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US Tech | North America

4Q23 CIO Survey – AI Rises to the Top of the CIO's Priority List

The expectation for stronger IT spending growth in 2024 sustained in our Q4 CIO survey, and forward indicators see incremental improvement. Matching the investor fervor, CIOs have brought AI/ML to the top of the Priority List, with 68% indicating impacts to their current IT budgets.

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Key Takeaways

- Our 4Q23 CIO survey suggested overall IT spending growth accelerates from 2.6% in 2023 to 3.3% in 2024, but still below the 4.1% 10-year average (pre-Covid)
- AI/ML rose to the top of the CIO priority list for the first time, followed by Data Warehousing/Analytics and Security.
- Perhaps most surprisingly, post optimization the percentage of workloads running in the Public Cloud jumped from 29% in our 2Q23 survey to 36% in 4Q23.
- The percentage of workloads expected to run in the Public Cloud 3 years forward expanded from 46% to 53%.

YoY IT Budget Acceleration in 2024 Underpinned by Strength in Secular Trends (GenAI and Public Cloud). In our latest CIO Survey, fielded between October 23rd and December 11th, CIOs reaffirm expectations for accelerating IT budget growth in 2024: from 2.6% in 2023 to +3.3% in 2024 (+ 73 bps), Exhibit 1 . However, 4Q's readings for both '23 and '24 remain below the 10-year pre-Covid average of 4.1%. On a sector view, CIOs expect acceleration across all groups, with Software continuing to lead the pack as the fastest growing sector, at +25 bps YoY to +3.4% growth. Communications is expected to accelerate +41 bps YoY to +2.8% growth, followed by IT Services expected to accelerate +21 bps to +2.6% growth, and Hardware expected to accelerate +41 bps to +1.7% growth (Exhibit 2). Regionally, US expectations for IT spending growth continue to outpace that of their EU counterparts, both for 2023 (US -24 bps sequentially to +2.8% vs. EU -10 bps sequentially to +1.9%), and into 2024 (US +77 bps YoY to +3.6%, vs. EU + 62 bps YoY to +2.6%). The 1-yr up-to-down ratio, which measures the ratio of CIOs expecting to revise their budgets higher/lower, increased modestly to 0.8x (from 0.5x in 3Q), an improving forward indicator, but still remains biased to the downside, with more CIOs fearing downward revisions to their forward IT budgets (25%) than anticipating upward revisions (20%) in 2024. Longer term secular trends prove

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SOFTWARE	
North America	
Industry View	Attractive
COMMUNICATIONS SYSTEMS AND APPLICATIONS	
North America	
Industry View	In-Line
IT SERVICES	
North America	
Industry View	In-Line
IT HARDWARE	
North America	
Industry View	In-Line

constructive: the 3-year up-to-down ratio came in at 4.9x, as more CIOs (44%) expect IT spending to grow as a portion of revenue over the next 3 years than decline (9%). **Generative AI,** which we believe could be the most impactful innovation cycle in decades, continues to gain mind and wallet share with CIOs- 68% of CIOs indicate direct impacts to their investment priorities surrounding AI/ML technologies, an uptick from 66% in 3Q and 56% in 2Q. Relatedly, AI/ML emerges as CIO's top IT priority this quarter, increasing from #3 on the list in 3Q23. However, consistent with prior surveys, the majority of CIOs do not expect to have their first AI/LLM projects in production until 2H24 and beyond (50% of responses), to which we remind investors that patience around the realization of GenAI dollars will be needed to drive meaningful inflection in IT spending. Moreover, survey data highlights **acceleration in the public cloud transition**, as we come out of a period of heightened optimization, with CIOs now estimating 36% of application workloads reside in the cloud today, a significant uptick from the 29% reported in 2Q22 and the 27% in 4Q22, with the ~9 point jump surpassing the historical pace of ~2 points per year by a wide margin. **Net, 4Q23 survey data reinforces optimism for the IT spend landscape and the potential for GenAI to move the needle, but with growth expectations remaining below long-term averages, investors likely need to 1) focus more tightly on the top of the CIO priority list and 2) exhibit patience for enterprise technology cycles to play out around Gen AI** (see our latest report- AI Index: Mapping the $4 Trillion Enterprise Impact).

How the Segments are Positioned

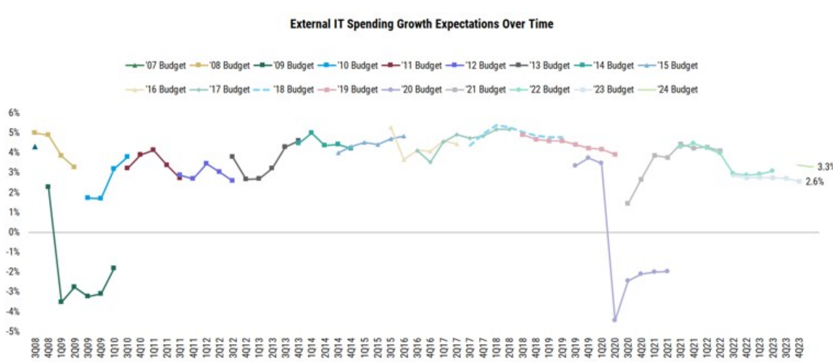
- **GenAI Excitement Heightens the Focus on Software.** As recently discussed in our 2024 outlook, the potential rewards from the large and transformative effects of GenAI on the software space (a vast software revenue opportunity, improvement of software margins as companies leverage technologies internally to become more efficient, and the opportunity to further bolster software's strategic importance across the broader economy), outweigh the risks of higher multiples and rising expectations priced into software stocks as we enter 2024 (Exhibit 29). **4Q23 CIO Survey data reinforces our constructive view on software**: as software spending growth expectations continue to lead the pack, +25 bps YoY to +3.4% growth, while software initiatives (AI/ML, DW/BI/Analytics, Security, Digital Transformation, Cloud Computing) dominate the top of the CIO priority list and defensibility rankings, demonstrating the durability of secular trends. While software budget growth expectations do remain below historical averages (below the +4.5% Pre-Covid average from 2010-2019), this reads inline with our view that timing remains the most important factor in aligning the realization of GenAI dollars with investor expectations. 4Q23 CIO Survey data makes us incrementally more positive on **MSFT**, as: 1) more CIOs express indications of utilizing Microsoft GenAI products over the next 12 months, 2) across a broad suite of software vendors, CIOs only expect forward year growth acceleration for Microsoft, and 3) Microsoft remains overwhelmingly best positioned to gain incremental share as workloads shift to the cloud. Aligned with our view of GenAI Precursors seeing incremental demand impacts first, Datawarehousing/Analytics rose to the number 2 position on the CIO Priority list (positive for **SNOW**), and Security rounds out the top 3. Perhaps most surprising in the 4Q23 survey, coming out of a period of heightened optimization activity in Public Cloud usage, CIOs report an acceleration in the migration of workloads to the Public Cloud – standing at 36% of workloads today, up from 29% in 2Q23 and 27% in 4Q22 – supporting our thesis this optimization activity largely acted to firm the foundation for future growth, rather than marking a shift away from Public Cloud (see our report, Cloud Optimization: Short Term Pain for Long Term Gains). Our deep dive into the Automation space shows Microsoft as a clear leader in standardization decisions, illustrating a more difficult playing field for best of breed vendors (**PATH**) and vendors looking to expand into a broader Automation platform (**NOW**).

- **Spend intentions marginally down for Communication Equipment/ Data Networking.** Results from our 4Q23 survey indicate a modest downtick in expected Communications Equipment/ Data Networking y/y growth of spend for 2024 (2.8% this survey vs. 2.9% prior survey and vs. 2.3% in 2023). This was largely in-line with other sub-sectors. We upgraded our sector to In-Line with our 2024 outlook, in part given depressed conditions within networking are already reflected in valuations (space meaningfully underperformed in 2023) and we are seeing signs of improvement in 2024 (though we tend to think 2H weighted). This is evidenced with networking seeing an uptick in the percentage of CIO's expecting networking equipment spend to see the largest increase in 2024, to 4% from 3.3% (8th greatest category). Security software continued to poll positively in 4Q23, which remains a positive for vendors like **CSCO / FFIV**. Results from the CIO survey upticked slightly for communications software, with it growing as a CIO priority (4.0% from 3.3%), metered by it still being a category likely to get cut under budget constraints. Contact center investment continues to grow as an area of investment given AI benefits (outlined more in our recent deep dive). This is a slight positive for **ZM/RNG/FIVN/NICE**.
- **2024 IT Hardware budgets see upward revision, supporting our view for a moderate enterprise IT Hardware recovery in 2024.** According to our 4Q23 CIO Survey, CIOs now expect 2024 hardware spend to grow 1.7% Y/Y, up from 1.5% Y/Y in our 3Q23 survey, marking the first upward revision to 2024 hardware budgets, following consecutive 6 cuts to 2022 and 2023 hardware budgets. Historically, this trend of upward budget revisions positively correlates to both 1) positive hardware net income revisions, and 2) hardware stock outperformance, with Hardware stocks - on average - outperforming the S&P 500 by 30-45 points in the 12 months after hardware budgets stabilize. As a result, the upward revision to 2024 hardware budgets should be viewed positively. That said, 1.7% Y/Y growth in 2024 still trails the robust growth rates from 2021-1H22 (2.3% average), suggesting this recovery should be viewed as more moderate than robust. And with Hardware stocks trading at ~16x P/E - 4x turns above where our group has traded historically at the point where CIO budgets stabilize/inflect higher, we choose to maintain our 'In-Line' industry view until 1) we see a more attractive valuation entry point, or 2) we see a more robust inflection in hardware spending expectations. At the project level, we'd highlight that PCs saw the second largest Q/Q uptick in CIO project defensibility out of all

hardware related projects (behind AI/ML), supporting our expectations for a commercial PC refresh cycle beginning in 2024. However, the mixed macro environment remains a key downside risk as well, as most CIOs still point to infrastructure-related projects as the least defensible IT projects. Overall, this survey gets us incrementally more constructive on hardware names in 2024, with **DELL**, **HPQ** and **TDC** our most preferred Enterprise Hardware Overweights.

