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Fujifilm Global IT Executive Summit:
Storage Industry Update & Outlook

Mark Peters, *Senior Analyst, ESG*
Houston TX, *10/24/13*

Agenda

- What does the IT industry look like right now through the eyes of the CIO? Major IT and business challenges?
- Impact of key market trends? Cloud, convergence etc…
- The storage landscape – and motivations for change
- “Taming the storage beast” - options, economics, and pragmatic recommendations

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ESG is counted on for straight talk as the Trusted Advisor for:

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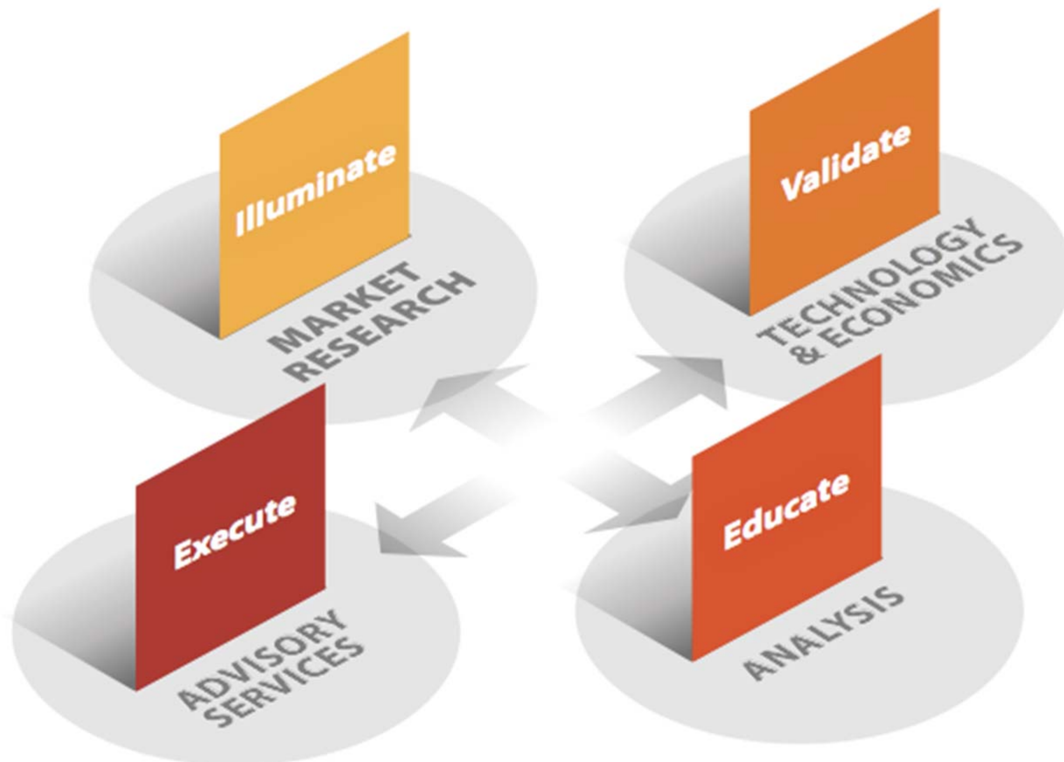

ESG is staffed with successful practitioners who possess proven track records and experience.

Motherhood and Apple Pie!?

- **The basic storage challenges**
  - Growth up
  - Complexity up
  - Budgets not up
- **Why are new approaches needed?**
  - Virtualization
  - Flexibility
  - Expectations
- **An hour of catharsis and challenge!**
  - Encourage [re]evaluation

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Nature of The IT Beast

World's Most Accurate Pie Chart!

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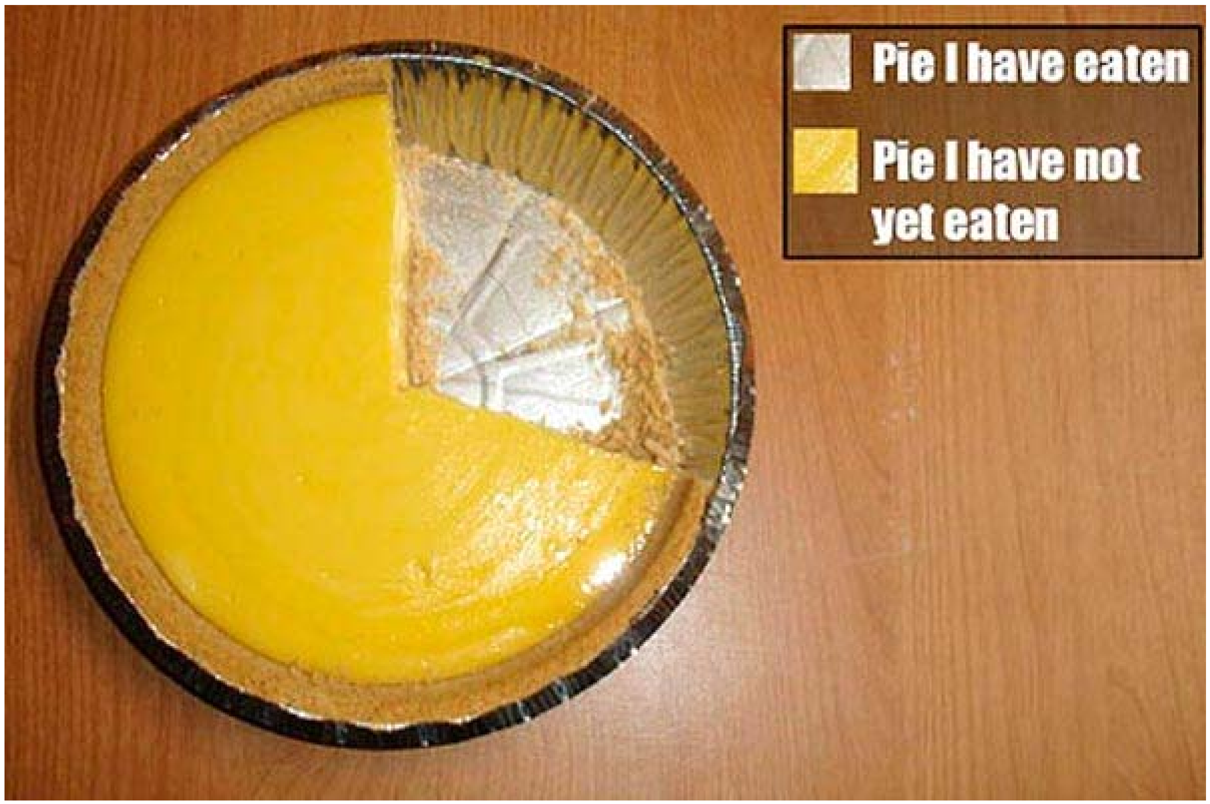
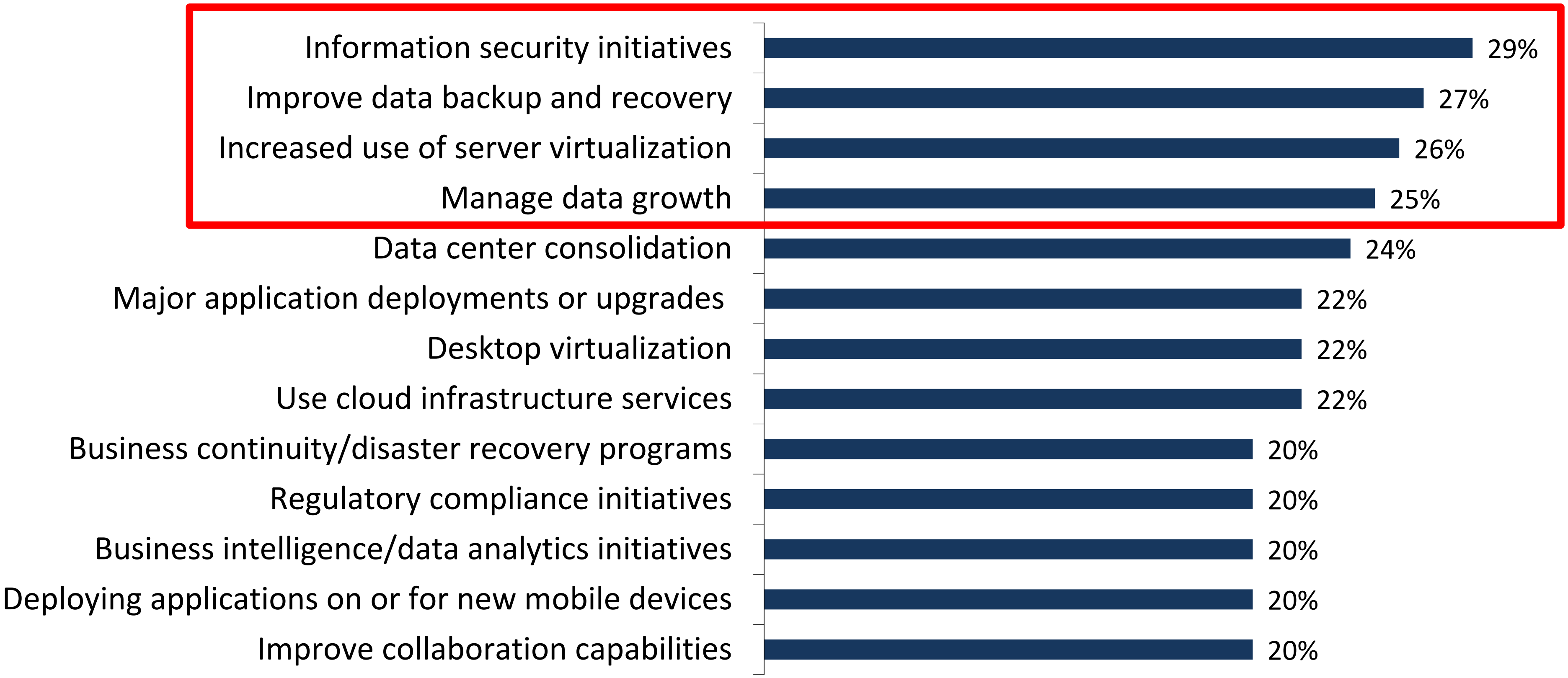


What's on the "CIO whiteboard"? How will that impact spending?

