Flash Storage Outlook (Storage Wars)

… in the enterprise data center. Based on TheInfoPro Storage Wave 19.

Marco Coulter – Vice President, 451 Research

Wed Aug 12 3:10pm Session 203-D

Agenda

introducing the data

the storage cornucopia

new storage for a new IT

flash in the enterprise

About the Speaker

Marco Coulter, a Vice-President at 451 Research where he manages the storage Voice of the Enterprise practice. His expertise include storage, internal and external cloud, data center operations, software/hardware purchasing, software development, marketing, and product programs.

Before joining 451 Research, he spent 12 twelve years in an IT department advisory role and as Vice-President of several divisions. He helped redesign the IT facility to a virtually-provisioned, automated, tiered model. His product line experience includes spurring revenue growth, directing remote teams, instituting project management methodology, improving product development delivery, optimizing customer support services, and defining business strategy to offer a complete end-to-end storage management platform. He presents at many conferences (including CA World and HP World) and executive events, and contributed quotes and research to articles in CIO Insight, ComputerWorld, Network Computing, and other media outlets. His years of experience on both the vendor and customer side of IT gives him a unique perspective on data center operations, software/hardware purchasing, software development, and storage system management.

@marcocoulter

marco@451research.com

Read other research from Marco Coulter:
https://451research.com/search?author=Marco+Coulter

Upcoming Events:
Hosting Cloud + Transformation Summit
Sep 15-17, 2015 | Bellagio Resort & Hotel, Las Vegas

The premier forum for executives in the hosting, cloud computing, datacenter and Internet infrastructure sectors.

Sessions include:

- From Colo to Cloud: Moving Up The Stack to Managed and Cloud Services
- Voice of the Enterprise: Workloads, Security, Datacenter Utilization, OpenStack and Managed Services Driving Off-Premises and Private Cloud Growth
- IoT Enters the Cloud: How to Prepare for the Invasion of Things

Where Does the Data Come From?

15,000 mid/senior-level IT buyers and IT executives of enterprise technologies.

Members have joined our internal research networks for information and research exchange. They receive:

- 451 reports
- Curated newsletters
- Survey results

All of the members are vetted and curated for expertise and job role. Many applications are rejected because they are not the right fit.

Our network companies represent **$23bn** in buying power.

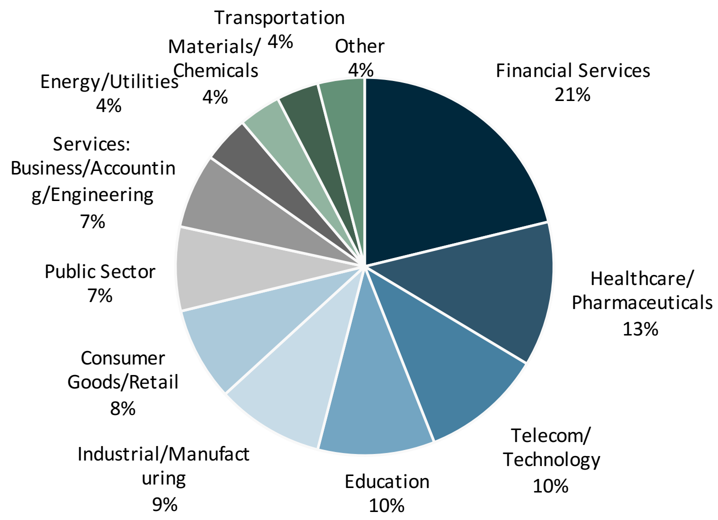
Areas of Member Involvement
Cloud Computing
IT Security
IT Services
Storage
Software
Converged Infrastructure
Datacenters
Networking
Servers
Big Data
Virtualization
Mobile

Sampling of Our Membership

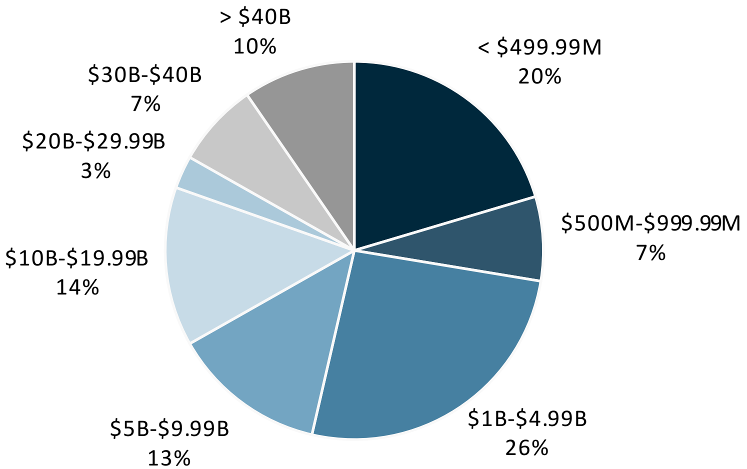
Chief Information Officer
Chief Information Security Officer
Chief Technology Officer
Data Center Manager
Director of Enterprise Mobility
Director of Information Security
Director, Business Intelligence
Director, IT - Global Strategy
Global Information Security Program Director
Global Manager, Enterprise Architecture & Delivery
Infrastructure Integration Officer
IT Senior Manager, Performance & Reporting Excellence
Mgr. Global IT Facilities
Senior Director Enterprise Architecture
Sr. Manager, IT Vendor Management
SVP Information Technology/CIO
SVP, Global Head of Capacity Planning
VP, IT Operations
VP. IT Security

Demographics

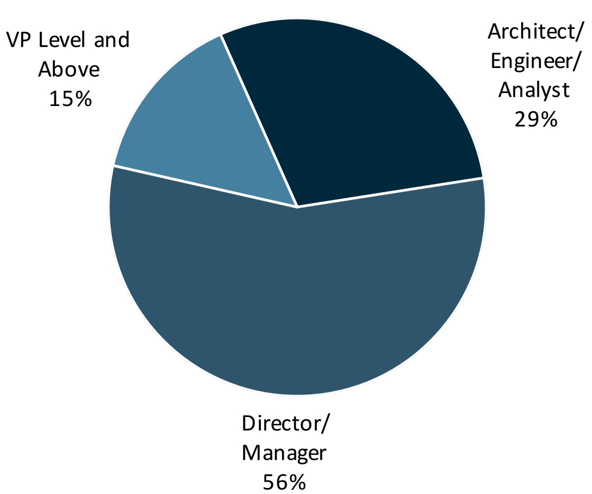
Industry Verticals



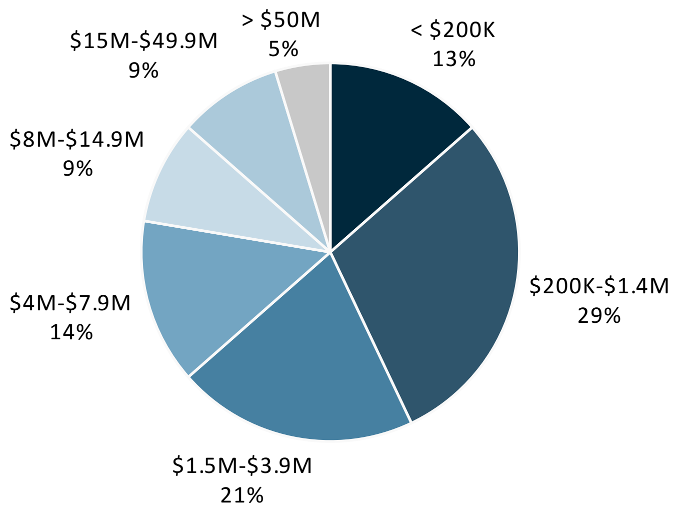
Enterprise Revenue



Respondent's Title



Storage Budget Level



the storage cornucopia

'Too many options to choose from – vendors, solutions, products within a particular vendor.' – MSE – Telecom/Technology

’[Pain Point] Pace of change within storage technology industry' – MSE – Public Sector

'Where to invest? Converged vs. conventional, separated storage, vs. distributed virtual solutions' – LE – Telecom/Technology

the storage cornucopia

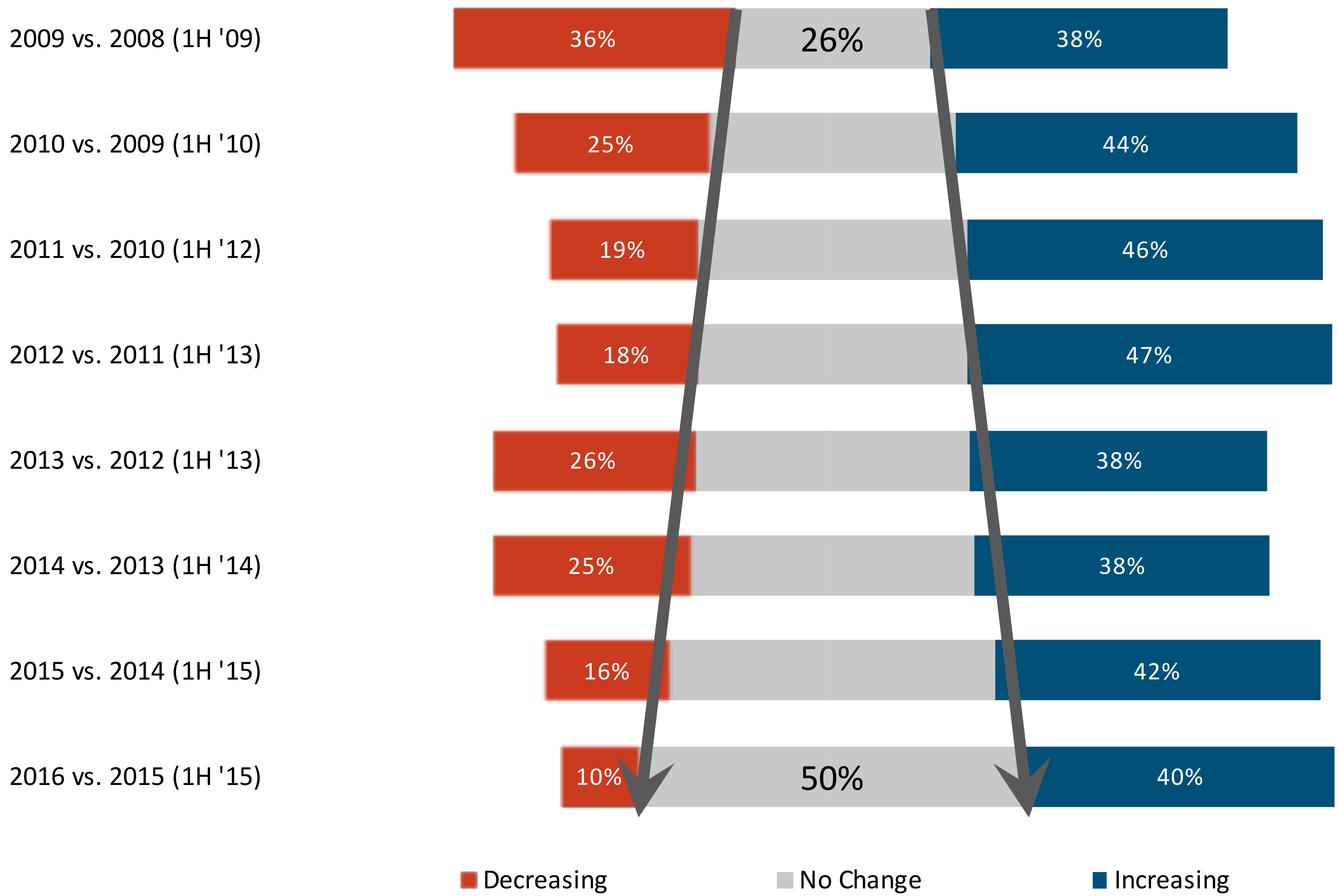
'Complexity of our current environment because we've got one of everything.' – LE – Consumer Goods/Retail

'So much going on within storage – server SANs, different kind of flash arrays, choosing the right solution moving forward. ... It's actually quite difficult to figure out. Things that look most interesting – new vendors, haven't been in the market for that long. Seeing whether, ... whether their solutions are viable on a long-term basis, I'm not convinced of it yet. Second thing is whether these kind of arrays are completely outdated and, because we're running VMware, I should be looking at an open source thing, such as CEPH' – MSE – Public Sector

’Too many storage vendors. There is no clear path for any technology' – LE – Healthcare/Pharmaceuticals

