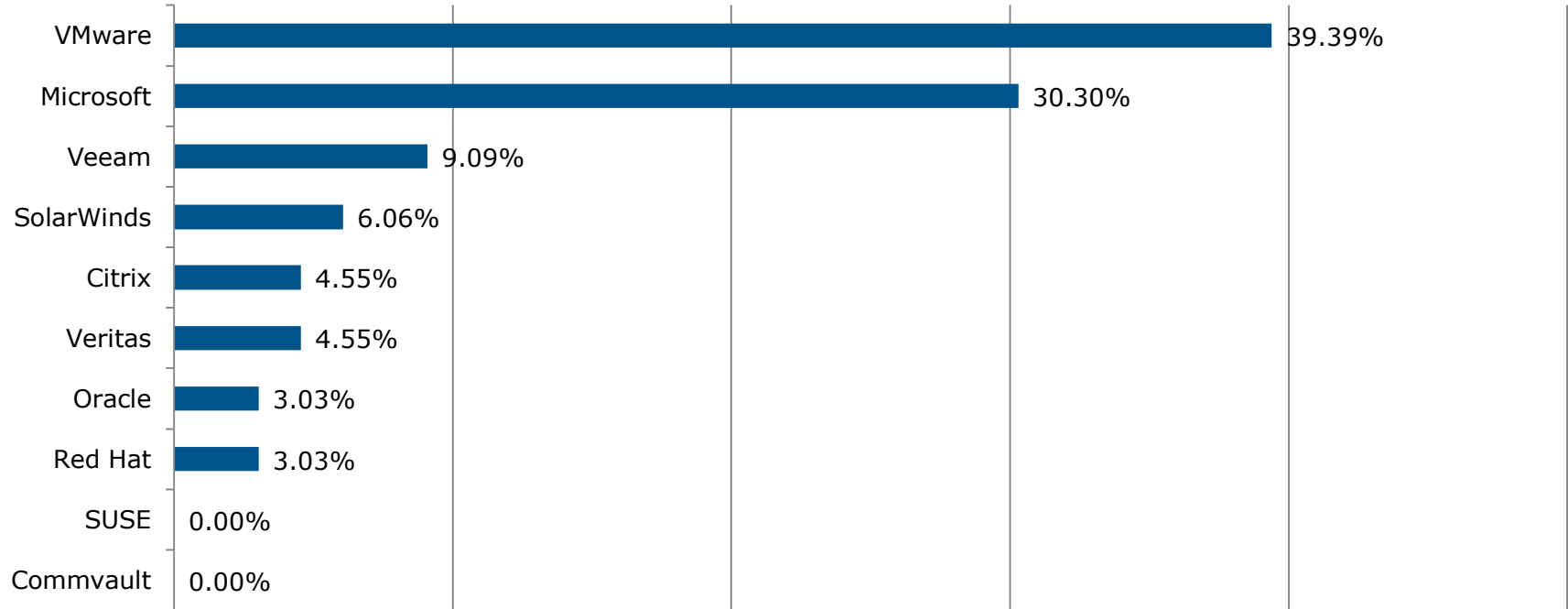
All things considered, this networking vendor does the best job of marketing:



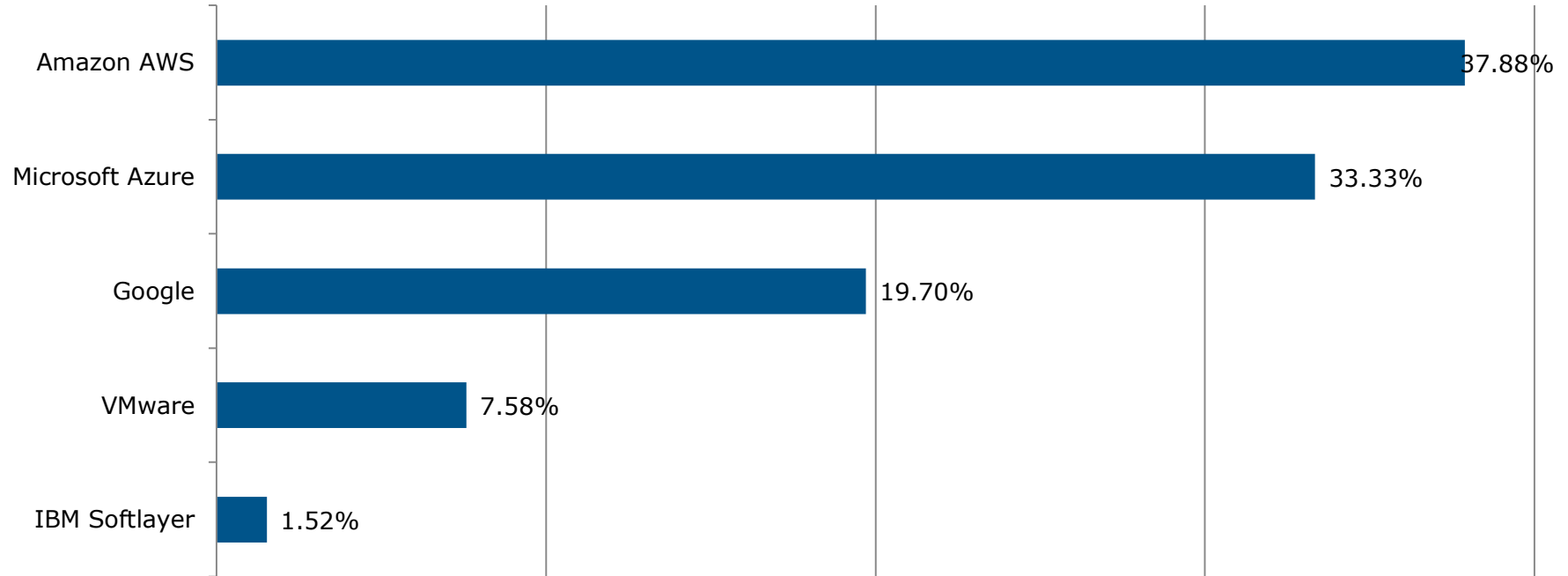
All things considered, this Flash Storage vendor does the best job of marketing:



Which data center infrastructure software vendor does the best job of marketing:



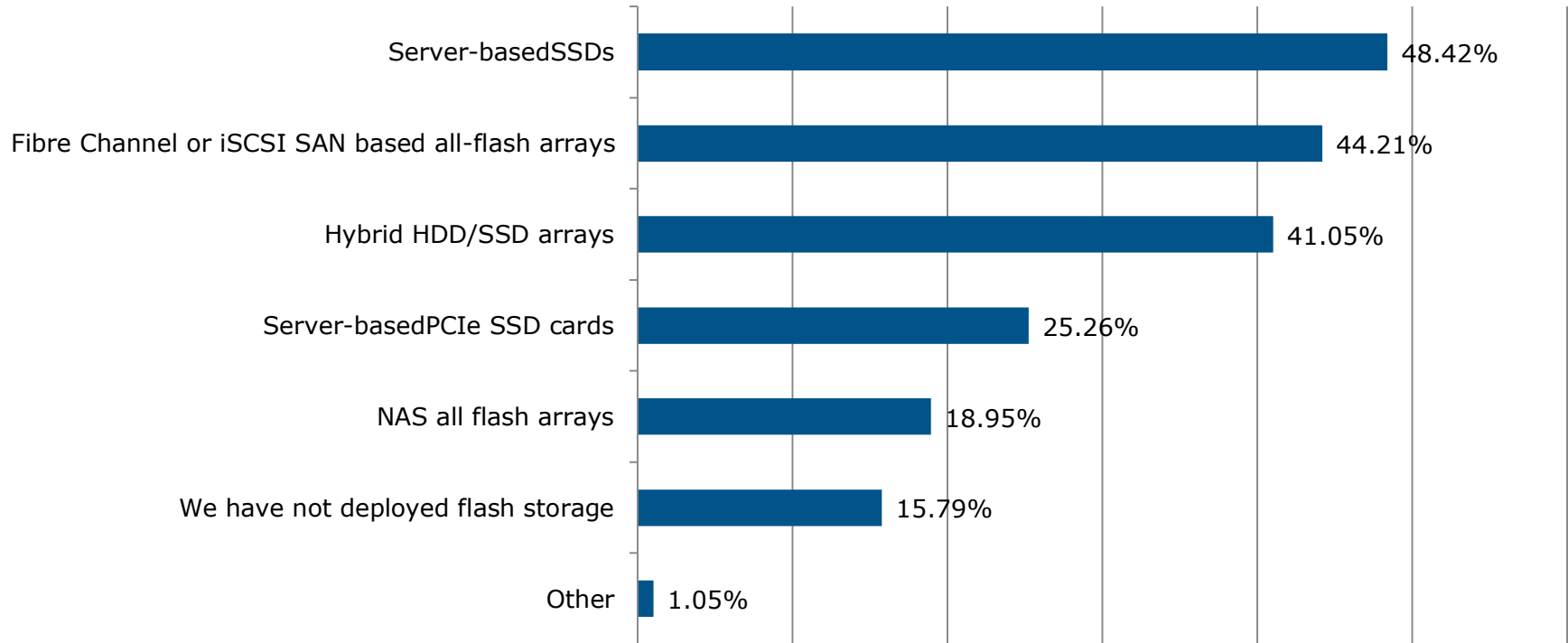
Which Infrastructure-as-a-Service cloud service provider does the best job at marketing:



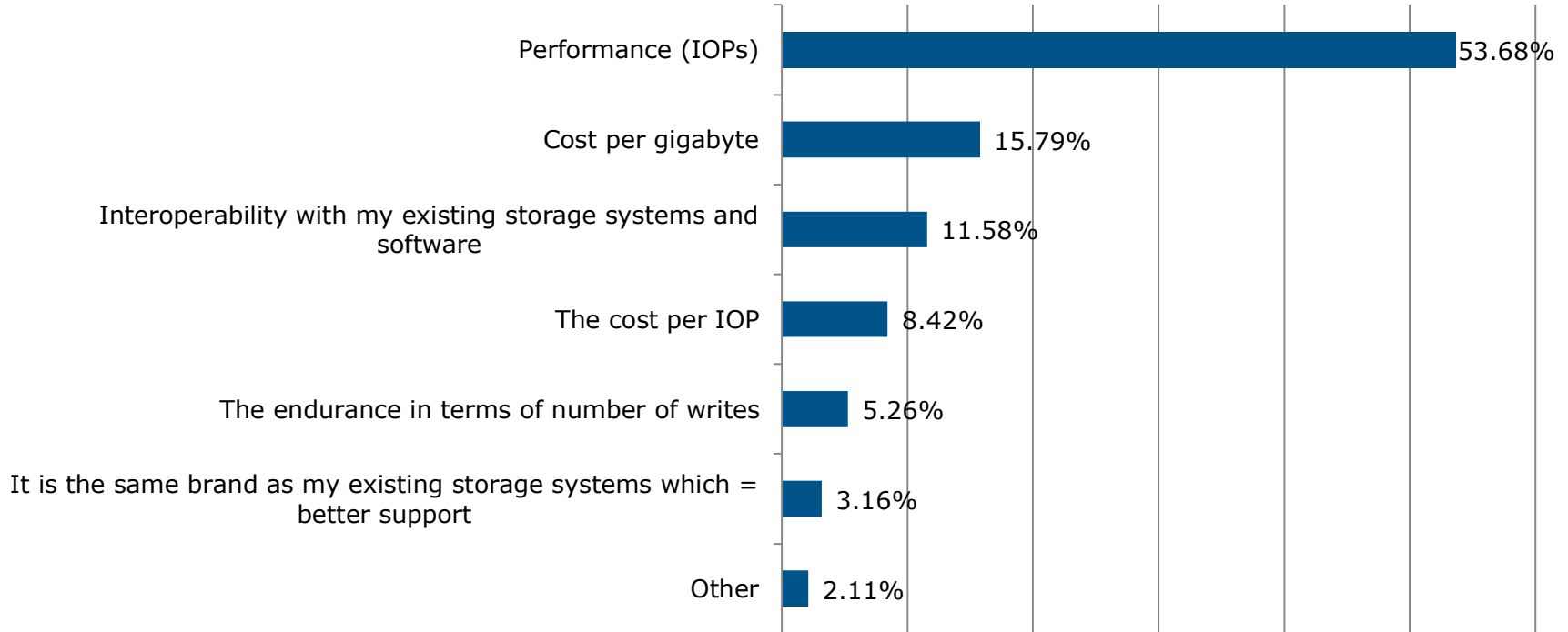
Flash Storage in Production



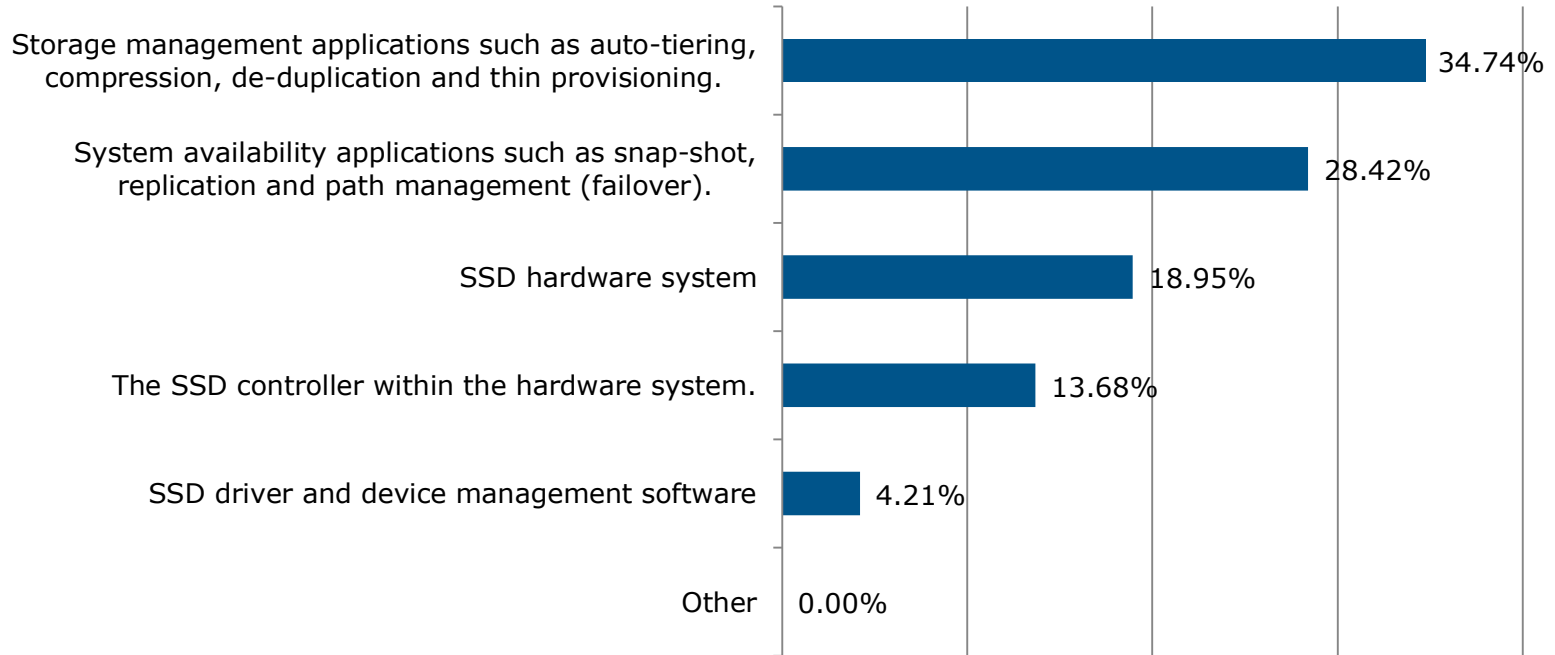
My organization has deployed the following type of flash storage(select all that apply):



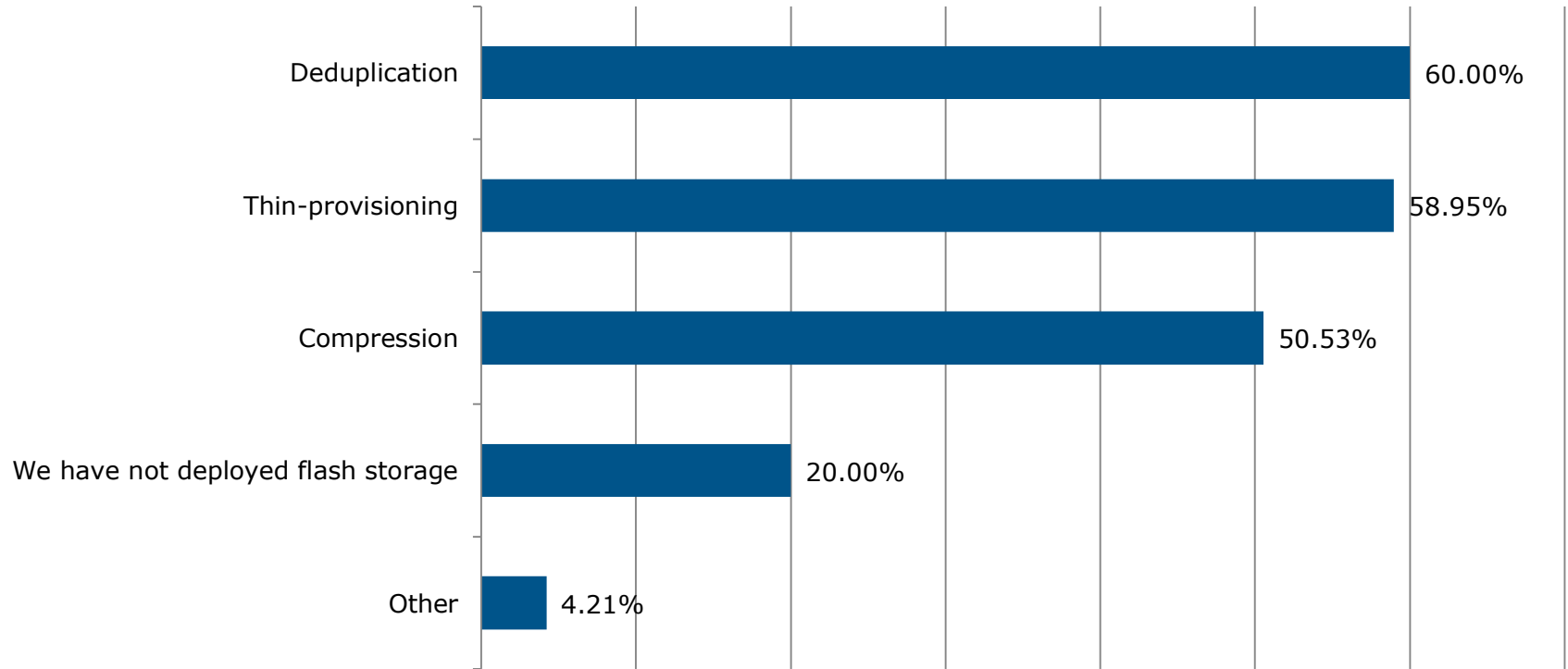
The most important feature of an SSD in my environment is:



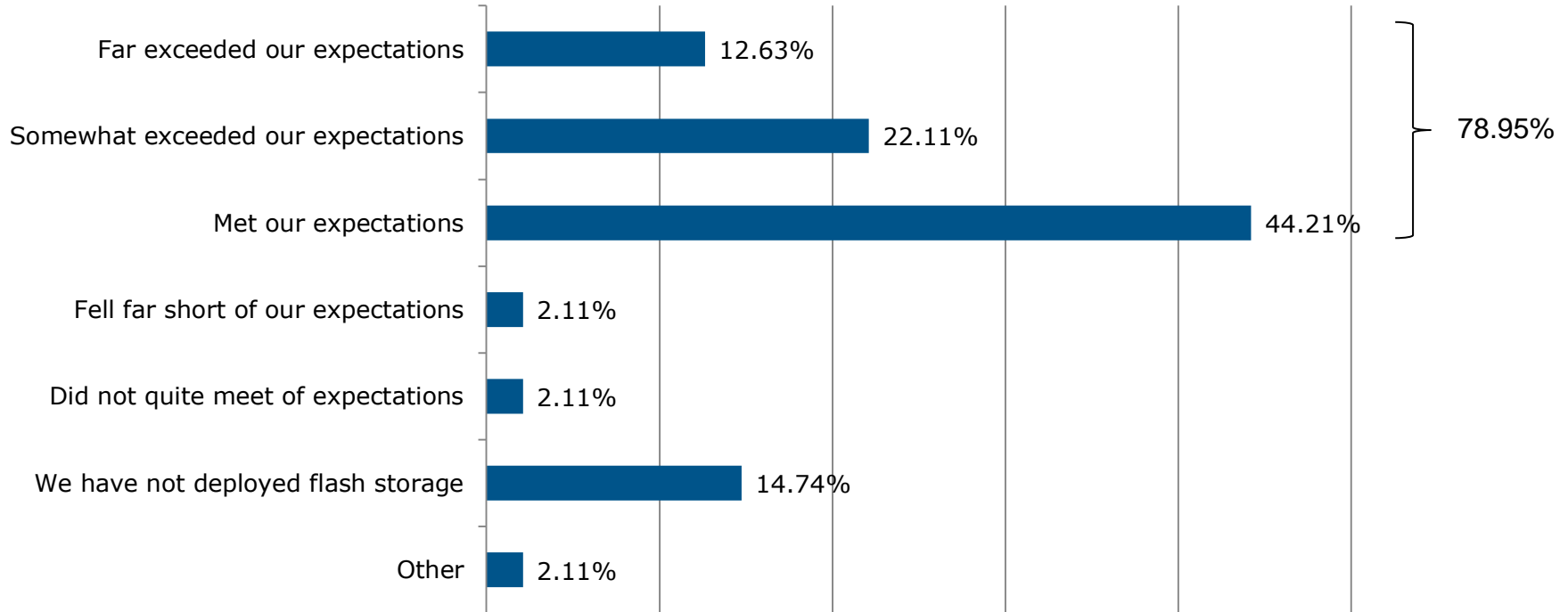
The most strategic (irreplaceable) component of a complete SSD storage solution is the:



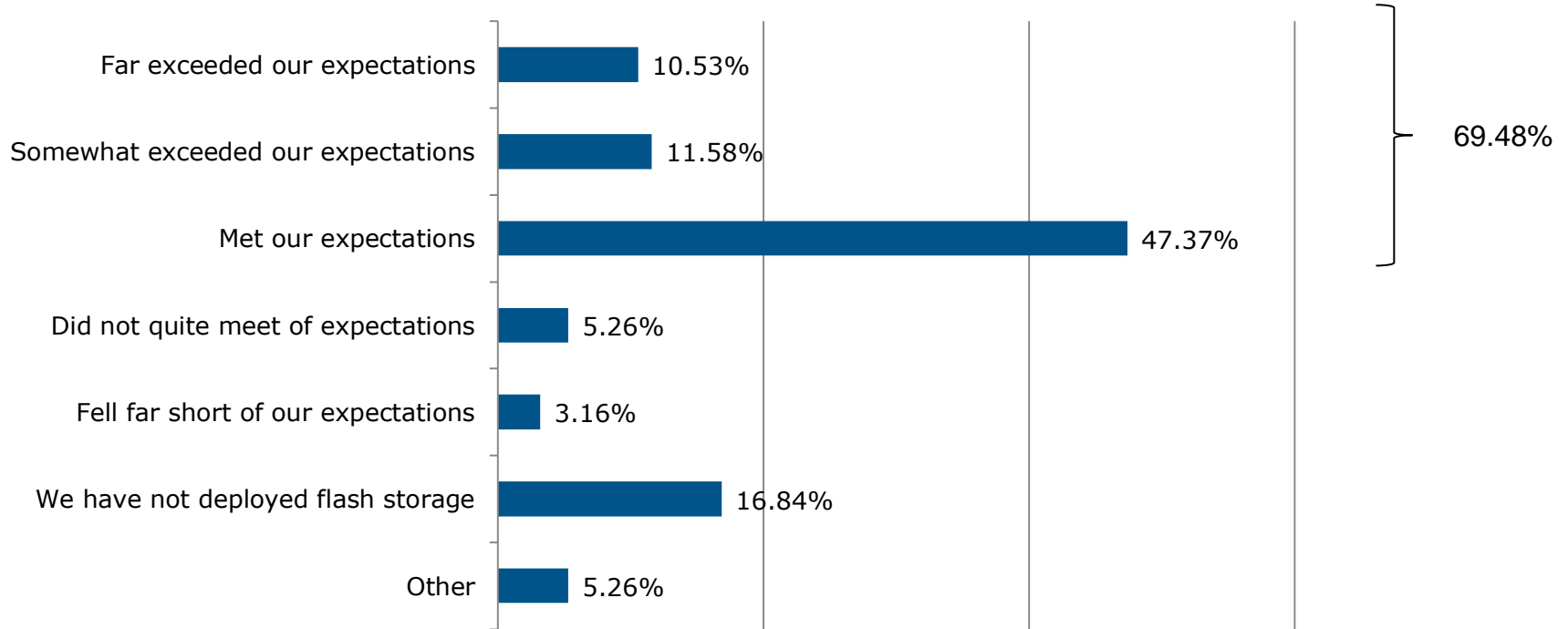
We have deployed the following with our flash storage:



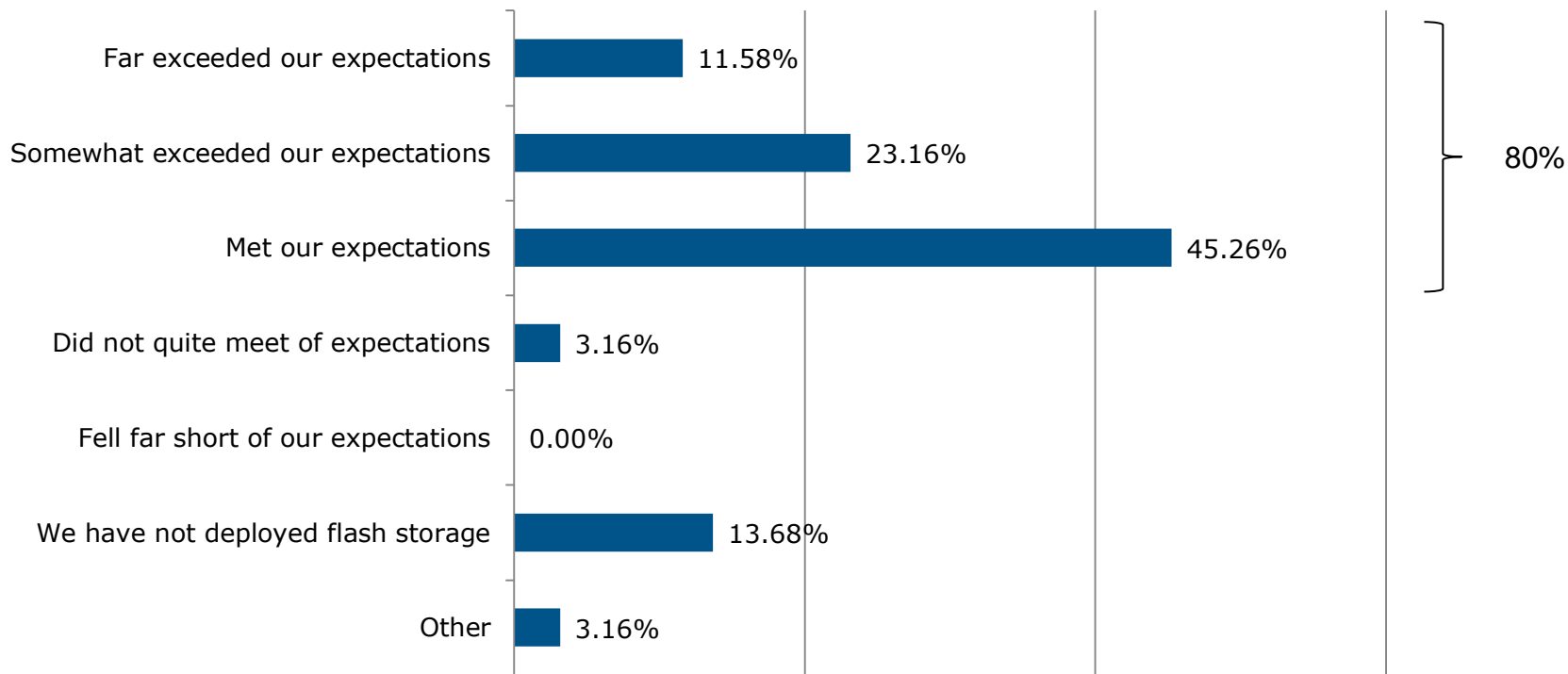
The purchase price of the enterprise flash storage we deployed was:



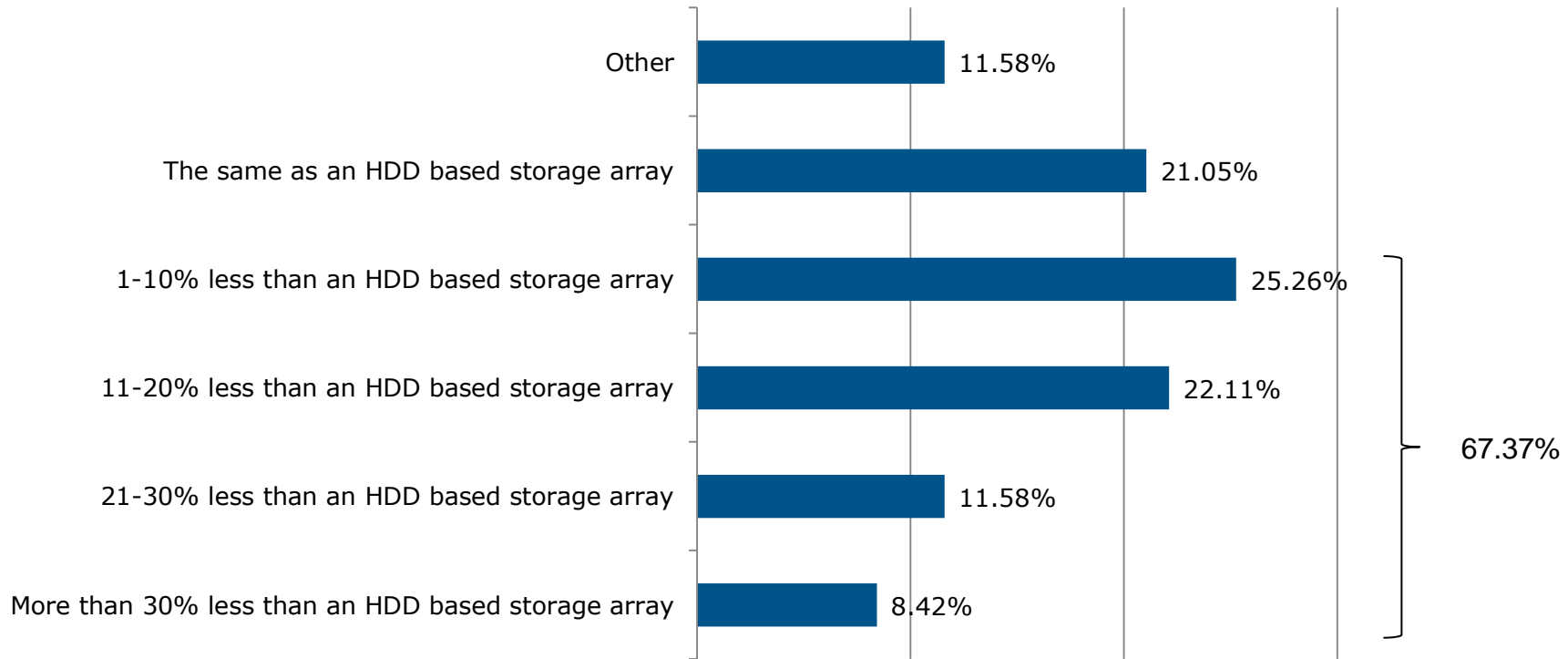
The reliability of the enterprise flash storage we deployed has:



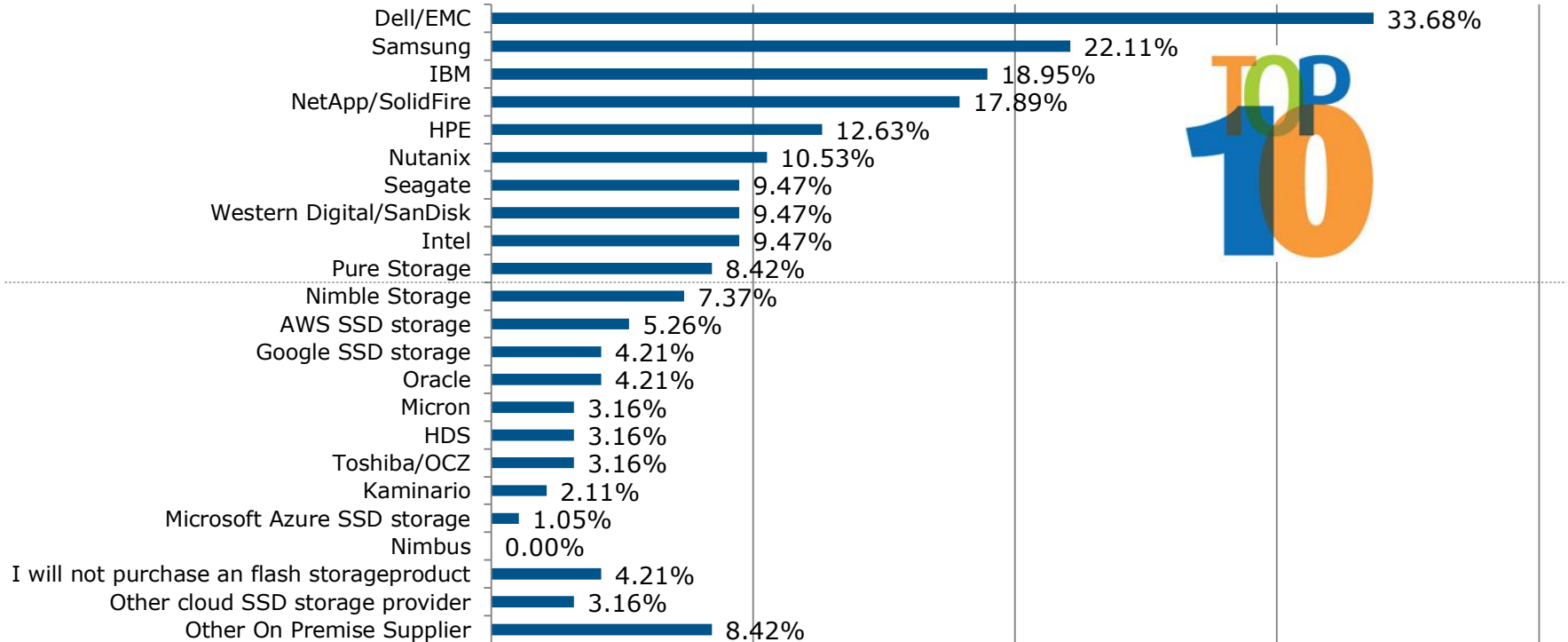
The performance of the enterprise flash storage we deployed has:



By eliminating HDD crashes, our experience is the operating costs of SSD based storage arrays to be:



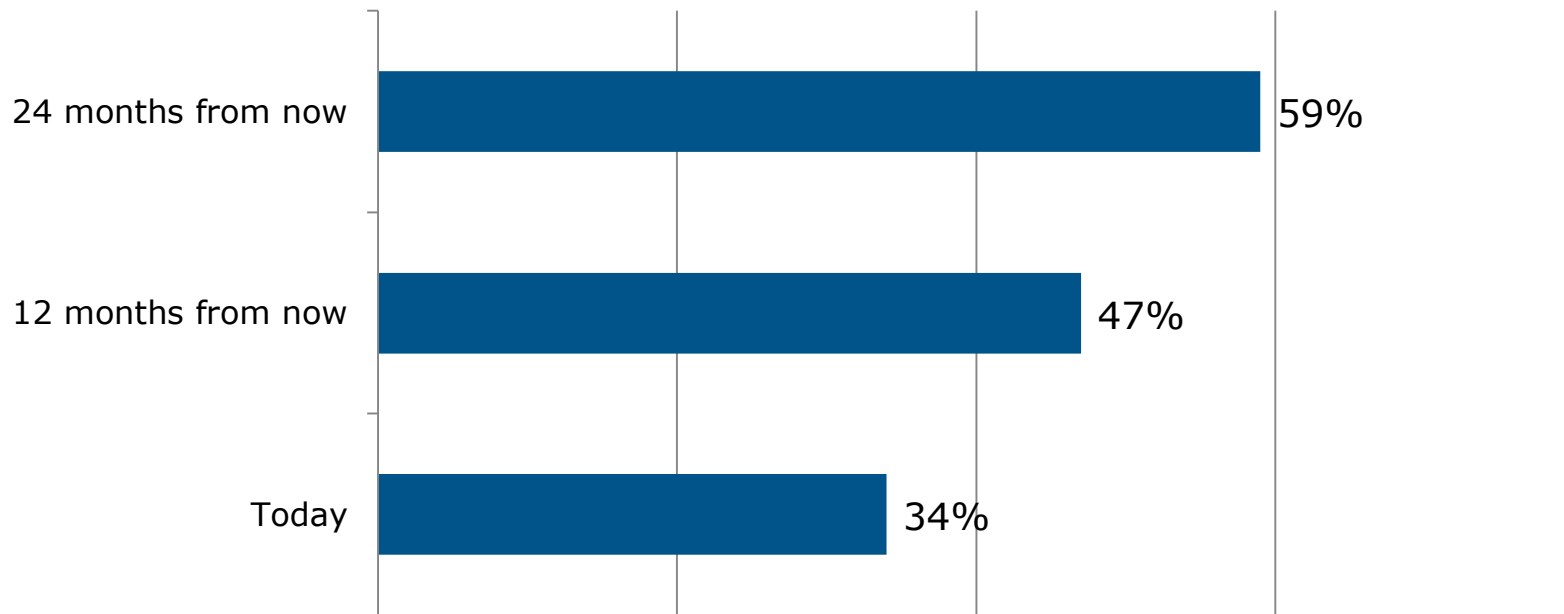
I will purchase the following brands of flash storage in the next 12 months