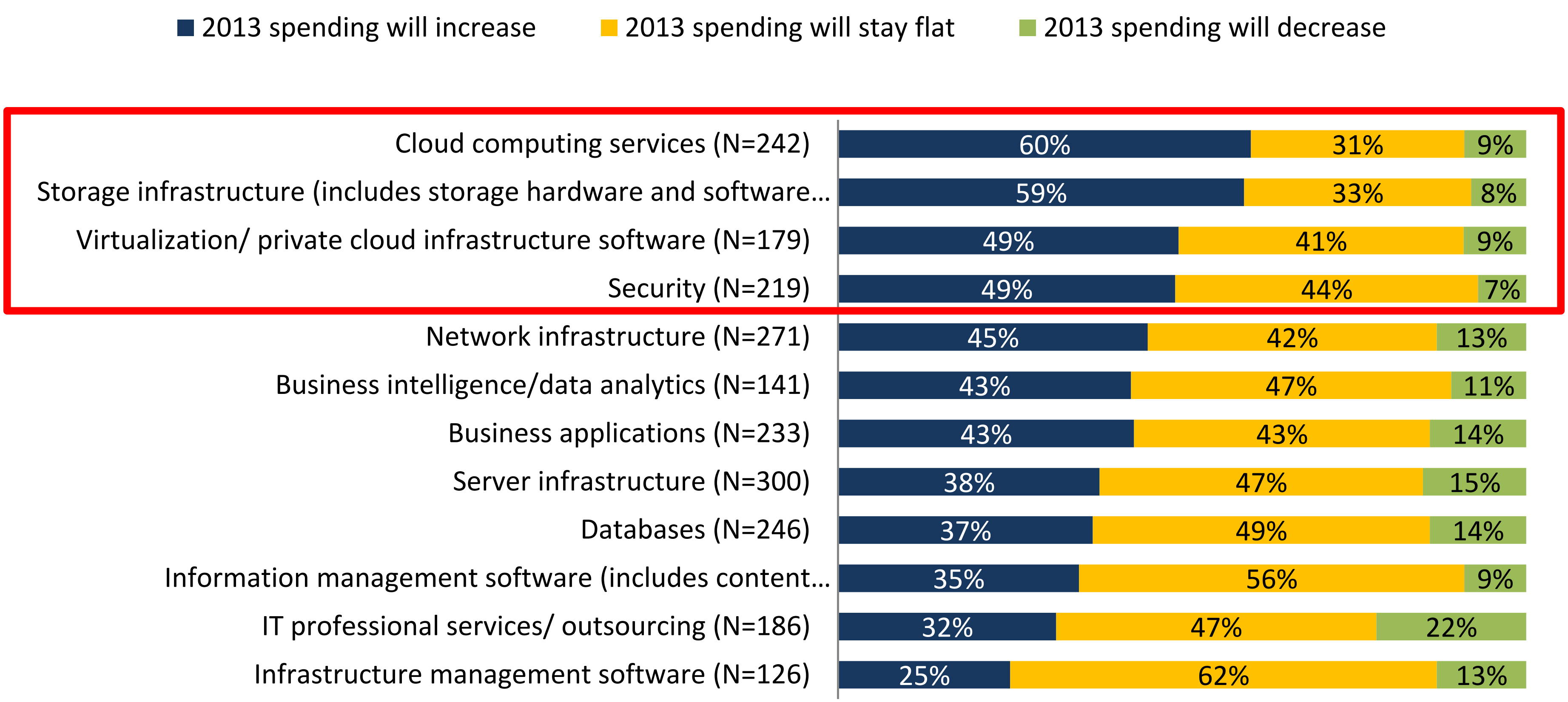
What’s on the White Board of IT Executives?

- How do I successfully transform to **ITaaS** while still struggling with virtualized silos? Impact of mobility?
- How do I safely leverage **IaaS** to “de-risk” storage management in new deployment models? Optimal use of [what type of?] cloud?
- How do I responsibly tune and optimize **vendor management** amid rapid change and “standards”?
- How do I do **“enough”** with **“not enough”**? Managing user expectations and the demands for speed.

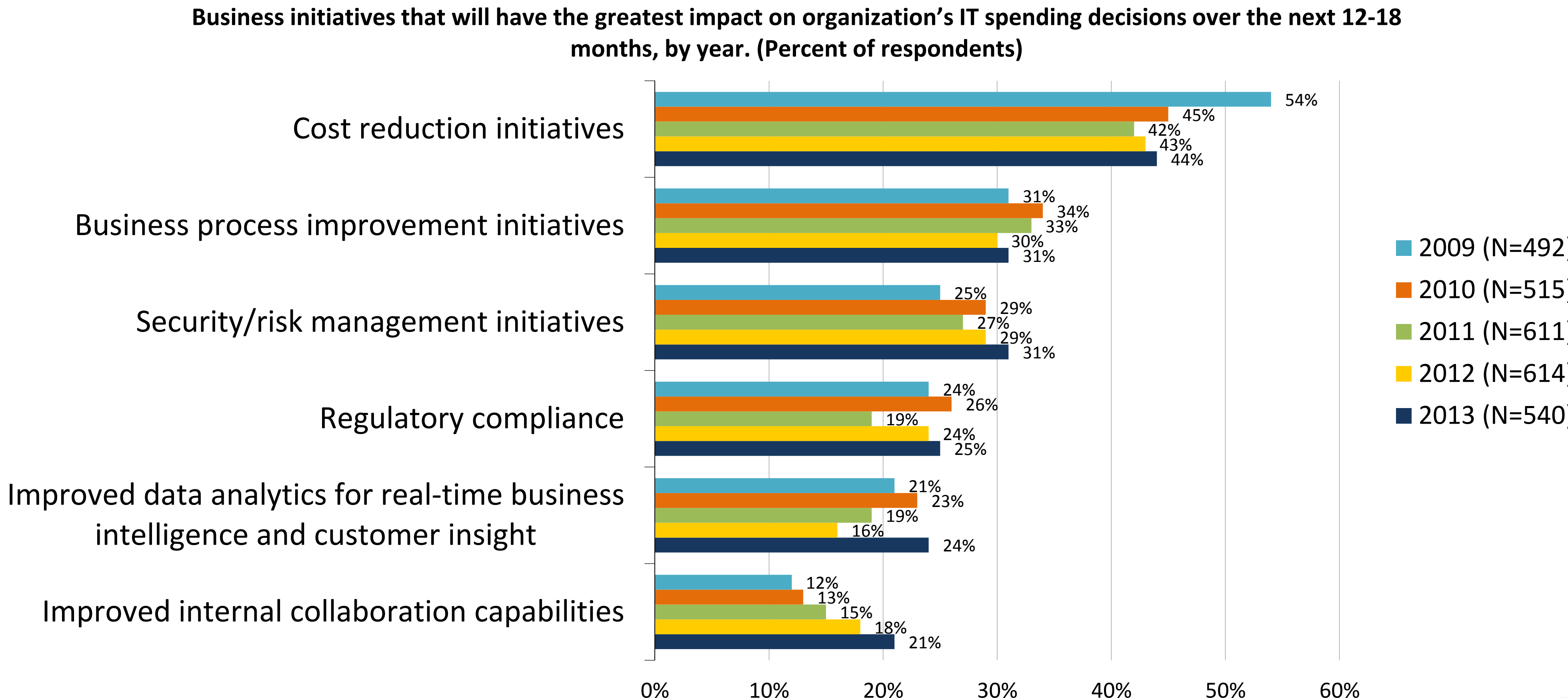
Top IT Priorities



Most Favorable Spending Outlook



Business Initiatives Impacting IT Spending



SMB-Specific IT Insights

- **Limited resources**
  - 59% of SMB organizations have only 1, or zero, IT staff
- **How is technology/IT viewed?**
  - Only 1/3 say management believes technology provides competitive advantage
- **Outages impact productivity not revenue**
  - Only 21% of respondents attest to a direct revenue loss as a result of outages/downtime
- **IT priorities and projects**
  - Data protection is at the top of the list for both IT and non-IT respondents
- **Limited data protection**
  - 89% do back up data, BUT only 73% of those have a formal backup plan
  - A mere 51% have a DR plan!
- **Cloud has relatively less focus**
  - 55% do not use the public cloud at all yet (a relatively high %)
  - Only 29% see the cloud as having a significant (or total) impact on their IT operations over the next five years

Key emerging trends? Cloud, convergence etc…

Major Overall IT Trends

Top Three Trends	Compute	Network	Storage	Backup and Recovery	Application Management
Trend #1	Multiple Hypervisors	Software Defined Network	Flash – All or Hybrid	Virtualization impact on Data Protection	Holistic Management Frameworks with Orchestration
Trend #2	SDDC	Network Admin Role Shifting	Hybrid (on-premise and public) Cloud Storage	Multiple Hypervisors	PaaS Tools and Frameworks
Trend #3	Open Source Momentum	Open Source Momentum	Software Defined Storage	Cloud for Tiering	devOps Tools and Frameworks

What is the Status of Enterprise Cloud Spending?

