

# 2023 DATA COMPLEXITY REPORT

Driving Simplicity Through Unified Storage

October 2023

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“ Insights from NetApp’s report underscore the need for unified and modernized enterprise storage solutions in the age of rapid digital transformation. Rising security threats and pressure to reduce energy and carbon emissions, coupled with the urgency to adopt new innovations like AI make IT more complex than ever. Leaders need holistic solutions that address these challenges and enable new technologies to thrive across hybrid IT environments.”

- Sandeep Singh,  
Senior Vice President and General Manager of  
Enterprise Storage at NetApp

# 2023 DATA COMPLEXITY REPORT

## Driving simplicity through unified storage

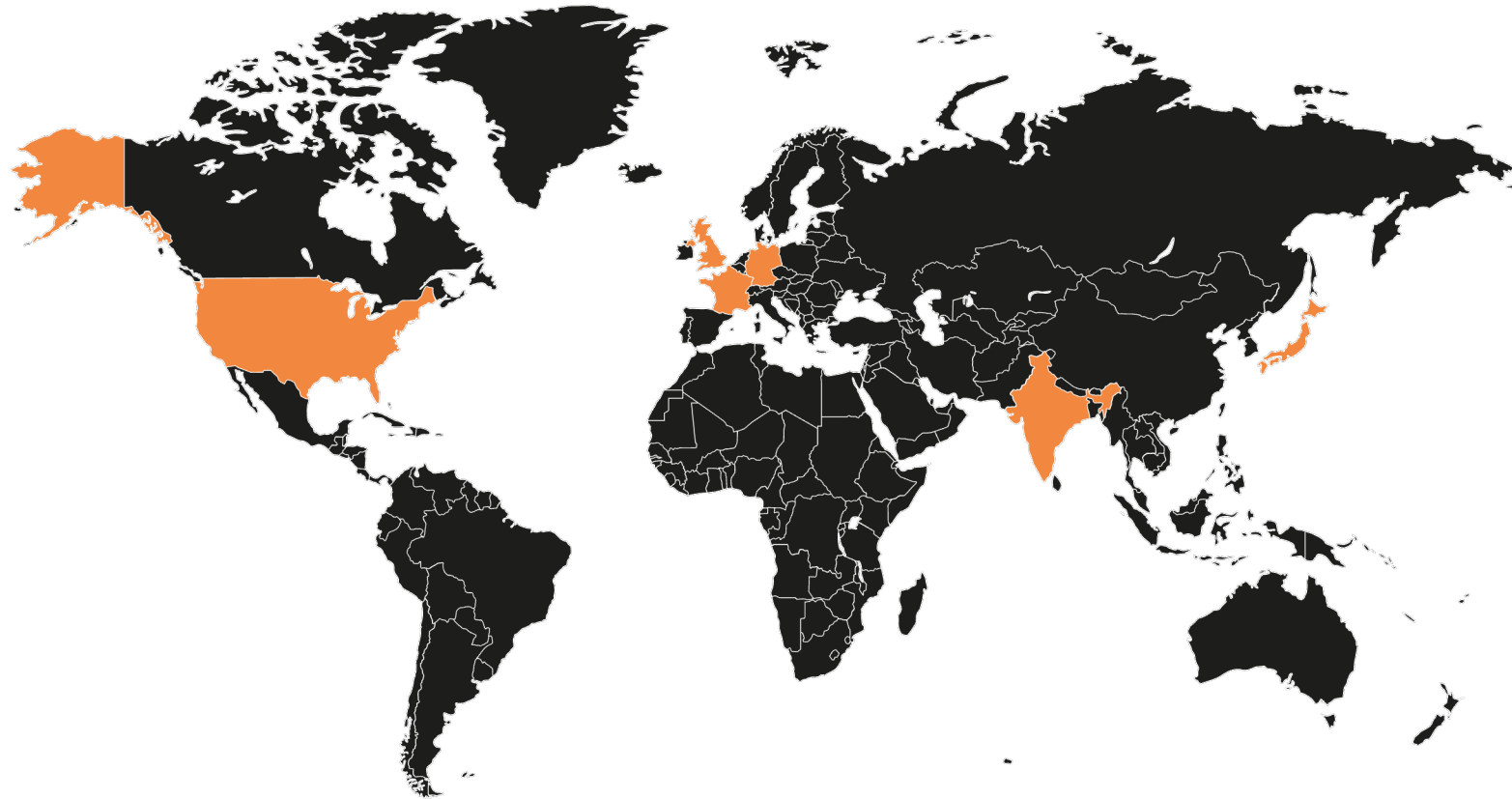
NetApp explored how technology decision makers around the globe are navigating data storage amidst rapidly accelerating change across hybrid and multicloud environments.

This new chapter in digital transformation – fueled by AI – requires innovation that minimizes risk and optimizes sustainability and performance.



## RESEARCH METHODOLOGY

NetApp partnered with Wakefield Research to conduct a quantitative research study from September 29, 2023 to October 5, 2023, among 1,000 C-levels, tech and data executives at businesses in 6 markets: US, EMEA (France, Germany, the UK), and APAC (India, Japan).



### Included roles:

- IT
- IT Infrastructure
- Cloud Infrastructure
- Data Engineering

### Included titles:

(Seniority of Director+)

- CIO
- CTO
- SREs
- IT Ops
- Storage Admins
- DevOps
- CloudOps
- Cloud Architects
- Data Engineers

# EXECUTIVE SUMMARY

Innovation is driving a need for unified storage



## EXECUTIVE SUMMARY

# 98%

of organizations globally are in the middle of their cloud journey, with three out of four reporting workloads using data stored on-premises.

### **AI IS DRIVING FURTHER NEED FOR CLOUD ADOPTION:**

74% of global tech executives are using the public cloud for AI and analytics.

### **DATA SECURITY CONCERNS CAUSE FURTHER COMPLEXITY:**

Data privacy and security are the top 2 concerns in every market, and account for 40% of the top concerns globally.

### **SUSTAINABILITY IS A TOP CONCERN IN TECHNOLOGY INNOVATION:**

More than 80% consider decreasing their carbon footprint as extremely, or very important.

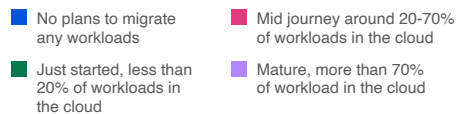
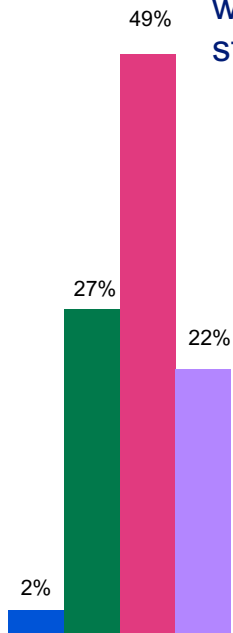
### **THESE CHALLENGES ARE UNIQUELY ADDRESSED BY CLOUD-ENABLED FLASH STORAGE INNOVATION:**

39% say their top need for Flash innovation is to optimize AI performance, cost and efficiency; 30% place data privacy and data recovery at the top of their Flash storage priorities; 83% say sustainability is an extremely important, or very important, criterion in choosing Flash storage.

## 1. CLOUD ADOPTION

Organizations are in the middle of their cloud journey

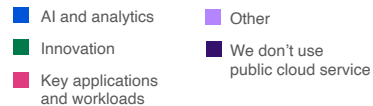
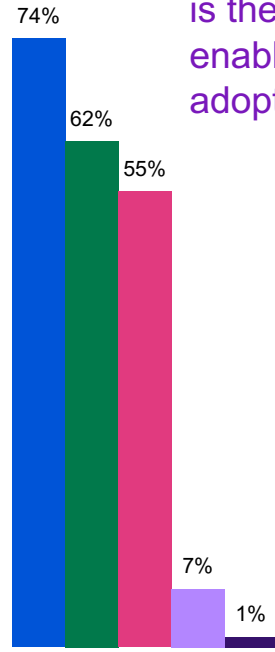
Three out of four still have 30-80% of their workloads are still stored on-premises



## 2. AI ACCELERATION

AI is driving further need for cloud adoption

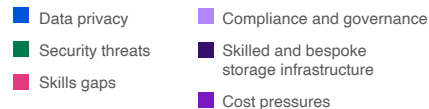
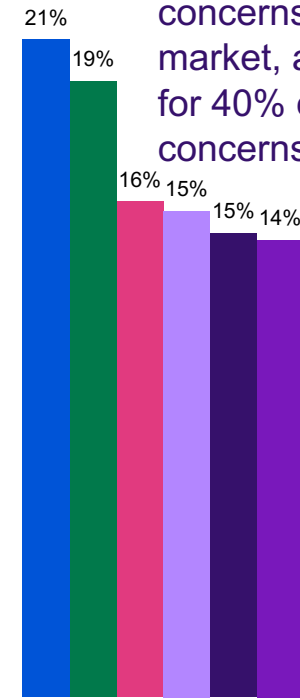
AI adoption is the biggest driver for Cloud, and Cloud is the major enabler for AI adoption



## 3. SECURITY

Data security concerns cause further complexity

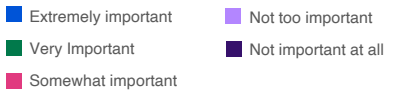
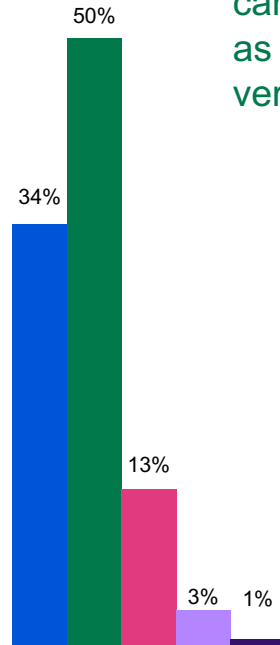
Data privacy and security are the top 2 concerns in every market, and account for 40% of top concerns