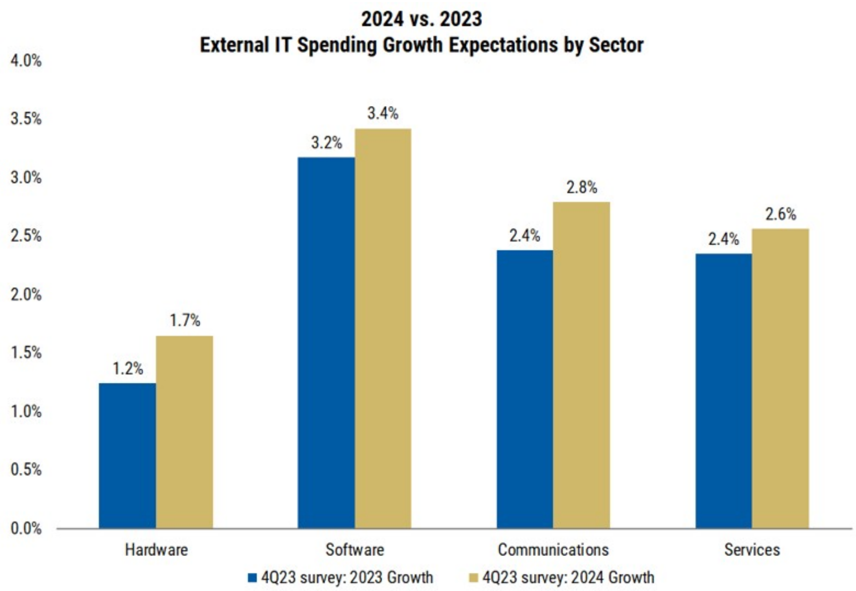
- **2024 IT Services spending intentions marginally up.** 2024 IT Services growth expectations remained constant at +2.6% y/y growth relative to our 3Q23 CIO survey, reflecting a slight uptick from +2.4% y/y growth in 2023. Despite growth trending slightly upward, macroeconomic uncertainty continues to weigh on CIO spending intentions as 12% of CIO's surveyed intend to overspend on IT Services vs. 15% that plan to underspend, helping drive a record low over-to-under ratio of 0.8x. Overall moderation in spending intentions corroborates commentary from IT Services providers around closely balancing supply and demand dynamics as competition for talent normalizes in response to a softer demand environment. This dynamic likely leads to greater discounting amongst vendors as **CTSH (EW)** and **DXC (EW)** ranked first and fourth in willingness to discount, respectively. Despite Consulting screening as the least defensible area of spend in a downturn, we continue to see that balanced by CIO priorities across cloud computing, security, and software upgrades, which likely benefits **ACN (OW)**. We continue to view **ACN (OW)** as among the greatest beneficiaries of the current environment given its ability to balance supply and demand in the current environment as well as its breadth across managed services and transformation-oriented consulting. Given sustained demand for highly-skilled talent, we also see **DAVA (OW)** as a beneficiary within IT Services given engineering strength aligned with CIO priorities around transformation.

Exhibit 1: CIOs Expect IT Budget Growth of +3.3% in 2024, Stable Against 3Q23 Reading but Below the 10-Year Pre-Covid Average of +4.1% from 2010-2019



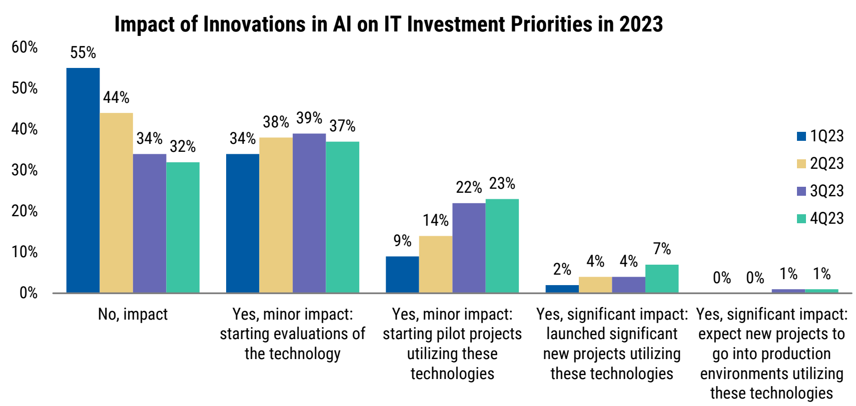
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 2: CIOs Continue to Expect Software to Remain the Fastest Growing Industry Group in 2024



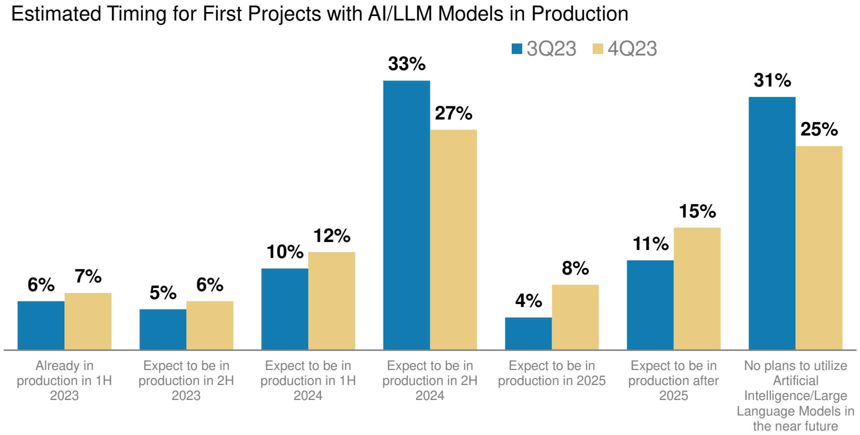
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 3: Generative AI Remains Top Of Mind With 68% Reporting an Impact to 2023 Investment Priorities...



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 4: ... But Majority of CIOs (50%) Expect Initial Projects to Be in Production in 2H24 and Beyond



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Macro – Key Takeaways

We surveyed 71 US and 29 European CIOs regarding their external IT budgets and the current spending environment. Key macro takeaways from our 4Q23 survey include:

- **2023 overall IT budget growth expectations were largely stable, moderating ~16 bps sequentially to +2.6% growth in 4Q23, below the +4.1% 10-year average before Covid.** Regionally, expectations among CIOs decreased sequentially both in the US (down ~24 bps) and in the EU (down ~10 bps).
- **CIO expectations for 2024 IT budgets remained largely stable sequentially, at +3.3% growth, vs 3.4% as indicated in our initial reading in 3Q23, with levels remaining below the 10-year average of 4.1%.** Regionally, US CIOs continue to expect higher growth in IT budgets at +3.6%, compared to their EU counterparts (+2.6%). The 2024 up-to-down ratio ticks up modestly again, to 0.8x (below the 8-year average of 1.3x), with 20% of CIOs expecting to revise their IT budgets higher, vs. 25% anticipating a downward revision. On a three-year view, the metric remains more constructive at 4.9x, indicating the majority of CIOs still expect IT spending to grow as a percentage of revenue over the medium term.

- **CIOs continue to expect Software to remain the fastest growing technology industry in 2023 at +3.2% growth**, followed by Communications (+2.4%), Services (+2.4%) and Hardware (+1.2%). **Expectations for 2024 indicate that Software spend is expected to continue to lead the pack** at +3.4% growth, +5 bps vs 3Q23 reading. Expected growth for Communications decelerated 9 bps from 3Q23 to +2.8%, followed by services at +2.6% (flat vs 3Q23), and Hardware at +1.7% (+14 bps vs 3Q23 read).
- **The majority of CIOs indicate seeing no change to vendors' willingness to discount.** 47% of CIOs indicate seeing no change in levels of discounting (an uptick vs 40% in 3Q23). Of the remaining, 27% of CIO responses pointed towards seeing more aggressive discounting, vs 26% seeing less discounting.
- **Artificial Intelligence/Machine Learning (13.3% of responses), DW/BI/Analytics (8.3% of responses), Security Software (8.0% of responses), Digital Transformation (8.0% of responses), and Cloud Computing (7.3% of responses) sit atop the CIO priority list in 4Q23.** AI/ML emerges as top priority this quarter, emblematic of the growing importance CIOs are placing on deploying these innovative technologies across enterprises.
- **Security Software (net score of +18%) remains the most defensive IT project in 4Q23, followed by AI/ML/Process Automation (net score of 10%), and ERP Applications (net score of +6.0%).** If the economy were to worsen significantly, Consulting (net score -9%), Data Center Build Out (net score -6%), and HR Software (net score -5%) represent the projects most likely to be cut (largely consistent with our previous survey results).
- **As workloads shift to the cloud, Microsoft and Amazon remain the clear beneficiaries.** Similar to previous surveys, **Microsoft** and **Amazon** remain best positioned to gain incremental share of IT budgets, with **Google** and **Palo Alto Networks** screening positively as potential share gainers over the next 3 years. Conversely, **Dell, Oracle, and Cisco** have the highest risk of losing incremental

share of IT budgets in 2024, while **Oracle, IBM,** and **Dell** screen as the largest share losers over the next three years.

- **CIOs expect the % of application workloads stored on-premise to decrease by the end of 2026, the % of application workloads residing in co-location/ managed hosting to remain consistent through 2026, and the % of application workloads stored in the public cloud to increase by the end of 2026.** Specifically, CIOs expect the % of application workloads residing on-premise to decline from 54% today to 38% by the end of 2026, the % of application workloads stored in co-location/managed hosting to remain stable around 9% through 2026, and the % of application workloads stored in the public cloud to increase from 36% today to 53% by the end of 2026.
- **Microsoft Azure remains CIOs' preferred public cloud vendor (and is expected to remain so over the next 3 years), followed by Amazon AWS and Google GCP**. CIOs indicate that 48% of application workloads reside in **Microsoft Azure** today, with expectations to increase to 50% of workloads in 3 years. In contrast, CIOs indicate that 27% of application workloads reside in **Amazon AWS** today, with expectations of 25% in 3 years. **Google GCP** lags far behind its peers, with CIOs indicating just 6% of workloads reside in GCP today, although with expectations to increase to 8% in 3 years.
- **Artificial Intelligence is continuing to cement itself as a clear priority for CIOs**. Not only did AI rank atop the priority list in 4Q23, but the % of CIOs that expect no impact to their IT investment priorities within the year from recent innovations around AI, LLMs, and other innovative technologies has continued to downtick since this question was introduced to our CIO survey in 1Q23, with the 4Q23 reading coming in at 32% (vs 34% in 3Q23). **On timing, most CIOs (27% of responses, vs 33% in 3Q23) expect their first AI/LLM projects to be in production in 2H24, and 23% of CIOs expect projects to be in production in/ after 2025 (vs 15% in 3Q23).** We note that 13% of CIOs have either already begun producing projects in 1H23 or expect to be in production in 2H23 (uptick from 11% in 3Q23), while 12% of CIOs expect projects to be in production in 1H24 (uptick from 10% in 3Q23).

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Primary Research

See what others don't.

1. Expected growth in 2023 IT budget was 2.6%, in line with the last survey. Further, the 2024 IT budget growth is expected to be 3.3%, which is also consistent with the previous survey.

2. The 2024 IT budget revisions up-to-down ratio has risen to 0.8x, up from 0.5x in the last. For outlook over the next three years, 44% CIOs expect IT spending to increase as % of revenue (vs. 38% in 3Q23) while 9% anticipate it to fall (vs. 6% in 3Q23), resulting in a lower LT spending up-to-down ratio this quarter (4.9x vs. 6.3x in 3Q23).

3. Top prioritized projects are: 1) Artificial Intelligence / Machine Learning, 2) DW/BI/Analytics, 3) Security Software, 4) Digital Transformation, 5) Cloud Computing are the most prioritized projects.

Methodology.

Between October and December 2023, AlphaWise conducted telephone and online interviews with CIOs discussing broad IT spending trends and domain specific strategies. The survey consists of 1) Macro CIOs Survey amongst 100 respondents (71 US / 29 EU); 2) Software Domain Survey with 60 respondents (38 US / 22 EU); 3) IT Services Domain Survey with 60 respondents (43 US / 17 EU) represent enterprise customer adoption and purchasing behaviors for Q4 2023.

Team behind the analysts.

AlphaWise Primary Research gathers alternative data and generates unique insights via an innovative analytical and visualization platform.

