

Technology

2025 CIO Survey | "Making Tech Great Again"

CONCLUSION

IT spending optimism abounds as we turn the page on 2024 and embark on the new year with 87% of respondents expecting budget increases in 2025 – an all-time high. Areas of strength are security (consistent with prior year's results) and a strong bounce-back in IT services and application software relative to 2024 levels. Further, Gen AI shifting from testing / planning to implementation and increased spending intentions around cloud underpin what sets up to be a dynamic year for tech.

- **Optimism for 2025 remains at all-time high levels after 2024 growth intentions abated throughout the year.** 64% of CIOs reported IT budgets increases in 2024, lower than the 71% expecting 2024 increases in the mid-year survey. "No change" increased 7 points to 20%, illustrating a tighter budgetary environment than expected to begin the year, and some IT budget decisions being pushed out past the U.S. elections. Despite muted 2024 results, 2025 optimism remains at all-time high levels with 87% (flat vs. 6/24) expecting budget increases, and only 7% (flat vs. 6/24) expecting decreases.
- **Security and IT Services tied for top priority in 2025.** Security and IT Services tied for the top spending priority with 89.2% planning to increase spend. Other priorities include 3 - Application SW (81.4%), 4 - IoT / Device Connectivity (71.8%), and 5 - Devices (67.6%).
- **Generative AI shifting from test/plan to implementation.** Generative AI continues to see strong uptake, with 84% of CIOs testing, planning to implement, or implementing now (down slightly vs. 87% in 6/24). Within that group, 56% are implementing GenAI now (up from 48% in 6/24) as CIOs continue to progress from the testing and planning stages to implementation. Google improved materially compared to the prior two surveys, surpassing Microsoft and OpenAI as the most strategic vendor on strength with GCP (top AI infrastructure offering). However, ChatGPT and Microsoft Copilot remained the top two SaaS offerings, improving to 50%+ of CIOs.
- **Rising AI Tide Lifting All IaaS Boats.** Spending intentions across Azure, AWS, and GCP improved vs. the mid-year survey with 75%+ of CIOs expecting to increase across all three. AWS saw the greatest improvement vs. the mid-year survey, gaining 23 points; OCI also ticked up 4 points to 53%.
- **Two biggest priority increases: IT Services and Application SW.** Nearly all IT categories improved compared to the mid-year survey, continuing an upwards trajectory since July 2023 (up 27 points on average). IT Services gained 18 points vs. the mid-year survey, roughly 2x the improvement of second-place Application SW (+9 points).
- **Analyst Takeaways**
 - Bracelin | Most favorable: MSFT, SNOW, CRM; less favorable for WDAY
 - Owens | Most favorable: S, ZS, TEAM, GTLB
 - Fish | Most favorable: NTNX, CSCO, MANH
 - Champion | Most favorable: GOOGL, AMZN
 - Ramnani | Most favorable: GLOB, ACN, DAY
 - Kumar | Most favorable: NVDA

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INDUSTRY RISKS

Macroeconomy, IT Spending, Competition, ASPs, and Valuations.

2025 CIO Survey

“Making Tech Great Again” | Strong Sentiment
Heading into 2025

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Table of Contents

1. **Summary**
2. **Cloud Applications** – Bracelin / Champion
3. **Generative AI** – Bracelin / Kumar
4. **Security** – Owens
5. **Infrastructure & Communication Software** – Fish / Owens
6. **Vertical Software & IT Services** – Ramnani
7. **Appendix**

1. Summary



Executive Summary

CIO Survey | 2025 Implications

Summary: IT spending optimism abounds as we turn the page on 2024 and embark on the new year with 87% of respondents expecting budget increases in 2025 – an all-time high. Areas of strength are security (consistent with prior year's results) and a strong bounce-back in IT services and application software relative to 2024 levels. Further, Gen AI shifting from testing / planning to implementation and increased spending intentions around cloud underpin what sets up to be a dynamic year for tech.

- Optimism for 2025 remains at all-time high levels after 2024 growth intentions abated throughout the year.** 64% of CIOs reported IT budgets increases in 2024, lower than the 71% expecting 2024 increases in the mid-year survey. The percentage of CIOs indicating a decrease in 2024 remained flat, and "no change" increased 7 points to 20%; this illustrates a tighter budgetary environment than expected to begin the year, and some IT budget decisions being pushed out past the U.S. elections. Despite muted 2024 results, 2025 optimism remains at all-time high levels with 87% (flat vs. 6/24) expecting budget increases, and only 7% (flat vs. 6/24) expecting decreases.
- Security and IT Services tied for top priority in 2025.** Security and IT Services tied for the number-1 spending priority with 89.2% planning to increase spend. Other top priorities include 3 - Application SW (81.4%), 4 - IoT / Device Connectivity (71.8%), and 5 - Devices (67.6%).
- Generative AI shifting from test/plan to implementation.** Generative AI continues to see strong uptake, with 84% of CIOs testing, planning to implement, or implementing now (down slightly vs. 87% in 6/24). Within that group, 56% are implementing GenAI now (up from 48% in 6/24) as CIOs continue to progress from the testing and planning stages to implementation. Google improved materially compared to the prior two surveys, surpassing Microsoft and OpenAI as the most strategic vendor on strength with GCP (top AI infrastructure offering). However, ChatGPT and Microsoft Copilot remained the top two SaaS offerings, improving to 50%+ of CIOs.
- Rising AI Tide Lifting All IaaS Boats.** Spending intentions across Azure, AWS, and GCP improved vs. the mid-year survey with 75%+ of CIOs expecting to increase across all three. AWS saw the greatest improvement vs. the mid-year survey, gaining 23 points; OCI also ticked up 4 points to 53%.
- Two biggest priority increases: IT Services and Application SW.** Nearly all IT categories improved compared to the mid-year survey, continuing an upwards trajectory since July 2023 (up 27 points on average). IT Services gained 18 points vs. the mid-year survey, roughly 2x the improvement of second-place Application SW (+9 points).

Analysts' Takeaways

Brent Bracelin | Cloud Applications & Analytics

CIO responses suggest we are now exiting a two-year phase of AI experimentation into the new realm of enterprise AI with real-world use-cases going into production. This bodes well for 1) the Big 4 IaaS platforms that could benefit from a “rising tide lifting all IaaS boats”, 2) broader data estate consolidation that could help reaccelerate spend on IT Services, Databases, and Cloud Applications, and 3) increasing number of agentic functions embedded in the application layer that could help sustain and/or revive spending priority in the application layer. **Net/net, 2025 CIO survey most favorable for MSFT, SNOW, CRM; less favorable for WDAY.**

Rob Owens | Security & Infrastructure Software

Security remains CIOs' top priority for 2025, with 89% expecting increased spend, and 34% expecting material (>25%) increases in spending over the coming year. A strong uptick in ITSM spending expectations and the third straight survey of improving DevOps spending intentions should bode well for top infrastructure picks as well. **Net/net, most favorable for S, ZS, TEAM, GTLB.**

James Fish | Cloud Automation Software

Infrastructure & Communication Software are seeing the benefit of the overall IT spending uptick. Strength was notable for private cloud AI investments, on-premise refresh (especially campus), IoT, SMB IaaS, and Backup/Recovery. VMware replacement potential appears strongest for '26 as customers look for standalone AHV & HCI. Communication trends are relatively positive but cloud conversions were slightly pushed out, and AI is impacting customer support the most. **Most favorable for NTNX, CSCO, MANH.**

Tom Champion | Internet

Strong spending intentions for IaaS should continue to benefit hyper-scalers. IaaS spending intentions at AWS increased most of the group relative to prior surveys. GOOGL IaaS net spending intentions improved from prior peak and is now the #1 most strategic AI vendor. **Net/net, results are favorable for GOOGL, AMZN.**

Analysts' Takeaways

Arvind Ramnani | Vertical Software & IT Services

We see an improvement in 2025, which will be a welcome change after a choppy 2023-24. The past two years have been largely rooted in efficiency and cost savings related work, and “doing more with less.” Our CIO survey results were consistent with our recent India field trip. We met with a range of executives over [a week in India, including IT Services companies, buyers of IT and industry experts](#), who largely reinforced what we learned from our CIO survey. Looking to 2025 and beyond, we would expect to see pent-up demand and AI dynamics turn into meaningful revenue growth, likely on the back of an improved macro and interest rate environment. We note that we have already seen notable growth of AI-related work for both ACN and GLOB. Importantly, our channel checks have indicated that discretionary spend is slowly trickling back in and that ticket sizes of deals are beginning to grow, which aligns with our survey results indicating that many CIOs are positioning for increased levels of IT Services spend as we head into FY25.

Net/net, most favorable for GLOB, ACN, DAY.

Harsh Kumar | Semiconductors

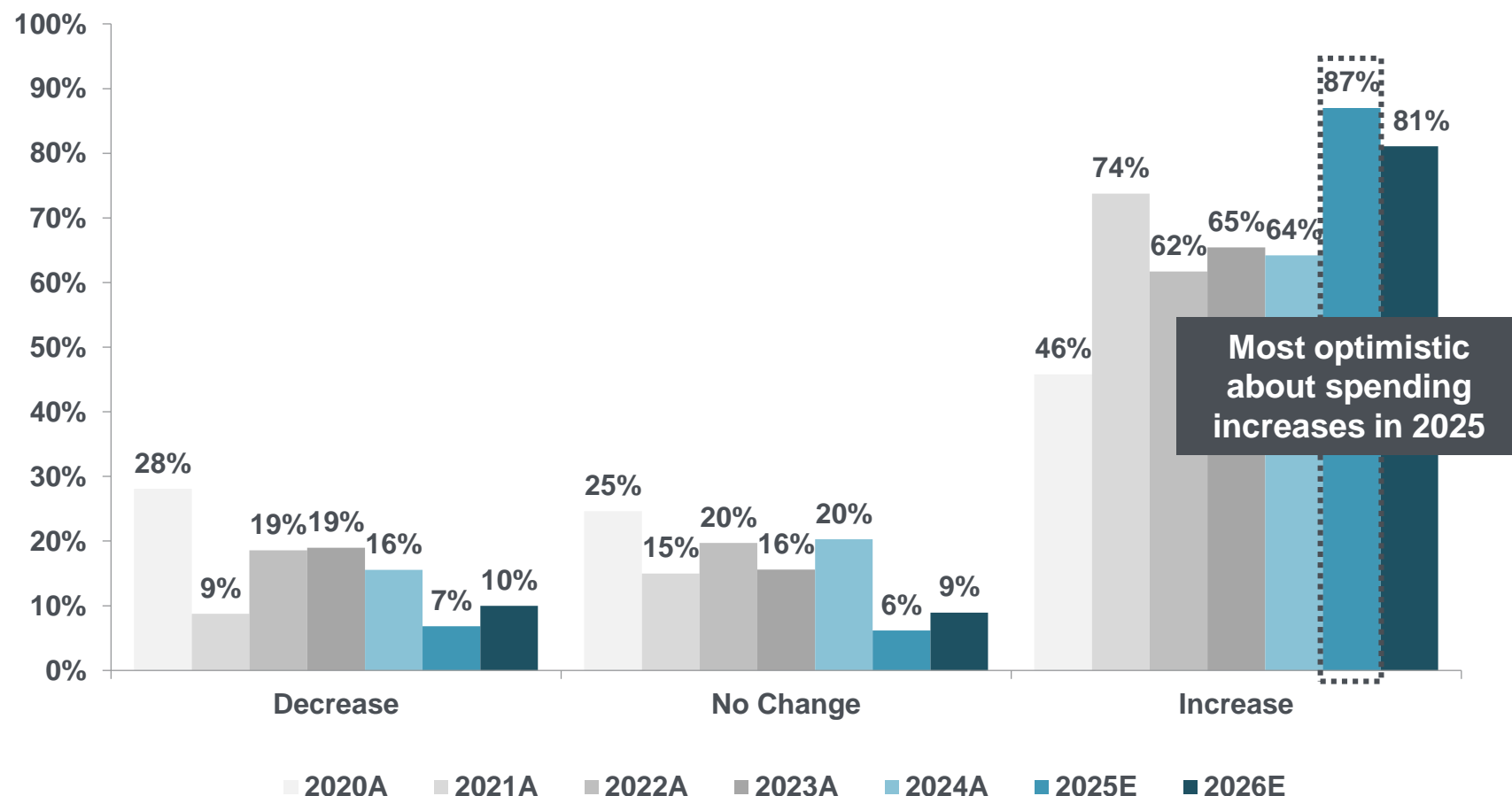
We believe GPU accelerators could be a \$500B+ opportunity by 2028E with sustained double-digit CAGR growth. In the GPU space we see NVDA as the clear leader with over 70% of the total market with AMD and Intel competing for the rest of the enterprise market. In networking, Broadcom continues to be the clear leader relative to MRVL when it comes to enterprise adoption.

Net/net, most favorable for NVDA.

CIOs Most Optimistic About 2025 IT Spending Increases

87% of CIOs expect to increase in 2025, an all-time high heading into a new year.

Q: What was the approximate growth rate of your IT budget in 2024 relative to 2023, and how do you expect IT budgets to trend in 2025 and 2026 relative to the previous years?



2025 IT Budget Increases In-Line with Mid-Year Survey

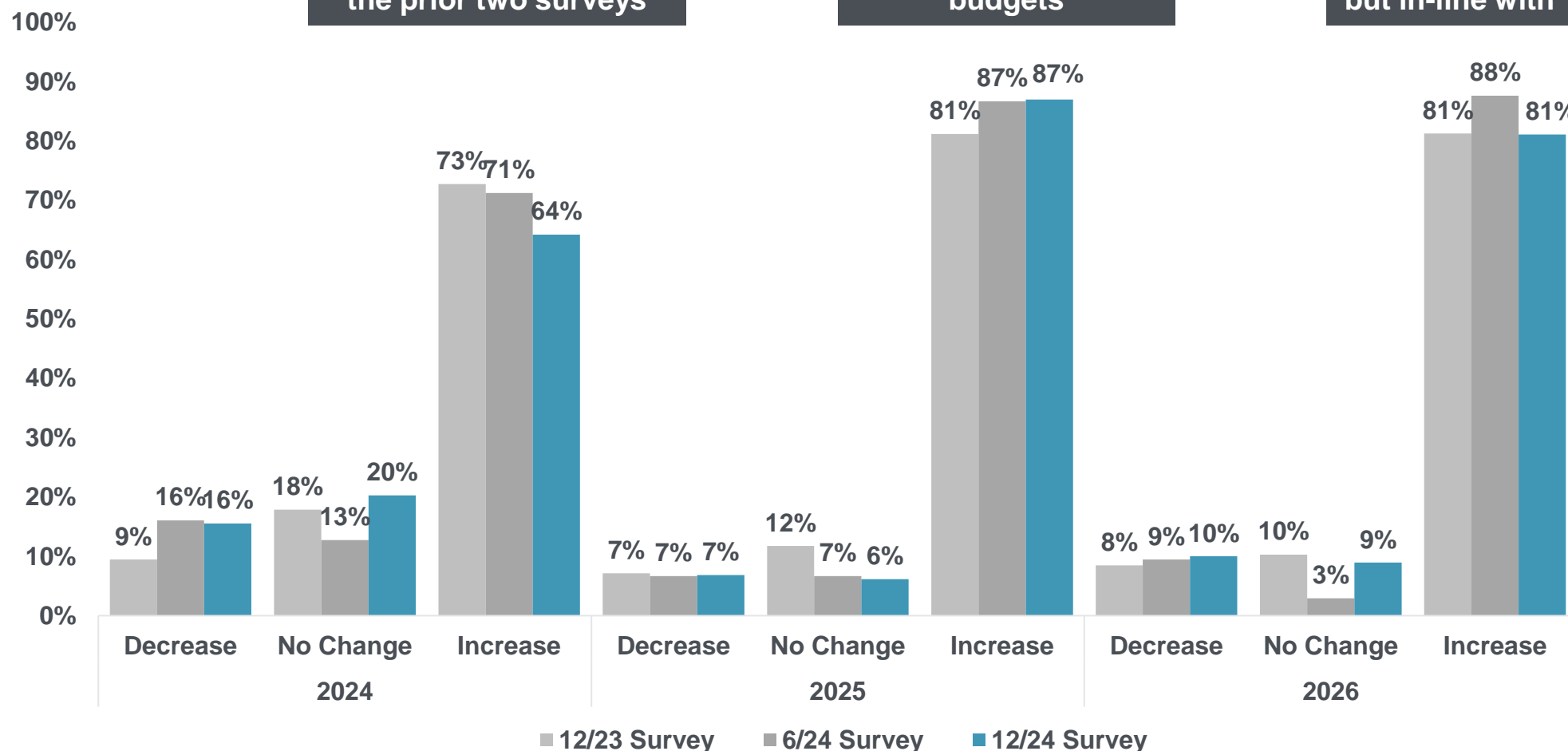
While spend intentions for 2025 remain robust, 2026 fell to 81%, in-line with the prior year survey.

Q: What was the approximate growth rate of your IT budget in 2024 relative to 2023, and how do you expect IT budgets to trend in 2025 and 2026 relative to the previous years?

2024 IT budgets came in lower than expected in the prior two surveys

CIOs remain highly optimistic on '25 IT budgets

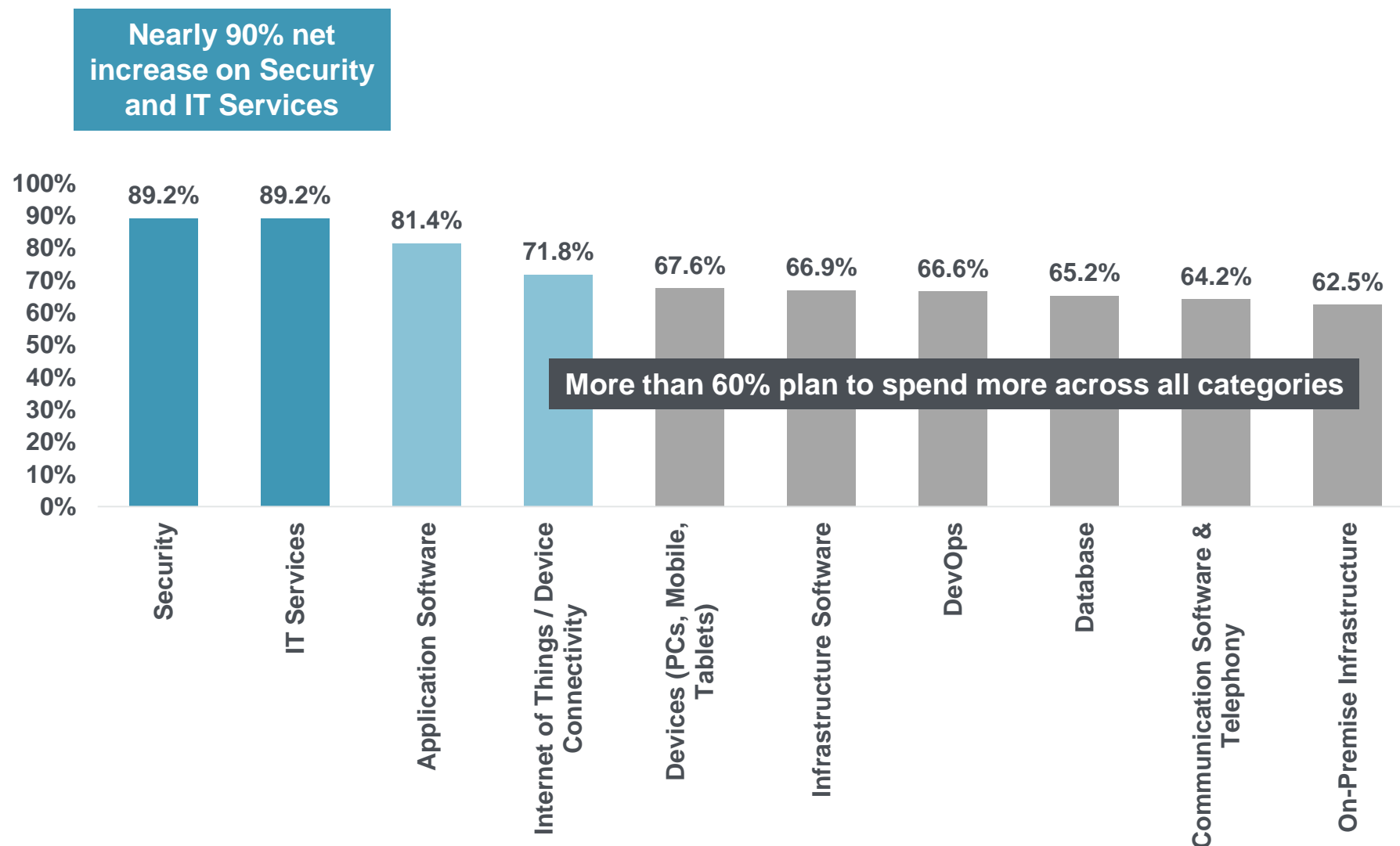
CIOs less optimistic about '26 than 6/24, but in-line with 12/23.



Security, IT Services, and Application Software Top Priority List

>60% net increase across all categories, with three categories above 80% vs. one in the mid-year survey.

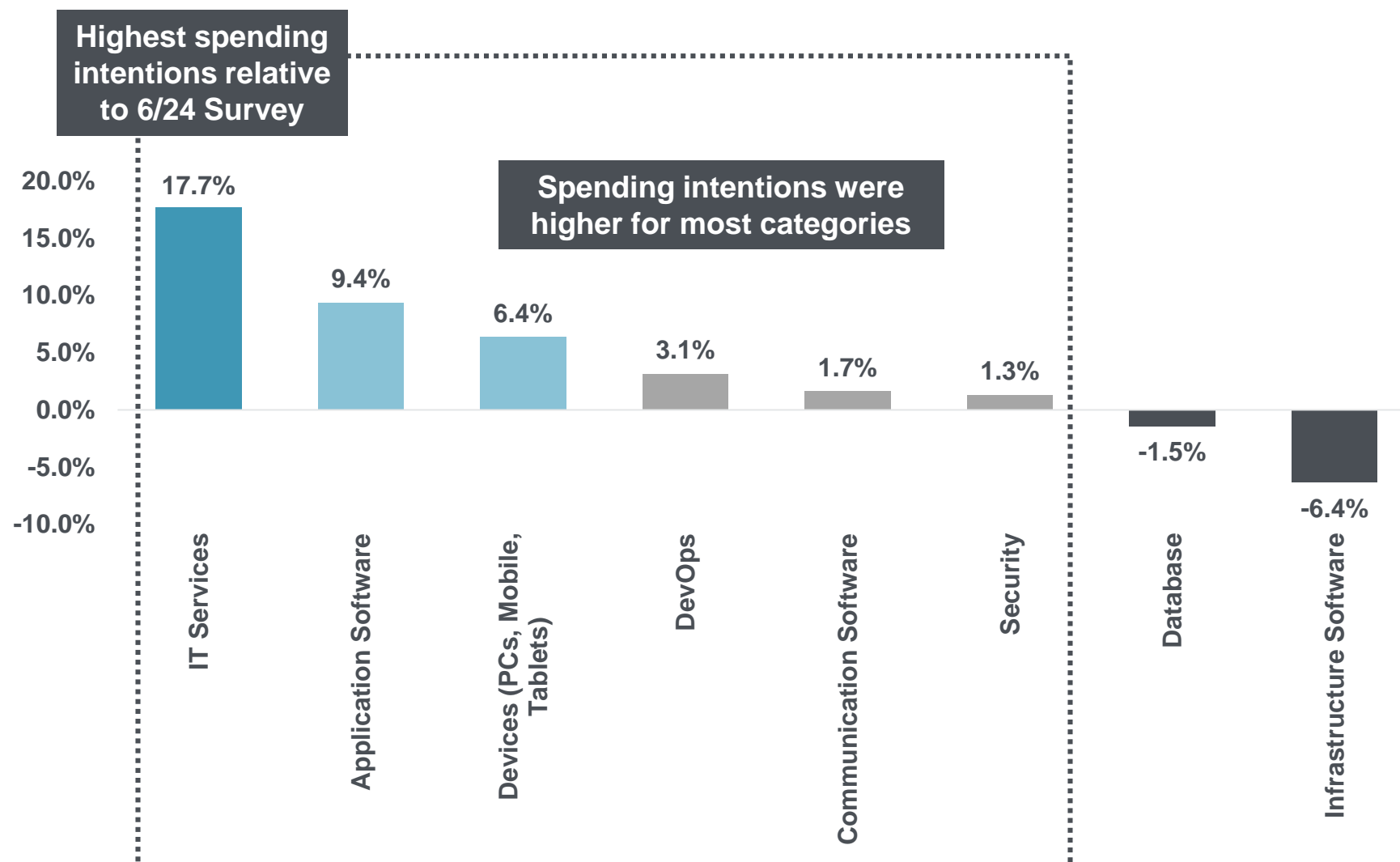
Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.



Spending Intent Was Higher Across Most Product Categories

The biggest increase in spending intent vs. the mid-year survey was 1 - IT Services, 2 - Application SW, and 3 - Devices.

Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.

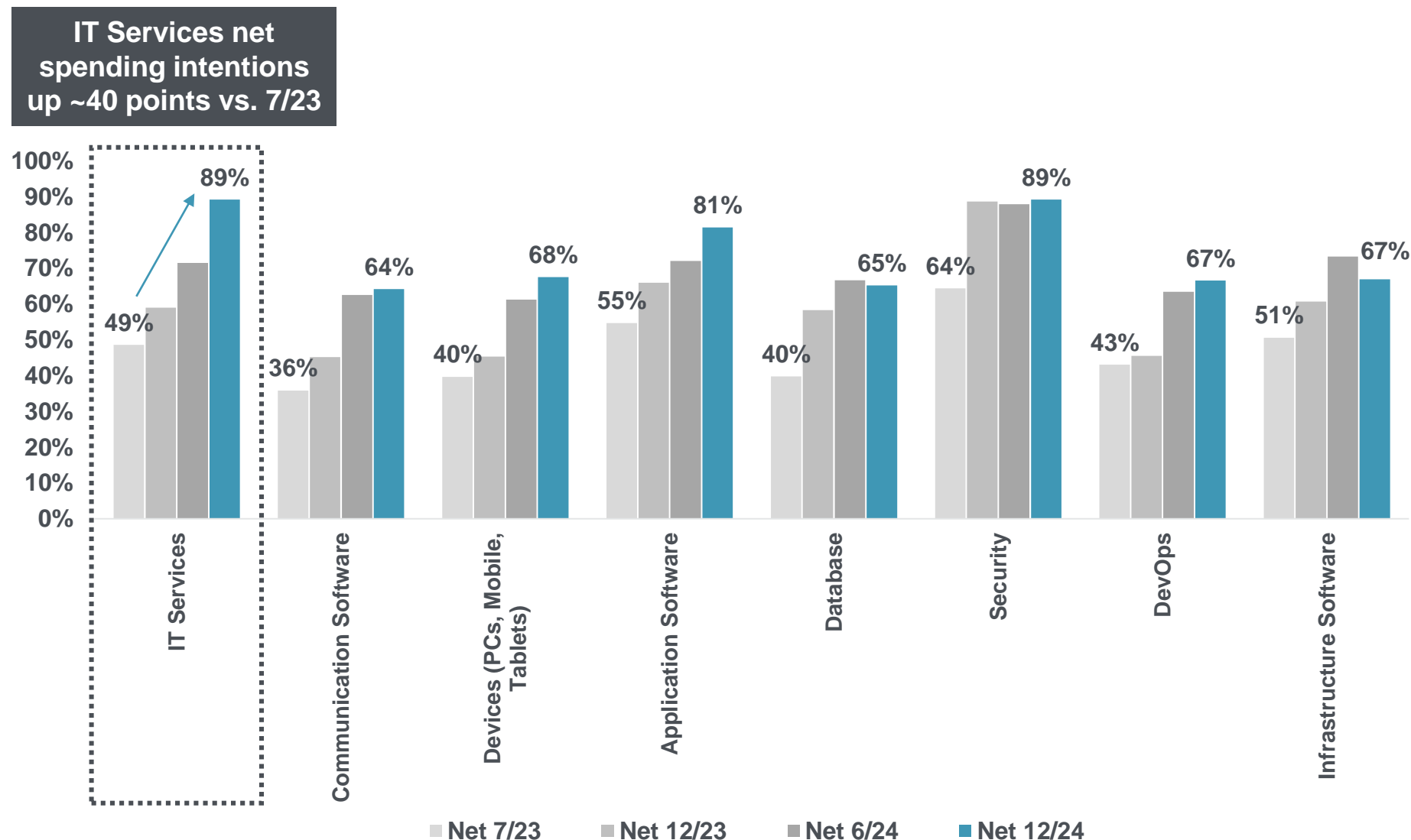


Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Net Increase = % Increase or Increase Materially - % Decrease

Average Net Spending Intentions +27 Points Since the 7/23 Survey

Rate of improvement for spending intentions has slowed, but still up +4 points on average vs. the mid-year survey.

Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.



Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Net Increase = % Increase or Increase Materially - % Decrease

>85% of CIOs Expecting Cloud Increases in '25 & '26

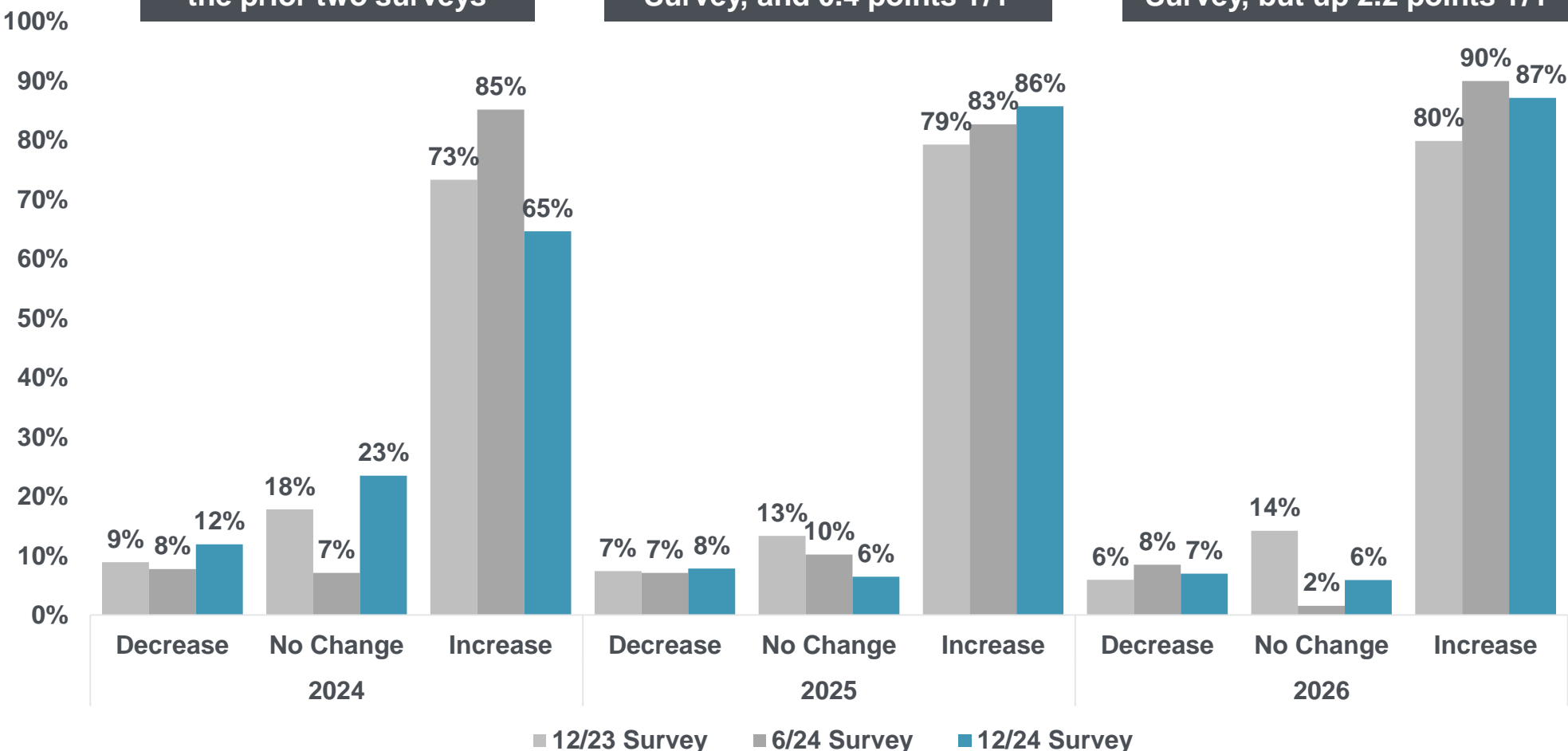
CIOs remain optimistic on cloud budgets, but Weighted Average Growth Rate (WAGR) declined for '25 & '26 vs. the mid-year Survey.

Q: What was the approximate growth rate of your Cloud budget in 2024 relative to 2023, and how do you expect IT budgets to trend in 2025 and 2026 relative to the previous years?

2024 cloud budgets came in lower than expected in the prior two surveys

10.1% '25 Cloud WAGR down 2.7 points from the 6/24 Survey, and 0.4 points Y/Y

14.3% '26 Cloud WAGR down 2.1 points from the 6/24 Survey, but up 2.2 points Y/Y



Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Weighted Average Growth Rate (WAGR) is Calculated Using Expected % Increase in Cloud Budget.

2. Cloud Applications



Analysts' Takeaways

Cloud Applications

BRENT BRACELIN – CLOUD APPLICATIONS & ANALYTICS

Directional spending intentions suggest that we are now exiting a two-year phase of AI experimentation into the new realm of production-ready enterprise AI with real-world company-specific and industry-specific use-cases. This bodes well for 1) the Big 4 IaaS platforms that could benefit from a rising tide lifting all boats, 2) further streamlining and consolidation of the data layer that could help reaccelerate spend on IT Services, Databases, and Cloud Applications, and 3) increasing number of agentic functions embedded in the application layer that could begin to help sustain and/or revive growth in application software. **Net/net, 2025 CIO survey most favorable for MSFT, SNOW, CRM.**

TOM CHAMPION – INTERNET

Strong spending intentions for IaaS should continue to benefit hyper-scalers. IaaS spending intentions at AWS increased most of the group relative to prior surveys. GOOGL IaaS net spending intentions improved from prior peak and is now the #1 most strategic AI vendor. **Net/net, results are favorable for GOOGL, AMZN.**

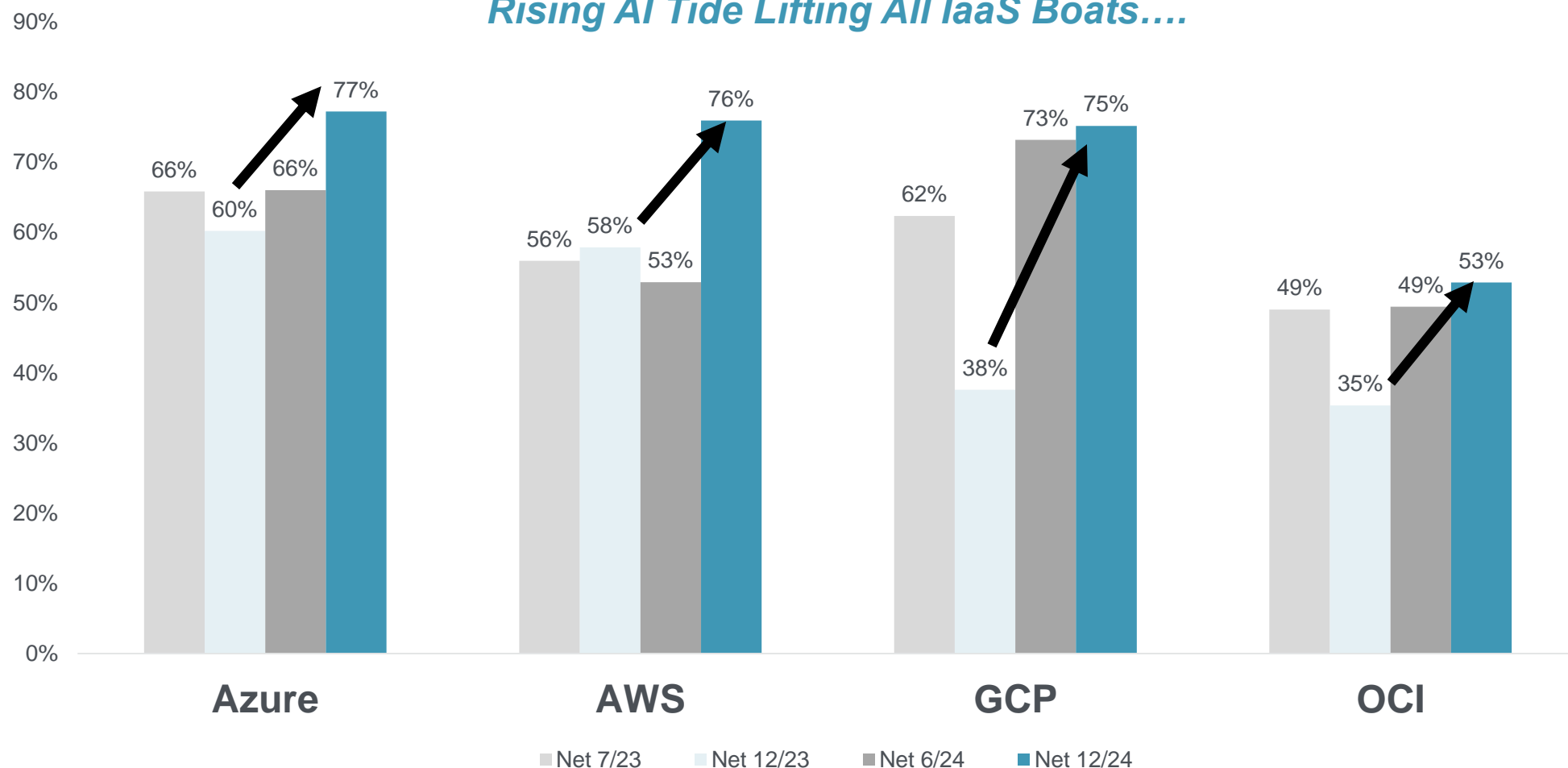
Key Stock Implications

1. **Bracelin | MSFT – OW:** *Rising AI tide lifting all IaaS boats; 77% plan to spend more on Azure (vs. 66% prior).*
2. **Bracelin | SNOW – OW:** *Datawarehouse net spend priority y/y surged to 77% (vs. 44% prior); See broader recovery.*
3. **Bracelin | CRM – OW:** *Excluding data software, Sales net spend priority rose the most to 81% (vs. 65% in June).*
4. **Champion | AMZN – OW:** *Rising AI tide lifting all IaaS boats; Remains #2 for IaaS spending intentions and ticked up most.*
5. **Champion | GOOGL – OW:** *Rising AI tide lifting all IaaS boats; Remains #3 in spending intentions and now above prior peak.*

Rising (AI) Tide Lifting All (IaaS) Boats

Q: What is your spending intention for cloud infrastructure net of optimization in 2025 vs. 2024?

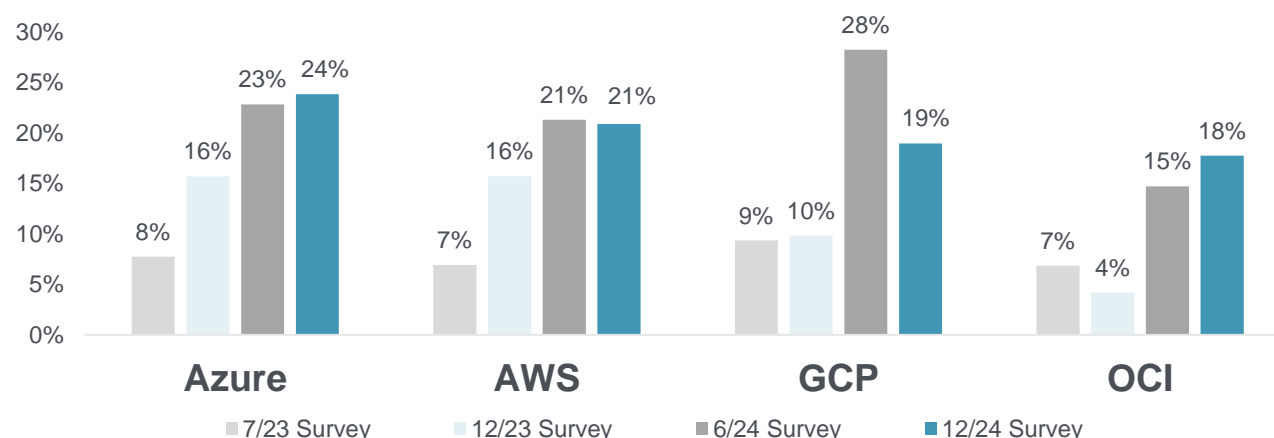
Rising AI Tide Lifting All IaaS Boats....



Nearly 1 in 5 Plan to Increase IaaS Spend Materially (>25% Y/Y)

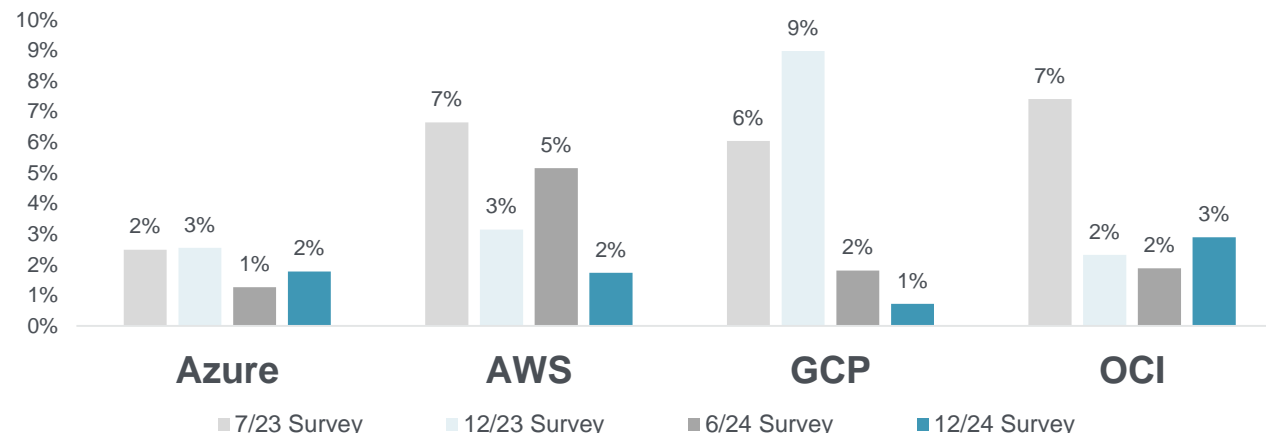
Q: What is your spending intention for cloud infrastructure net of optimization in 2025 vs. 2024?

% of CIOs expecting to increase materially (>25%)



Azure and OCI saw uptick in those planning material (>25%) IaaS spending increases vs. June survey.

% of CIOs expecting to decrease

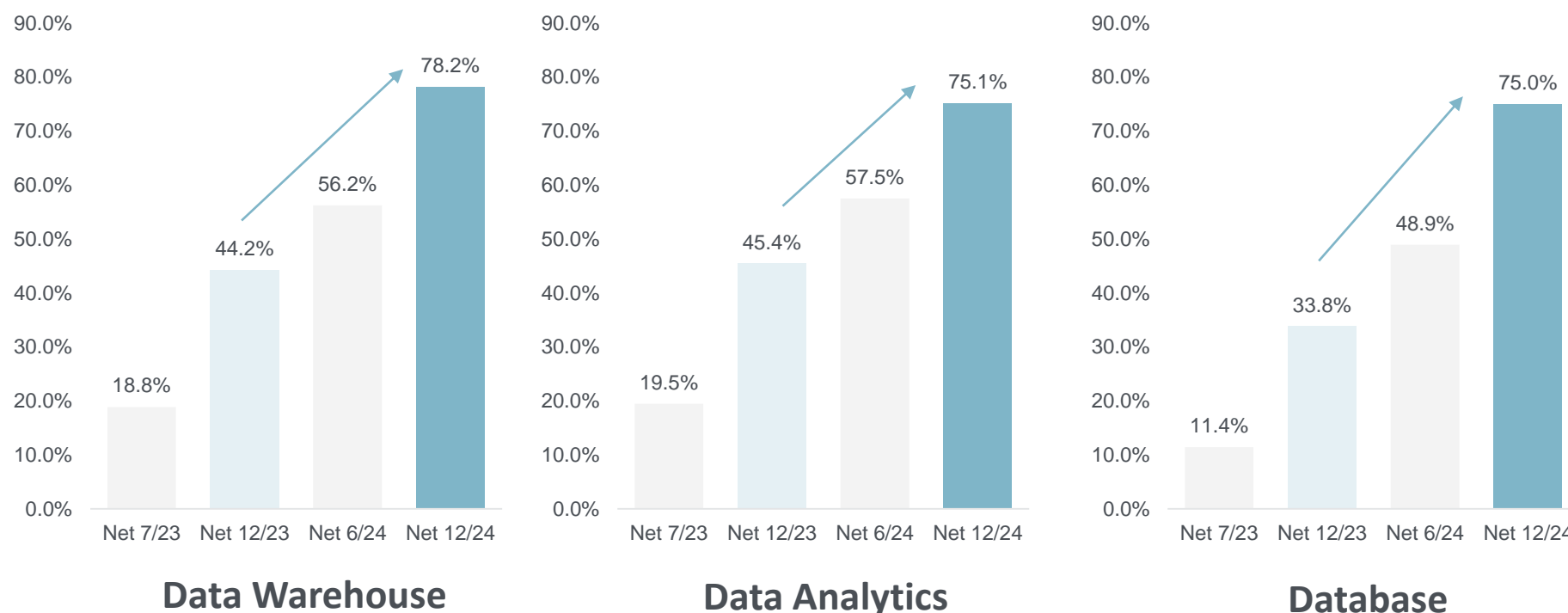


97% of respondents plan to spend the same or more on IaaS next year.

Data, Data, Data – 2025 Spending Plans Rise Across the Board

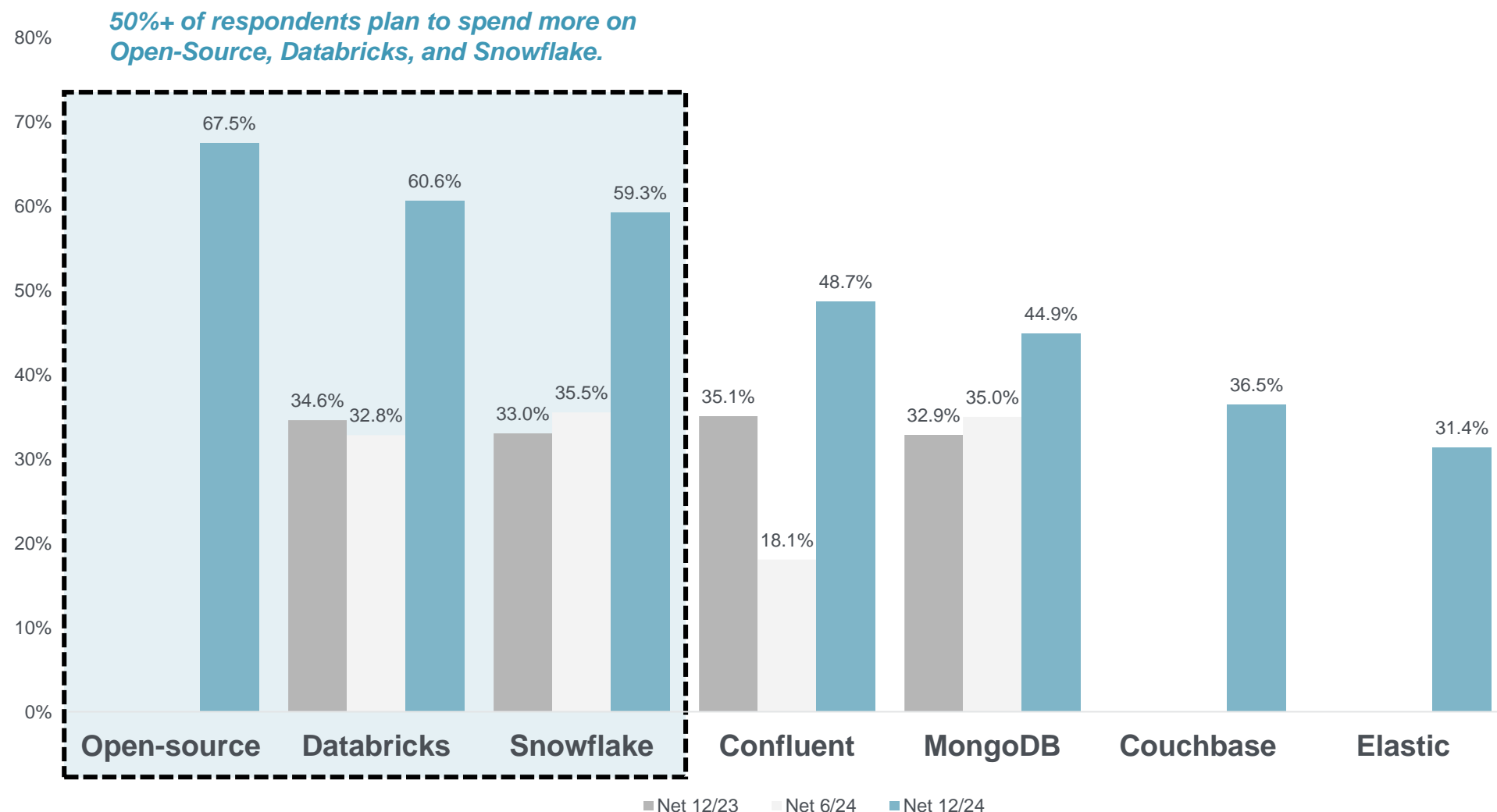
3 of 4 respondents plan to increase spending on data software

Q: Net spending intentions by application software category for 2025?



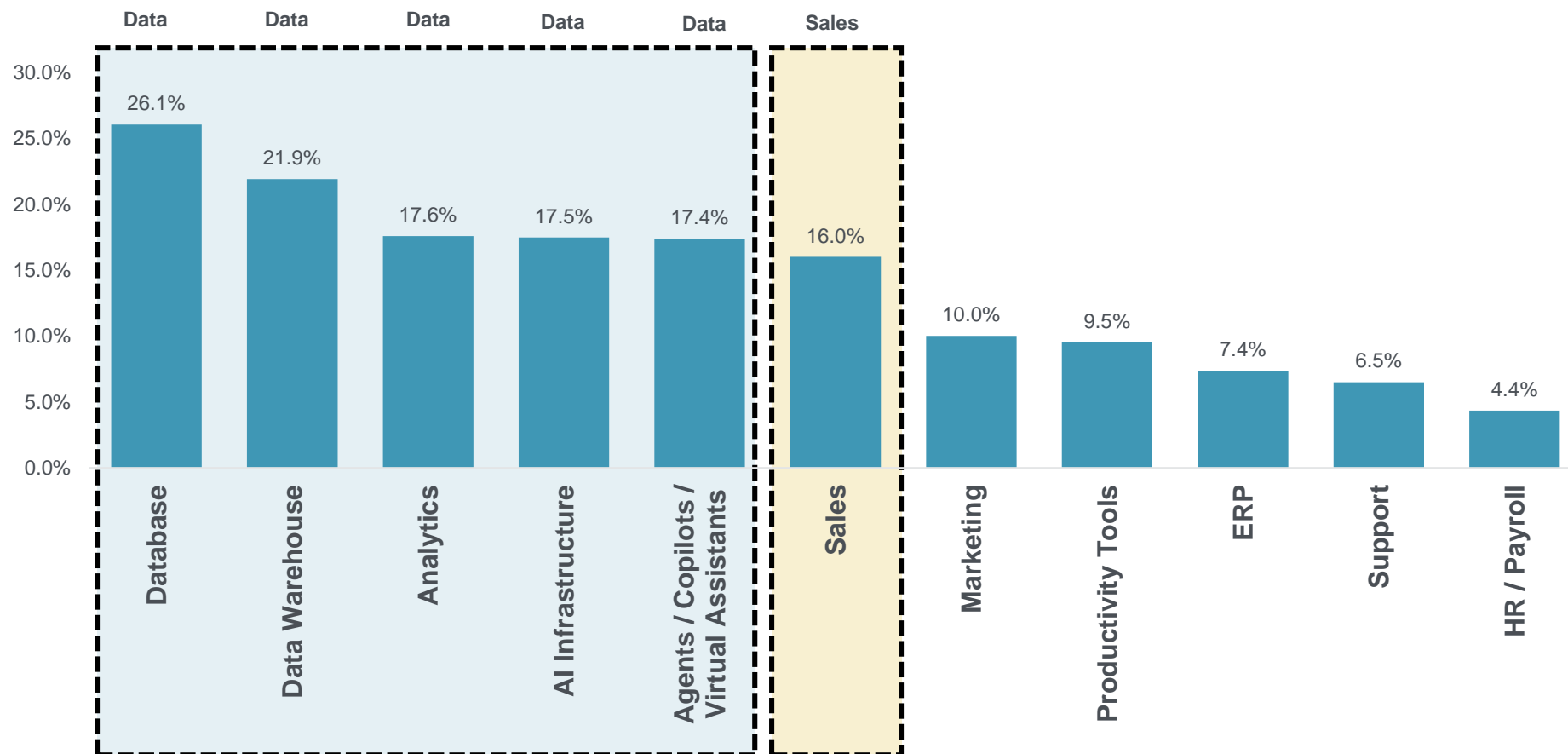
By Data Vendor – Databricks and Snowflake Stand Out for 2025

Q: Net spending intentions by application software vendor for 2025?



Biggest Net Priority Changes – Data, Data, Data, Data, Data, Sales

Q: Net spending intentions by application software category for 2025?