## 4. SUSTAINABILITY

Sustainability is a top concern in technology innovation

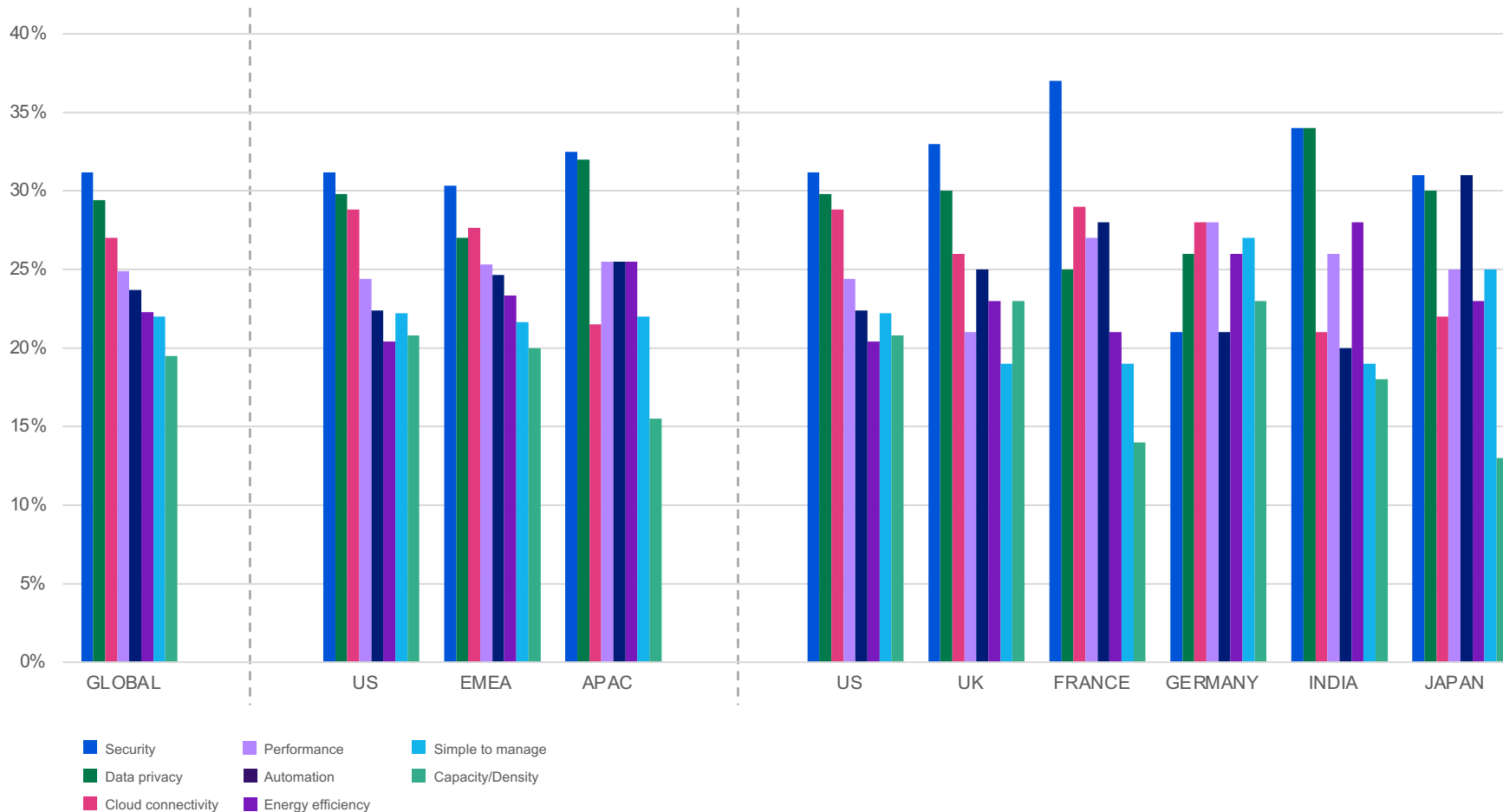
More than 80% consider decreasing carbon footprint as extremely, or very, important



# LEADERS LOOK FOR FLASH INNOVATION TO ADDRESS CLOUD ADOPTION, AI, SECURITY, AND SUSTAINABILITY

Sixty-one percent of tech executives cited either data security or data privacy among their top choices for where they want to see Flash storage design breakthroughs in the next three years.

Where do you expect the most innovation in Flash storage design in the next three years?



Leaders in the US ranked cloud connectivity as a top three area for Flash innovation.

Japan listed automation and security as the biggest drivers for Flash Innovation in the next three years.

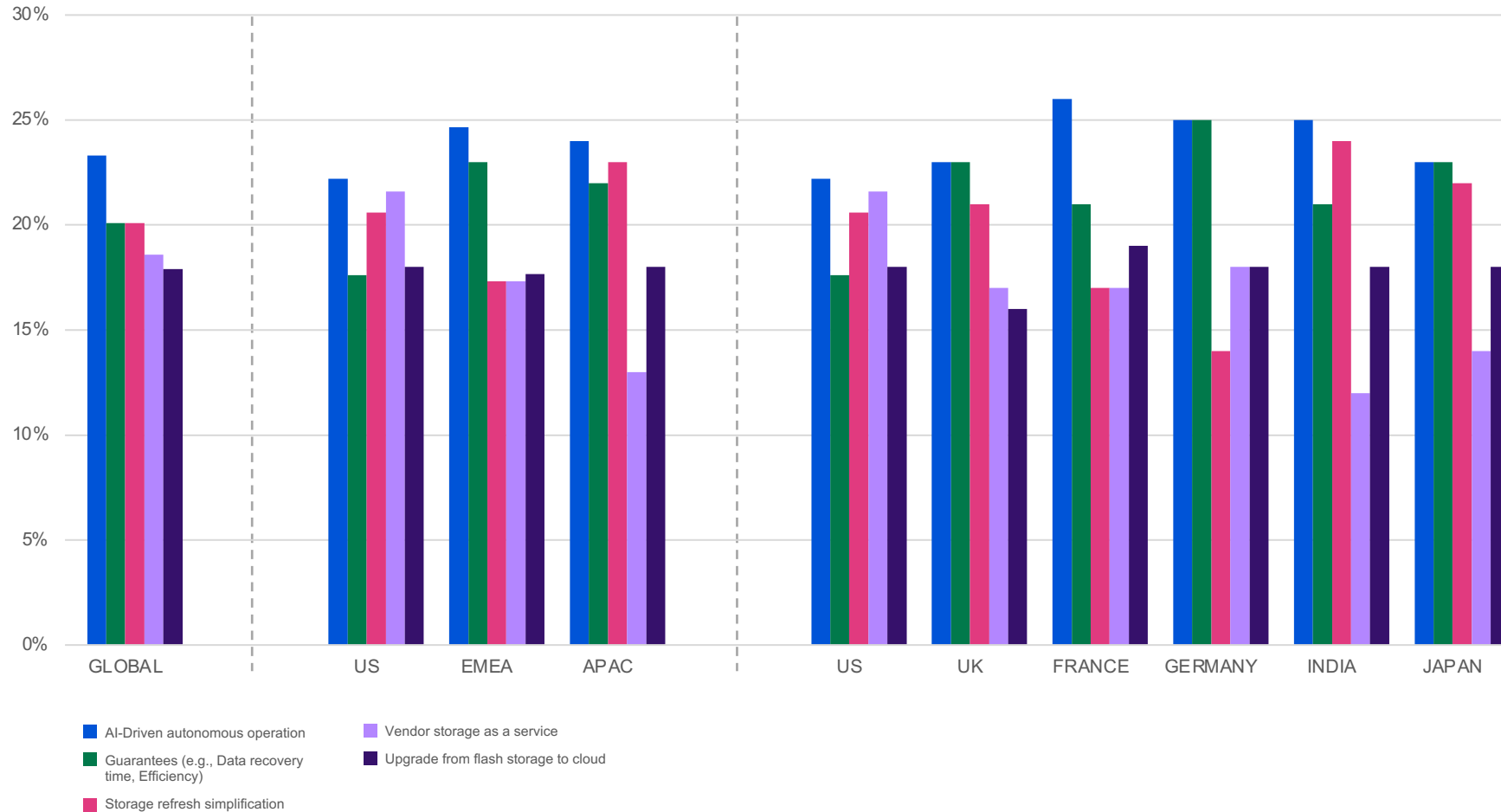
Tech executives from every market expect innovation in Flash storage to address security challenges in the next three years, with France and India expecting it the most and the US, Germany, and Japan the least.



# LEADERS LOOK FOR FLASH INNOVATION TO SUPPORT FUTURE FLASH BUSINESS PROCESSES

One-fifth of leaders believe vendors should offer guarantees for data recovery time and efficiency

Where do you need the most innovation in Flash storage to support future Flash business processes?



Leaders in every market ranked AI-driven autonomous operations as the area where they would like to see the most innovation to support future flash business processes.

Storage refresh simplification is a top two innovation need in APAC and guarantees (e.g., data recovery time, efficiency) was a top two innovation need in EMEA.

# CHAPTER 1: CLOUD ADOPTION

Organizations are in the middle  
of their cloud journey



# 3/4

of global tech executives migrating to the cloud report they still have considerable workloads using data stored on-premises.

