Technology

2023 CIO Survey | The Year of Change

CONCLUSION

2023 CIO Survey: For Piper Sandler's 12th annual CIO Survey, we surveyed 128 IT decision makers having an estimated $1.6B in average annual revenue. Results suggest that 2023 could be the 'year of change' with >50% planning to consolidate vendors within infrastructure software and application sectors (71% cited cost savings as a contributing factor). Intent to 'maintain' budgets overall also fell to the lowest level in years at 10% (vs. 18% average). Overall, 2023 IT budget expectations were surprisingly healthy rising +4.9% Y/Y, a +700 bps increase compared to 2022. Security and application software were top spending priorities in 2023, with devices, unified communications, and database falling to the bottom.

- **Security (Owens):** 1) Security remains the top priority, with 74% expecting increased spend and 48% looking to consolidate; 2) While the macro may influence some appliance sweating and increased focus on pricing dynamics, overall demand for security should hold strong. We see vendors that address high priority segments of the security stack alongside offering consolidation opportunities as best positioned going into 2023. *Stock implications: OKTA (+; OW), CRWD (+; OW), PANW (+; OW), TENB (+; OW).*

- **Applications (Bracelin):** 1) 64% are planning to consolidate application vendors in 2023 with cost savings as a key driver; 2) multi-cloud preferences are gaining popularity across the broader enterprise; 3) spend priority was most favorable for application software and data analytics; 4) most at risk categories included procurement, work management, marketing, and CX. *Stock implications: MSFT (+; OW), ORCL (+/-; N), SNOW (+; OW), and AYX (+; OW).*

- **Infrastructure Software (Fish/Owens):** 1) Priorities are shifting more towards "keeping the lights on", automation, & 5G services rather than "nice to haves" around transformational infrastructure (ex: containers, edge compute, etc.); 2) Spending intentions strongest for areas like Security, Switching, ITSM, Backup, Storage / HCI; 3) CIOs are looking to most consolidate infrastructure vendors, making "true-platforms" differentiated and well-setup. *Stock implications: NET (+; N), NOW (+; OW), NTNX (+; OW), and ANET (+; OW).*

- **Communication Software (Fish):** 1) While the space remains a low relative priority relative to the rest of IT, spending intentions did return to above pre-pandemic levels, pointing to a better 2023; 2) Cloud migrations in contact center & voice remain strong in 2023 and over the next 3 years; 3) As the #3 area CIOs most desire to consolidate, this will most impact platform plays across voice, video, and chat / messaging. *Stock implications: FIVN (+; OW), NICE (+; N), and ZM (+; N).*

- **IT Services & HCM Software (Ramnani):** 1) 20% of respondents expect IT Services to be most exposed in a recession. 49% are looking to consolidate vendors as a mechanism to save costs. In our view, larger players such as ACN, CTSH (not covered) are likely to be more pressured relative to the digital players (EPAM, GLOB) given their scale and consulting exposure; 2) 86% looking to increase/spend the same on HCM Apps given it's a non-discretionary spend. We expect cloud HCM (PCTY, PAYC, CDAY) to continue to benefit from stable/healthy spend and churn from legacy vendors (ADP, PAYX, both not covered). *Stock implications: EPAM (+/-; OW), ACN (-; UW), PCTY (+; OW).*

Rob D. Owens
Sr. Research Analyst, Piper Sandler & Co.
503 275-8317, rob.owens@psc.com

Brent A. Bracelin
Sr. Research Analyst, Piper Sandler & Co.
503 275-8316, brent.bracelin@psc.com

James E. Fish
Sr. Research Analyst, Piper Sandler & Co.
612 303-6509, james.fish@psc.com

Arvind Ramnani
Sr. Research Analyst, Piper Sandler & Co.
503 275-8323, arvind.ramnani@psc.com

Thomas Champion
Sr. Research Analyst, Piper Sandler & Co.
212 284-6132, tom.champion@psc.com

Harsh V. Kumar
Sr. Research Analyst, Piper Sandler & Co.
901 302-1646, harsh.kumar@psc.com

Braeden Kuether
Research Analyst, Piper Sandler & Co.
503 275-7725, braeden.kuether@psc.com

INDUSTRY RISKS

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

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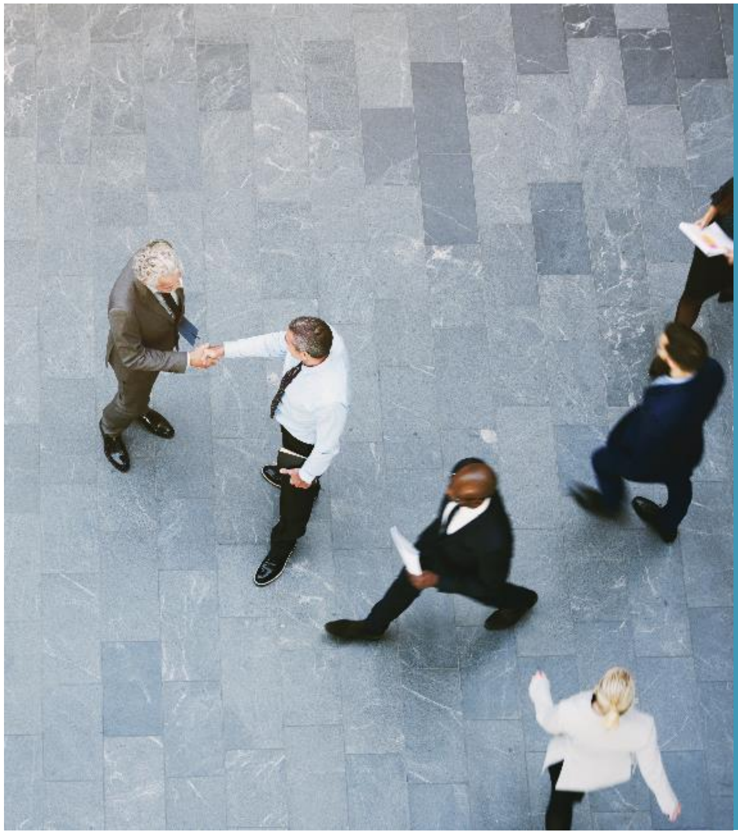

Piper Sandler CIO Survey

2023 | The Year of Change

Brent A. Bracelin
SENIOR RESEARCH ANALYST
Tel: +1 503-275-8316
Email: brent.bracelin@psc.com

Rob D. Owens
SENIOR RESEARCH ANALYST
Tel: +1 503-275-8317
Email: rob.owens@psc.com

James E. Fish, Jr.
SENIOR RESEARCH ANALYST
Tel: +1 612-303-6509
Email: james.fish@psc.com

Braeden Kuether
TECHNOLOGY PRODUCT MANAGER
Tel: +1 605-214-3696
Email: braeden.kuether@psc.com

Arvind Ramnani
SENIOR RESEARCH ANALYST
Tel: +1 503-275-8323
Email: arvind.ramnani@psc.com

Harsh V. Kumar
SENIOR RESEARCH ANALYST
Tel: +1 901-302-1646
Email: harsh.kumar@psc.com

Tom Champion
SENIOR RESEARCH ANALYST
Tel: +1 212-284-6132
Email: tom.champion@psc.com

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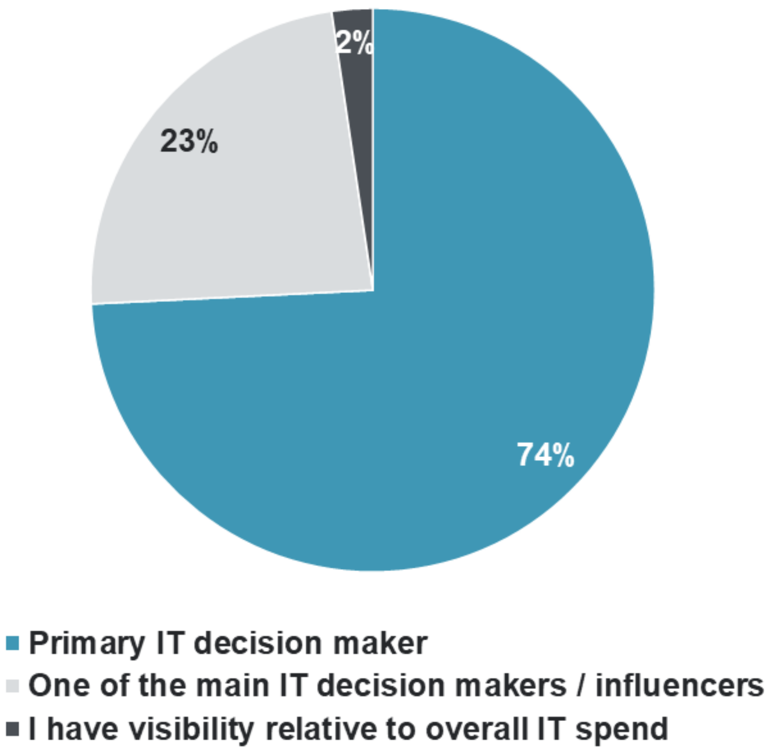
Part 1

Executive Summary

Piper Sandler Annual CIO Survey (n = 128)

Primary IT decision makers across 128 enterprises participated in our annual CIO survey ahead of 2023.

	# CIOs	Estimate Avg. Revenue
2023	*128*	*$1.6B*
2022	93	$1.3B
2021	100	$1.4B
2020	103	$1B
2019	110	$1B



Source: Piper Sandler

2023 Final Takeaway | Ch-ch-ch-ch-Changes

Vendor consolidation is top of mind alongside a broader appetite for multi-cloud and core functional areas.

Key Themes

1. **Vendor consolidation.** Intentions to consolidate vendors was an overwhelming theme throughout the survey, with infrastructure, application, and communication software being the most likely areas.

2. **Multi-cloud.** Cloud secular tailwinds remain intact, and public cloud penetration is projected to reach 40% by 2025 vs. 28% today.

3. **Shift to core.** A shift to core functional areas in infrastructure, like security (maintains status the top spend priority), ITSM, backup, storage, and switching.

50%+

of survey respondents plan to consolidate vendors in 2023 across infrastructure and application software.

71%

cited cost savings as one of the contributing factors driving vendor consolidation intent.

74%

of survey respondents plan to increase spending on security in 2023.

Source: Piper Sandler; Responses weighted by IT Budget Sizes

Section Overview

General IT Takeaways

- 2023 is shaping up to be the year of ‘change’; “Maintained” budget falls to multi-year low (10% vs. 18% average).
- More than 50% plan to consolidate infrastructure and application vendors in 2023; 71% driven by cost savings.
- Security and applications remain the top spending priorities; Devices, UCC, and database fall to the bottom.

Security

Rob Owens

- Security is the top priority with 74% expecting increased spend and 48% looking to consolidate.
- While the macro may influence some appliance sweating and increased focus on pricing dynamics, we expect that overall demand for security should hold strong. We see vendors that address high priority segments of the security stack alongside offering consolidation opportunities as best positioned going into 2023.

Applications

Brent Bracelin

- Vendor consolidation surfaces as a major trend to watch in 2023 (cost savings).
- Cloud secular tailwinds remain intact with broader multi-cloud adoption.
- Spend priority highest on data analytics; more resilient than front/back office apps.
- Spend most at risk for procurement, work management, marketing, and CX.

Infrastructure

James Fish & Rob Owens

- Priorities are shifting more towards “keeping the lights on”, automation, & 5G services rather than “nice to haves” around transformational infrastructure (ex: containers, edge compute, etc.)
- Spending intentions strongest for areas like Security, Switching, ITSM, Backup, Storage / HCI
- CIOs are looking to most consolidate infrastructure vendors, making “true-platforms” differentiated and well-setup.

Communication

James Fish

- While the space remains a low relative priority relative to the rest of IT following the pandemic (2020-2021), spending intentions did return to above pre-pandemic levels and well-above 2022 that points to a better 2023.
- Cloud migrations in contact center & voice remain strong in 2023 and over the next 3 years. ~45% of organizations anticipate moving to UCaaS and ~54% plan to move to CCaaS over the next few years.
- As the #3 area CIOs most desire to consolidate, this will most impact platform plays across voice, video, and chat / messaging, particularly those that have a strong or “good enough” cloud solution.

IT Services & HCM Software

Arvind Ramnani

- 20% of respondents expect IT Services to be most exposed in a recession. 49% are looking to consolidate vendors as a mechanism to save costs. In our view, larger players such as ACN, CTSH (not covered) are likely to be more pressured relative to the digital players (EPAM, GLOB) given their scale and consulting exposure.
- 86% looking to increase/spend the same on HCM Apps given it’s a non-discretionary spend. We expect cloud HCM (PCTY, PAYC, CDAY) to continue to benefit from stable/healthy spend and churn from legacy vendors (ADP, PAYX, both not covered).

Source: Piper Sandler; Responses weighted by IT Budget Sizes

Most Meaningful Stock Implications | 2023 CIO Survey

Rob Owens | Security and Infrastructure Software

- **Okta (OKTA, OW, $80 PT):** 1) IAM continued to be a top category in security – 65% of respondents indicated they are looking to increase spend in 2023; 2) Okta's two best of breed identity clouds (customer and workforce) position the company well to succeed; 3) Recent release of IGA and PAM solution coming later in the new year bode well for consolidation trends.
- **CrowdStrike (CRWD, OW, $175 PT):** 1) Endpoint also proved to be a top spending category for respondents in 2023, with 65% indicating they will increase spend; 2) Replacement market for endpoint remains large, and the threat landscape remains pervasive; and 3) CRWD's ability to consolidate functionality on its single agent should drive success given overall appetite for vendor consolidation.

Brent Bracelin | Cloud Applications and Analytics

- **Microsoft (MSFT, OW, $265 PT):** Spending intentions on cloud and vendor consolidation could help buoy Microsoft in 2023.
- **Oracle (ORCL, N, $85 PT):** Positive cloud spending intentions partially offset by risk of declining database budget priority.
- **Snowflake (SNOW, OW, $200 PT) & Alteryx (AYX, OW, $62 PT):** Data spend intentions appear more resilient than front and back office application spend.

James Fish | Cloud Automation Software

- **Five9 (FIVN, OW, $61 PT):** (1) CCaaS spending intentions show strongest improvement amongst cloud categories, with "Tier-2" verticals (higher exposure) showing just as strong of intentions as Tier-1s (less exposure); (2) Contact Center cloud conversions relatively strong in 2023 (likely due to a favorable competitive landscape), with also less penetration of Tier-2 verticals currently a positive.
- **Cloudflare (NET, N, $58 PT):** (1) Cloudflare Workers is keeping pace with "Big 4" IaaS regarding net-intentions, despite step-down in edge computing intentions vs. last year; (2) Beneficiary of infrastructure/security consolidation as a "true platform"; (3) CDN and WAF spending intentions relatively stable Y/Y

Arvind Ramnani | Vertical Software & Fintech

- **EPAM (EPAM, OW, $414 PT):** Despite survey results, EPAM should be relatively well-positioned given its focus on digitization, which we believe will be resilient given the revenue growth and margin benefits to its clients. However, we note that geo diversification exposes it to operational risk.
- **Accenture (ACN, UW, $245 PT):** The survey results support the rationale on our recent Accenture downgrade to UW: 2023 budgets may be impacted given decision making delays and project pushouts. Consulting exposure and large engagement sizes likely leave it vulnerable in a tough macro environment.
- **Paylocity (PCTY, OW, $276):** Continued transition to cloud HCM platforms from legacy, 100% USD denominated revenue and the mission-critical non-discretionary nature of the business position PCTY well for 2023, particularly given it is currently trading below its 5 yr avg on an NTM EV/S basis.

Harsh Kumar | Semiconductors

- **Apple (AAPL, OW, $195 PT):** 35% of respondents that use Apple devices expect it to grow as a percentage of total devices, and 45% expect the proportion of Apple devices in their company will remain the same.

Tom Champion | Internet

- **Amazon (AMZN, OW, $119 PT):** 73% planning to increase spend on AWS versus 22% staying the same This places AMZN second for spending intentions among IaaS behind Azure, in-line with last year.
- **Alphabet (GOOGL, OW, $122 PT):** 63% planning to increase spend on GCP versus 32% staying the same. This places GOOGL third for spending intentions among IaaS, in-line with last year.

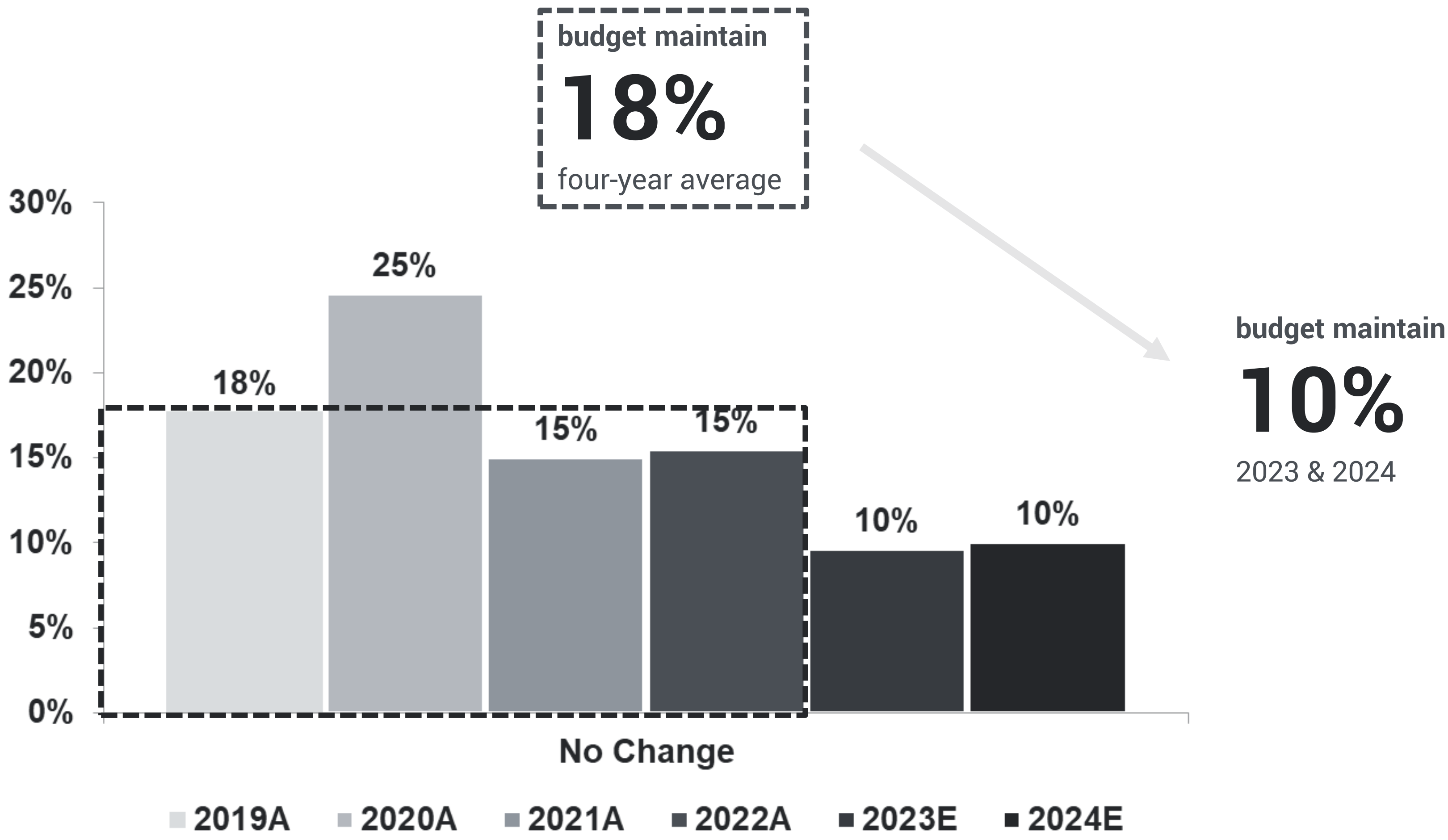
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Part 2

General IT Trends

Bias Toward the *Maintain* Status Quo Falls to a Multi-Year Low

Surprised to see the fewest respondents planning to maintain a "no change" stance on IT budgets.