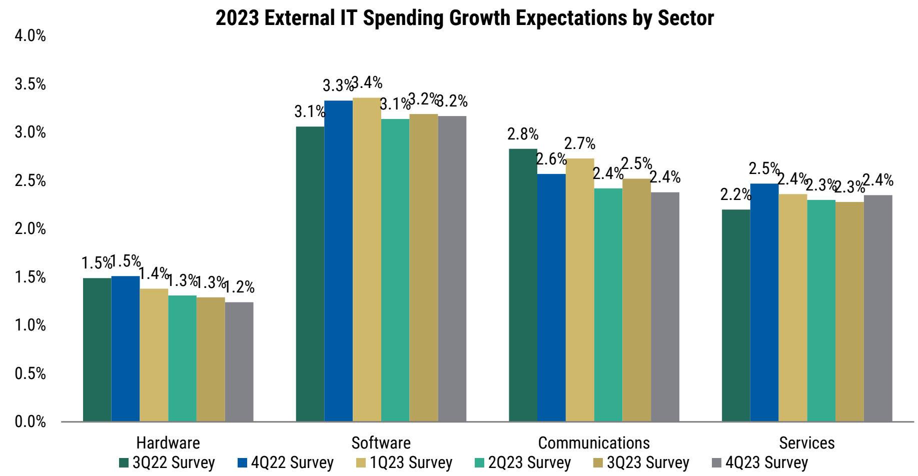
Survey Vendor Change:

Historical October 2015 data reflects a different survey vendor, representing a higher mix of small businesses, and a change in business verticals represented. This may affect historical comparisons.

Both 2024 and 2023 IT Budget Growth Expectations Read Stable Sequentially Compared to Our Previous (3Q23) Survey

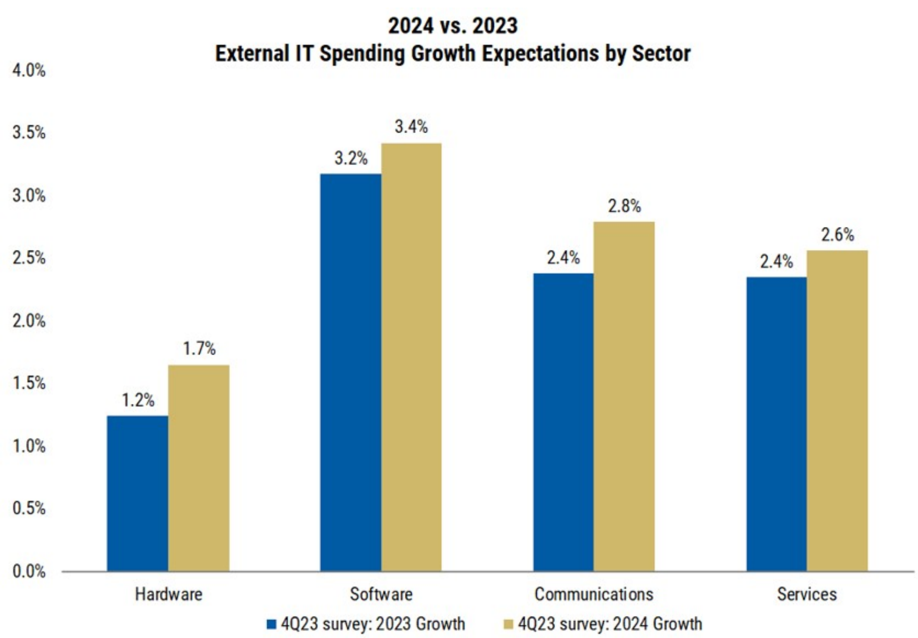
By what percentages did your External IT Spending change for each of the following technology areas in 2023 vs. 2022? What was your percentage (%) growth for the External IT Spending portion of your IT Budget for the full year 2023 vs. 2022? What is your estimated spending for 2024 vs. 2023?

Exhibit 5: CIOs' IT Budget Expectations for 2023 Have Held Relatively Consistent Over the Last 12 Months



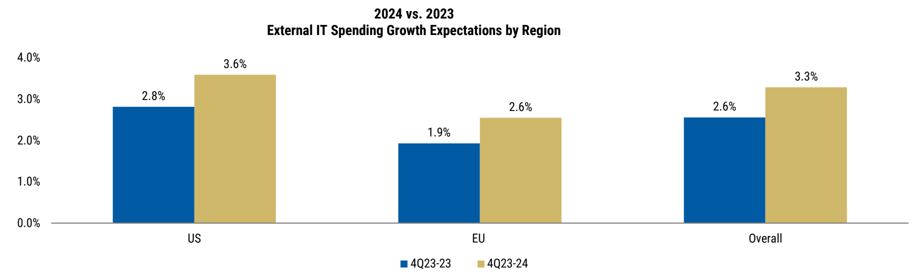
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data

Exhibit 6: CIOs Expect 2024 IT Budget Spending to Accelerate Across Sectors; Software Continues to Lead the Pack in Terms of Growth Expectations



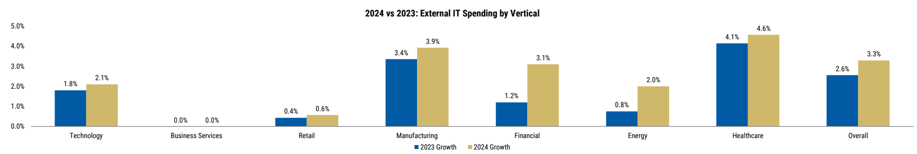
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 7: EU CIOs Expect Slower Growth in '24 (+2.6%) Compared to their US Counterparts (+3.6%)



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 8: CIOs in the Healthcare, Manufacturing, and Financial Industries Expect the Highest IT Budget Growth in '24



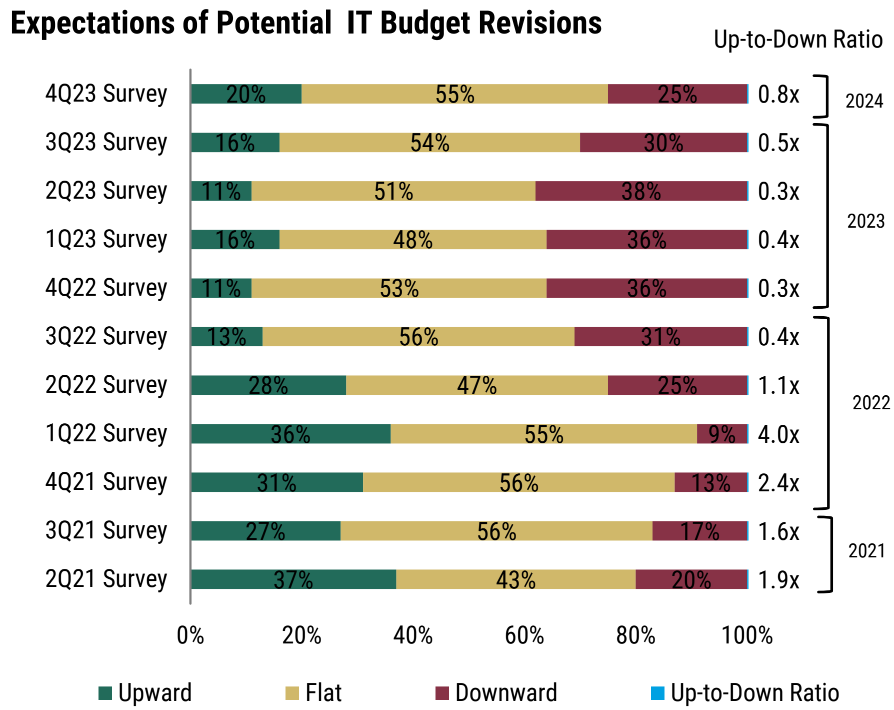
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

- **4Q's reading of 2023 IT budget growth expectations came in at +2.6%, holding in stable vs 3Q23's read (+2.7%),** but remains below the pre-covid average of 4.1%. Across sector readings, growth expectations came in relatively stable as well: Software spend is expected to grow +3.2% YoY, flat QoQ. Communications spend is expected to grow +2.4% YoY, -14 bps QoQ, followed by IT Services spend expected to grow +2.4%, +7 bps QoQ, and Hardware spend, +1.2%, flat QoQ, Exhibit 5 .
- **Overall IT Spend is expected to accelerate +73 bps YoY, to +3.3% (vs 2.6% in 2023). Our second look at 2024 IT Budget growth expectations is largely stable against our first read from 3Q23 (+3.4%).** While CIOs do continue to expect acceleration into 2024 YoY, budget growth remains below pre-covid averages (4.1% from 2010-2019 and 4.7% from 2017-2019).
- **Sector:** Software is still expected to be the fastest growing sector in our survey in 2024 (3.4% vs 3.2% in 2023), followed by Communications (2.8% vs 2.4% in 2023), Services (2.6% vs 2.4% in 2023), and Hardware (1.7% vs 1.2% in 2023), Exhibit 6
- **Region:** CIOs in the US continue to expect higher IT budget spending in 2024 (+3.6%) relative to their EU counterparts (+2.6%), Exhibit 7 .
- CIOs in the **Healthcare** (+4.6), **Manufacturing** (+3.9), and **Financial** (+3.1%) industries lead all other verticals in terms of absolute level of IT spending growth expectations for 2024 (Exhibit 8).

2024 Up-To-Down Ratio Points To Near-Term IT Budget Pressure, 3-Year Up-To-Down Remains Constructive

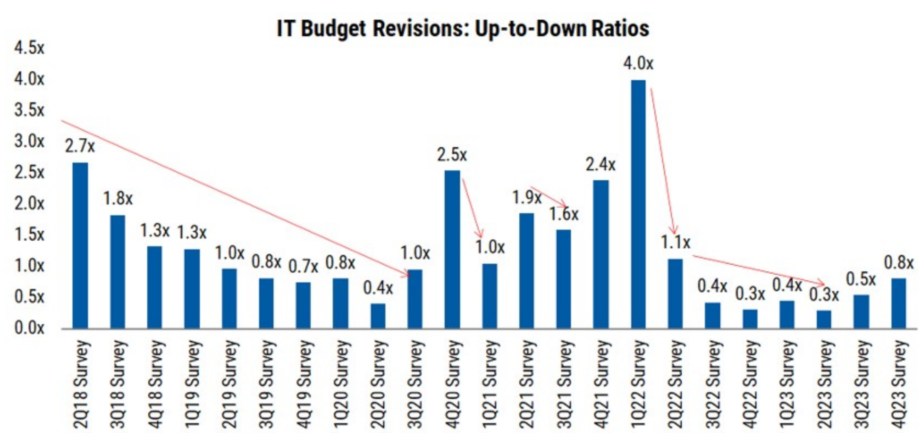
What are your expectations regarding potential future revisions to your current 2024 IT budget plans?