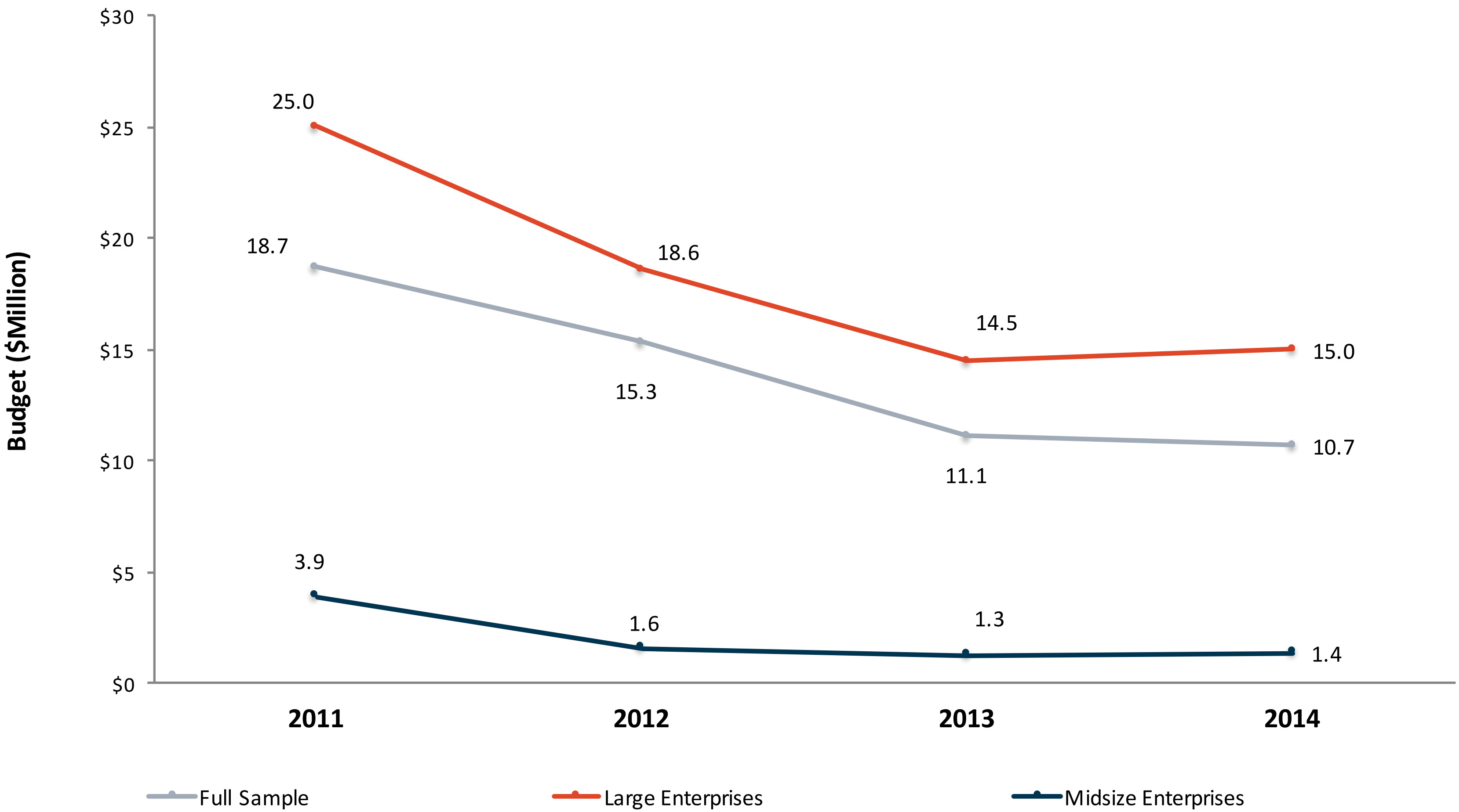
Storage Budget Trends: 2009-2016

The actual, unchanging budget trend now in sixth year



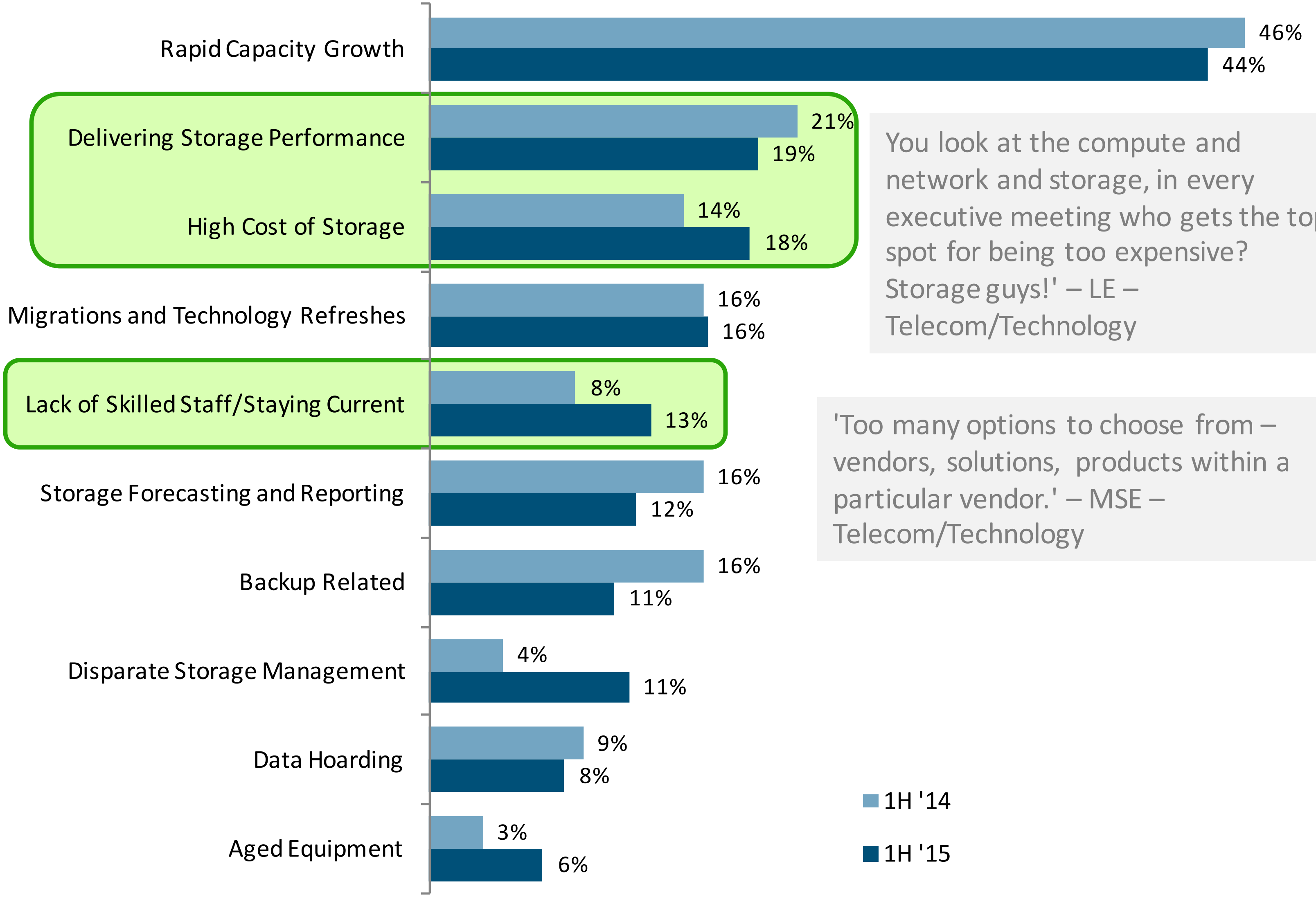
n=194-238

Mean Storage Budget: 2010-2014 by Size of Enterprise
The downhill budget run is slowing



Full Sample: 2010, n=201; 2011, n=194; 2012, n=196; 2013, n=195; 2014, n=170. Large Enterprise Sample: 2010, n=128; 2011, n=136; 2012, n=158; 2013, n=146; 2014, n=116. Midsize Enterprise Sample: 2010, n=73; 2011, n=58; 2012, n=38; 2013, n=49; 2014, n=54.

Storage Pain Points – Time Series of Top Categories

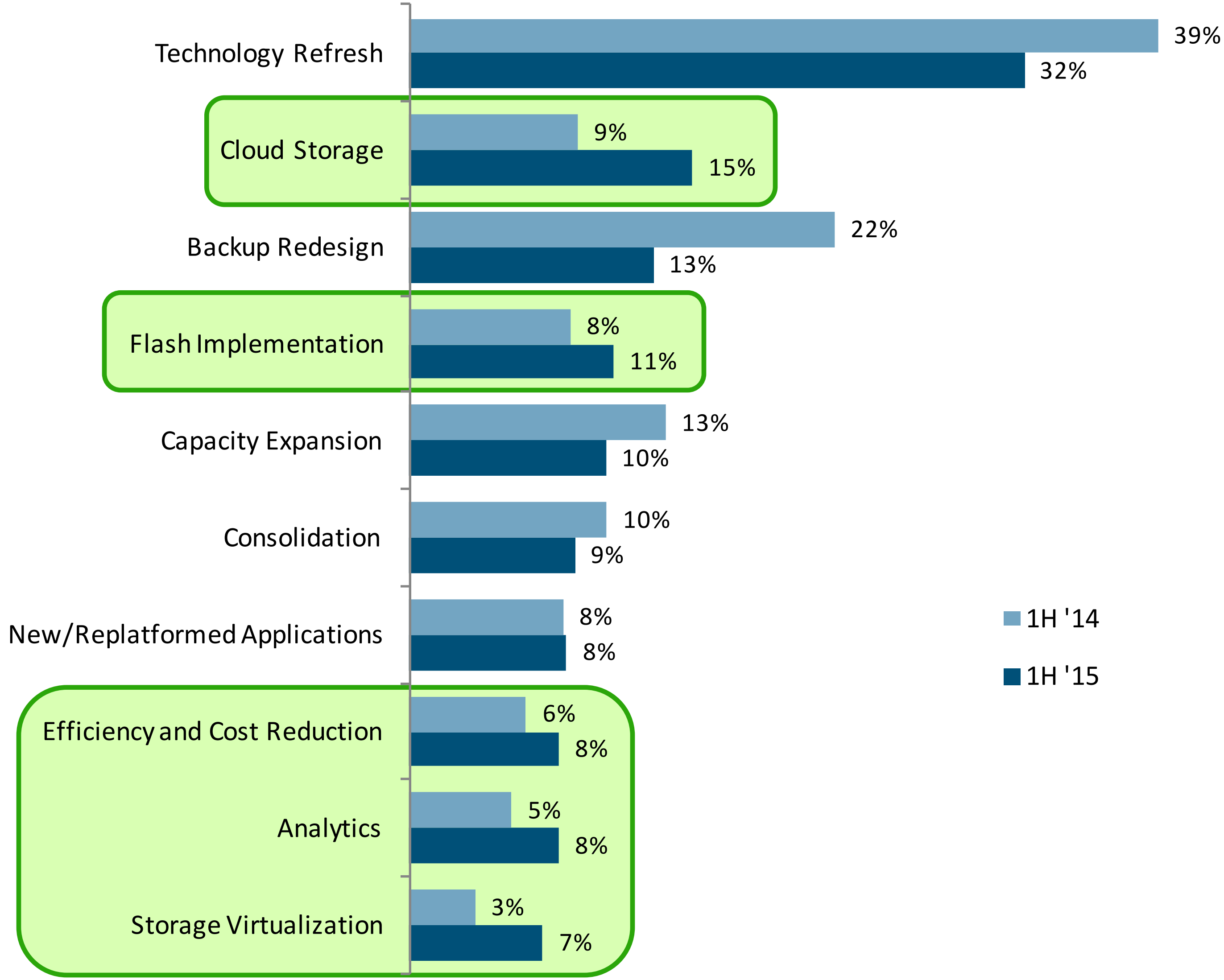


You look at the compute and network and storage, in every executive meeting who gets the top spot for being too expensive? Storage guys!' – LE – Telecom/Technology

'Too many options to choose from – vendors, solutions, products within a particular vendor.' – MSE – Telecom/Technology

Q. What are your top storage-related pain points? List up to three. 1H '14, n=264; 1H '15, n=247.

Storage Projects – Time Series of Top Categories

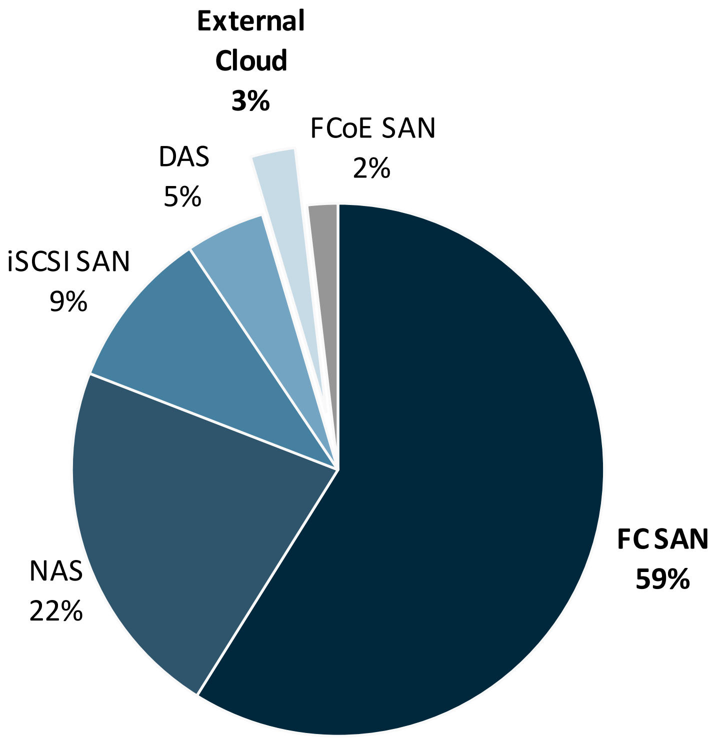


Q. What are your organization's top storage-related projects in the next 12 months? List up to three. 1H '14, n=262; 1H '15, n=244.