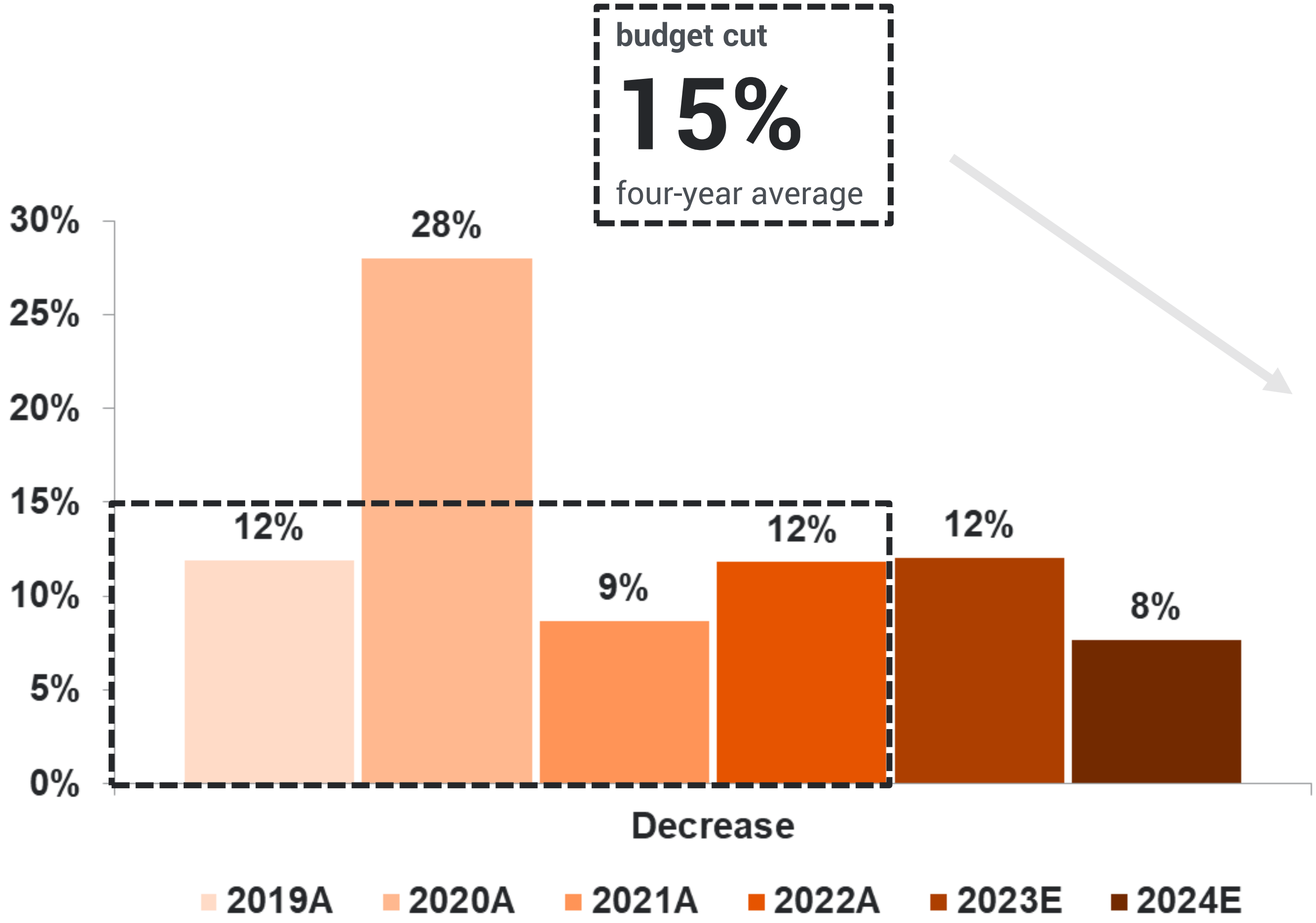


2023 marks the highest expectation for a budget change in 5 years

Question: "What was the approximate growth rate of your IT budget in 2022 relative to 2021, and how do you expect IT budgets to trend in 2023 and 2024 relative to the previous years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Expectations for ***Budget Cut*** Similar to 2022

Against the backdrop of recessionary headwinds, we were a little surprised this wasn't higher.



budget cut

12%

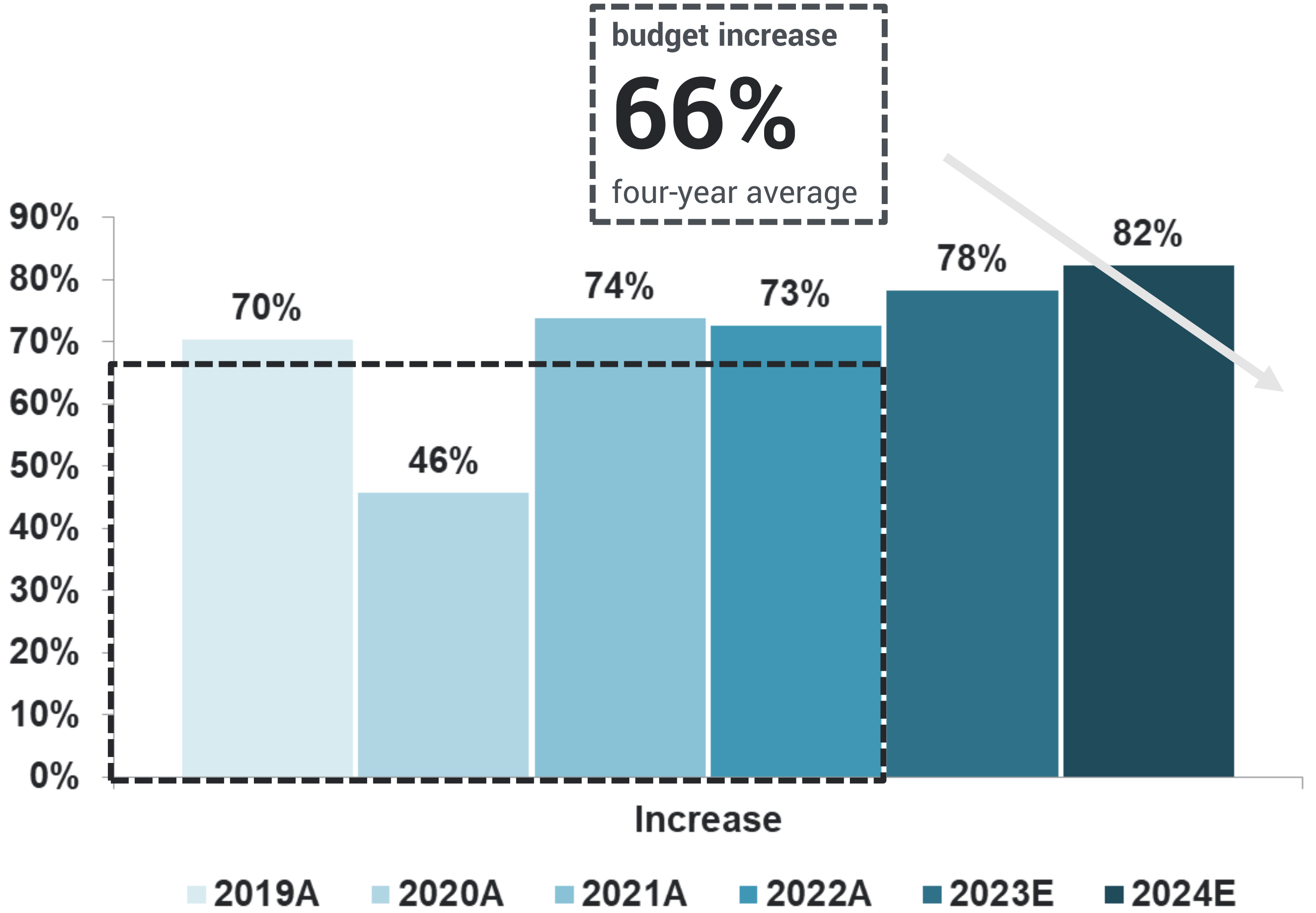
2023

(similar to 2022 but nowhere near the severity of 2020)

Question: "What was the approximate growth rate of your IT budget in 2022 relative to 2021, and how do you expect IT budgets to trend in 2023 and 2024 relative to the previous years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

78% Expectation for a ***Budget Increase*** Was Surprising

We were very surprised by the optimism for expanding budgets given recessionary headwinds.



budget increase

78%

2023

(above expectations for budget increases in 2019, 2021, and 2022)

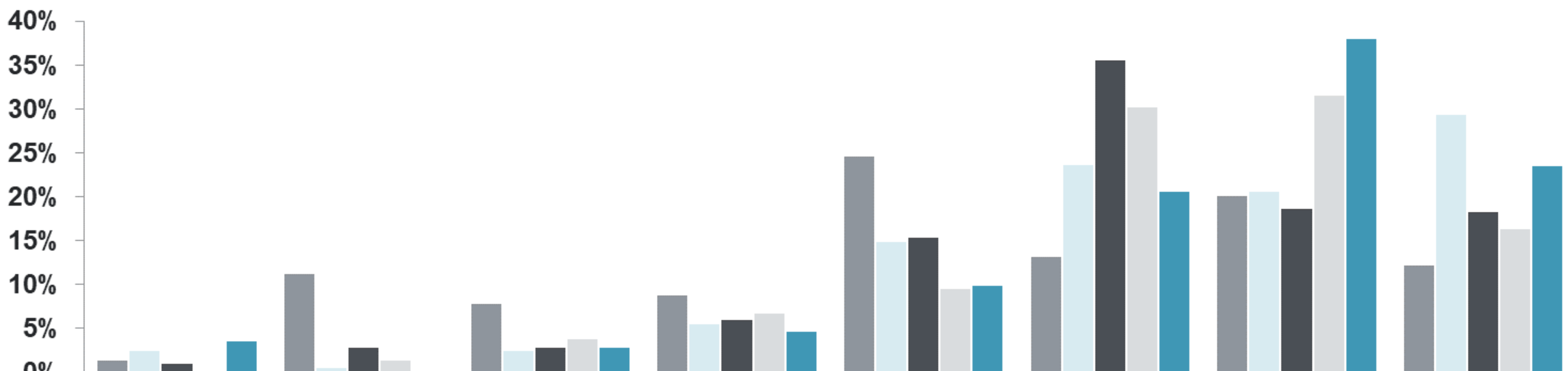
Question: "What was the approximate growth rate of your IT budget in 2022 relative to 2021, and how do you expect IT budgets to trend in 2023 and 2024 relative to the previous years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Weighted Average Implies Budgets Could Be Slightly Higher in 2023

The weighted average of responses (n=128) points to slightly more optimism entering 2023 than we expected.

IT Budget Y/Y Growth

2020: +2.9%	2021: +5.4%	2022: +4.2%	2023E: +4.9%	2024E: +6.6%

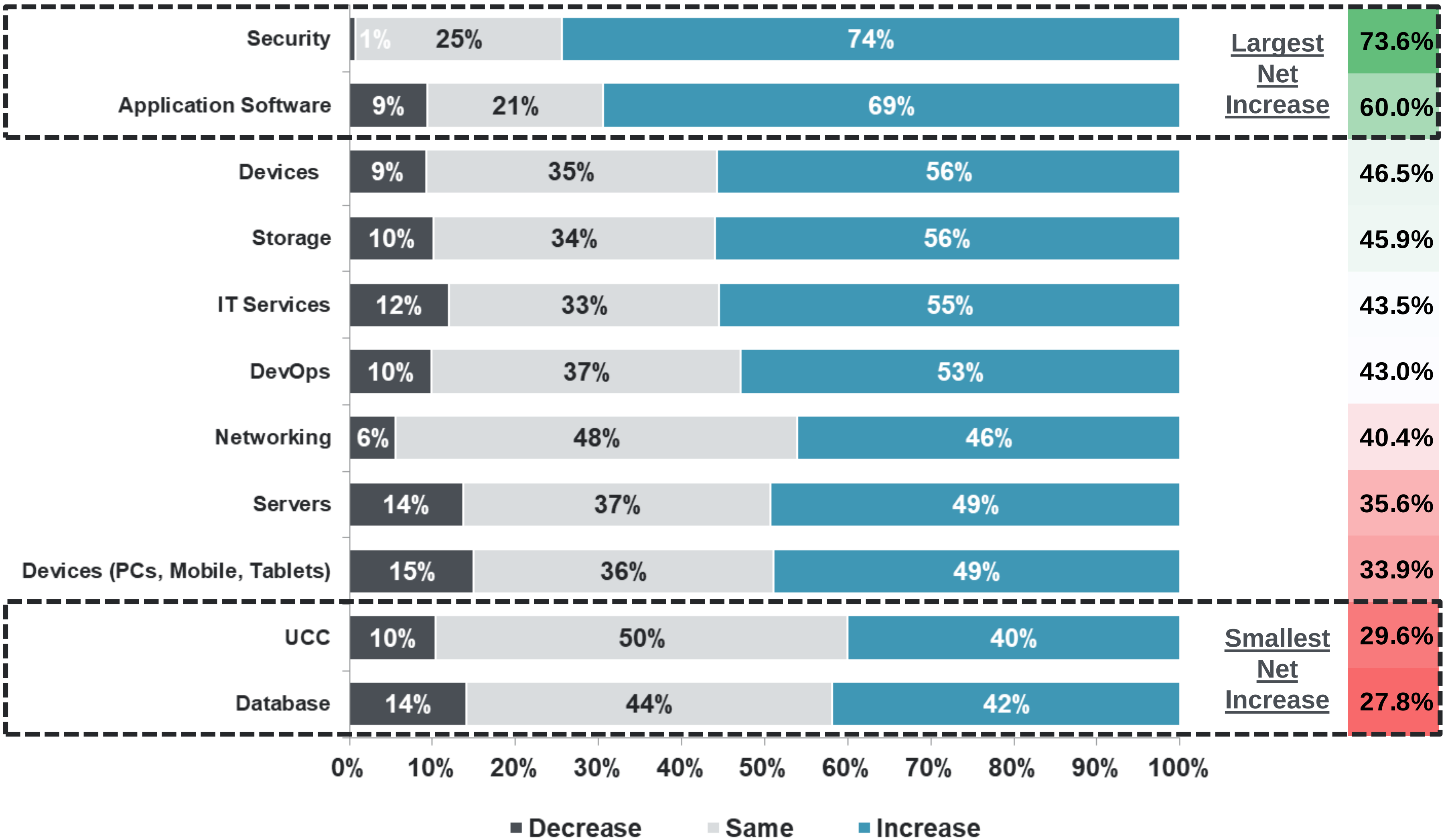


	Unsure / NA	Down more than 10%	(10%) to (5%)	(4%) to (1%)	Flat (0%)	+1% to +4%	+5% to +10%	Up more than 10%
2020A	1%	11%	8%	9%	25%	13%	20%	12%
2021A	3%	1%	3%	6%	15%	24%	21%	29%
2022A	1%	3%	3%	6%	15%	36%	19%	18%
2023E	0%	1%	4%	7%	10%	30%	32%	16%
2024E	4%	0%	3%	5%	10%	21%	38%	24%

Question: "What was the approximate growth rate of your IT budget in 2022 relative to 2021, and how do you expect IT budgets to trend in 2023 and 2024 relative to the previous years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Security and Applications Remain Top Spending Priorities

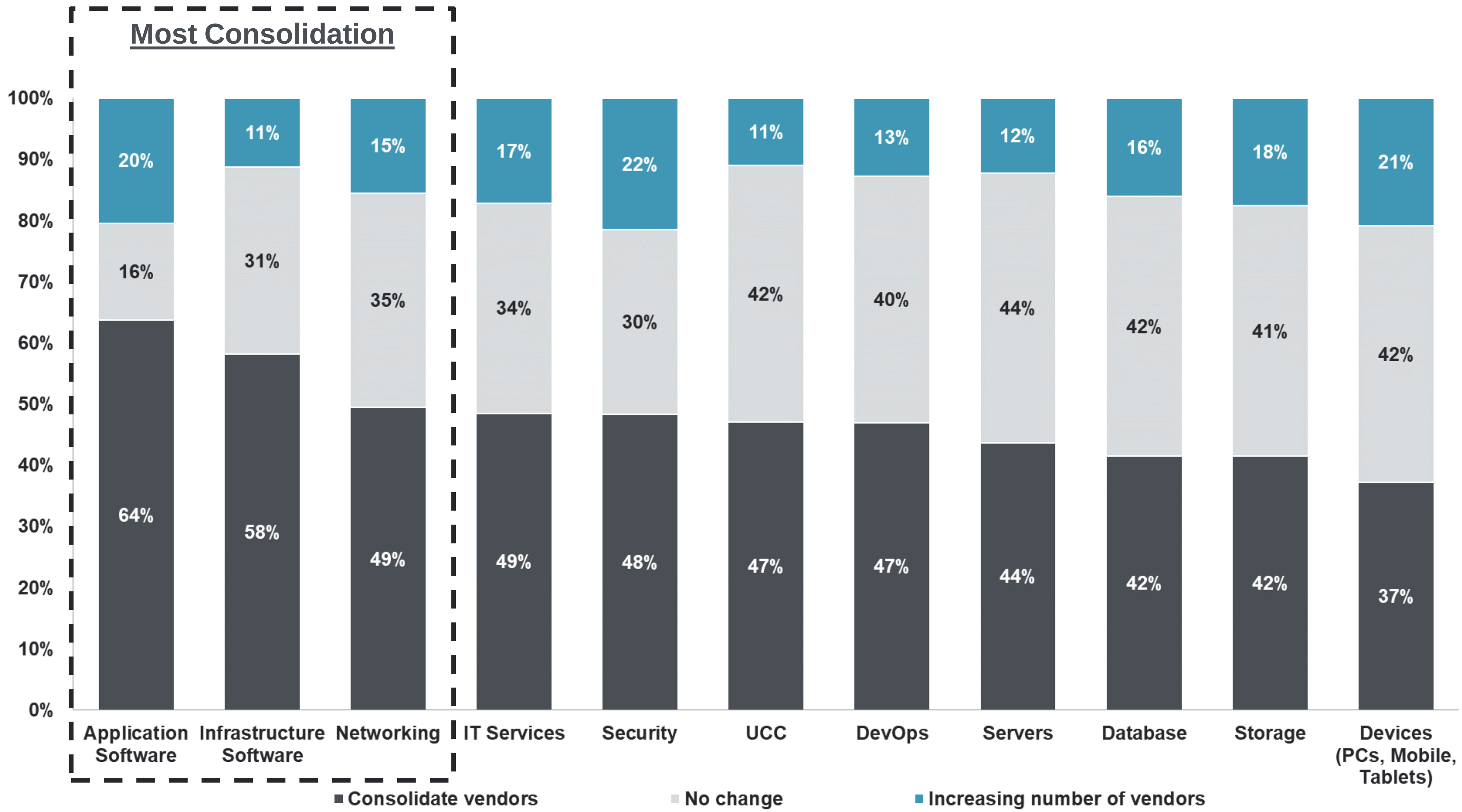
Budget allocations appear to be most favorable for security (74% increase) and applications (69% increase).



Question: "Please indicate whether you plan to increase or decrease spending in 2023 relative to what you spent in 2022."
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Vendor Consolidation *Most Likely* in Infrastructure and Applications

Application Software (64%), Infrastructure Software (58%), and Networking (49%) are the top-areas that organizations are looking to consolidate.



Question: "How are you thinking about vendor consolidation across the following spending categories?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Vendor Consolidation is Primarily Driven By ***Cost Savings***

Cost was a contributing factor driving consolidation for 71% of respondents; 29% attributed to efficacy.

Cost Factors
#1 Infrastructure Software
#2 Networking
#3 Security

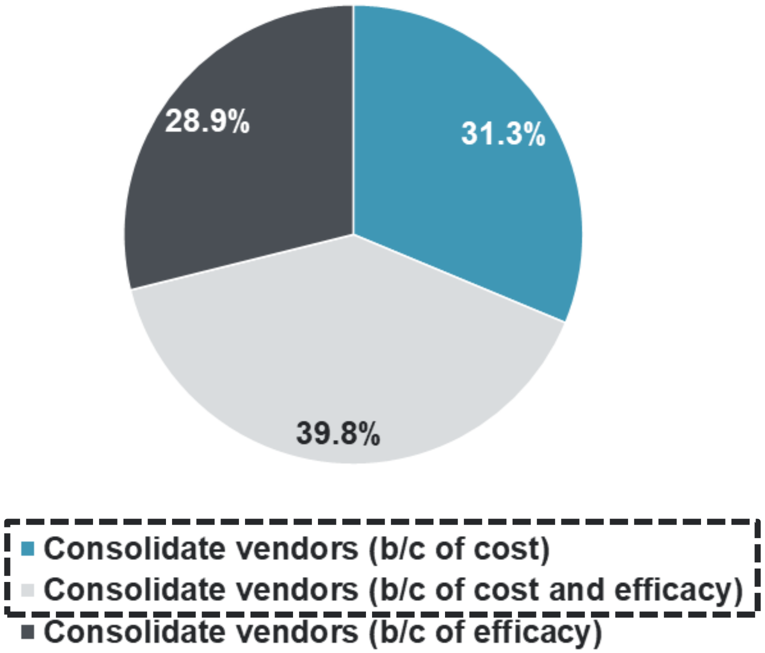
Cost and Efficacy Factors
#1 Application Software
#2 IT Services
#3 Servers

Efficacy Factors
#1 DevOps
#2 Storage
#3 Devices

Cost savings

71%

included cost as a contributing factor driving vendor consolidation



Question: "How are you thinking about vendor consolidation across the following spending categories?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Who could benefit the most in 2023?

CIO quotes on which vendor they intend to *increase spend on the most* in 2023.