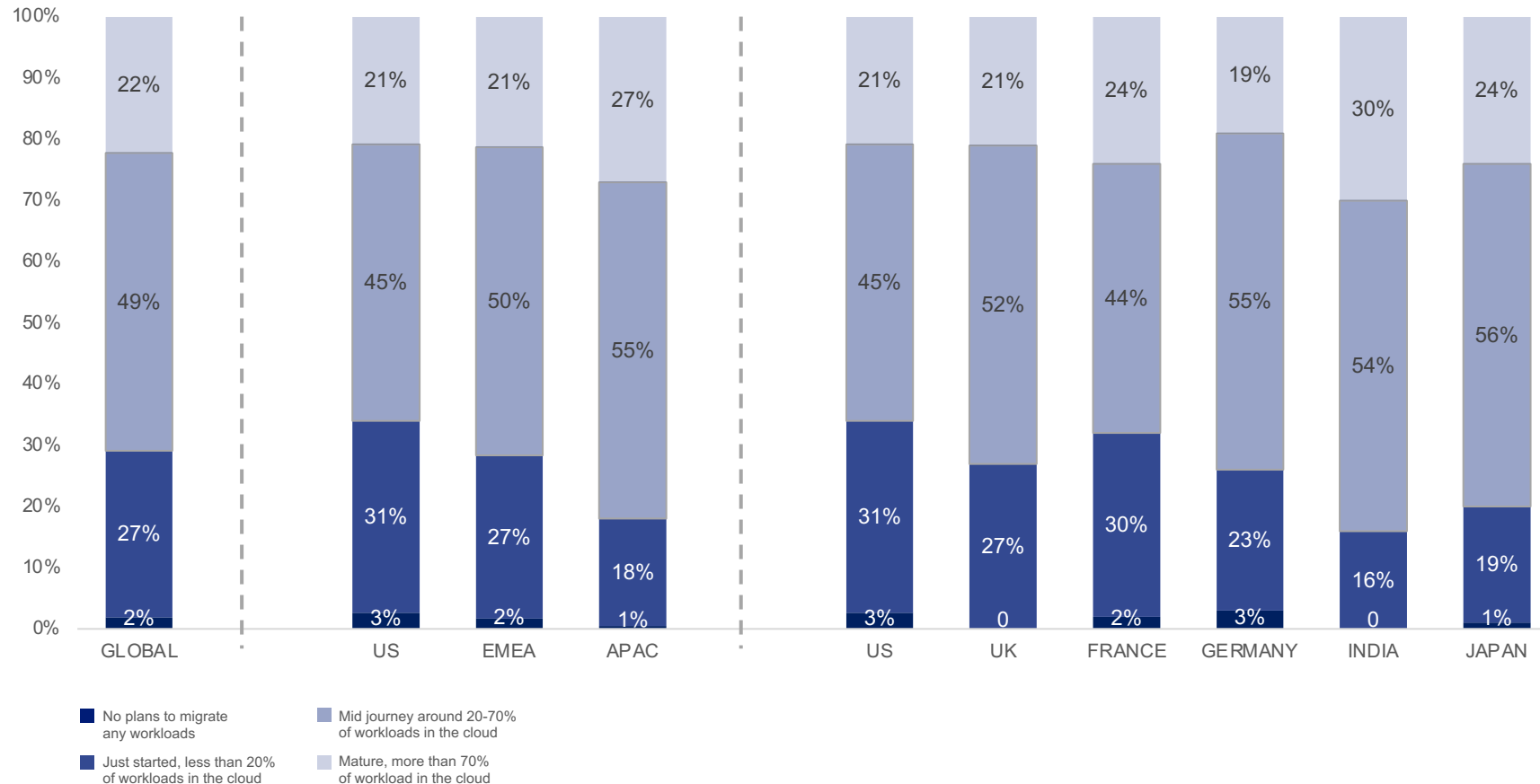
## **WHILE CLOUD MIGRATION IS STARTING TO MATURE, HYBRID MULTICLOUD IS THE REALITY FOR MOST**

98% of global tech executives report they are in the middle of migrating workloads to the cloud, with three out of four reporting 30% - 80% of their workloads are still stored on-premises.

# CLOUD ADOPTION: ORGANIZATIONS ARE IN THE MIDDLE OF THEIR CLOUD JOURNEY

Three out of four still have 30-80% of their workloads stored on-premises

Where are you on your cloud journey?

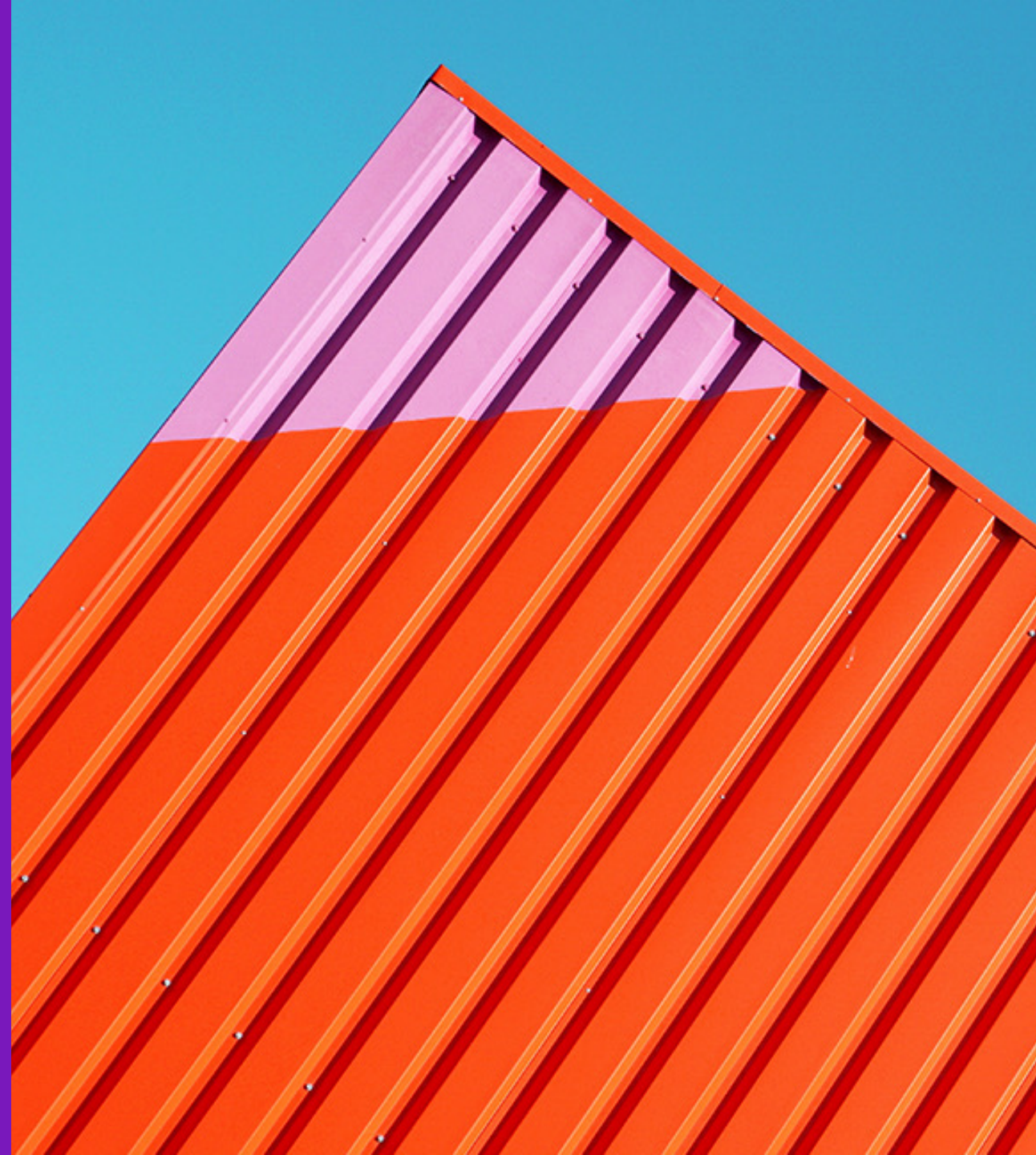


India and Japan are leading in cloud migration with 84% and 80% respectively mid-journey or mature in migrating workloads to the cloud.

The US and France are lagging in cloud migration with 66% and 68% respectively mid-journey or mature in migrating workloads to the cloud.

# CHAPTER 2: AI ACCELERATION

AI is Driving Further Need  
for Cloud Adoption



# 74%

of global tech executives report using public cloud for AI and analytics.

## **ALL-IN ON AI, BUT CHALLENGES REMAIN**

72% of companies are already using generative AI and 74% are leveraging the cloud for AI and analytics services.

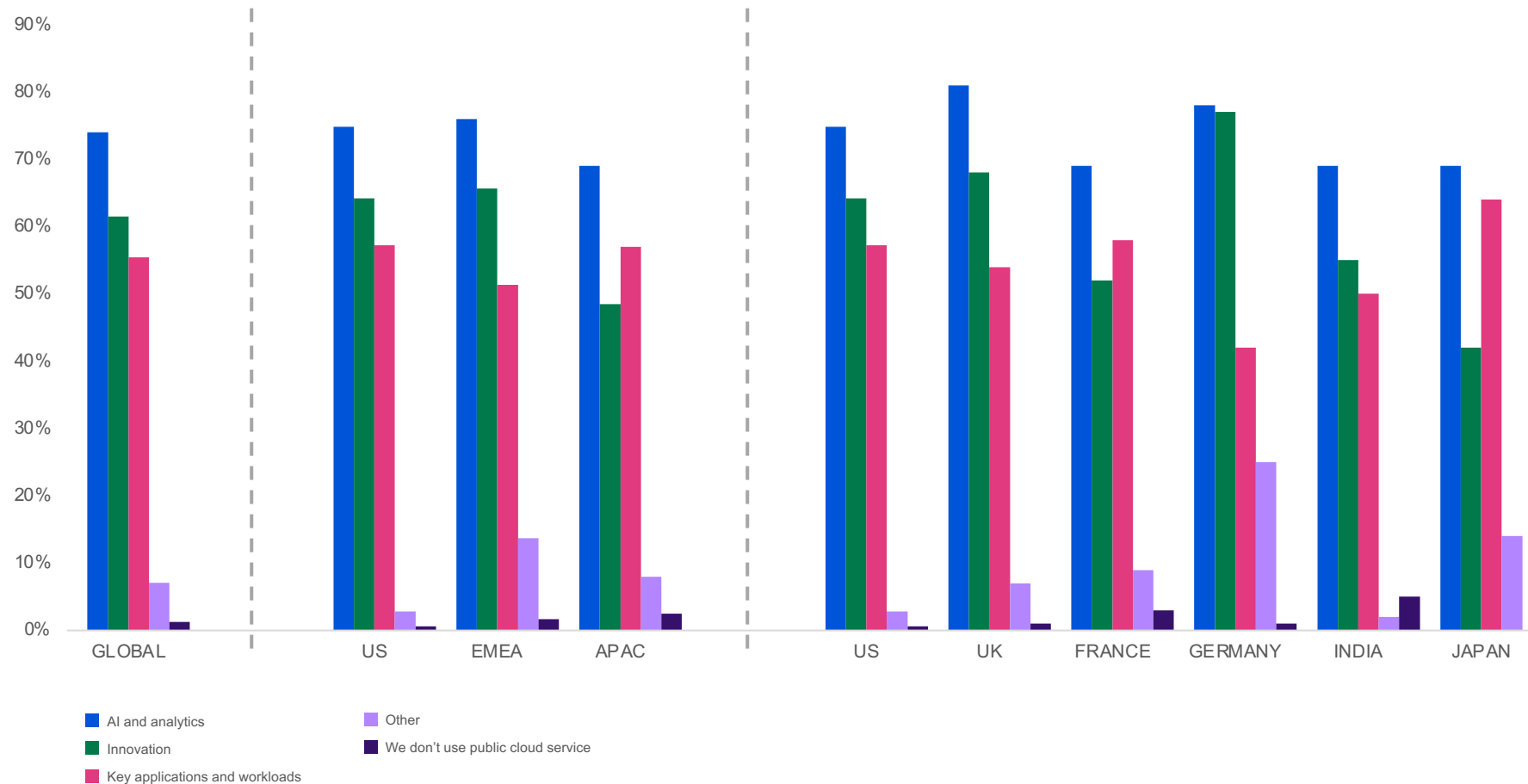
But AI deployment comes with its own set of complex challenges: data security (57%), data integration (50%), and talent scarcity (45%) persist as barriers.