50% of enterprise is either currently or planning to deploy IaaS.

58% indicate moderate impact to IT infrastructure and process.

68% of enterprise will increase cloud spending year-over -year

- On the storage front mobility translates into access/OFS – driving adoption.

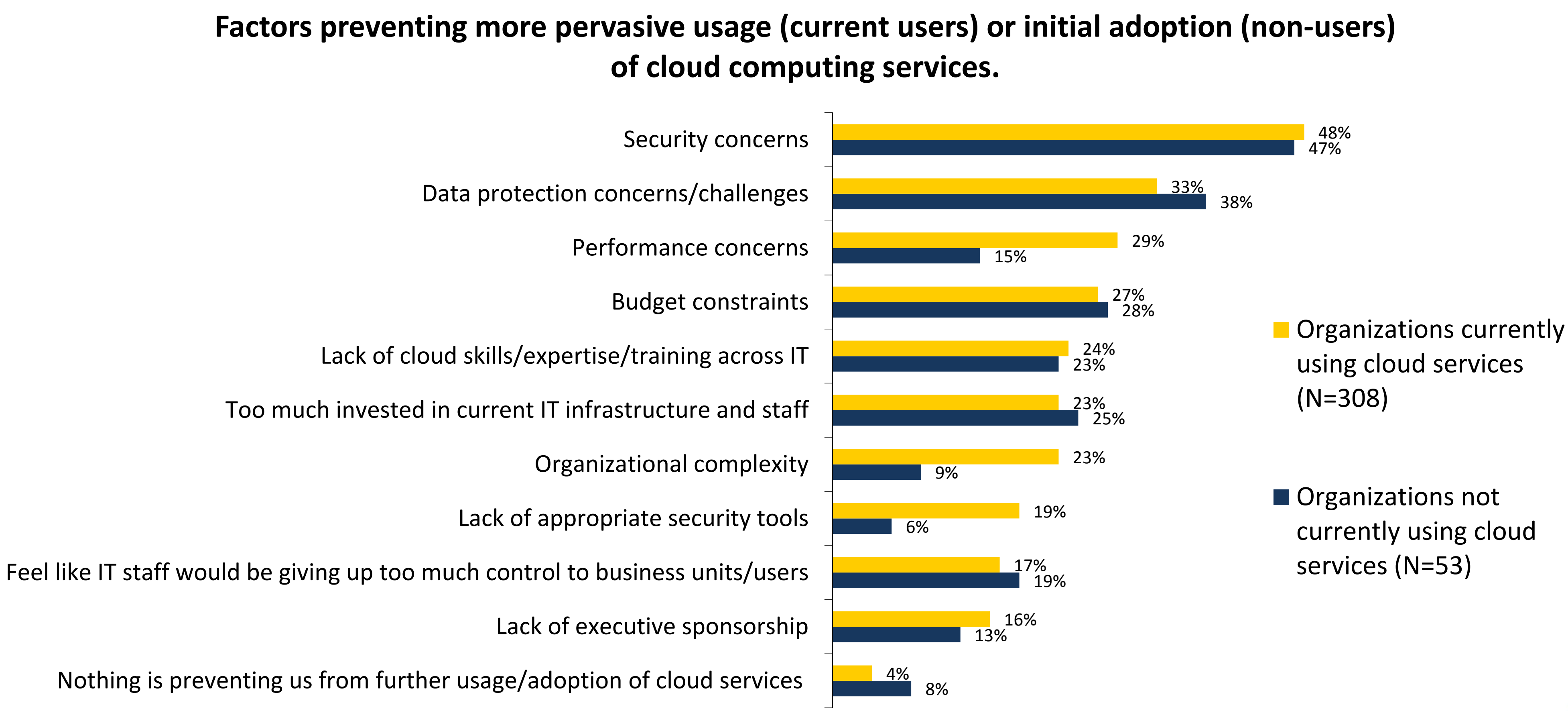
What is the Status of Mid-market Cloud Spending?

34% of mid market is either currently or planning to deploy IaaS.

24% indicate significant impact to IT infrastructure and process (& strategic approach).

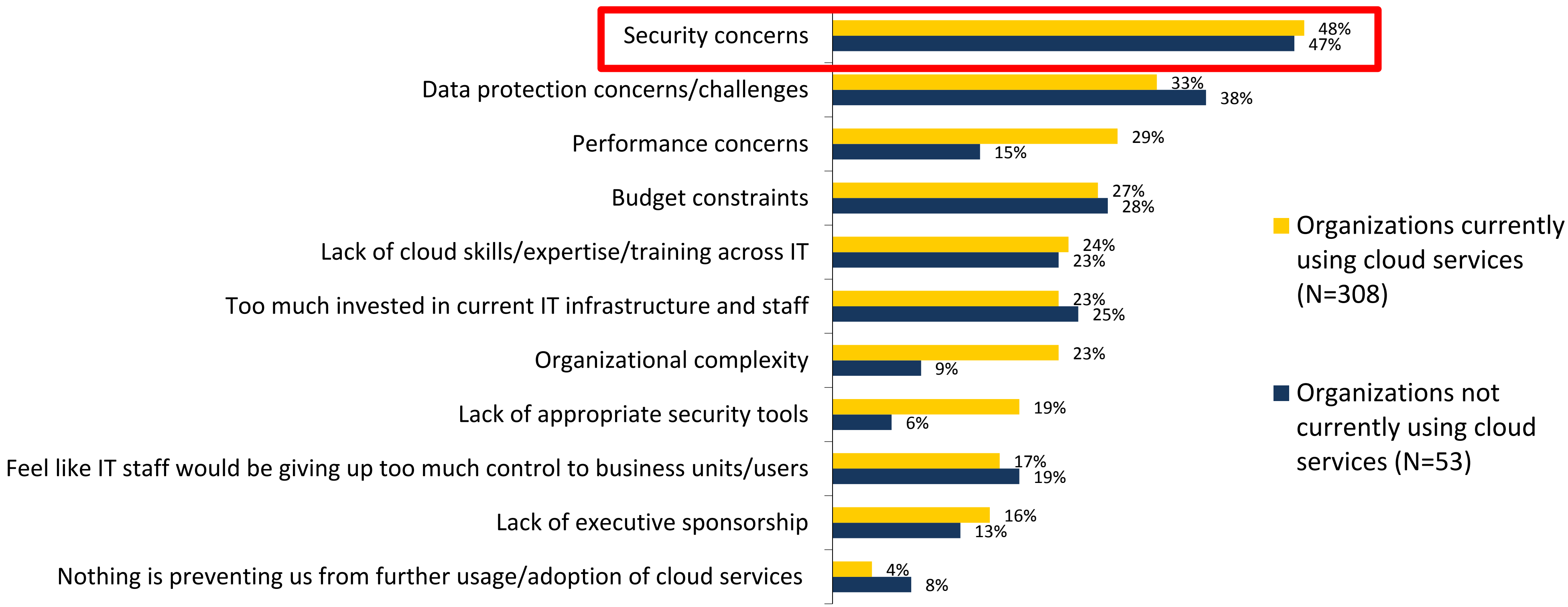
50% of mid market will increase cloud spending year-over-year.

