Uptime Institute®

7th ANNUAL SURVEY RESULTS

Ali Moinuddin

Managing Director, Uptime Institute EMEA

Proven and Adopted

Certified Resilience

Operational Excellence

IT Efficiency

Accredited Training

More than 1,200 Certifications in over 87 Countries

What We Do

Uptime Institute simplifies the process of planning, designing, building and operating a data center.

WE DELIVER BUSINESS VALUE BY REDUCING THE RISK OF INFRASTRUCTURE OUTAGES

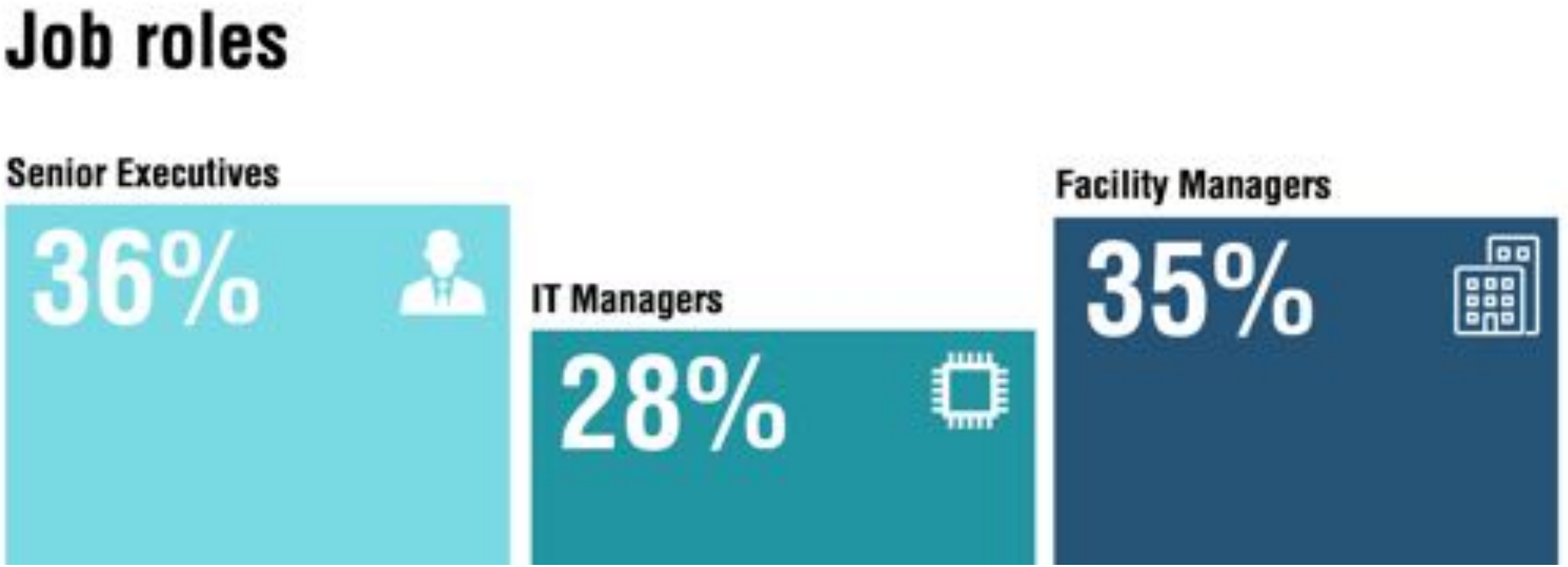
7th Annual Uptime Institute Survey

- Insights from over 1,000 data center executives and end users from around the globe.

  - How are companies adjusting to shifting budgets and deployment models?
  - What impact is cloud computing having on capacity planning?
  - What are the adoption rates for new technologies?
  - What are the biggest challenges facing IT Infrastructure organizations in the coming year?