Tech executives globally (39%) say their top need for Flash innovation is to optimize AI performance, cost and efficiency.

# AI: ACCELERATED AI IS DRIVING FURTHER NEED FOR CLOUD ADOPTION

AI adoption is the biggest driver for Cloud, and Cloud is the major enabler for AI adoption

For which of the following are you using a public cloud?

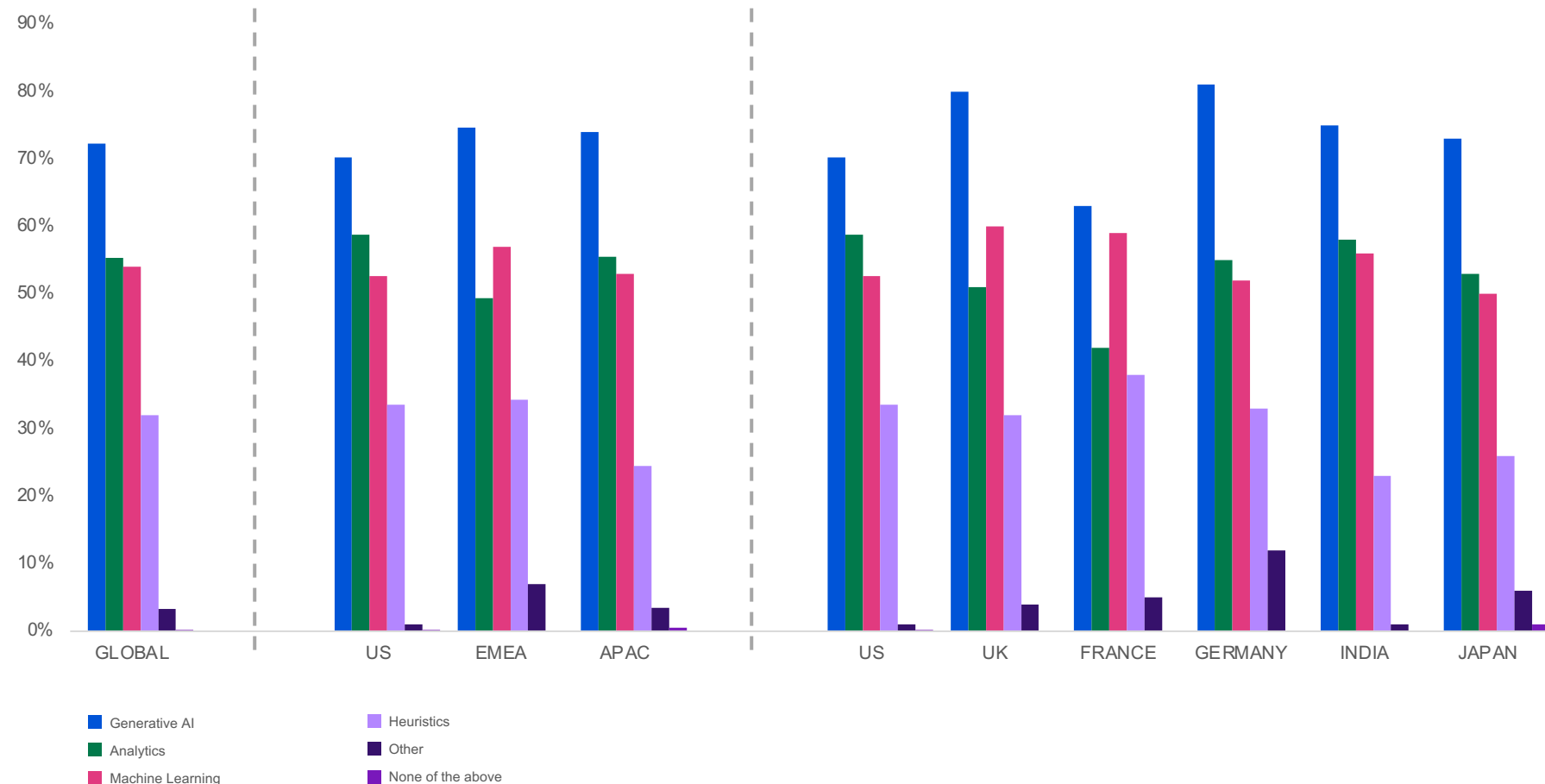


**74% of tech executives say AI and analytics is the number one use for public cloud, with the UK (81%) and US (75%) leading and France, India and Japan lagging at 69%.**

# GENERATIVE AI IS THE BIGGEST AI DRIVER

The enterprise continues to embrace AI, with 72% of respondents already using generative AI

How are you using AI in your organization?



As AI investment grows, nearly three-fourths of companies (72%) are using generative AI, while more than half are using AI for analytics (55%) and machine learning (54%).

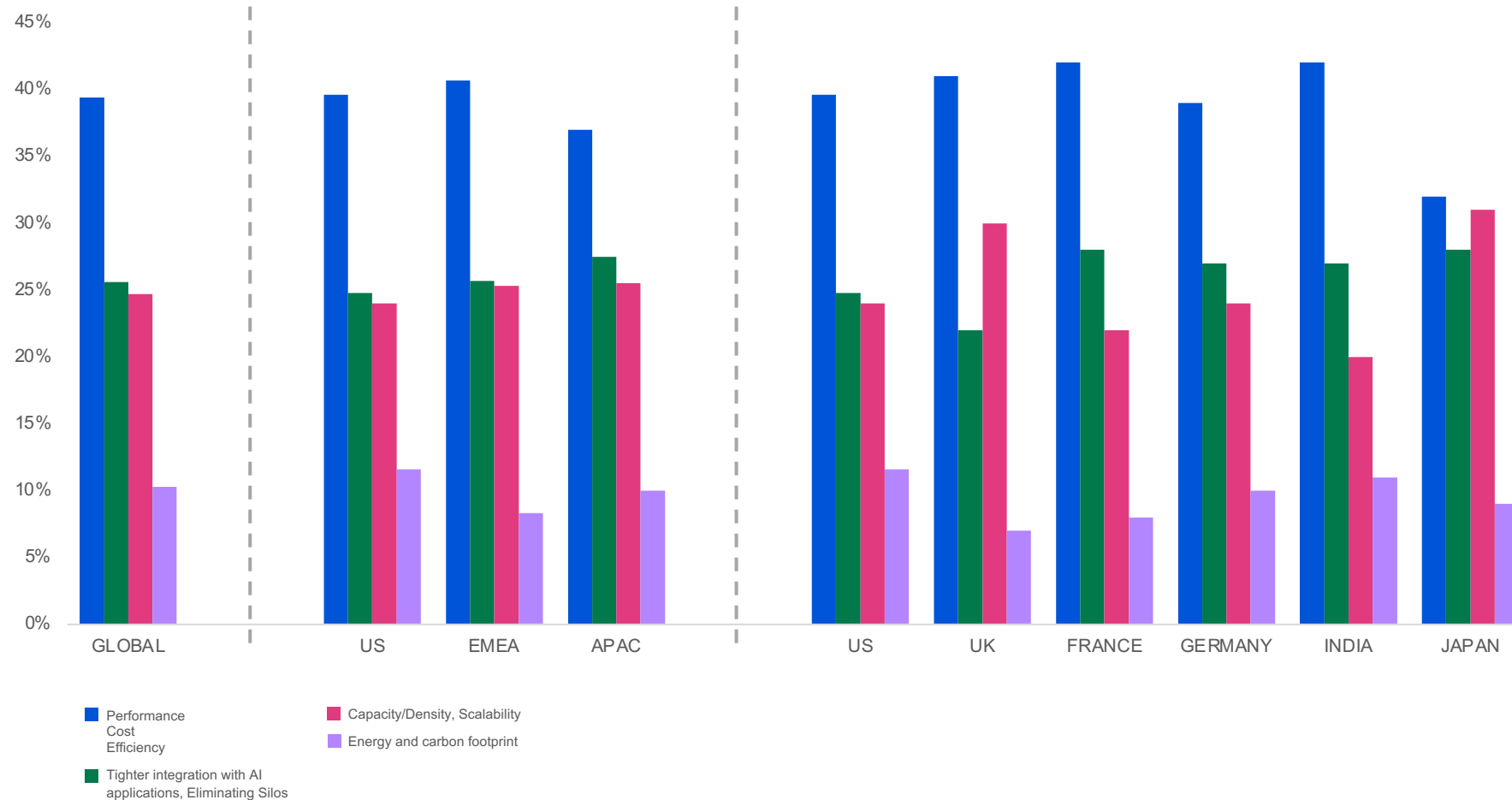
The proportion of companies using generative AI is even higher in the UK (80%) and Germany (81%) compared to an average of 72% across all markets.



# BUT FLASH INNOVATION IS NEEDED TO OPTIMIZE AI PERFORMANCE, COST AND EFFICIENCY

Globally, IT leaders look to Flash innovation to optimize performance, cost and efficiency

Where do you need the most innovation in Flash storage to support your AI/ML workloads?