Exhibit 9: While Revisions Expectations Increased Modestly to 0.8x in 4Q, the Up-to-Down Ratio Remains Relatively Muted <1.0x



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

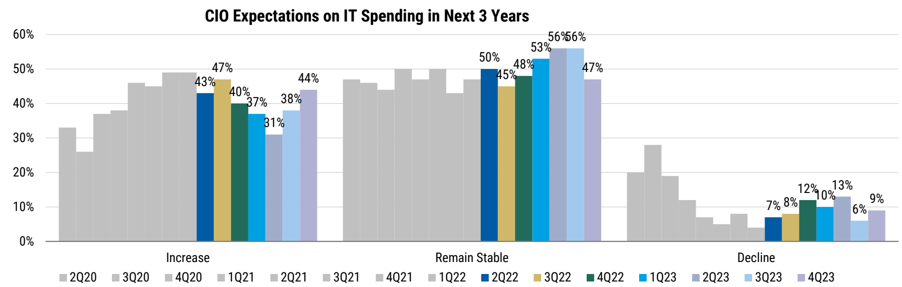
Exhibit 10: 1-yr Up-to-Down Ratio of 0.8x is Modestly More Favorable than our Prior 5 Surveys



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

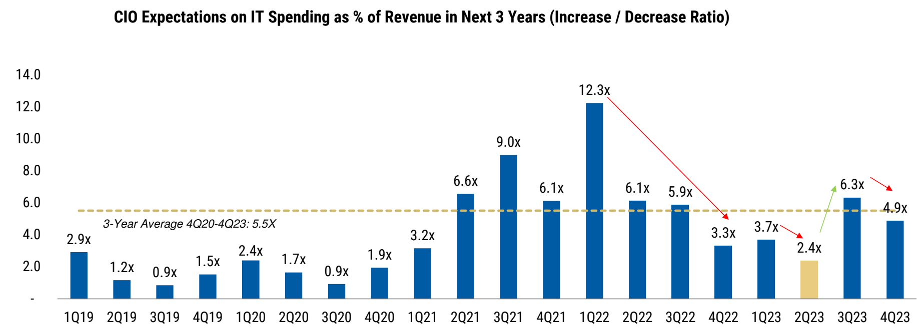
Over the next three years, how do you expect IT spending as a % of total revenues to change within your organization?

Exhibit 11: 44% of CIOs Expect IT Spending to Increase as a % of Total Revenue over the Next 3 Years...



Source: AlphaWise, Morgan Stanley Research. n =100 (US and EU data)

Exhibit 12: ...Translating to a 4.9x Up-to-Down Ratio



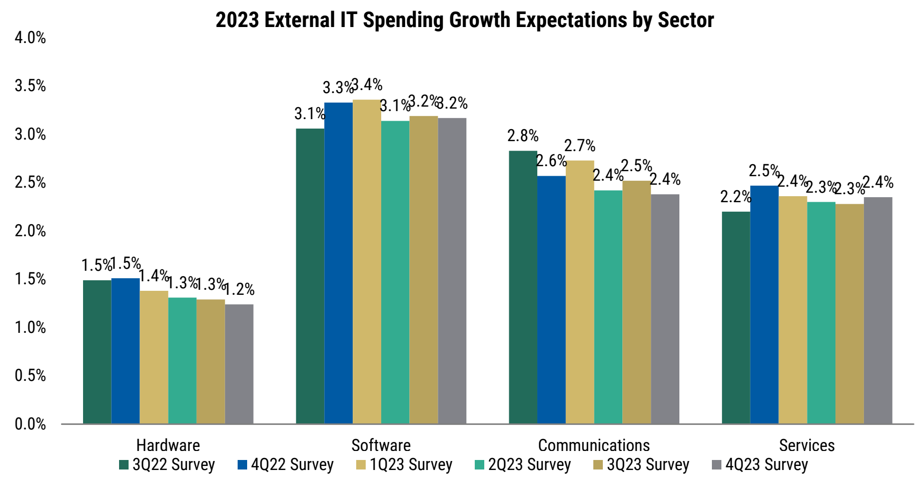
Source: AlphaWise, Morgan Stanley Research. n =100 (US and EU data)

- The 1-year up-to-down ratio for CIOs' expectations of potential IT budget revisions suggests CIO's see downside risk to spending impulse near-term. Our first up-to-down ratio for 2024 expectations of potential IT budget revisions came in at 0.8x, as 20% of CIOs see upward revisions to IT Budgets more likely, compared to 25% of CIOs who see downwards revisions more likely, (Exhibit 9). Although the metric remains rangebound <1.0x, we note that the 1-yr up-to-down ratio in 4Q23 is more favorable than our prior 5 surveys (Exhibit 10).
- CIO's expectations for 3-year revisions remained in healthy territory, supporting a more constructive medium-term outlook. 44% of CIOs expect IT spending to increase as a percentage of total revenue over the next 3 years. By comparison, only 9% of CIOs expect IT spending to decline as a percent of revenues, translating to an up-to-down ratio of 4.9x (just shy of the 3-year average, 5.5x), Exhibit 12 . Resilience in this metric indicates that the mid-term backdrop for IT spending remains constructive, as upward revisions to budgets are favored even as uncertainty in the macro persists.

Software Continues To See Best Overall Growth In 2023, Whereas Communications Sees Largest Deceleration At the Sector Level

By what percentages did your External IT Spending change for each of the following technology areas in 2023 vs. 2022?

Exhibit 13: Software Remains Fastest Growing Segment in CY23, With Growth Expectations Holding Relatively Steady Across the Sectors we Track



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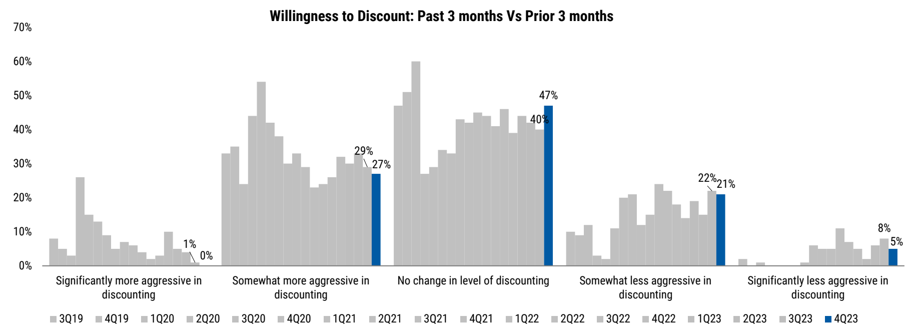
- 4Q's reading of 2023 IT budget growth expectations came in at +2.6%, holding in stable vs 3Q23's read (+2.7%), but remains below the pre-covid average of 4.1%. Across sector readings, growth expectations came in relatively stable as well: Software spend is expected to grow +3.2% YoY, flat QoQ. Communications spend is expected to grow +2.4% YoY, -14 bps QoQ, followed by IT Services spend expected to grow +2.4%, +7 bps QoQ, and Hardware spend, expected to grow +1.2% YoY, flat QoQ, (Exhibit 13).

Pullback in Vendors' Willingness To Discount

How do you perceive technology vendors' willingness to discount in the past three months versus prior three months (i.e. in 3Q23 versus 2Q23)?

Exhibit 14: CIOs Indicate a Slight Downtick in Vendor Willingness to Discount in 4Q, With The Majority of CIOs Indicating No Change to Discounting Levels



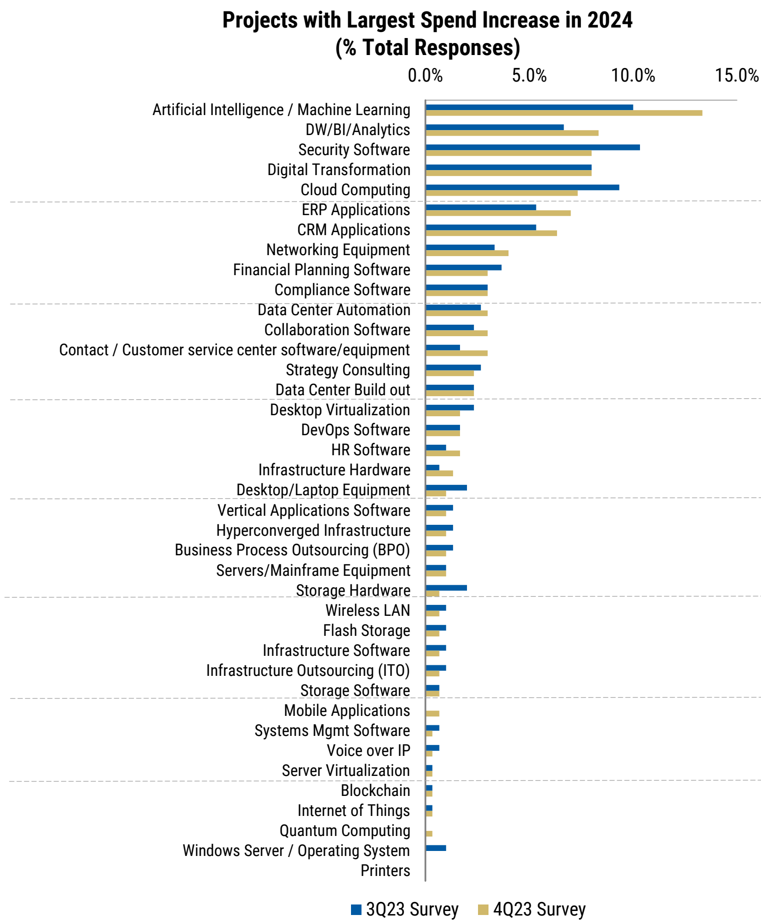
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

- **CIOs continue to indicate seeing less vendor willingness to discount in 4Q23 vs 3Q23.** 27% of CIOs indicate seeing more aggressive discounting from vendors (a downtick from 30% in 3Q23). Notably, the largest portion of CIOs (47% of responses) indicate seeing no change in the level of discounting, an uptick vs 40% in 3Q23, Exhibit 14 .

Artificial Intelligence/Machine Learning, DW/BI/Analytics, and Security Software Top The CIO Priority List

Which three External IT Spending projects will see the largest percentage increase in spending in 2024?