Microsoft	• *'we will shift from Google to Microsoft'* • *'consolidating infrastructure and IT security into the Microsoft platform'* • *'due to increased pricing and consolidation of infrastructure and security suites'* • *'we have been trying to streamline our services to get a bit of a break on price'*
AWS	• *'moving to cloud and away from captive hosting providers'* • *'support enterprise growth and increased use of serverless capabilities'* • *'critical to operations'*
Google Cloud	• *'running our SaaS product on Google and as the customer base grows, so do our cloud costs'* • *'because it is very reliable'* • *'the services are good'*
Salesforce	• *'our quota carrying headcount is still growing and we are adopting modules'* • *'implementing nCino and Salesforce Marketing Cloud'* • *'adding more features'*
Crowdstrike	• *'expanding our coverage map'*
SAP	• *'yearly price increases'* • *'S/4 Hana implementation'* • *'we will be implementing additional modules'*

Question: "What vendor do you plan to increase spending the most on during 2023 and why?"
Source: Piper Sandler

Inflation and Interest Rates Surpass COVID and Supply-Chain Risks

Not surprising to see the economy, inflation, and rising interest rates top the concern list in 2023.

2020	2021	2022	2023
	Rising: COVID-19 (+26%) Falling: Global trade-wars / geopolitical tension (-20%)	Rising: Supply-chain constraints (+20%) Falling: COVID-19 (-10%)	Rising: Inflation (+27%) Falling: COVID-19 (-13%)
#1: US economy *28% of weighted votes*	***#1: COVID-19*** *26% of weighted votes*	***#1: US economy*** *28% of weighted votes*	***#1: US economy*** *29% of weighted votes*
#2: Global trade-wars / geopolitical tensions *27% of weighted votes*	***#2: US economy*** *26% of weighted votes*	***#2: Supply-chain constraints*** *20% of weighted votes*	***#2: Inflation*** *27% of weighted votes*
#3: US consumer spending *12% of weighted votes*	***#3: US political changes*** *11% of weighted votes*	***#3: COVID-19*** *16% of weighted votes*	***#3: US interest rates*** *12% of weighted votes*

Question: "What are your top macro-economic concerns for 2023 that could negatively impact your IT budget?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes; Note: #1 votes weighted x3, #2 votes weighted x2

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Part 3

Security

Rob Owens

Conclusion

Spending intentions remain high across multiple categories, with organizations continuing to favor consolidated platform offerings.

1 Security is the *top priority* with 74% expecting increased spend, with IAM and endpoint topping spend expectations by category

Net/net: Security was the top priority for CIOs again, and 65% expect to increase spend on IAM and endpoint in 2023. Positive for: CRWD, OKTA

2 Need for consolidation is strong, with 48% looking to reduce number of security vendors

Net/net: As the macro influences higher scrutiny on budgets, many are looking to consolidate to drive higher ROI within security. Positive for CRWD, PANW, OKTA

3 Growth in cloud spend should bode well for cloud security offerings

Net/net: Public cloud penetration is expected to reach 40% by 2025, boding well for the leaders in cloud security today. Positive for CRWD, PANW, RPD, TENB

Positive Implications

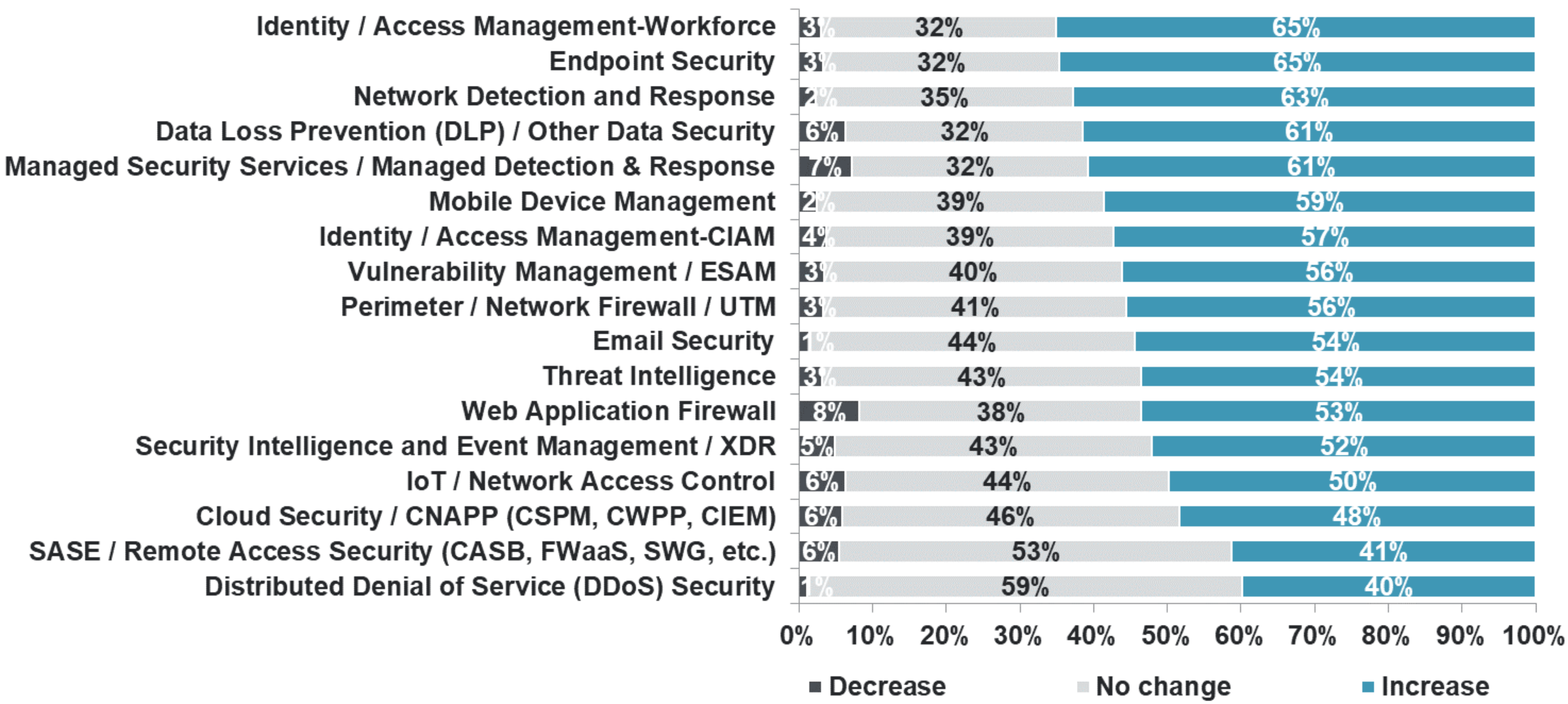
Owens	CRWD – OW => Strong spending intentions for endpoint and desire to consolidate should aid the Falcon platform adoption.
Owens	OKTA – OW => IAM again was the top category for spending intentions for 2023, with OKTA's dual cloud approach set to benefit.
Owens	PANW – OW => With a broad platform across multiple categories, PANW should capitalize on resilient demand and consolidation.
Owens	TENB – OW => Attack surface expansion across cloud, IoT / OT and hybrid requires sophisticated cyber risk management.

Source: Piper Sandler; Responses weighted by IT Budget Sizes

Expected Change in 2023 Spending by Security Categories

IAM and Endpoint remained strong in this year's survey with organizations focusing on high priority projects in '23.

- Identity and access management (IAM) and endpoint security were the top categories for security spending, with 65% of respondents indicating they are looking to increased spend in these categories next year.
- Network detection and response (NDR), data security and managed security services also fared well, rounding out the top five categories. SASE and DDOS spending came in at the bottom, though we note most respondents intend to keep spend stable, rather than decreasing or increasing.



Question: "Which areas of security software do you intend to increase, decrease, or leave the same in regards to spending in 2023 relative to 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Security Net Spending Expectations in 2023 vs. 2022

MDM and IoT spending saw the largest net spend increases in this year's survey.

- Spending expectations saw some volatility in 2023 vs 2022, though largely remained strong.
- Most improved categories were: mobile device management (+13%), IoT / network access control (+12%), web application firewall (+7%), and email security (+5).
- While IAM and SIEM both saw some large y/y declines in expectations, we note the net responses for both of these categories remained solid.

Category	Net % 2022	Net % 2023	Change
Identity / Access Management-Workforce	80%	62%	-18%
Endpoint Security	67%	61%	-6%
Network Detection and Response	N/A	60%	N/A
Data Loss Prevention (DLP) / Other Data Security	57%	55%	-2%
Managed Security Services / Managed Detection & Response	56%	54%	-3%
Mobile Device Management	43%	56%	13%
Identity / Access Management-CIAM	80%	54%	-27%
Vulnerability Management / ESAM	67%	53%	-14%
Perimeter / Network Firewall / UTM	51%	52%	1%
Email Security	48%	53%	5%
Threat Intelligence	N/A	50%	N/A
Web Application Firewall	38%	45%	7%
Security Intelligence and Event Management / XDR	74%	47%	-27%
IoT / Network Access Control	32%	43%	12%
Cloud Security / CNAPP (CSPM, CWPP, CIEM)	N/A	43%	N/A
SASE / Remote Access Security (CASB, FWaaS, SWG, etc.)	N/A	36%	N/A
Distributed Denial of Service (DDoS) Security	47%	39%	-8%

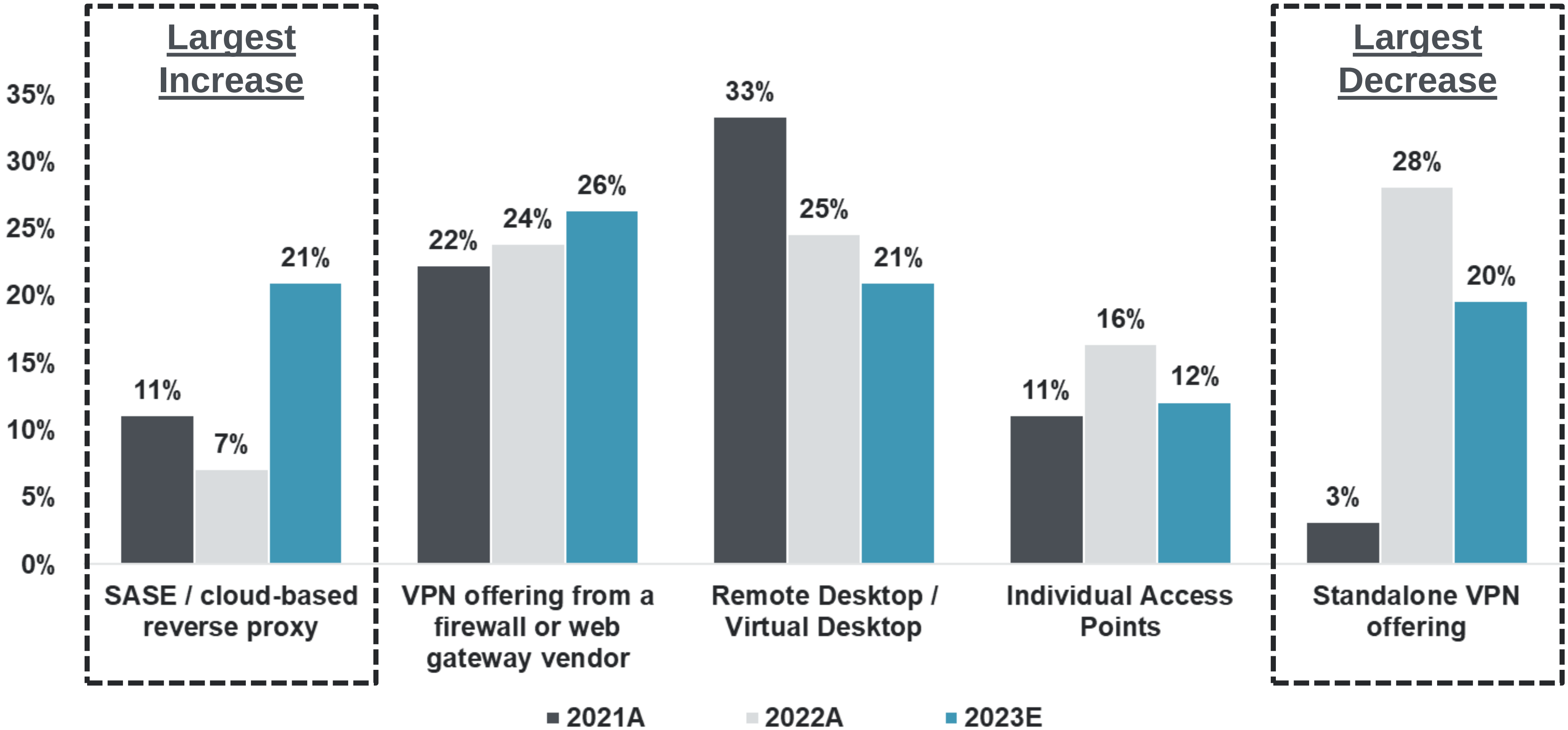
Question: "Which areas of security / infrastructure software do you intend to increase, decrease, or leave the same in regards to spending in 2023 relative to 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Methods for Supporting Remote Workers

While SASE was the least used method in '22, respondents expect this to change in '23 as adoption grows.

- VPNs from firewall / web gateway vendors are expected to be the primary method of supporting remote workers in 2023, seeing a 2% increase over the prior survey. SASE saw the largest increase in responses, with **21%** expecting to use this method compared to 7% last year.

- Standalone VPN offerings (-8%) are likely to become less prevalent, seeing the largest decrease.



Question: "Based on what you are seeing from your customers, how are customers primarily looking to support remote employees connecting to corporate resources today compared to next year?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Part 4

Application Software

Brent Bracelin

Conclusion

Vendor consolidation and multi-cloud adoption stood out as the most incremental takeaways for us.

1. ***Vendor consolidation*** **surfaces as a major trend to watch in 2023 (cost savings)**

   Net/net
   Positive for MSFT

2. **Cloud secular tailwinds remain intact with broader *multi-cloud* adoption**

   Net/net
   Positive for MSFT and ORCL

3. **Spend priority highest on *data analytics*; more resilient than front/back office**

   Net/net
   Positive for SNOW and AYX

4. **Spend most at risk for *procurement*, *work management*, *marketing*, and *CX***

   Net/net
   Work mgmt. – slight negative for ASAN, MNDY
   Marketing and CX – slight negative for CRM, HUBS, BRZE, FRSH, XM

Stock Implications

Bracelin	MSFT – Overweight => Spending intentions on cloud and vendor consolidation could help buoy Microsoft in 2023.
Bracelin	ORCL – Neutral => Positive cloud spending intentions partially offset by risk of declining database budget priority.
Bracelin	SNOW – Overweight => Data spend intentions appears more resilient than front and back office application spend.
Bracelin	AYX – Overweight => Data spend intentions appears more resilient than front and back office application spend.

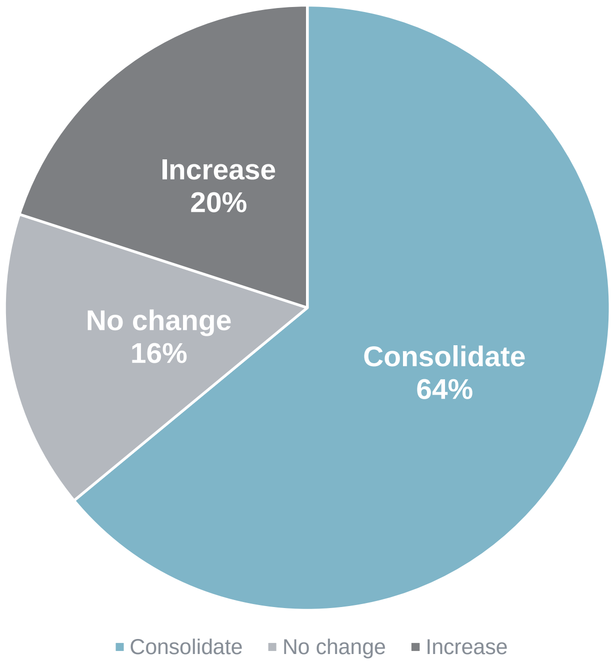
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Vendor Consolidation Surfaces as Key Trend to Closely Watch

Spending intentions remain healthy with a steady increase in respondents planning cloud budget increases.

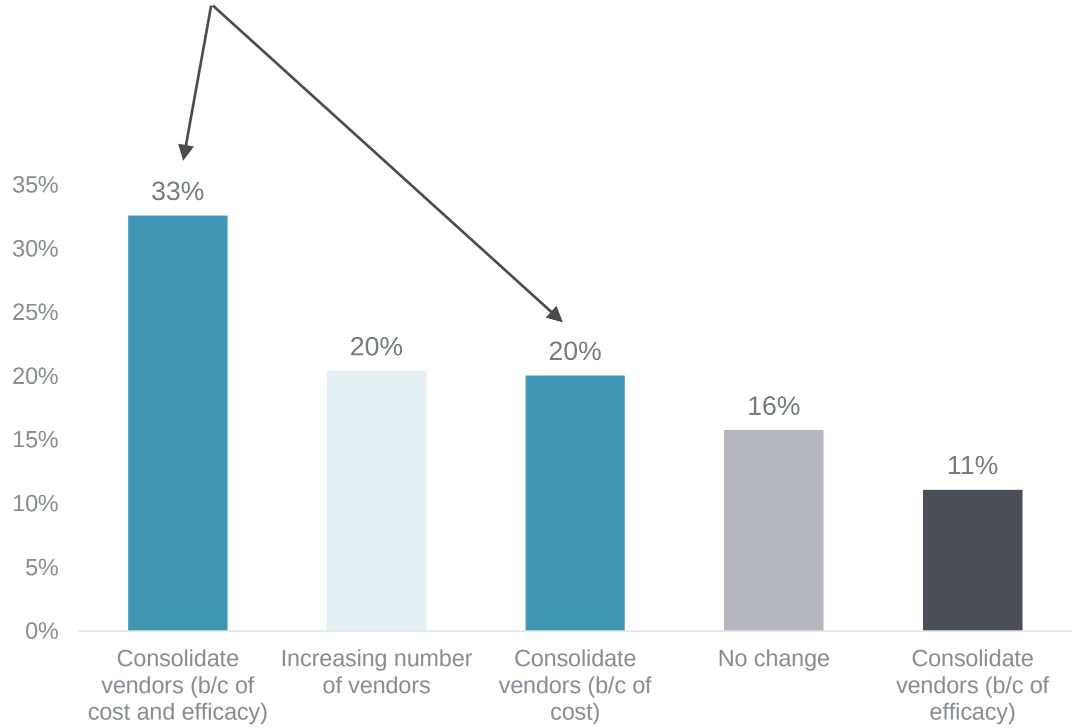
64%

Planning to consolidate application software vendors



53%

Outlined costs savings as one of the contributing factors



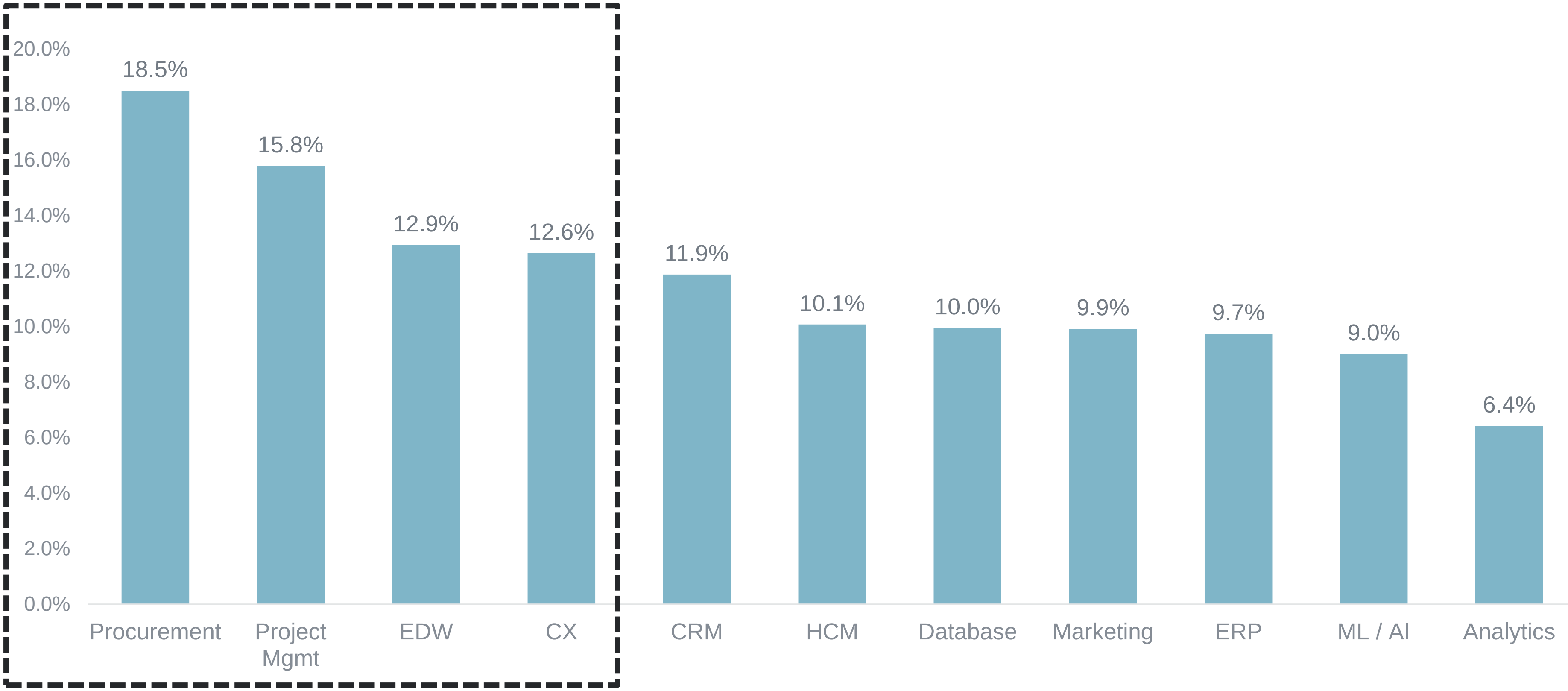
Question: "How are you thinking about vendor consolidation across the following spending categories?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Vendor Consolidation ***Most at Risk*** in Procurement, PM, EDW, CX

2023 spending priority by application category suggest that data analytics could benefit the most.