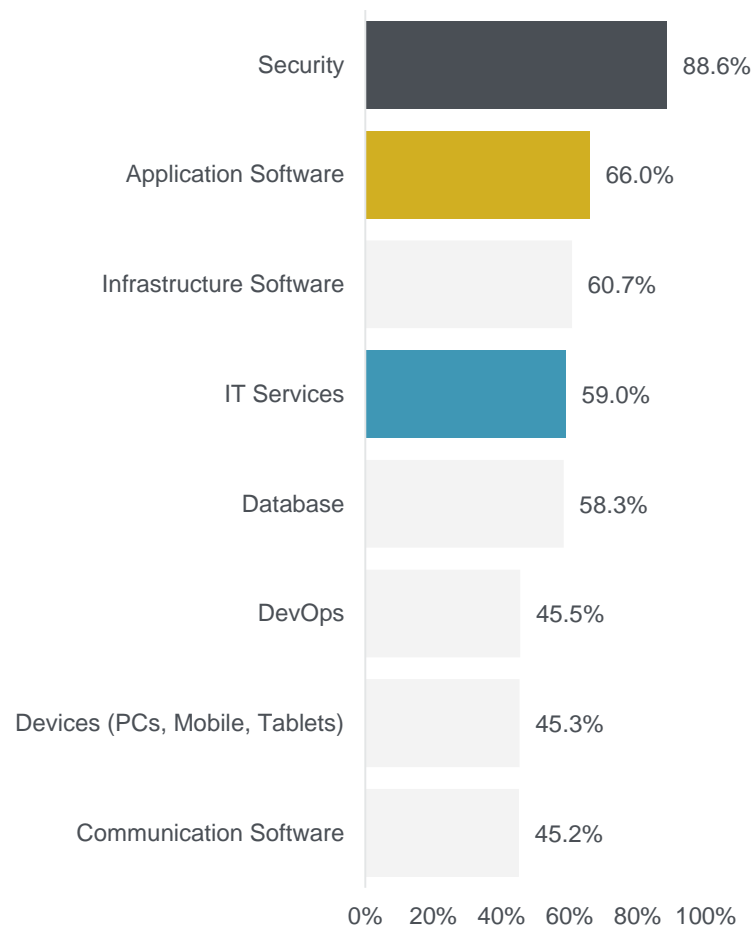
50%+ of respondents plan to spend more on Open-Source, Databricks, and Snowflake.

Net Priority Increases the Most for IT Services and Application SW

Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.

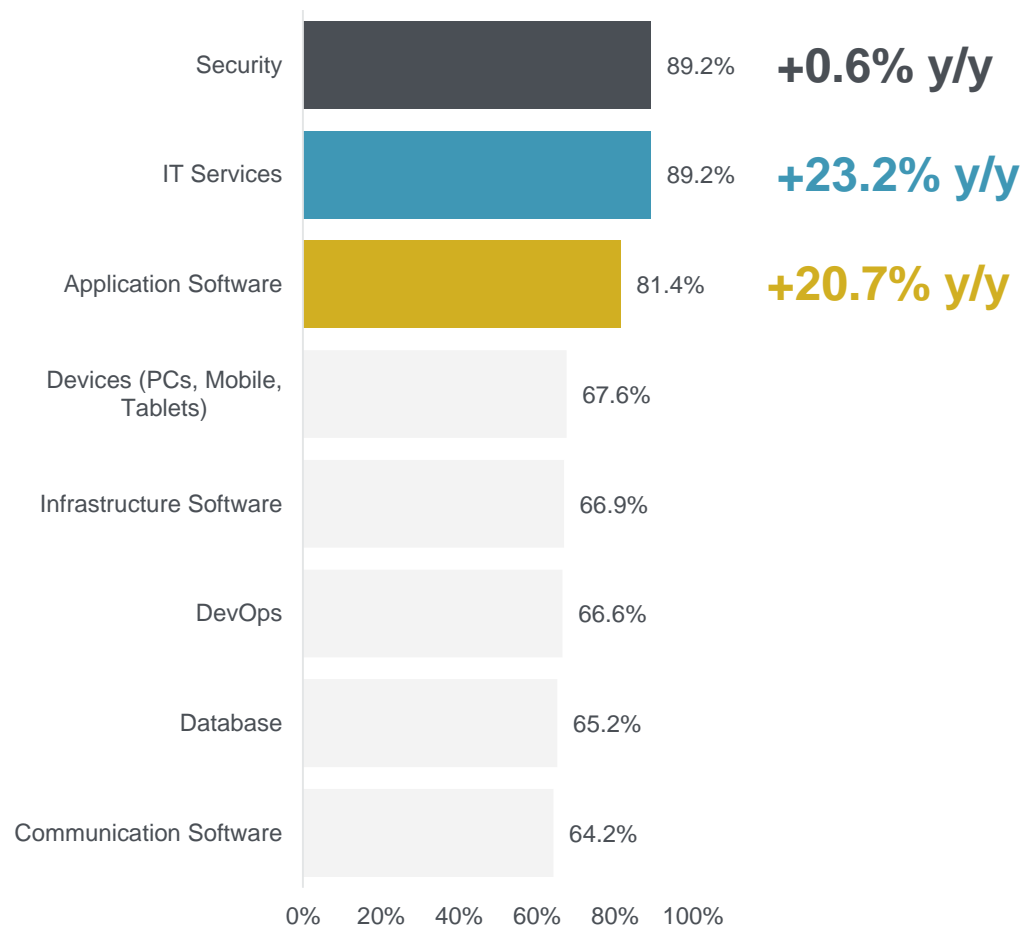
Last year

Net 12/23



This year

Net 12/24



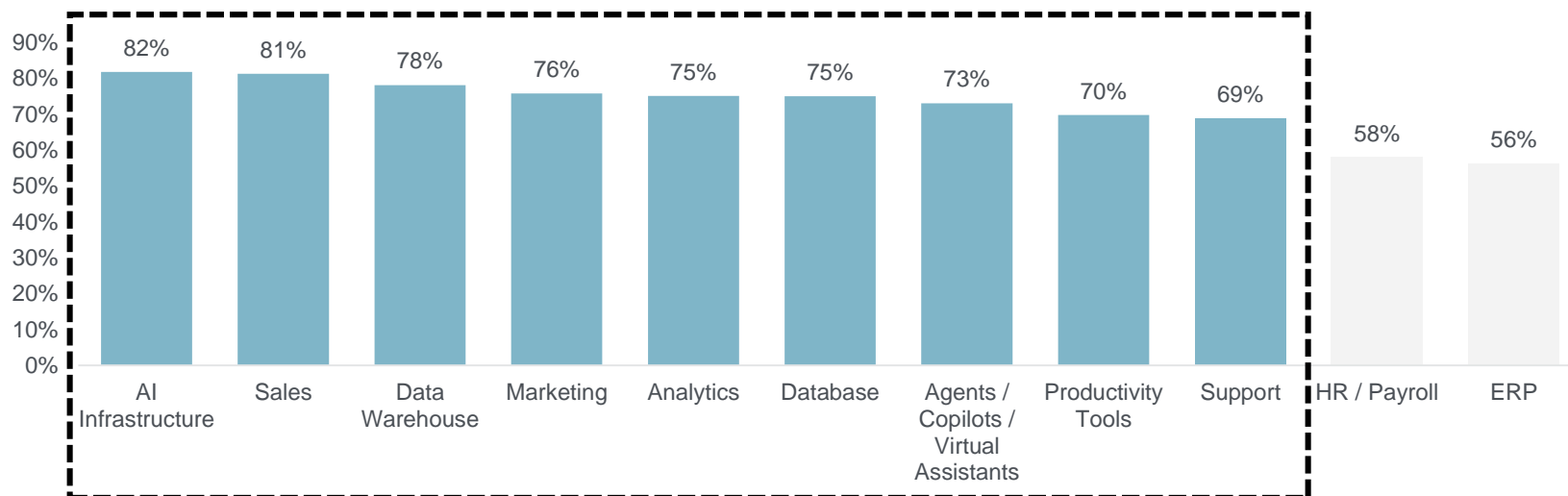
Spend Priority is Broadening After AI Experimentation Period

Q: Spending intentions by application software category for 2025?

Dec 24 Survey

9

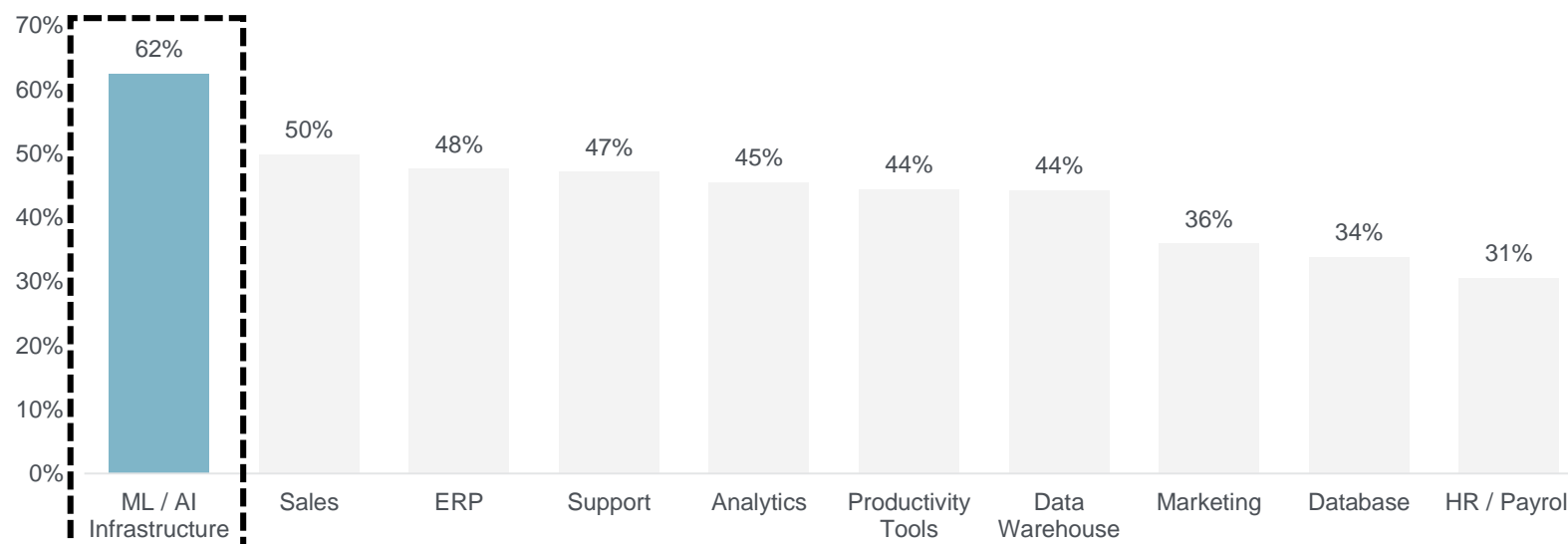
categories
with >60%
net expecting
to increase
spending



Dec 23 Survey

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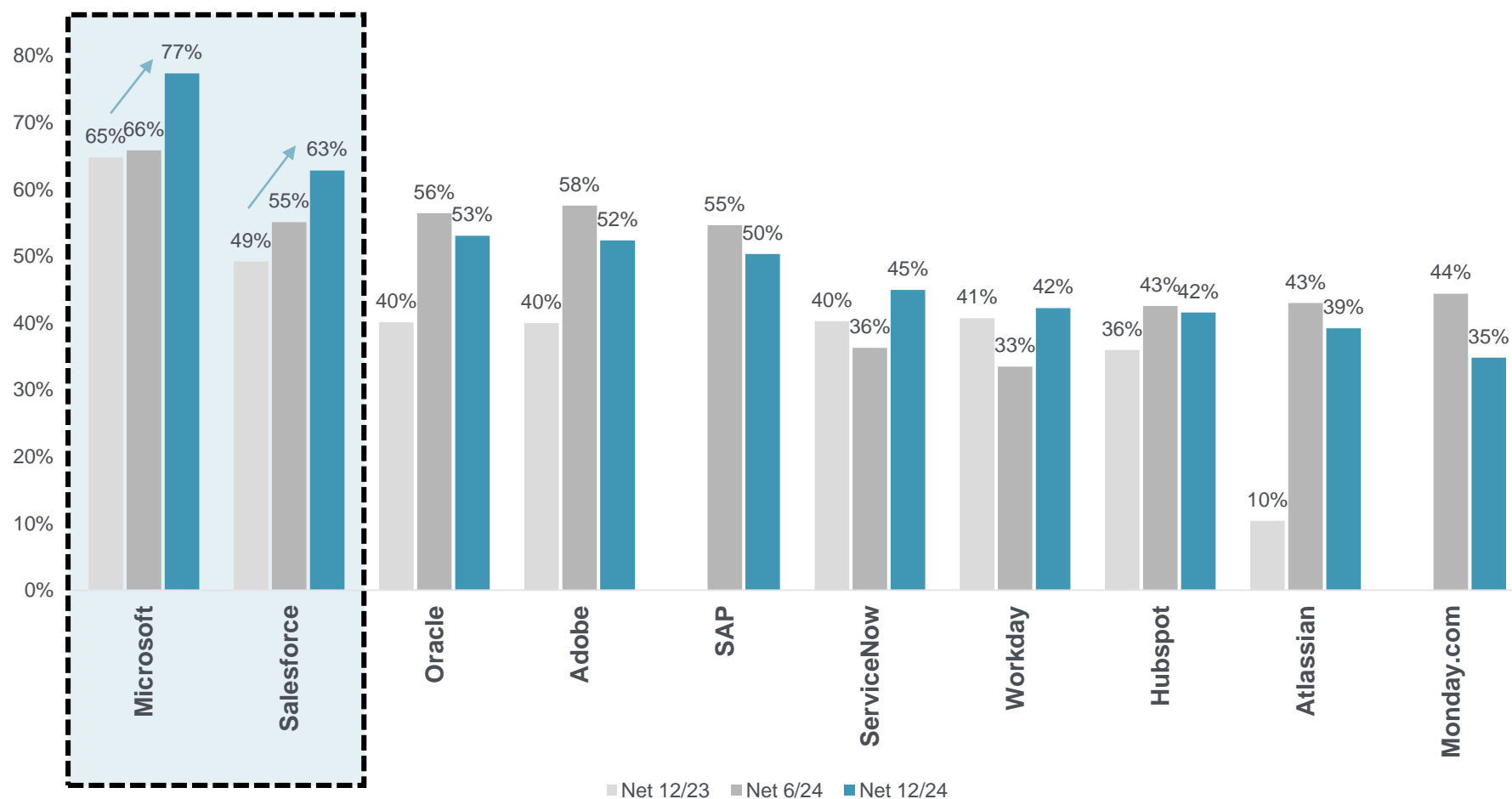
categories
with >60%
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MSFT and CRM Had the Biggest Priority Increase Entering 2025

Q: Spending intentions by application software vendor for 2025?

Biggest y/y vendor priority increases noted at MSFT and CRM



3. Generative AI



Analysts' Takeaways

Generative AI

BRENT BRACELIN – CLOUD APPLICATIONS & ANALYTICS

More than half of respondents are now implementing AI for the first time (56% vs. 43% one year ago) with 39% (vs. 35% prior) flagging AI as a potential headwind to hiring activity over the next two years. While customer support was the most common AI use-case this year, the biggest areas likely to see AI departmental use-case increases next year include 1) Sales, 2) Supply Chain, and 3) IT Help Desk.

HARSH KUMAR - SEMICONDUCTORS

We believe GPU accelerators could be a \$500B+ opportunity by 2028E with sustained double-digit CAGR growth. In the GPU space we see NVDA as the clear leader with over 70% of the total market with AMD and Intel competing for the rest of the enterprise market. In networking, Broadcom continues to be the clear leader relative to MRVL when it comes to enterprise adoption.

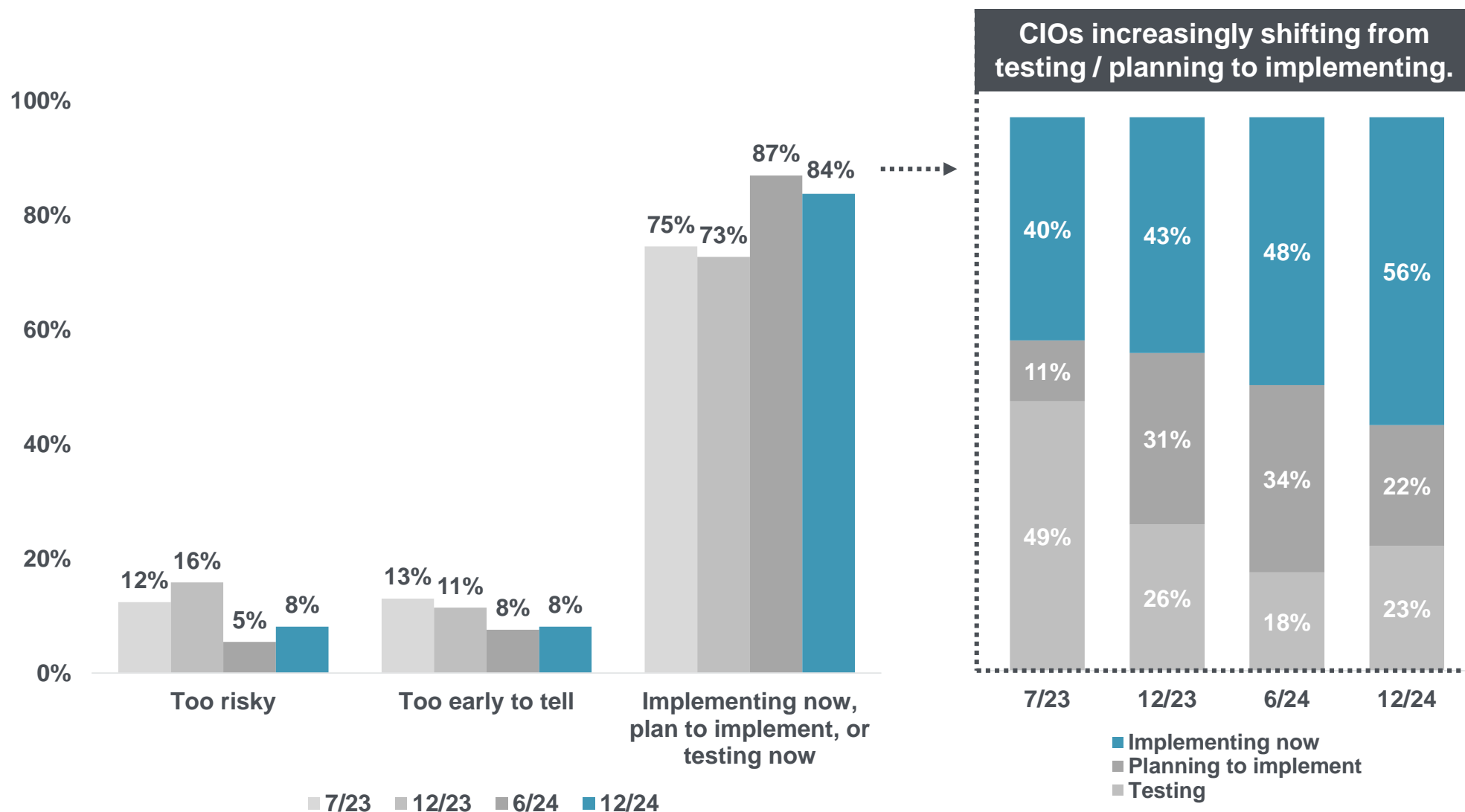
Key Stock Implications

1. **Bracelin | CRM – OW:** Sales AI use-case priority jump to 70% (vs. 30% prior) bodes well for Agentforce Agents.
2. **Bracelin | WDAY – Neutral:** Most sensitive model to AI drag on headcount given per-employee pricing.
3. **Champion | GOOGL – OW:** Now the most strategic AI vendor relative to peers, improving from prior #3 ranking.
4. **Champion | META – OW:** Spending intentions for GenAI apps ticked up ~4%, remains #4 on the list.
5. **Champion | AMZN – OW:** Ranked #2 for GenAI IaaS vendors, improving from #3 in prior survey.
6. **Kumar | NVDA – OW:** Our top large-cap pick in our coverage. Positively biased to generative AI through GPUs as well as AI Enterprise software platform.

More Than 50% of Respondents Are Implementing GenAI Now

Less than half of CIOs (40%) were implementing GenAI in 7/23; today, over half (56%) are implementing GenAI.

Q: How has your company responded to Generative AI and ChatGPT?



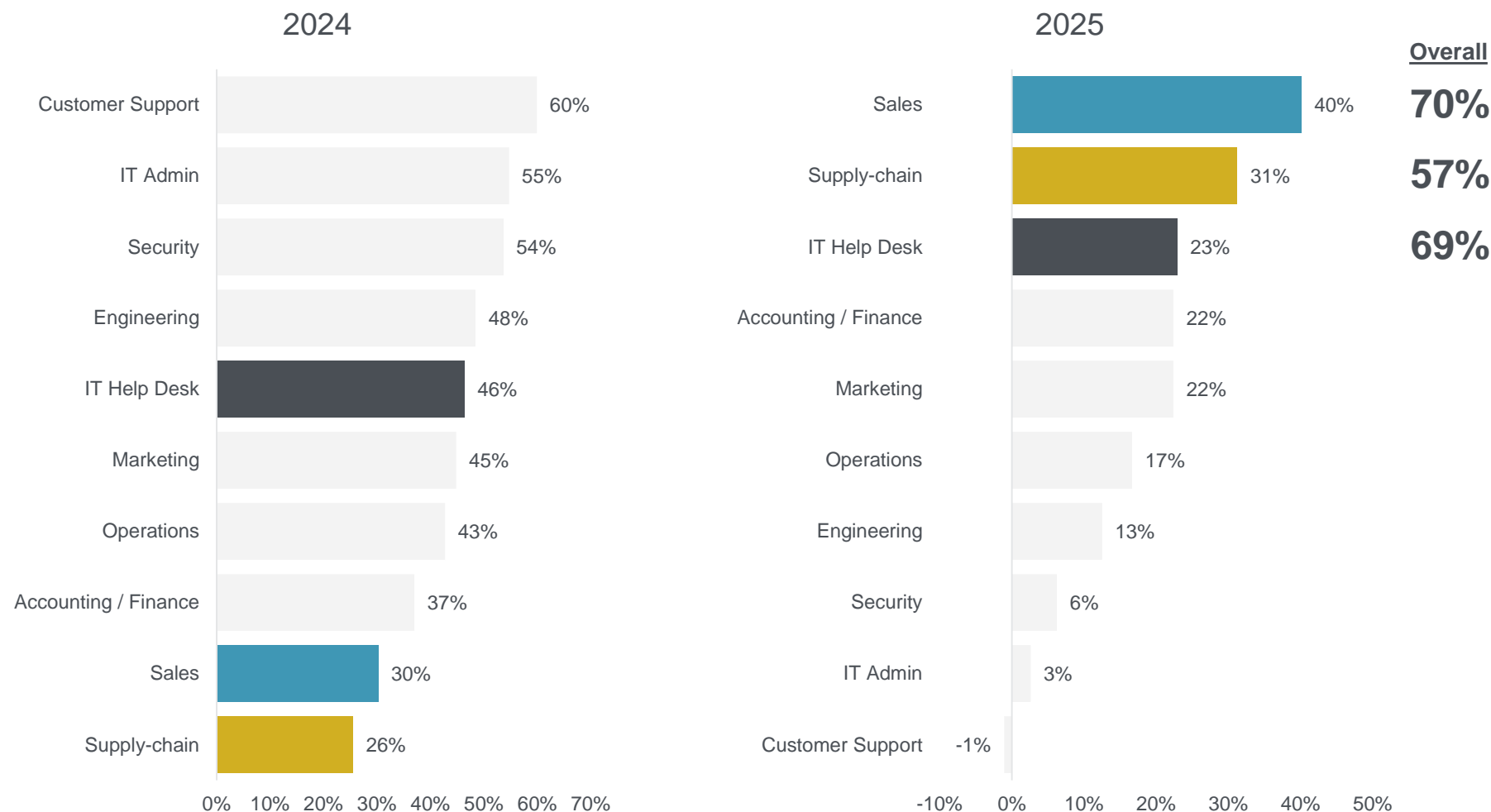
GenAI Use-Case Shifting to Sales, Supply-Chain, IT Help Desk

Use-cases are most prolific across support (60%) and IT Admin (55%) this year but sales, supply-chain, and help desk next year.

Q: What department or use-cases for AI are you most likely to implement this and next year?

This Year

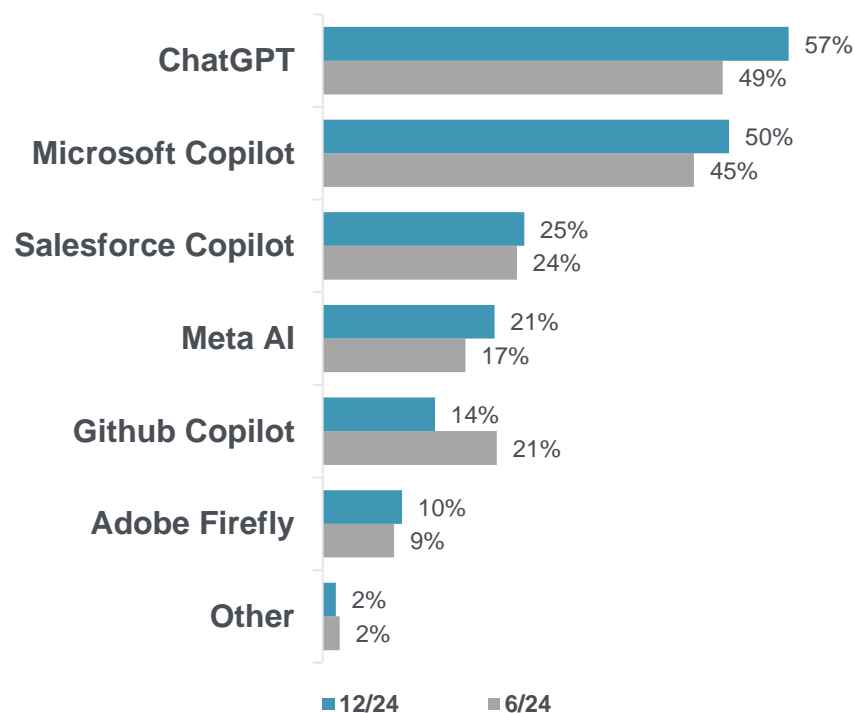
Next Year (Net Change vs. 2024)



ChatGPT Maintains Apps Lead; GCP and AWS Gain in Infrastructure

Q: Which AI IaaS & SaaS offerings are your company testing, planning to implement, or implementing right now?

AI Applications



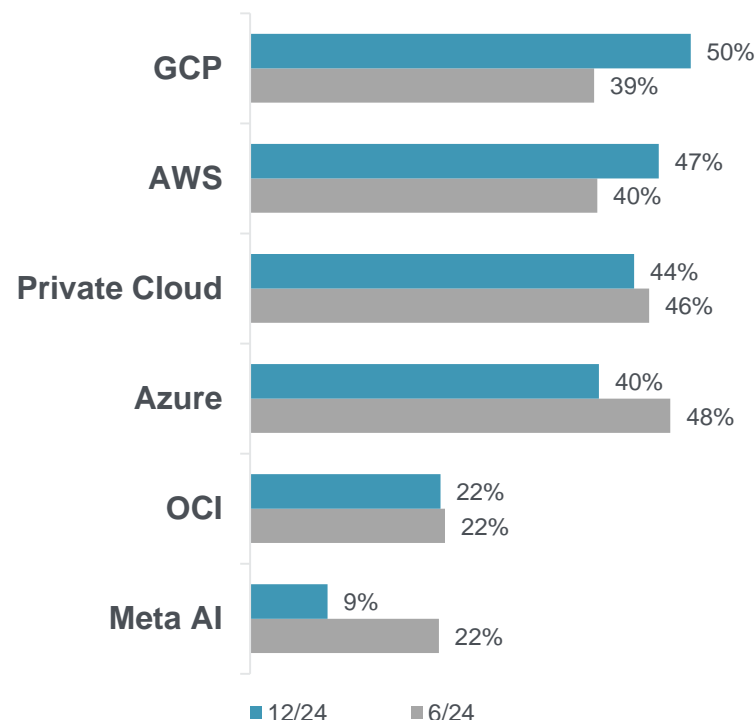
Most Popular

- ChatGPT most popular AI application at 57%
- Microsoft Copilot a close second at 50%

Biggest Surprise

- Downtick in implementation plans for Github Copilot.