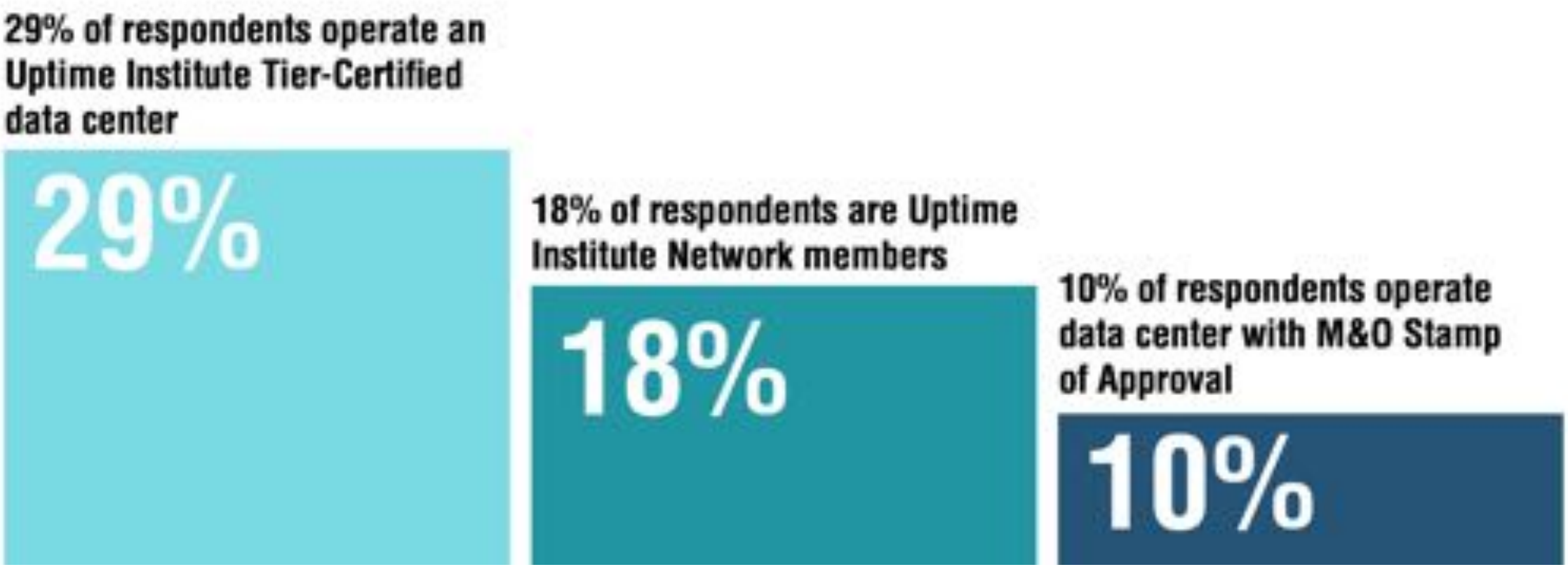
Demographics: Over 1,000 Respondents

Survey Responses From End-users Only



Vertical Industries Represented

Uptime Institute Client Participation in Survey



Uptime Institute®

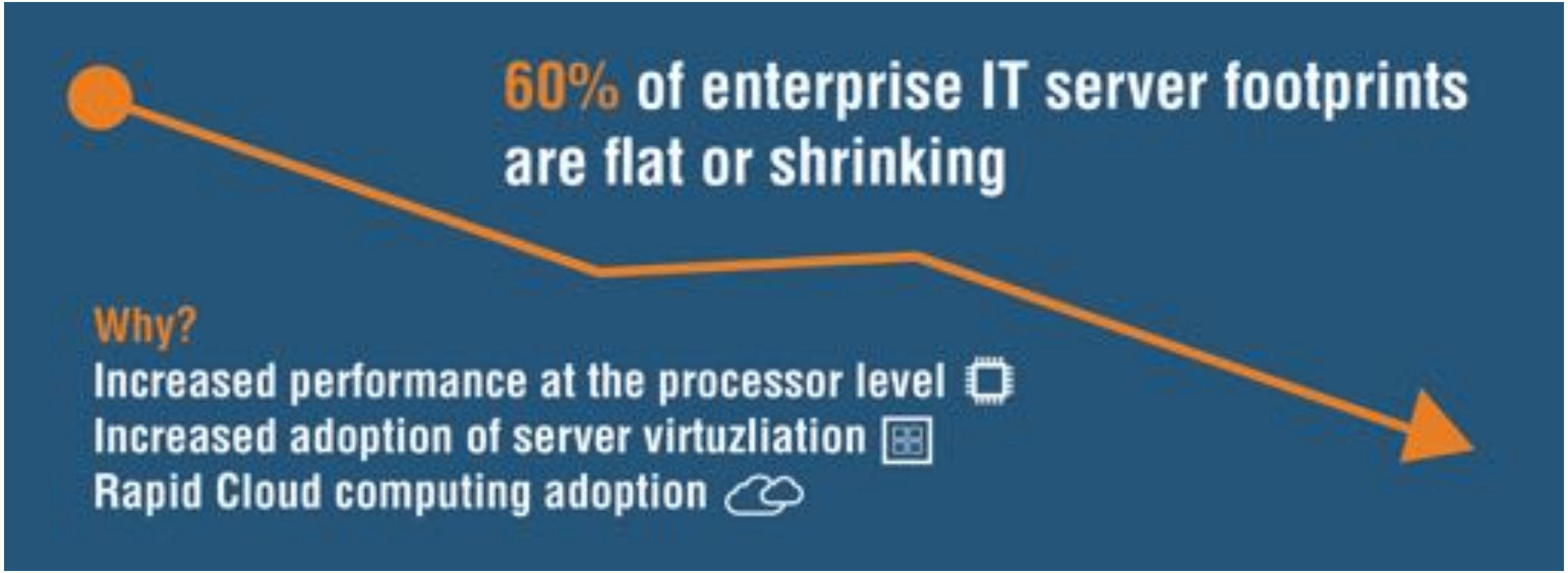
2017 Data Center Industry Survey; Megatrends

Phil Collerton

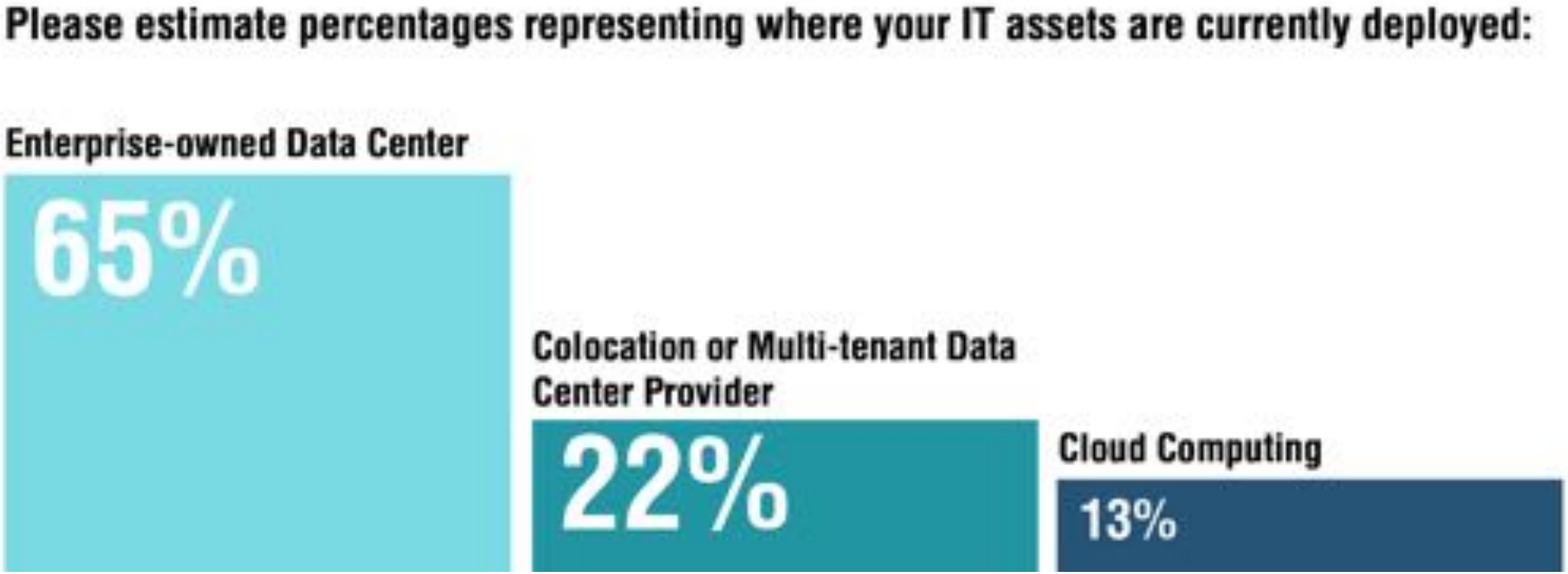
Managing Director, Uptime Institute EMEA

25th July 2017

Industry-wide Consolidation



Hybrid deployment models hold steady



Cloud Siphoning Off Some Workloads

67% of respondents see workloads that would previously have resided in their own data centers going to the cloud

The largest organizations are 10% more likely to deploy to the cloud than the smallest IT groups.