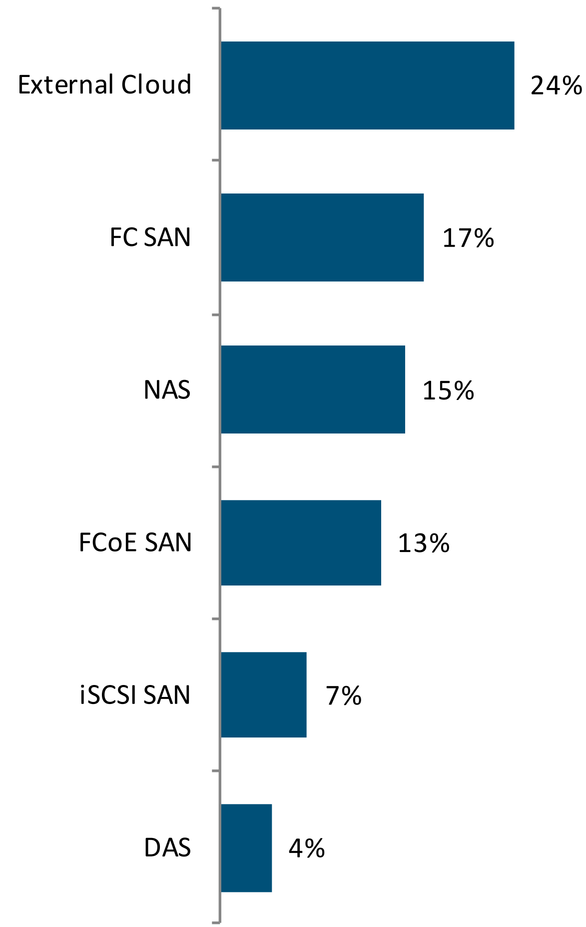
Source: Storage – Wave 19 |

Capacity by Connectivity Type

2014 Disk Storage Purchased



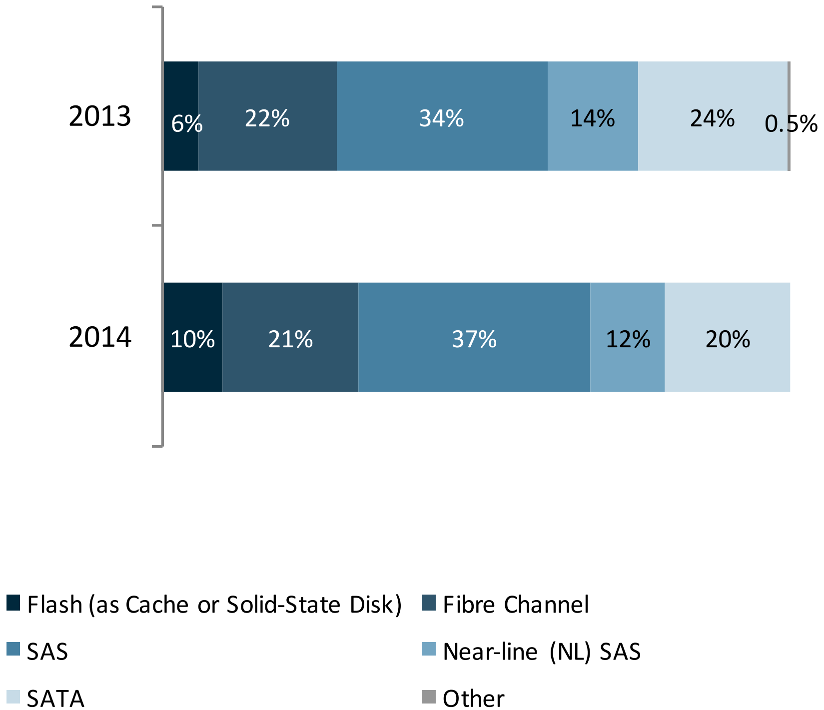
2015 Growth Rate



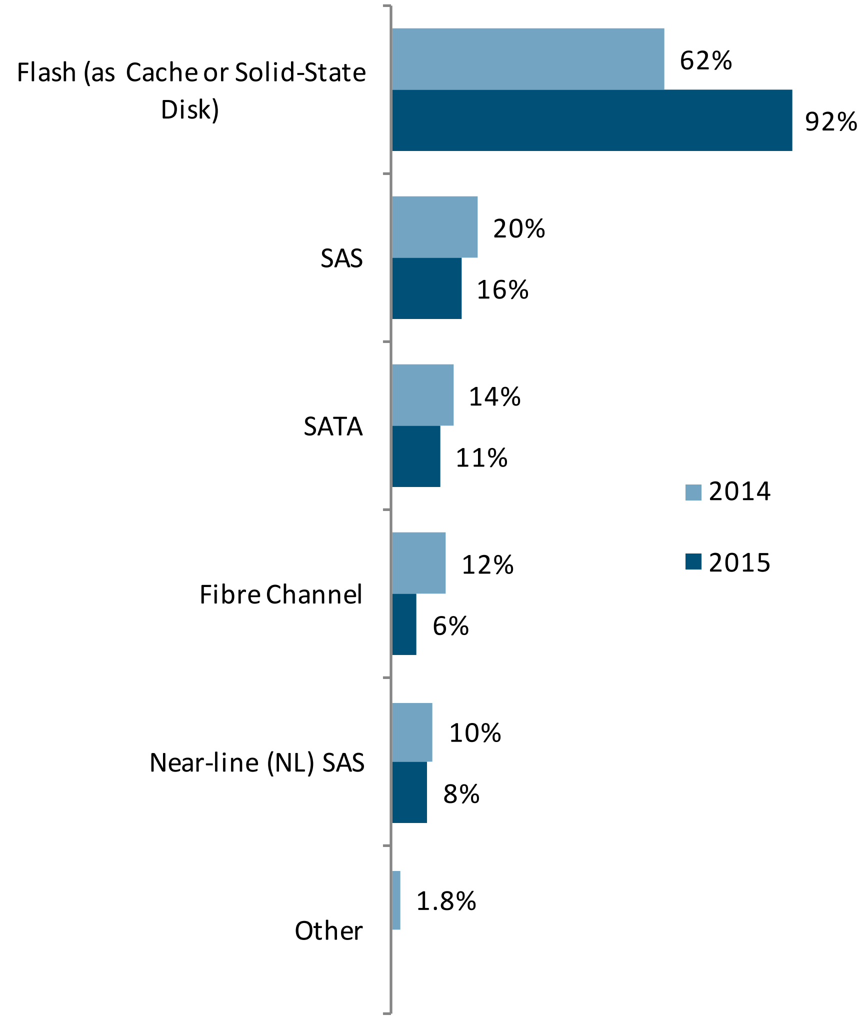
Left Chart: Q. Considering disk storage purchased in 2014, what percentage will be on the following storage connectivity types? n=214. Right Chart: Q. What is your expected growth rate percentage of capacity for each of the following storage connectivity types for 2015? n=191.

Capacity by Drive Type – Time Series

Disk Storage Purchased

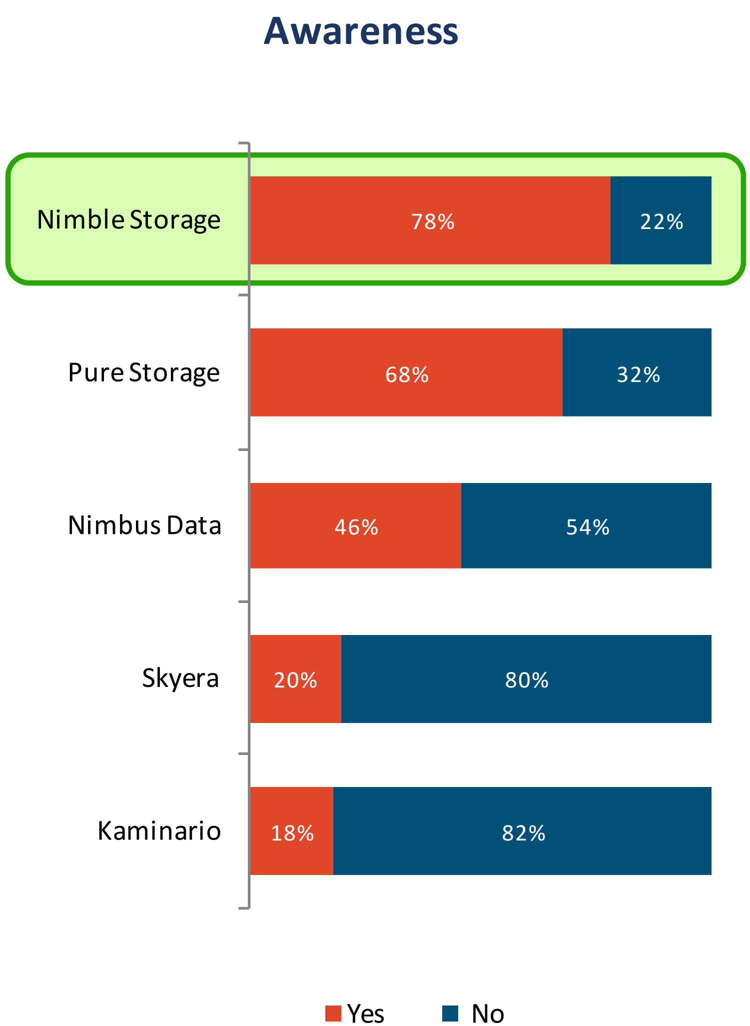


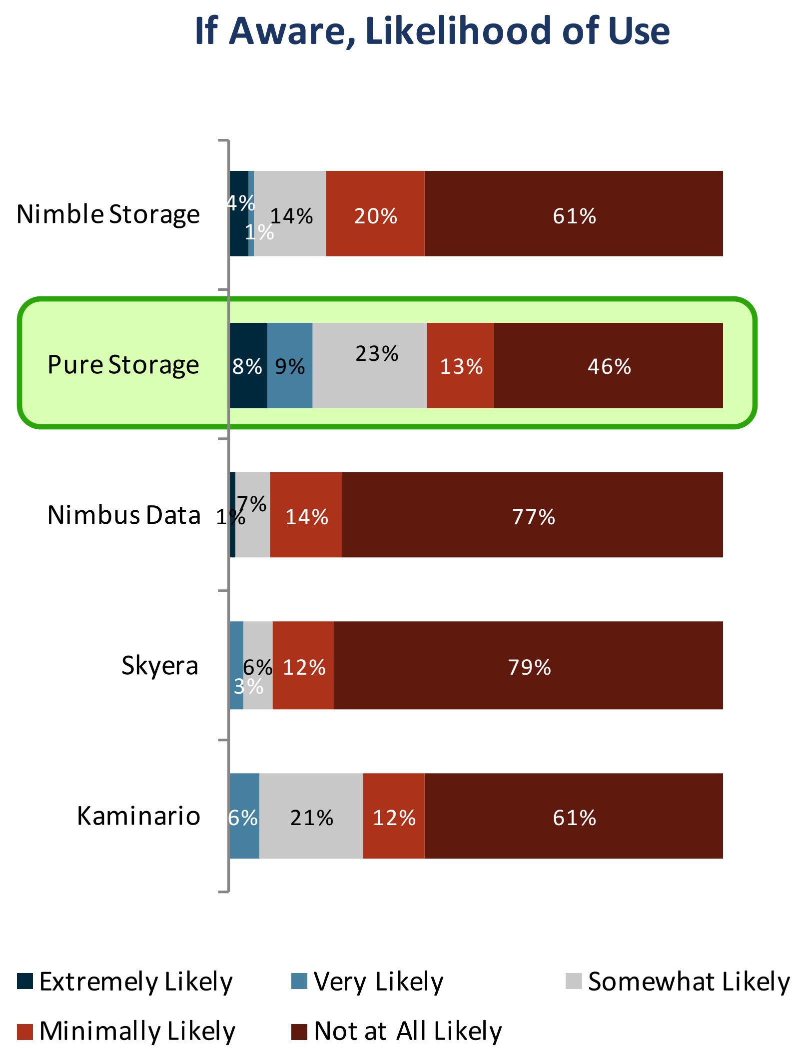
Growth Rate



Left Chart: Q. Only considering new disk storage purchased in 2014, what percentage will use the following storage drive types? 2013, n=223; 2014, n=209. Right Chart: Q. What is your expected growth rate percentage of capacity for each of the following storage drive types for 2015? 2014, n=193; 2015, n=179.

Emerging Vendor Awareness: Flash





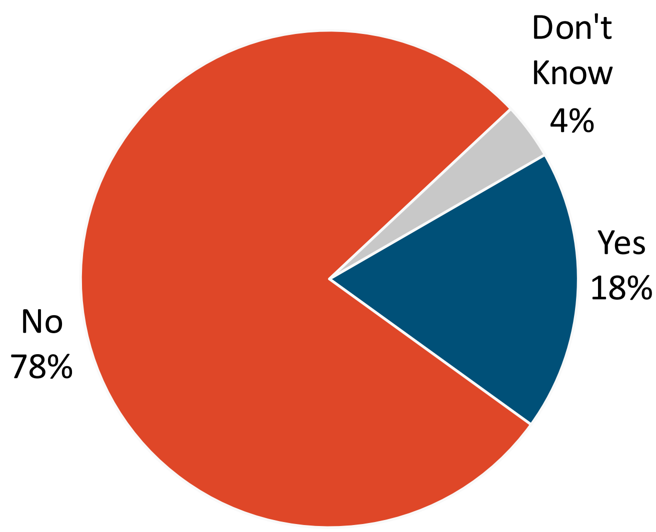
Left Chart: Q. Are you aware of the following flash, cloud and data protection companies or products? Select all that apply. Nimble Storage, n=190; Pure Storage, n=190; Nimbus Data, n=189; Skyera, n=188; Kaminario, n=186.
Right Chart: Q. If yes, how likely are you to use that company or product in the next two years? Please use a 1-5 scale where '1' is not at all likely and '5' is extremely likely. Nimble Storage, n=147; Pure Storage, n=127; Nimbus Data, n=83; Skyera, n=33; Kaminario, n=33.

new storage for a new IT

redefining storage architectures

Wholesale Architecture Change in Coming Year
One in five planning wholesale change in architecture