AI Infrastructure



Most Popular

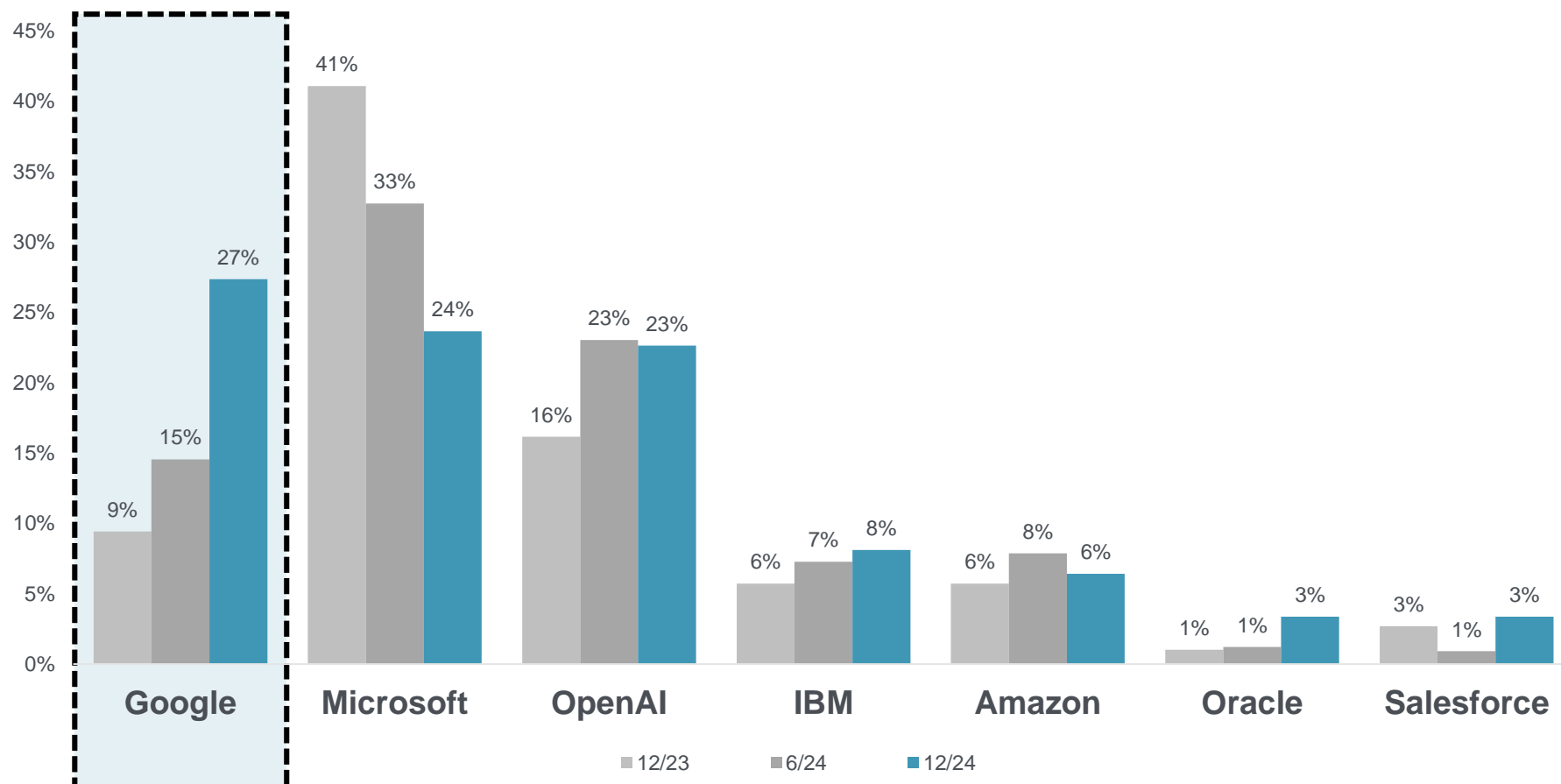
- GCP most popular AI infrastructure at 50%

Biggest Surprise

- GCP and AWS strategic uptick vs. Azure downtick.

GCP (Google) Rising in “Most Strategic” AI Vendor Category

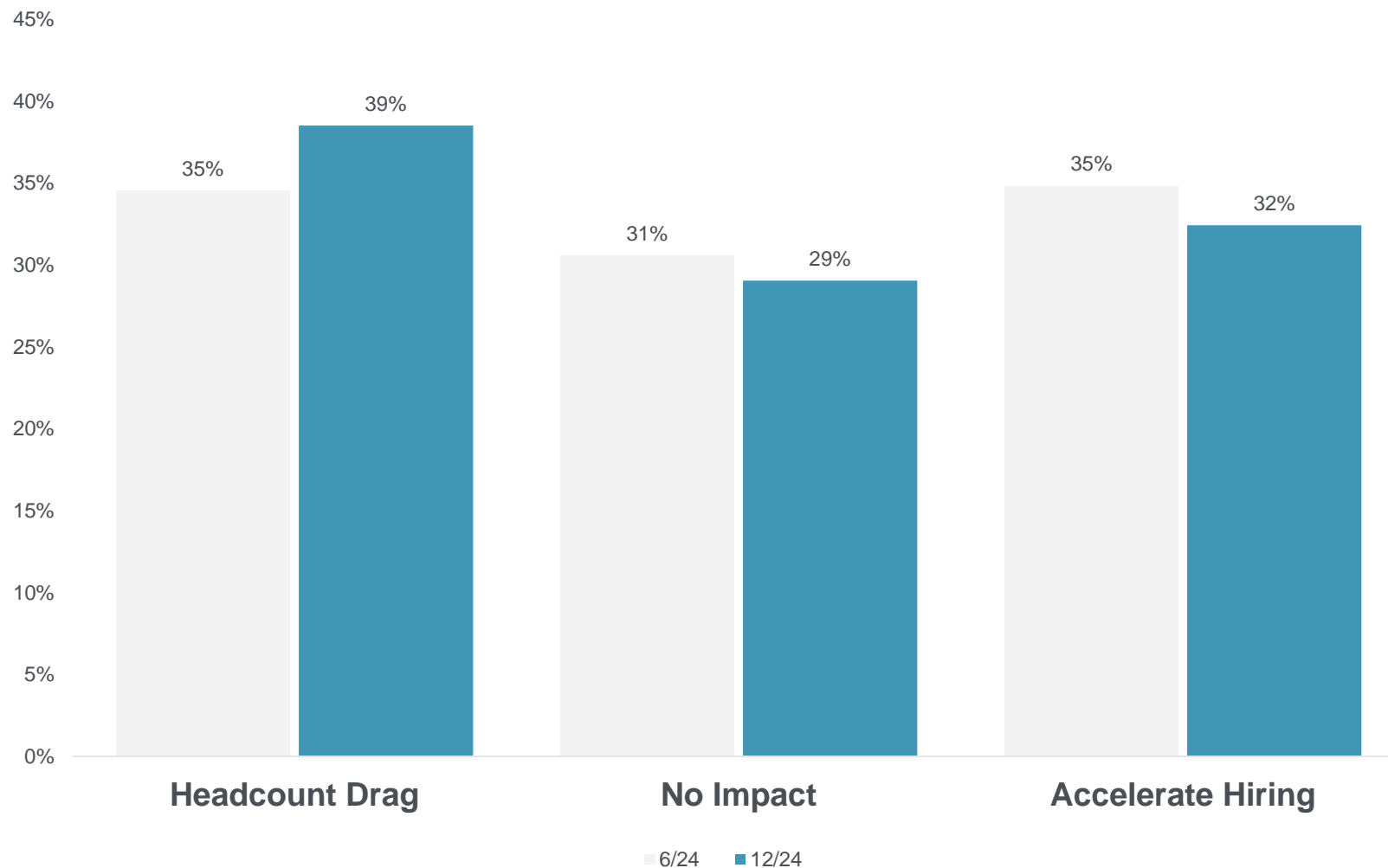
Q: What AI vendor(s) would you consider to be the most strategic and why?



Slightly More Sobering View on AI Impact to Headcount

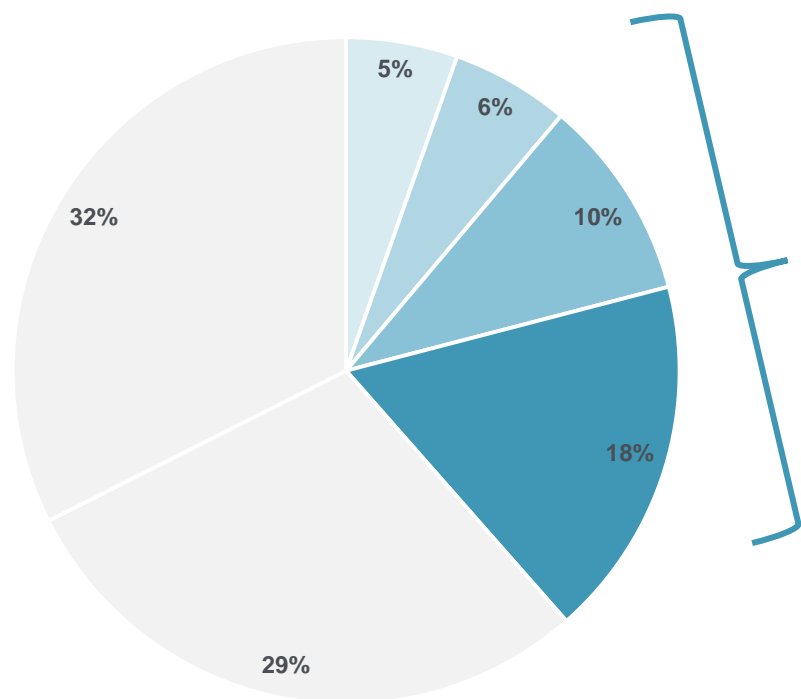
39% of respondents now expect AI to have a drag on headcount over the next two years (vs. 35% in June).

Q: How do you expect AI productivity gains to impact hiring plans for the next two years?



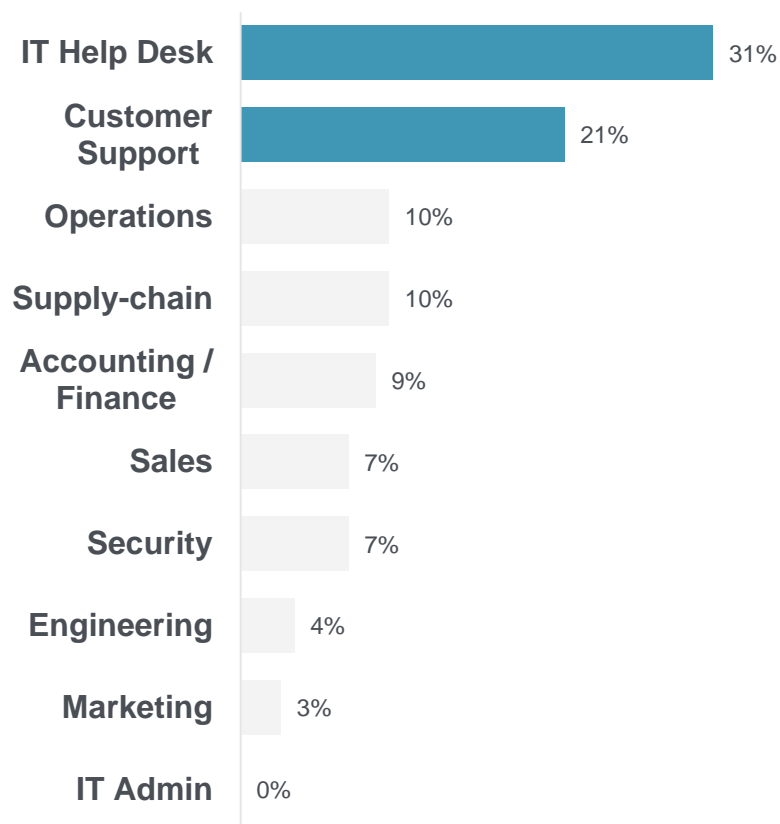
Support and Help Desk Roles Most Vulnerable to Automation

Q: Which department will AI slow hiring or decrease headcount the most?



- Material layoffs
- Some layoffs
- Major drag
- Minor drag
- No impact
- Accelerate hiring

Respondents expecting headcount drag from AI see support and help desk roles as most vulnerable



4. Security



Analyst Takeaways

Security

ROB OWENS – SECURITY & INFRASTRUCTURE SOFTWARE

1 Security demand likely to prove durable in 2025 as the #1 priority for CIOs

Net/net: 89% of respondents expect to increase spending on security overall, continuing to hold the #1 priority spot for CIOs and showing a modest increase vs. our previous survey. Positive for: S, CYBR, ZS.

2 Cloud security & data security the highest priority categories within security for '25

Net/net: 79% / 76% of respondents indicated increased spending for cloud security / data security, the highest in security. Positive for: CRWD, ZS, PANW.

3 Firewall refresh cycle set to pick up steam in 2025

Net/net: ~30% of respondents expect to refresh firewalls in the coming year, and 70% expect to refresh in the next 2 years – we note respondents indicated a quicker timeline for DC firewalls vs. branch / campus. Positive for: PANW, FTNT, CHKP.

Key Stock Implications

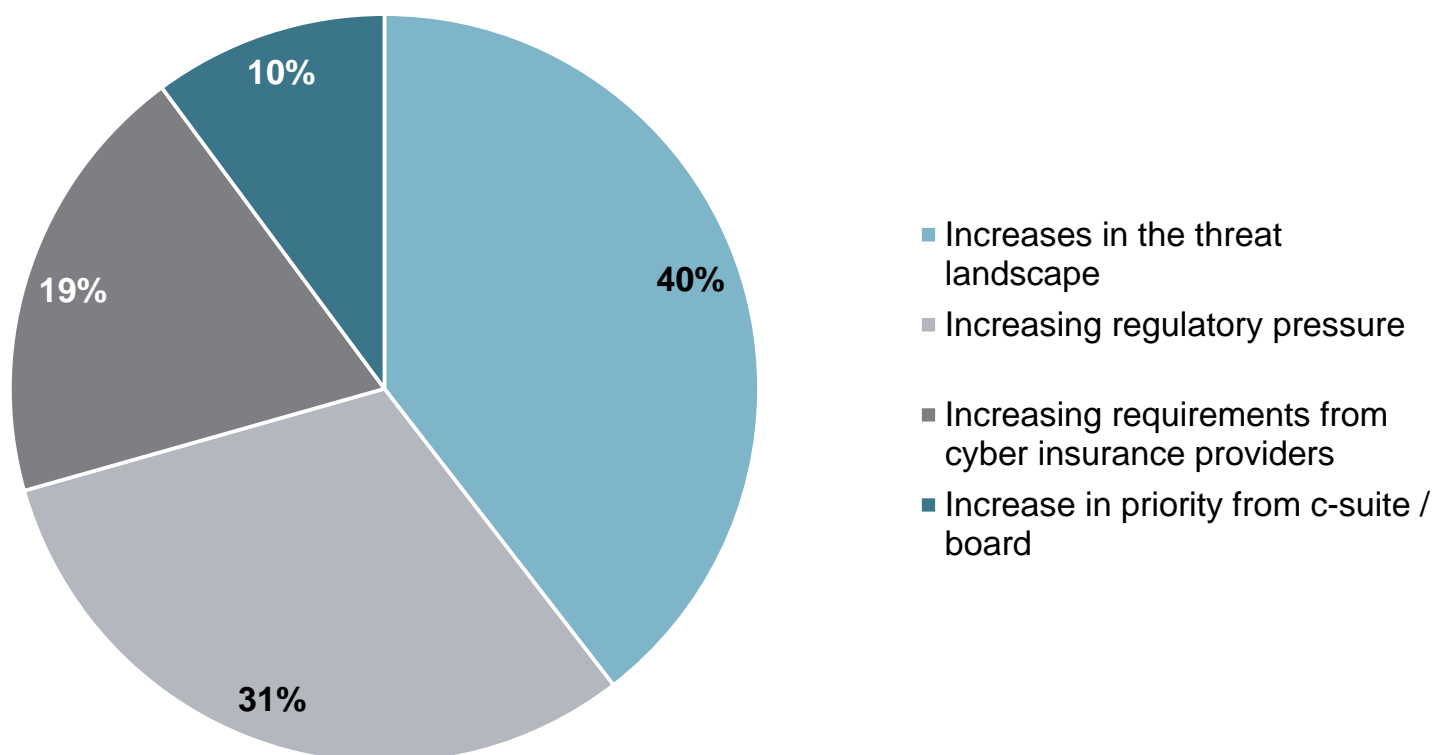
1. **Owens | ZS – OW:** Cloud, data, SASE and IoT all ranking in the top five categories for security spend plays into ZS's strengths.
2. **Owens | CRWD / S – OW:** Prioritization of cloud security / data security should aid momentum with newer solutions for both names, and endpoint / XDR spending intentions increased too.
3. **Owens | FTNT – N:** Responses around a potential refresh cycle in '25 reinforce commentary made by management last quarter around an acceleration next year.

Key Drivers of Increasing Security Spend in 2025

Keeping pace with an evolving threat landscape is the core driver of increasing security spend in the future.

Q: Which of the following is the biggest driver for increased cybersecurity spending within your organization?

- To get a better understanding of what is driving strong growth in security budgets and a continued prioritization of the category, we asked survey respondents about what the core driver of increased security spending is for their organization.
- Almost half of respondents (40%) indicated that increases in the threat landscape were the biggest driver for increased cybersecurity spending within their organization, with the frequency and severity of attacks showing continued growth throughout the year.
- Over 30% of respondents indicated that increasing regulatory pressures was the core driver behind increased spend, unsurprising in our view given the increased reporting / disclosure requirements implemented by the SEC recently.

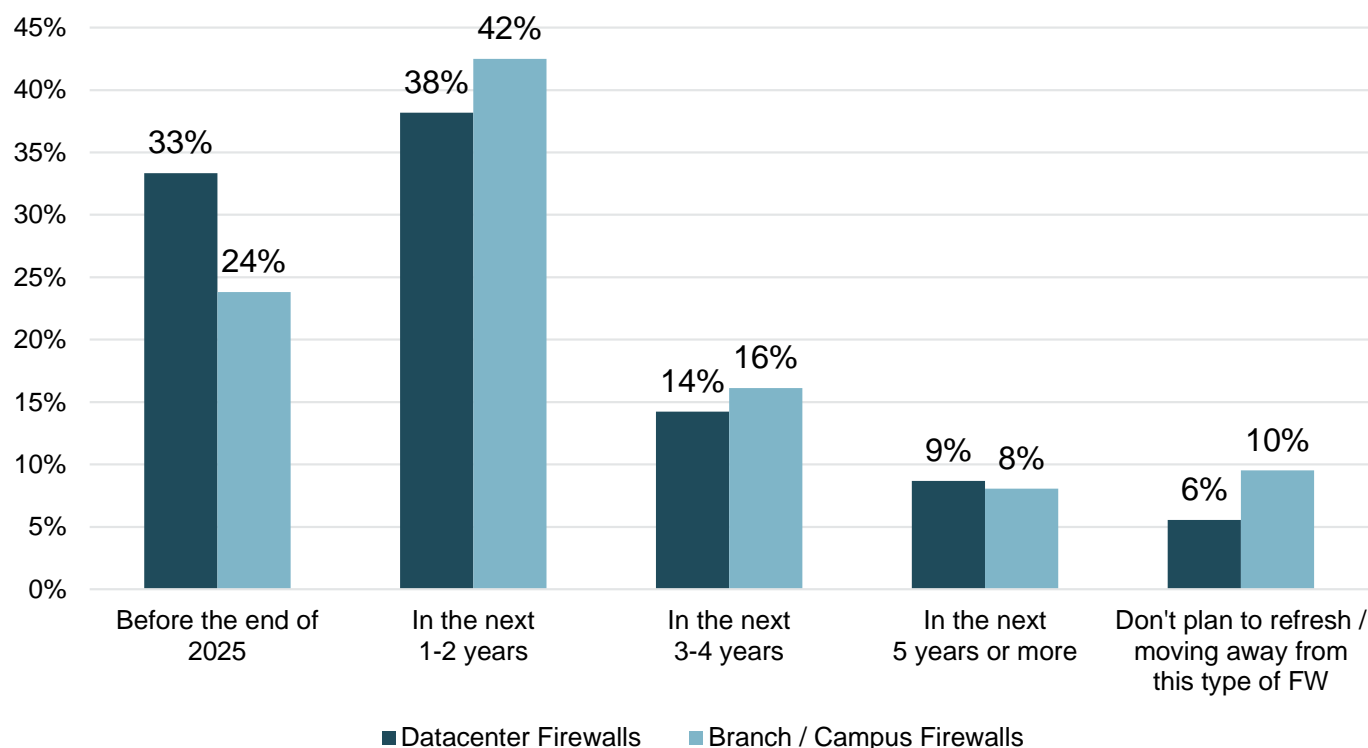


Plans for Firewall Refresh

~70% of respondents are planning on refreshing firewalls within the next two years – 29% expect to refresh before the end of 2025.

Q: When do you plan to do a major refresh of the following on-premise firewall solutions?

- With the major firewall vendors (CHKP, FTNT, PANW) gearing up for a refresh cycle to play out in coming years, we surveyed CIOs to get a better sense of timing, while also drilling down into trends between datacenter and branch / campus firewalls.
- In total, the vast majority of CIOs are expecting to refresh within the next two years; 72% indicated they will refresh datacenter firewalls over this timeframe and 66% indicated they will refresh branch / campus firewalls. We believe this should support expectations around a firewall refresh helping product growth for the industry in coming years.
- We note our survey pointed to stronger near-term refresh trends for datacenter firewalls with 33% of respondents looking to refresh before the end of 2025, vs. 24% for campus firewalls.

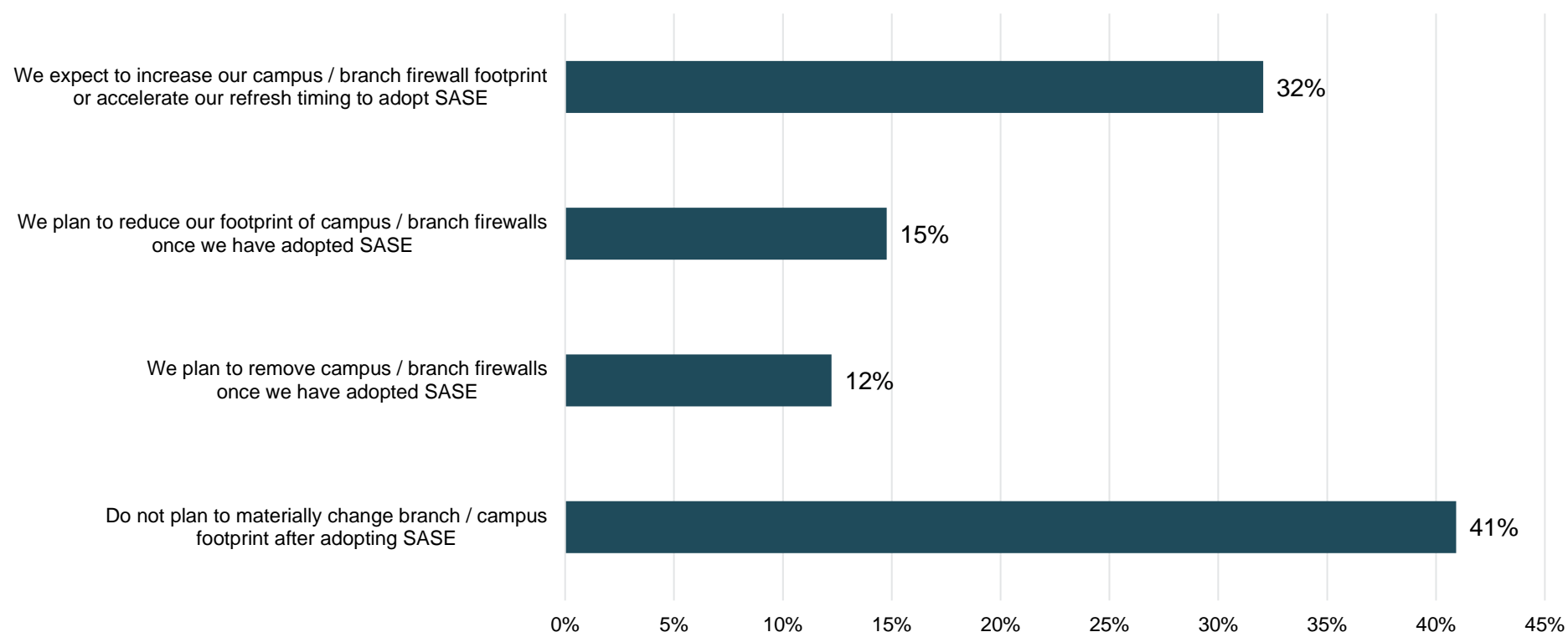


Is SASE Adoption Impacting Branch / Campus FW Refresh Plans?

Only 27% of respondents looking to adopt SASE will reduce / remove B/C firewalls when adopting the technology.

Q: Do you plan to adopt Secure Access Service Edge (SASE) in the next 1-3 years? If so, what impact do you expect this will have the next time you are supposed to refresh your campus / branch firewalls?

- Amidst the talk of a firewall refresh cycle, we have increasingly heard debates from investors around the potential for SASE adoption to hurt the refresh of campus / branch firewalls given some vendors (i.e. ZS) enable organizations to remove these firewalls when deploying SASE. We included a question to get a sense of impact from orgs who are looking to adopt SASE.
- Overall the majority of respondents (73%) expect to increase branch / campus footprints or keep them the same – unsurprising in our view given many look to leverage the existing firewall vendor for SASE.
- Only 12% signaled an intention to completely remove campus / branch firewalls when deploying SASE, whereas 15% indicated some level of reduction. Overall, we do not expect this trend to materially affect refresh trends for branch firewalls this cycle.