Significant Cloud Barriers

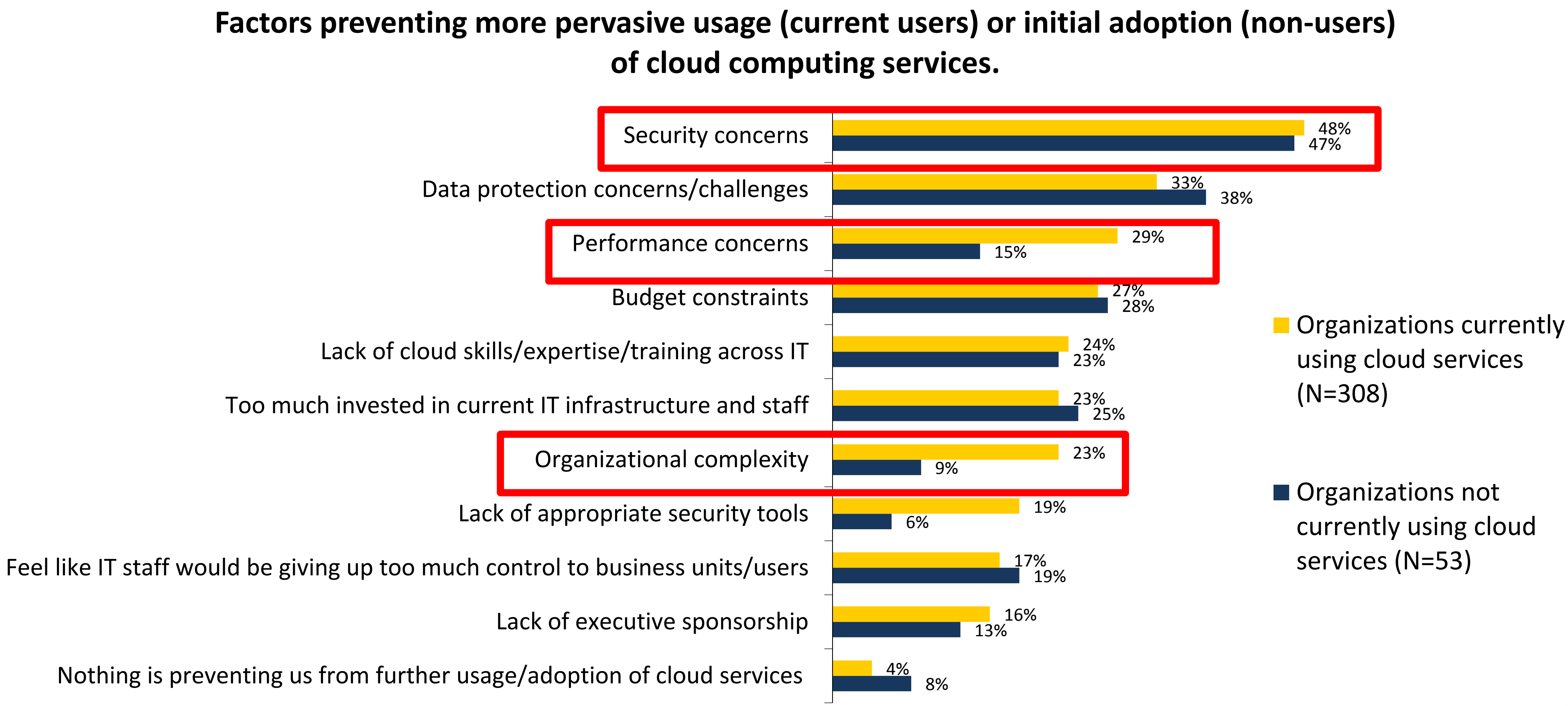


Significant Cloud Barriers

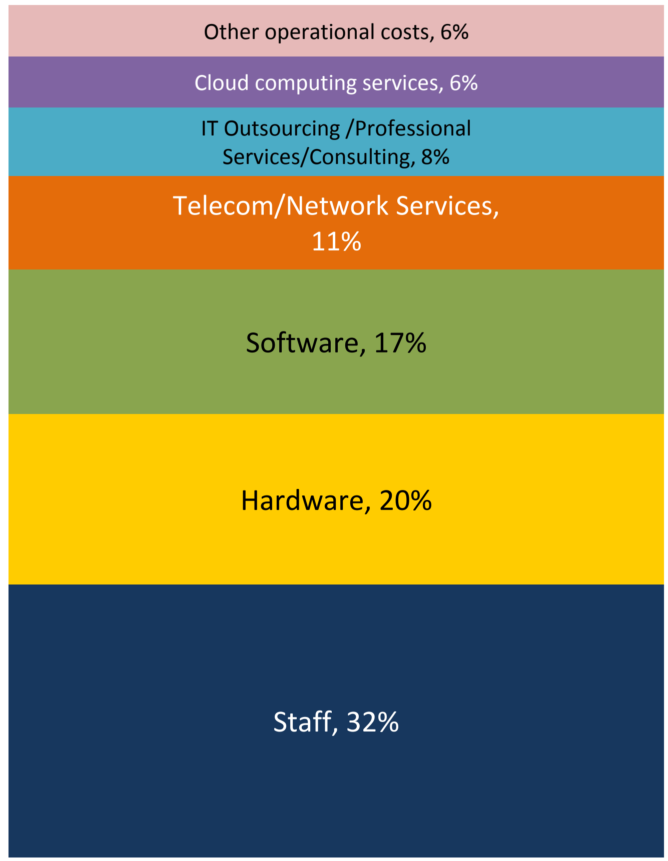
Factors preventing more pervasive usage (current users) or initial adoption (non-users) of cloud computing services.



Significant Cloud Barriers



Cloud Spending in Perspective



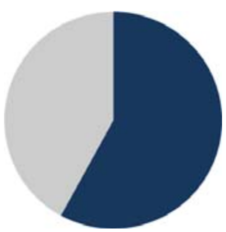
To the best of your knowledge at this time, approximately what percentage of your organization's total 2013 IT budget is allocated to each the following categories? (Mean, N=540)

New World

New Demands & Approaches

The IT Purchase Process is More Than IT

62% of marketing executives are now involved in technology evaluation and purchase processes.

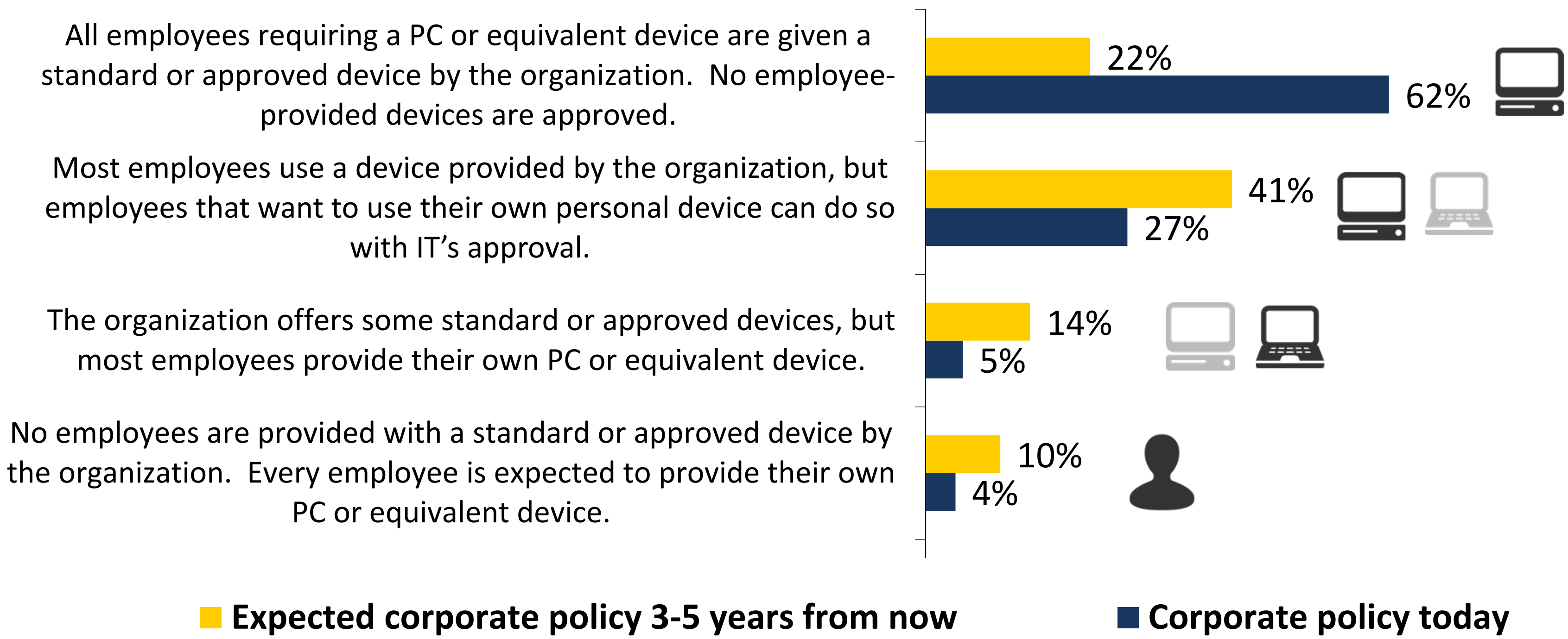


58% of IT professionals confirm that non-IT individuals have become more involved in IT evaluation and purchase processes in the last 2 years.

Technology Role Reversal

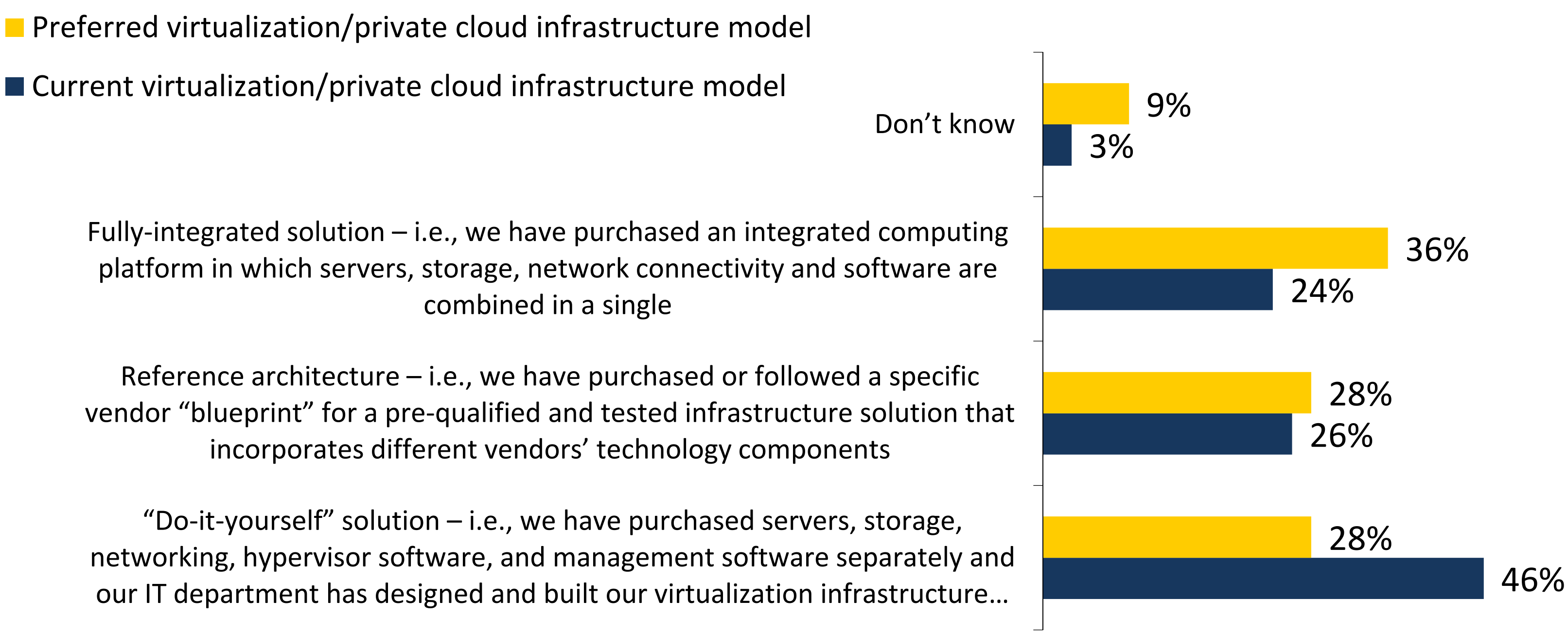
BYOD Marches On

Which of the following best describes your organization's policy with respect to providing your employees with a PC or other core endpoint computing device they need to do their job? What do you expect your policy in this area to be 3-5 years from now?