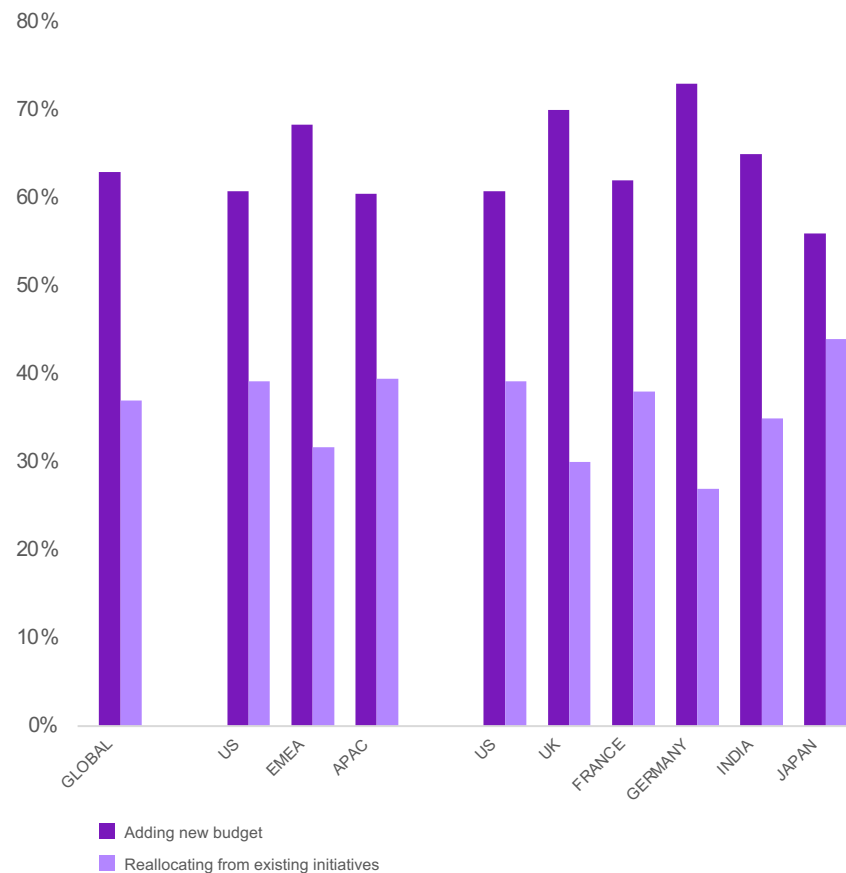


**39% of tech executives globally need Flash innovation to support AI/ML performance, reduce cost and create efficiencies.**

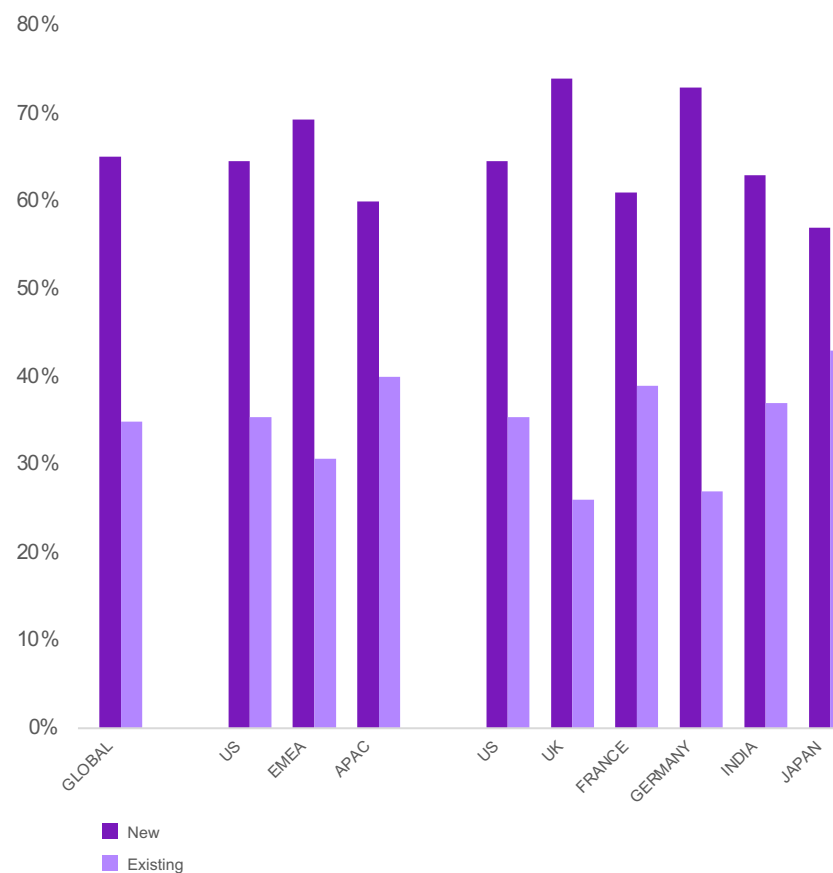
# WHICH REQUIRE NEW BUDGETS AND SUPPORT

More than 3 in 5 companies (63%) are adding new budgets for investments in AI, while nearly 2 in 5 (37%) are reallocating budgets from existing initiatives.

Where does more of the budget for investments in AI come from?



Considering AI initiatives, do you believe your existing storage vendors will be used for AI, or will you require new vendors?



Consequently, nearly two-thirds of companies (65%) believe they will need new storage vendors for AI, while more than a third (35%) will use existing vendors.

# CHAPTER 3: SECURITY

Data security concerns  
cause further complexity



# 87%

of C-suite and board-level executives view ransomware protection as a high, or top priority in their organization – 55% see it as *the* top priority.

## DATA PRIVACY AND SECURITY PREVAIL AS TOP CONCERNS AMONGST THE C-SUITE

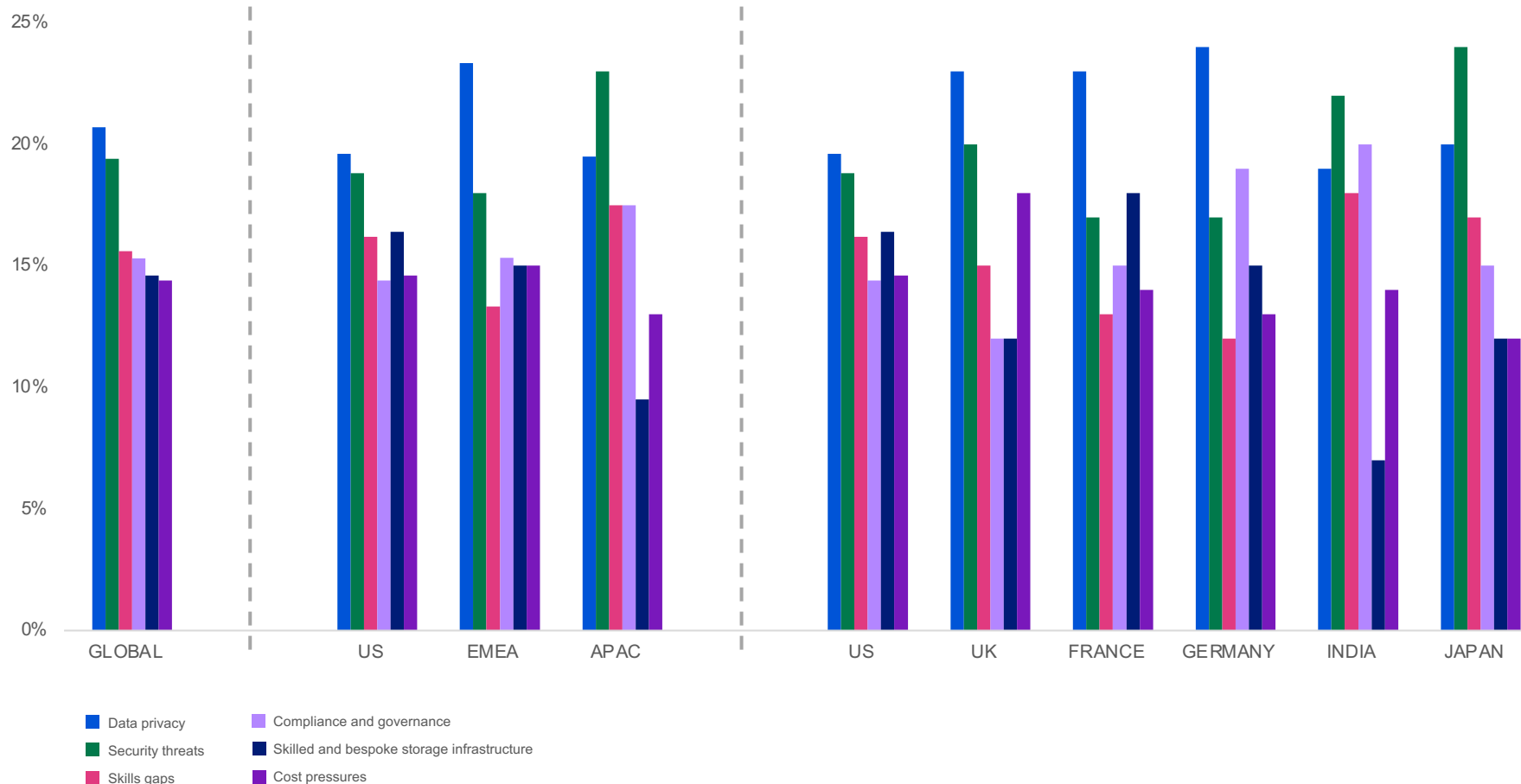
40% of global tech executives believe data privacy and security are the top causes of complexity in their storage infrastructure.

With ransomware on the rise, the biggest fear for executives is company downtime, with speed of data recovery cited as a top priority for most leaders.

# DATA PRIVACY AND SECURITY CONCERNS CAUSE FURTHER COMPLEXITY IN DATA STORAGE

Data privacy and security are the top 2 concerns in every market, account for 40% of top concerns

What are the top causes of complexity in your storage infrastructure?