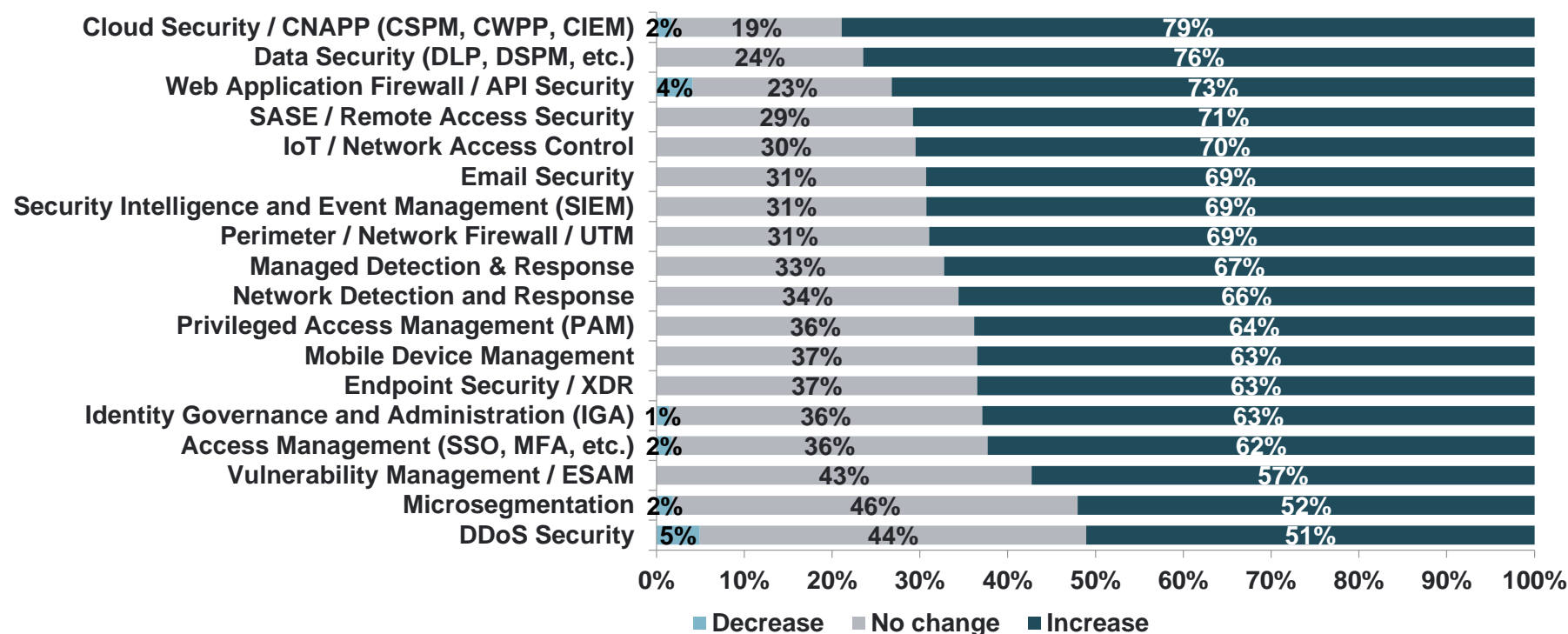


Expected Change in 2025 Spending by Security Categories

Cloud security, data security, WAF / API security, SASE and IoT / NAC are the highest priority security categories for 2025.

Q: Which areas of security software do you intend to increase, decrease, or leave the same in regards to spending in 2025 relative to 2024?

- Cloud security and data security were the top two prioritized security categories for 2025, with 79% / 76% of respondents indicating they are looking to increase spend in these categories in 2025.
- Web application firewall (WAF) / API security, SASE and IoT / Network Access Control (NAC) also showed well, rounding out the top five categories.
- DDoS and micro segmentation spending came in at the bottom, but were relatively solid overall – minimal respondents indicated a decrease in spend of these categories.



Security Net Spending Expectations in Dec. 2024 vs. Jun. 2024

Cloud security / data security saw the largest positive shifts in expectations vs. the previous survey.

Q: Which areas of security software do you intend to increase, decrease, or leave the same in regards to spending in 2025 relative to 2024?

- Net spending expectations for 2025 showed a notable improvement versus expectations in our June survey, with the average net score up 8 points across categories.
- Most improved categories vs. the 2024 survey were: cloud security (+20%), data security (+17%), WAF / API security (+16%) and IoT / NAC (+16%).
- DDoS (-6%) and Access Management (-4%) were the only categories to show a decrease from the previous survey, and Vulnerability Management / MDM showed modest increases in net scores relative to other categories we surveyed for.

Category	Net Score			Change in Net Score	
	Dec. '23 Survey	Jun. '24 Survey	Dec. '24 Survey	From Dec. '23	From Jun. '24
Cloud Security / CNAPP (CSPM, CWPP, CIEM)	68%	57%	77%	9%	20%
Data Security (DLP, DSPM, etc.)	50%	59%	76%	26%	17%
Web Application Firewall / API Security	51%	53%	69%	18%	16%
IoT / Network Access Control	46%	55%	70%	25%	16%
Managed Security Services / Managed Detection & Response	49%	53%	67%	18%	14%
SASE / Remote Access Security (CASB, FWaaS, SWG, etc.)	49%	58%	71%	22%	13%
Email Security	57%	58%	69%	12%	12%
Endpoint Security / XDR	66%	53%	63%	-3%	10%
Security Intelligence and Event Management (SIEM)	57%	60%	69%	12%	9%
Network Detection and Response	63%	57%	66%	3%	8%
Perimeter / Network Firewall / UTM	55%	63%	69%	14%	6%
Mobile Device Management	49%	61%	63%	15%	3%
Vulnerability Management / ESAM	53%	56%	57%	4%	1%
Access Management (SSO, MFA, etc.)	50%	64%	61%	10%	-4%
Distributed Denial of Service (DDoS) Security	45%	52%	46%	1%	-6%
Privileged Access Management (PAM)			64%	N/A	N/A
Identity Governance and Administration (IGA)			61%	N/A	N/A
Microsegmentation			50%	N/A	N/A
Average	54%	57%	65%	11%	8%

5. Infrastructure & Communication Software



Analyst Takeaways

Infrastructure & Communication Software Trends

JAMES FISH, ROB OWENS, QUINTON GABRIELLI – INFRASTRUCTURE SOFTWARE

Almost all categories showed planned spending increases, and while Security continues to dominate CIOs' priority lists, the underlying investments planned around IoT, Campus Networking, and ITSM are especially encouraging for those sub-sectors. Key to us: 1) Strong on-premise refresh is potentially ahead, particularly for WLAN & firewalls; 2) Private Cloud AI mentions persisting is highly encouraging for equipment providers, and supports needed refresh or increased investment; 3) IoT & SMB IaaS spending intents showing upticks are positives for vendors like Samsara, Cloudflare, & DigitalOcean; 4) 45% of respondents plan to replace VMware over the next few years mainly via standalone hypervisors or HCI migrations; 5) DevOps strength for the 3rd consecutive survey points to a durable demand, developer hiring, and seat-expansion backdrop for '25.

JAMES FISH – COMMUNICATION SOFTWARE

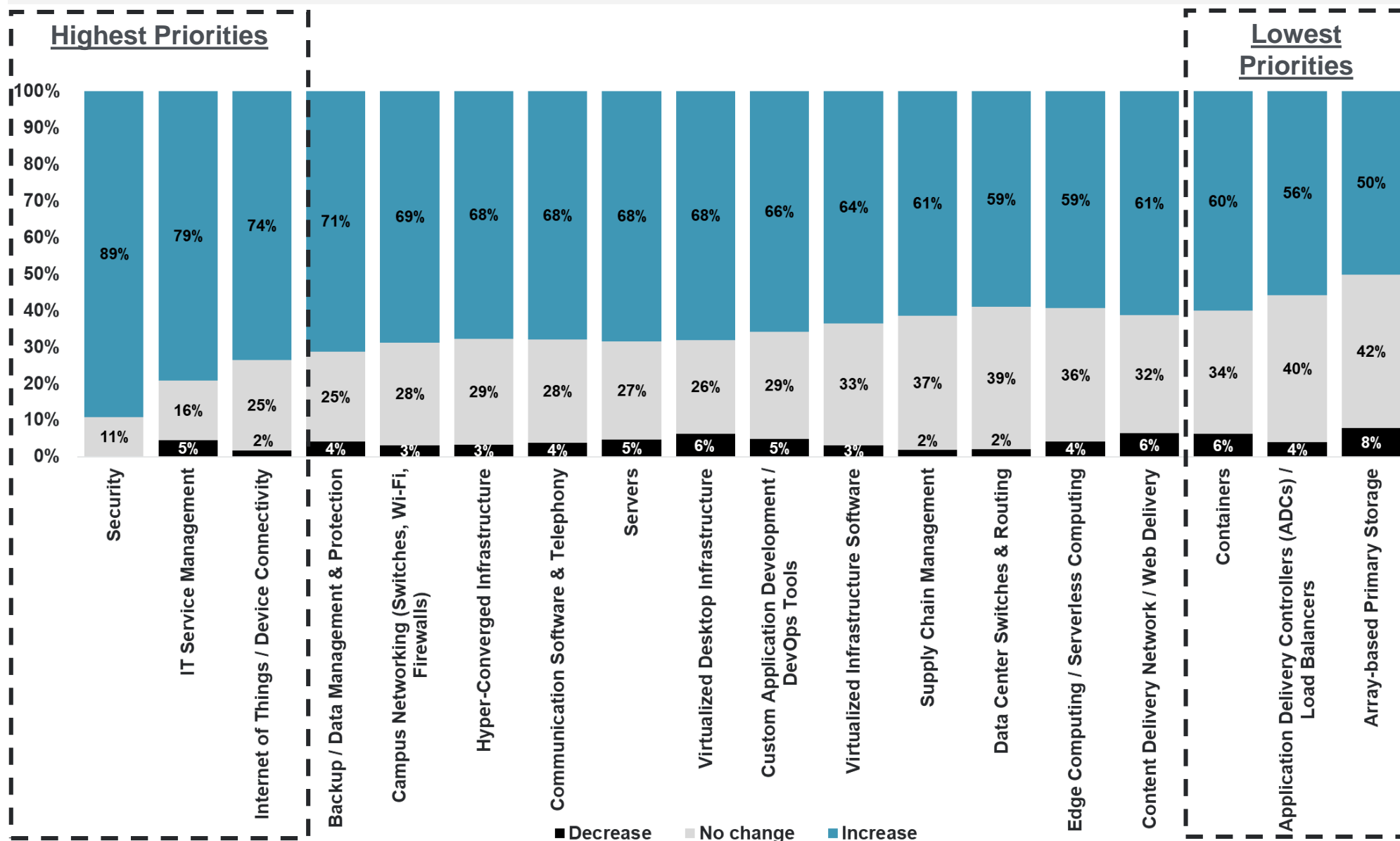
Despite actual spending over the last few years being tepid, net-spending intention (+64%) in our survey is at a record as cloud categories showed the strongest intention. However, like our recent CXO survey, cloud migrations appear to have been pushed.

Key Stock Implications

1. **Fish | NTNX – Overweight:** Robust spend intent in HCI and Virtualization, Private Cloud for AI mentions resilience, and strength for HCI migrations (particularly '26) from VMware gives incremental confidence in growth sustainability.
2. **Fish | CSCO – Neutral:** Cisco is the largest campus networking provider, and while there will be a debate around incumbency positioning vs. share losses, the campus refresh opportunity and competitive disruption is a positive for Cisco.
3. **Owens | TEAM – Overweight:** A notable uptick in ITSM spending expectations bodes well for continued strength with JSM, and another year of improving DevOps spending intentions should help set up a solid demand environment for TEAM in '25.
4. **Owens | GTLB – Overweight:** Another uptick in DevOps spending intentions lays the groundwork for a strong year of growth and minimal engineering headcount impacts from GenAI adoption should help quell a key bear point on the story.
5. **Gabrielli | MANH – Overweight:** Strong net-spending for SCM software, with Retail outpacing overall and focused on Manhattan's [core markets](#).

Infrastructure & Communication Software Spending Intentions

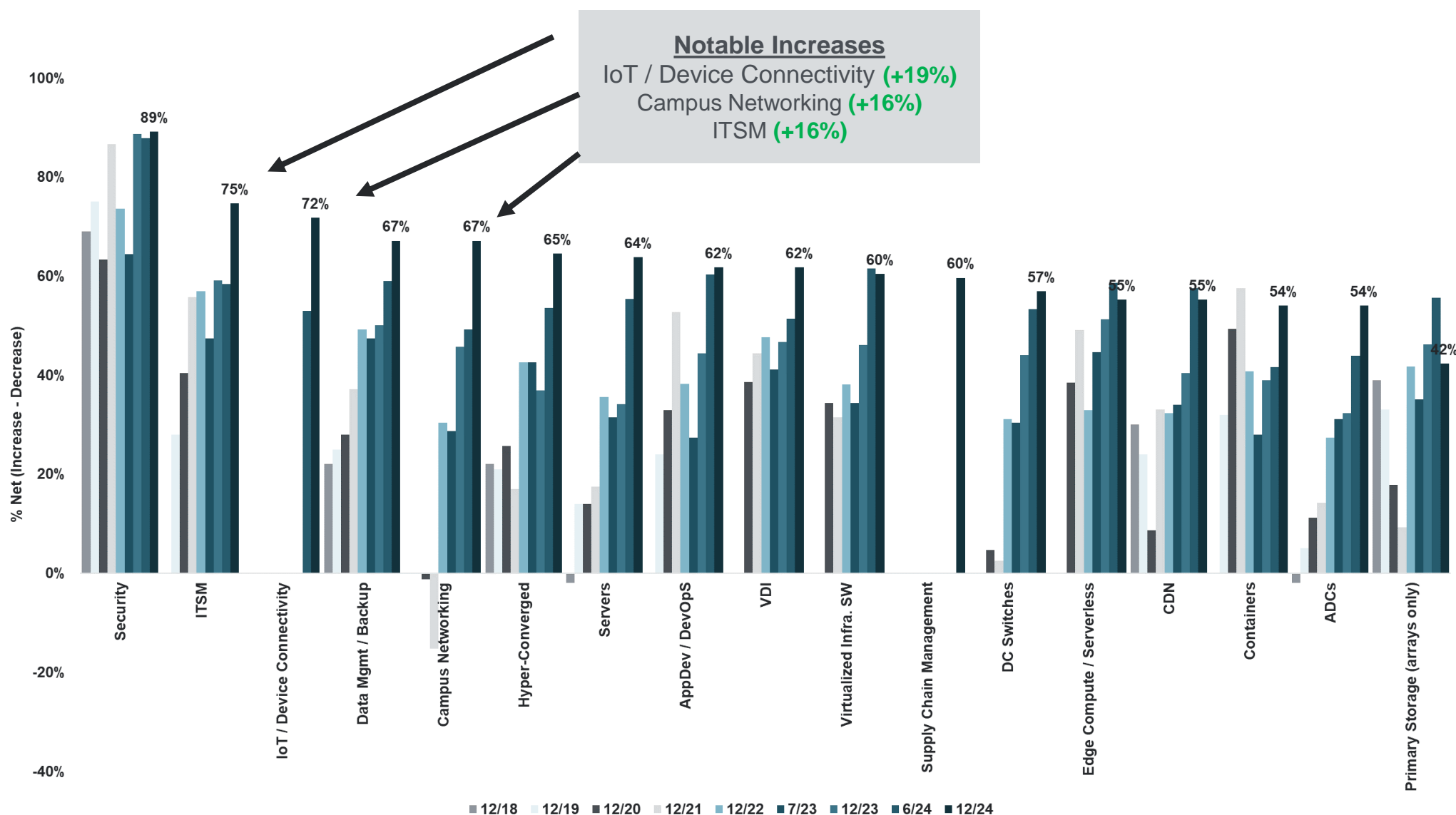
Security, ITSM, & IoT Device Connectivity the Highest Priorities | Array-Based Primary Storage, ADCs & Containers Lower Priority



Source: Piper Sandler Research, Responses Weighted by IT Budget Size (numbers may not appear to total to 100% due to rounding)

Infrastructure Spending Intentions

Strongest Increase in IoT / Device Connectivity, Campus Networking & ITSM; Largest Decrease in Array-Based Primary Storage

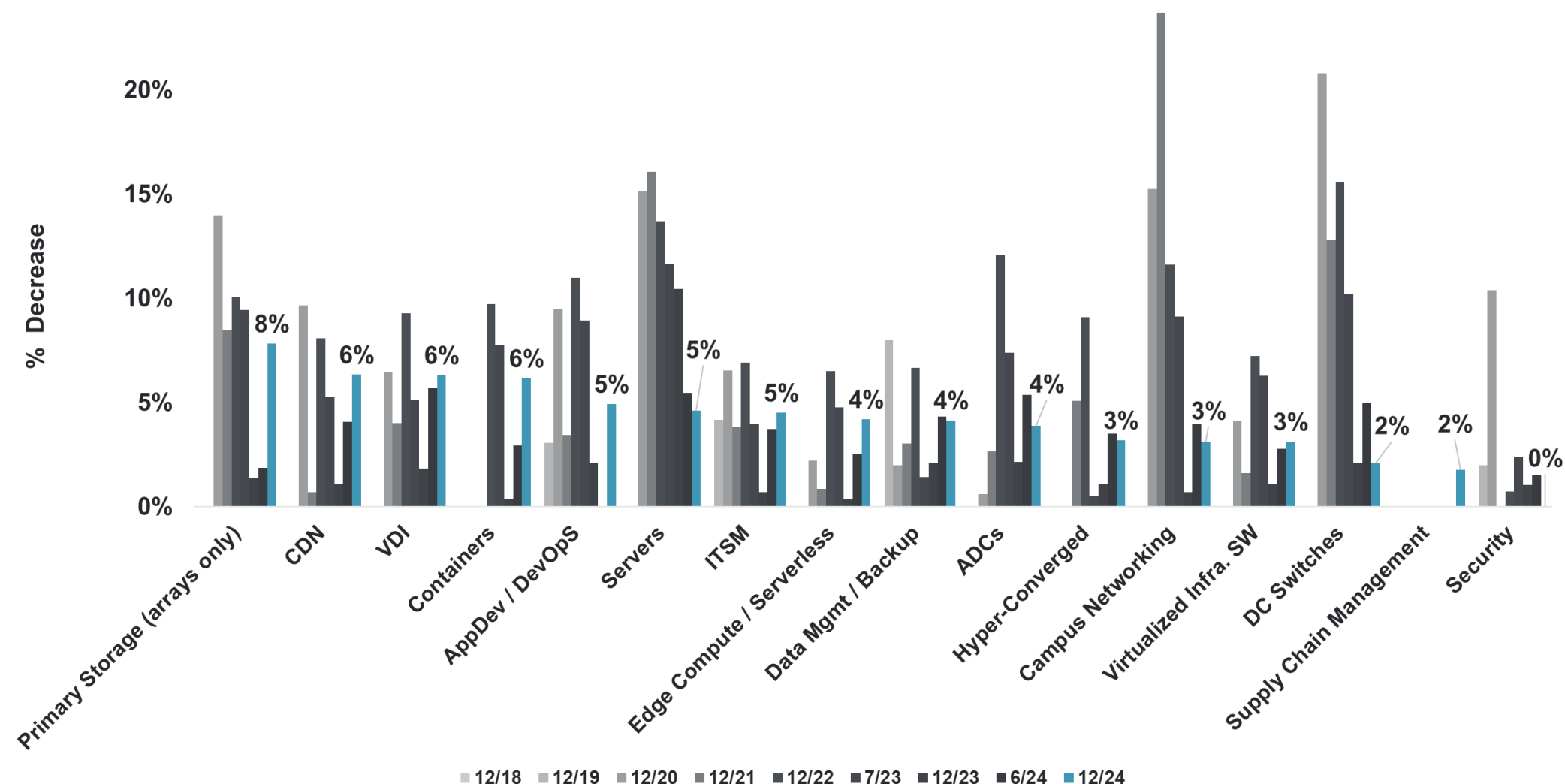


Spending Declines Most at Risk

Array-Based Primary Storage, CDNs, VDI & Containers Are Most at Risk if Budgets Get Reduced in '25

Most at risk

25% to decline in spending in 2025 because of budget cut or consolidation

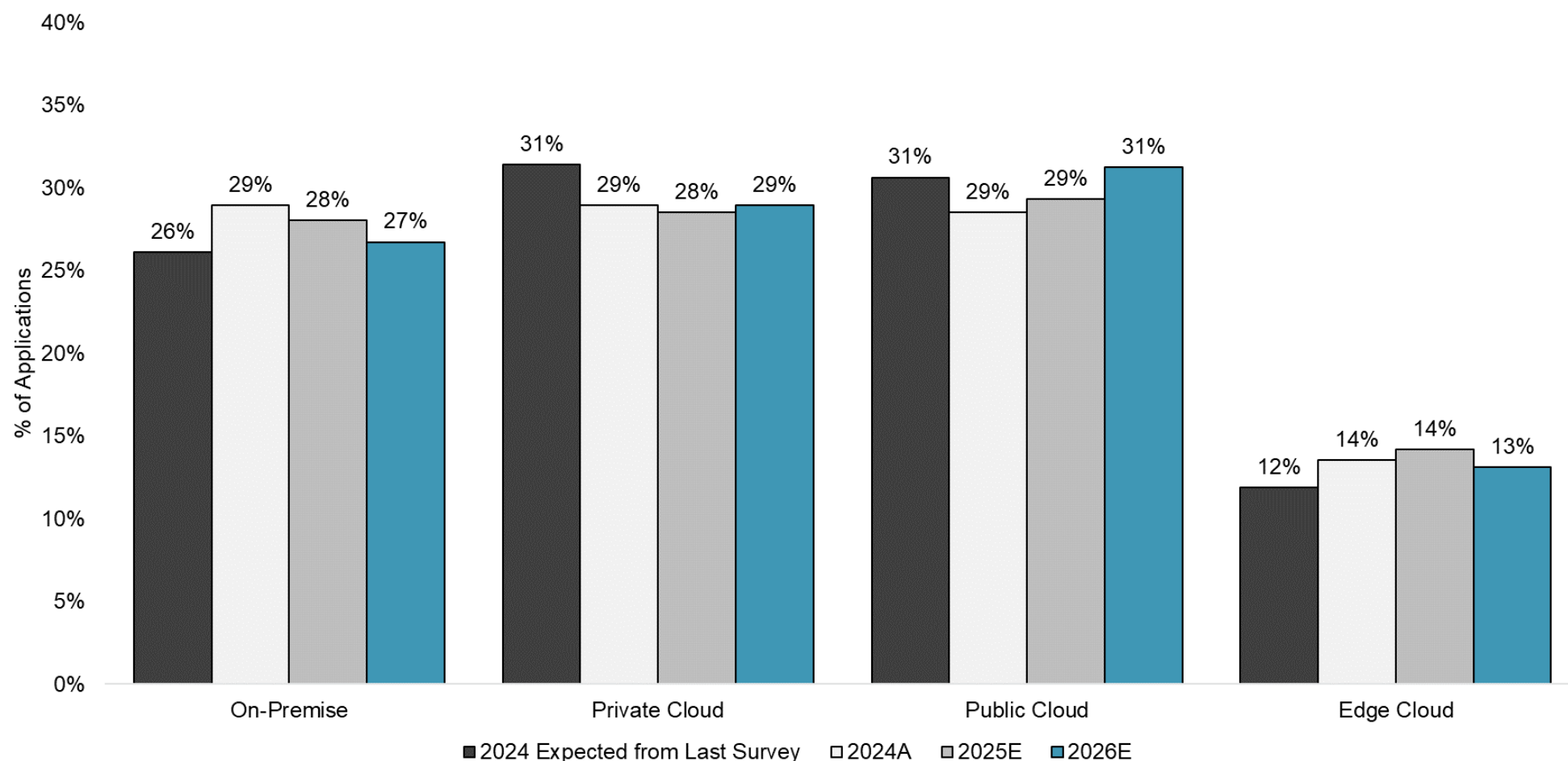


Source: Piper Sandler Research, Responses Weighted by IT Budget Size

IT Infrastructure Architecture

Public Cloud Anticipated to Show Largest Share Gains Over the Next Two Years

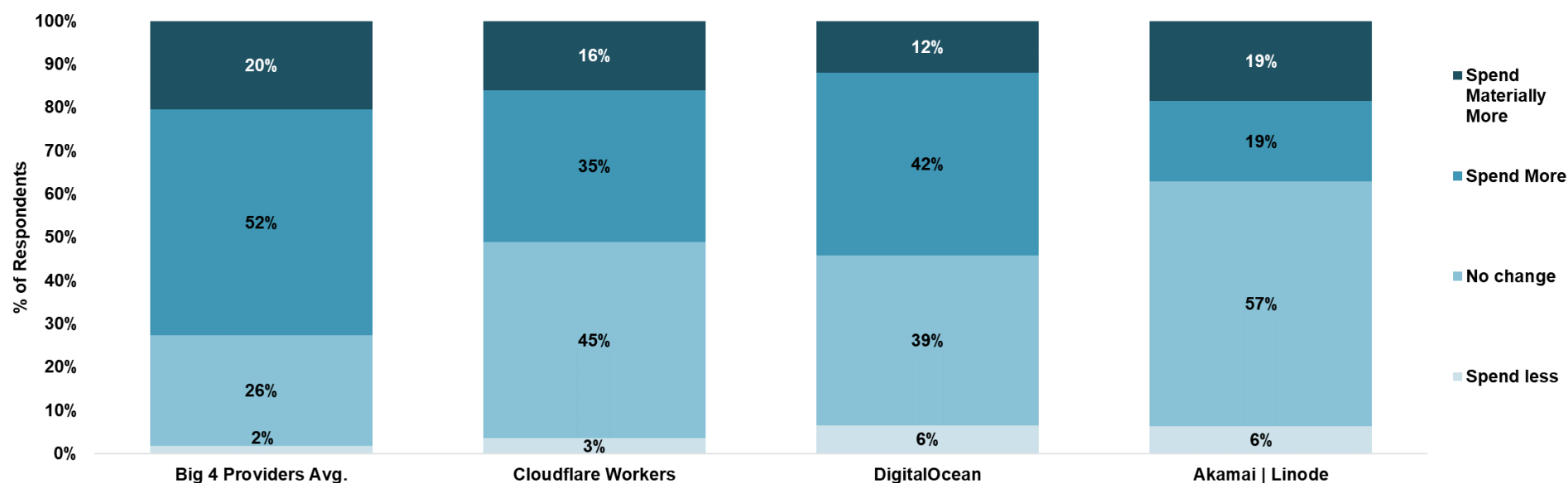
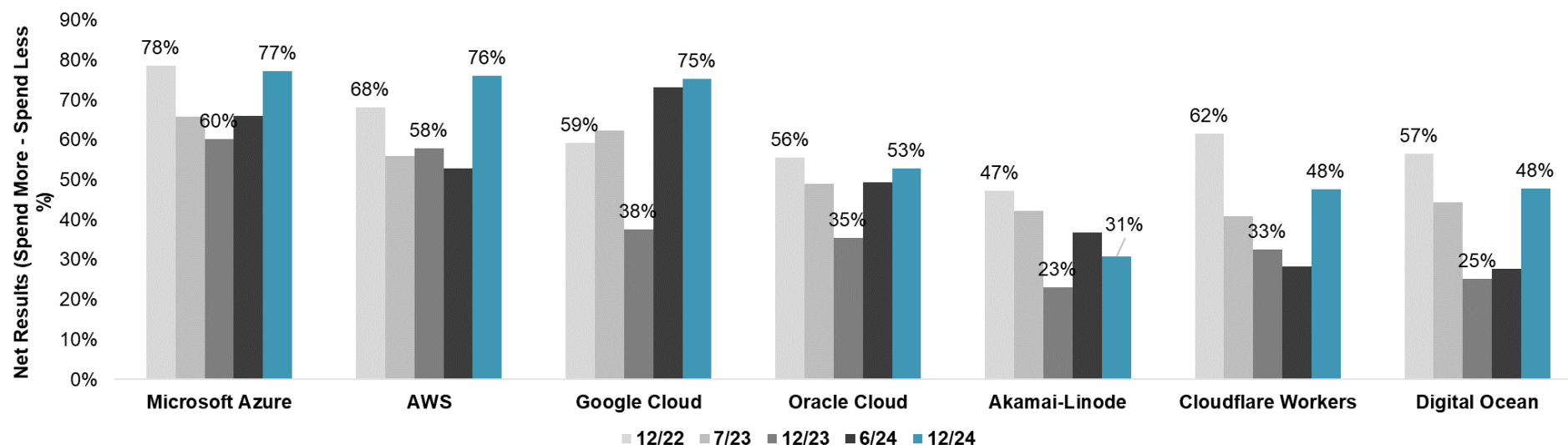
On average, respondents are currently running just 29% of applications on the Public Cloud vs. the expected mix of 31% predicted by our last survey (with apps evenly distributed across On-Prem, Public & Private cloud at 29%). **On-Premise** is expected to see the largest decline in share (-2%) from 2024 to 2026, with **Public Cloud** (+2%) seeing the largest increases. We believe the stability in On-Prem and Private Cloud mentions signals a hybrid cloud strategy to remain in focus through 2026.