Mostly an Executive-level Decision

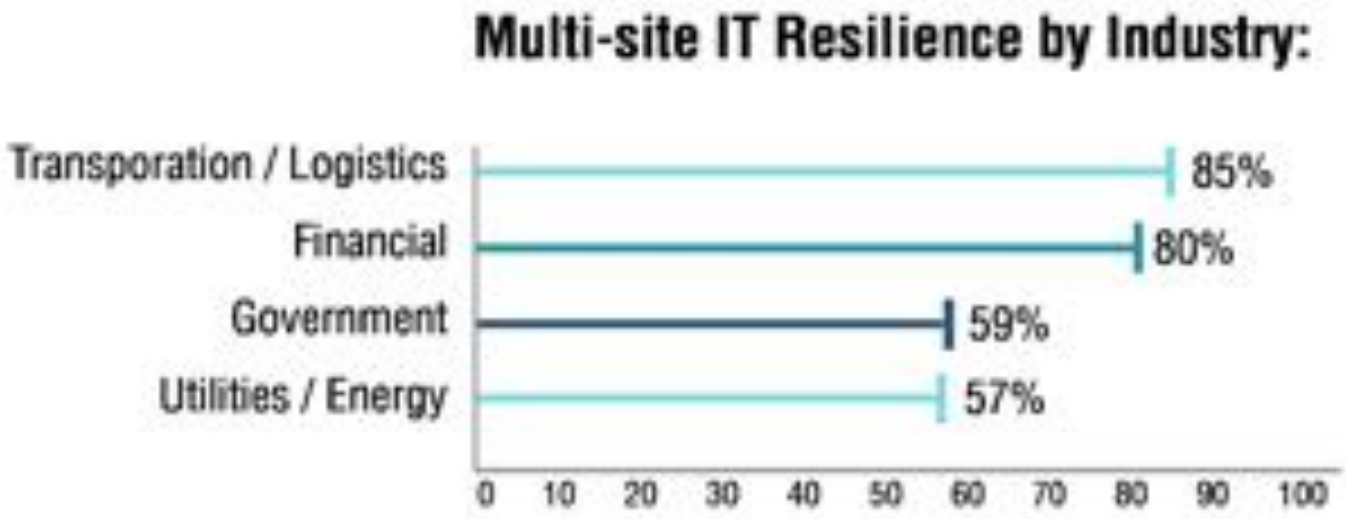
Governance, Planning, Processes Need Work

Over 70% of respondents said that their organization's process for evaluating cloud and colocation providers could use improvement. 15% described it as incoherent.

Data Center Capacity Planning Under The Specter of Cloud

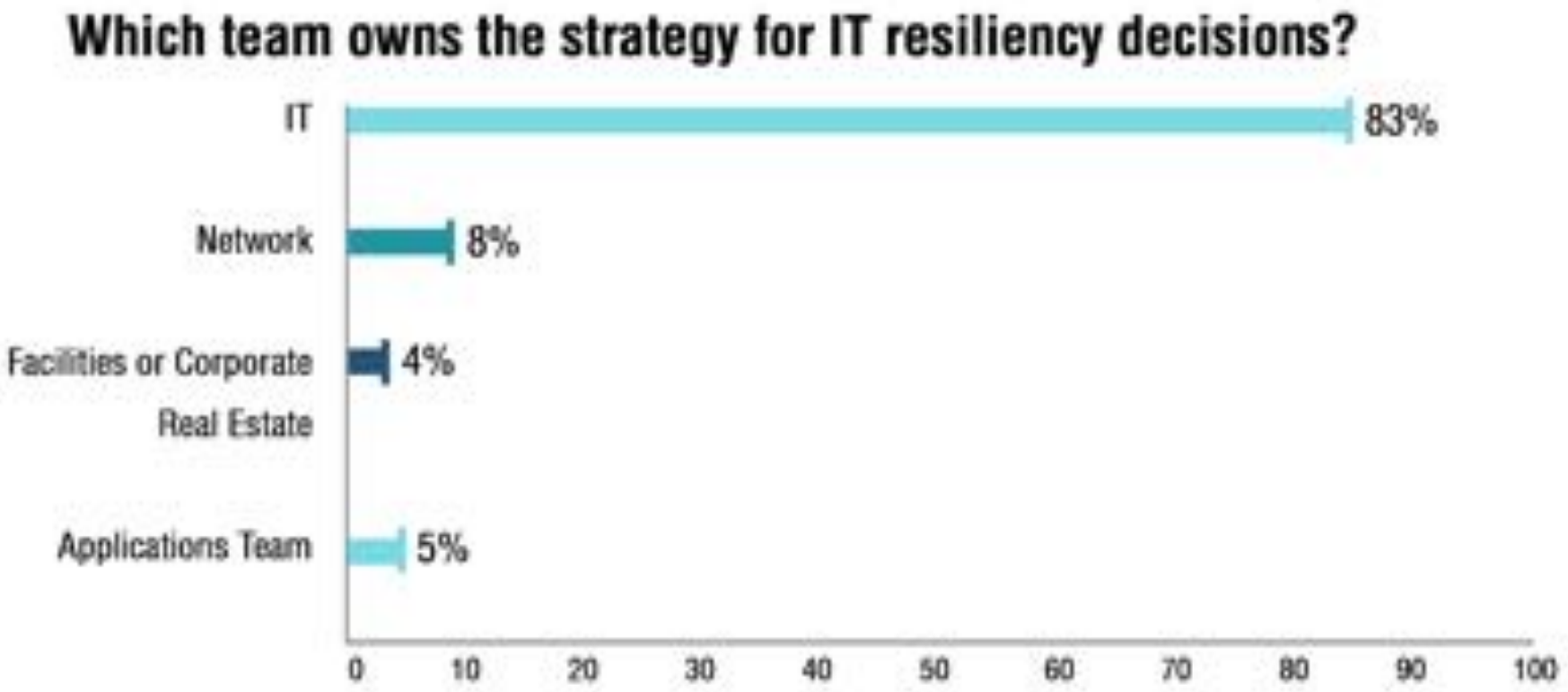
- Around half of enterprise facilities teams are updating legacy sites
- Running critical IT out of a well planned datacenter built some time ago is not a bad thing
- If you are making the most of existing assets and upgrading live sites, operations (sequencing, training, maintenance) become even more critical