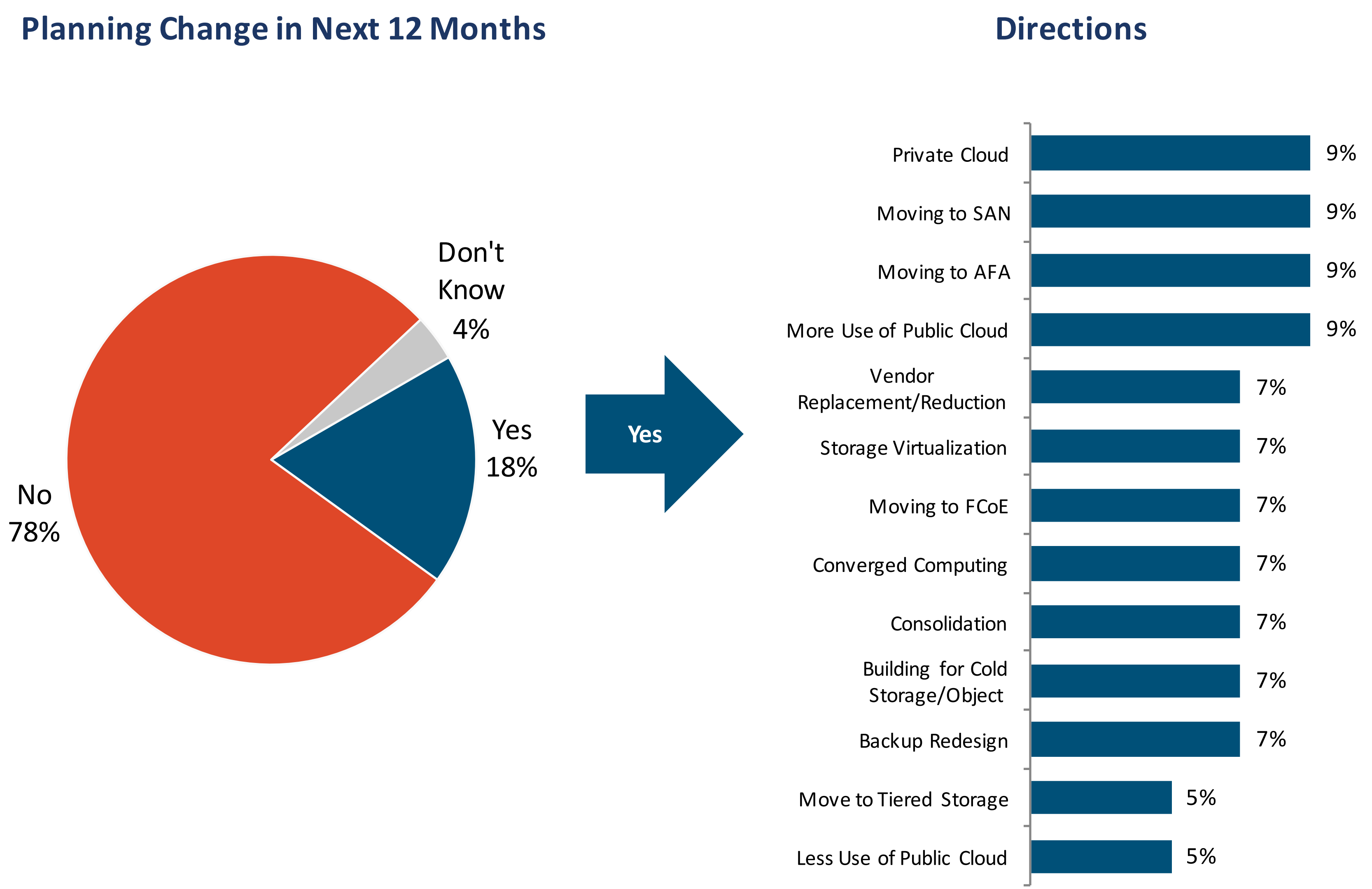
Planning Change in Next 12 Months



'We're trying to do it all at once. Trying to catch up. Normally you try to do it in stages. Datacenter, then buy or migrate software, then telephony, computing, business transformation.' – MSE – Other

Left Chart: Q. Are you planning a wholesale change in your storage architecture in the next 12 months? n=246. Right Chart: Q. If yes, please describe. n=44.

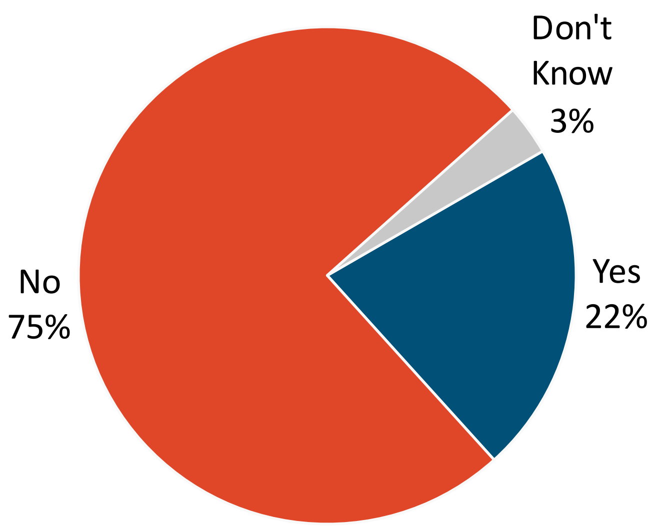
Wholesale Change in Coming Year – Directions
No specific target architecture



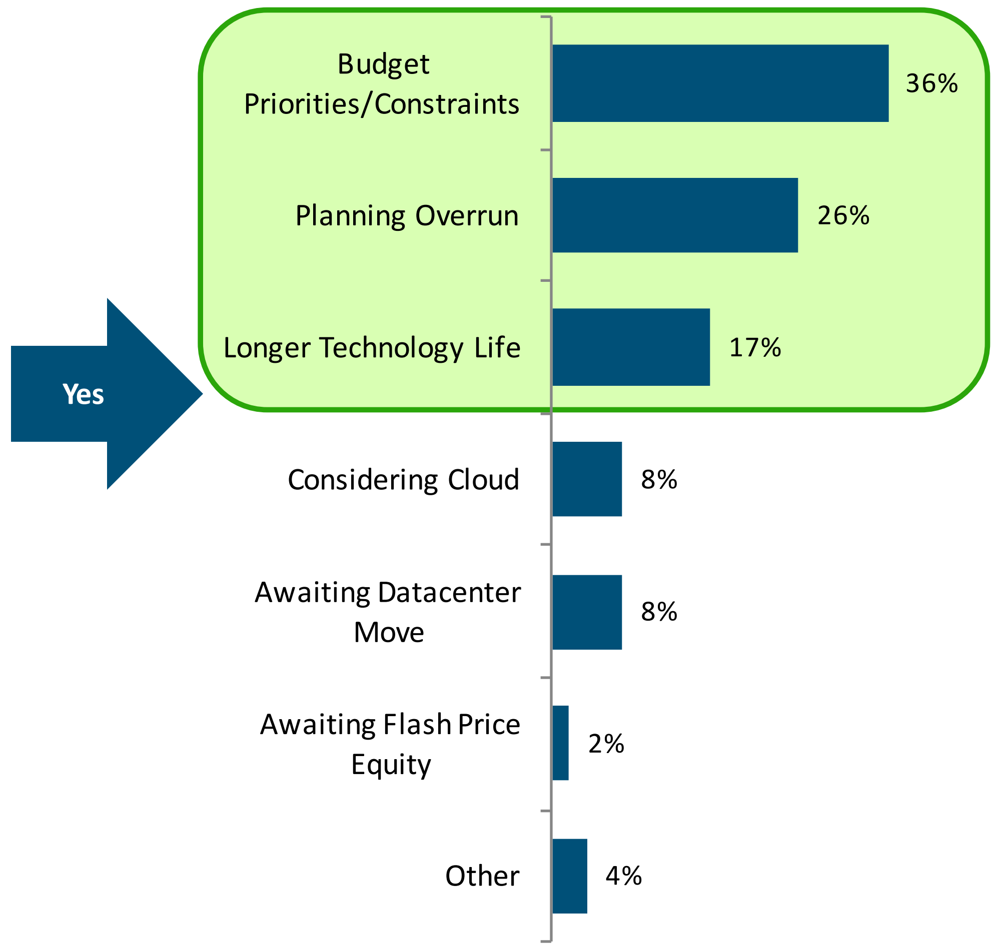
Left Chart: Q. Are you planning a wholesale change in your storage architecture in the next 12 months? n=246. Right Chart: Q. If yes, please describe. n=44.

Storage Refreshes are Being Delayed

Delaying Storage Refresh

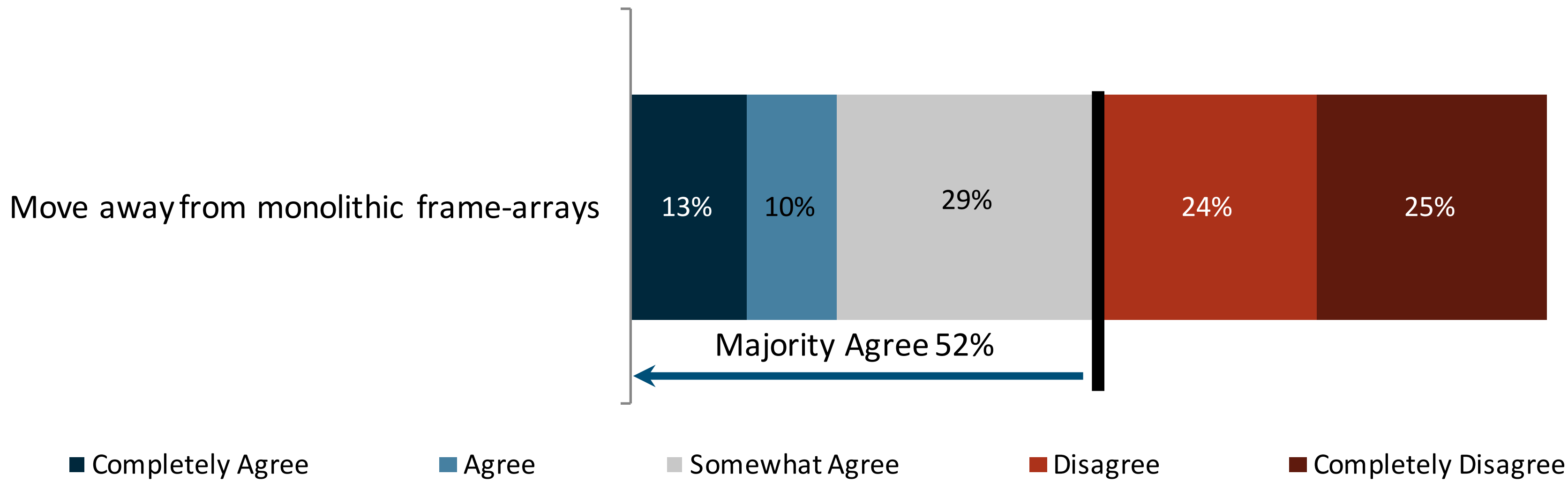


Reasons for Delay



Left Chart: Q. Are you delaying storage refreshes compared to your prior refresh cycle? n=245. Right Chart: Q. If yes, what is causing this delay? n=53.

Strategy Importance of Monolithic Arrays
Enterprises are moving away from monoliths



'We refresh 6-7 years. We have changed from the monolithic storage arrays to more module arrays to split out workloads by tier levels. We now have 4 sets of array.' – LE – Energy/Utilities

'We are moving more to the cloud and all our critical systems are virtualized.' – LE – Consumer Goods/Retail

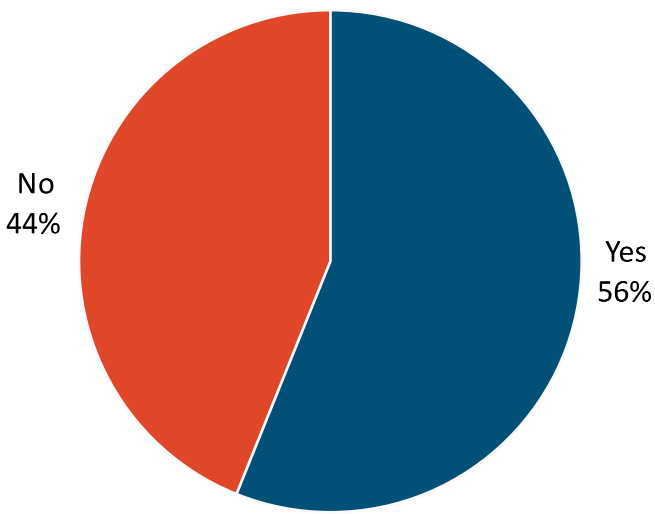
'Introducing GlusterFS is different–it enables collaboration across cities using the same array.' – LE – Education

'We are moving towards an all-flash environment. We are a bit ahead of the curve with this. We want to get off all spinning disk.' – LE – Financial Services

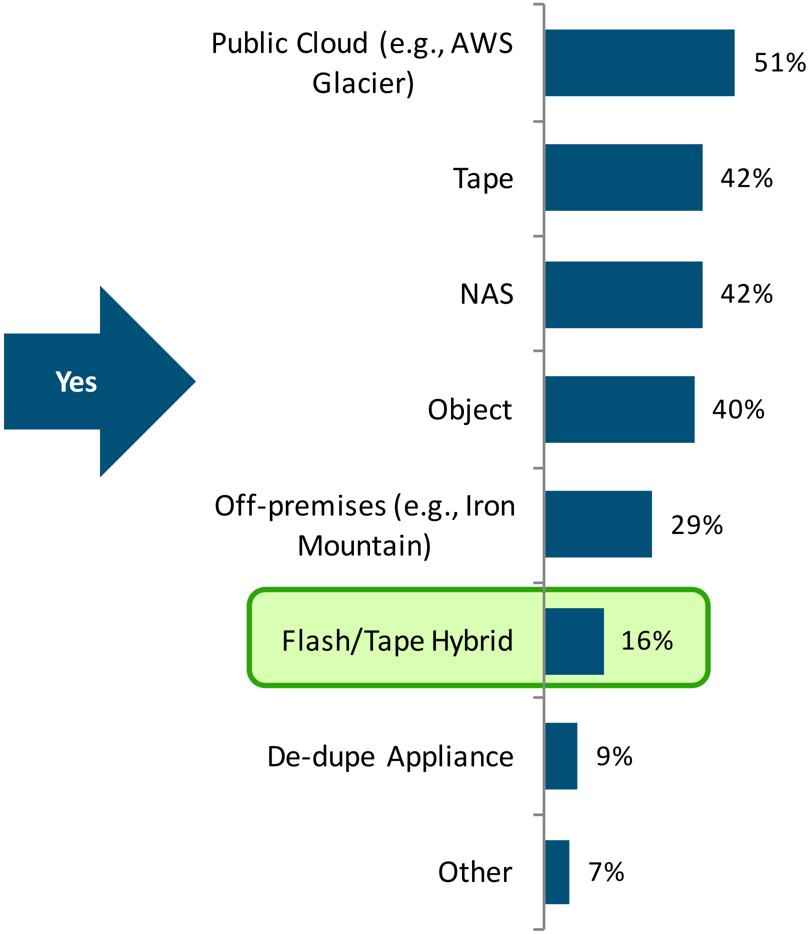
Q. To what extent do you agree with the following statements? Please use a 1-5 scale where '1' is completely disagree and '5' is completely agree. n=80 to 83.