Source: Piper Sandler Research, Responses Weighted by IT Budget Size

Cloud Infrastructure Spending

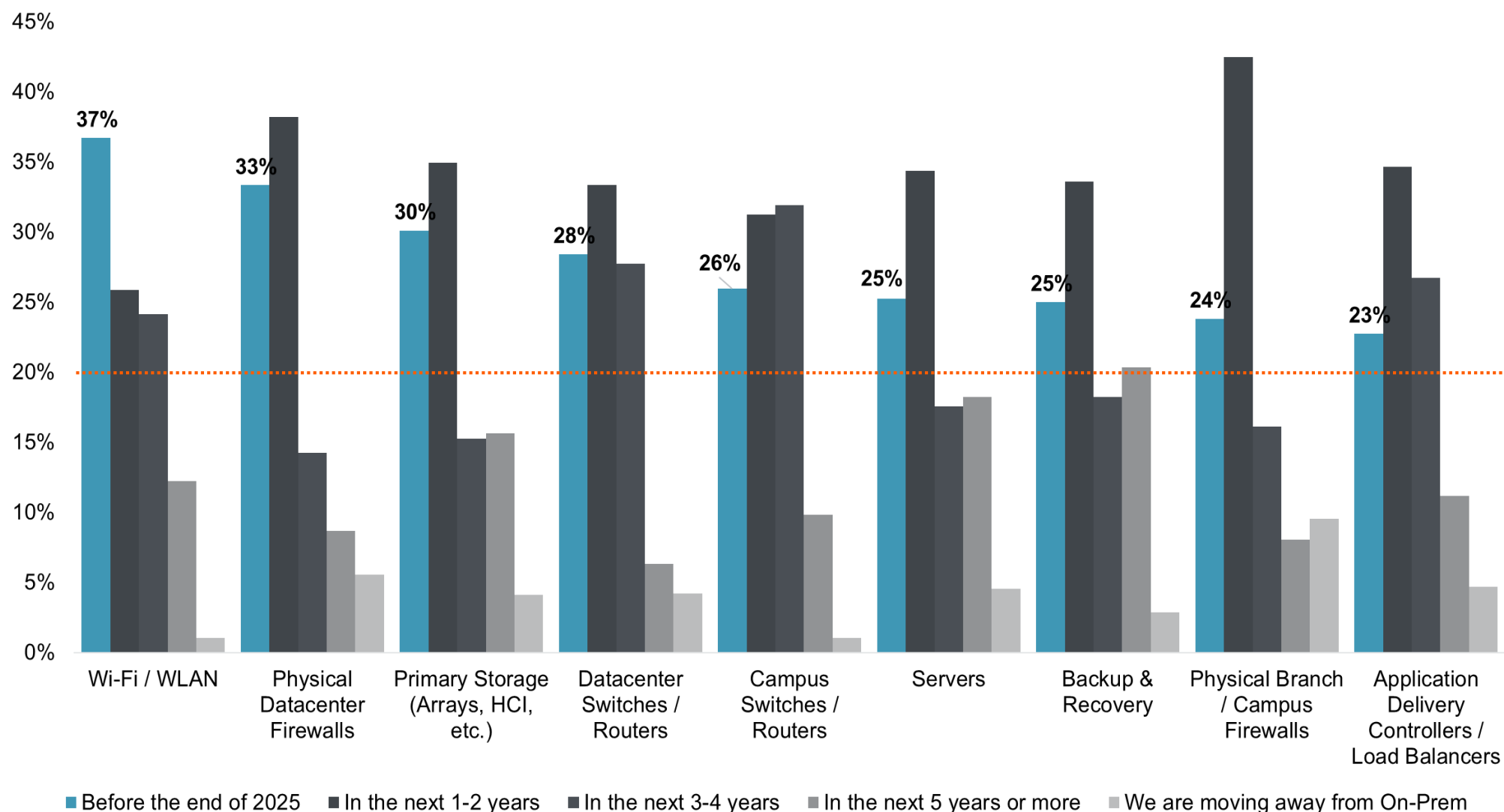
Within Smaller IaaS providers, Mentions Are Unsurprisingly Lower than the Big-4, but Cloudflare & DigitalOcean saw Notable Pickups.



Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Net Increase = % Increase or Increase Materially - % Decrease

On-Premise Refresh | Wi-Fi / WLAN & DC Firewalls Priority in '25

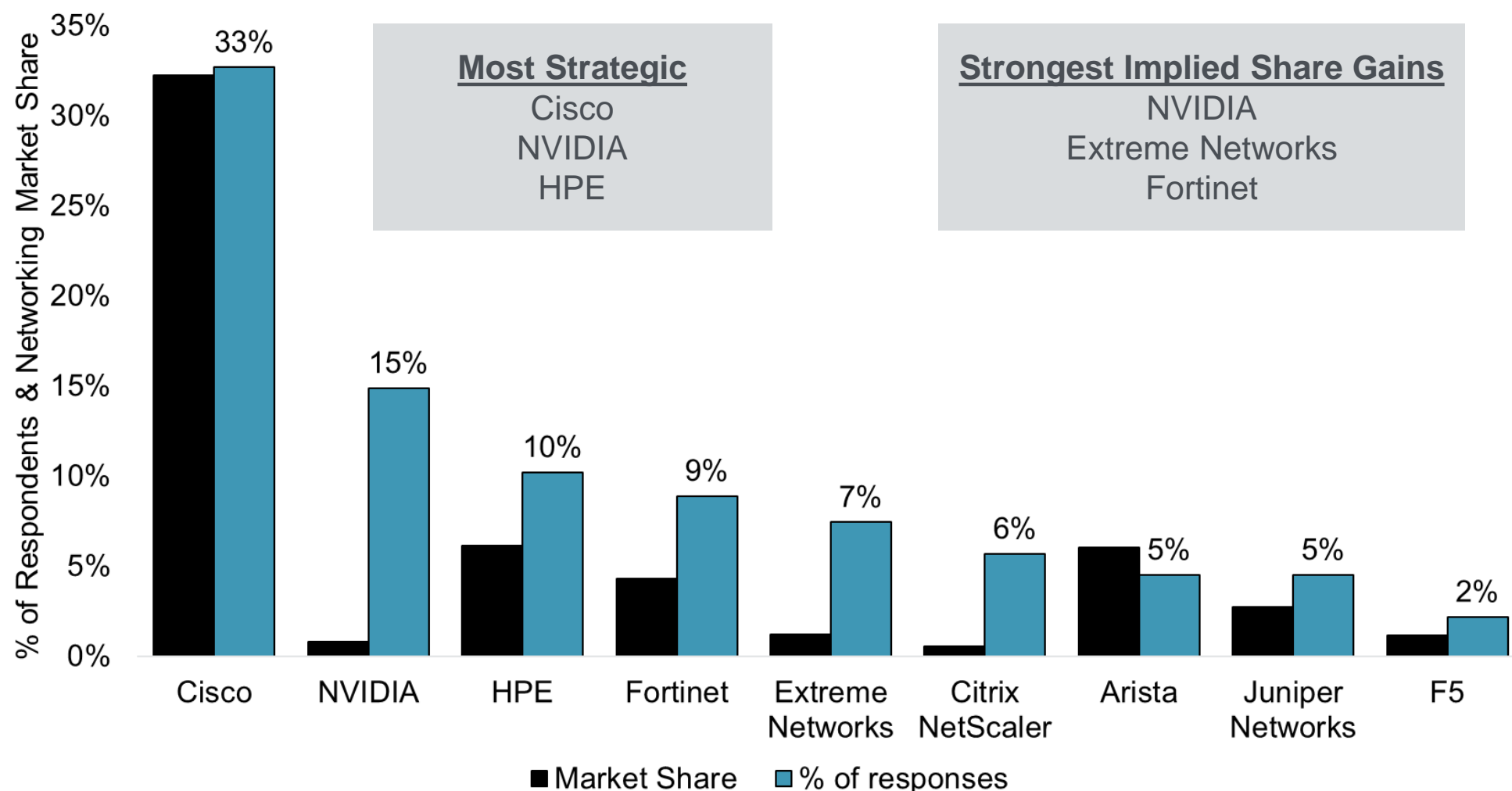
Networking Refresh More Likely to Occur in FY25/FY26. Vast Majority of Respondents Expecting to Remain on Prem



Vendors Most Strategic for On-Prem Network Refresh | Cisco Dominant

Cisco the Clear Leader in Strategic Networking Vendors; NVIDIA, Extreme Networks & Fortinet Implied Share Gainers

Most Strategic Networking Vendors to Planned On-Prem Refresh?



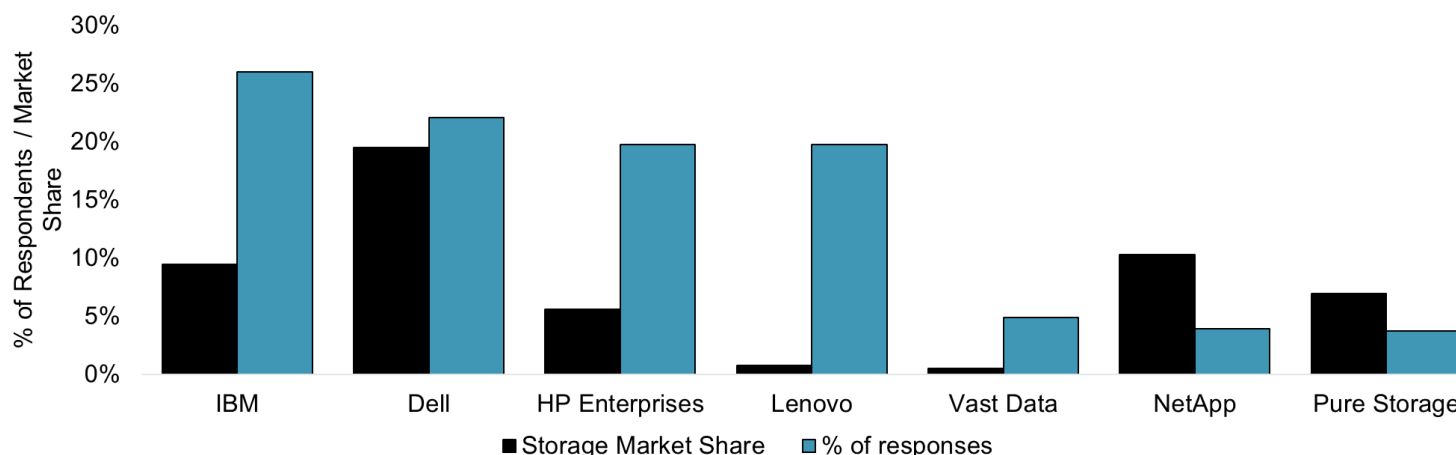
Vendors Most Strategic for On-Prem Refresh | Storage vs. Backup

Incumbents Lead Storage Mentions and Potential Refresh; Strongest Implied Gains Belong to Dell, Veeam, Commvault in DPM

Most Strategic Primary Storage Vendors to Planned On-Prem Refresh?

Strongest Implied Share Gains

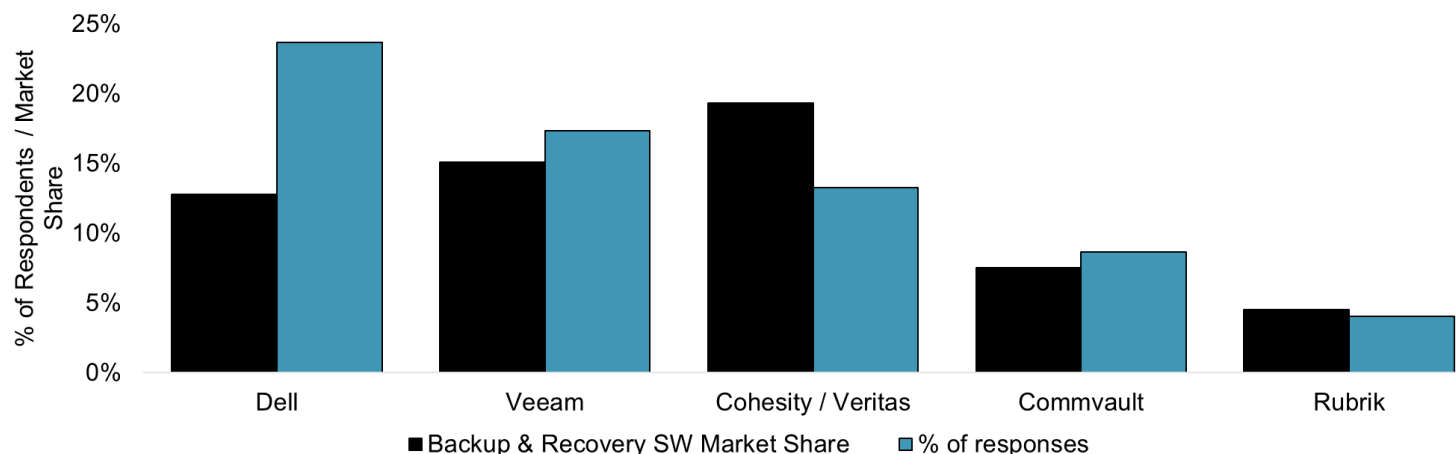
Lenovo
IBM
HPE



Most Strategic Backup & Recovery Vendors to Planned On-Prem Refresh?

Strongest Implied Share Gains

Dell
Veeam
Commvault



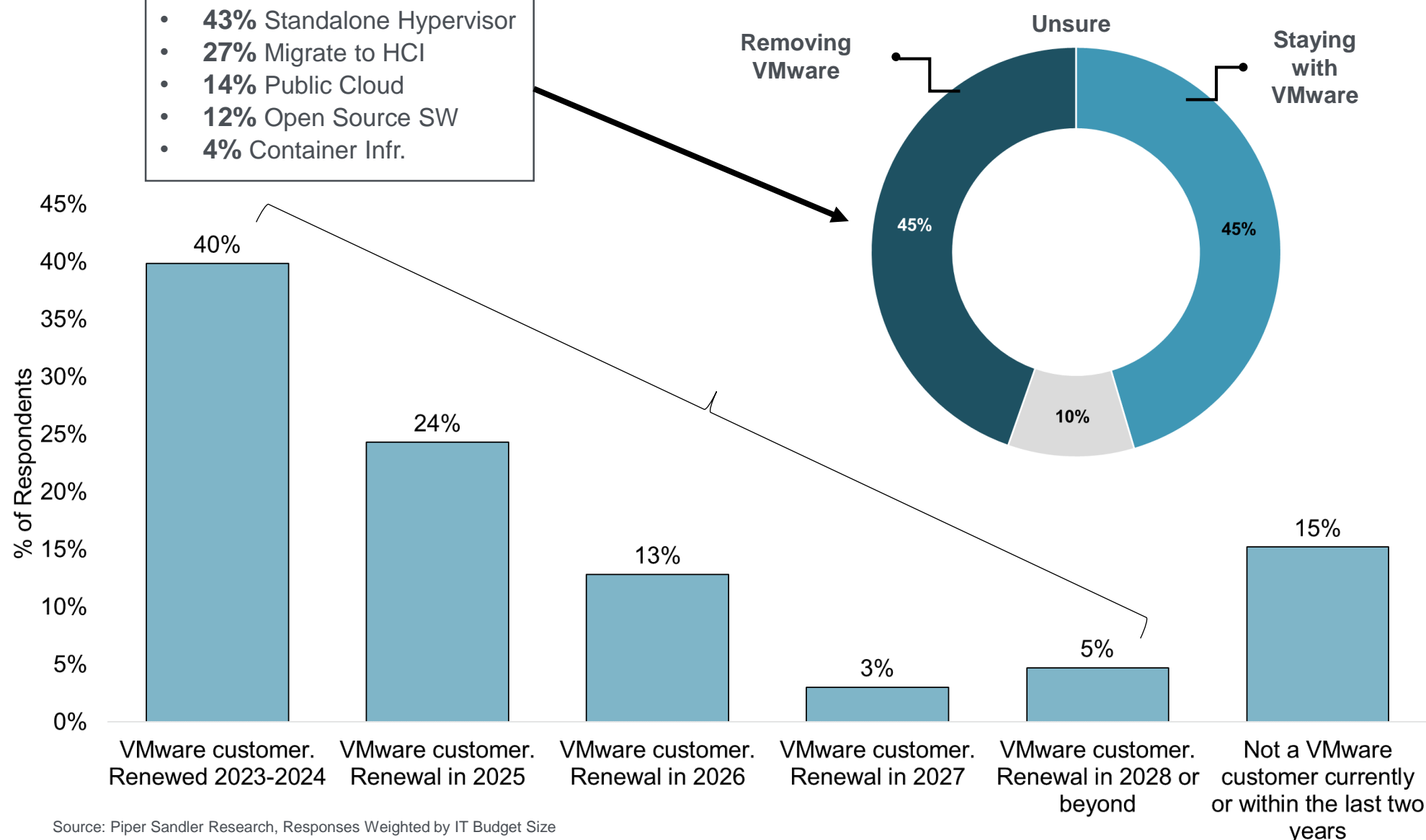
CIOs Fairly Mixed on Using vs. Replacing VMware

Standalone hypervisor replacement leads replacement methods, with 2025 a strong renewal year vs. future periods.

Replacing With?

- **43%** Standalone Hypervisor
- **27%** Migrate to HCI
- **14%** Public Cloud
- **12%** Open Source SW
- **4%** Container Infr.

At Your Next Renewal, What Do You Plan to Do With your VMware Contract?



Source: Piper Sandler Research, Responses Weighted by IT Budget Size

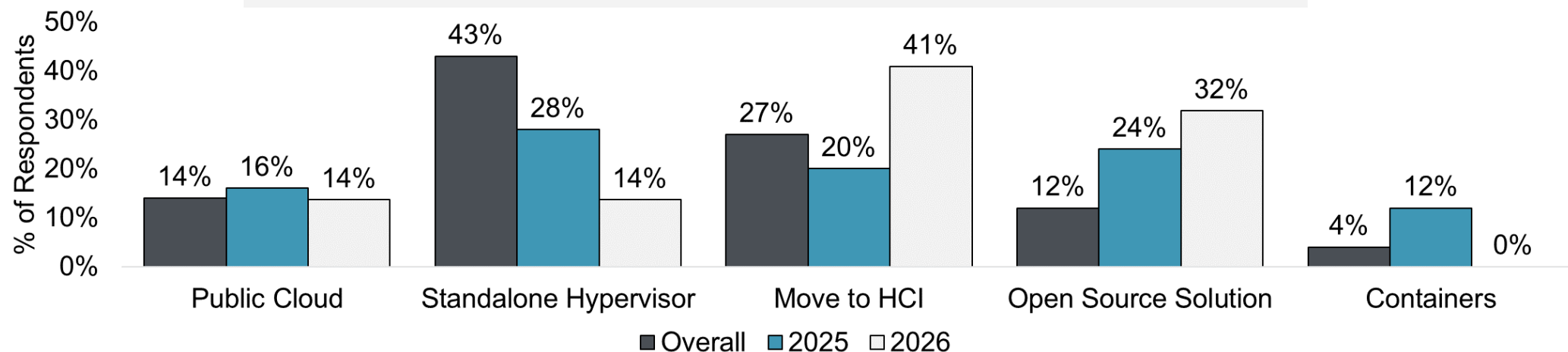
VMware Replacement | Uncertainty in '25 but Confidence in '26

Standalone Hypervisor the Main Replacement Opportunity in 2025, While 2026 Refresh Decisions Leans More Towards Full HCI Move

When is your VMware contract up for renewal and what is your organization's VMware strategy moving forward?



If Choosing to Replace, What Will You Replace VMware With?



Source: Piper Sandler Research, Responses Weighted by IT Budget Size

Supply Chain Software / Positive Sentiment, Visibility Top Priority

CIOs Largely Expect Spending on Supply Chain Software to Increase in 2025, with Visibility Platforms the Most Mentioned Category

Net Spend Intent

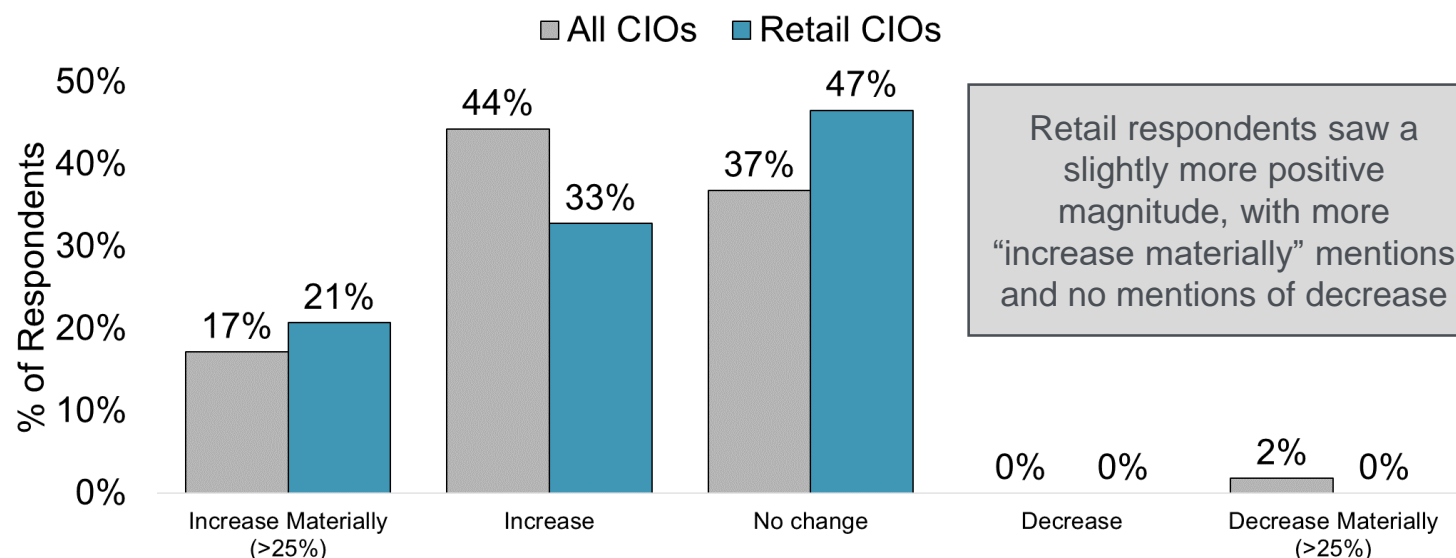
All CIOs (+61%)

Retail CIOs (+53%)

Spending Magnitude

All CIOs (+6.8%)

Retail CIOs (+7.8%)

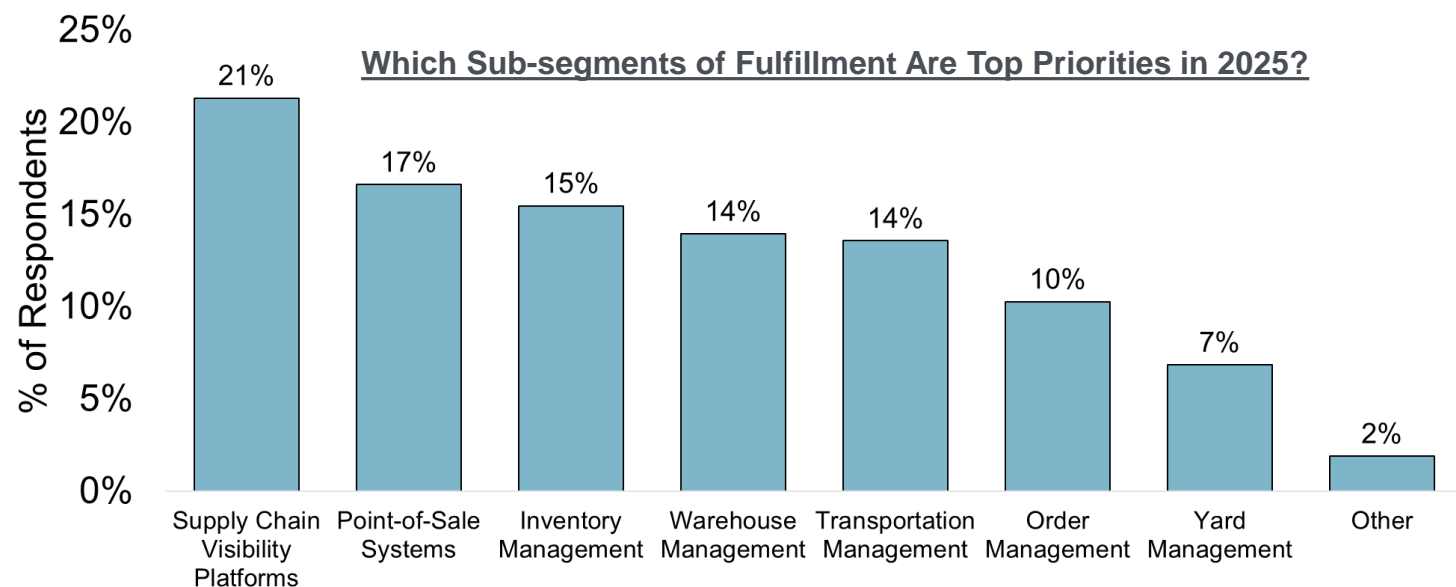


Top Spend Intent - Overall

Visibility Platforms
POS Systems
Inventory Management

Top Spend Intent - Retail

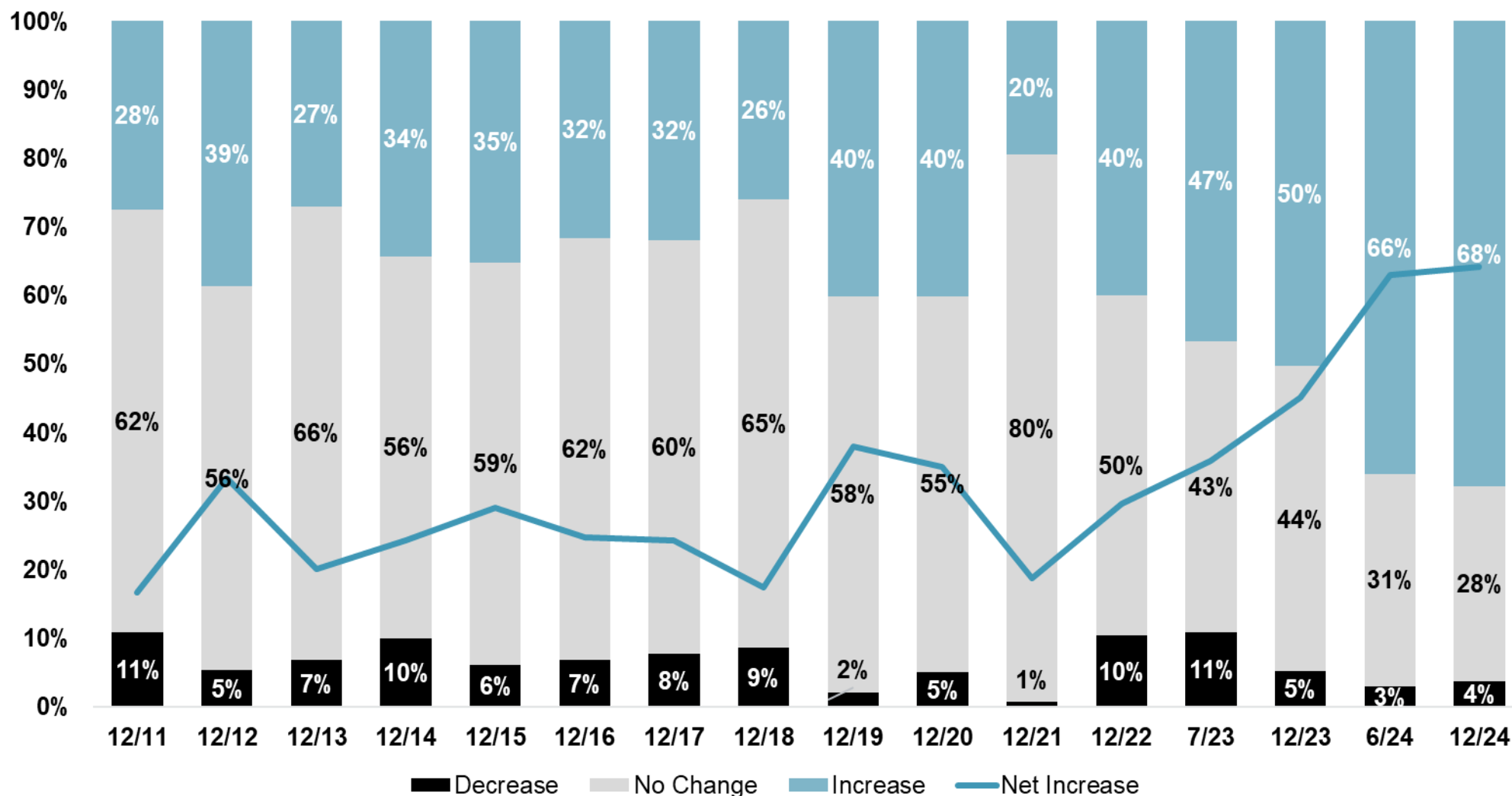
Transportation Management
Visibility Platforms
Warehouse Management