Application failover: Hype vs Reality

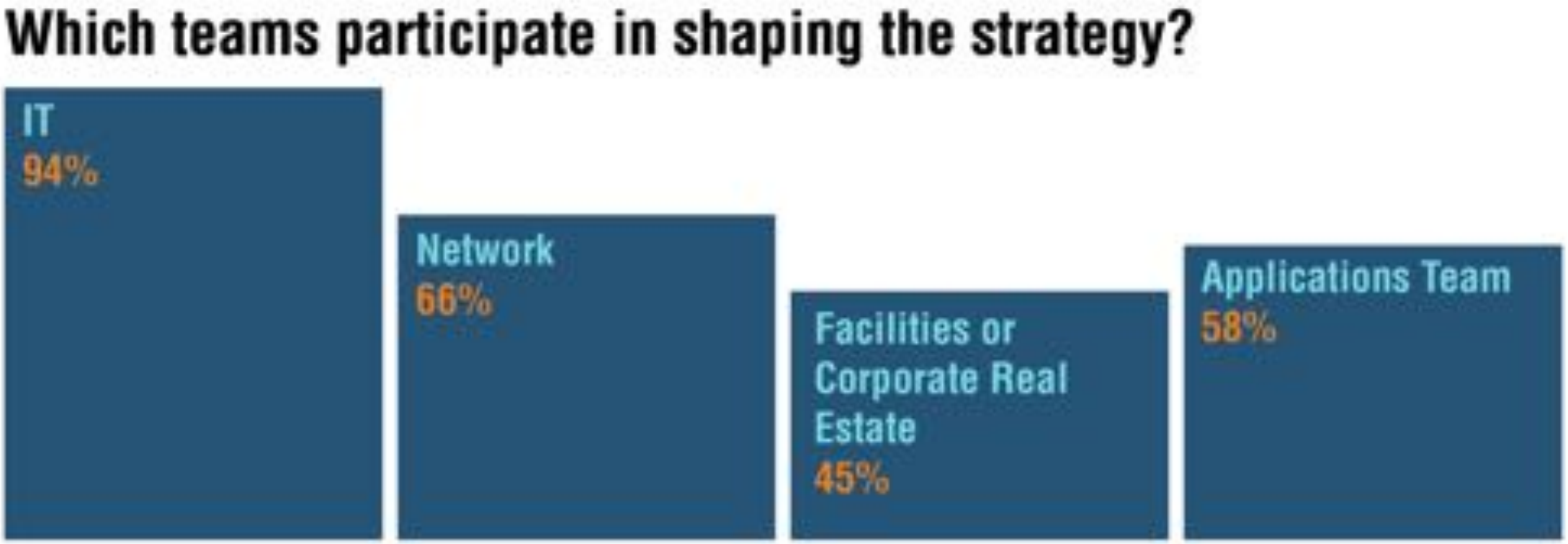


Not worth the risk?

IT is Calling The Shots



Apps Teams Becoming Involved



Confidence Seems Pretty High…

Downtime matters

Almost 90% of organizations conduct root cause analysis of an outage

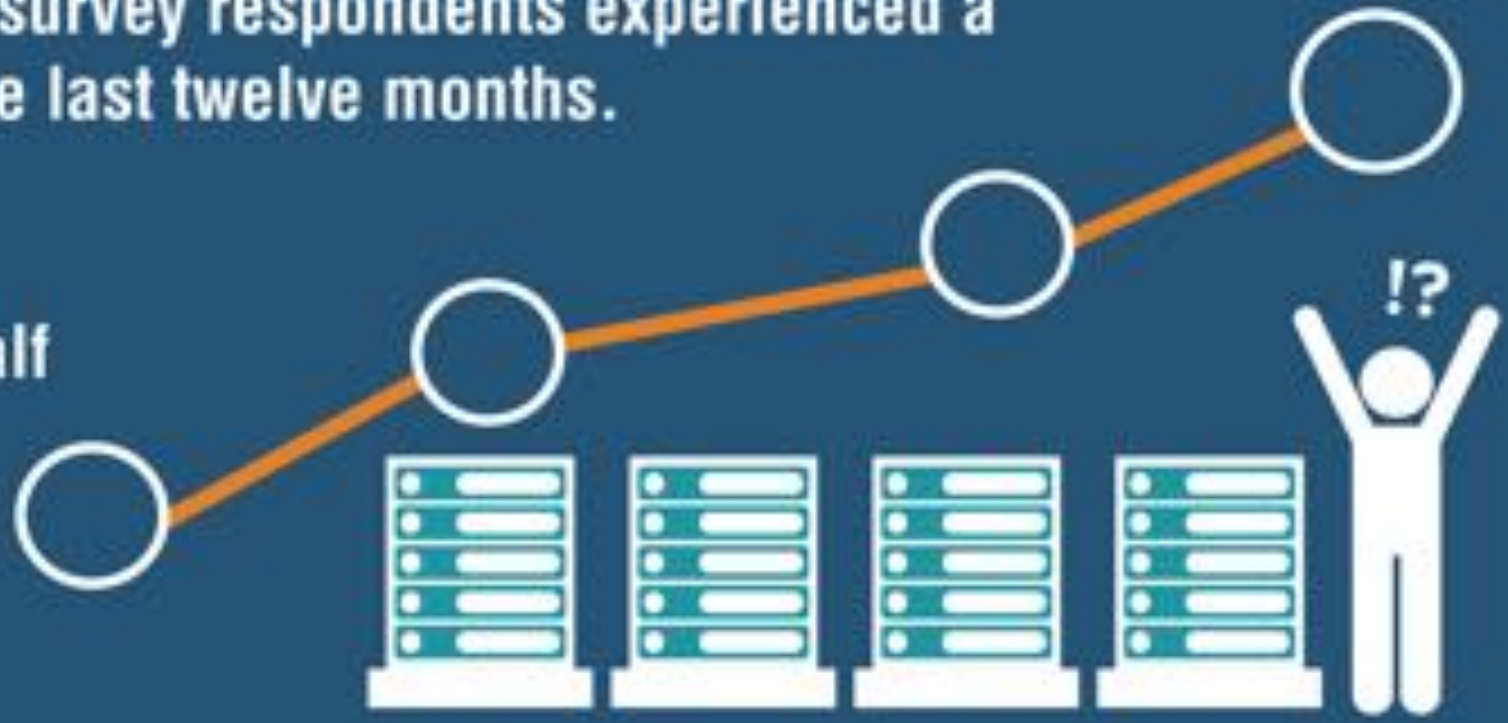
Over 60% of organizations say they measure the cost of downtime

Only 8% of respondents said their management is less concerned about IT outages than they were a year ago

Hard Work Paying Off For Some!

Overall, around 25% of survey respondents experienced a data center outage in the last twelve months.

Members of the Uptime Institute Network had half as many instances.