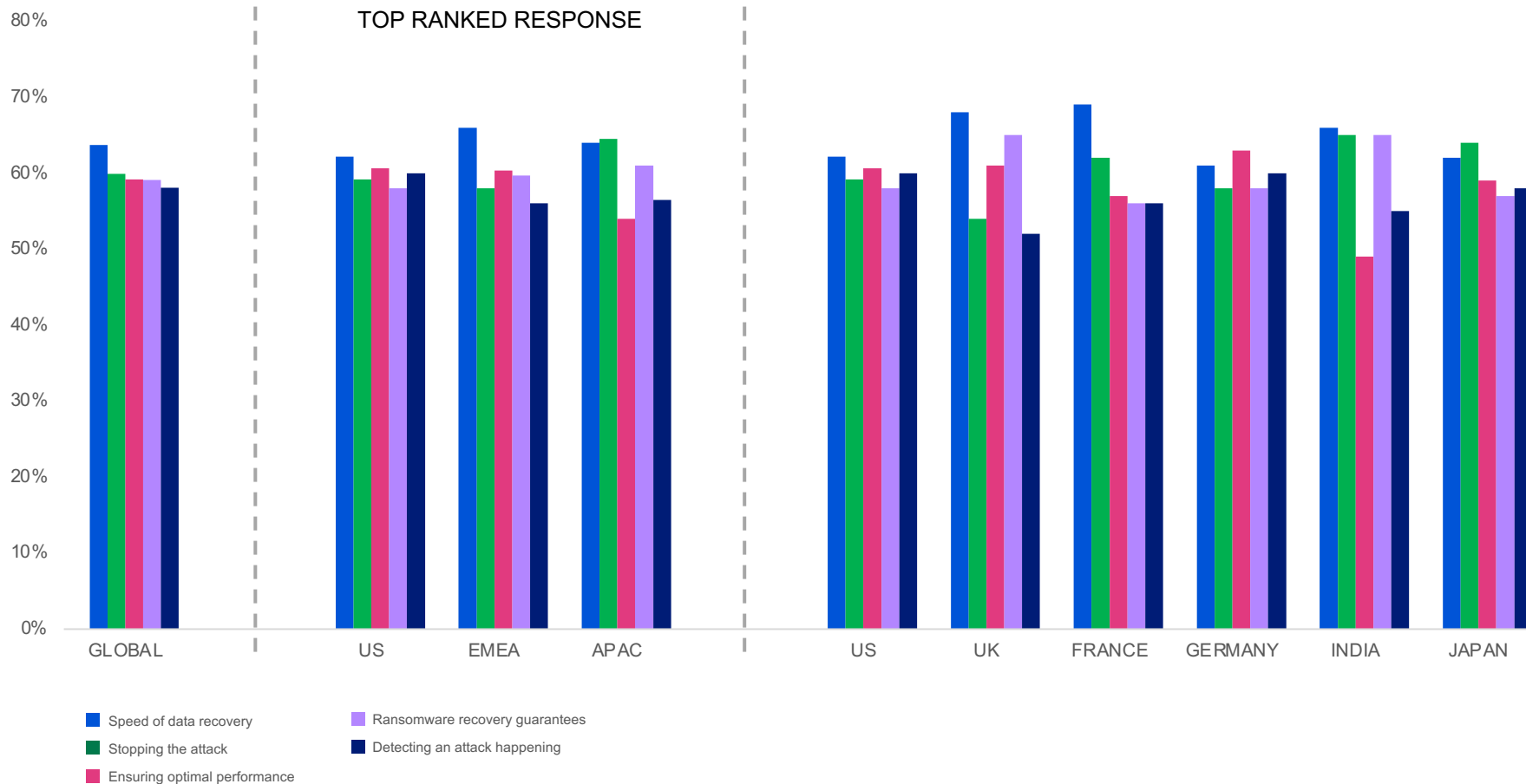
A substantial share (40%) of global tech executives believe data privacy and security are the top causes of complexity in their storage infrastructure.

Data privacy is the top cause in Germany, France, the UK and US, while security ranks higher in Japan and India.

# SPEED OF DATA RECOVERY IS SEEN AS THE TOP CHALLENGE IN PROTECTING AGAINST CYBER THREATS

Speed of data recovery is the top concern in every region, even more than stopping the attack, with over 60% including it in the top 3 (along with stopping attack and ensuring optimal performance)

What are your top challenges in protecting against cyber threats?



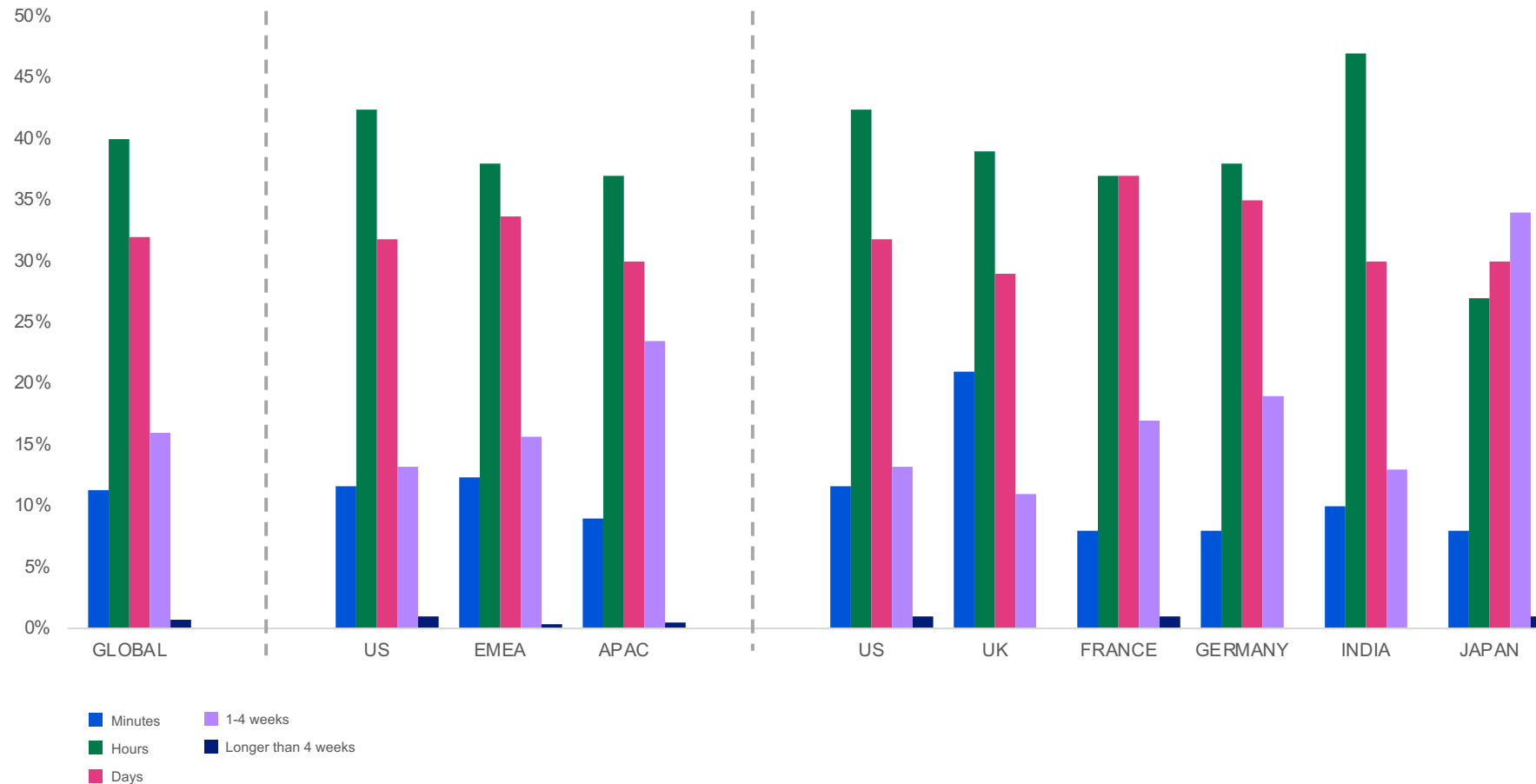
Cyber threats pose many challenges, but speed of data recovery ranks as the top priority globally (over 60%).

In Germany, ensuring optimal performance ranks as a higher challenge (63%), while Japan places stopping the attack (64%) as its top challenge.

# AND DOWNTIME IS VIEWED AS HAVING A SIGNIFICANT BUSINESS IMPACT

Only a few believe they could be back online in minutes, with close to 90% thinking it would take hours or days, and almost half thinking it would take days or weeks.

What do you believe your current data recovery time would be following a ransomware or cyberattack?



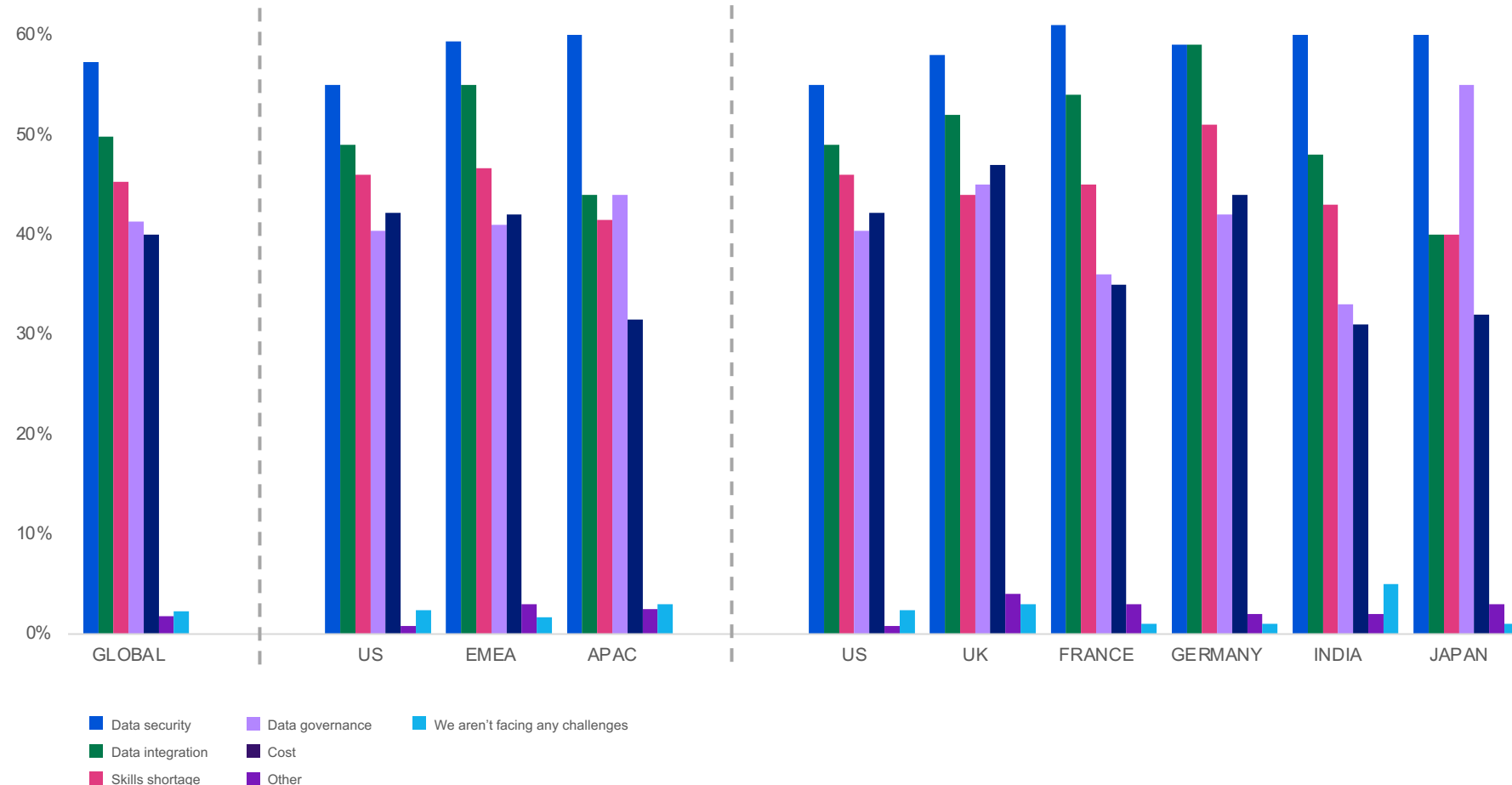
**Confidence in an immediate recovery from a ransomware attack lacks as 48% of global tech executives believe it would take days or weeks for their organization to resume normal business operations.**

**In Japan, the expected recovery time extends to 1 – 4 weeks (34%).**

# SECURITY CONCERNS ARE COMPLICATED BY ACCELERATED AI ADOPTION

57% see data security as a top challenge for realizing the potential of AI in their company

What are the top challenges for realizing the potential of AI in your company?