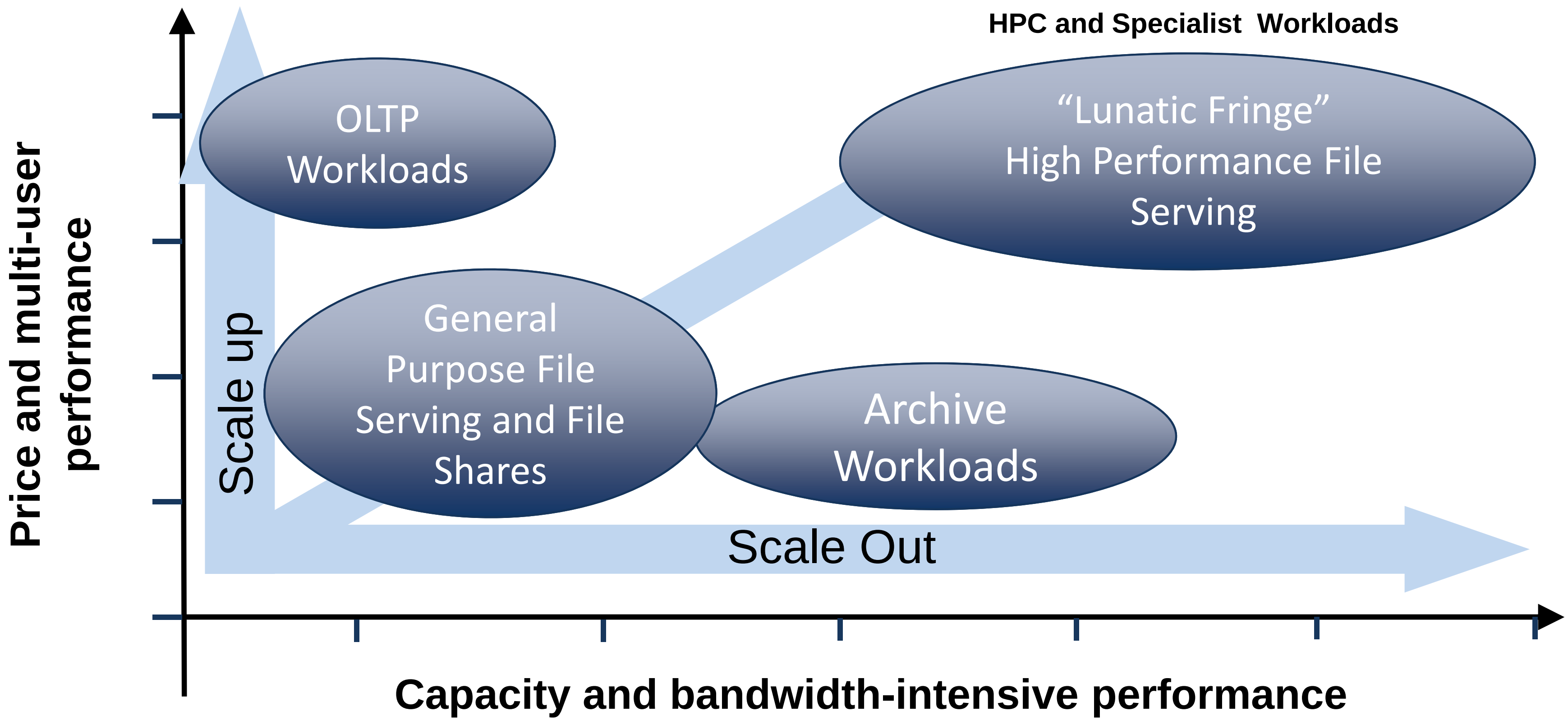
Virtualization/Private Cloud: Current vs. Preferred Models

Which of the following best describes your current infrastructure? Which do you believe would be your organization's preferred infrastructure for its virtualization/private cloud environment?

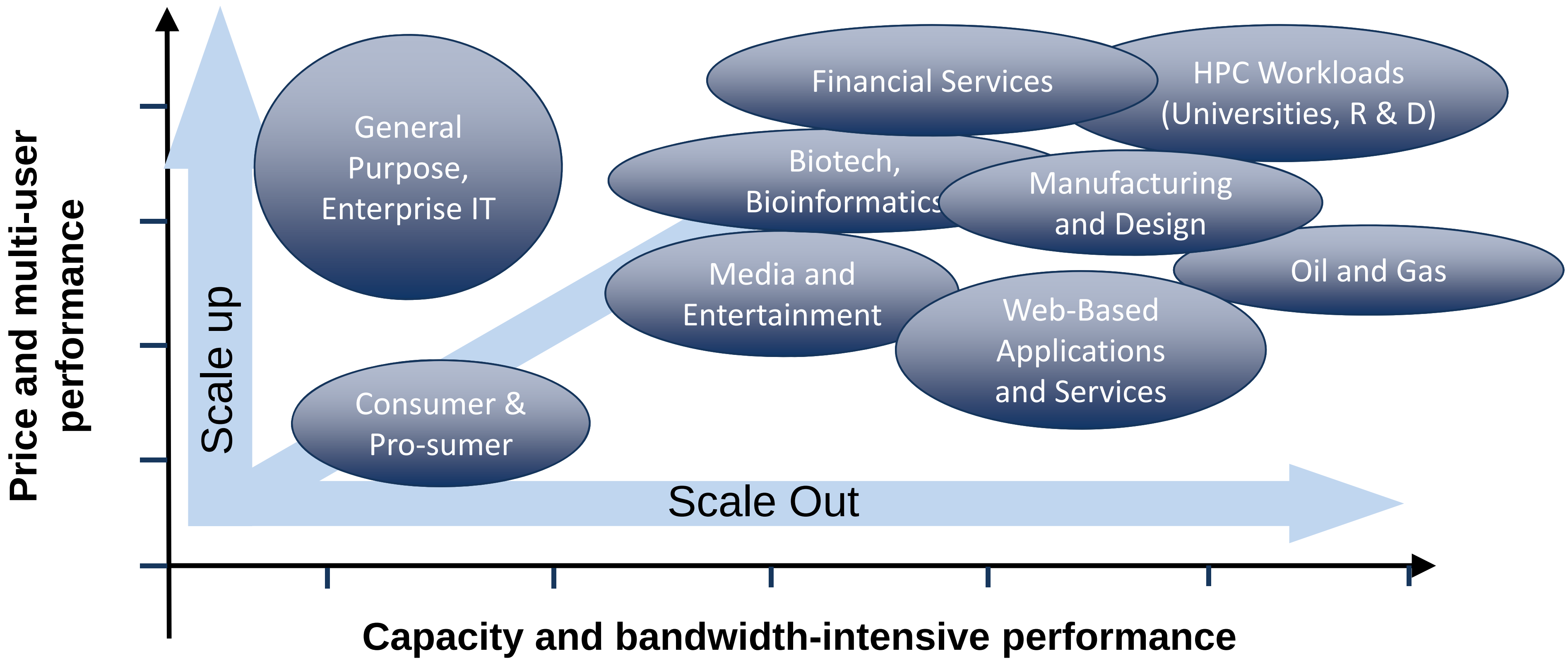


Source: ESG Research Brief, *Virtualized Computing Infrastructure Preferences,* April 2012.