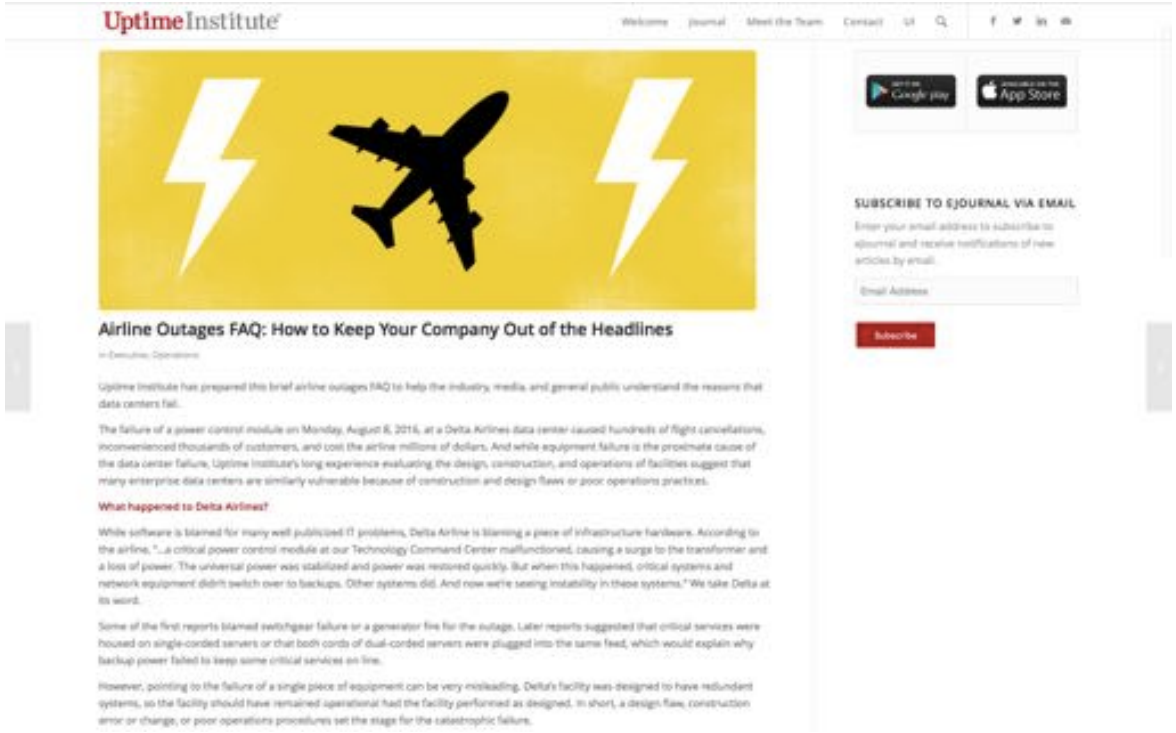
Downtime happens

“IT resiliency” cost Southwest Airlines tens of millions of dollars

- A poorly understood single router error set off cascading systemic failures in 2016.

- Media calling for CEO’s resignation
- Millions in lost earnings and stock price devaluation
- Thousands of customers inconvenienced and angered

Uptime Institute Prediction…

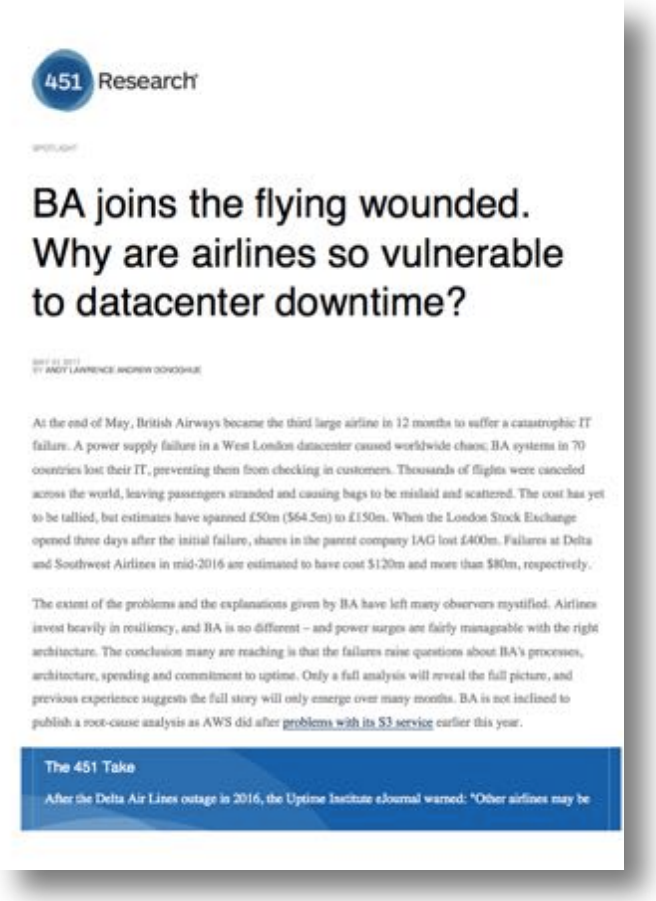


"Airlines may be similarly vulnerable because of skimpy IT budgets, poor prioritization, and bad processes and procedures."

Delta Airlines Outage

- August 2016, computer outage prompted the airline to cancel roughly 2,300 flights impacting hundreds of thousands of passengers and prompting three days of chaos.
- A malfunction in an ageing piece of equipment at its data centre had caused a fire which knocked out its primary and back-up systems.
- This system failure knocked $100m off revenues in August. In January 2017, a smaller outage resulted in hundreds of flights being cancelled.

Global Outages Continue to Happen…



451 Research

BA joins the flying wounded. Why are airlines so vulnerable to datacenter downtime?

At the end of May, British Airways became the third large airline in 12 months to suffer a catastrophic IT failure. A power supply failure in a West London datacenter caused worldwide chaos; BA systems in 70 countries lost their IT, preventing them from checking in customers. Thousands of flights were cancelled across the world, leaving passengers stranded and causing bags to be mislaid and scattered. The cost has yet to be tallied, but estimates have spanned £50m ($64.5m) to £150m. When the London Stock Exchange opened three days after the initial failure, shares in the parent company IAG lost £400m. Failures at Delta and Southwest Airlines in mid-2016 are estimated to have cost $120m and more than $80m, respectively.

The extent of the problems and the explanations given by BA have left many observers mystified. Airlines invest heavily in resiliency, and BA is no different – and power surges are fairly manageable with the right architecture. The conclusion many are reaching is that the failures raise questions about BA's processes, architecture, spending and commitment to uptime. Only a full analysis will reveal the full picture, and previous experience suggests the full story will only emerge over many months. BA is not inclined to publish a root-cause analysis as AWS did after problems with its S3 service earlier this year.