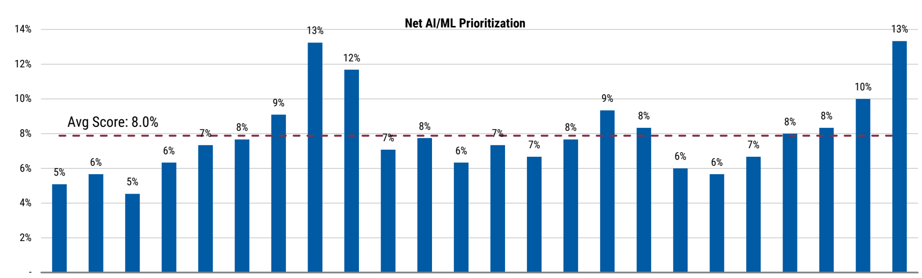
Exhibit 15: AI/ML Moves to #1 on the CIO Priority List, Followed by DW/BI/Analytics and Security Software



Project	4Q23	3Q23
Artificial Intelligence / Machine Learning	13.3%	10.0%
DW/BI/Analytics	8.3%	6.7%
Security Software	8.0%	10.3%
Digital Transformation	8.0%	8.0%
Cloud Computing	7.3%	9.3%
ERP Applications	7.0%	5.3%
CRM Applications	6.3%	5.3%
Networking Equipment	4.0%	3.3%
Financial Planning Software	3.0%	3.7%
Compliance Software	3.0%	3.0%
Data Center Automation	3.0%	2.7%
Collaboration Software	3.0%	2.3%
Contact / Customer service center software/equipment	3.0%	1.7%
Strategy Consulting	2.3%	2.7%
Data Center Build out	2.3%	2.3%
Desktop Virtualization	1.7%	2.3%
DevOps Software	1.7%	1.7%
HR Software	1.7%	1.0%
Infrastructure Hardware	1.3%	0.7%
Desktop/Laptop Equipment	1.0%	2.0%
Vertical Applications Software	1.0%	1.3%
Hyperconverged Infrastructure	1.0%	1.3%
Business Process Outsourcing (BPO)	1.0%	1.3%
Servers/Mainframe Equipment	1.0%	1.0%
Storage Hardware	0.7%	2.0%
Wireless LAN	0.7%	1.0%
Flash Storage	0.7%	1.0%
Infrastructure Software	0.7%	1.0%
Infrastructure Outsourcing (ITO)	0.7%	1.0%
Storage Software	0.7%	0.7%
Mobile Applications	0.7%	0.0%
Systems Mgmt Software	0.3%	0.7%
Voice over IP	0.3%	0.7%
Server Virtualization	0.3%	0.3%
Blockchain	0.3%	0.3%
Internet of Things	0.3%	0.3%
Quantum Computing	0.3%	0.0%
Windows Server / Operating System	0.0%	1.0%
Printers	0.0%	0.3%

Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 16: 13.3% of CIOs Cite AI/ML as a Top Priority in 4Q23, the Highest Net Prioritization Score Across the History of our Survey



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

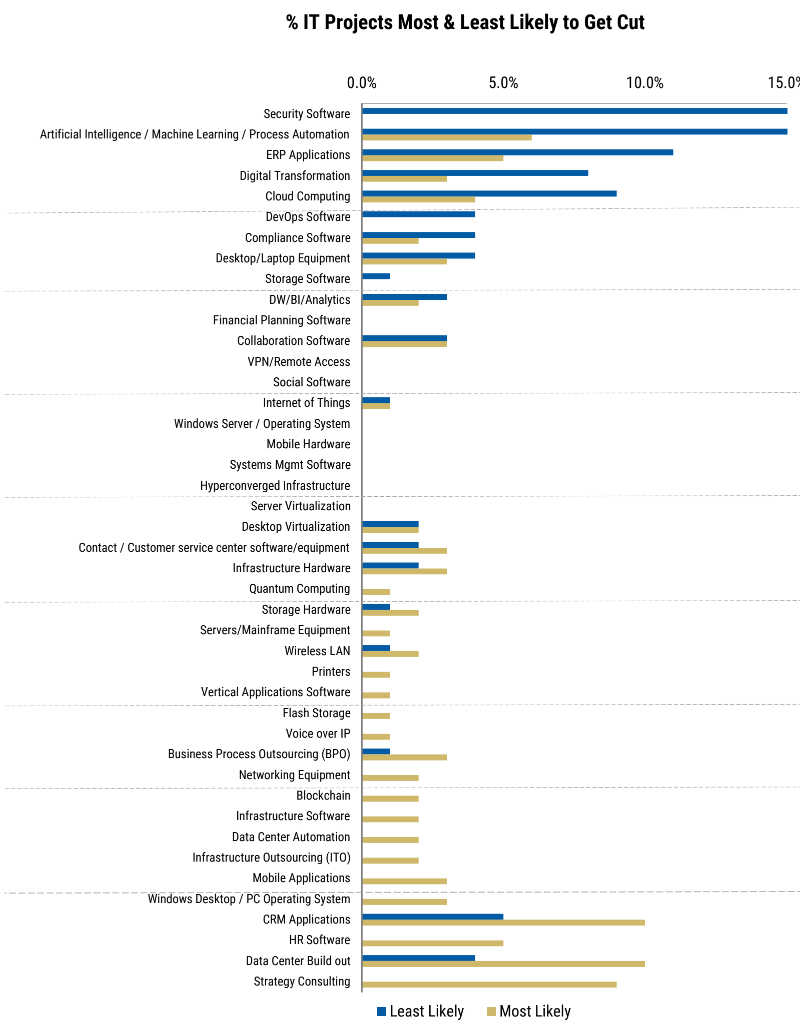
- **In 2024, Artificial Intelligence emerges as #1 on the CIO priority list (~13% of CIOs citing it as a top priority).** DW/BI/Analytics (8.3% of CIOs citing it as a top priority) comes in at #2 in 4Q, a meaningful jump from #5 in 3Q. Security Software (8.0% of responses), Digital Transformation (8.0% of responses), and Cloud Computing (7.3% of responses) round out the top 5 CIO priorities, (Exhibit 15).

- **Artificial Intelligence/Machine Learning** realized the largest QoQ increase in prioritization (+330 bps), and the highest net prioritization score in the history of our survey (Exhibit 16). Meanwhile, **Security Software** realized the largest QoQ decrease in prioritization (-230 bps), although still remains a top 3 priority for CIOs, and notably, the most defensible IT Project for CIOs.

Security Software Remains the Most Defensive IT Project By A Wide Margin

If the economy worsens significantly in 2024, what spending project is most likely to get cut? What spending project is least likely to get cut?

Exhibit 17: Security Software, Artificial Intelligence/Process Automation, and ERP Applications Sit Atop the List of Top 3 Most Defensive IT Projects



Project	Net % 4Q23 Survey	Net % 3Q23 Survey
Security Software	18.0%	15.0%
Artificial Intelligence / Machine Learning / Process Automation	10.0%	3.0%
ERP Applications	6.0%	9.0%
Digital Transformation	5.0%	10.0%
Cloud Computing	5.0%	7.0%
DevOps Software	4.0%	0.0%
Compliance Software	2.0%	6.0%
Desktop/Laptop Equipment	1.0%	-4.0%
Storage Software	1.0%	1.0%
DW/BI/Analytics	1.0%	5.0%
Financial Planning Software	0.0%	2.0%
Collaboration Software	0.0%	2.0%
VPN/Remote Access	0.0%	0.0%
Social Software	0.0%	0.0%
Internet of Things	0.0%	-1.0%
Windows Server / Operating System	0.0%	-1.0%
Mobile Hardware	0.0%	-1.0%
Systems Mgmt Software	0.0%	-1.0%
Hyperconverged Infrastructure	0.0%	-1.0%
Server Virtualization	0.0%	-2.0%
Desktop Virtualization	0.0%	-4.0%
Contact / Customer service center software/equipment	-1.0%	-1.0%
Infrastructure Hardware	-1.0%	-3.0%
Quantum Computing	-1.0%	0.0%
Storage Hardware	-1.0%	-1.0%
Servers/Mainframe Equipment	-1.0%	-1.0%
Wireless LAN	-1.0%	-2.0%
Printers	-1.0%	-2.0%
Vertical Applications Software	-1.0%	-3.0%
Flash Storage	-1.0%	-3.0%
Voice over IP	-1.0%	-3.0%
Business Process Outsourcing (BPO)	-2.0%	-2.0%
Networking Equipment	-2.0%	1.0%
Blockchain	-2.0%	-1.0%
Infrastructure Software	-2.0%	-2.0%
Data Center Automation	-2.0%	-2.0%
Infrastructure Outsourcing (ITO)	-2.0%	0.0%
Mobile Applications	-3.0%	-2.0%
Windows Desktop / PC Operating System	-3.0%	-3.0%
CRM Applications	-5.0%	0.0%
HR Software	-5.0%	-3.0%
Data Center Build out	-6.0%	-4.0%
Strategy Consulting	-9.0%	-8.0%

Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data). Note: Projects are ranked based on the percentage of CIOs indicating the project is most likely to get cut, adjusted for the percentage of CIOs indicating the project is least likely to get cut

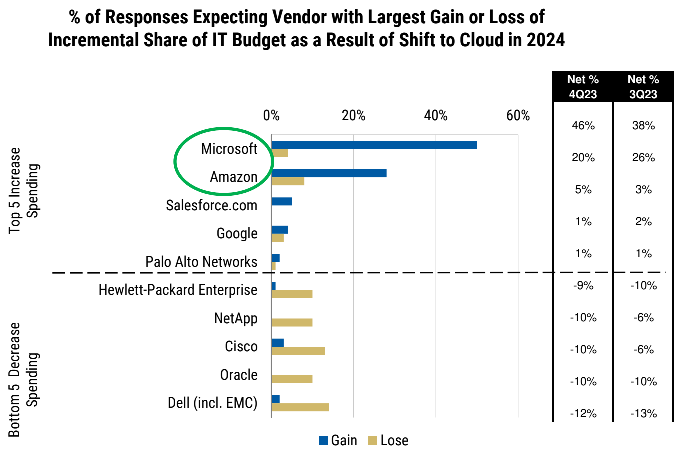
- **Security Software (net score of 18%) remains the most defensible area of spending (18% of CIOs view Security as the category least likely to cut in a downturn, vs. 0% of CIOs indicating most likely), Exhibit 17 .** Security Spend continues to benefit from several secular drivers of growing budget share including: 1) an expanding attack surface area as organizations operate in increasingly complex hybrid and cloud environments; 2) increased mind share as recent high profile cyber attacks shift C-suite attention and additional resources to address the problem.

- **AI/ML/Process Automation** (net score of 10%) emerges as the second most defensive project for CIOs, notably ticking up 700 bps in net defensibility vs 3Q reading. **ERP applications** (net score of 6%) rounds out the top 3.
- If the economy were to worsen significantly, discretionary projects like **Strategy Consulting** (net score -9%), and capex intensive projects like **Data Center Buildout** (-6%) screen as relatively more exposed to budget cuts (consistent with prior survey readings).

Microsoft and Amazon Remain Best Positioned as Workloads Shift to The Cloud

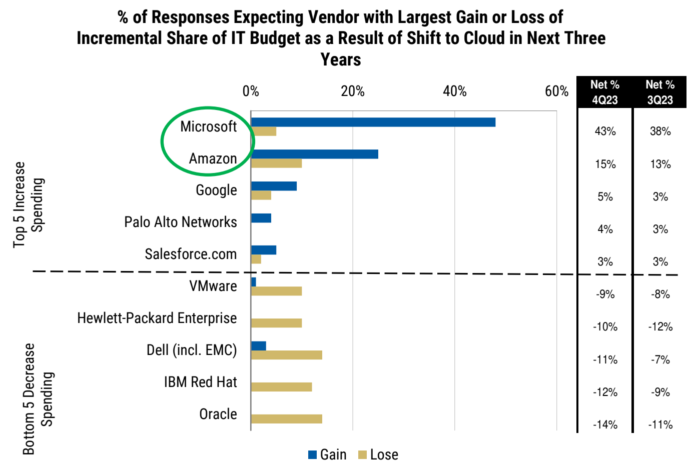
As you shift workloads from on-premise to the cloud, which of these vendors do you expect to gain the largest incremental percentage of your IT budget in 2024? Which do you expect to be the largest gainer over the next three years?

Exhibit 18: Microsoft and Amazon Continue to Lead as the Top Incremental Share Gainers due to Cloud Shift in 2024...