Classic Workload Profiles: Islands

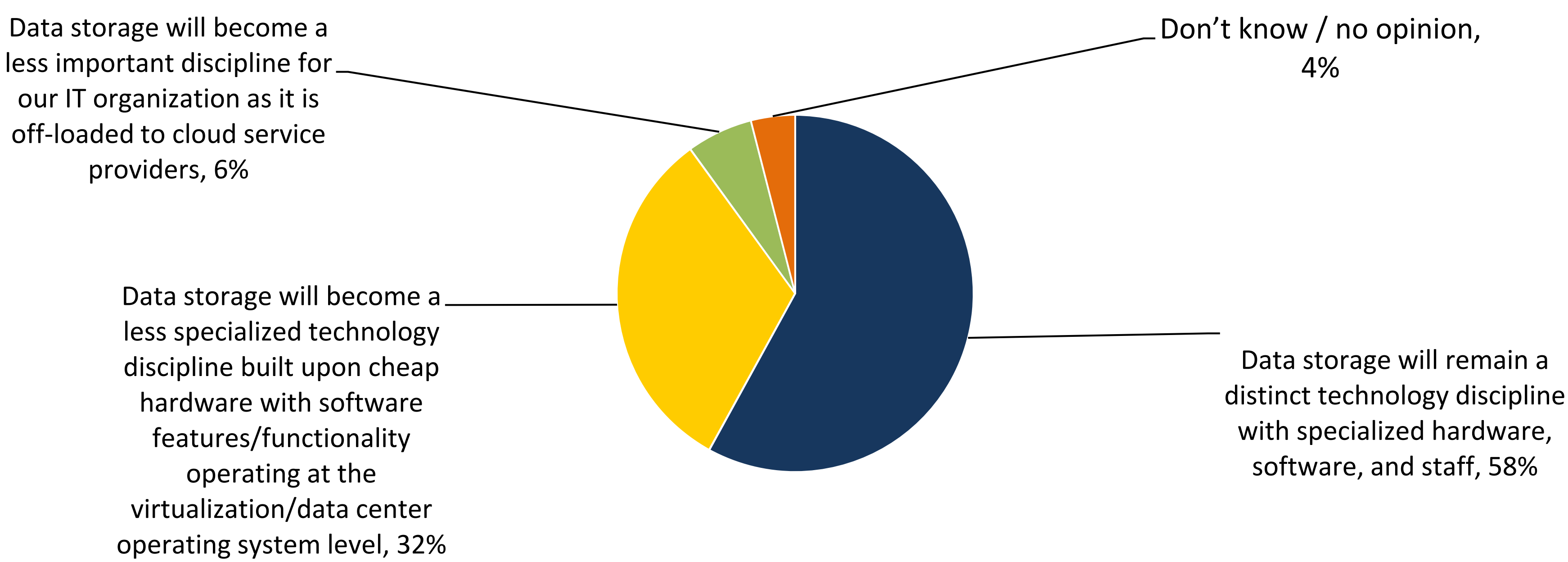


Contemporary Workload Profiles: Convergence



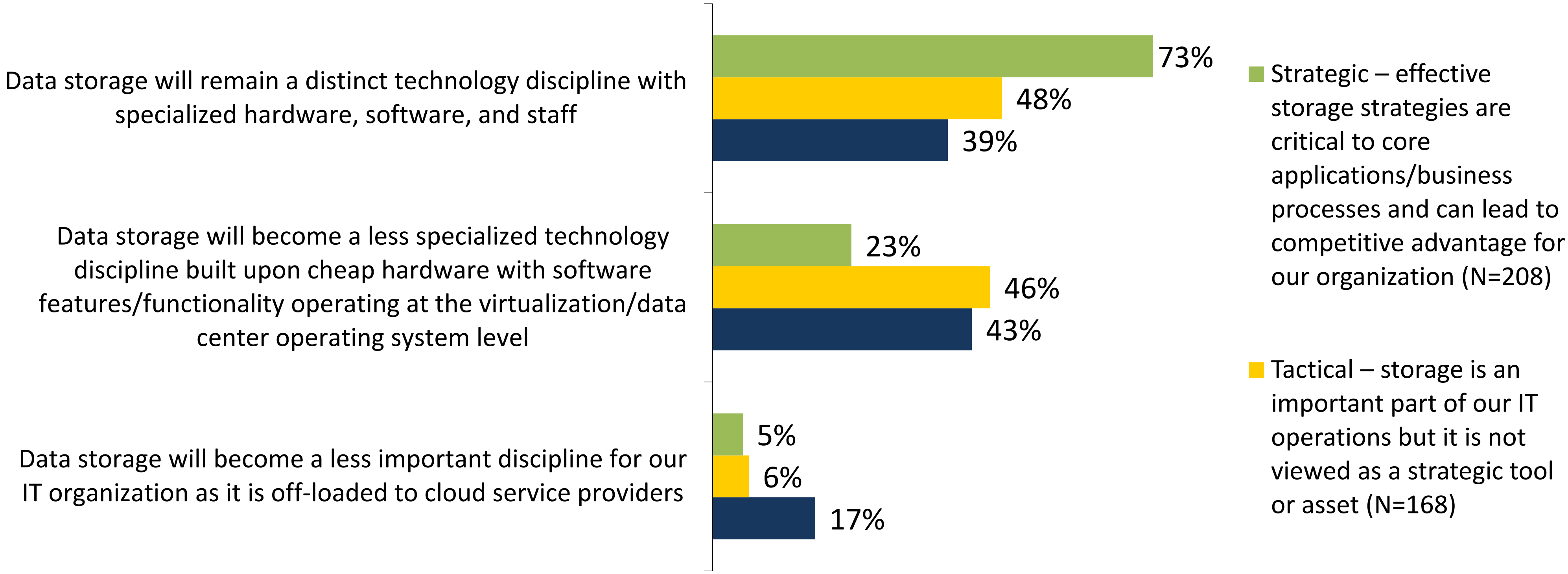
Long-term View of Storage Technology (Overall)

Which of the following statements best describes your organization's long-term view of data storage technology?



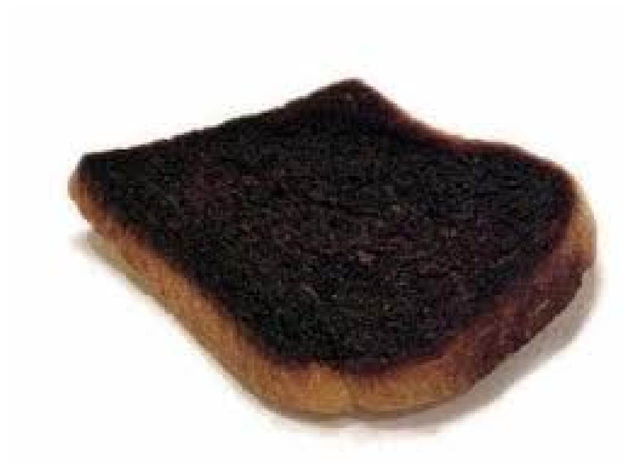
Long-term View of Storage Technology (Psychographics)

Organization's long-term view of data storage technology, by role of data storage technology in IT and business operations. (Percent of respondents)



The storage landscape

Toasting Storage!?



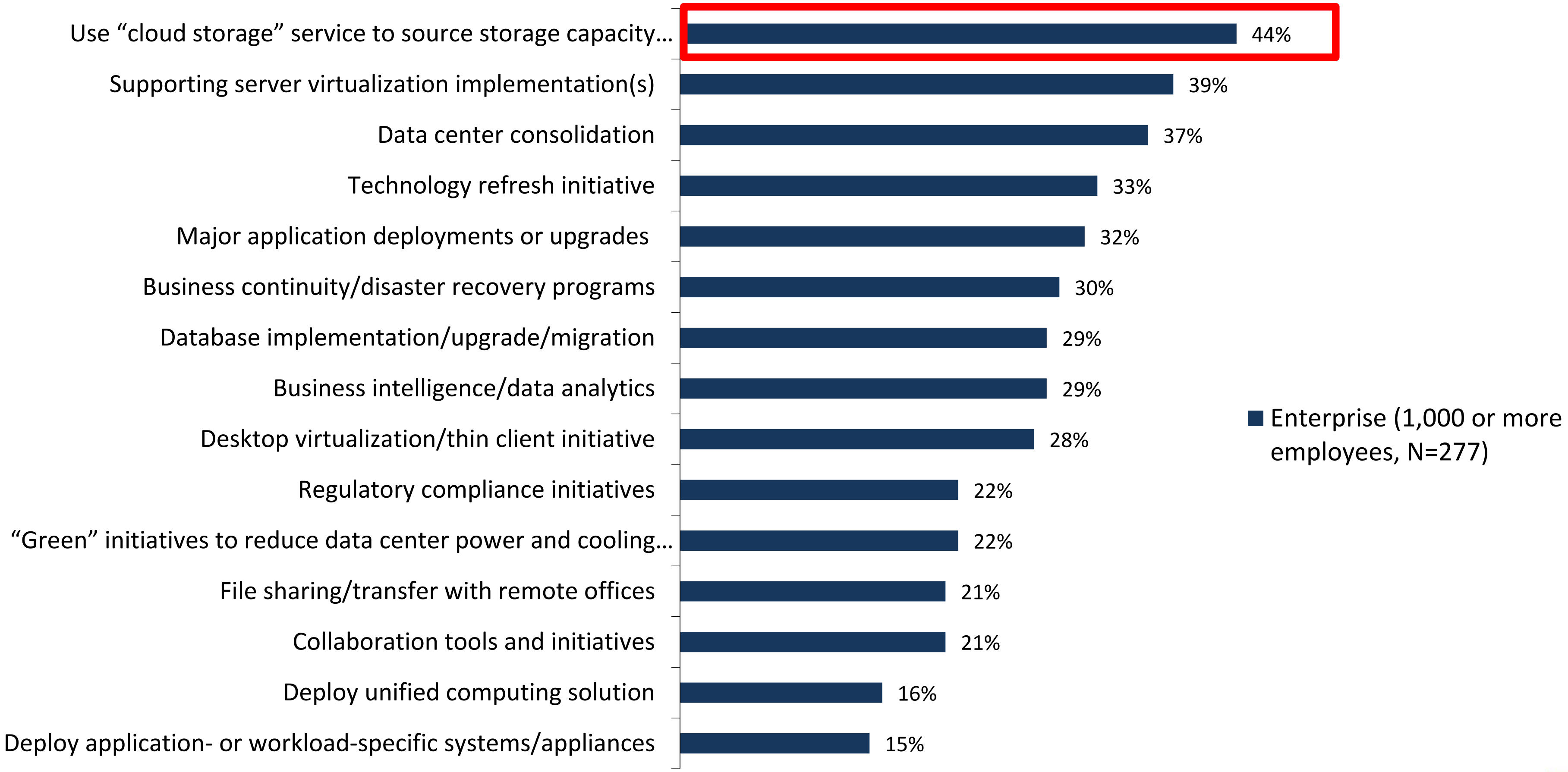
Storage: Market Trends and Analysis

The biggest impact on storage is using cloud storage to source capacity without buying new infrastructure. **44%** of enterprise respondents cited that as an initiative.