The 451 Take

After the Delta Air Lines outage in 2016, the Uptime Institute eJournal warned: "Other airlines may be

BRITISH AIRWAYS

£360M > reduction in market valuation

Call for CEO to resign

Brand severely impacted

The Global Data Centre Authority

- 1200+ Certifications in 88+ Countries
- 120+ M&O awarded
- 2100+ ATD/ATS/AOS awarded

Other outages…

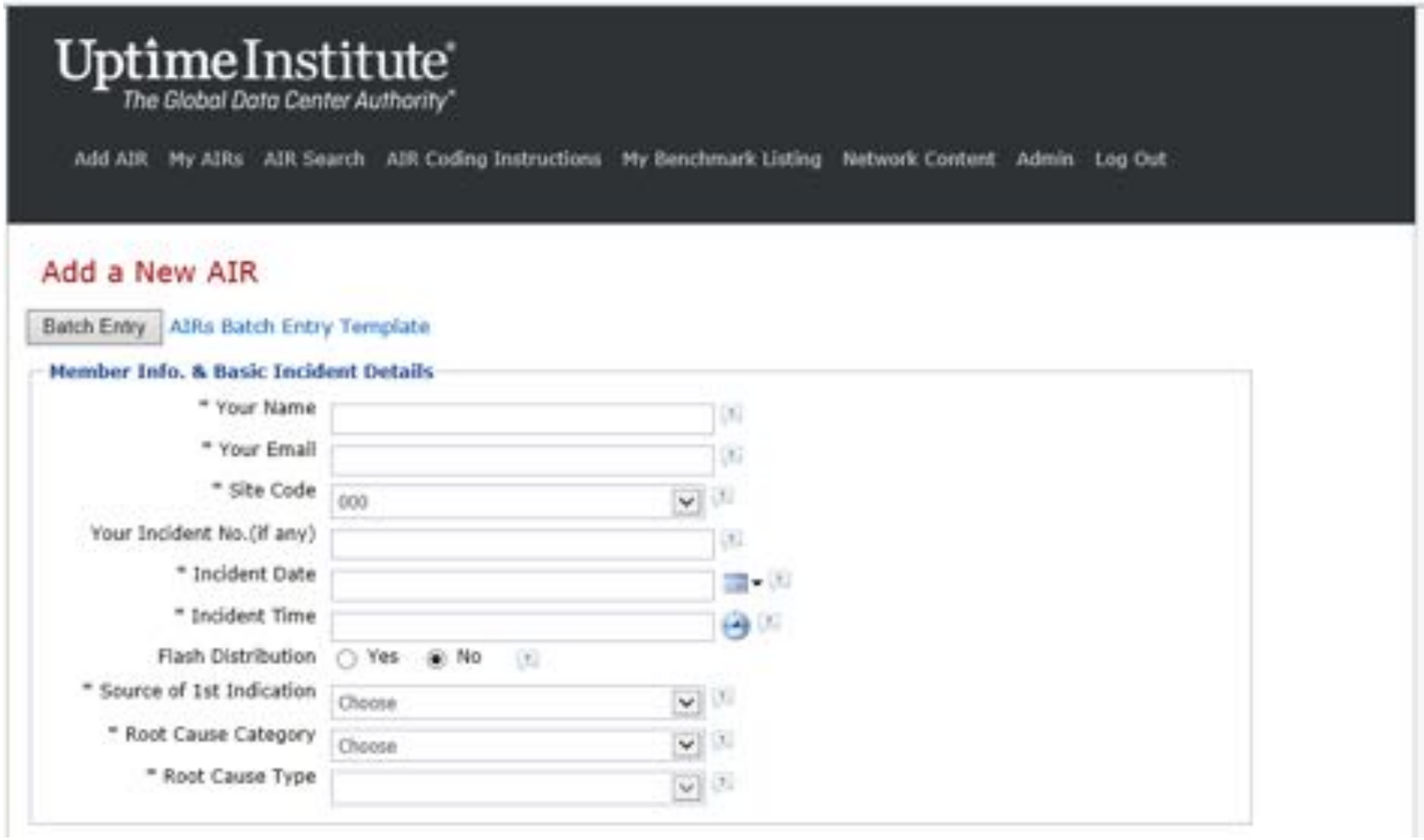
"Systems failure" impacted 600K customers. Company fined £56M

"systems failure" impacting customers

a "technical configuration" froze the market" $10M accrual set aside

"upgrade of its computer systems locked customers out of accounts"

Uptime Institute AIRs



Match Outage Root Cause - Globally

AIRs Matching Your Search Criteria Modify Search New Search

By default, search results are sorted chronologically by *Incident Date*. To reverse the sort order, double-click the *Incident Date* column heading. Results may also be sorted by *Incident #*, *Entry Date*, *Manufacturer* and *Model/Capacity* by double-clicking the appropriate column heading.

Search Results

Incident #	Entry Date	Incident Date	Manufacturer	Model/Capacity	Infrastrcutre System Affected	Infrastrcutre System Type	view
2013-210	2013-05-08	2013-04-07	MGE	EPS8000/800KVA 72-130108-44	Electrical	UPS System	
2010-274	2010-04-30	2009-12-30	MGE	EPS 6000	Electrical	UPS System	
2010-128	2009-10-12	2009-09-03	MGE	EPS 6000/ 750KVA	Electrical	UPS System	
2009-419	2009-05-18	2009-01-26	MGE	EPS6000/400KW	Electrical	UPS System	
2010-151	2009-10-20	2009-01-26	MGE	MGEEPS6000/400kw	Electrical	UPS System	
2009-390	2009-04-09	2008-11-14	MGE	EPE-6000 750 kVA	Electrical	UPS System	
2007-372	2007-06-27	2007-06-26	MGE	EPS 6000	Electrical	UPS System	