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

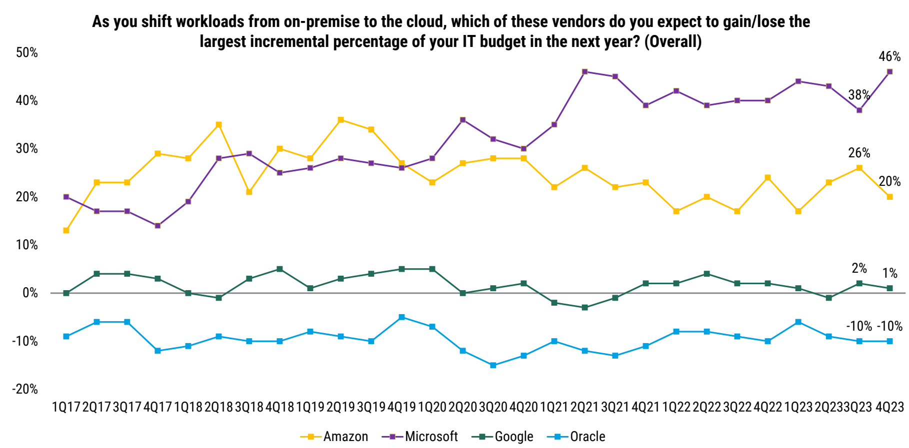
Exhibit 19: ... And in the Next Three Years



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 20:

MSFT Gains Share over AMZN as Workloads Shift to the Cloud



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

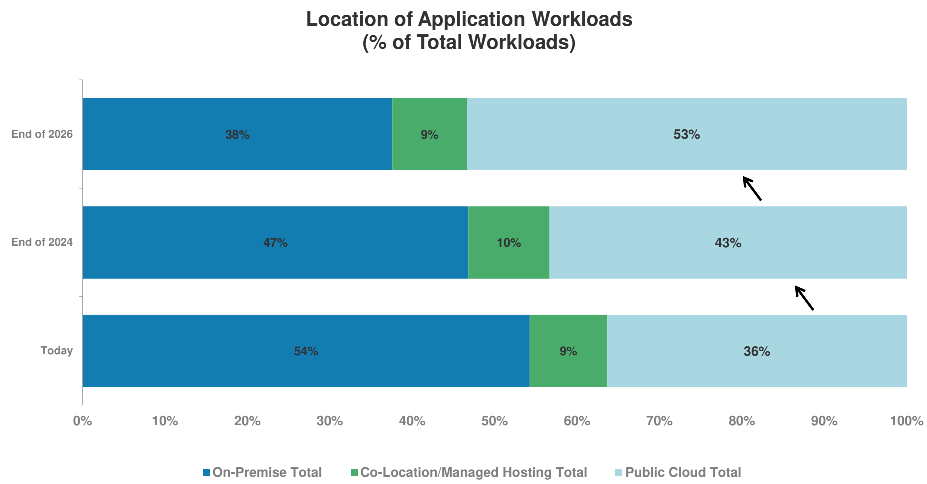
- **As workloads shift to the cloud, Microsoft and Amazon remain the clear beneficiaries.** Similar to previous surveys, **Microsoft** and **Amazon** remain best positioned to *gain* incremental percentage of IT budgets in 2024 and over the next three years, Exhibit 18 and Exhibit 19). **Microsoft's** lead over Amazon remains sizeable on an absolute basis, from a 2024 view (+46% vs +20%), and on a 3-year view (+43% vs +15%). Sequentially, Microsoft's lead over Amazon widened by 14 points on a 1-yr view (Exhibit 20), and widened by 3 points on a 3-yr view. **Salesforce, Google , and Palo Alto Networks** also screen as 2024 share gainers, though quite distant behind MSFT/AMZN.

- **Google, Palo Alto Networks,** and **Salesforce** similarly screen as distant beneficiaries from the shift to the cloud on a medium-term view.
- Conversely, survey data suggests that **Dell, Oracle, Cisco**, and **NetApp** face the highest risks of losing incremental budget share in 2024 as a result of the shift to the cloud. Over the next three years, the mix includes **Oracle, IBM, Dell,** and **HPE.**

Growth In Public Cloud Still On Track, Expectations for Pace of Shift Accelerating

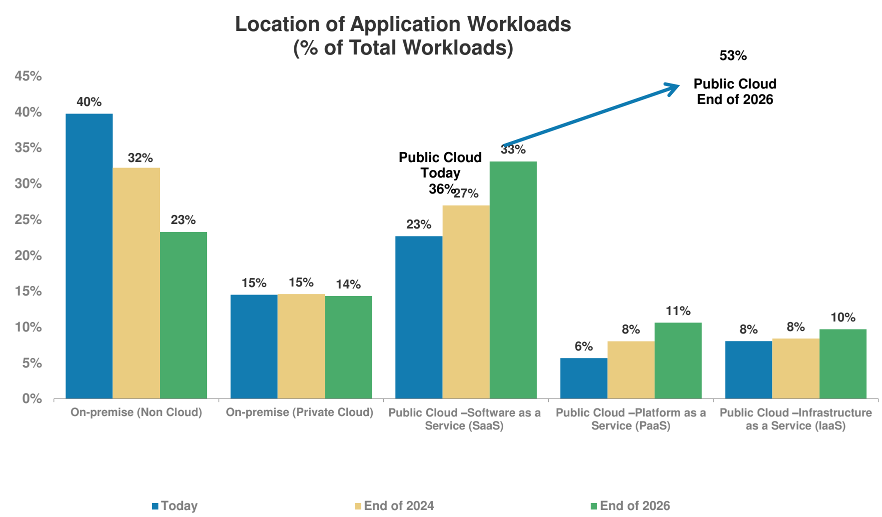
What percentage of your application workloads reside in each of the following six areas today? What percentage do you expect to reside in each of these six areas by the end of 2024 and 2026?

Exhibit 21: CIOs Estimate 36% of Application Workloads To Reside in the Public Cloud at the Time of the 4Q23 Survey



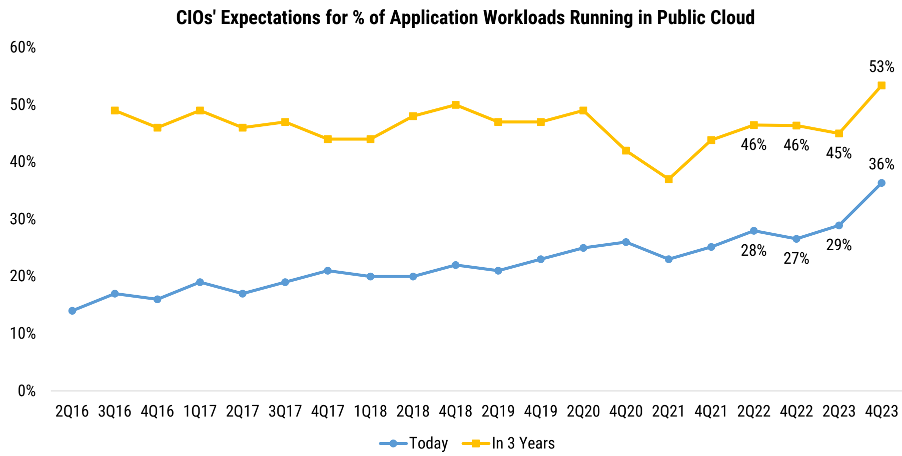
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Exhibit 22: CIOs Estimate 53% of Application Workloads to Reside in the Public Cloud by the End of 2026



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

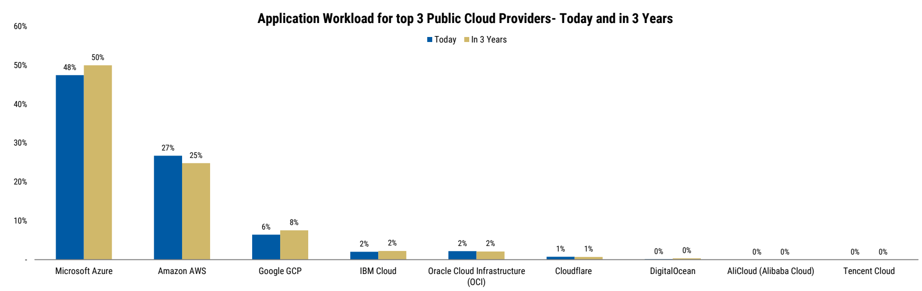
Exhibit 23: CIOs Expect 36% of Workloads to be Running in the Public Cloud Today, +9 pts vs 4Q22, Outpacing the Historic Rate of Acceleration



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

For your top 3 public cloud providers, what percentage of your application workloads reside in each of them today and in 3 years?

Exhibit 24: Microsoft Azure Ranks as the Preferred Public Cloud Vendor Today and is Expected to Remain So Over the Next 3 Years



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)Note: Percentages above represent the percentage of workloads amongst the CIOs using that platform – CIOs answers were limited to the three most used Clouds with aggregate responses capped <100%

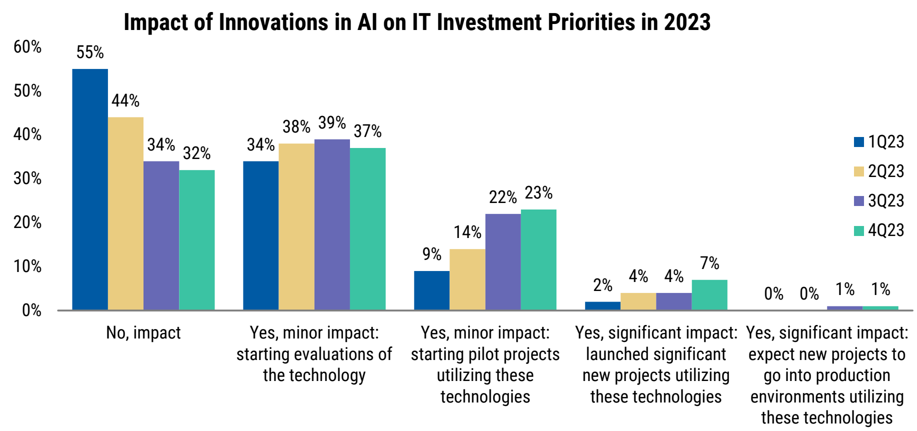
- **CIOs estimate 36% of application workloads are running in the public cloud today, a notable uptick from 27% in 4Q22.** While CIOs' estimations for the percent of workloads running in the public cloud has trended with some volatility over time, in aggregate, historical data suggests that workloads shift to running in the cloud at a pace of ~2 points per year. As such, the ~9 point jump from our 4Q22 survey to our 4Q23 survey suggests CIOs expect the pace of the shift to the cloud to be accelerating, Exhibit 23 .
- **CIOs indicate that 48% of application workloads reside in Microsoft Azure today,** followed by Amazon AWS (27% of workloads) and Google GCP (6% of workloads) in a distant third, Exhibit 24 .
- **Looking forward to the next three years, CIOs expect Microsoft Azure to remain the largest share gainer of application workloads moving to the cloud**, followed by Amazon AWS and Google GCP (consistent with our prior surveys), Exhibit 24 .
- **CIOs expect 38% of workloads to remain on premise over the next three years,**

consistent with our 4Q22 reading (Exhibit 21).

Artificial Intelligence/Machine Learning

Have recent innovations in Artificial Intelligence around Large Language Models (e.g. ChatGPT) or Generative Design (e.g. Dall-e) had any impact on your IT investment priorities in 2023?