Search for New Architectures for Storing Cold Data

New Ways of Storing Cold Data



Options

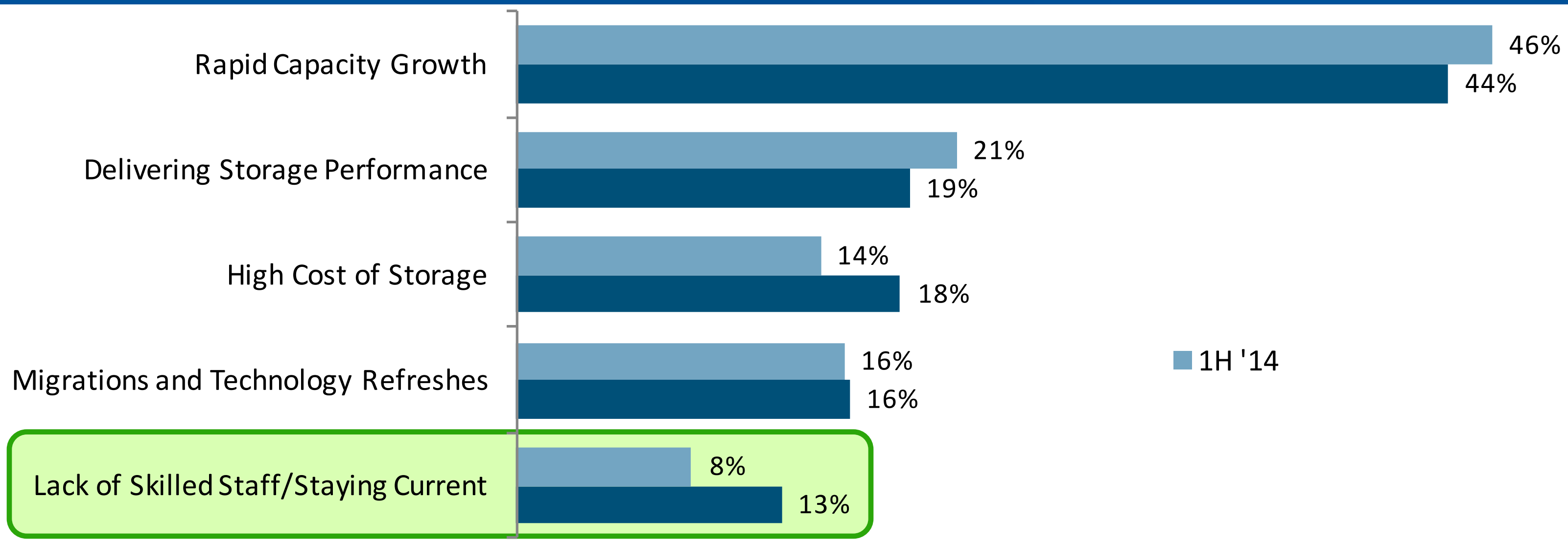


Left Chart: Q. Are you looking for new ways of storing cold data? n=82. Right Chart: Q. If yes, please select from the following list as many options as you would actively consider: n=45.

Source: Storage – Wave 19 | www.451research.com

reimagining the storage administrator

Storage Pain Points – Time Series of Top Categories



’Too many storage vendors. There is no clear path for any technology' – LE – Healthcare/Pharmaceuticals

'Complexity of our current environment because we've got one of everything.' – LE – Consumer Goods/Retail

’Supporting all the platforms we have today' – LE – Financial Services

'Lack of time/resources to deploy the newest toys.' – MSE – Services: Business/Accounting/Engineering

'Too many options to choose from – vendors, solutions, products within a particular vendor.' – MSE – Telecom/Technology

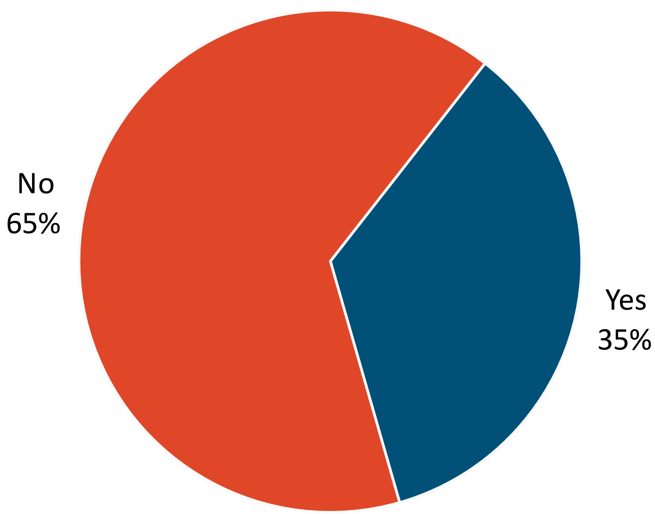
'Where to invest? Converged vs. conventional, separated storage, vs. distributed virtual solutions' – LE – Telecom/Technology

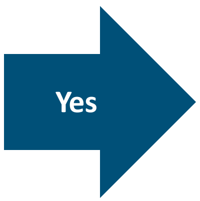
'Pace of change within storage technology industry' – MSE – Public Sector

Q. What are your top storage-related pain points? List up to three. 1H ’14, n=264; 1H ’15, n=247.

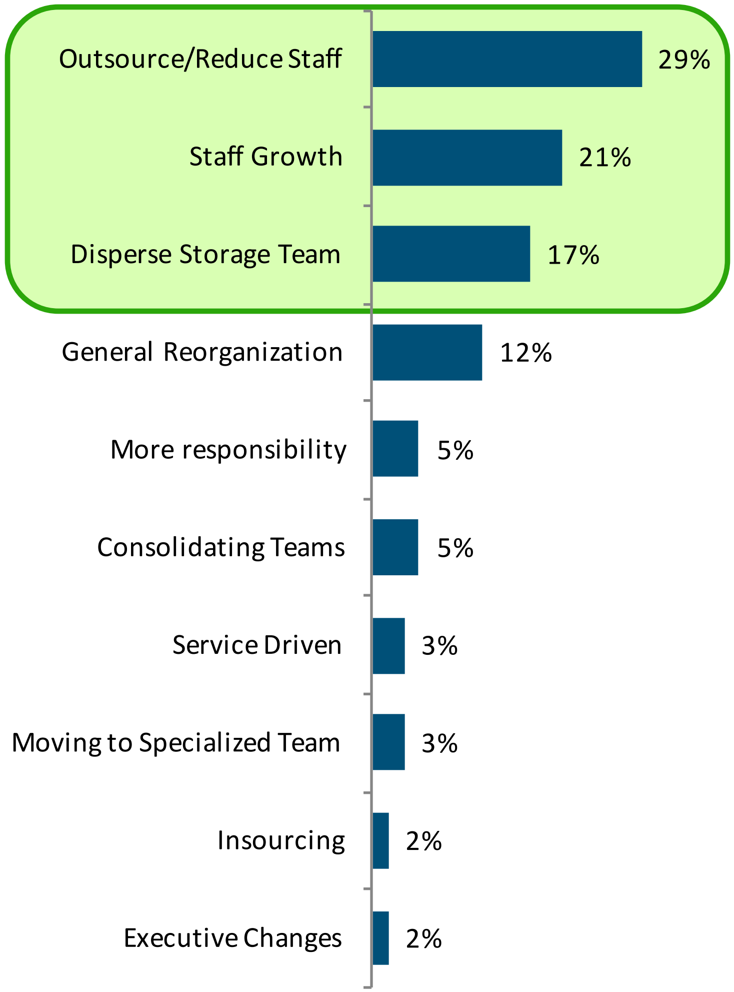
Recent Storage Team Structure Changes

Change of Storage Team Structure





Description of Storage Team Structure Change



Left Chart: Q, Has the storage team structures changed significantly in the past 12 months? n=237; Right Chart: Q. Please describe. n=58.

Storage Capacity Managed per Full-Time Employee (FTE)

Primary Capacity per Person (TB)					
Total Primary Capacity (TB)	**1H '11**	**1H '12**	**1H '13***	**1H '14***	**1H '15**
1-200	50	52	55	63	107
201-1,000	200	140	230	255	400
1,001-10,000	467	868	676	757	1,225
> 10,000	1,133	1,621	2,067	1,169	3,126
Median	***210***	***215***	***260***	***285***	***500***

'We started the concept of storage virtualization a long time ago. The 1.5 FTEs managing storage has been pretty constant over the last 14 years.' – LE – Public Sector

'Absolutely. We released 20% of our staff about a month and a half ago.' – LE – Consumer Goods/Retail

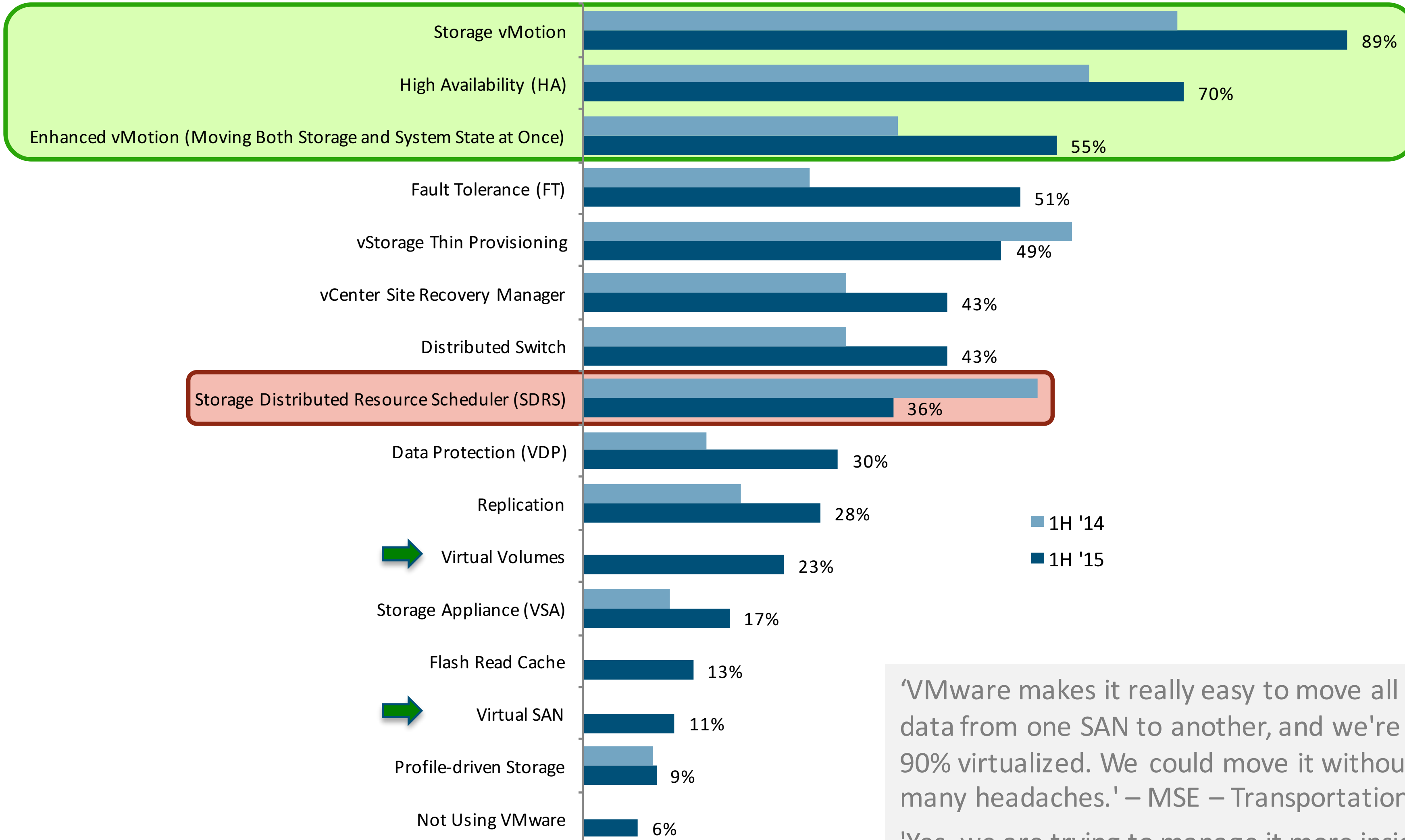
'We changed a lot of the interim [external] staff into our own staff – in-sourcing the staff, including me. Reducing use of consultancy.' – LE – Energy/Utilities

'Now that we can farm out some roles to operational staff, they can add storage in VMware.' – MSE – Telecom/Technology

Q. What is your overall raw disk storage capacity in terabytes for the following storage connectivity types? How many internal full-time employees provide storage services for your enterprise? How many external or outsourced staff members provide storage services for your enterprise? What is your average raw terabytes per storage professional? 1H '11, n=145; 1H '12, n=18; 1H '13, n=205; 1H '14, n=242. 1H '15, n=199. *Includes both internal and external full time employees.