Most at risk

to decline in spending in 2023
because of **vendor consolidation**



Question: "What areas of enterprise software could spending change in 2023?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Public Cloud Secular Tailwinds Appear Resilient

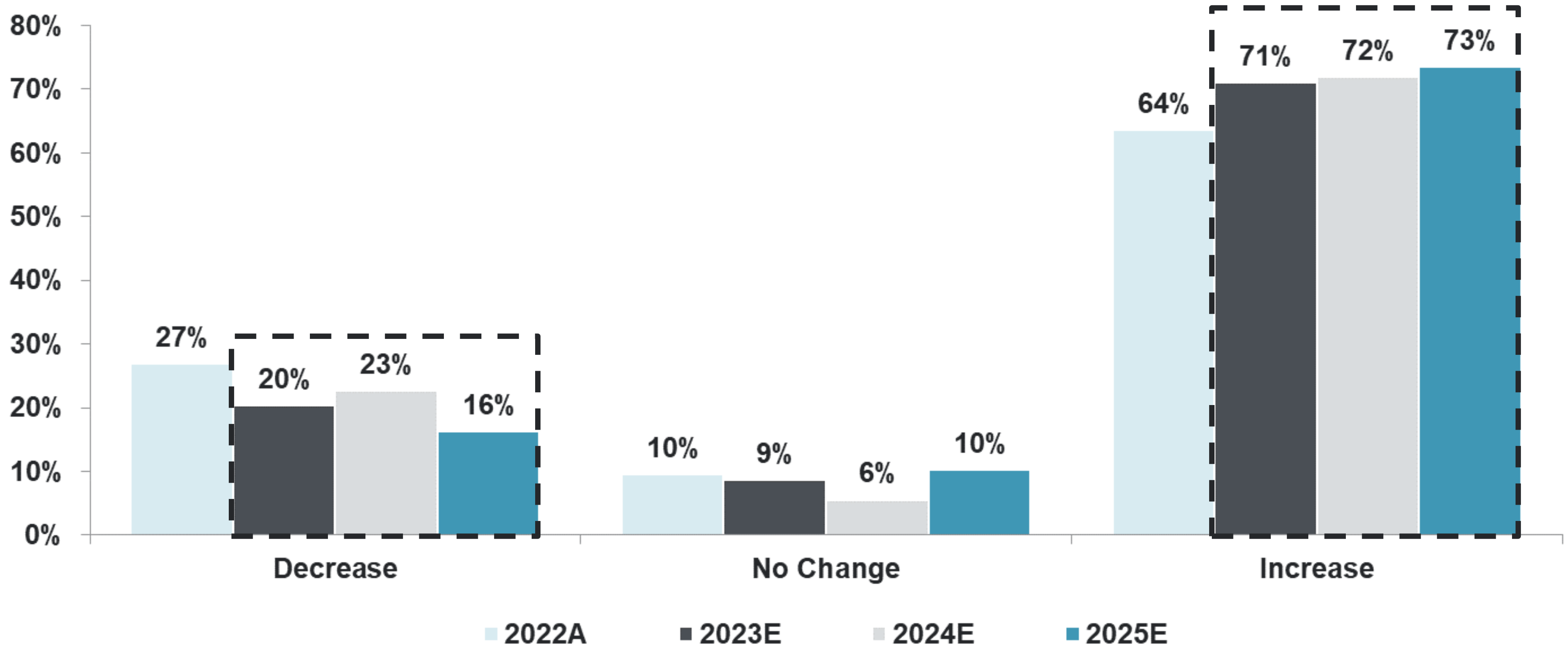
Spending intentions remain healthy with a steady increase in respondents planning cloud budget increases.

20%

Expect cloud budgets to be cut, down from 27% last year.

71%

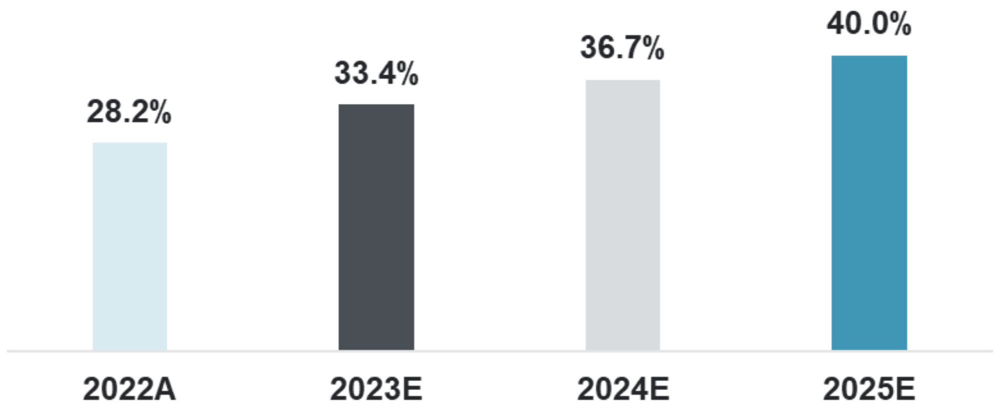
Expect cloud budgets to increase in 2023 and steadily rise through 2025.



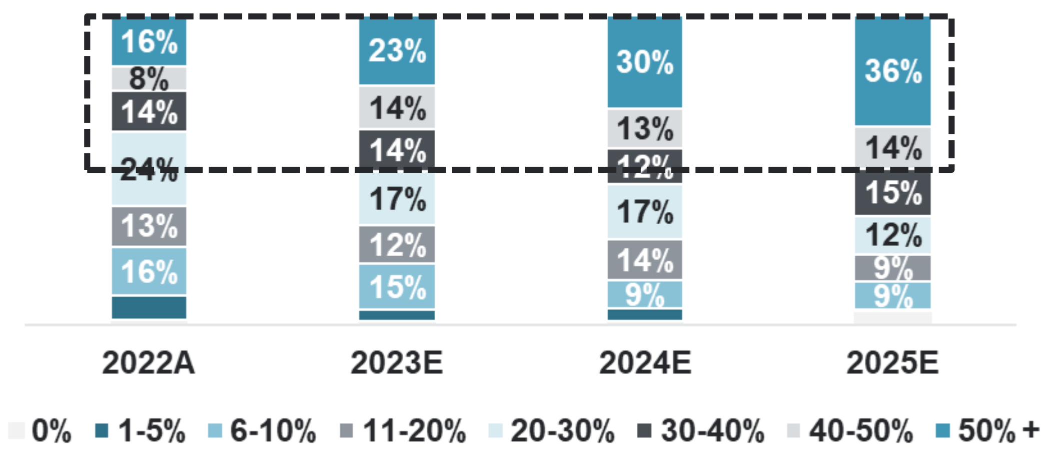
Question: "What was the approximate growth rate of your budget for Cloud in 2022 relative to 2021, and how do you expect Cloud budgets to trend in 2023, 2024, and 2025 relative to the previous years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Public Cloud Penetration Could Reach 40% By 2025 (vs. 28% Today)

Secular tailwinds remain intact relative to broader adoption of the public cloud.



28% average public cloud penetration in 2022 → **40%** average public cloud penetration by 2025



24% have deployed 40%+ of workloads onto public cloud → **50%** expect to deploy 40%+ workloads on public clouds by 2025

Question: "Approximately what percent of your applications currently sit in the public cloud today (SaaS, PaaS, IaaS) vs. where you expect to be three years from now?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

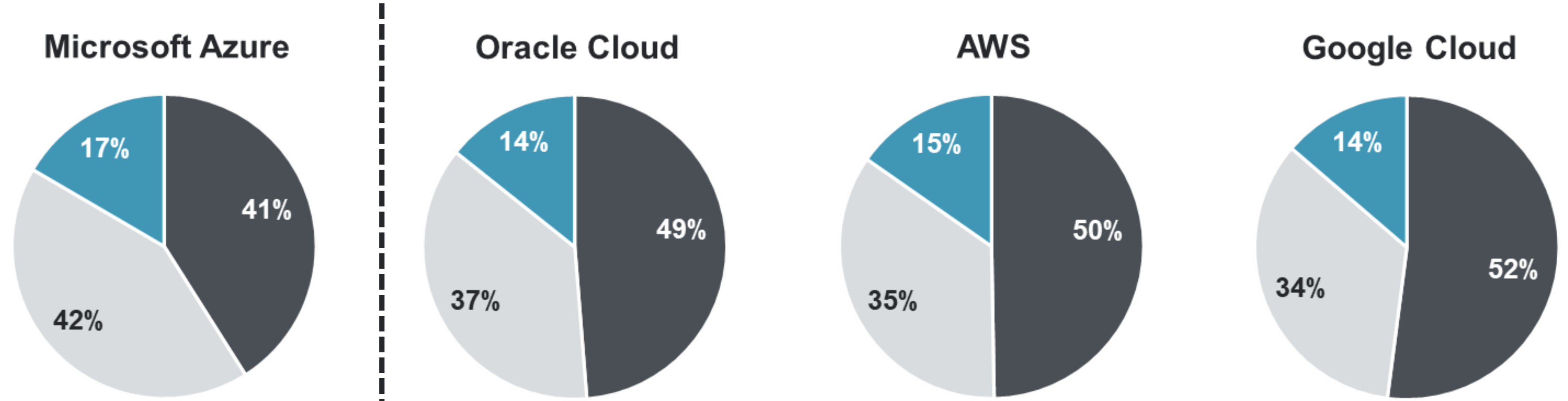
Spending Intentions Reinforce Multi-Cloud Adoption Trends

Budget increases are not concentrated, but rather appear balanced across the Big 4 IaaS platforms.

50%+

expect to increase cloud budgets by 11%+ in 2023 across Azure, Oracle Cloud, and AWS; Google Cloud is trailing the group at 48% of respondents.

#1 Azure is ~**800 bps** higher than #2 Oracle Cloud



59%	**51%**	**50%**	**48%**
Expect vendor budget to increase 11%+	Expect vendor budget to increase 11%+	Expect vendor budget to increase 11%+	Expect vendor budget to increase 11%+

■ **Spend 1-10% more** ■ **Spend 11-25% more** ■ **Spend >25% more**

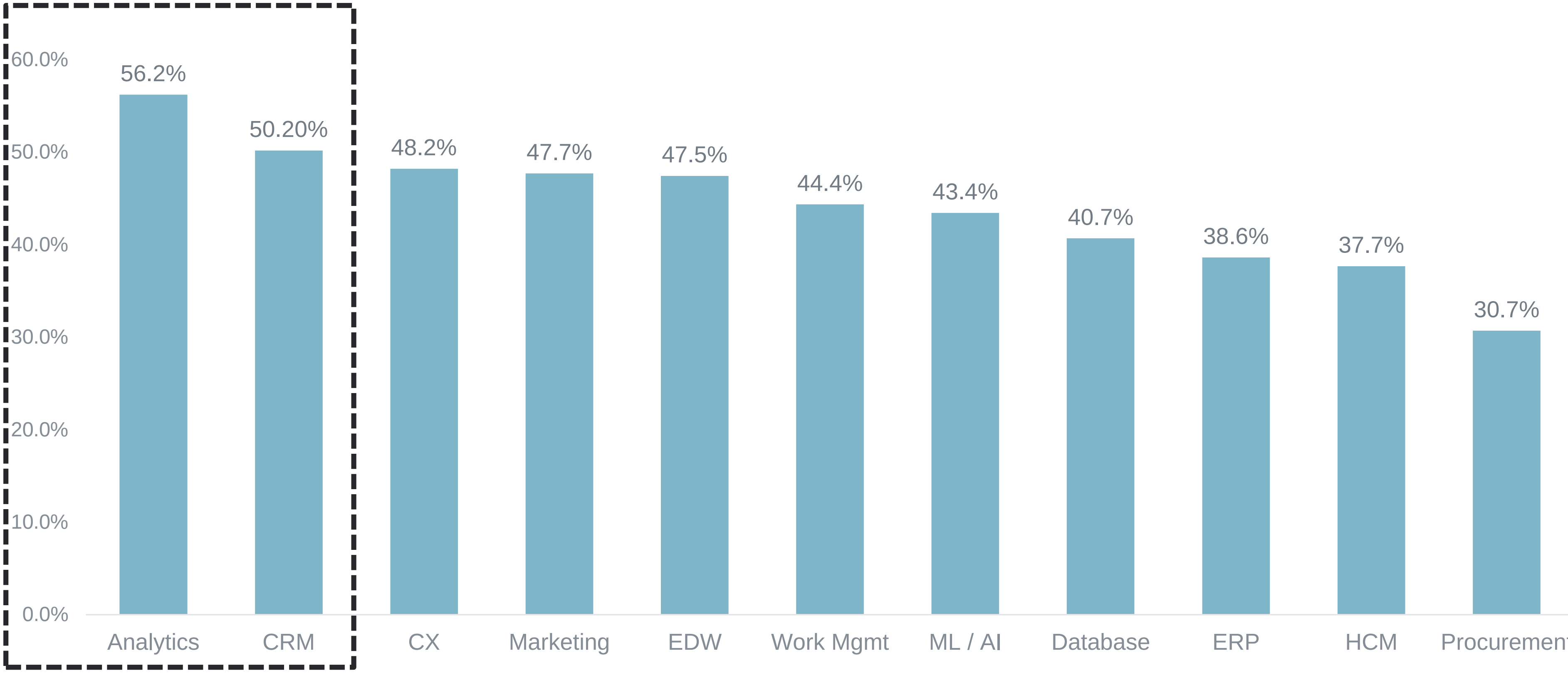
Question: “How will your spending change on the following cloud vendors in 2023 vs. 2022?”
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Could *Increase the Most* for Data Analytics and CRM

Budget priority by application category exposed two categories with the most favorable spending bias.

Most favorable

on expected budget increases in 2023



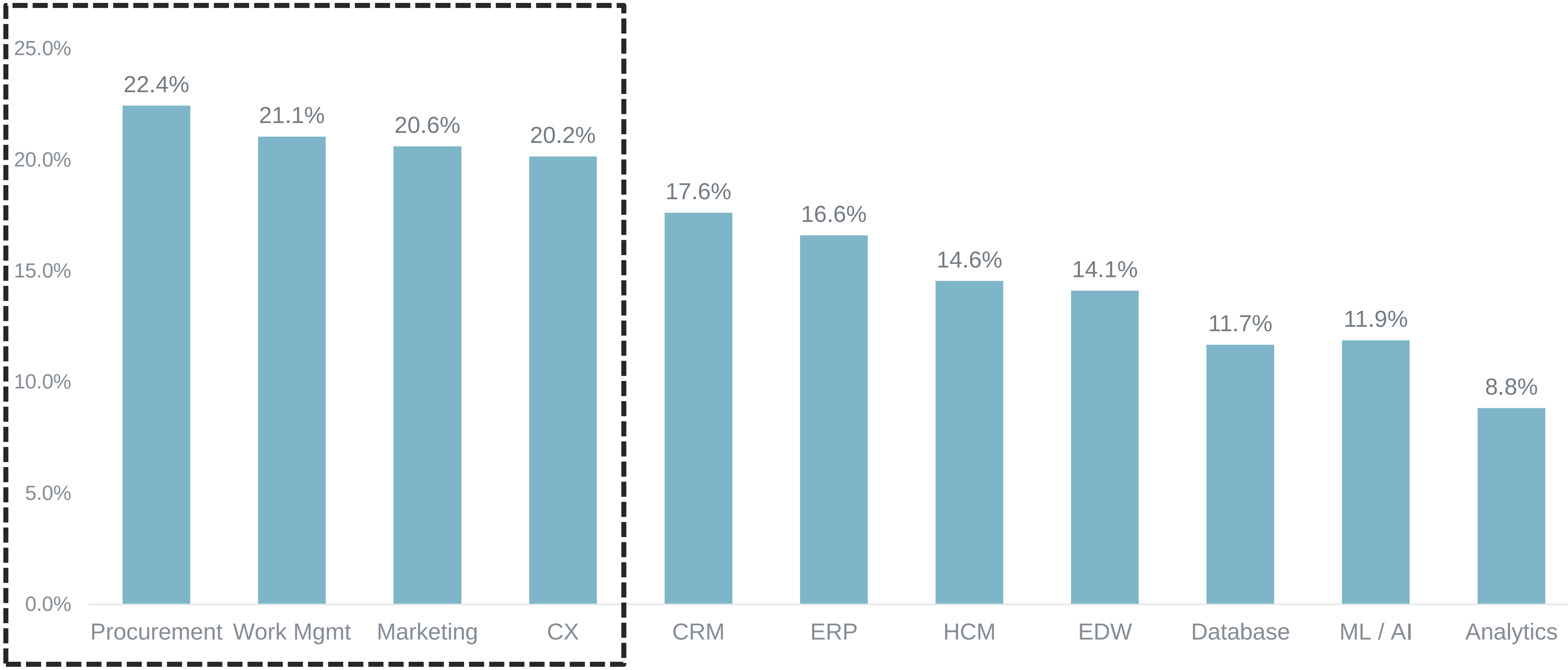
Question: "What areas of enterprise software could spending change in 2023?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Declines *Most at Risk* in Procurement, WM, Marketing, CX

Spending priority by application category expose four application categories with higher risk in 2023.

Most at risk

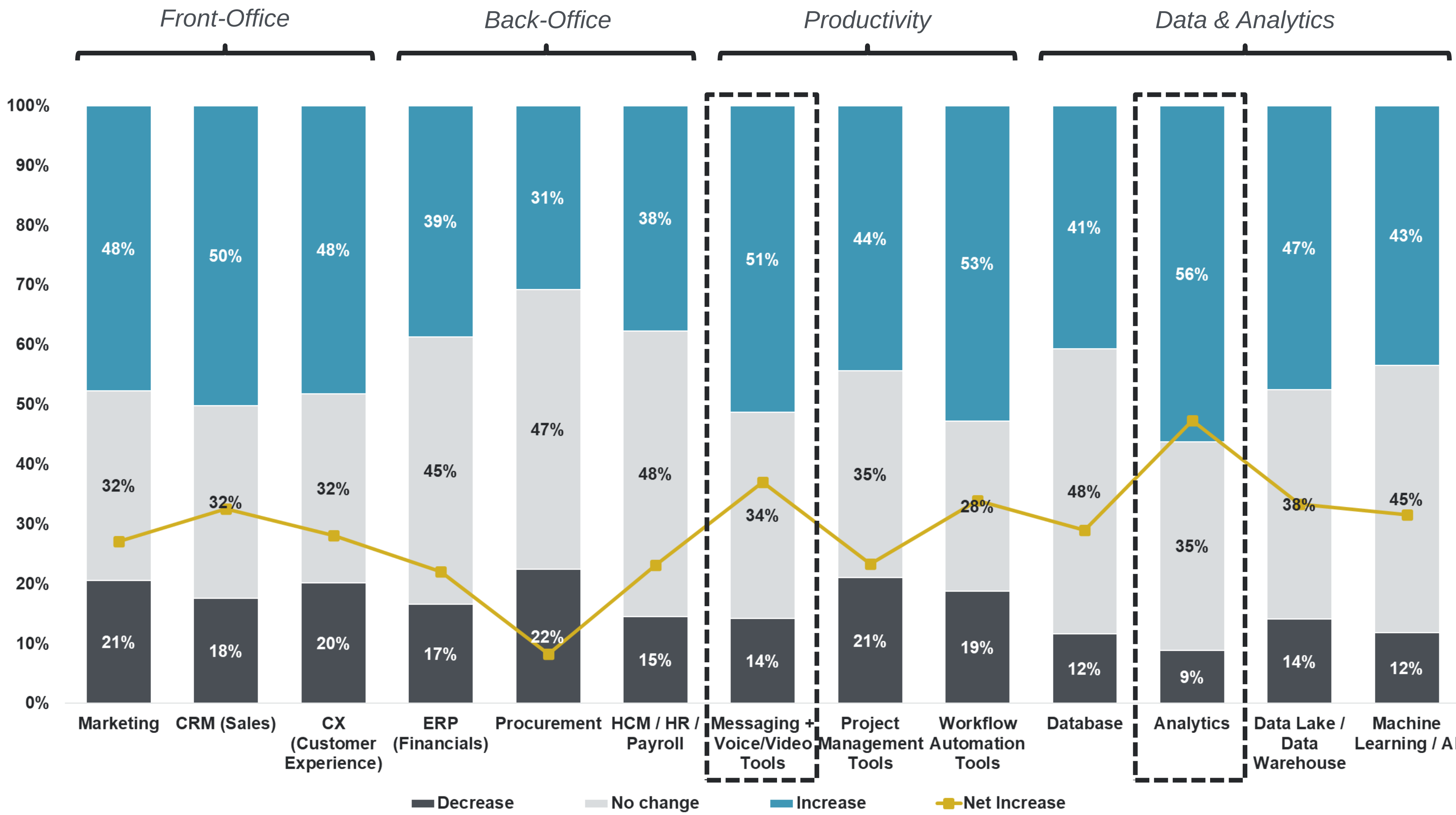
to decline in spending in 2023 because of budget cut or consolidation



Question: "What areas of enterprise software could spending change in 2023?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Analytics and Messaging + Voice/Video Poised to Benefit the Most

Intentions indicate Workflow Automation, Machine Learning / AI, and CRM applications will also see healthy growth in 2023, all with >30% net increase.