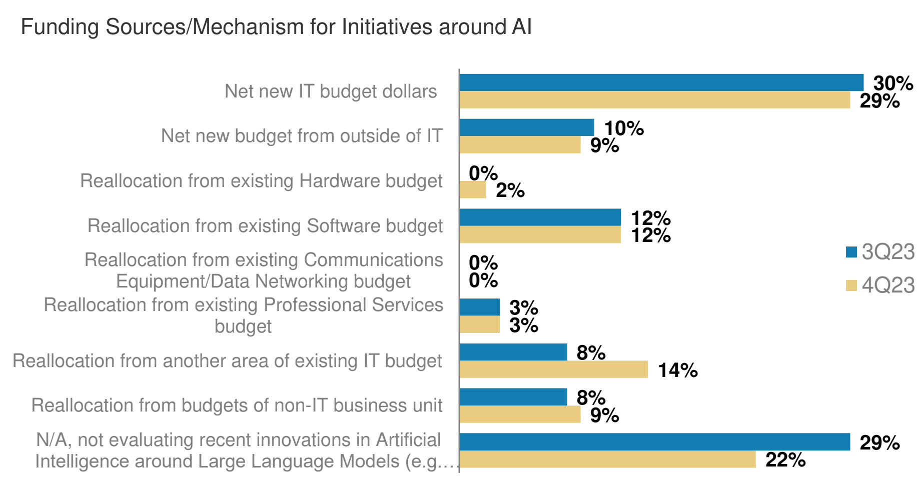
Exhibit 25: 68% of CIOs Say Recent Innovations in Generative AI & LLMs Are Having Direct Impacts to 2023 IT Investment Priorities



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

If evaluating or using recent innovations in Artificial Intelligence around Large Language Models (e.g. GPT-4) or Generative Design (e.g. Dall-e), which of the following best describes how these initiatives are funded?

Exhibit 26: 29% of CIOs Indicate Funding AI Ventures Through Net New IT Budget Dollars, While 14% Cite the Reallocation from Other Areas of Existing IT Budget...

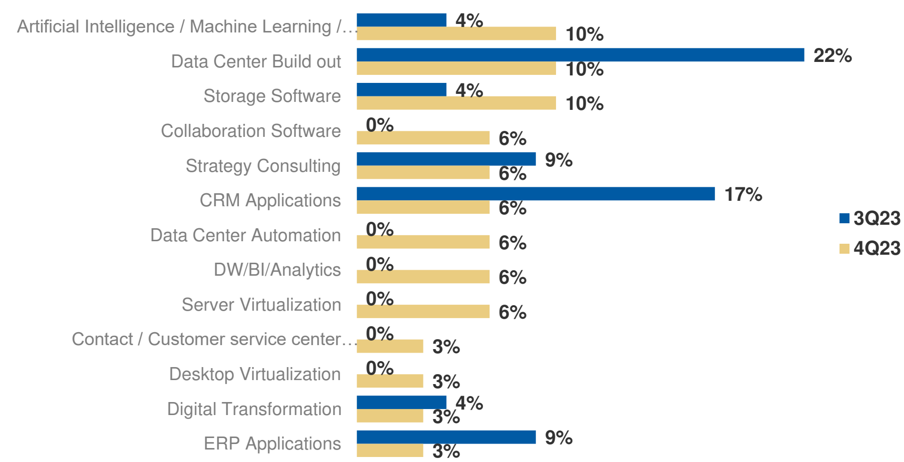


Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

You mentioned reallocating budget dollars from other areas of your IT budget to fund new projects around innovations in artificial Intelligence around Large Language models (e.g. GPT-4) or generative Design (e.g. Dall-e). What project is being cut?

Exhibit 27: ... Leading to Data Center Buildout, Storage Software, and AI/ML/Process Automation Projects Being Most Impacted

Most Impacted Area of Spending Due to Reduced Budget

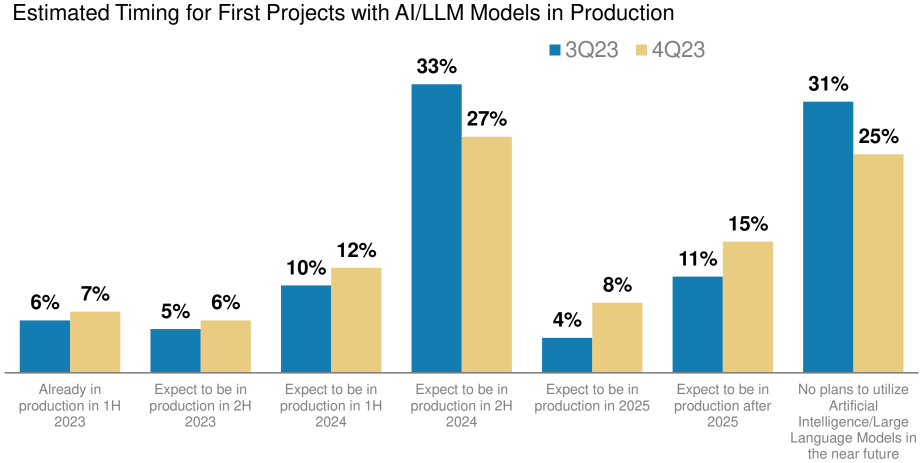


Source: AlphaWise, Morgan Stanley Research. n=31 (US and EU data)

When do you expect to have first project with recent innovations around Artificial Intelligence/Large Language models in production?

Exhibit 28: Out of the 75% of CIOs That Expect AI Projects to be Deployed Near Term, the Majority of Respondents Expect Projects to be in Production in 2H24 and Beyond (50%)

Estimated Timing for First Projects with AI/LLM Models in Production



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

- **An increased proportion of CIOs are indicating that recent innovations in AI and Large Language Models are impacting IT investment priorities**. Specifically, in 4Q23, 68% of CIOs cite impacts to investment priorities (+200 bps QoQ, from 66% in 3Q23). Notably, 8% of CIOs have seen significant impacts to investment priorities, an uptick from just 5% in 3Q23, Exhibit 25 .
- **29% of CIOs indicate leveraging Net New IT Budget Dollars in order to fund AI initiatives, followed by reallocating funds from areas of existing IT Budget outside of Hardware, Software, Communications, and Professional Services (14% of responses)**, Exhibit 26 . Of the CIOs that cited the reallocation of funds

from existing budget as their preferred strategy for funding AI initiatives, 10% cite **Data Center Buildout** as a project area to be cut, along with **Storage Software** and **AI/ML/Process Automation**, with both also receiving 10% of responses, (Exhibit 27). We note that the intuition behind AI projects being cut in order to fund more complex AI/ LLM innovation likely represents the reshuffling of resources/priorities within an enterprise's AI spend.

- Out of the 75% of CIOs that expect AI projects to be deployed near term, the majority of respondents expect projects to be in production in 2H24 (27%, a downtick vs 33% in 3Q23), or 2025 and beyond (23%, an uptick from 15% in 3Q23), **Exhibit 28** .

Enterprise Software – Macro Takeaways

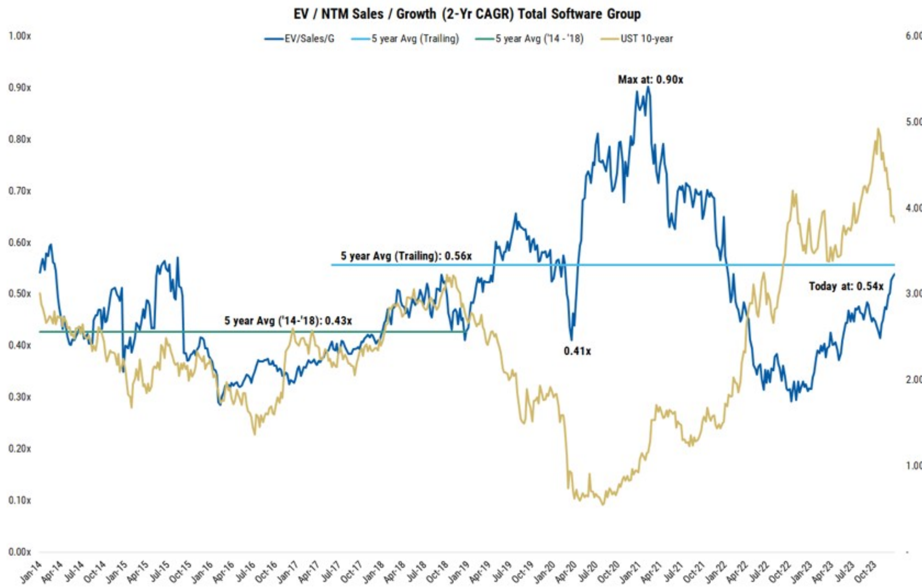
GenAI Excitement Heightens the Focus on Software. As recently discussed in our 2024 outlook, the potential rewards from the large and transformative effects of GenAI on the software space (a vast software revenue opportunity, improvement of software margins as companies leverage technologies internally to become more efficient, and the opportunity to further bolster software's strategic importance across the broader economy), outweigh the initial expectations priced into software stocks as we enter 2024(Exhibit 29). **4Q23 CIO Survey data reinforces our constructive view on software**: software spending continues to lead the pack in terms of YoY growth expectations, +25 bps YoY to +3.4% growth (Exhibit 30), while software initiatives (AI/ML, DW/BI/Analytics, Security, Digital Transformation, Cloud Computing) remain atop both CIO priorities and defensibility rankings, demonstrating the durability of secular trends. While software budget growth expectations do remain below historical averages (+4.5% on average between 2010-2019), this reads inline with our view that timing remains the most important factor in aligning the realization of GenAI dollars with investor expectations. Below, we dig into three key CIO Survey conclusions across software themes, highlighting companies within our coverage:

- **GenAI Uptake and Cloud Consumption Trends Continue to Benefit Microsoft.** Generative AI, Large Language Models, and other innovative technologies are increasingly impacting CIO's investment priorities- 68% of CIOs indicate an impact to priorities in 4Q23 (up from 66% in 3Q23 and 56% in 2Q23). As per 4Q23 survey data, 67% of CIOs indicate plans to utilize **MSFT's** GenAI products (Azure OpenAI Services & Microsoft 365 Copilot Screening as the most popular) over the next 12 months, a significant uptick vs 47% of CIOs in 2Q23. Similarly, CIOs plan to increase uptake of MSFT's GenAI products over the next three years (80% of CIOs). Moreover, looking across a broad suite of software vendors, CIOs expect forward year growth to accelerate for Microsoft only, with growth deceleration expected for the remaining vendors (Exhibit 32 Exhibit 32). In terms of positioning the shift to public cloud, Microsoft remains overwhelmingly best positioned, and continues to widen its lead over closest competitor Amazon (the lead widening by 14 points on a one-year view in 4Q23), Exhibit 20 . The aforementioned data points corroborate our view that MSFT is a high quality software franchise, able to capture consolidated spend while monetizing GenAI early (all with a reasonable P/E multiple). Please see here for our full MSFT CIO Survey takeaways.
- **CIO Priorities and Consolidation Preferences Align with our GenAI Precursors.** As enterprises prepare strategies to incorporate GenAI innovations into their IT architectures, software geared at lowering frictions to building and utilizing this new technology, which we refer to as 'GenAI Precursors', is poised to benefit. In 4Q23, DW/BI/Analytics screened as #2 on the CIO priority list (Exhibit 15). On the consolidation front, BI/Analytical Applications screen as the vendors most likely to experience consolidation over the next three years, with Database/Data Storage vendors in a close second, Exhibit 35 . This trend towards consolidation in core database and data storage offerings likely benefits those vendors that offer flexible database architectures that can handle various data types and schemas,

such as Snowflake and MongoDB. Emblematic of this value proposition, **SNOW** screens favorably as a vendor with high weighted average growth expectations in 2024 at +3.9%. Moreover, when asked how their enterprises are meeting Analytics/Data Warehousing needs, the majority of CIOs (28%) indicate they are primarily using a 3rd party cloud data warehouse service like Snowflake or Databricks, increasing from 20% in 4Q22 and 13% in 4Q21.