Source: Storage – Wave 19 |

VMware Management Features Used in Production

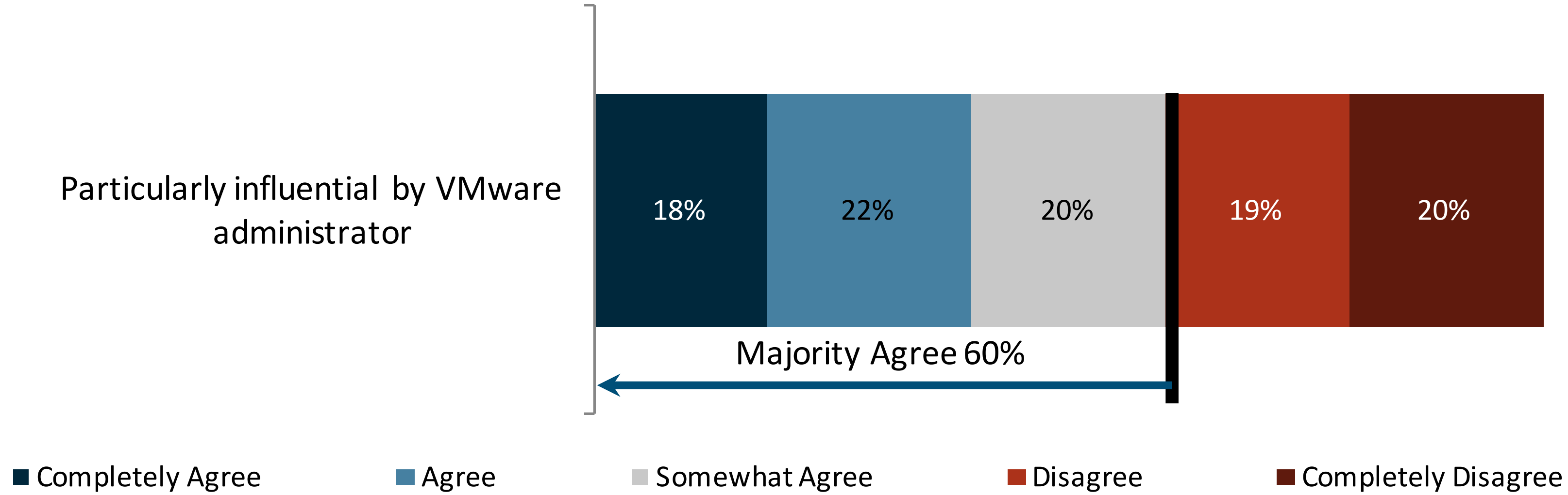


'VMware makes it really easy to move all your data from one SAN to another, and we're like 90% virtualized. We could move it without too many headaches.' – MSE – Transportation

'Yes, we are trying to manage it more inside of VMware.' – MSE – Telecom/Technology

Q. If using VMware, which of the following hypervisor features are you using in production? 1H '14, n=49; 1H '15, n=47.

Procurement Influence of VMware Administrator



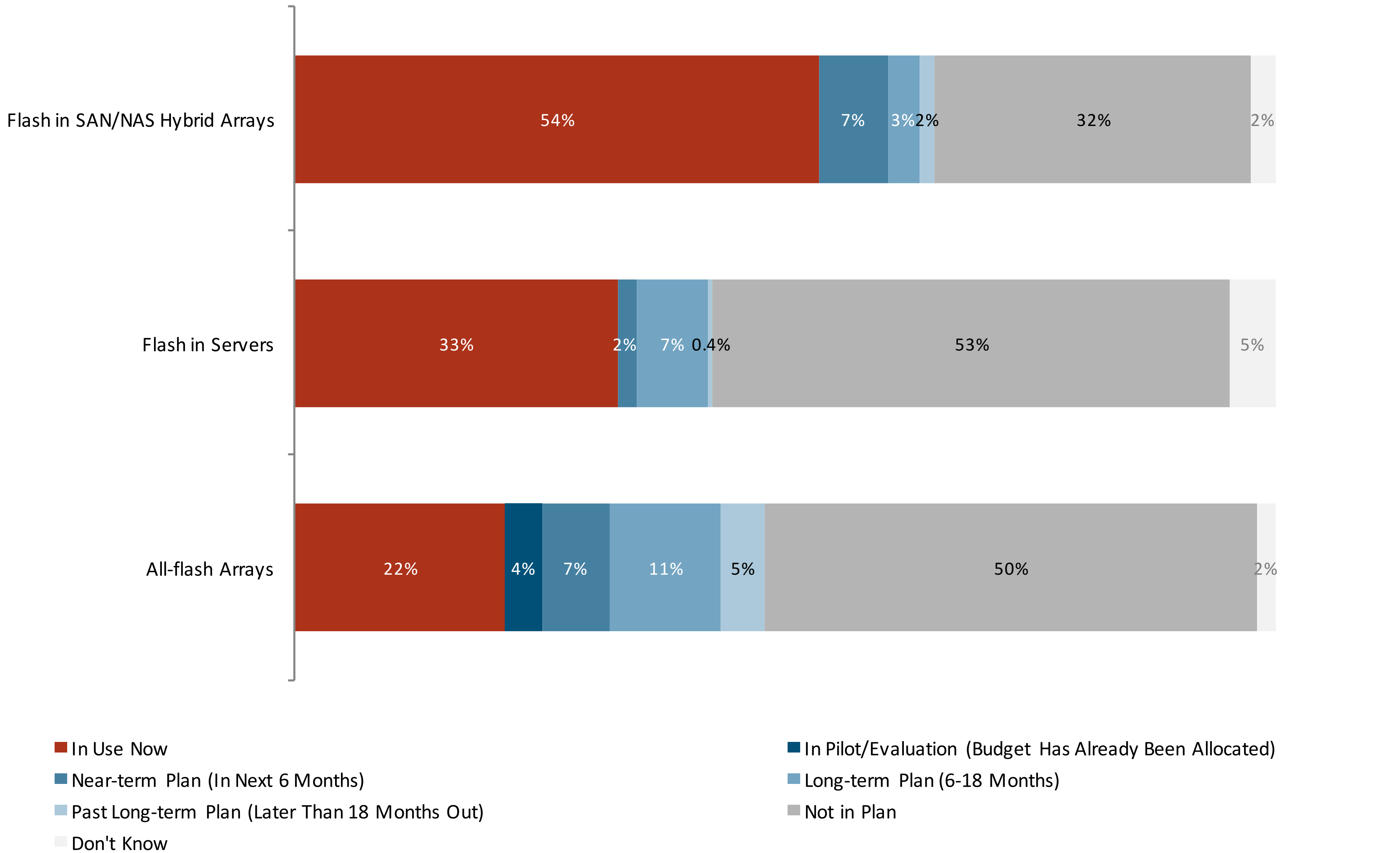
'Essentially the [storage] same team will not exist, stop existing, maybe in one year's time or so. Because [storage] would just be a part of deploying a new server. just another task in VMware, just another task, all logic being taken care of by software. If I was working in storage, I would be kind of nervous. Storage administrators are going to be extinct. … Going to be fewer of them. Companies won't need a specific storage admin.' – MSE – Public Sector

'I run a shop where storage virtualization and server virtualization are on the same team. My storage guy knows VMware, and the VMware guy is the backup storage guy.' – LE – Financial Services

Q. To what extent do you agree with the following statements? Please use a 1-5 scale where '1' is completely disagree and '5' is completely agree. n=80 to 83.

flash in the enterprise

Flash Storage Technology Roadmap



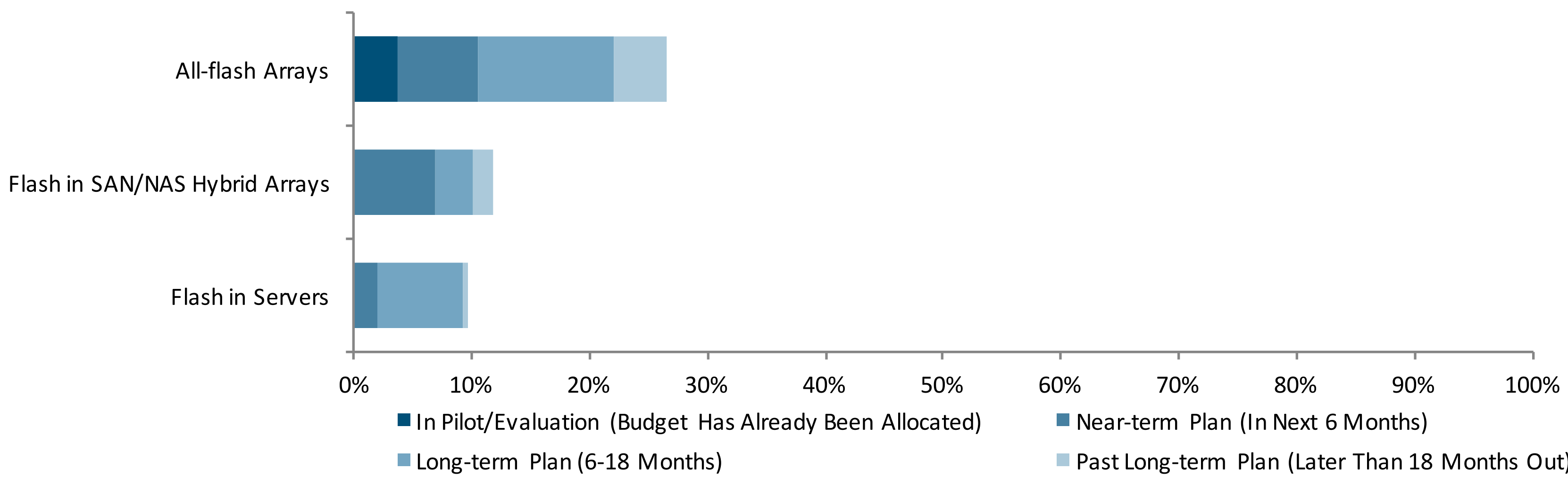
Q. What is your status of implementation for this technology? n=245 to 246.

Flash Technologies: Heat Index® Time Series & Implementation Roadmap – In Pilot or Plan Only

Heat Rank 1H '15	Heat Rank 1H '14	Change	Technology
1	1	0	All-flash Arrays
10	3	-7	Flash in SAN/NAS Hybrid Arrays
13	4	-9	Flash in Servers

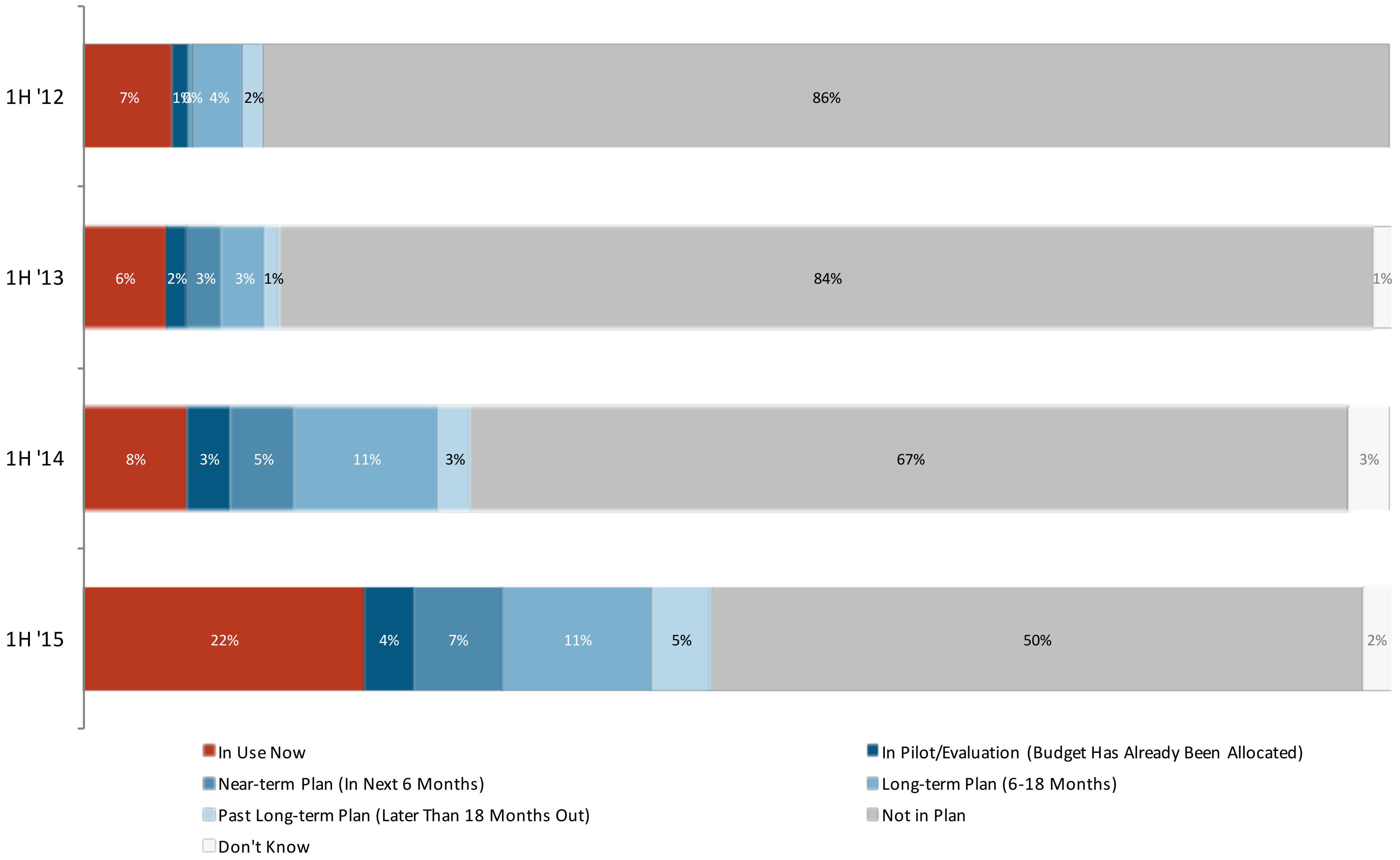
Technology Heat Index®: measures user demand for a technology based on several factors including: usage or planned usage, changes in planned spending, an organization's budget for the relevant IT sector, and future changes in the organization's budget. A high score means a technology is expected to see significant growth. A '!' vendor has at least twice the number of selections as the closest competitor.