Question: "What areas of enterprise software could spending change in 2023?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Part 5

Infrastructure Software

James Fish

Conclusion

Priorities have shifted more towards basic "blocking and tackling" that supports more on-premise/private cloud environments rather than new transformational projects and developmental areas.

1 Focus More on "Keeping the Lights On" Rather than "Futuristic Goals"

Net/net Priority categories tend to focus on big-spend items and "need to haves" (Security, Switching, ITSM, Backup, Storage / HCI) rather than "nice to haves" (Containers, AppDev, Edge Compute)
Positive for ANET, NET, NOW, CVLT, NTNX

2 Automation & 5G Services Top 3-Yr Implementations

Net/net Over the next 3-years, CIOs are most focused on automating infrastructure across IT and workflows and how 5G services can impact their businesses. Serverless & Containers showed significant negative change.
Positive for HCP, JNPR, NTCT, VMW

3 Only Cloudflare Keeping Pace with "Big 4" in Cloud

Net/net Cloudflare Workers is anticipated to see a similar increase in spending intent as the "Big 4" IaaS providers, but "Tier-2" CSPs like DigitalOcean and Akamai-Linode are being used less and not growing as fast.
Positive for NET

4 Infrastructure Software Most Exposed to "Do More With Less"

Net/net An overwhelming take across sectors is the desire for CIOs to consolidate vendors as "vendor fatigue" sets in. This was most felt in Infrastructure Software, which means true platforms could see a material benefit.
Positive for NET, CSCO, VMW

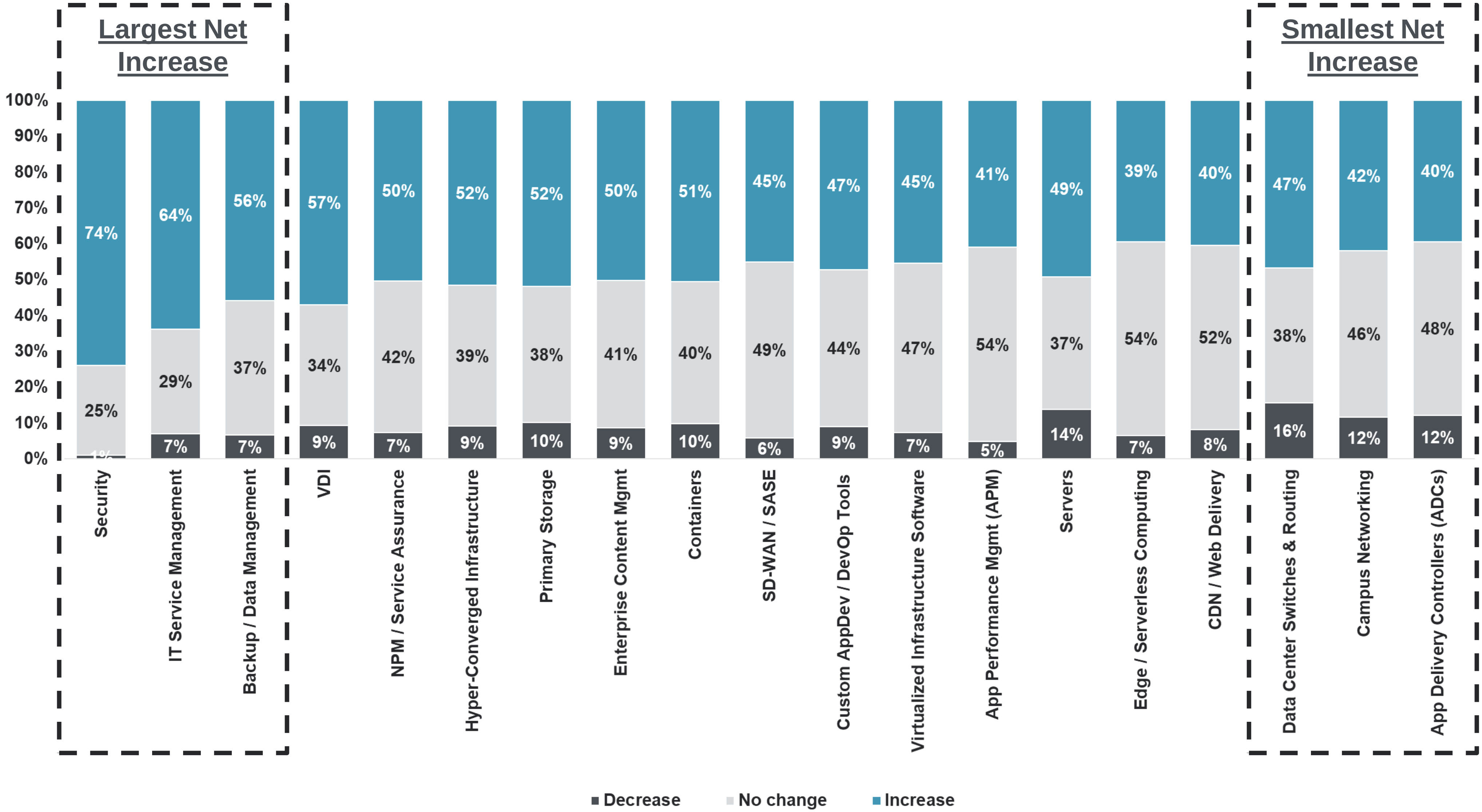
Positive Implications

Fish	NET – Neutral => Keeping pace with "Big 4" IaaS, a "true-platform" consolidation player, and Security/SASE beneficiary.
Owens	NOW – Overweight => ITSM remains a top 2 spending priority into '23, showing demand should remain resilient in a tough macro.
Fish	NTNX – Overweight => Storage and HCI both seeing improving trends, while competitive landscape remains attractive
Fish	ANET – Overweight => Switching a low-priority but seeing material Y/Y increases in intent; will most benefit from cloud migrations.

Source: Piper Sandler; Responses weighted by IT Budget Sizes

Infrastructure Software Specific Spending Intentions

Security, ITSM, & Data Management are top 2023 infrastructure priorities, while Networking solutions are the lowest priorities as on-premise is de-emphasized and orders have already been placed.



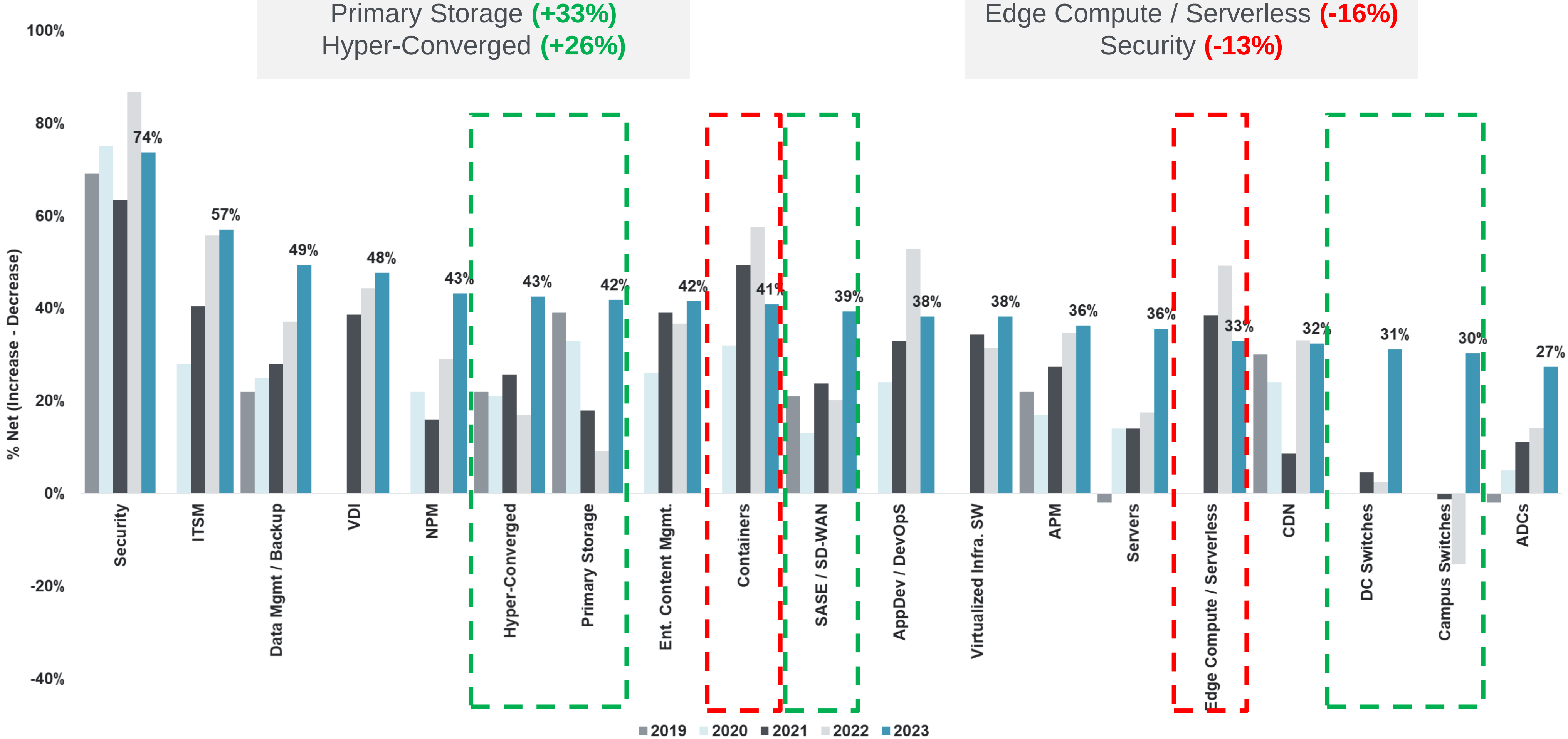
Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Infrastructure Spending Intentions

Notable intention improvements occurred with Switching, Primary Storage, & Hyper-Converged ("keep the lights on" categories), with declines in more "developmental" areas like Containers & Edge Compute.

Notable Increases
Switching **(+37%)**
Primary Storage **(+33%)**
Hyper-Converged **(+26%)**

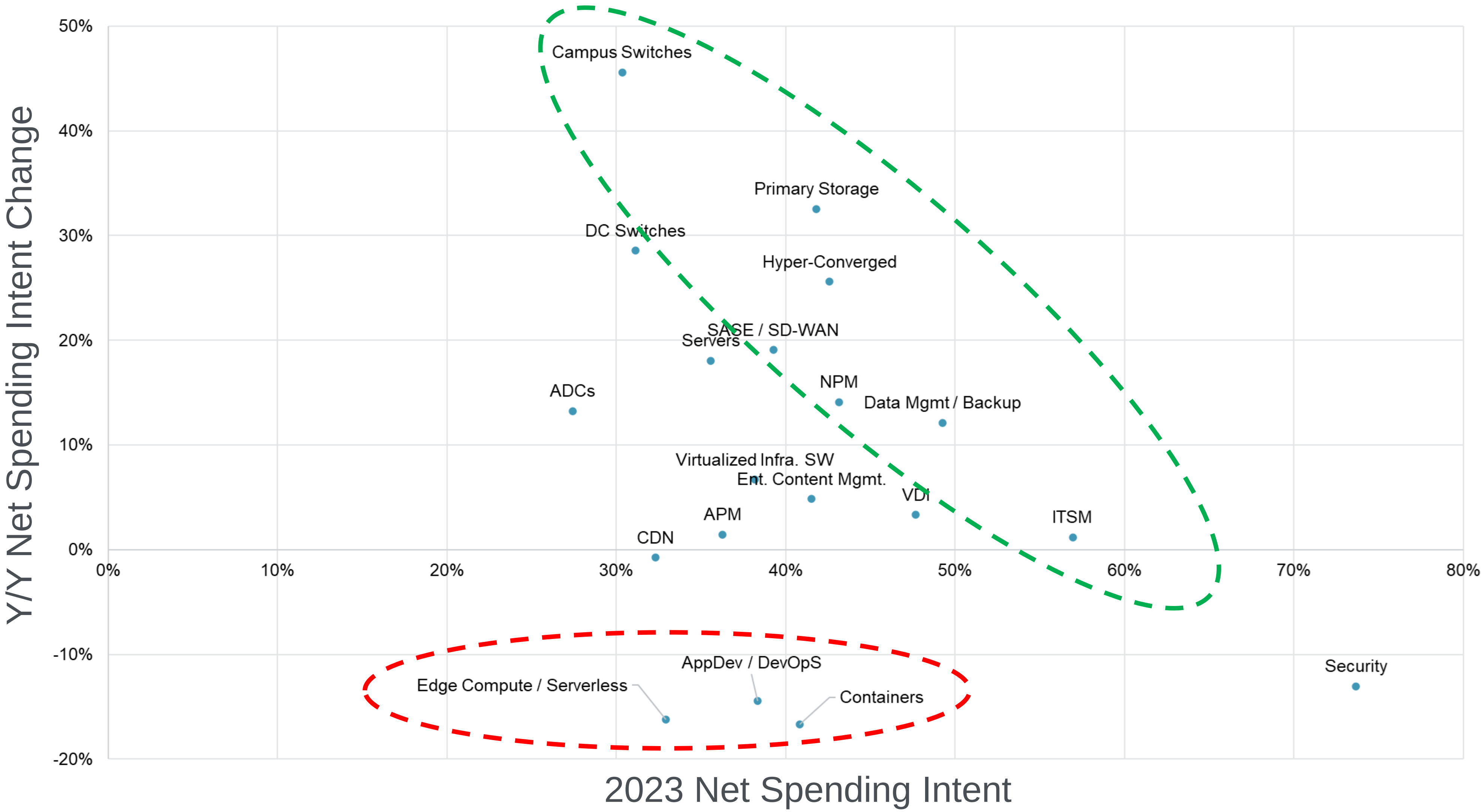
Notable Decreases
Containers **(-17%)**
Edge Compute / Serverless **(-16%)**
Security **(-13%)**



Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Infrastructure Spending Intentions

When comparing "Top Priorities" vs "Net-Spending Intent Increases", Switching, Storage/HCI, SASE, NPM, Data Mgmt. / Backup, & ITSM showed the best results.



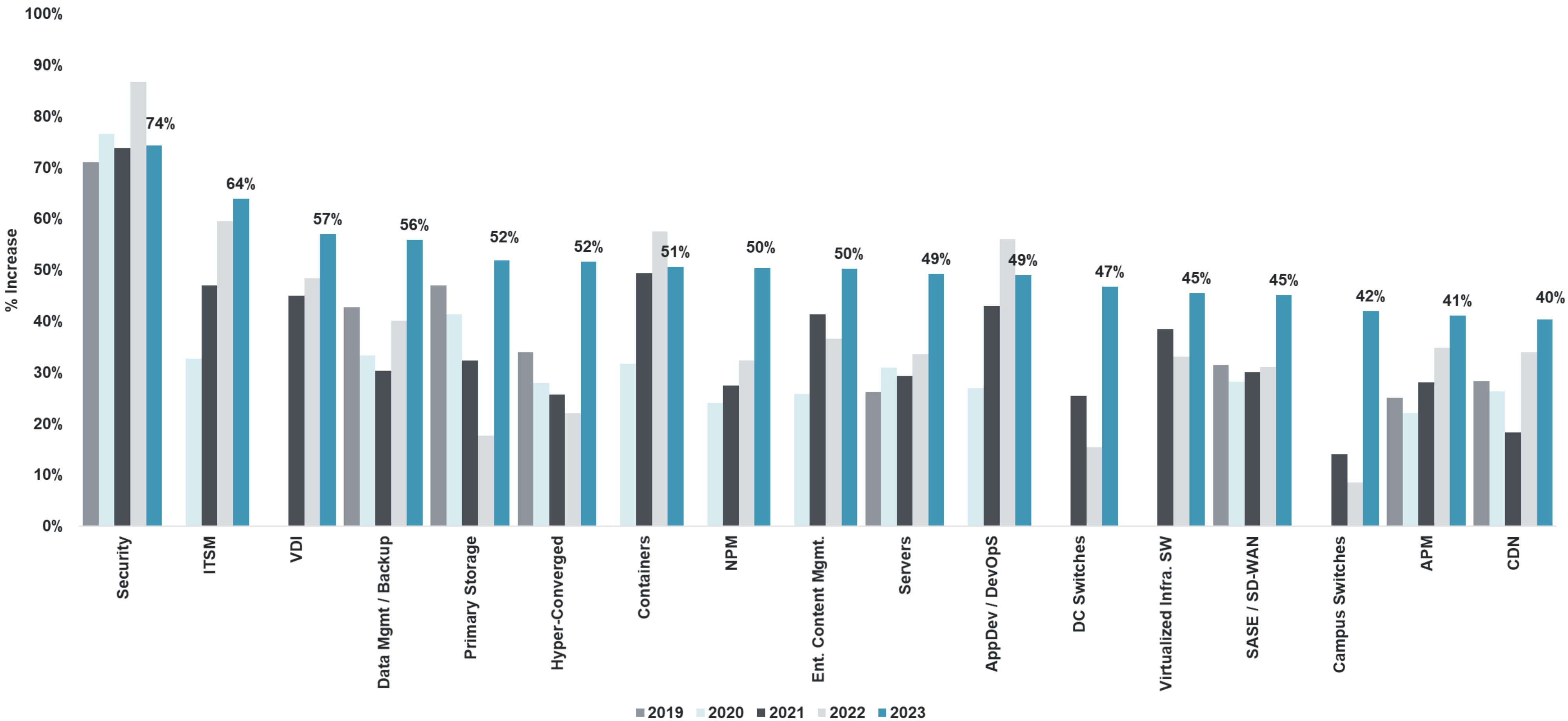
Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Could *Increase the Most* for Security and ITSM

Budget priority by infrastructure category exposed two categories with the most favorable spending bias.

Most favorable

on expected budget increases in 2023



Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Declines *Most at Risk* in Switching, Servers, & ADCs

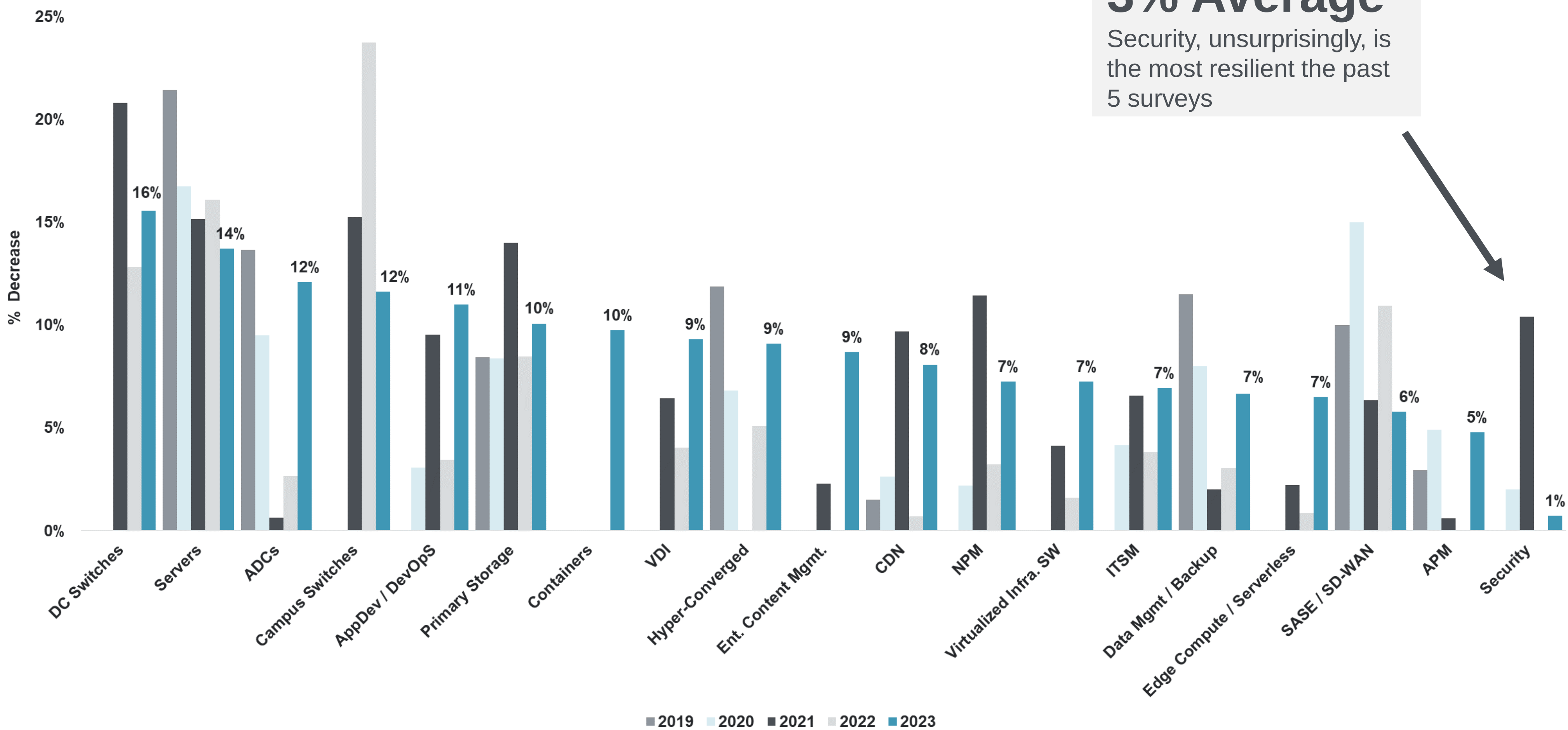
While Switching, Servers, & ADCs are seeing positive net Y/Y intentions, these categories are also the most at risk of budget cuts / consolidation impacts.