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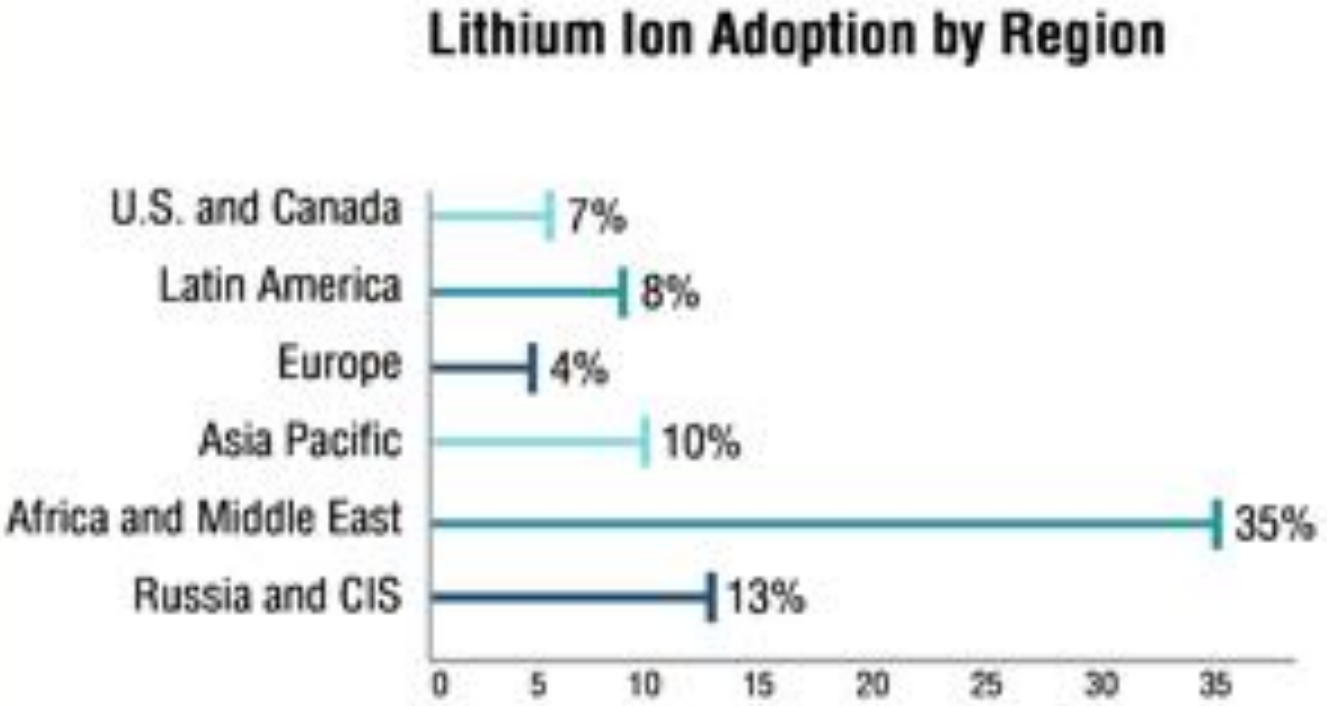
Data Center Industry Survey; Adoption Trends