Communication Software Spending Intent

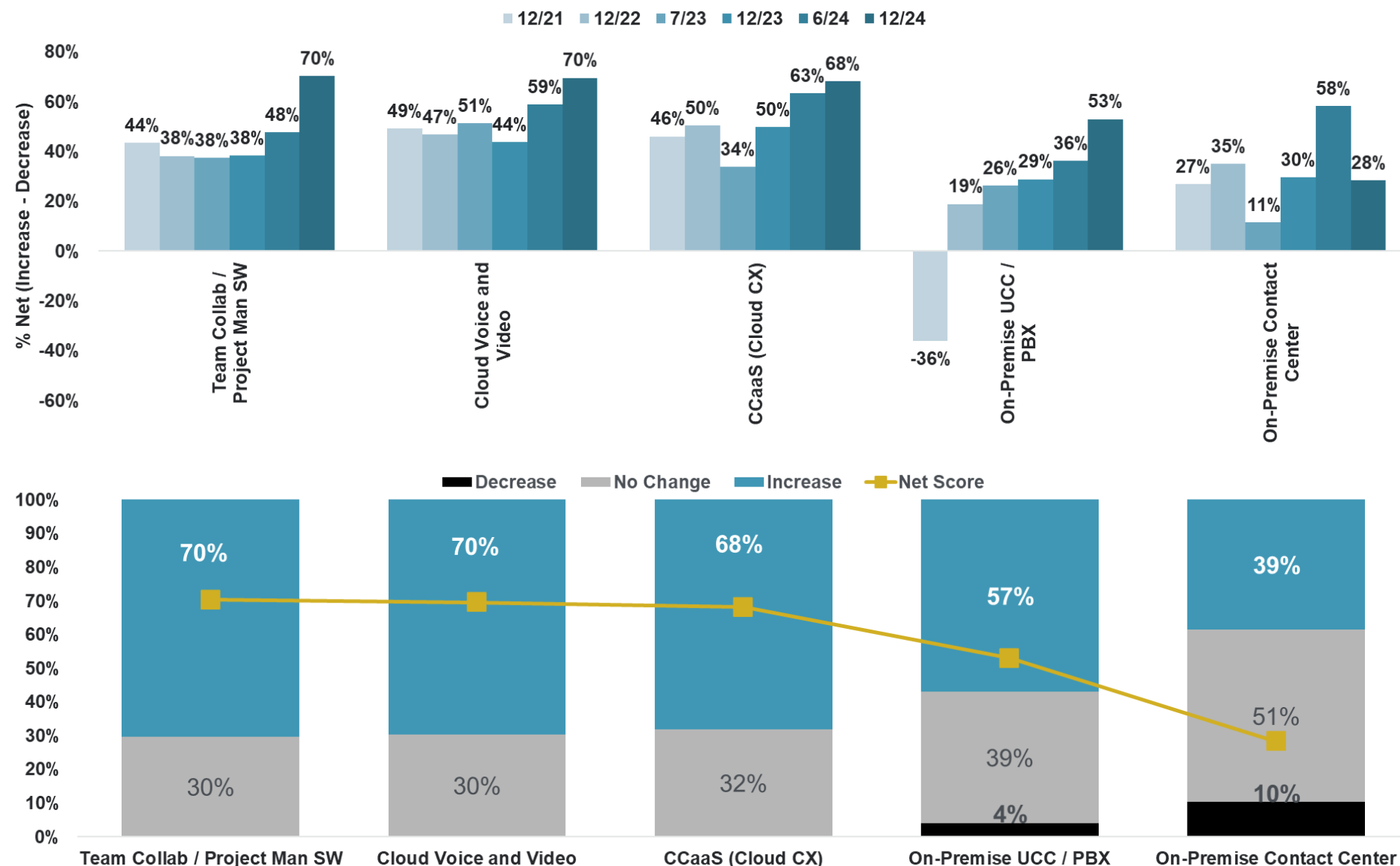
Strong Communication Software Intent Holding All-Time Highs in Latest Survey

Communications Spending Intent Over Time:



Communication Software Spending Intention by Category

Strength Driven by the Cloud | Team Collaboration, UCaaS, & CCaaS Lead Net Intentions



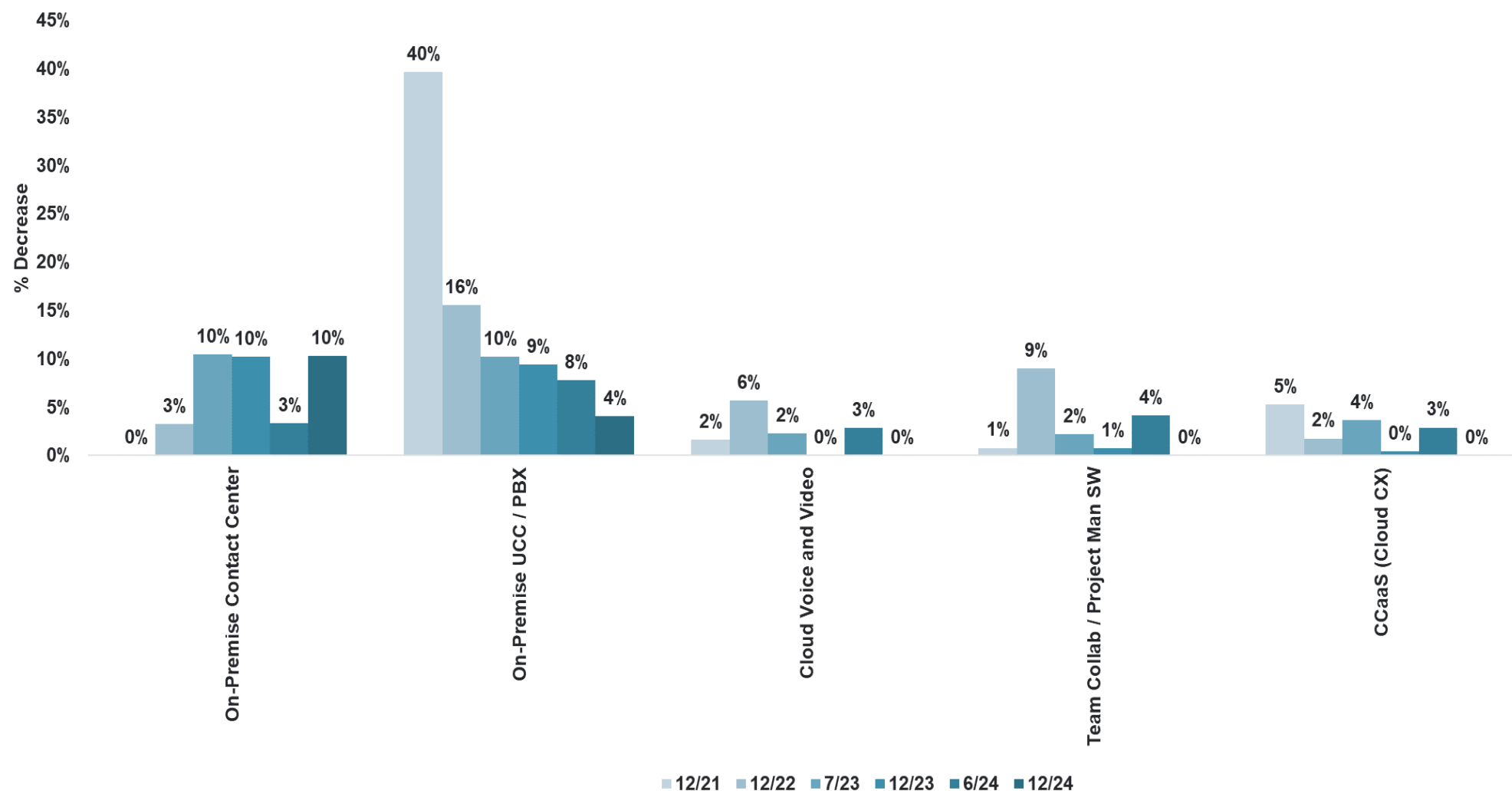
Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Net Increase = % Increase or Increase Materially - % Decrease

Communication Software Areas Most at Risk

On Premise, Particularly CX, Remains Most at Risk in 2025

Most at risk

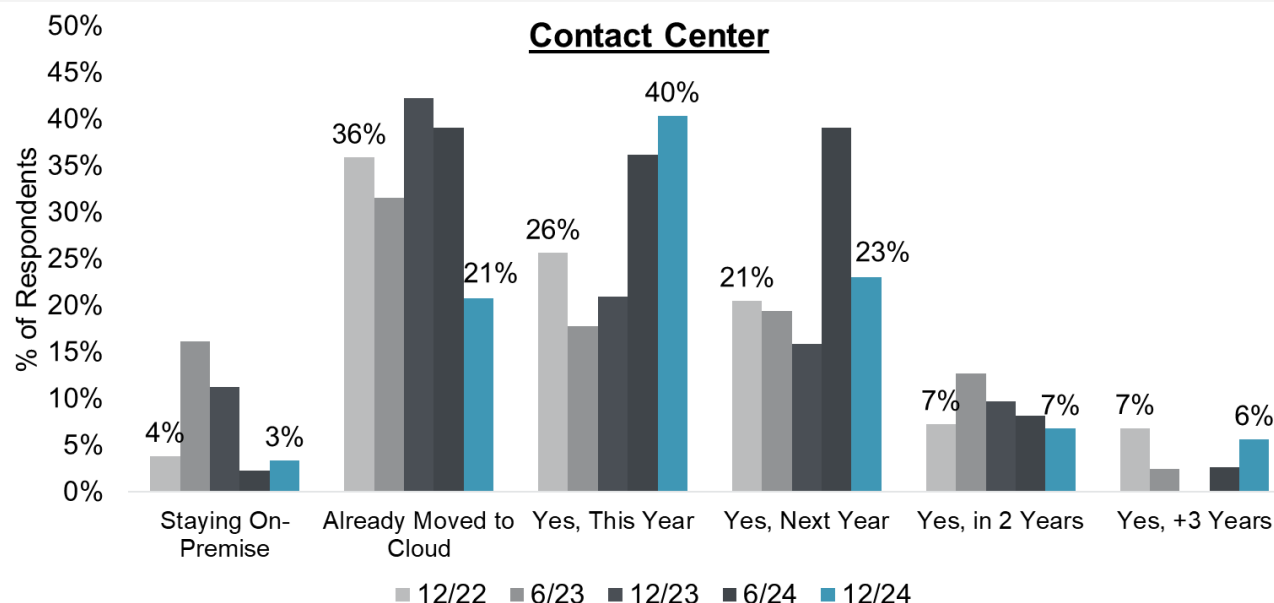
to decline in spending in 2025 because of budget cut or consolidation



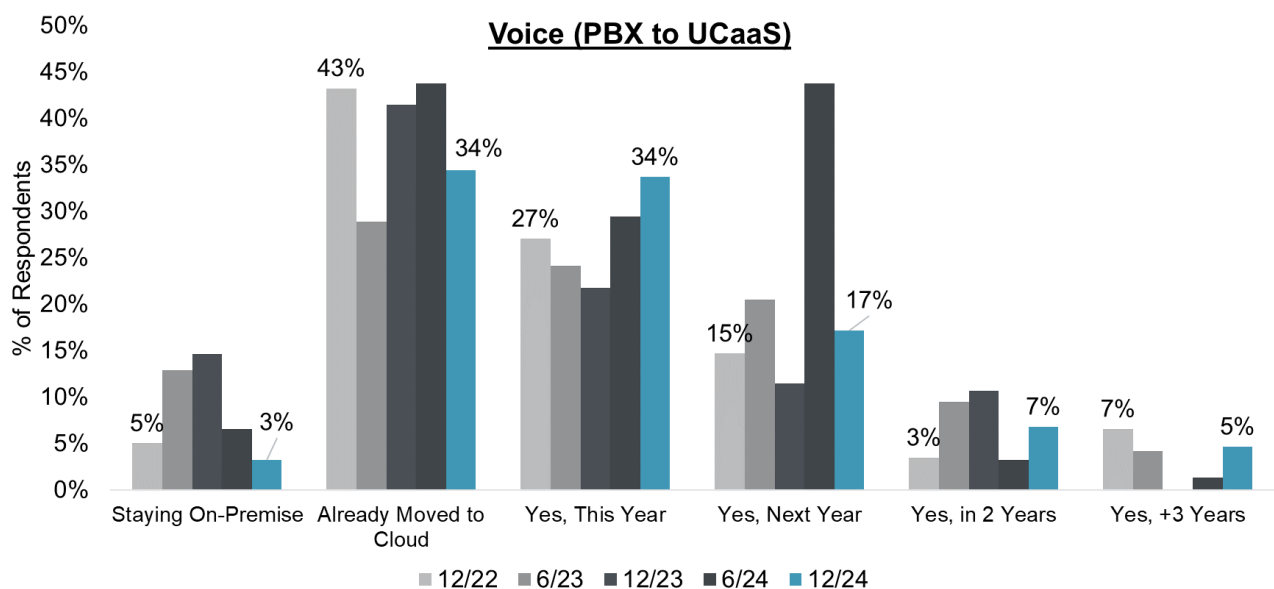
Desire for Cloud | Conversions Anticipated in '25 & '26

Similar to Our CX Buyer Survey, Migration Timelines Extended Slightly, Though '25 / '26 Remain the Largest Opportunities

70%
of CIOs anticipate
moving to CCaaS
over the next 3
years (vs. 83%
last survey)

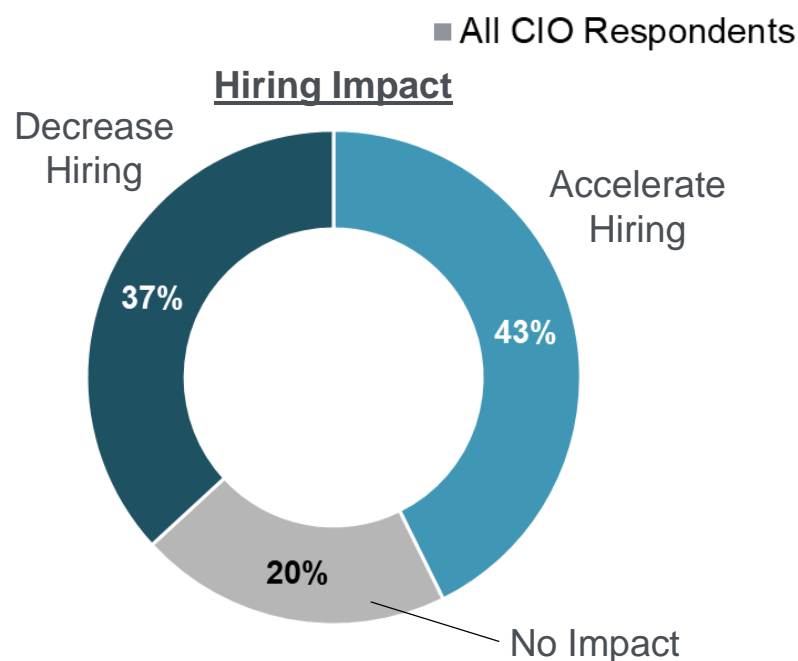
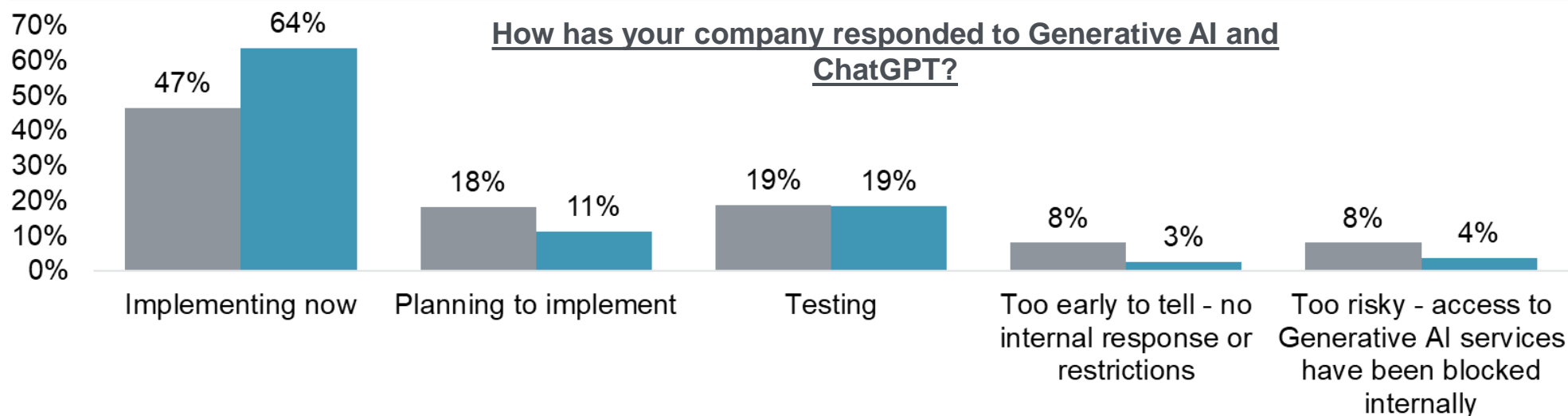


58%
of CIOs anticipate
moving to UCaaS
over the next 3
years (vs. 76%
last survey)

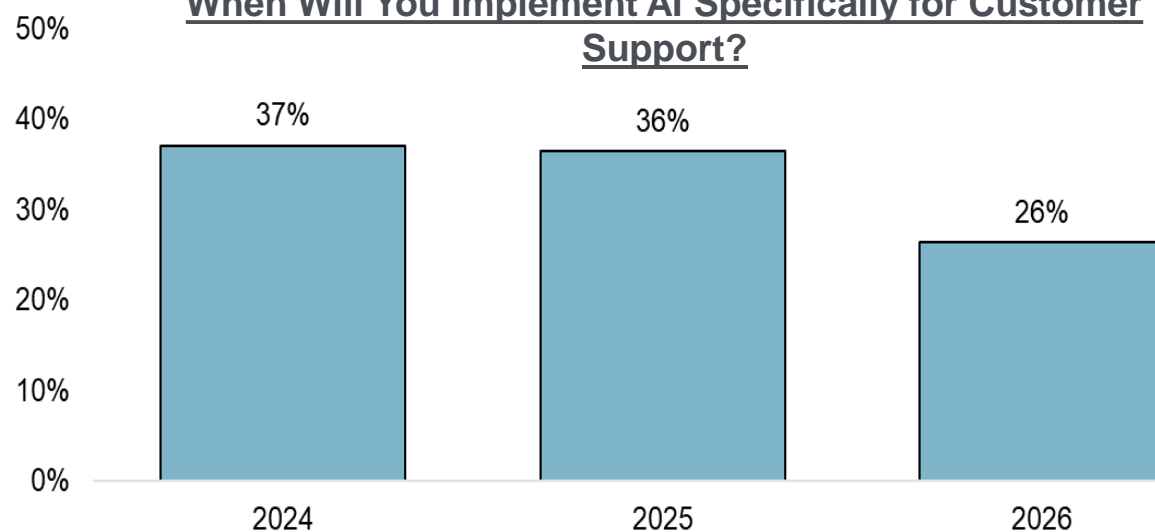


Special Take | Impact of AI on Customer Support

CIOs That Implement AI for Customer Support Are Further Along with Deployments, but Remain Mixed on Hiring Impact



When Will You Implement AI Specifically for Customer Support?



6. Vertical Software & IT Services



Analyst Takeaways

Vertical Software & IT Services

ARVIND RAMNANI – VERTICAL SOFTWARE & IT SERVICES

- 1 AI is a NT opportunity for most IT Services; mid- to long-term impact could be crippling.** We see significant enterprise interest in AI, which has been an opportunity for IT Services firms including Accenture, Globant, EPAM, etc. In just one year, Accenture has achieved bookings in excess of \$3.0B in AI-related work and has converted \$900M to revenue, the fastest that the company has grown sales in an emerging technology, ~10x growth y/y. Similarly, GLOB has experienced +120% y/y growth in AI-related revenue through the first three quarters of FY24. Use cases are centered on several main areas, including: 1) where to implement GenAI and what strategic investments are needed to get there; 2) how to fill talent gaps to efficiently utilize AI; 3) how to structure data appropriately; and 4) how to utilize GenAI in a responsible manner. Importantly, Accenture is starting to see some scaled GenAI projects; and an increase in number of data projects and security-related work that is moving beyond the proof-of-concept engagements that have been prevalent for many in the industry to date. However, in the medium/long term, smarter AI solutions will likely replace humans, and with IT Services companies largely headcount driven, business models will likely struggle to maintain their value proposition.
- 2 Starting to see rays of sunshine on enterprise tech demand.** We see an improvement in 2025, which will be a welcome change after a choppy 2023-24. The past two years have been largely rooted in efficiency and cost savings related work, and “doing more with less.” Robust interest in AI has resulted in a reallocation of spend towards AI readiness and early AI implementations. Looking to 2025 and beyond, we would expect to see pent-up demand and AI dynamics turn into meaningful revenue growth, likely on the back of an improved macro and interest rate environment. We note that we have already seen notable growth of AI-related work for both ACN and GLOB. Importantly, our channel checks have indicated that discretionary spend is slowly trickling back in and that ticket sizes of deals are beginning to grow, which aligns with our survey results indicating that many CIOs are positioning for increased levels of IT Services spend as we head into FY25.
- 3 HCM related work starting to look incrementally healthier.** 58% of survey participants (up from 54% six months ago; 31% a year ago) are looking to increase spend on HCM Apps given it’s non-discretionary spend. We expect cloud HCM (DAY, PCTY, PAYC) to continue to benefit from stable/healthy spend and churn from legacy vendors. Of the group, we continue to like Dayforce given its geographical breadth and enterprise-level client base.

Analyst Takeaways

Vertical Software & IT Services

ARVIND RAMNANI – VERTICAL SOFTWARE & IT SERVICES

Key Stock Implications

- 1. Ramnani | GLOB – OW:** GLOB remains our top pick in IT Services, and we expect it to continue delivering industry-leading growth rates, particularly given traction with large deal wins. The company is well-positioned from an AI standpoint generating over \$250M in revenue in the first three quarters of 2024 (+120% y/y) from AI-related engagements. We expect GLOB to comfortably outpace growth of its pure-play competitors as we look into 2025 and has a large capacity for upside given a growing client exposure to the Middle East.
- 2. Ramnani | ACN – OW:** The demand environment for IT Services is starting to look better in 2025, after two years of choppy growth. We believe that ACN is uniquely well positioned with GenAI given its breadth of expertise, scale (ability/willingness to invest) and best-in-class consulting capabilities. In FY24, ACN grew its GenAI bookings/revenues by ~ 10x, with bookings of \$3B and revenues of \$900M, up from \$300M/\$100M in FY23. Notably, the company is starting to see some scaled GenAI projects; and an increase in number of data projects and security-related work, moving beyond proof-of-concept engagements.
- 3. Ramnani | DAY – OW:** Dayforce remains our top pick in the HCM space given the company's focus on enterprise-level customers and its geographical breadth and capability. DAY has maintained a robust pipeline and has displayed healthy client conversion and existing client dynamics in recent quarters. The company's growth rates are well ahead of peers reflective of its product, and we expect that Dayforce will continue to take share particularly with medium-/large-sized clients as budgets become more favorable for HCM software spend.

Survey Results Indicate Improved IT Services Spend

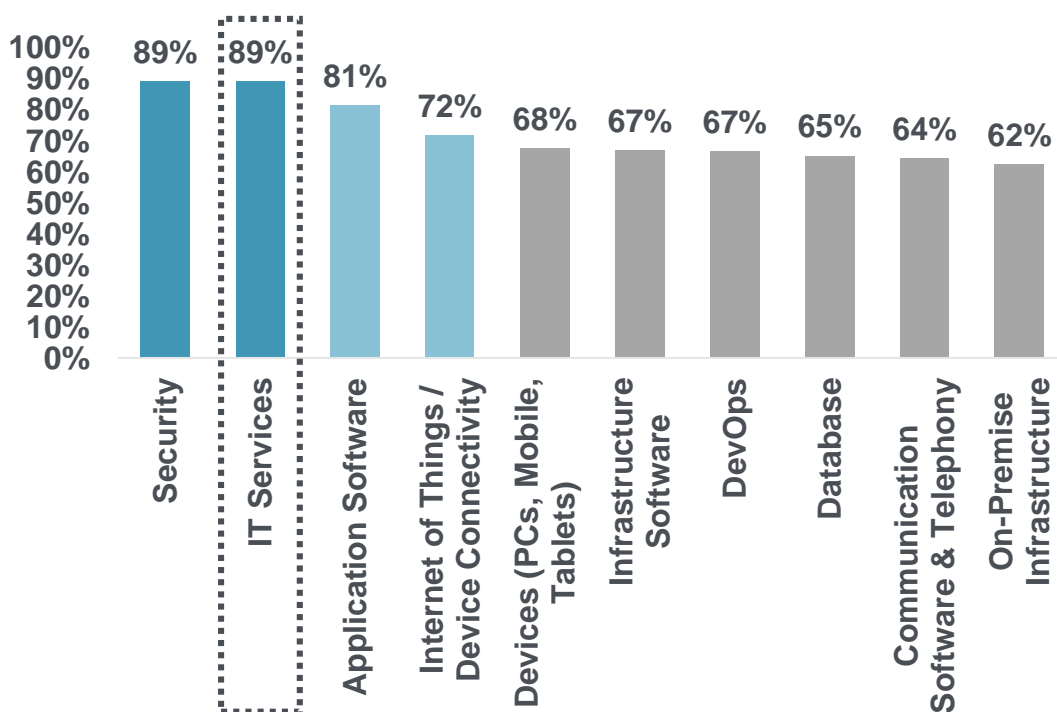
PIPER | SANDLER

89% of respondents plan to spend more on IT Services, leading the pack along with Security software as the two biggest areas of intended spend for next year. This optimism is consistent with what we learned on our week-long trip to India, where we met with a range of IT Services companies, IT decision makers, etc. Some of the underlying drivers include pent-up demand (due to delayed projects), AI readiness work, and an improved macro.