Most at risk

to decline in spending in 2023 because of budget cut or consolidation

3% Average

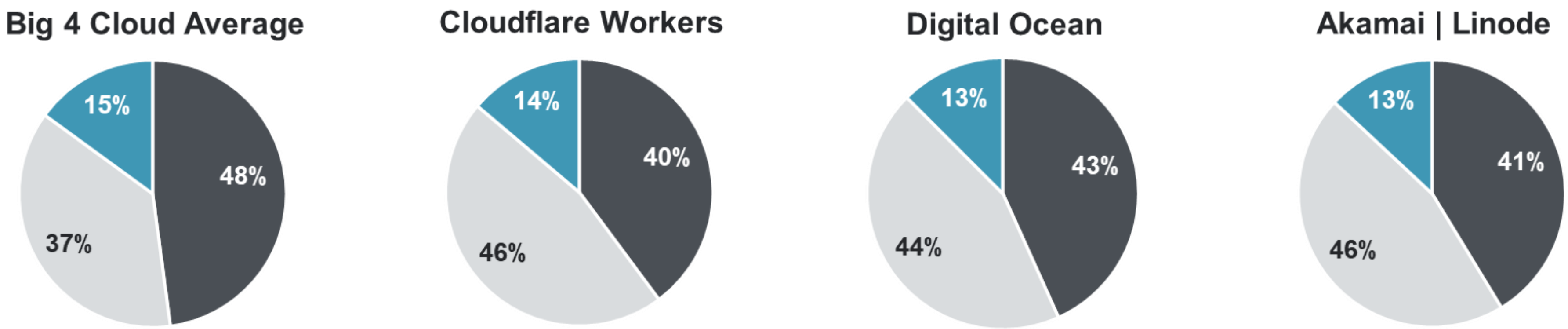
Security, unsurprisingly, is the most resilient the past 5 surveys



Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Cloud Infrastructure Spending

Workers seeing similar net spending as Big 4 cloud providers, while DigitalOcean & Akamai lag

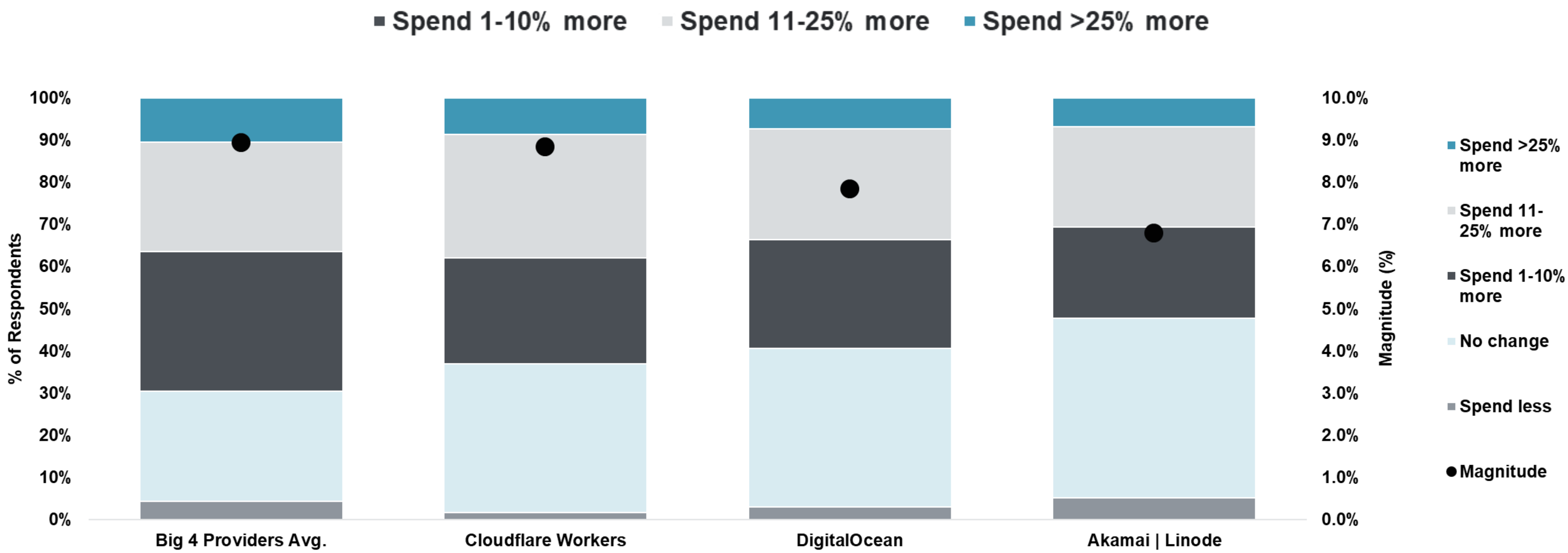


52%
Expect vendor budget to increase 11%+

60%
Expect vendor budget to increase 11%+

57%
Expect vendor budget to increase 11%+

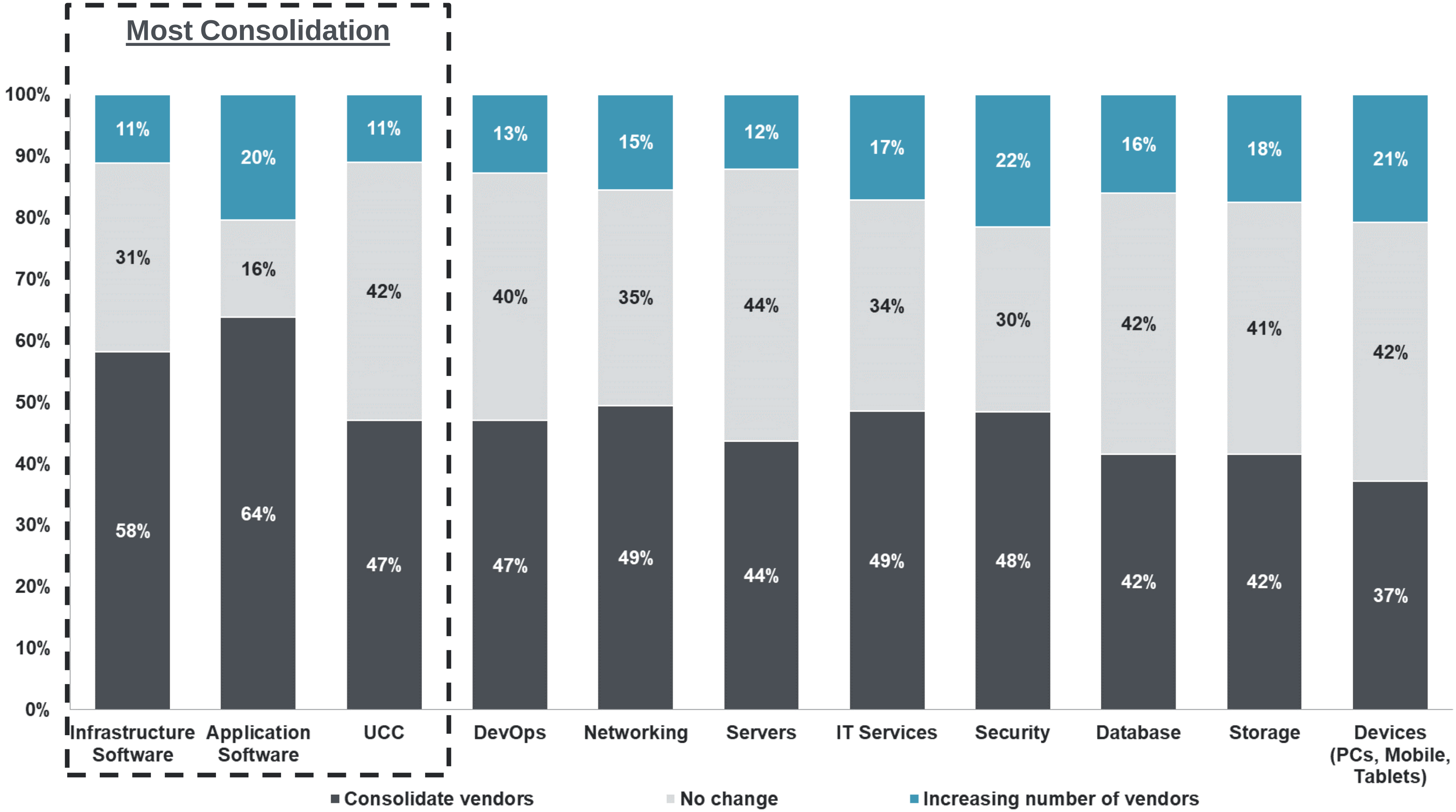
59%
Expect vendor budget to increase 11%+



Question: “How will your spending change on the following cloud vendors in 2023 vs. 2022?”
Source: Piper Sandler; “Big 4 Cloud” = AWS, Azure, GCP, OCI; Responses weighted by IT Budget Sizes

Vendor Consolidation *Most Likely* in Infrastructure, Apps, & Comms

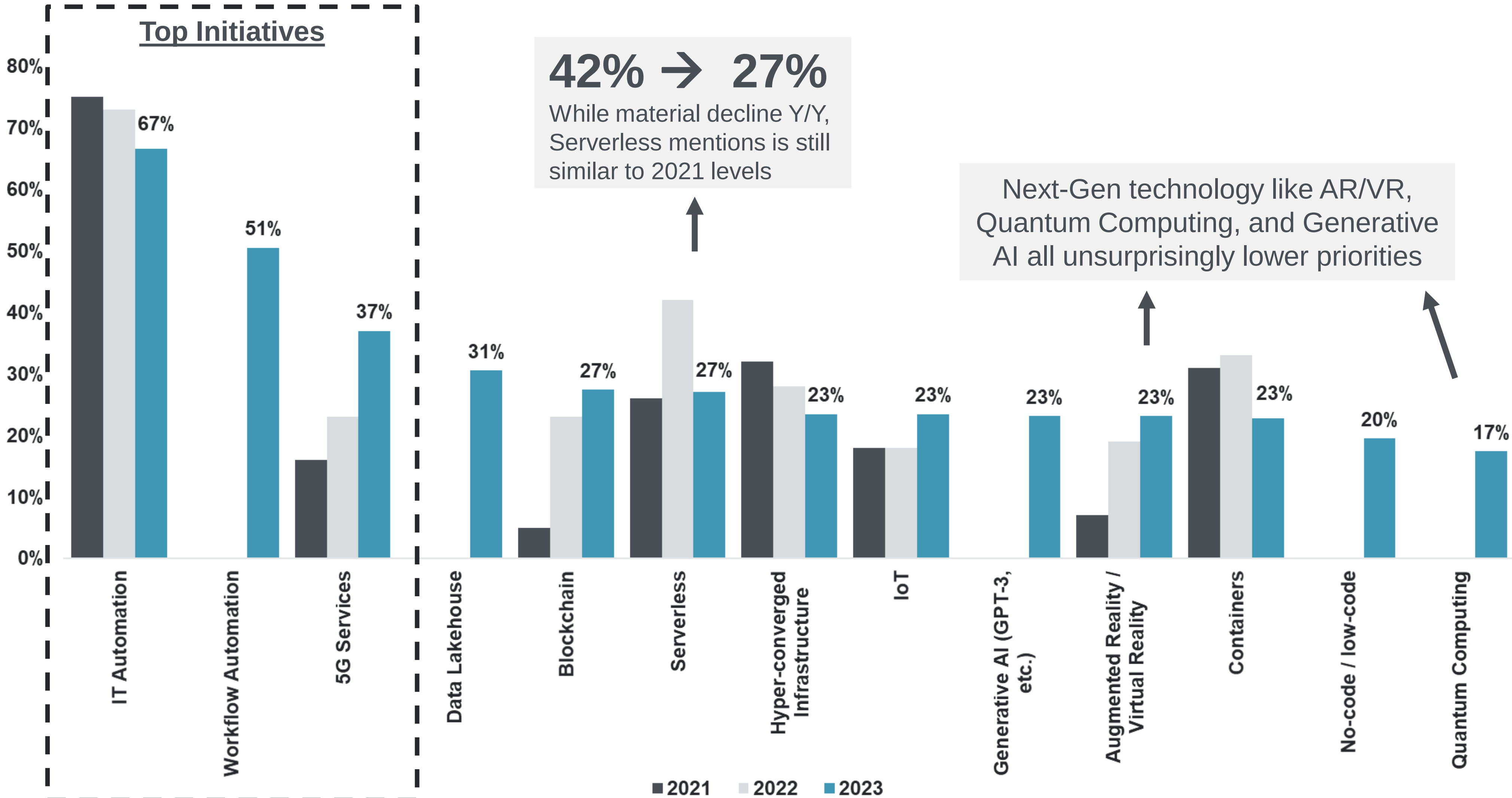
On a net-basis, Infrastructure Software (47%), Application Software (44%), and Unified Communications (36%) are the top-areas that organizations are looking to consolidate most.



Question: "How are you thinking about vendor consolidation across the following spending categories?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Infrastructure Technology Implementation in Next Three Years

CIOs continue to target IT Automation and Workflow Automation as top implementations for the next three years, with 5G, IoT, and AR/VR seeing notable Y/Y increases. Serverless & Containers saw notable declines.



Question: "Which of the following infrastructure technologies do you plan on implementing within the next 3 years?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Part 6

Communication Software / Unified Communications & Collaboration (UCC)

James Fish

Conclusion

Low-priority area that is seeing much improved spending intent vs. last year, with cloud migrations in voice and contact center picking-up in 2023, along with consolidation efforts.

1 Low Relative IT Priority, but Spending Intent Returns to Above Pre-Pandemic Levels

Net/net While the priority for the space is relatively low to the rest of the IT-stack (#2 lowest), spending intention returned to above pre-pandemic levels and well-above 2022 which we believe points to a better 2023 in the space. CCaaS net-intention showed the largest Y/Y spending intention changes within cloud categories, while on-premise did show an improvement but remains the lowest priority.
Positive for BAND, CSCO, FIVN, MS Teams, LVOX, RNG, TWLO, ZM

2 Cloud Migrations in CCaaS & UCaaS to Remain Strong in 2023

Net/net Pipelines remain most robust in cloud voice and contact center conversions relative to messaging / collaboration and video, with ~45% of organizations anticipate moving to UCaaS and ~54% plan to move to CCaaS over the next few years. By vertical, there was largely no difference.
Positive for NICE, FIVN, LVOX, TWLO, MS Teams, RNG, ZM, BAND

3 Consolidation Desired, but Is It Reality?

Net/net Communication Software was the #3 area that CIOs most want to consolidate, but given other surveys (see 2H22 "Making Contact With Contact Centers"), the reality is a consolidation more geared towards voice, video, and chat rather than contact center (where consolidation with WEM/WFO is more likely, in our view). While the desire to use best-of-breed rather than "good enough" is decreasing, we expect questions will arise to the reality of this given the EU's desire to unbundle offerings in the space.
Positive for MS Teams, ZM, CSCO

Positive Implications

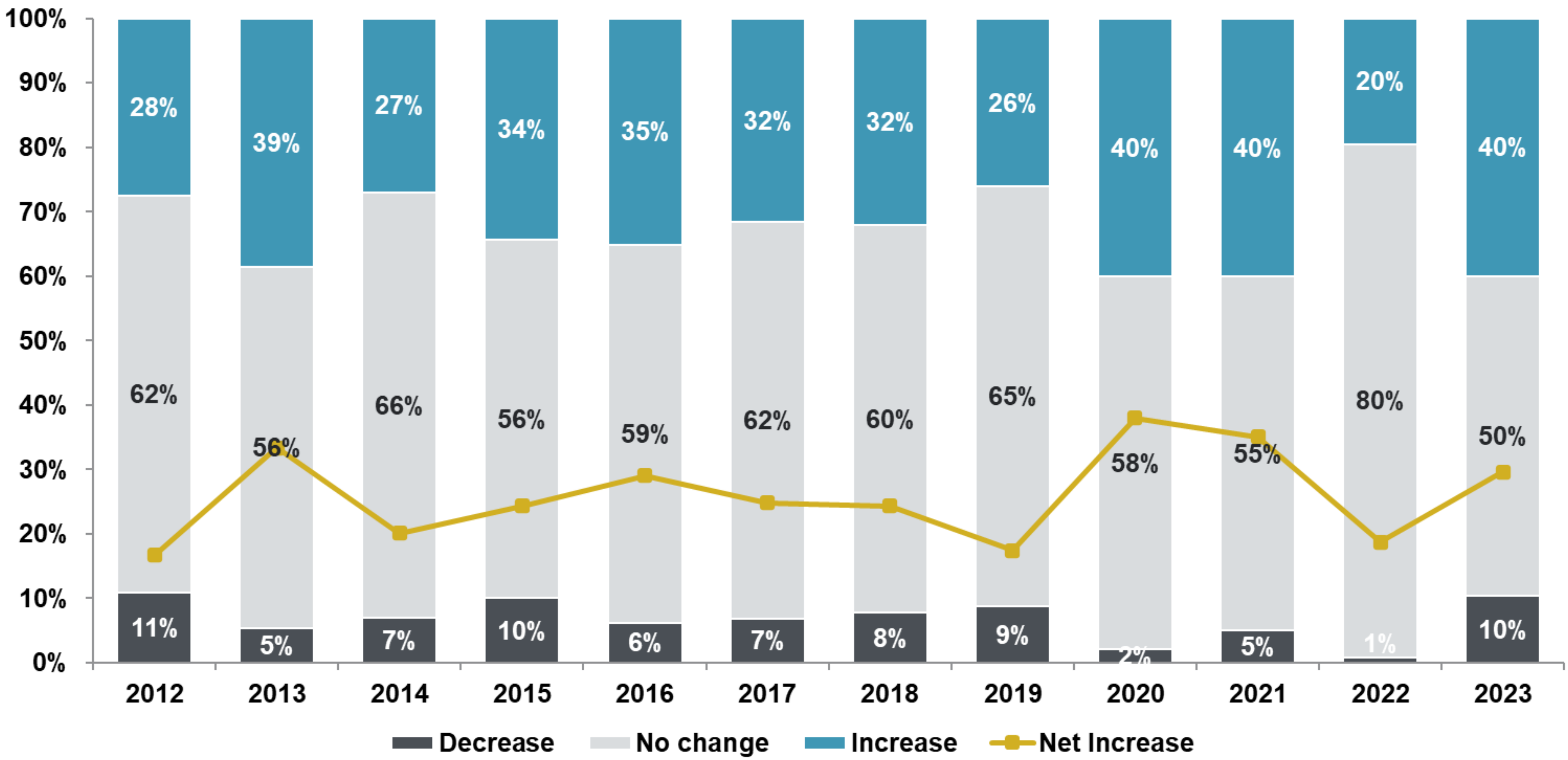
Fish	FIVN – Overweight => CCaaS pipelines remain strong with net intent most resilient across verticals; minor consolidation concern.
Fish	NICE – Neutral => Strong CCaaS pipelines and intent, with high-exposure to "Tier-1" verticals a specific positive.
Fish	ZM – Neutral => Consolidation desire is a positive as a 'platform' play, along with soon to be #2 spot in UCaaS seats.

Source: Piper Sandler; Responses weighted by IT Budget Sizes

Picking Up on the Latest "Cloud Talk" | UCC Intent Back Above Pre-Pandemic

+30% net-intention returned to above the pre-pandemic average (+24%) and well-above 2022 (+19%), during which vendors saw a material slowdown compared to the pandemic.