Phil Collerton

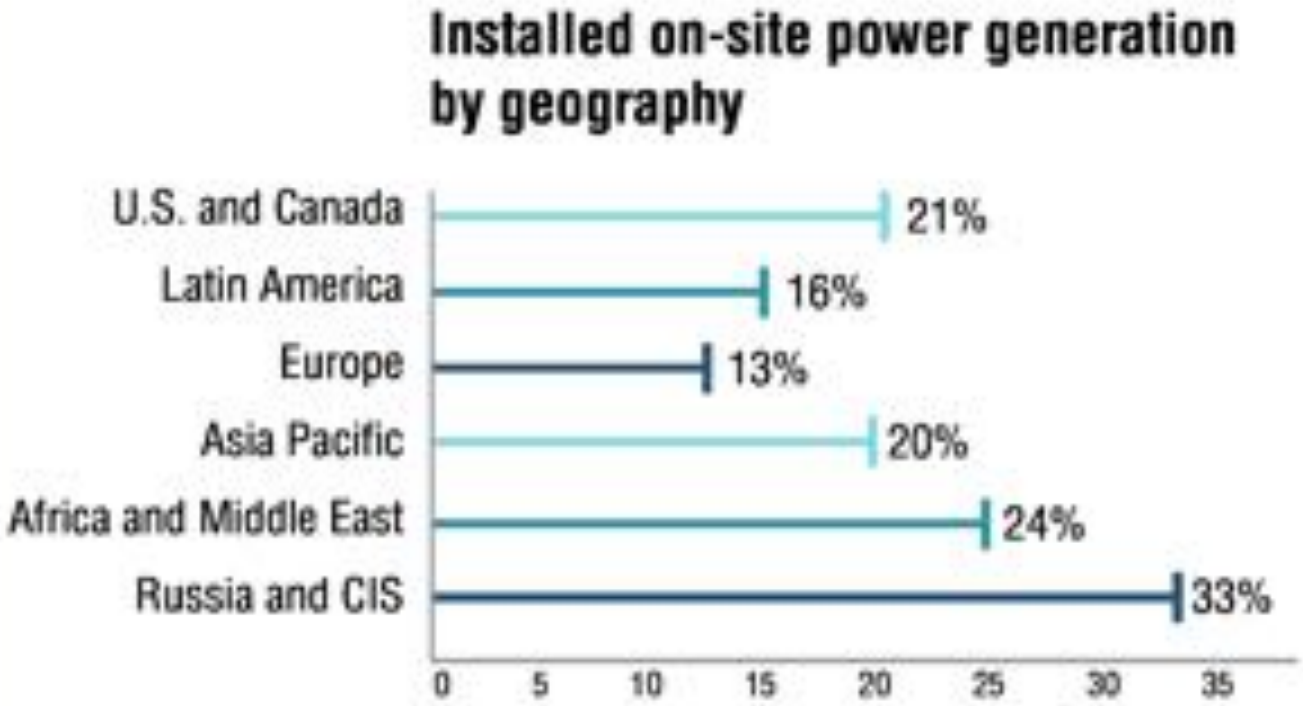
Ali Moinuddin, Uptime Institute Europe

The tradeoffs with fire suppression

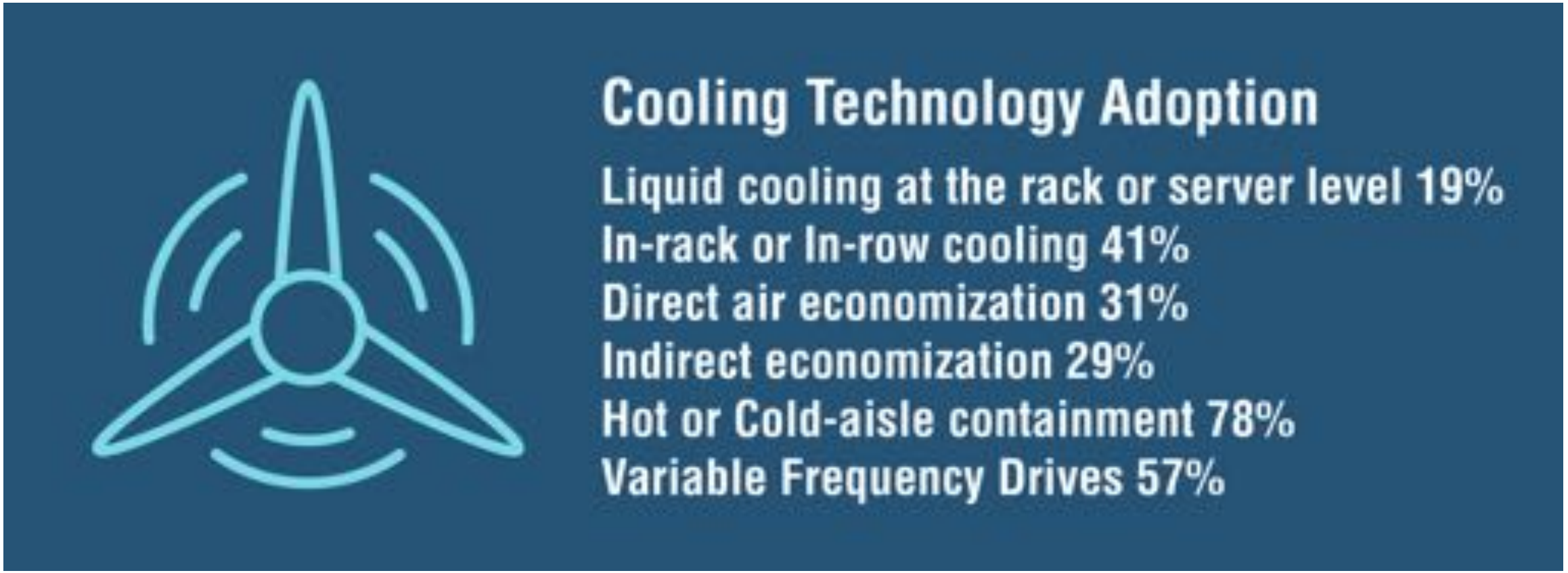
Lithium Ion in the Data Center



On-site Power Gen Varies by Region



Advanced cooling on the rise?



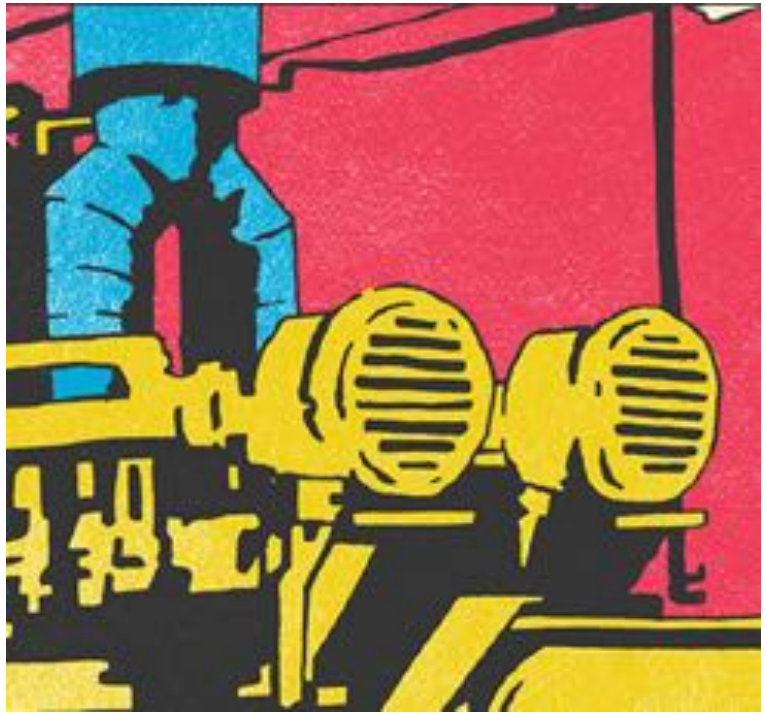
Server density still fairly low

Average Power Density

<4kW per rack 34%
4–5.99kW per rack 33%
6–7.99kW per rack 16%
8–9.99kW per rack 8%
10-12kW per rack 5%
>12kW per rack 4%

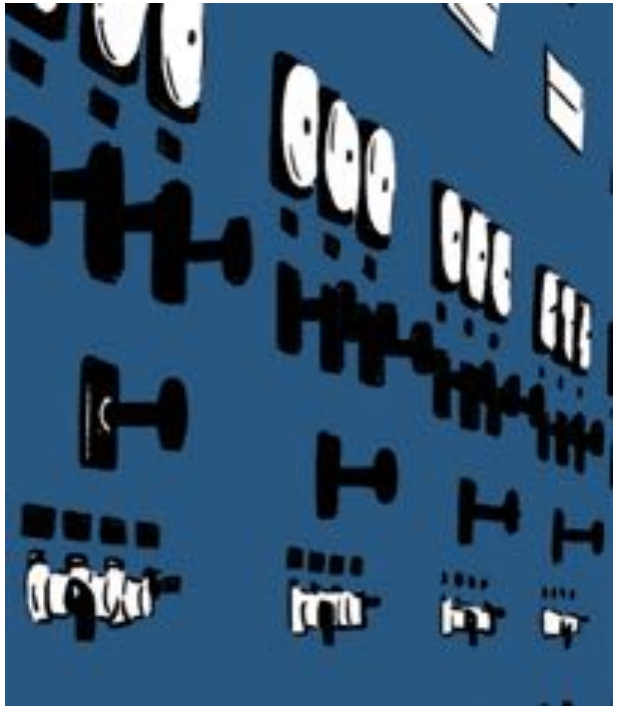
Capital project in North America, 2016

- Backup power systems failed during a simulated electrical utility outage.
- The underlying reason for the failure was a “feature” engineered into the backup power systems.
- Owner did not receive training, did not have appropriate knowledge, and had not been informed of its existence, thereby defeating the purpose of the data center.



Capital project in Europe 2016

- Service work on the power systems required placing a screwdriver on a live 400-volt connection.
- Additional failures discovered, due to incorrect fuse ratings and errors in the building monitoring and automation system.
- Any of those three issues would have resulted in a service interruption of the new data center.



Capital project in Africa 2016

- A data center owner commissioned a international engineering firm to design and deliver a Tier III data center for critical infrastructure for banking.
- The initial designs did not meet Tier III topology standard and left the facility open to failure.
- Design documentation was adjusted based on Uptime Institutes recommendations and changed to help meet the business objectives.

Capital project in Africa 2016

- An in-house team designed a Tier IV data center for a government department.
- After review the design was revealed as ‘over engineered’ Components of the designed were removed to reduce complexity of design while not impacting Tier objective.
- UI conducted site visited to audit progress of build by third party and to ensure data center was built ‘as designed’.
- Cost saving on $200,000 were realized.

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Any questions?

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Thank-You

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Visit www.uptimeinstitute.com for more information

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