Despite ambitious plans for AI and increasing budgets, its implementation comes with a range of challenges.

Nearly all companies (98%) are facing one or more challenges in realizing the potential of AI.

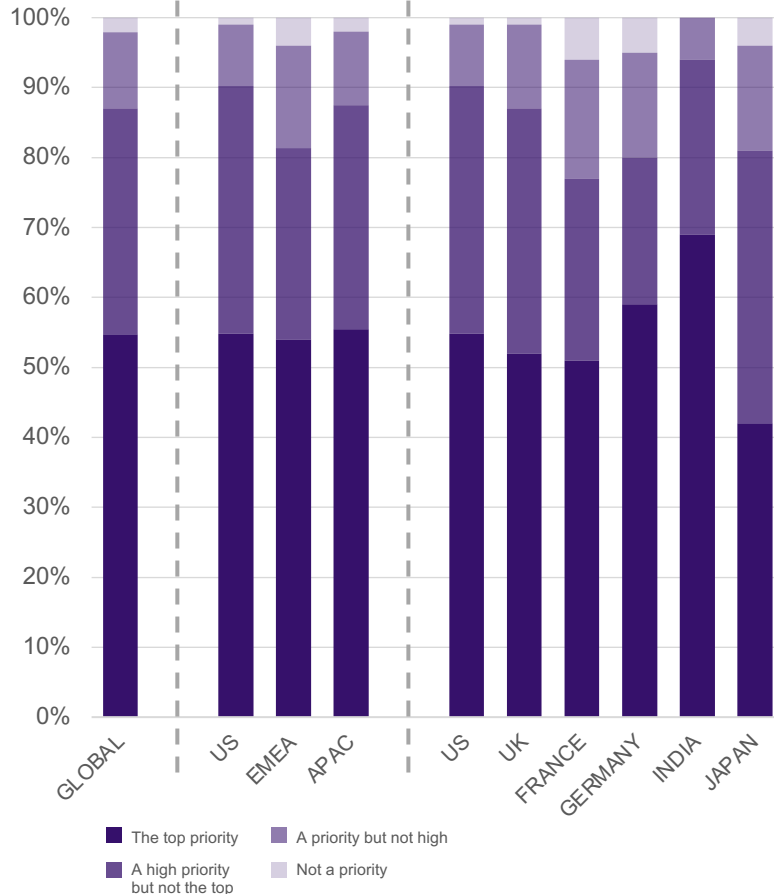
The top challenges are data security (57%), data integration (50%) and a skills shortage (45%).



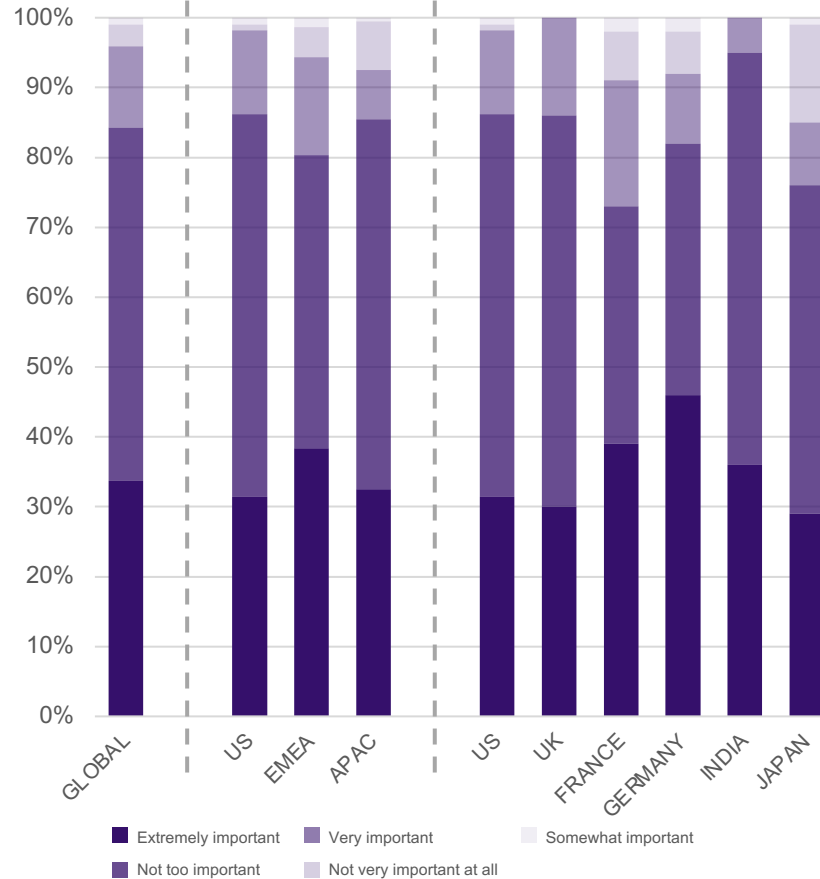
# AND RANSOMWARE PROTECTION IS A MAJOR PRIORITY FOR LEADERS, WITH RANSOMWARE GUARANTEES TOP OF MIND

84% of leaders think it is extremely or very important for storage vendors to provide ransomware guarantees, while 87% of C-suite and board level executives view ransomware protection as a high or top priority in their organization

How much is ransomware protection prioritized at the C-suite and board-level at your company?



How important is it that your storage vendor should provide a ransomware guarantee?



**Globally, the C-suite and board members recognize the surging threat of ransomware, with the vast majority citing it as a high or top priority for their organization.**

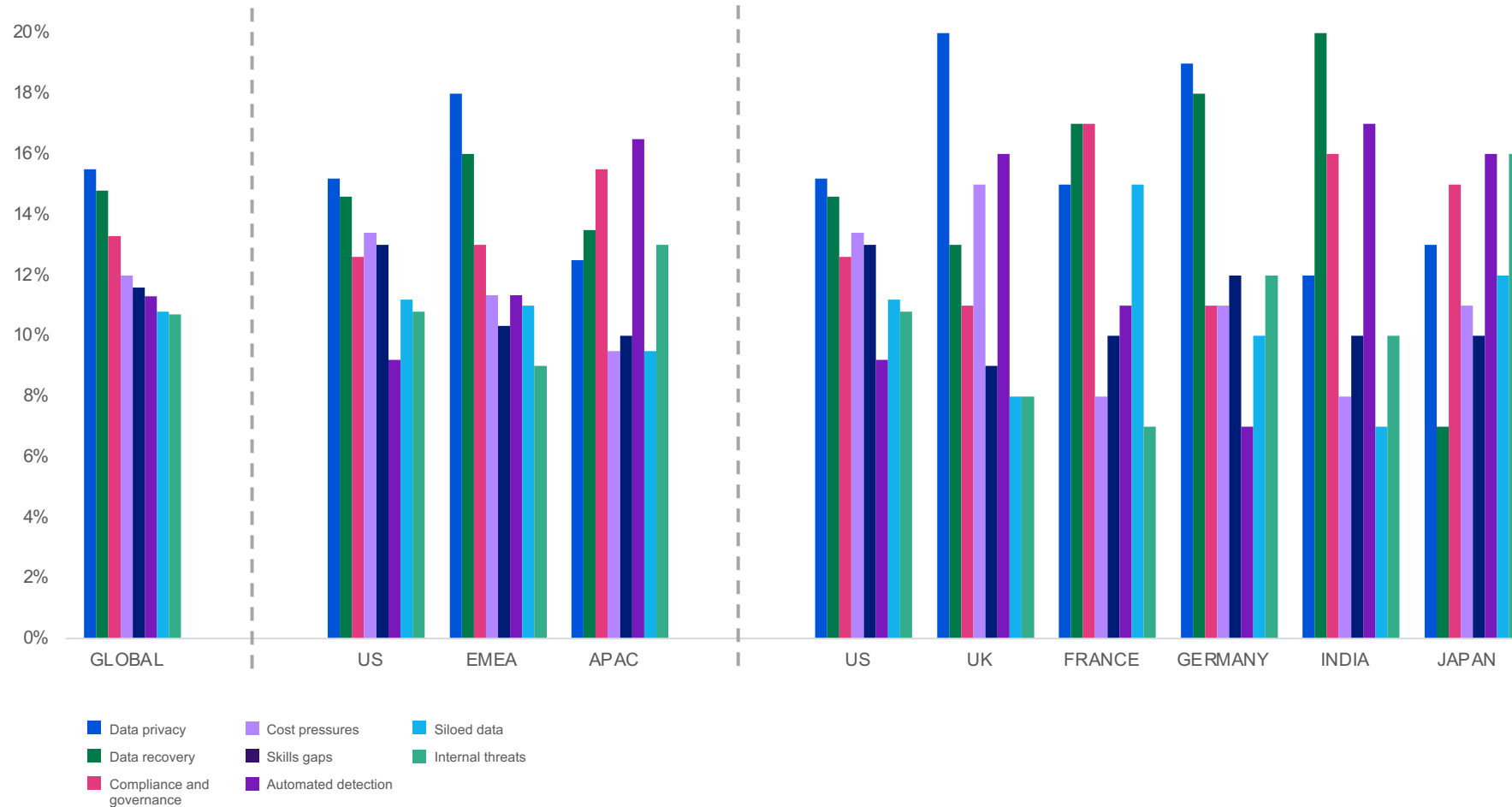
**More than half (55%) see it as the top priority.**

**Companies in the US (86%), the UK (86%) and India (95%) are even more likely to consider ransomware guarantees from vendors to be important, compared to firms from France (73%) and Japan (76%).**

# FLASH INNOVATION IS SEEN AS CRITICAL TO SUPPORT DATA PRIVACY AND RECOVERY

Globally, leaders believe data privacy, data recovery, and compliance and governance are where Flash innovation is needed to support Flash security

Where do you need the most innovation in Flash storage to support future Flash storage cybersecurity?