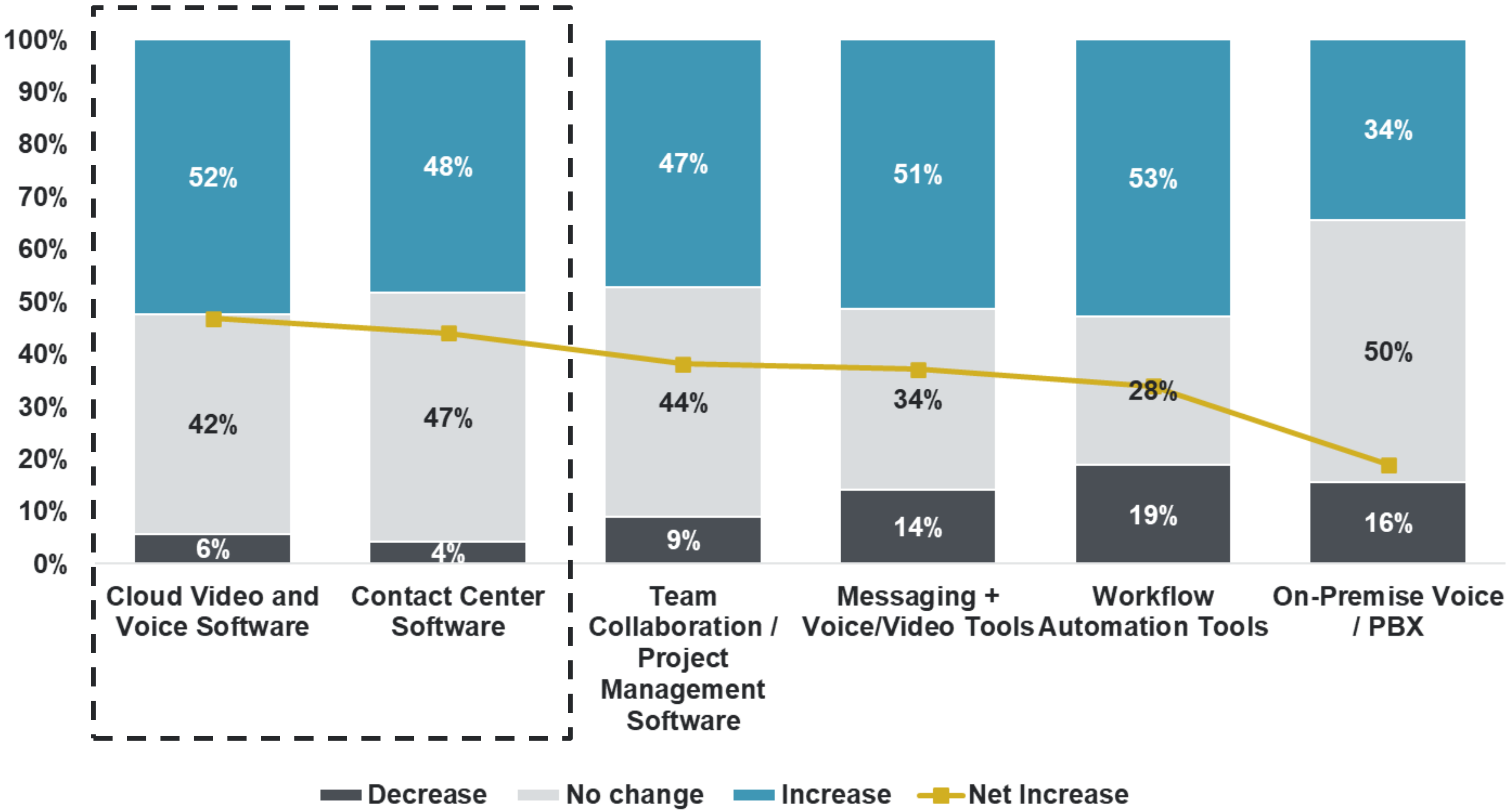
Unified Communications Spending Intent Over Time:



Question: "Please indicate whether you plan to increase or decrease spending in 2023 relative to what you spent in 2022."
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Cloud Video, Voice, & Contact Center the Top Priorities

Cloud Video, Voice, and Contact Center Software are the top-priorities in the space for 2023, with a clear shift away from on-premise voice. Surprisingly, Automation wasn't a higher priority.



Question: "Please indicate whether you plan to increase or decrease spending in 2023 relative to what you spent in 2022."
Source: Piper Sandler; Responses weighted by IT Budget Sizes

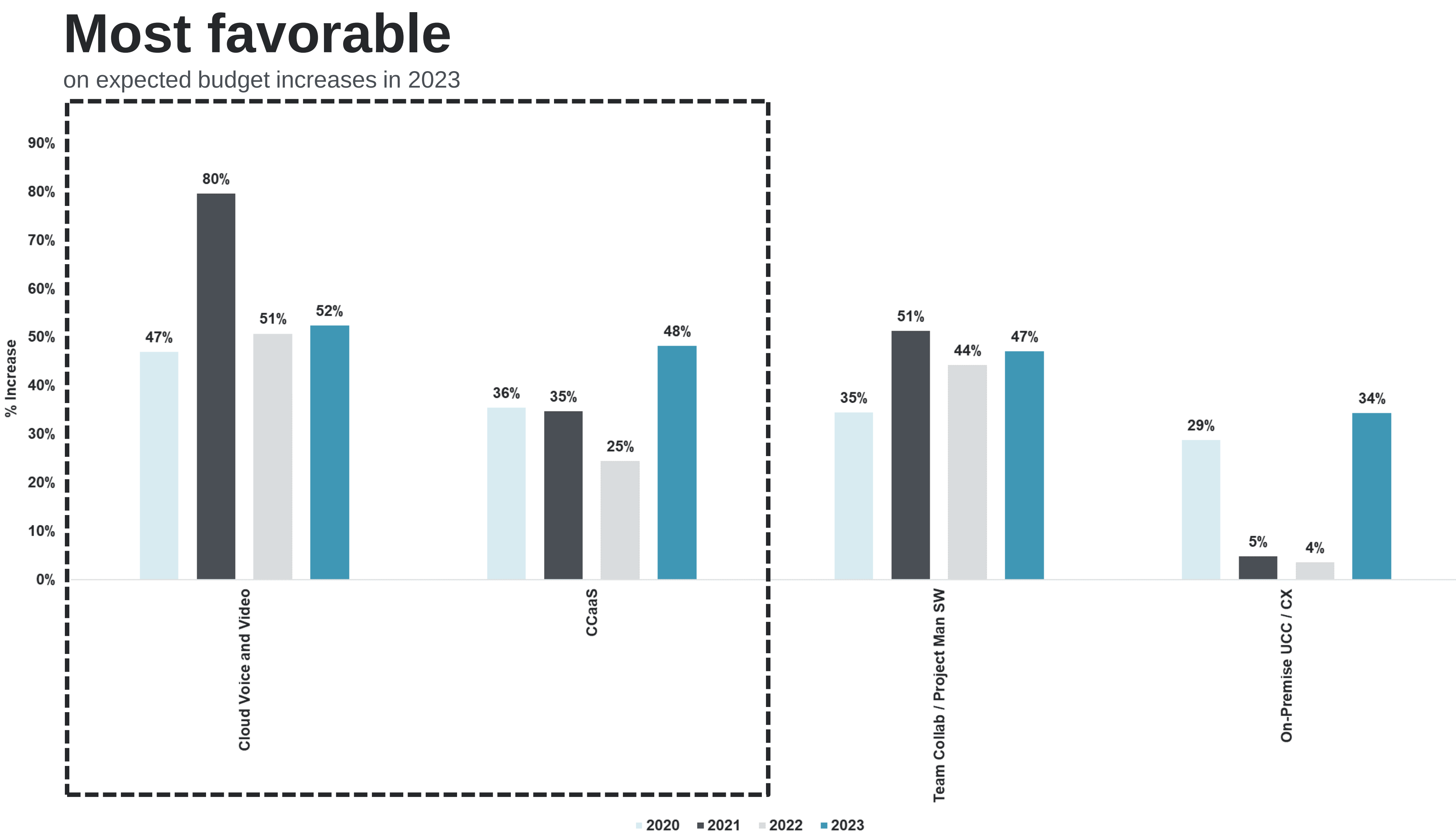
Communication Software Specific Spending Intentions

CCaaS showed material increase in net-spending intentions (+23% Y/Y), as well as, surprisingly, On-Premise Communication Systems (albeit, still the lowest priority).

Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Could *Increase the Most* for Cloud Voice & Video + CCaaS

Budget priority by communication category exposed Cloud as having the most favorable bias.



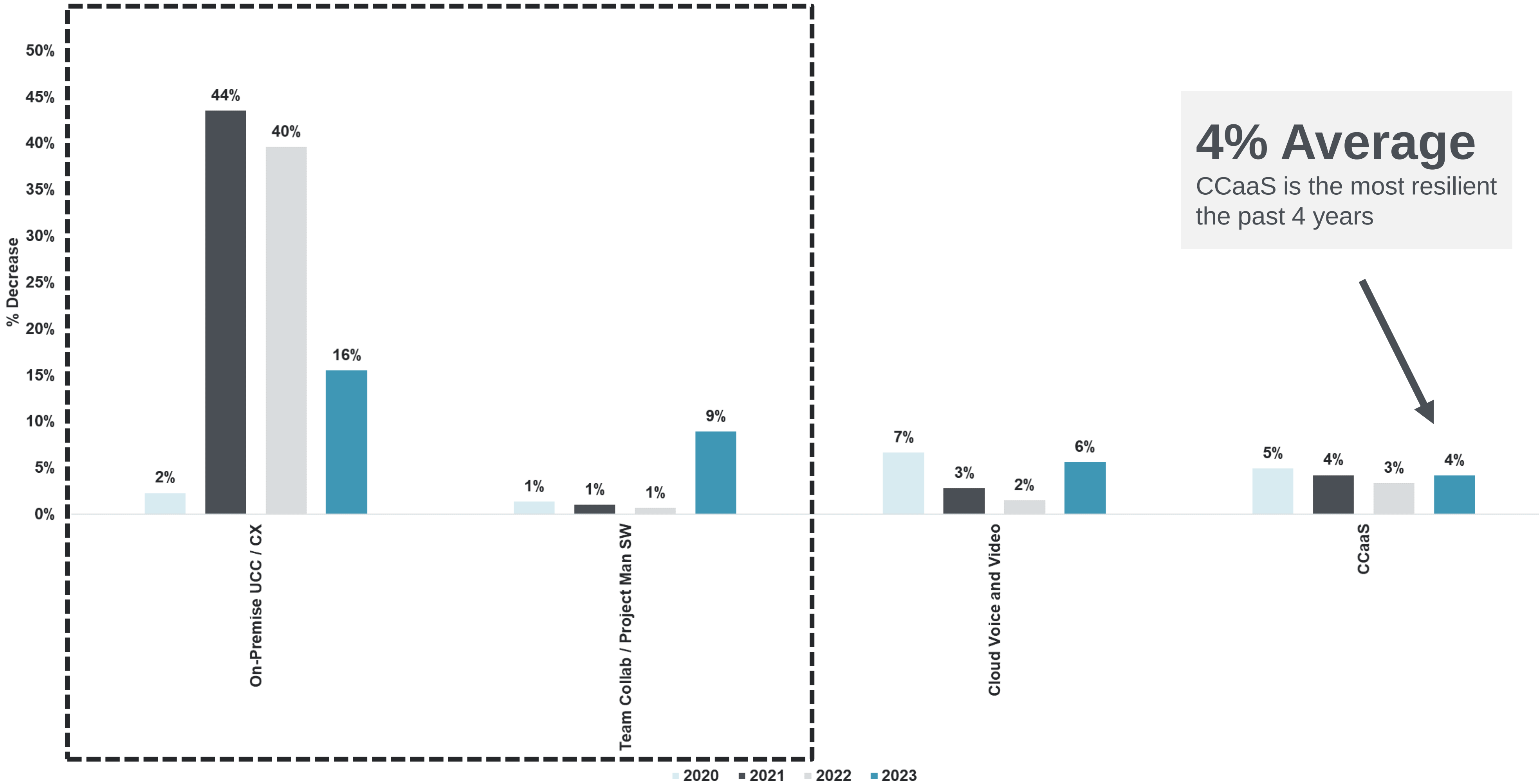
Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Spending Declines *Most at Risk* in On-Prem Software

Budget priority by communication category exposed On-Premise as the most at-risk.

Most at risk

to decline in spending in 2023 because of budget cut or consolidation



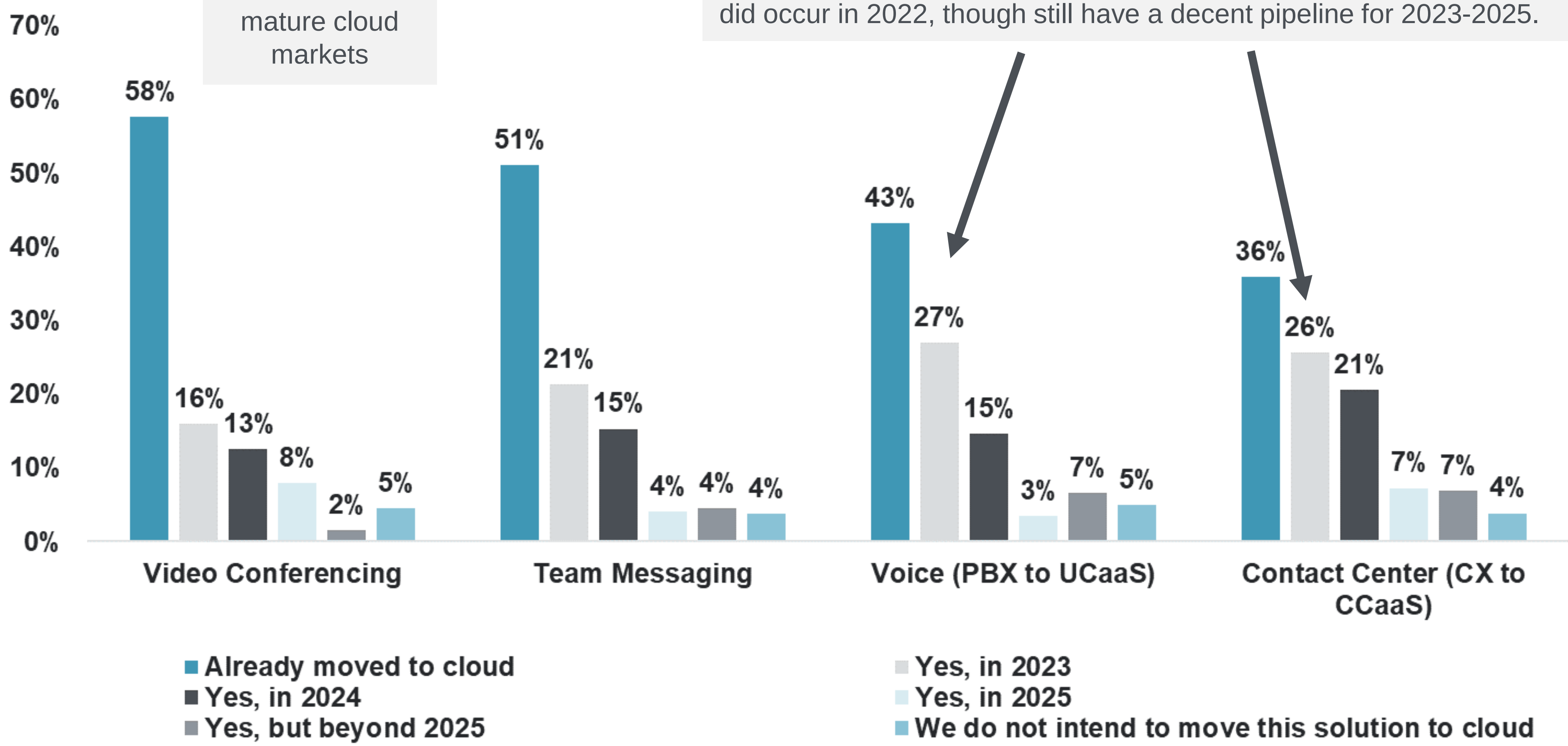
Question: "In each of the following IT areas, do you plan to increase, decrease, or leave spending unchanged in 2023 relative to what you spent in 2022?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

Cloud Communication Migrations Remain Strong for 2023-2025

Despite some pull forward of cloud demand, pipelines (specifically for CCaaS + Voice) appear promising. ~45% of organizations anticipate to move to the cloud in CCaaS & Voice over the next 3 years.

Video & Messaging remain more mature cloud markets

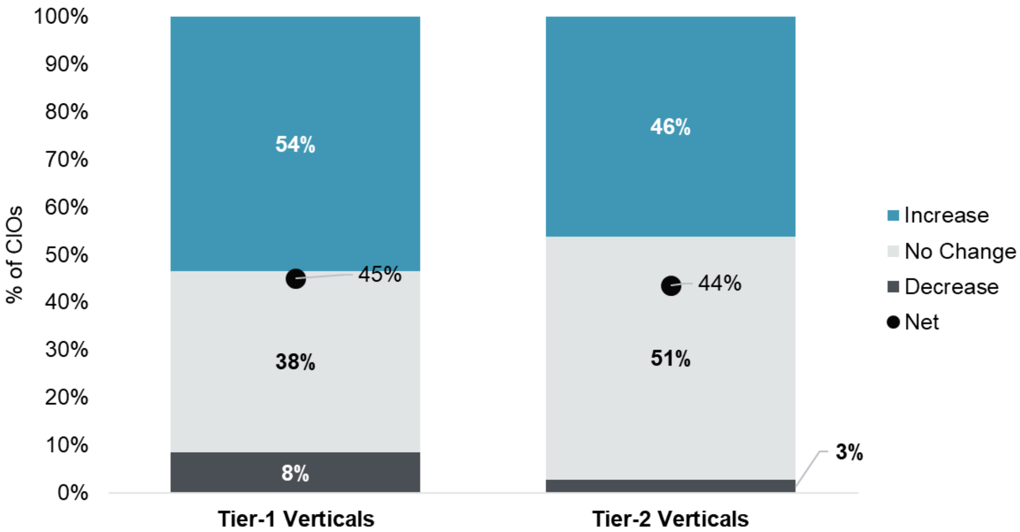
CCaaS continues to have the largest pipeline for 2023/2024, with 47% of CIOs indicating intent to migrate vs 36% already having migrated, suggesting there is further cloud penetration ahead. Voice migrations did occur in 2022, though still have a decent pipeline for 2023-2025.



Question: "In the next few years, do you intend to move from on-premise based solutions to cloud-based solutions across voice, video, contact center, or messaging?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

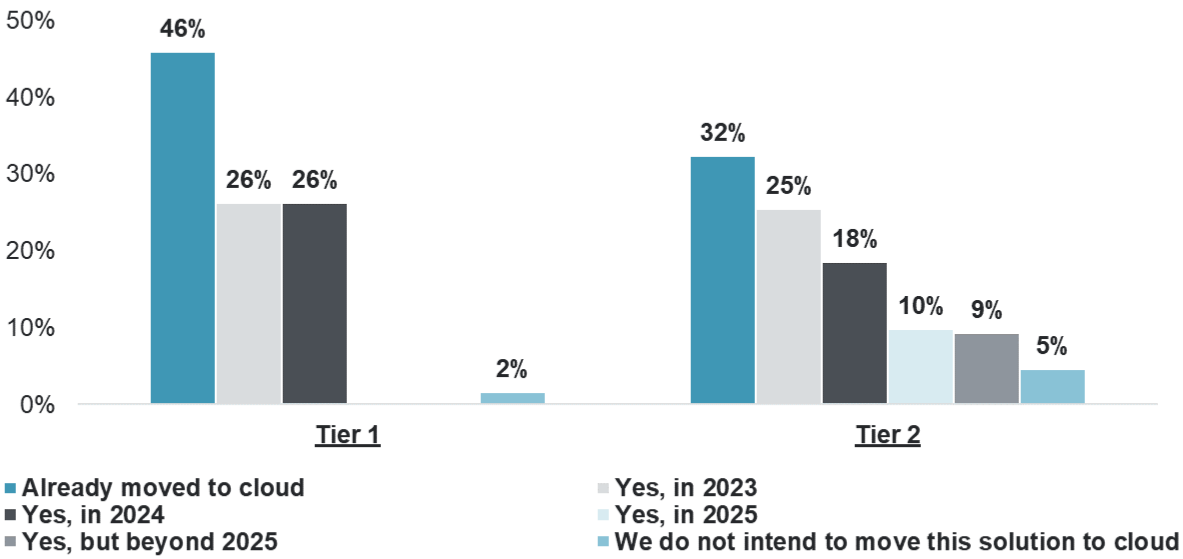
Special-Take: CCaaS Spending Intent Similar Across Verticals

Minimal vertical differences between CCaaS spending intent and 2023 conversion opportunity.



Tier-1: +45% Net
Tier-2: +44% Net

Relatively minimal difference between vertical spending intention



Tier-1 verticals have moved more to CCaaS than Tier-2 at this stage, leaving a longer-tail of potential conversion for those more focused on verticals consumer, ecommerce, energy, and industrial.