Implementation Roadmap



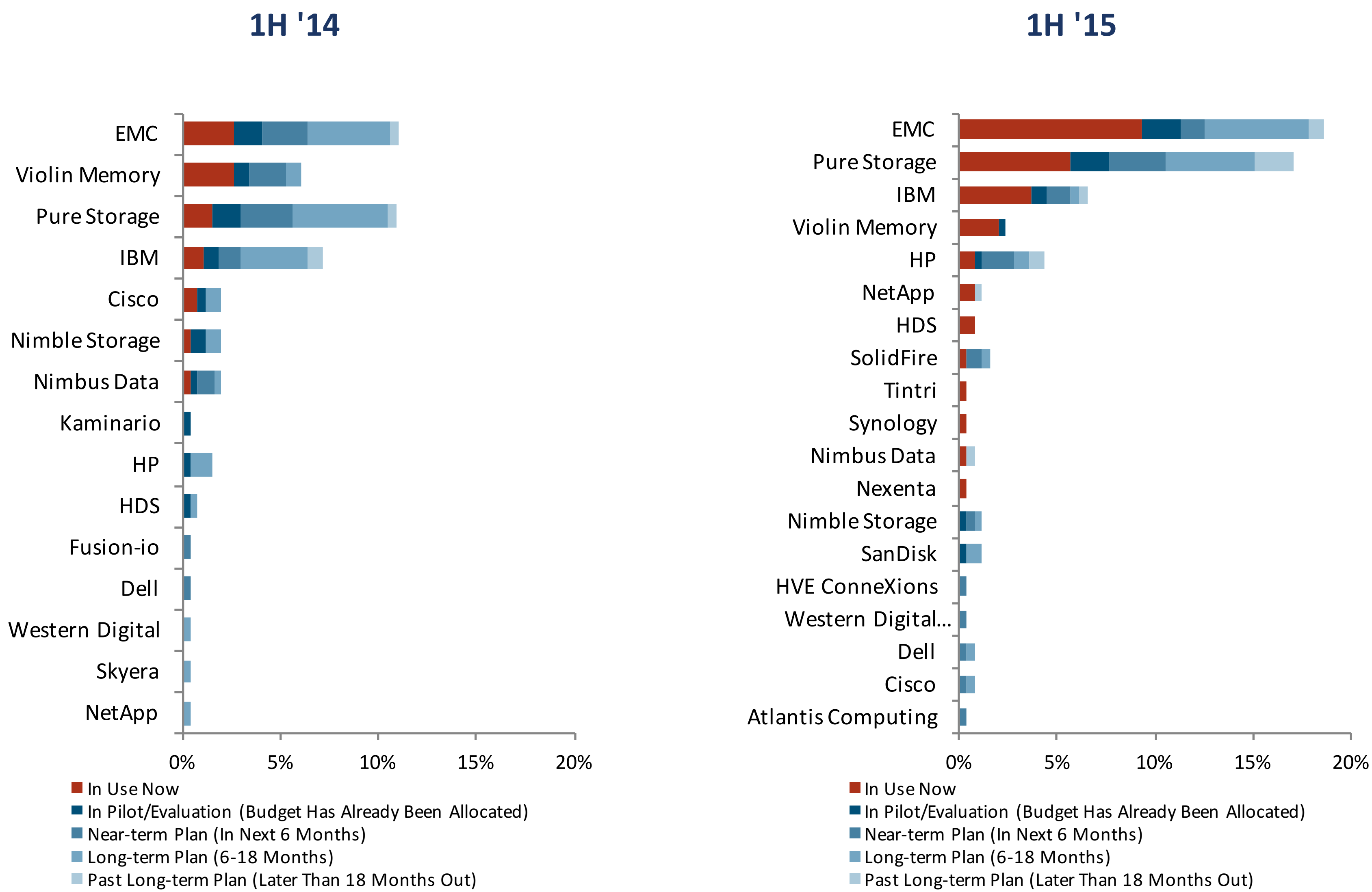
Upper Table: 1H '14, n=264 to 265; 1H '15, =243 to 247. Lower Chart: Q. What is your status of implementation for this technology? n=243 to 247.

All-Flash Arrays – Implementation Roadmap



Q. What is your status of implementation for this technology? 1H '12, n=245; 1H '13, n=252; 1H '14, n=265; 1H '15, n=246.

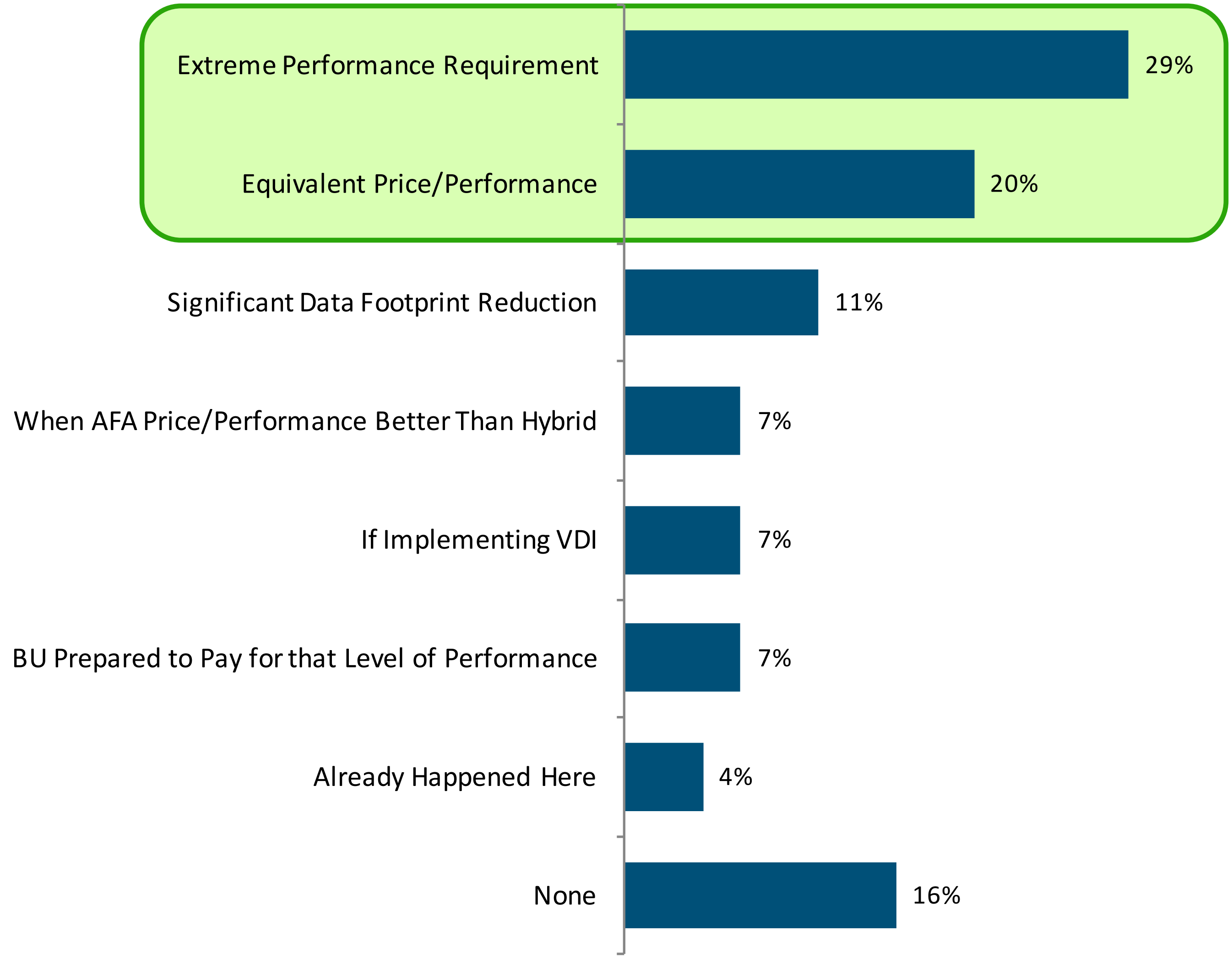
All-Flash Arrays – Time Series



1H '14, n=265; 1H '15, n=246.

Source: Storage – Wave 19 |

All-flash Array: Drivers to AFA Replacing Legacy Frames
AFA will take over capacity when price-equivalent

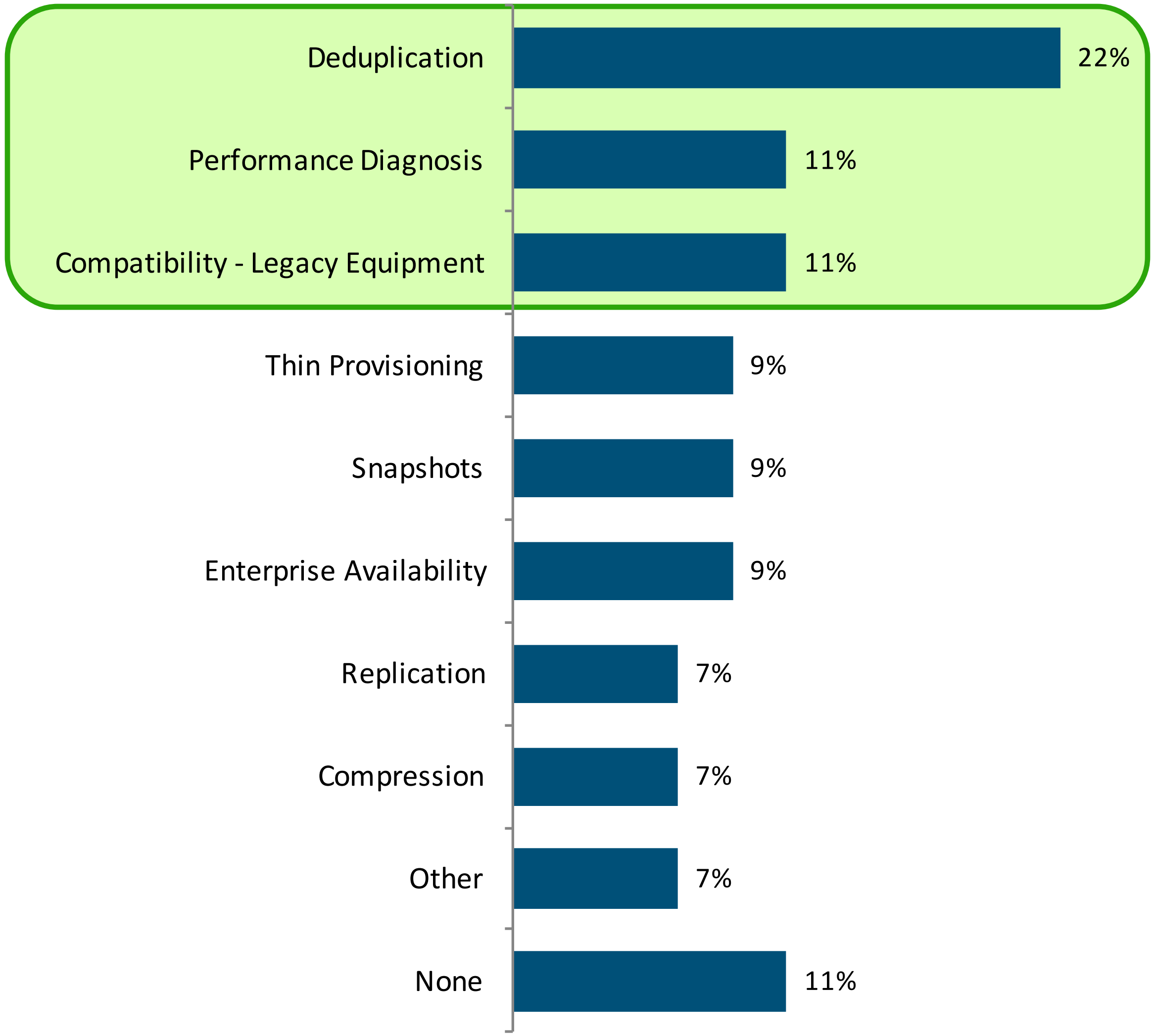


Q. Describe the circumstances where you would fully replace an existing hybrid array with an all-flash array. n=45.

Source: Storage – Wave 19 |

All-flash Array: Must-have AFA Features

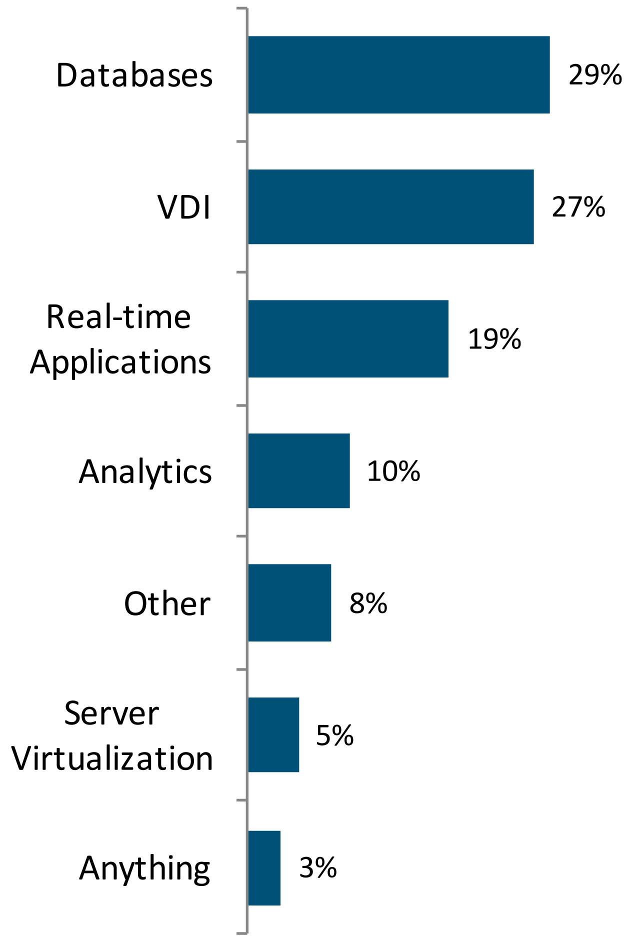
De-dupe, diagnosis and compatibility are gateway features