Data privacy, data recovery, as well as compliance and governance rank as the highest priorities (44%) for Flash storage innovation when it comes to Flash security.

Data privacy ranks the highest in EMEA, while APAC places more importance on automated detection.

The US values both data privacy and data recovery equally.

# CHAPTER 4: SUSTAINABILITY

Sustainability is a top concern  
in technology innovation



# 84%

of tech executives consider decreasing their organization's carbon footprint as extremely or very important.

## **SUSTAINABILITY IS A TOP PRIORITY FOR LEADERS**

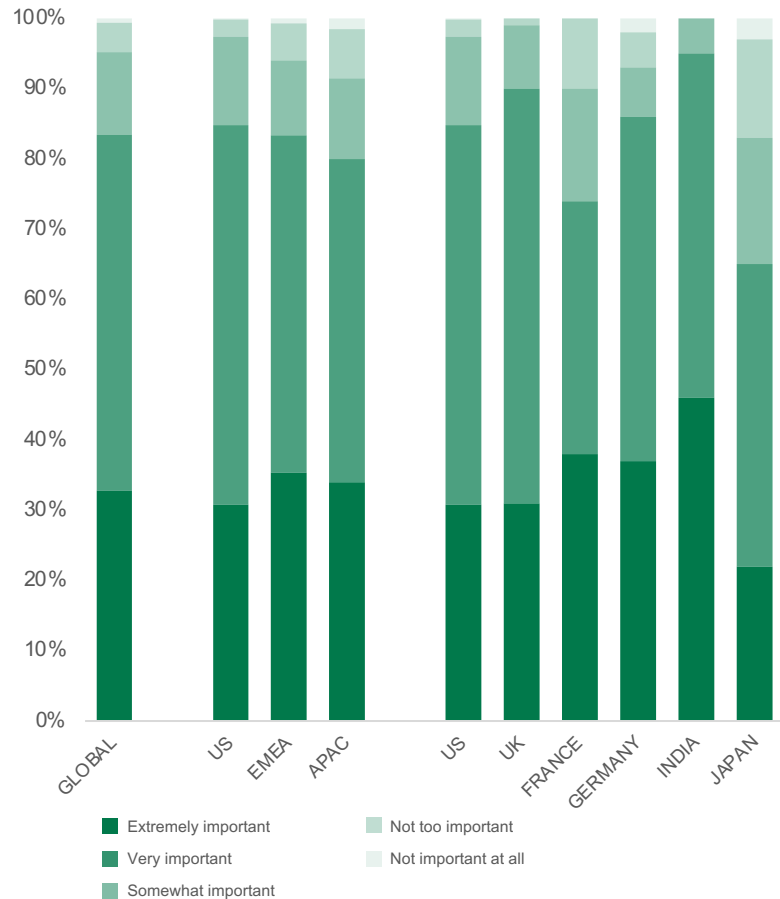
Reducing environmental impact has become an imperative for leaders when making key technology decisions as 83% cite sustainability as a critical deciding factor when evaluating storage vendors.

42% of C-suite leaders believe it's extremely important to decrease their carbon footprint.

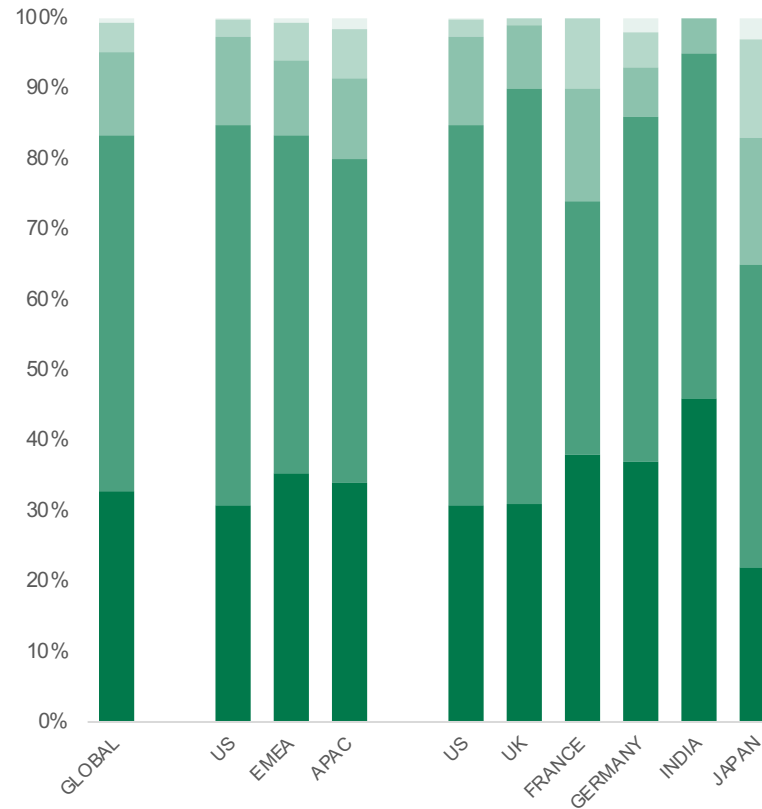
# SUSTAINABILITY IS A TOP CONCERN IN TECHNOLOGY INNOVATION

More than 80% consider decreasing their organization's carbon footprint as extremely or very important, with concern even higher with C-level executives

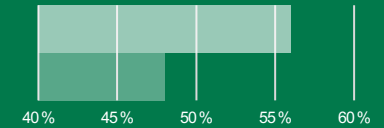
How important is it for your company to decrease its carbon footprint as part of its sustainability measures?



What does doing AI responsibly mean to you?

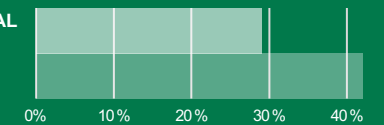


\$100 MILLION OR...  
LESS THAN \$100 MILLION



Sustainability concerns are higher at companies 100M+ and 50% consider minimizing carbon footprint as part of using AI responsibly.

SVP/VP/GENERAL MANAGER  
C-LEVEL EXECUTIVE



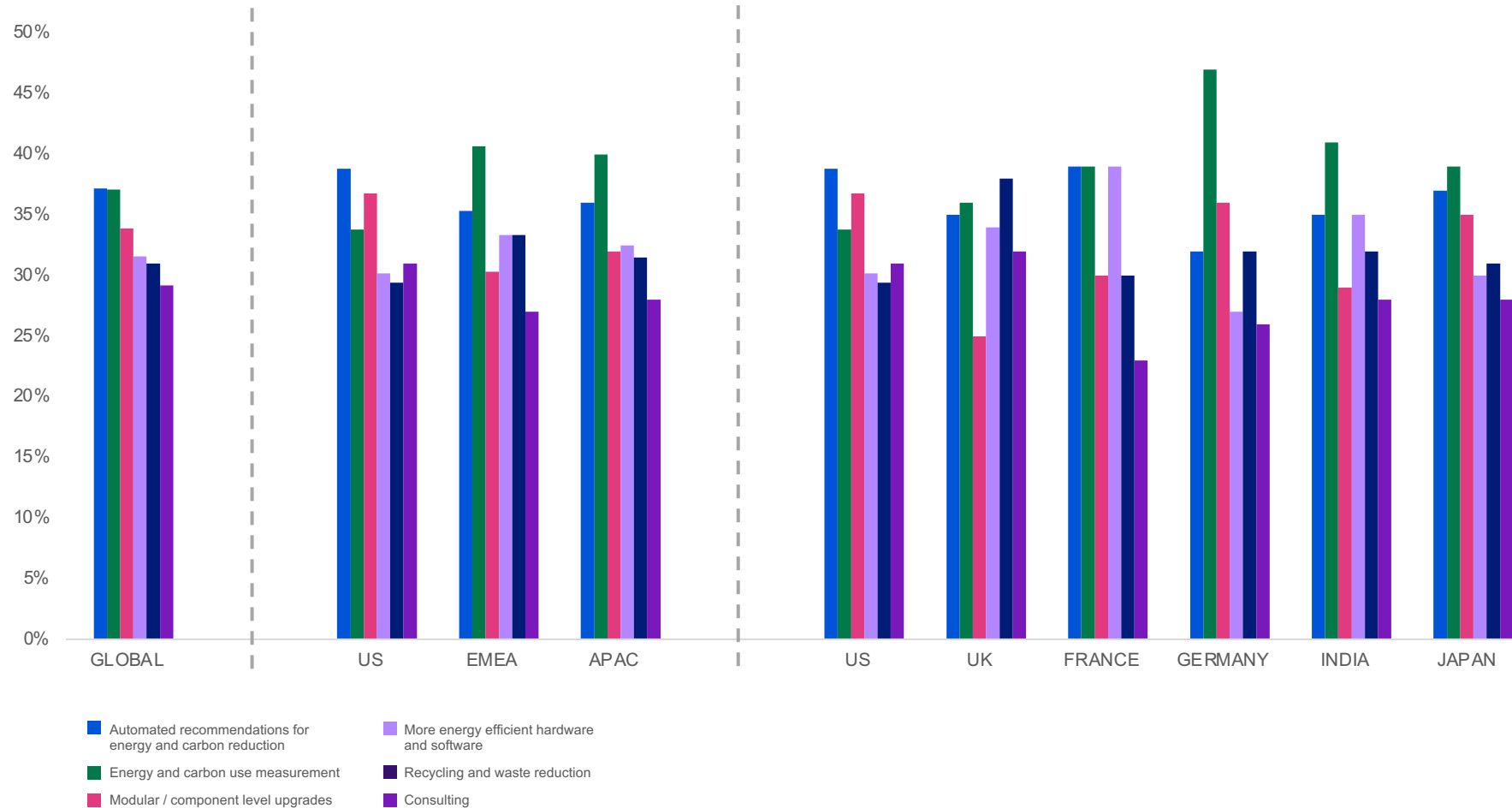
42% of C-level executives see it as extremely important, whereas only 29% of SVP and General Manager.

83% say sustainability is a criterion in choosing Flash storage.

# AND FLASH INNOVATION IS SEEN AS A CRITICAL PART OF THE SOLUTION

Overall, energy efficiency is a priority for leaders when evaluating the future of Flash storage sustainability

Where do you need the most innovation in Flash storage to support future Flash storage sustainability?



**Sustainability was a top three area of expected Flash innovation with calls for more energy efficient hardware and software and automated recommendations for reducing energy and CO<sub>2</sub> topping the list.**