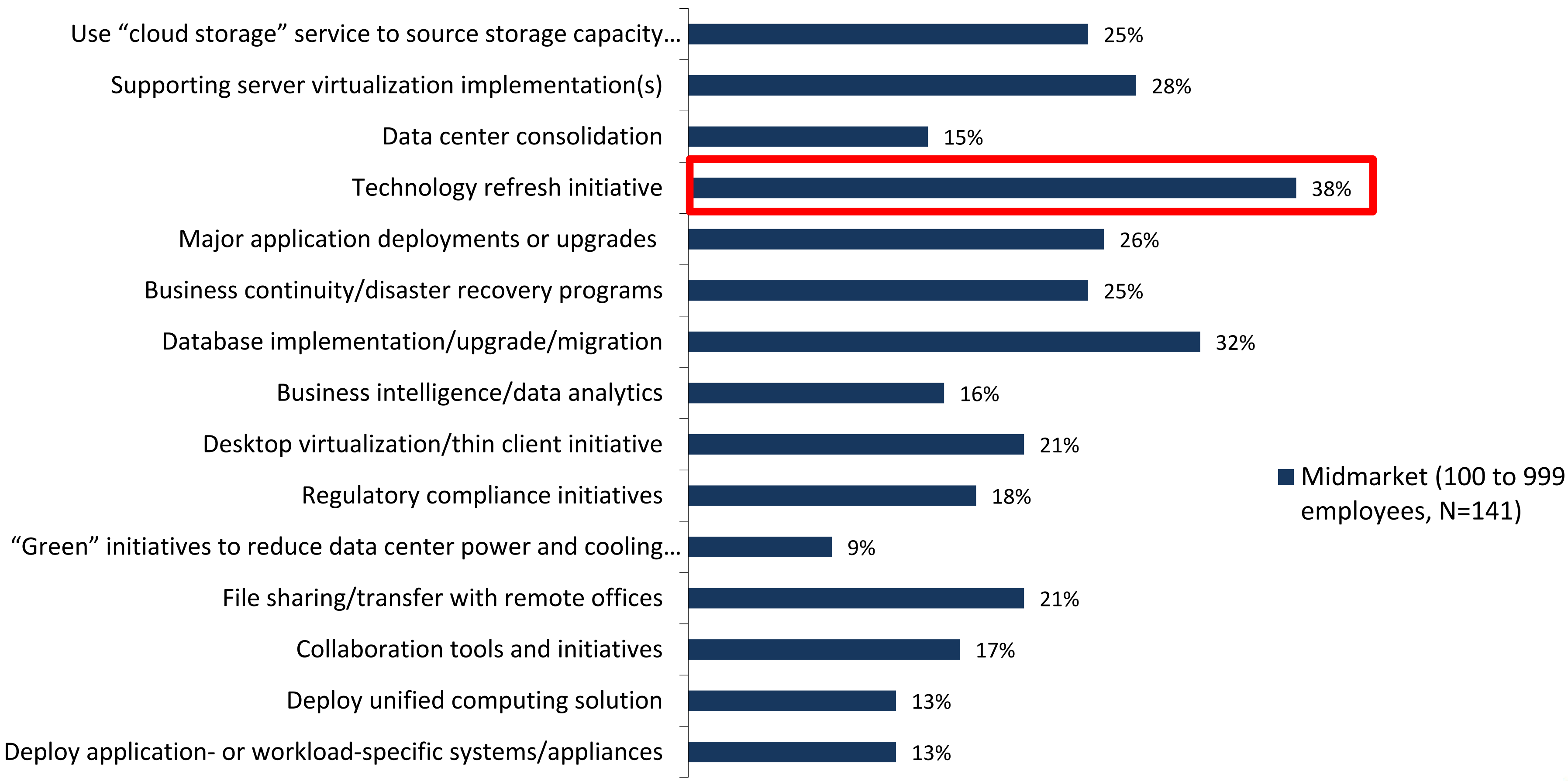
Considering that downtime tolerance windows continue to shrink, especially for tier-1 and mission-critical applications and data, the majority of IT organizations (59%) gravitate to storage systems that can deliver high availability. Server virtualization is leading many organizations to re-architect their data center networks to accommodate increased throughput requirements and has **41%** of organizations expecting their storage systems to provide 10 Gigabit Ethernet support.

Within TCO, the “vanilla” aspects of the cost of hardware and software are far and away the most important considerations, while oft-promoted factors such as reduced power, cooling, and floor space needs do not consistently figure strongly in the storage purchase decision.

IT Initiatives Expected to Significantly Impact Storage (Enterprise)



IT Initiatives Expected to Significantly Impact Storage (Midmarket)

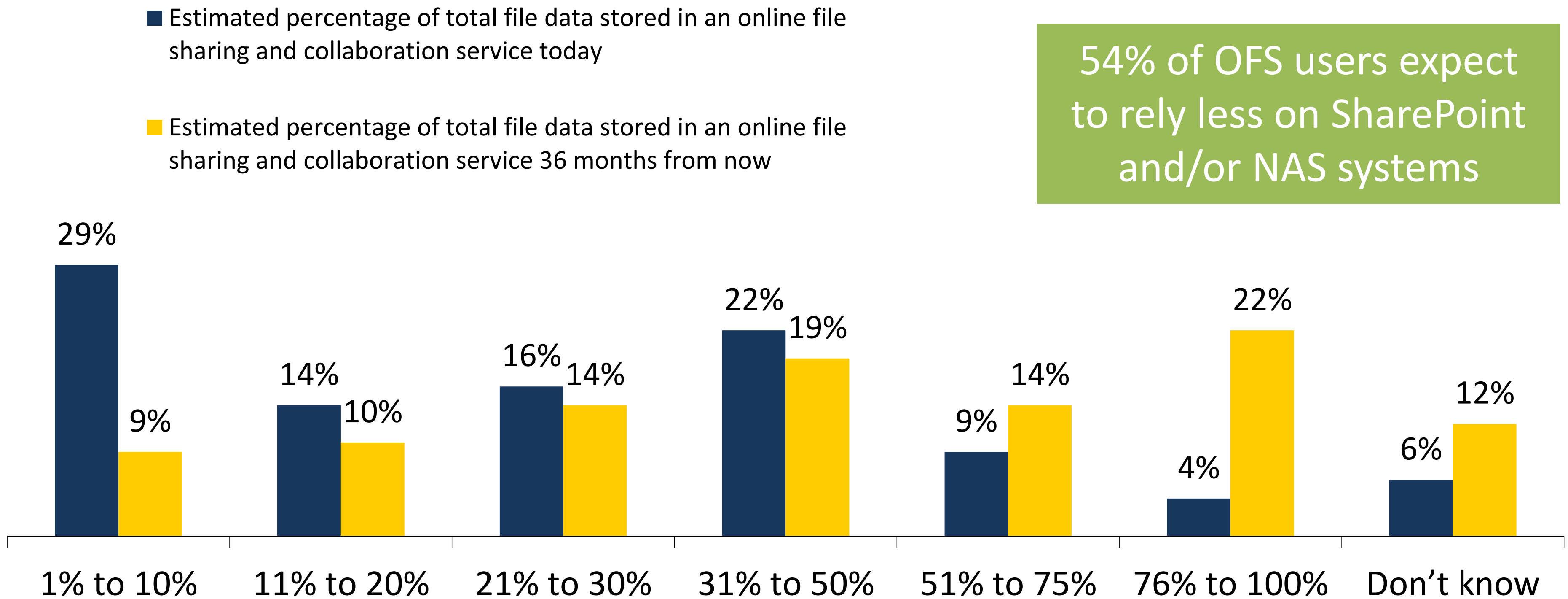


Key Storage Technology Emphases

- Flash – multiple types
- Cloud – varying types
- TCO – never out of style
- Unified, scale-out, virtualized, integrated – often table stakes
- Software-defined – latest buzzword but with real potential
- *Coming soon*
  a) *Blurring of memory and storage*
  b) *Increasing stack-convergence, but with heterogeneity*
  c) *Data governance*
  d) *"Cold data" storage*

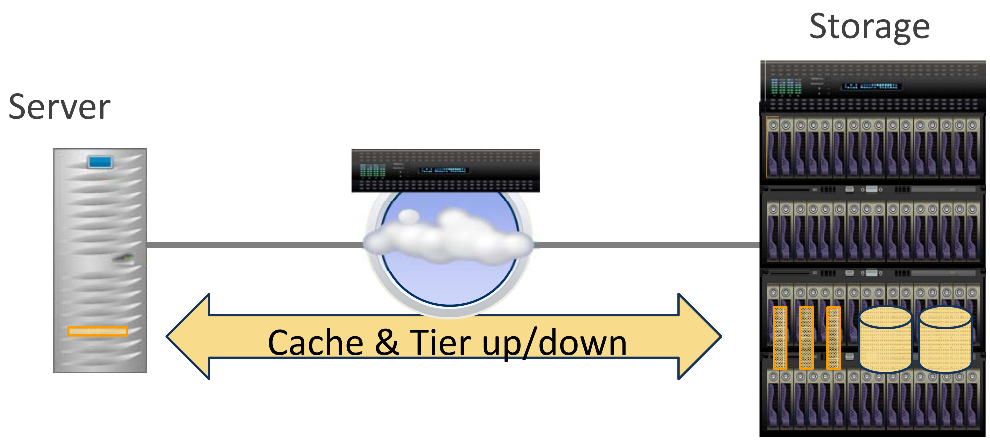
Percentage of Total File Data Stored in OFS Services

What percentage of your organization's total file data would you estimate is stored in an OFS service today? What do you expect that percentage to be 36 months from now?