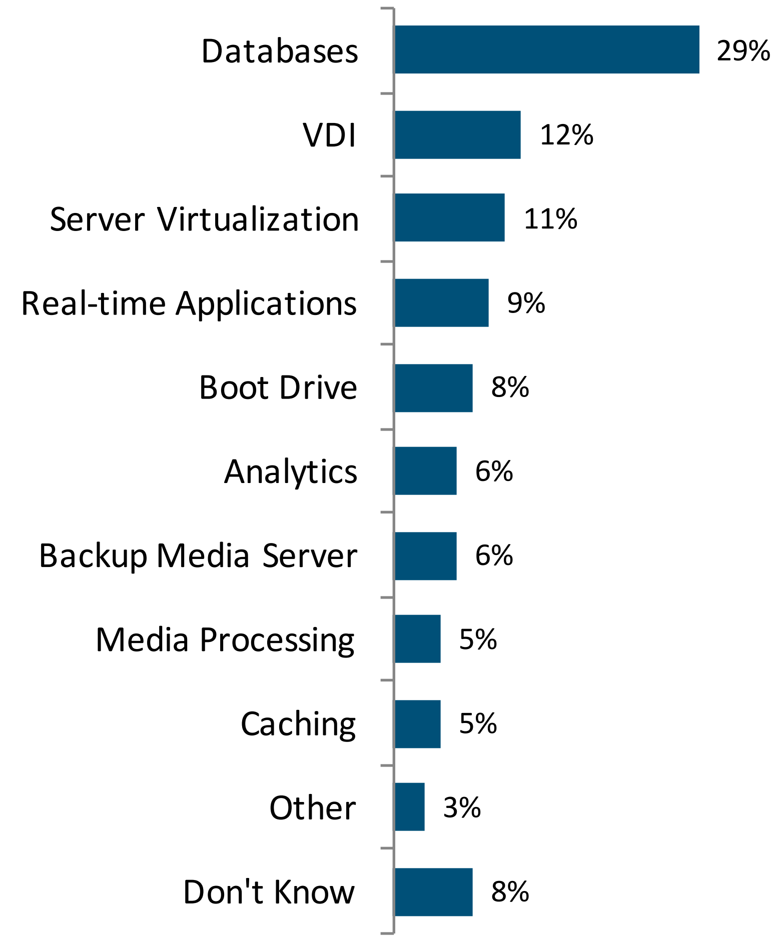
Q. Which management feature would make you reject an all-flash array if it was not available? n=46.

Primary Use Cases

All-flash Array



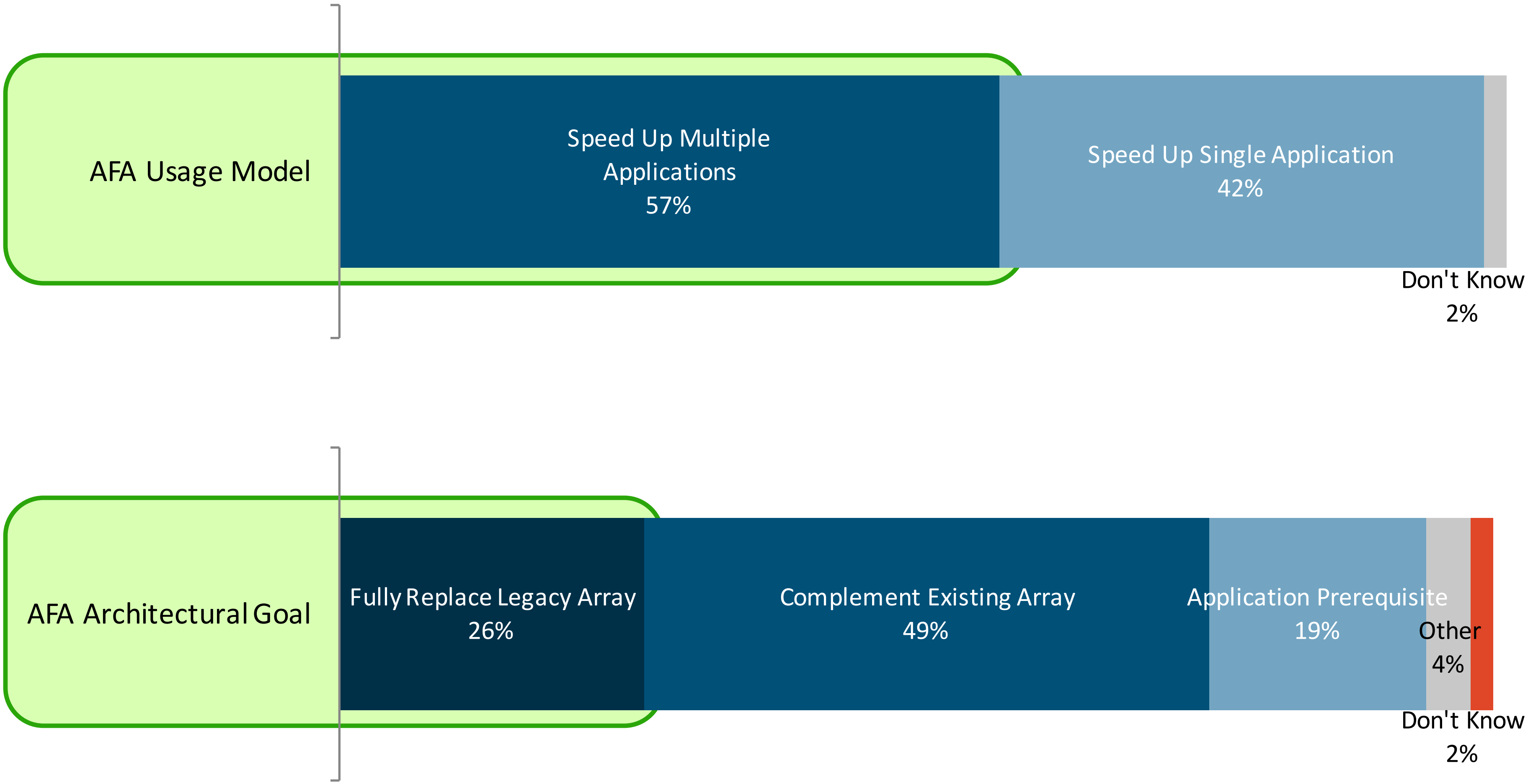
Flash in Server



Left Chart: Q. If you answered 'in use' for all-flash array, what application(s) are the primary use case? n=64. Right Chart: Q. If you answered 'in use' for flash in servers, what application(s) are the primary use case? n=66

Source: Storage – Wave 19 |

All-flash Array: Usage and Architectural Models
AFA *moving from niche to general replacement usage*

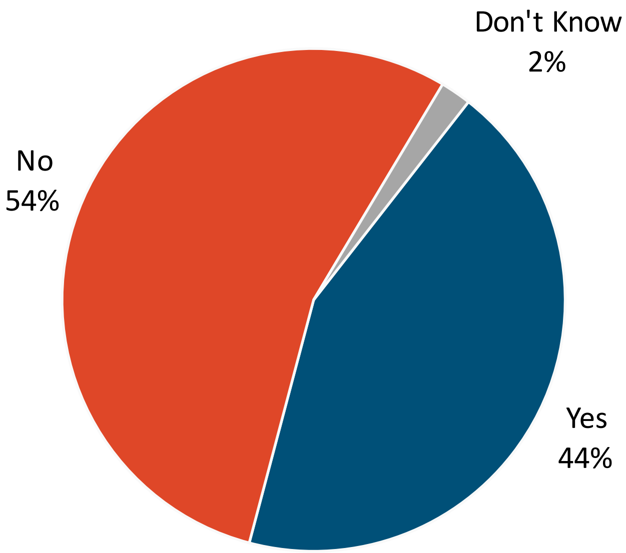


Upper Chart: Q. If you answered 'in use' for all-flash array, which of the following best describes your use case? n=53. Lower Chart: Q. If you answered 'in use' for all-flash array, which of the following best describes your implementation? n=53

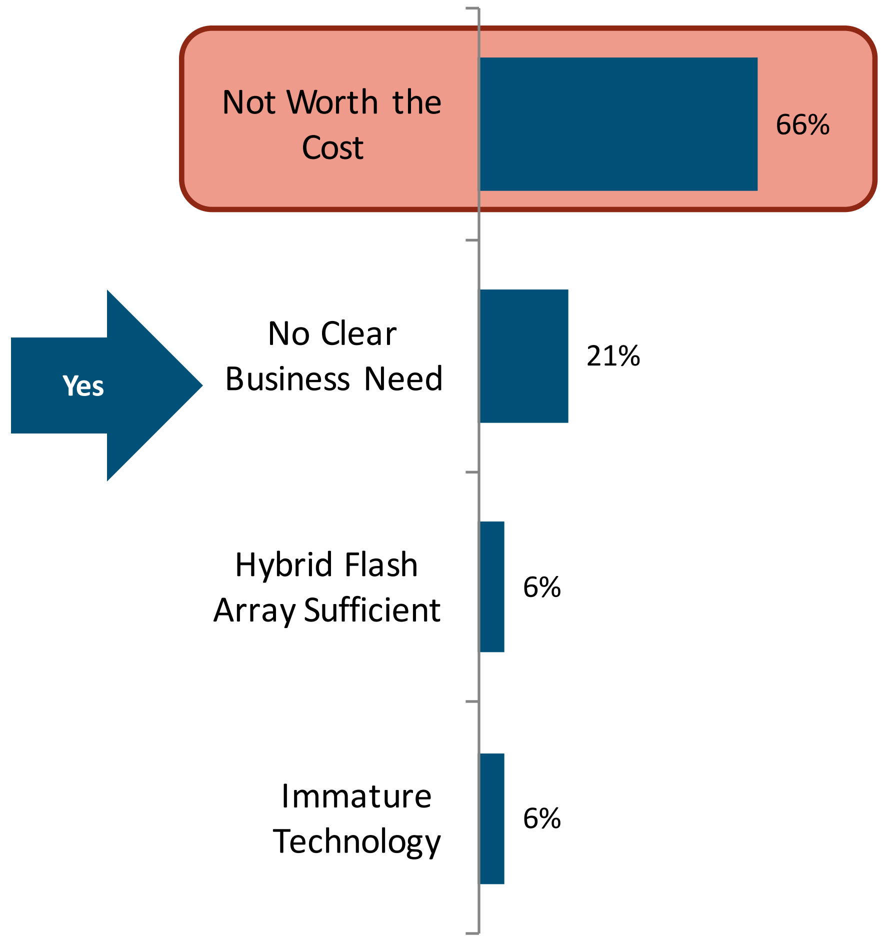
Source: Storage – Wave 19 |

All-flash Array: Rejection Reasons
Price still the lead barrier to adoption

Have You Considered and Rejected AFA?



Reasons



Left Chart: Q. If you answered 'not in plan' for all-flash array, have you considered and rejected using one? n=100. Right Chart: Q. If yes, please describe why you rejected using an all-flash array, n=47.

Questions?

@marcocoulter

marco@451research.com

Read other research from Marco Coulter:
https://451research.com/search?author=Marco+Coulter

Each individual report summarizes interesting portions of TheInfoPro's Wave 19 Storage Study and does not comprehensively review the hundreds of pages of research that form the full study. **For access to TheInfoPro's reports and services, please contact sales@451research.com.** Methodology questions may be addressed to **client.services@451research.com.**

451 Research, a division of The 451 Group, is focused on the business of enterprise IT innovation. The company's analysts provide critical and timely insight into the competitive dynamics of innovation in emerging technology segments. Business value is delivered via daily concise and insightful published research, periodic deeper-dive reports, data tools, market-sizing research, analyst advisory, and conferences and events. Clients of the company – at vendor, investor, service-provider and end-user organizations – rely on 451 Research's insight to support both strategic and tactical decision-making.

TheInfoPro, a service of 451 Research, is widely regarded as 'The Voice of the Customer,' providing independent, 'real world' intelligence on key IT sectors including Servers and Virtualization, Information Security, Networking, Storage and Cloud Computing. Using one-on-one interviews conducted within a proprietary network composed of the world's largest buyers and users of IT, TheInfoPro provides data and insights that are used for strategic planning, technology benchmarking, competitive analysis, and vendor selection and negotiation.

WWW.451RESEARCH.COM
20 West 37th Street, 3rd Floor, New York, NY 10018 P 212.672.0010 F 212.688.6598