- Spending intentions for IT Services has steadily improved in our survey results with respondents indicating a steady improvement in spend. Notably, 2H survey of 89% vs. 67% in 2H23; and 76% in 1H24.
- Many players in the space have been recording significant levels of AI-related bookings, which are beginning to convert to revenue. We expect that AI-related spend could be the catalyst to drive the next upcycle in the space as clients move beyond proof-of-concept projects. Clients remained focused on: 1) where to implement GenAI and what strategic investments are needed to get there; 2) how to fill talent gaps to efficiently utilize AI; 3) how to structure data appropriately; and 4) how to utilize GenAI in a responsible manner.

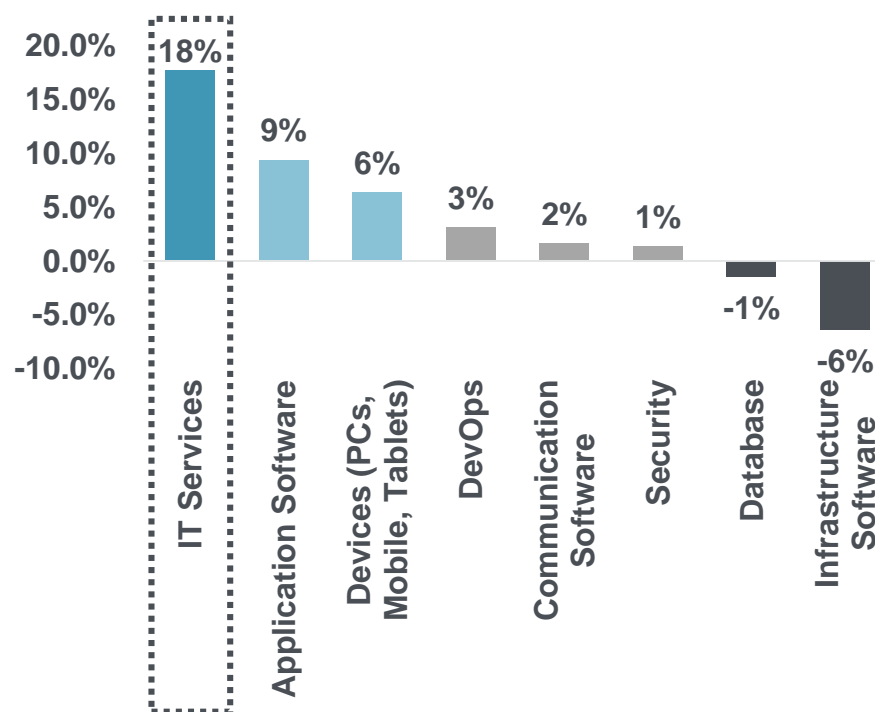
89%

expect to spend more on IT Services (89% net increase) in 2025 vs. 2024, up from 76% in the June 2024 Survey, and 67% in the December 2023.



+18 points

change in net increase for IT Services vs. the June 2024 Survey is the largest increase among all categories.



Source: Piper Sandler Research, Responses Weighted by IT Budget Size, Net Increase = % Increase or Increase Materially - % Decrease

Question: "Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below."

2025 Could See Acceleration of IT Services Spend

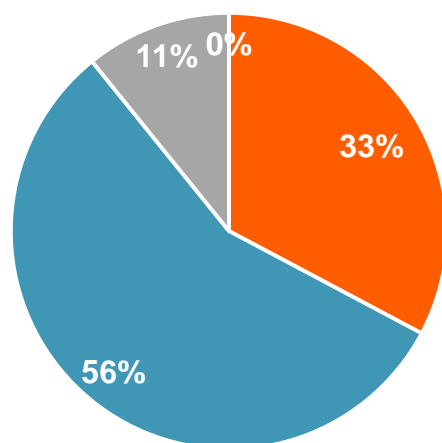
Pressured client budgets have significantly impacted IT Services growth rates over the last two years. When discretionary spend returns to normalized levels, we would expect recovery of growth rates to follow for our covered names (GLOB, ACN and EPAM).

Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.

Q: Which IT Services vendors do you plan to increase spending on?

33%

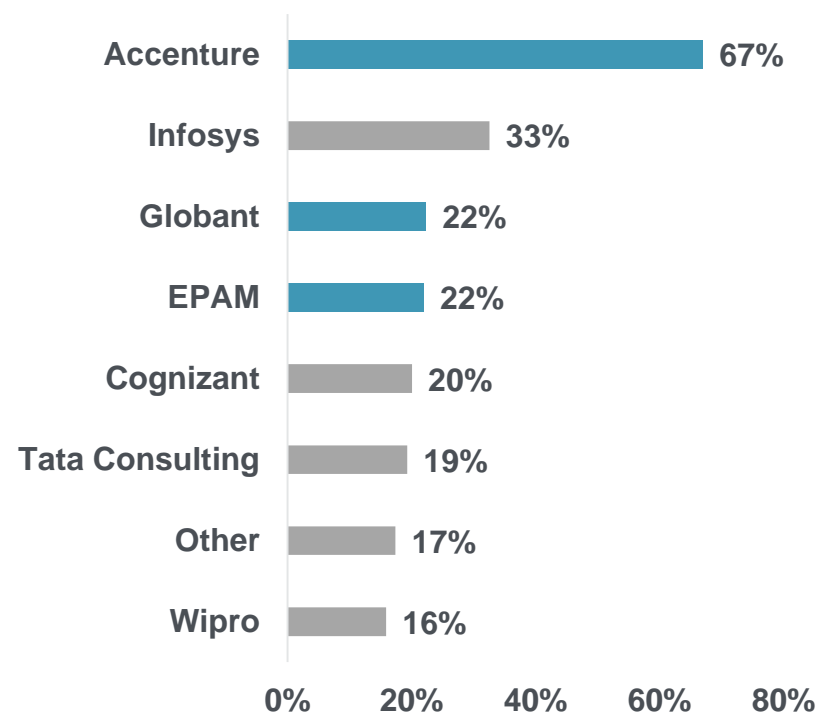
expect to increase IT Services spend materially (>25%) vs. 23% in the June 2024 Survey, and 19% in the December 2023 Survey.



- Increase materially (>25%)
- Increase
- No Change
- Decrease

Accenture

is the leading vendor, selected by 67% of CIOs who indicated they would increase or materially increase spend on IT services. Globant and EPAM both placed in the top four with ~22%.



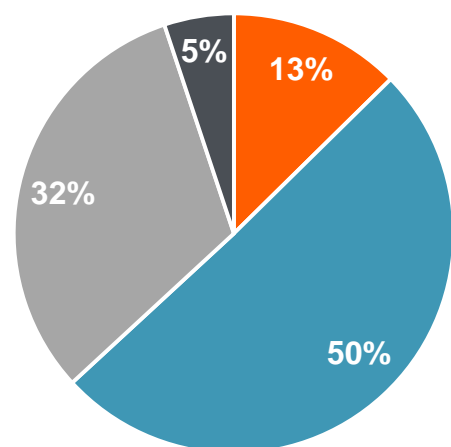
Improving 2025 IT Budget Intentions for Cloud HCM

We expect cloud HCM (DAY, PCTY, PAYC) to continue to benefit from stable/healthy spend and churn from legacy vendors.

Q: Please indicate whether you plan to increase or decrease spending in 2025 relative to what you spent in 2024, or select Unsure / NA for each area below.

63%

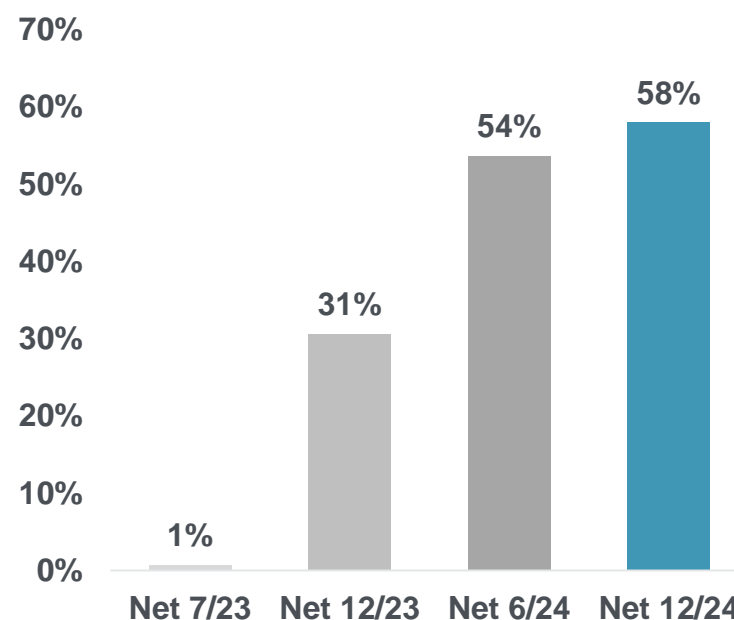
expect to spend more in 2025 vs. 59% in June 2024 Survey and 35% in the December 2023 Survey, with 13% expecting a material increase (>25%).



- Increase materially (>25%)
- Increase
- No change
- Decrease

58%

net spending increase in the June 2024 Survey is 4 points higher than the June 2024 Survey, 27 points higher than the December 2023 Survey, and 57 points higher than the July 2023 Survey.



7. Appendix



Piper Sandler TMT Equity Research Team

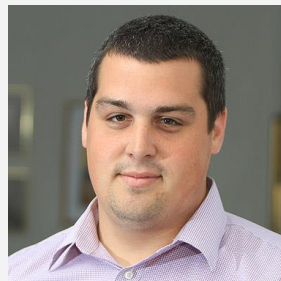
Team Software



Brent Bracelin
Co-Head of Tech Research
Sr. Research Analyst
Cloud Applications & Analytics



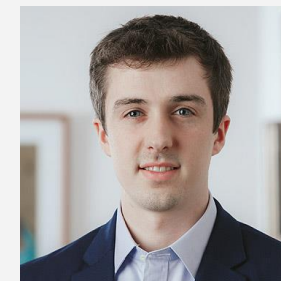
Rob Owens
Co-Head of Tech Research
Sr. Research Analyst
Security & Infrastructure Software



James Fish
Sr. Research Analyst
Cloud Automation Software



Arvind Ramnani
Sr. Research Analyst
Vertical Software & IT Services



Clarke Jeffries
Sr. Research Analyst
Commerce & Industrial Software

Team Internet



Thomas Champion
Sr. Research Analyst
Internet



Matt Farrell, CFA
Sr. Research Analyst
Vertical Marketplaces

Transportation Tech



Alexander Potter
Sr. Research Analyst
Transportation Technology

Semiconductors



Harsh Kumar
Sr. Research Analyst
Semiconductors

Piper Sandler TMT Equity Research Coverage List

TMT coverage universe

9

Senior Research Analysts

183

TMT stocks

\$25T

Aggregate market-cap

\$12B

Median market-cap

Team Software

Brent Bracelin
Cloud Applications & Analytics

Covered Tickers:
ADBE, AMPL, APPF, ASAN, BL, BRZE, BASE, CRM, FRSH, GLBE, HUBS, KVYO, MDB, MNDY, MSFT, NCNO, ORCL, OS, PCOR, SNOW, VEEV, WDAY, WEAV, ZI

Rob Owens
Security & Infrastructure Software

Covered Tickers:
CFLT, CHKP, CRWD, CYBR, DDOG, DOCU, DT, ESTC, FROG, FTNT, GTLB, JAMF, NOW, OKTA, PANW, QLYS, RPD, S, TEAM, TENB, VRNS, ZS

James Fish
Cloud Automation Software

Covered Tickers:
AKAM, ANET, BAND, CSCO, CVLT, DGII, DOCN, FFIV, FIVN, FSLY, HCP, IOT, JNPR, NET, NICE, NTNX, PSTG, RBRK, RNG, TWLO, ZM
MANH*, SPSC*

Arvind Ramnani
Vertical Software & IT Services

Covered Tickers:
ACN, AI, CCCS, CHGG, CWAN, DAY, DUOL, EPAM, GLOB, INTA, INTU, LMND, MA, PAYC, PCTY, PYPL, QTWO, SQ, UPST, V

Clarke Jeffries
Commerce & Industrial Software

Covered Tickers:
ADSK, AVDX, AZPN, BILL, BSY, CDNS, EVCM, FOUR, GDDY, LSPD, OLO, PTC, RSKD, SHOP, SNPS, SPT, TOST, TRMB, TYL, WIX

Team Internet

Thomas Champion
Internet

Covered Tickers:
ABNB, AMZN, BKNG, CART, DASH, EBAY, EDR, EXPE, GOOGL, IAC, LYFT, META, PINS, RBLX, RDDT, RDFN, SNAP, U, UBER, VMEO, VZIO, ZG
APP**

Matt Farrell
Vertical Marketplaces

Covered Tickers:
AAPL, BMBL, DIS, DKNG, DV, EB, FVRR, IAS, MTCH, NFLX, ROKU, SEAT, SPOT, TTD, UPWK

Core Tech

Alexander Potter
Transportation Technology

Covered Tickers:
ACVA, APTV, ASPN, BWA, CARG, CVNA, ENVX, F, GM, LICY, MBLY, PSNY, RIVN, SRFM, STLA, TSLA

Harsh Kumar
Semiconductors

Covered Tickers:
ADI, AKTS, AMD, AVGO, MCHP, MRVL, MTSI, MU, NVDA, NXPI, ON, PI, QBTS, QCOM, QRVO, SKYT, SMTC, SWKS, WOLF

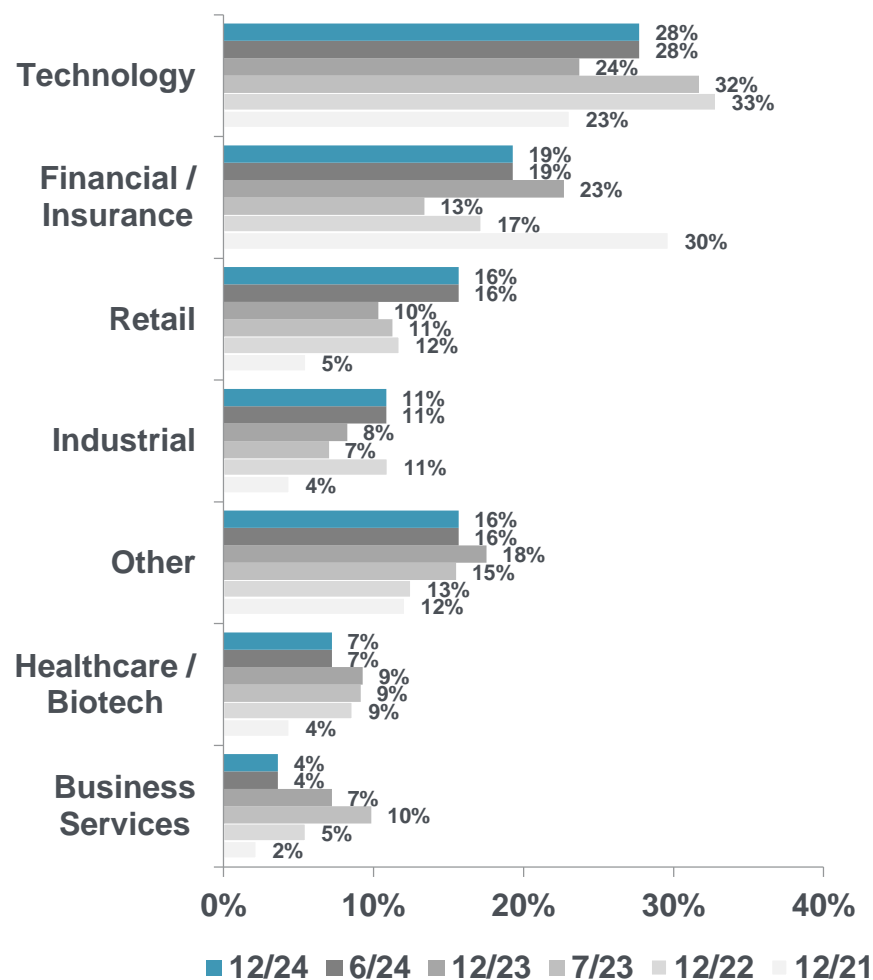
* = covered by Quinton Gabrielli

** = covered by James Callahan

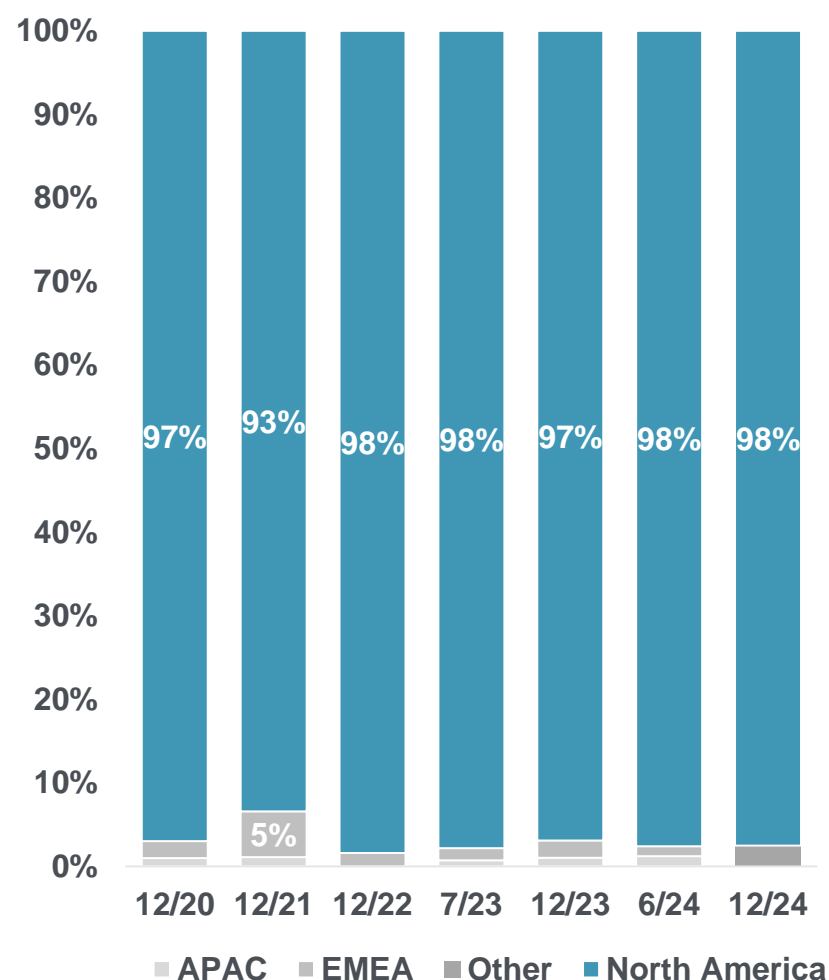
Verticals & Geography

The 2025 Piper Sandler CIO Survey included responses from 81 IT decision-makers. No single industry accounted for more than 30% of the respondents. 98% of respondents indicated North America is their primary business domicile.

Industry Verticals



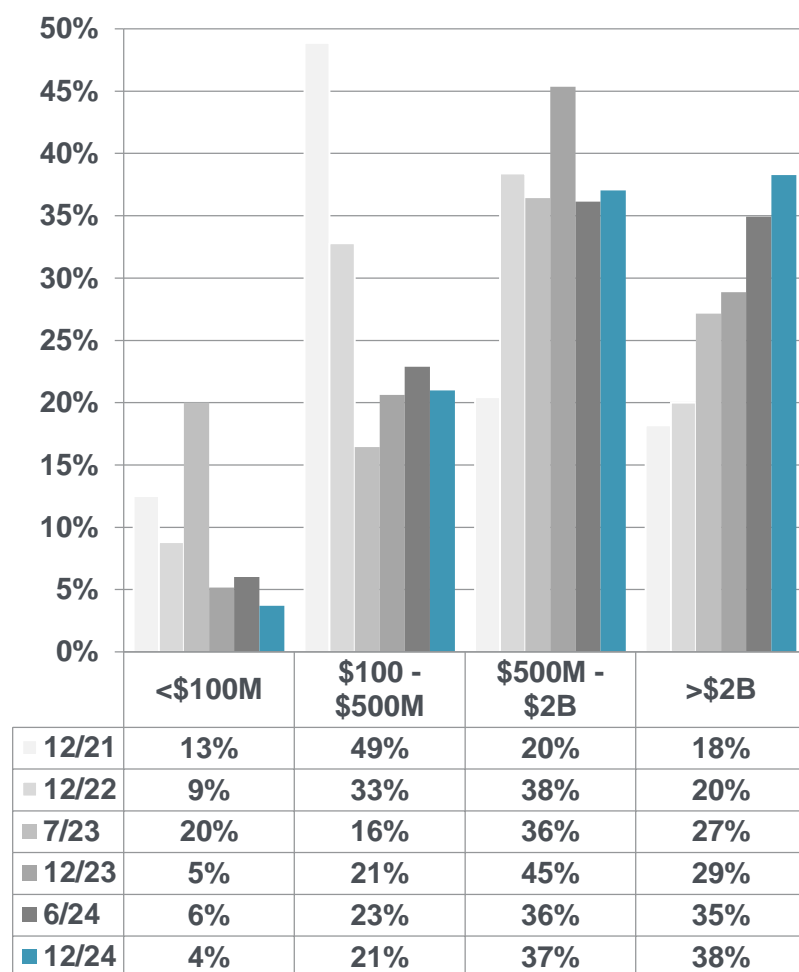
Geography



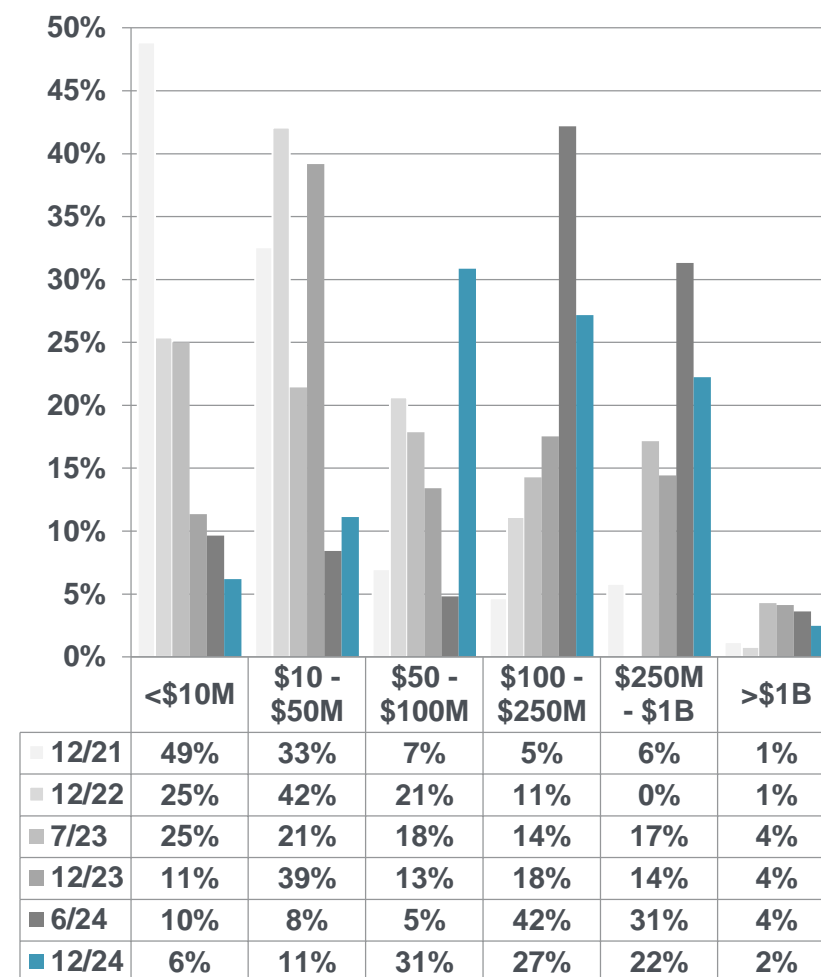
Organizational Size & IT Budgets

The average revenue size was ~\$2.4 billion, and IT budget was ~\$235M.

Annual Revenue



IT Budget



Closing Prices as of December 4, 2024

Company	Ticker	Price
Accenture Plc	ACN	\$ 352.54
Amazon.com, Inc.	AMZN	\$ 213.44
Salesforce, Inc.	CRM	\$ 331.43
CrowdStrike Holdings, Inc.	CRWD	\$ 349.95
Cisco Systems, Inc.	CSCO	\$ 59.48
Dayforce, Inc.	DAY	\$ 80.49
Fortinet, Inc.	FTNT	\$ 95.29
Globant SA	GLOB	\$ 221.95
Alphabet Inc.	GOOGL	\$ 171.34
Gitlab, Inc.	GTLB	\$ 63.86
Manhattan Associates, Inc.	MANH	\$ 297.09
Meta Platforms Inc	META	\$ 613.65
Microsoft Corporation	MSFT	\$ 431.20
Nutanix, Inc.	NTNX	\$ 66.01
NVIDIA Corporation	NVDA	\$ 140.26
SentinelOne, Inc.	S	\$ 27.55
Snowflake, Inc.	SNOW	\$ 175.94
Atlassian Corp	TEAM	\$ 268.36
Workday, Inc.	WDAY	\$ 257.06
Zscaler, Inc.	ZS	\$ 198.64

Source: FactSet

Research Locations

Minneapolis | Atlanta | Boston | Chicago | Greenwich | Houston | New York | Portland | San Francisco

IMPORTANT RESEARCH DISCLOSURES

Notes: The boxes on the Rating and Price Target History chart above indicate the date of the fundamental Equity Research Note, the rating and the price target. Each box represents a date on which an analyst made a change to a rating or price target, except for the first box, which may only represent the first Note written during the past three years.

Legend:

I: Initiating Coverage

R: Resuming Coverage

T: Transferring Coverage

D: Discontinuing Coverage

S: Suspending Coverage

OW: Overweight

N: Neutral

UW: Underweight

NA: Not Available

UR: Under Review

Distribution of Ratings/IB Services Piper Sandler				
Rating	Count	Percent	IB Serv./Past 12 Mos.	
			Count	Percent
BUY [OW]	535	57.96	108	20.19
HOLD [N]	355	38.46	35	9.86
SELL [UW]	33	3.58	1	3.03

Note: Distribution of Ratings/IB Services shows the number of companies currently covered by fundamental equity research in each rating category from which Piper Sandler and its affiliates received compensation for investment banking services within the past 12 months. FINRA rules require disclosure of which ratings most closely correspond with "buy," "hold," and "sell" recommendations. Piper Sandler ratings are not the equivalent of buy, hold or sell, but instead represent recommended relative weightings. Nevertheless, Overweight corresponds most closely with buy, Neutral with hold and Underweight with sell. See Stock Rating definitions below.

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The views expressed in this report accurately reflect our personal views about the subject company and the subject security. In addition, no part of our compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report.

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Time of dissemination: 5 December 2024 03:29EST.

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Overweight (OW): Anticipated to outperform relative to the median of the group of stocks covered by the analyst.

Neutral (N): Anticipated to perform in line relative to the median of the group of stocks covered by the analyst.

Underweight (UW): Anticipated to underperform relative to the median of the group of stocks covered by the analyst.

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