Source: Piper Sandler; Responses weighted by IT Budget Sizes; "Tier-1" = Financial/Insurance, Healthcare, & Media; "Tier-2" = Technology, Retail, Industrial, Business Services, Energy, Restaurants, Other

Part 7

IT Services & HCM Software

Arvind Ramnani

Conclusion

Participants in our survey indicated that IT Services budgets are likely to be pressured in a tougher macro. Cloud HCM vendors are likely to benefit from healthy HCM spend and churn from legacy vendors.

1. **20% of respondents expect IT Services to be most exposed in a recession. 49% are looking to consolidate vendors as a mechanism to save costs. In our view, larger players such as ACN, CTSH are likely to be more pressured relative to the digital players (EPAM, GLOB) given their scale and consulting exposure.**

   <u>Net/net</u>
   Negative for ACN

2. **IT Services themes for 2023: "prioritizing cost savings," "shorter term projects," "clear ROI," "project push-outs," "additional iterations of evaluation," "vendor consolidation."**

   <u>Net/net</u>
   Negative for ACN

3. **86% looking to increase/spend the same on HCM Apps given it's a non-discretionary spend. We expect cloud HCM (PCTY, PAYC, CDAY) to continue to benefit from stable/healthy spend and churn from legacy vendors (ADP, PAYX).**

   <u>Net/net</u>
   Positive for PCTY, PAYC, CDAY

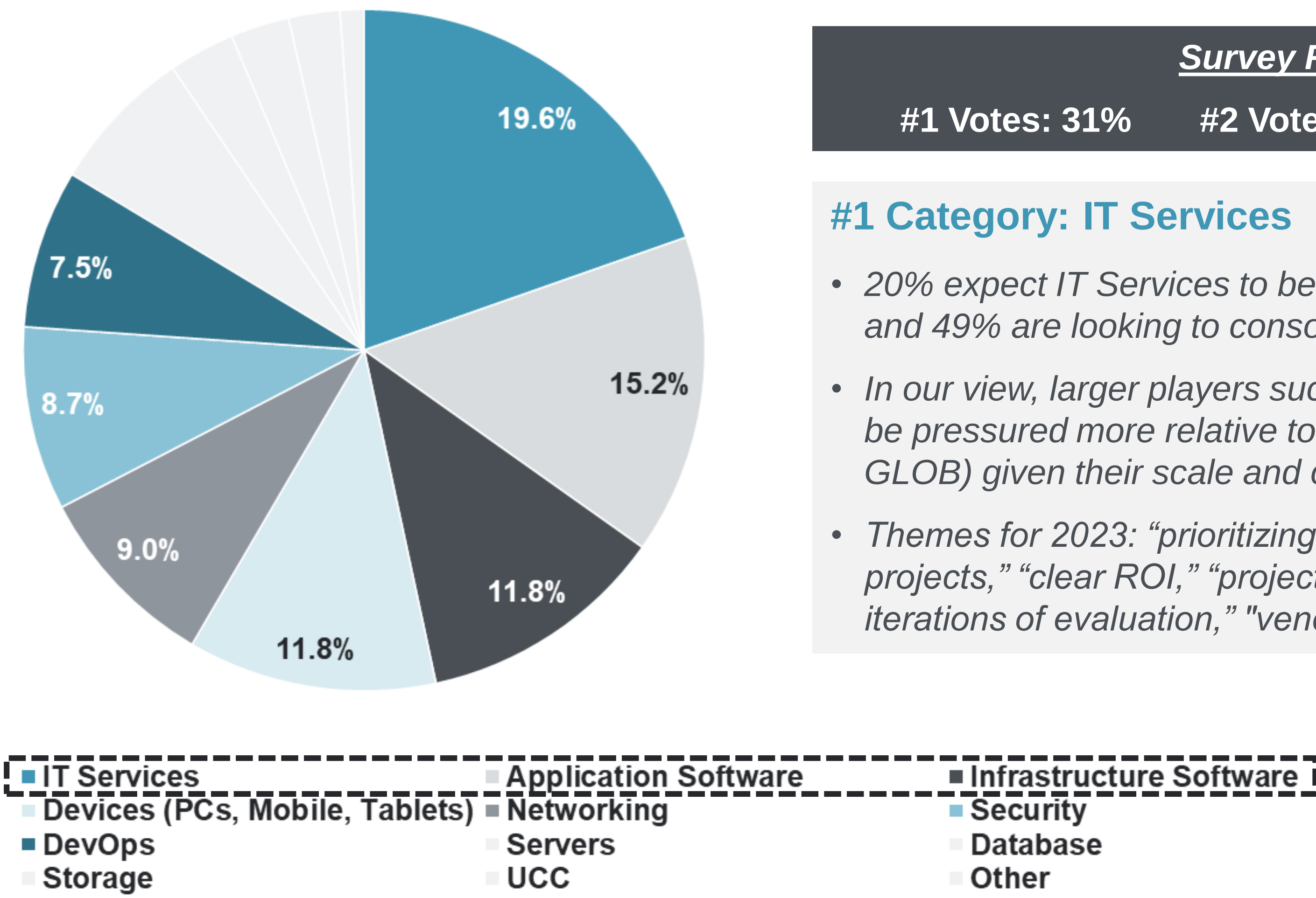
Stock Implications & Top Picks

EPAM – Overweight; $414 PT => Despite survey results, EPAM should be relatively well-positioned given its focus on digitization, which we believe will be resilient given the revenue growth and margin benefits to its clients. However, we note that geo diversification exposes it to operational risk.
ACN – Underweight; $245 PT =>The survey results support the rationale on our recent Accenture downgrade to UW: 2023 budgets may be impacted given decision making delays and project pushouts. Consulting exposure and large engagement sizes likely leave it vulnerable in a tough macro environment.
PCTY – Overweight; $276 PT => Continued transition to cloud HCM platforms from legacy, 100% USD denominated revenue and the mission-critical non-discretionary nature of the business position PCTY well for 2023, particularly given it is currently trading below its 5 yr avg on an NTM EV/S basis.

Source: Piper Sandler; Responses weighted by IT Budget Sizes

2023 IT Services Budgets Could Be Pressured

IT Services was ranked the #1 category most likely to be reduced by 31% of respondents, with application software a distant second at 12% of #1 votes.



Survey Results

#1 Votes: 31% **#2 Votes: 10%** **#3 Votes: 6%**

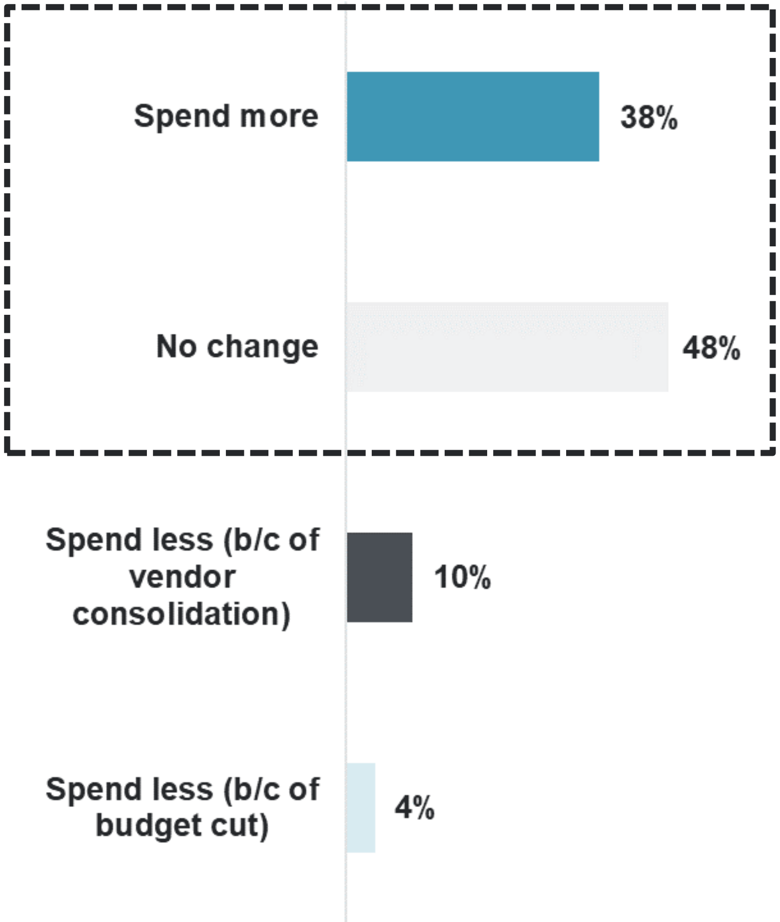
#1 Category: IT Services

- *20% expect IT Services to be most exposed in a recession, and 49% are looking to consolidate vendors.*
- *In our view, larger players such as ACN, CTSH are likely to be pressured more relative to the digital players (EPAM, GLOB) given their scale and consulting exposure.*
- *Themes for 2023: "prioritizing cost savings," "shorter term projects," "clear ROI," "project push-outs," "additional iterations of evaluation," "vendor consolidation."*

Question: "Which area of spending would you expect to be most negatively impacted by a recession / budget pressures?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes; Note: #1 votes weighted x3, and #2 votes weighted x2

2023 IT Budget Intentions Remain Healthy for Cloud HCM

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



86%

expect to spend more or no change, given HCM is a non-discretionary spend

69%

of respondents who indicated they would spend less are doing so because of vendor consolidation, with the remainder due to budget cuts

Question: "What areas of enterprise software could spending change in 2023?"
Source: Piper Sandler; Responses weighted by IT Budget Sizes

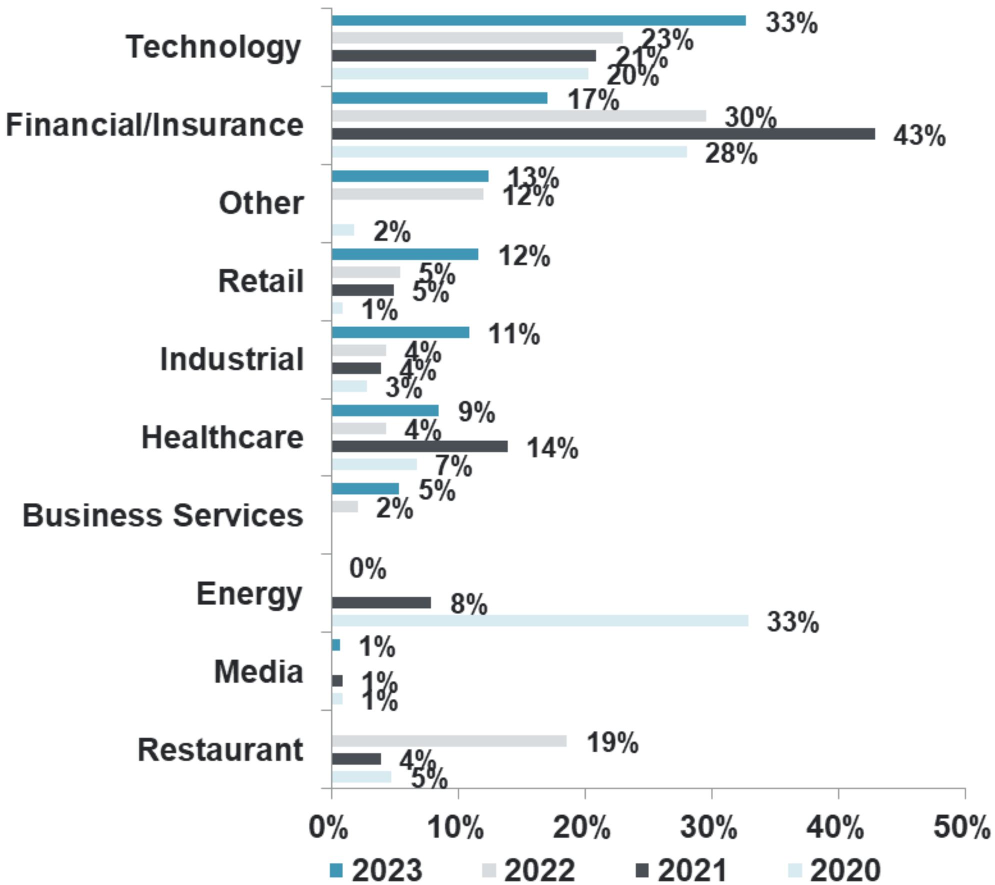
Part 7

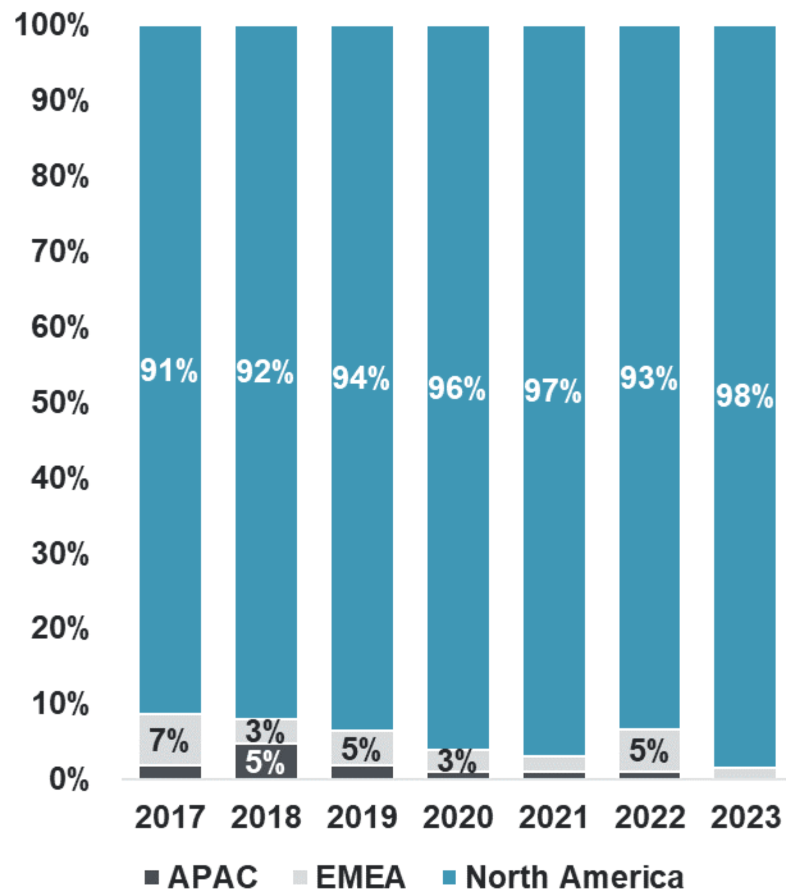
Survey Demographics

Verticals & Geography

The 2023 Piper Sandler CIO Survey included responses from 128 IT decision makers across 10 industries. The survey demographic was primarily North American, with 98% of the respondents reporting from this region as their primary business domicile with the remaining 2% coming from EMEA.

About half of the respondents were concentrated across two industry segments. Technology was the largest at 33%, while financial services was the second largest at 17%.



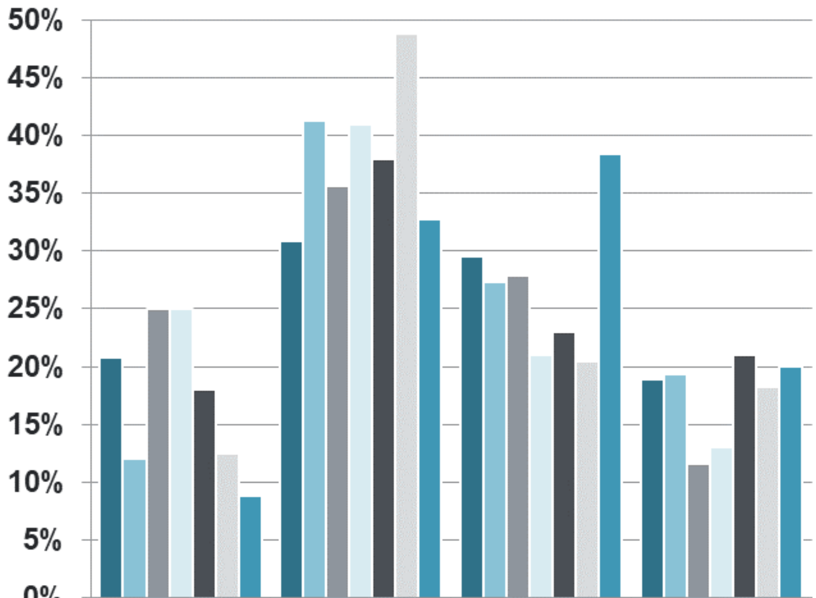


Source: Piper Sandler

Organizational Size & IT Budgets

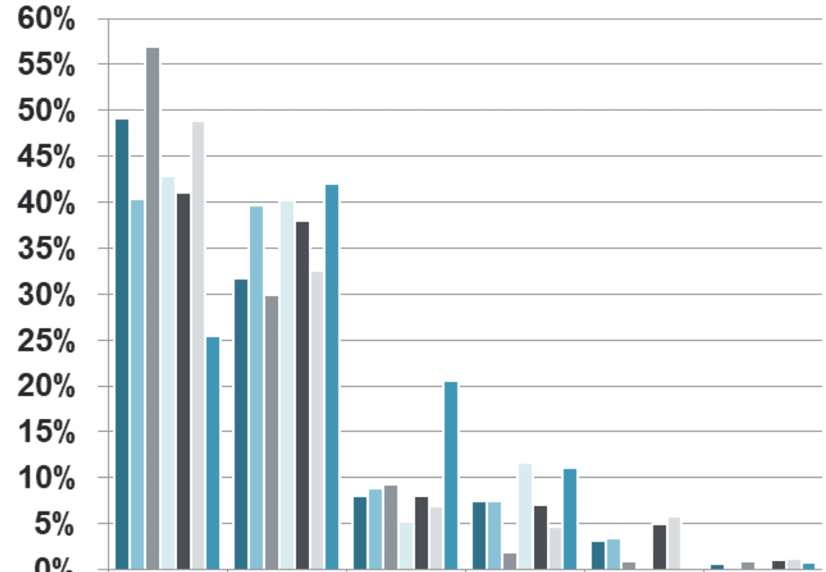
The average revenue size across our 2023 respondents was north of $1 billion.

Annual Revenue



	<$100M	$100 - $500M	$500M - $2B	>$2B
2017	21%	31%	30%	19%
2018	12%	41%	27%	19%
2019	25%	36%	28%	12%
2020	25%	41%	21%	13%
2021	18%	38%	23%	21%
2022	13%	49%	20%	18%
2023	9%	33%	38%	20%

IT Budgets



	<$10M	$10 - $50M	$50 - $100M	$100 - $250M	$250M - $1B	>$1B
2017	49%	32%	8%	7%	3%	1%
2018	40%	40%	9%	8%	3%	0%
2019	57%	30%	9%	2%	1%	1%
2020	43%	40%	5%	12%	0%	0%
2021	41%	38%	8%	7%	5%	1%
2022	49%	33%	7%	5%	6%	1%
2023	25%	42%	21%	11%	0%	1%

Source: Piper Sandler

Closing Prices as of December 16, 2022

Company	Ticker	Price
Apple	AAPL	$ 134.51
Accenture	ACN	$ 264.48
Amazon	AMZN	$ 87.86
Arista Networks	ANET	$ 123.66
Asana	ASAN	$ 14.00
Alteryx	AYX	$ 50.74
Bandwidth	BAND	$ 25.97
Braze	BRZE	$ 27.47
Ceridian	CDAY	$ 63.89
Salesforce.com	CRM	$ 128.27
CrowdStrike	CRWD	$ 111.50
Cisco	CSCO	$ 47.81
CommVault	CVLT	$ 63.23
EPAM	EPAM	$ 333.30
Five9	FIVN	$ 70.64
Freshworks	FRSH	$ 14.68
Alphabet	GOOGL	$ 90.26
HashiCorp	HCP	$ 29.02
HubSpot	HUBS	$ 295.48
Juniper Networks	JNPR	$ 31.78
LiveVox	LVOX	$ 2.86
Monday.com	MNDY	$ 122.64
Microsoft	MSFT	$ 244.69
Cloudflare	NET	$ 47.54
NICE	NICE	$ 198.91
ServiceNow	NOW	$ 394.37

Company	Ticker	Price
Nutanix	NTNX	$ 31.17
Okta	OKTA	$ 67.92
Oracle	ORCL	$ 79.58
Palo Alto	PANW	$ 151.00
Paycom	PAYC	$ 311.40
Paylocity	PCTY	$ 199.44
RingCentral	RNG	$ 39.40
Rapid7	RPD	$ 37.13
Snowflake	SNOW	$ 142.45
Tenable	TENB	$ 37.66
Twilio	TWLO	$ 47.92
VMware	VMW	$ 121.76
Qualtrics	XM	$ 10.39
Zoom Video	ZM	$ 69.86

Source: FactSet

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

			IB Serv./Past 12 Mos.	
Rating	**Count**	**Percent**	**Count**	**Percent**
BUY [OW]	**604**	**61.07**	**204**	**33.77**
HOLD [N]	**341**	**34.48**	**71**	**20.82**
SELL [UW]	**44**	**4.45**	**7**	**15.91**

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 analysts Rob D. Owens, Brent A. Bracelin, James E. Fish, Arvind Ramnani, Thomas Champion and Harsh V. Kumar, primarily responsible for the preparation of this research report, attest to the following:

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: 18 December 2022 21:30EST.

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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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