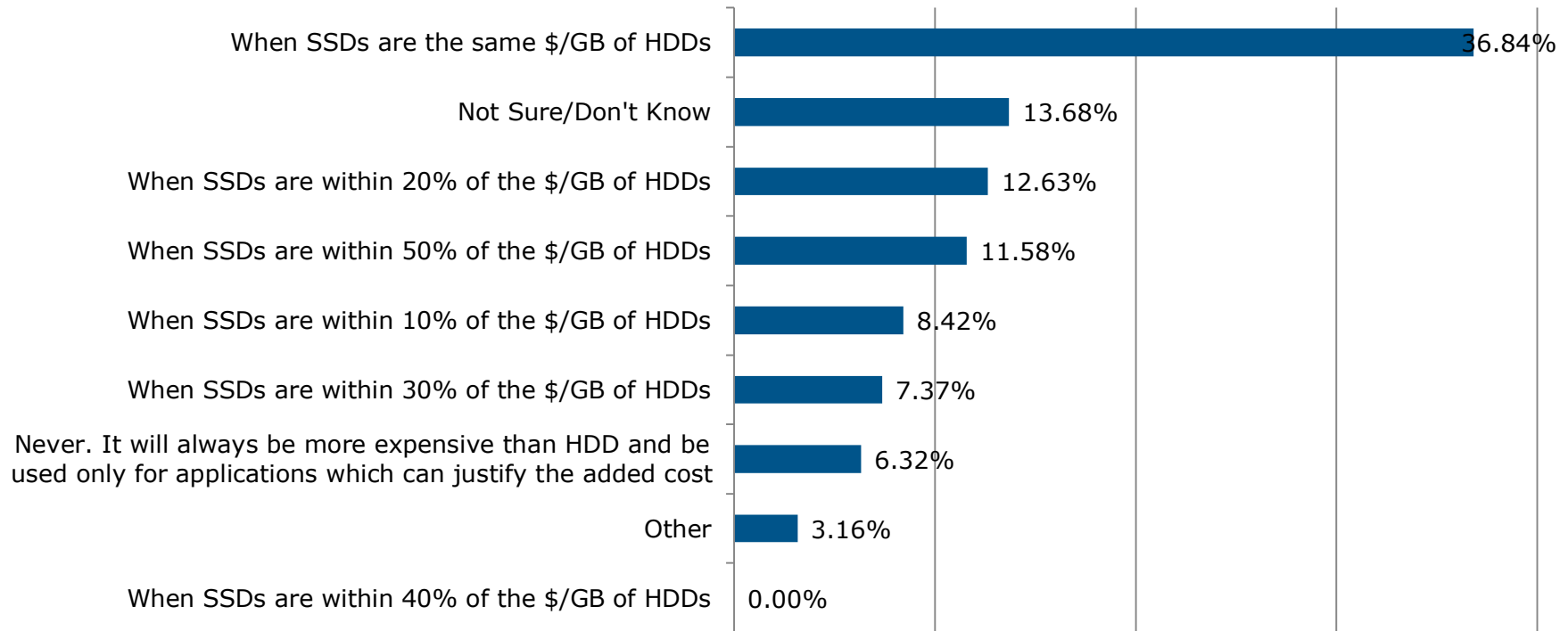
The Future



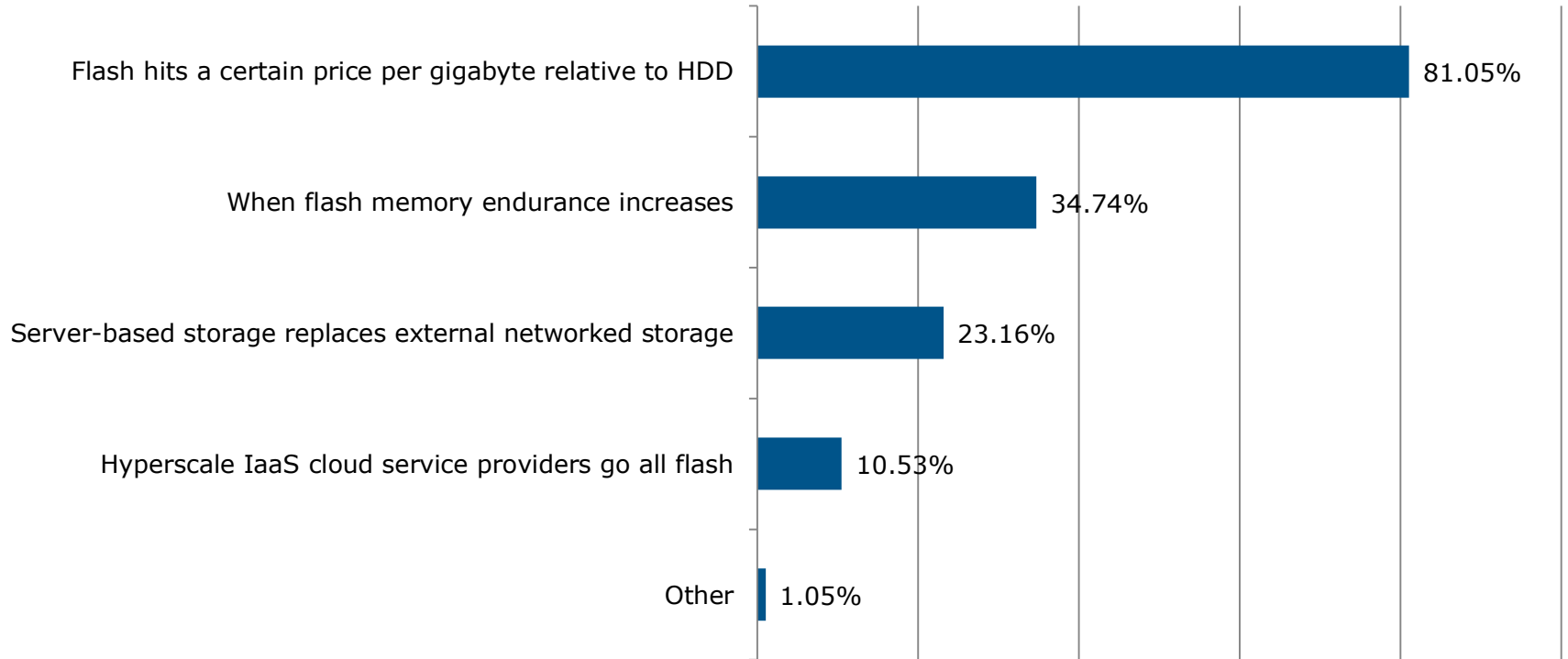
Percent of servers in my environment accessing some type of SSD storage



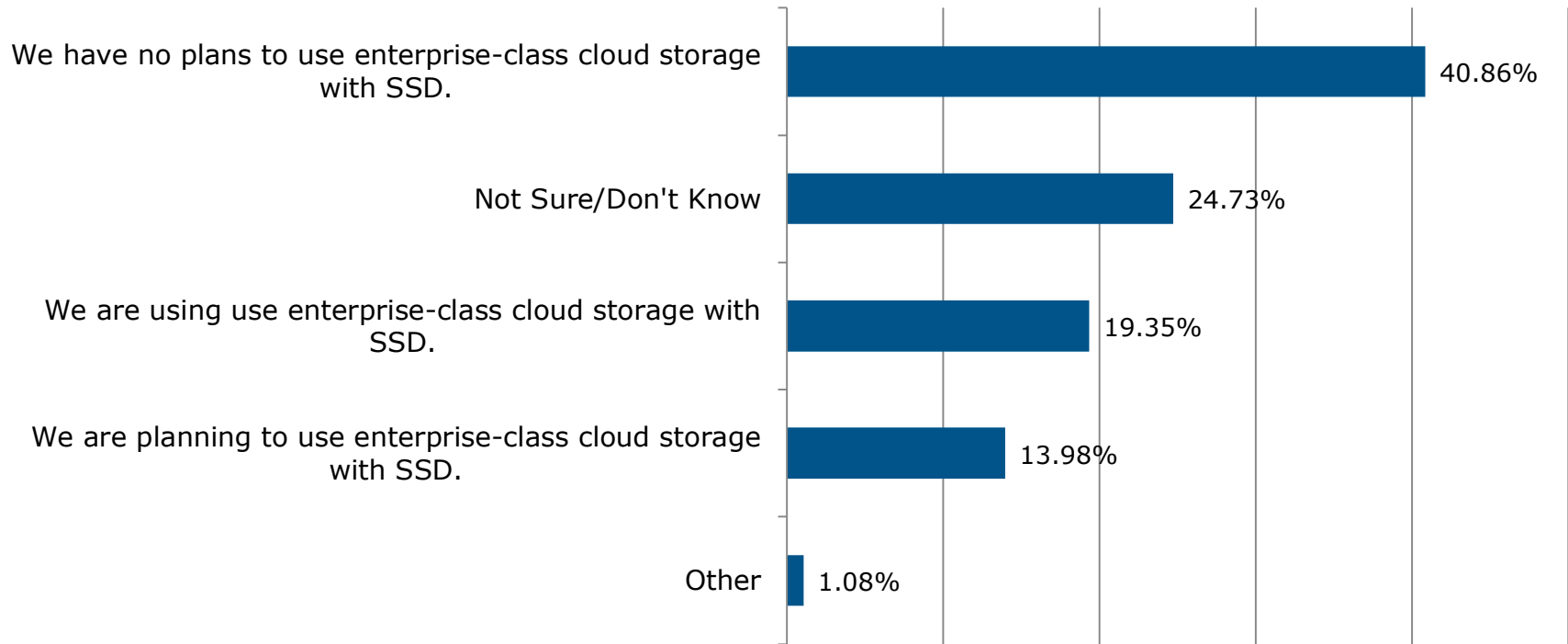
My organization would completely replace HDDs and deploy flash as primary storage:



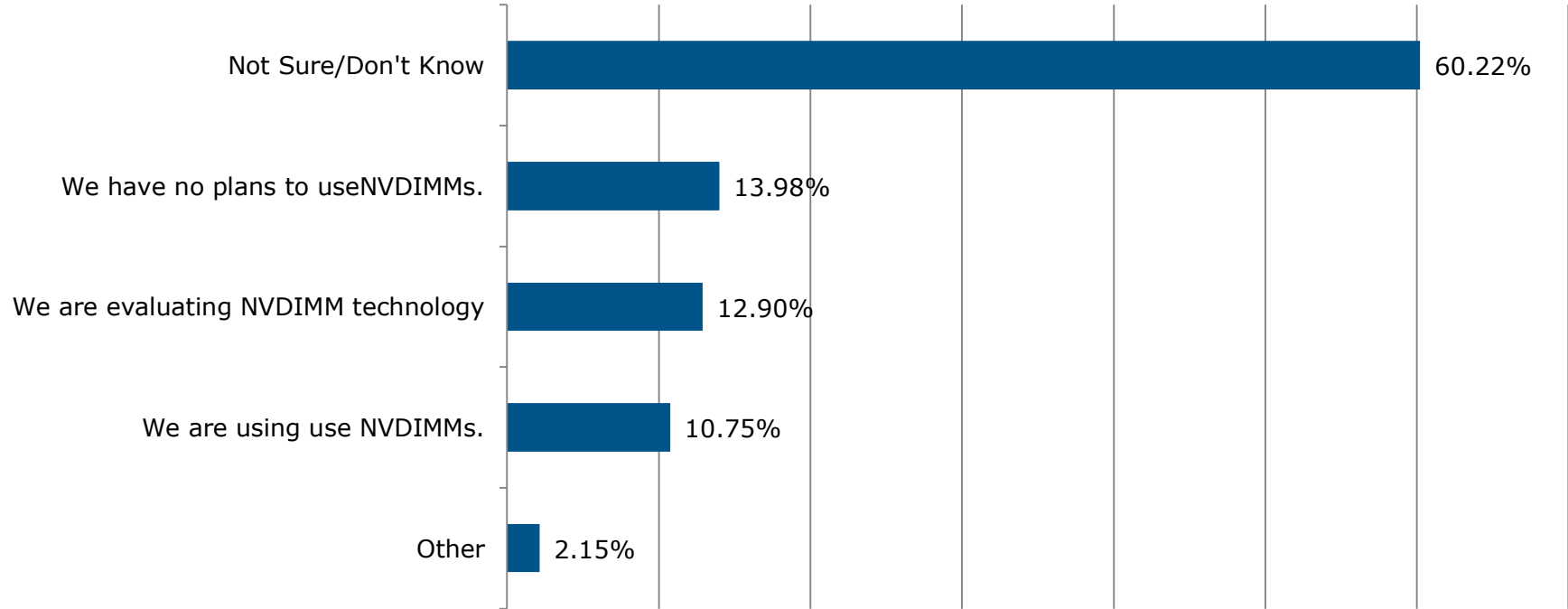
All Flash Data Centers will happen when:



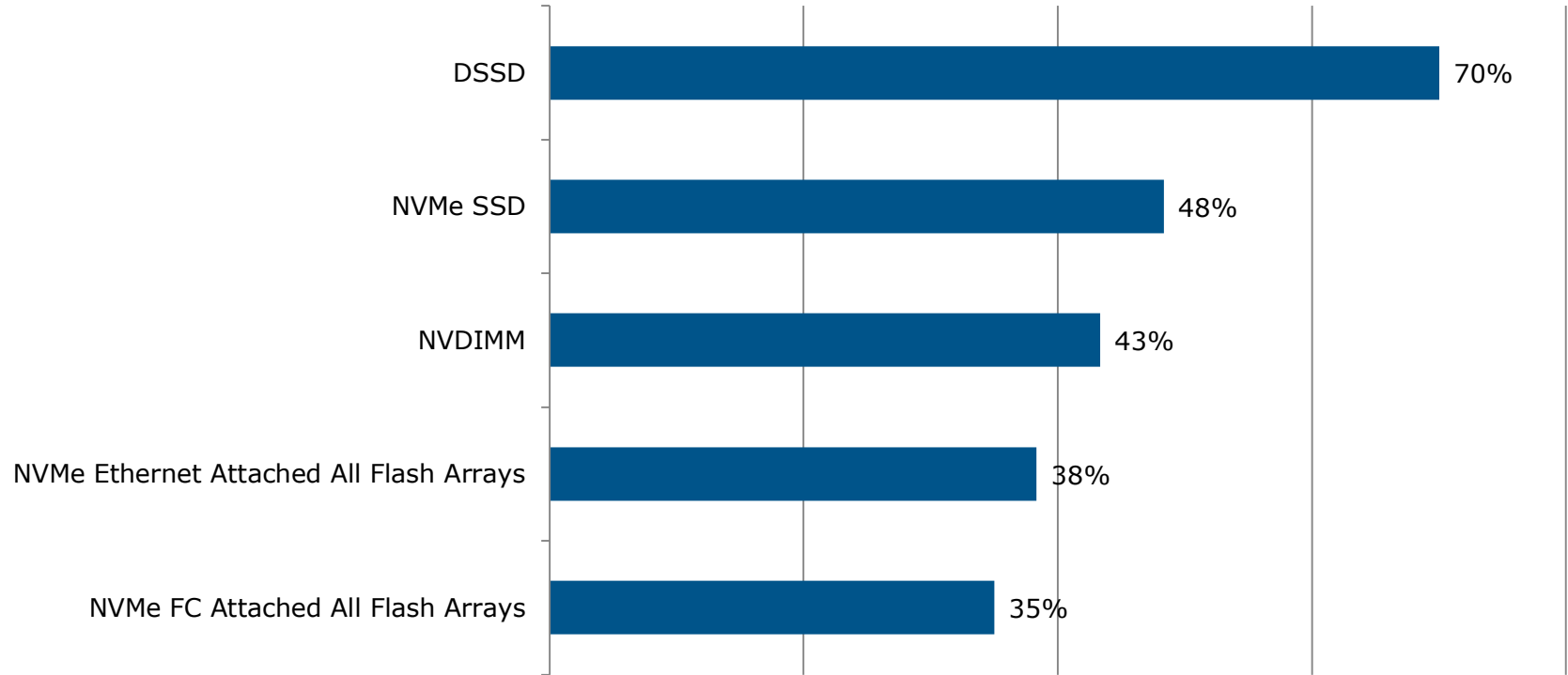
My organization's strategy for enterprise-class SSD-backed cloud storage is best described as:



My organization's strategy for NVDIMM storage is best described as:



I have not heard of it:



My Opinion

Because opinions are like

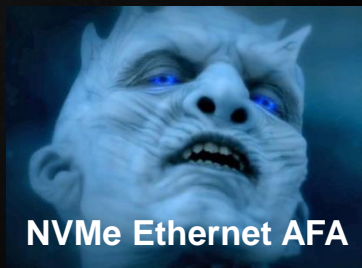
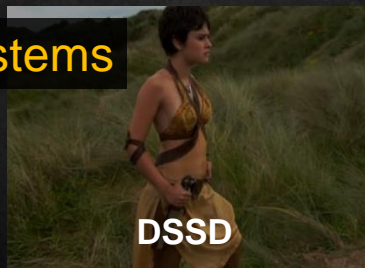


• Everyone has one.

Heirs to the Storage Kingdom



Architecture



Systems



Components



All Storage will speak NVMe

Off Premise Storage-as-a-Service



On Premise Storage-as-a-Service



On Premise-as-a-Service

\$1.50

Per Mile



\$0 DUE AT SIGNING

Pay only for the miles you drive

\$42,825 MSRP, 7-speed automatic transmission, all season tires, daytime running lamps, rains sensor, glass sunroof, power seat and steering column with memory iPod media interface, Sirius satellite radio, Harmon Kardon sound system, heated front seats, 17" spoke wheels, AMG sport line package



Thank You

Frank.berry@itbrandpulse.com