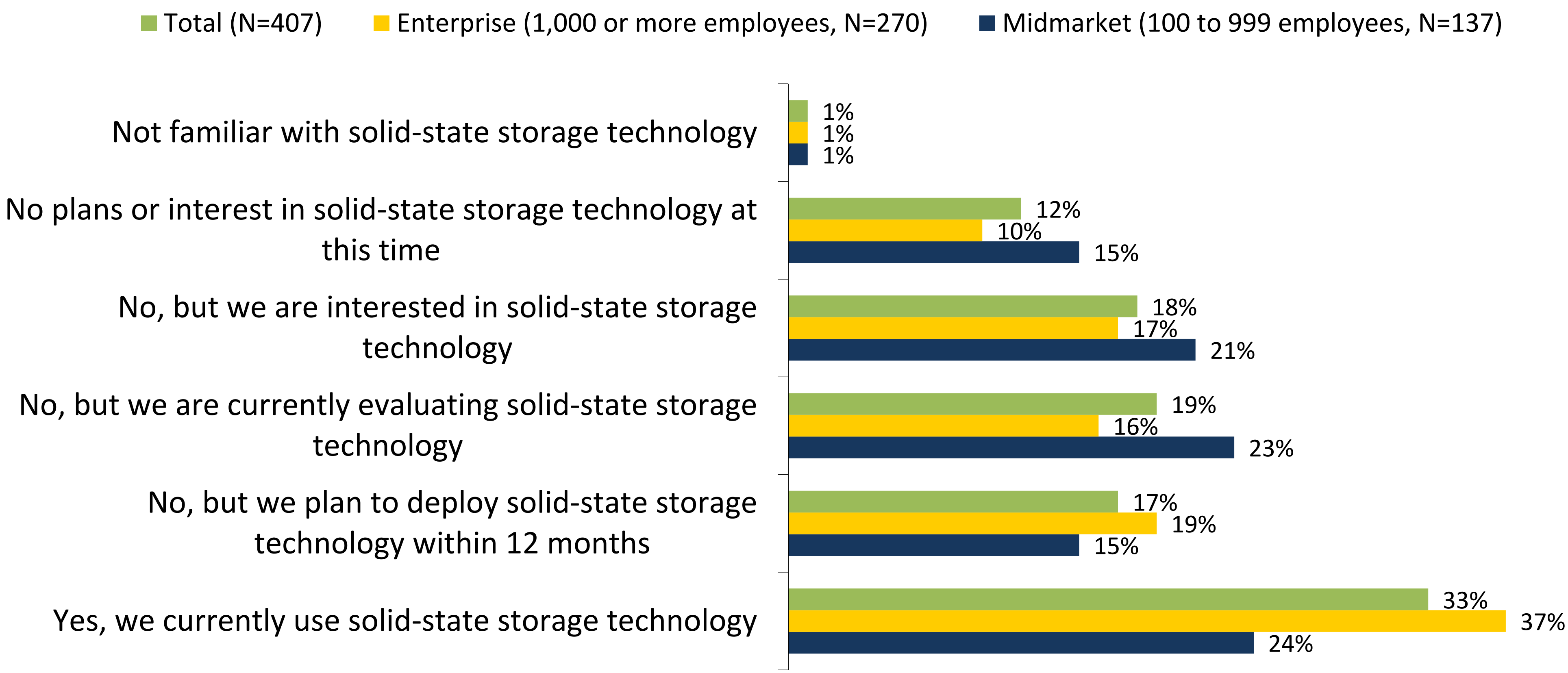
54% of OFS users expect to rely less on SharePoint and/or NAS systems

Solid-state Storage: Everywhere…



- SSS in servers *and* storage (and even network)
- End-to-end cache/tier with hottest data in the server
- Promising, but complex management needed
- Advertised/discussed, but not truly available yet

Solid-state Storage Usage Trends



Source: ESG Research Report, *2012 Storage Market Survey,* November 2012.

Data Protection Market Landscape

Data Protection is seen as a high priority

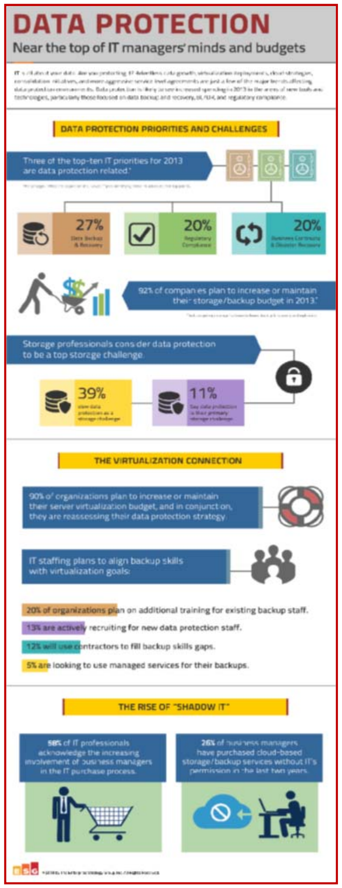
- *"Improve Backup & Recovery"* #2 IT Spend Priority in 2013 overall, #1 for Midmarket organizations
- *"Improve BC/DR"* #9 IT Spend Priority in 2013 overall, #2 for Midmarket organizations

The biggest challenges in data protection:

- Private cloud (highly virtualized) protection
- Endpoint device protection, including corporate and BYOD

The biggest enablers in data protection:

- Virtualization, enabling server portability
- Cloud, for endpoint devices and midmarket BC/DR solutions



Data Protection Trends

- Over 90% of virtualized environments will use a combination of storage-centric **snapshots** and **replication**, in supplement to VM backups
- 5 of the top 6 challenges with protecting virtualized environments deal with '*visibility*' issues, not technical capabilities or features
- **Backup as a Service** (BaaS) is interesting to midmarket servers and BYOD endpoints, whereas **DR as a Service** (DRaaS) is readily understood and considered viable by IT orgs of all sizes
- Augmenting on-premise backup solutions with **cloud-storage** is also appealing, particularly due to not requiring a re-engineering of all on-prem components
- **Deduplication** continues to be a significant enabler in data protection, with source-side discernment being optimum in most cases
- Expect to see:
    - Virtualized protection **appliances**
    - Better software + hardware combined solutions
    - Converged **Backup & Archive** using ***Disk*** + ***Tape*** + ***Cloud***

The ‘Software-defined Storage’ Opportunity

- **Server virtualization places new stress on storage**
  - Both performance and capacity
  - Alternative is typically over provisioning and/or complex management….
  - ….which can be restated as increasing cost and difficulty
- **Software-defined storage is a route to optimization**
  - Addresses mismatch of newer server virtualization and older storage architectures
  - “Frees” IT to run applications and not storage
- **SDS should be less about semantic definition; more about strategically determining what it can do for you**
  - All implementations should provide simplicity, agility, efficiency
  - Look at the same things as ever – performance, scalability, affordability, function

Taming
the storage beast

Seriously, Dear IT Professional….

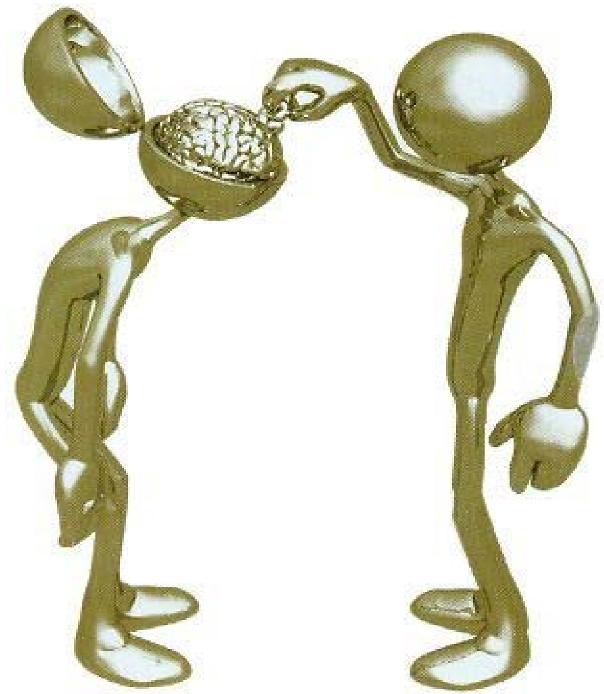
Are you a good kisser?

Storage Criteria 101

Manage Data *not* Storage

- Too much data….
  - 90% of all data was created in the last two years
  - 2.5 quintillion bytes created daily
- ….and not enough money
  - Data is an asset with variable (usually diminishing) value over its lifecycle
- Simply ‘managing storage better’ is addressing the symptom rather than the cause
  - And it can actually make things worse

Thinking Things Through



"Faced with the choice of changing one's mind and proving that there is no need to do so, almost everybody gets busy on the proof."

- J. K. Galbraith

Cleaning Out The IT [Storage] Fridge

- **Empty out food [data!] that ….**
  - Has passed its sell-by date (reduce your risk of sickness)
  - You no longer like or need
  - Belongs to a long-gone visitor
  - Shouldn’t have been in the fridge in the first place
  - You have too much, or is unopened, or doesn’t need refrigeration (maybe move to counter, pantry or freezer)

- **A well-run (maybe smaller?) fridge means**
  - You can find things
  - More effective choice
  - Reduced CAPEX and OPEX

Options to Manage Storage *and* Data

- Tiering
- Provisioning
- Dedupe
- Flash & Tape
- Metadata/QoS
- Cloud
- Deletion
- Convergence

Asking Questions

- What are your objectives?
- What could/should your objectives be?
- How do you plan, long-term?
- What drives your costs/efficiencies?
- When did you last delete a significant amount of data?
- What vendor assurances do you have/can you get?
- Do you measure and verify as you go?

Learn from Winnie the Pooh

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Thank You

Please contact us for more information

Mark Peters, Senior Analyst, ESG