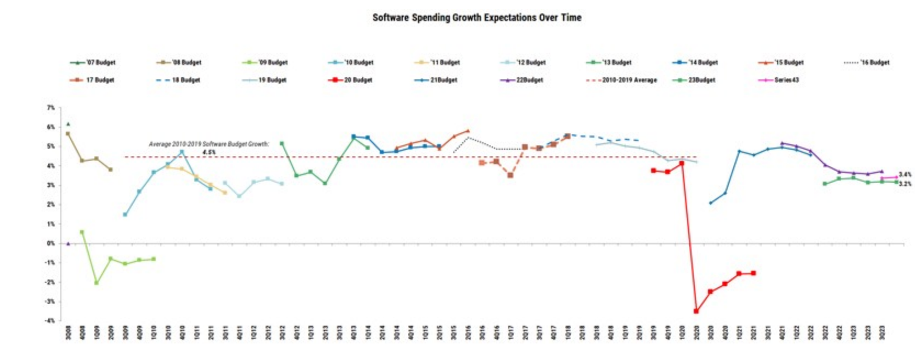
- **Automation Initiatives Continue to Screen as Strategic Priority- CIOs Largely Prefer Incumbent Vendors**. Various factors including: 1) the need for more resilient business operations following the Covid-19 Pandemic, 2) the tighter labor market environment placing higher priority on automation focused projects, and 3) the potential for increased automation deployments to free up incremental budget dollars that can be allocated towards AI/ML and other innovative technologies, are driving the increased penetration of automation technologies, in our view. Our 4Q23 survey data reaffirms automation technologies as a strategic priority for CIOs- 41% of CIOs expect spending on automation to grow in 2024 vs just 2% of CIOs expecting declines. While **MSFT** screens as the most widely adopted automation vendor today (used by 63% of CIOs with automation deployments today), **ServiceNow** (29%) and **Salesforce** (23%) are also heavily adopted compared to a long tail of competitors. On the standardization front, however, for CIOs that prefer to consume enterprise automation capabilities from a single vendor, **MSFT** screens as the overwhelming favorite (56%). Microsoft's ability to bundle capabilities into enterprise agreements (Power Automate and Power Apps platforms span numerous automation capabilities including: low-code application platforms, process mining, RPA, iPaaS and Event Stream Processing) is a key strategic advantage that can help drive share gains over time. Alternatively, data points are a lot less constructive around **UiPath** (which screens poorly from a vendor standardization perspective despite offering a best of breed end-to-end automation platform) and **ServiceNow** (a vendor looking to expand into a broader automation platform).

Exhibit 29: Valuation Views



Source: Morgan Stanley Research, Refinitiv, Company Data

Exhibit 30: Software Spending Growth Expectations Remain Below the 10-year Pre-Covid Average at +3.2%/+3.4% in 2023/2024



Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

Key Survey Takeaways

Software Macro Key Takeaways

- **CIOs continue to expect software spend to outpace growth in other industries at +3.4% in 2024, below the historical pre-covid average of +4.1%.** CIOs continue to estimate +3.2% budget growth in 2023, flat vs our 3Q23 survey reading, demonstrating resiliency in software spend despite lingering macro uncertainty. Software projects continue to dominate CIO priorities and defensibility rankings, suggesting durability of secular trends.
- **Regionally, US software budget growth expectations of +3.5% growth are outpacing EU software budget growth at +3.2%.**
- **Software related projects continue to dominate the top of the CIO priority list** with Artificial Intelligence/Machine Learning, DW/BI/Analytics, Security Software, Digital Transformation, and Cloud Computing rounding out the top 5.

- **Vendor growth expectations were revised upwards for Microsoft only, with CIOs expecting higher growth in 2024 relative to expectations for 2023 growth in the 4Q22 survey. Microsoft** screens as having the highest weighted average growth expectations at +5.0% (+170 bps vs 4Q22), followed by **Snowflake** (-196 bps vs 4Q22), and **Salesforce** (-39 bps vs 4Q22).
- **In three years, CIOs expect the most consolidation around BI/Analytical Application Vendors**, followed by **Database/Data Storage**; meanwhile, **Security Software** will likely see the least amount of consolidation on a relative basis.

Enterprise Automation Key Takeaways

- **Automation initiatives screen as increasingly strategic priorities, with 41% of CIOs expecting spending on automation technologies to grow in 2024 versus just 2% of CIOs expecting automation spend to decline.** Drivers of a secular shift towards the uptake of automation technologies include: 1) a growing mandate among executive leadership that business operations need to be more resilient in the wake of the Covid-19 Pandemic; 2) the tighter labor market environment placing higher priority on automation focused projects; and 3) the potential for increased automation deployments to free up incremental budget dollars that can be allocated towards AI/ML and other innovative technologies
- Vendor takeaways: In terms of vendors most widely adopted today for automation capabilities, **Microsoft** (63% of CIOs with automation deployments today), **ServiceNow** (29% of CIOs) and **Salesforce** (23% of CIOs) screen as the most heavily adopted.
- While numerous vendors in both the public and private market screen as prospective players in the automation market in the long-term, **Microsoft** continues to screen as the overwhelming favorite for standardization today (56% of CIOs).

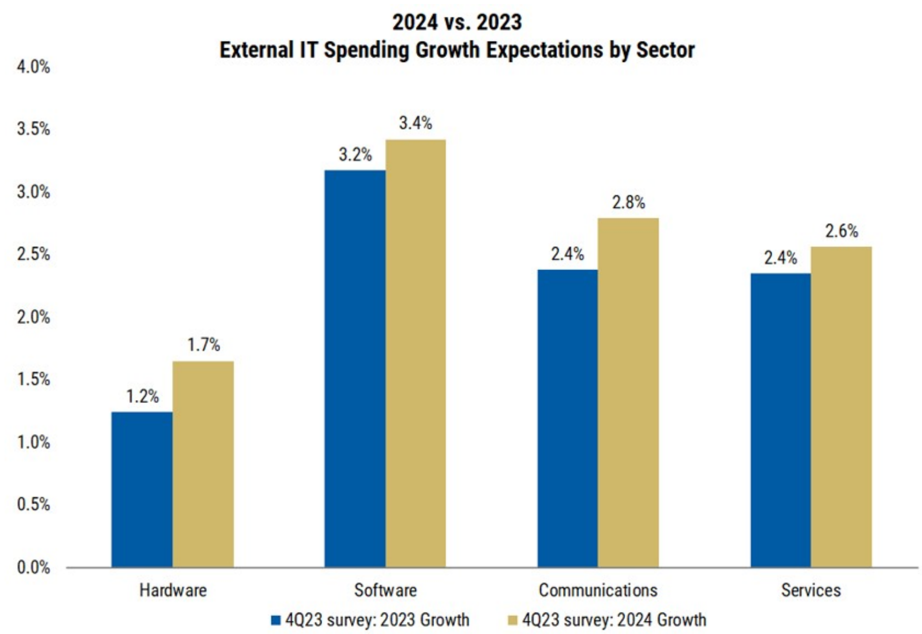
Data Management Key Takeaways

- **Database / Data Storage tops the list of areas of software most likely to be consolidated today**. This trend towards consolidation in core database and data storage offerings likely benefits those vendors with broad solution offerings in core operational databases (i.e. **Microsoft**, **Amazon**, **Google**, **Oracle**), as well as, vendors that offer flexible database architectures that can handle various data types and schemas, such as **MongoDB**'s document model.
- **As vendors increasingly move workloads and data to the public cloud**, the majority of CIOs (37%) are expecting to standardize on database architectures including a mixture of their incumbent on-premise vendor, one or more database offerings from their public cloud provider, as well as, a third party vendor that can run in multi-cloud / hybrid cloud environments.

CIOs Expect Software to Remain the Fastest Growing Industry

By what percentages did your External IT Spending change for each of the following technology areas in 2023 vs. 2022? What is your estimated spending for 2024 vs. 2023?

Exhibit 31: Software Continues to Lead the Pack as the Fastest Growing Industry Group; All Sectors Remain in Positive Growth Territory in 2024



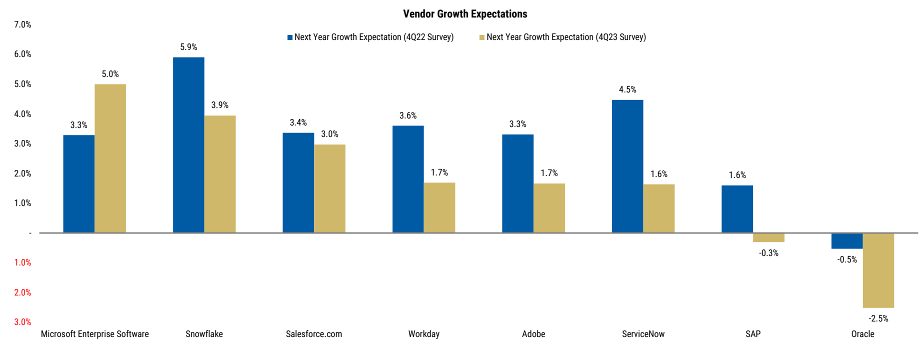
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

- **CIOs expect software to remain the fastest growing industry in 2024 at +3.4%** (+25 bps from +3.2% growth in 2023), below the 10-year average of +4.5% growth before 2020 and the 3-year average of +4.9% growth from 2017-2019. CIOs now estimate +3.2% software budget growth in 2023 (flat vs 3Q23 reading).
- **Divergence in regional growth expectations** with European respondents expecting Software spending growth of +3.2% YoY in 2024, trailing that of expected growth in the US at +3.5% growth.

CIO Vendor Spend Expectations In 2024

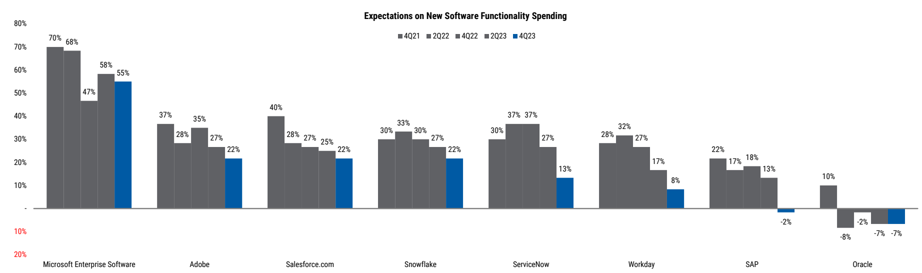
How do you expect your spending for new software functionality or additional users/seats to change in 2024 versus 2023 for the following vendors?

Exhibit 32: CIOs Expect Forward Year Vendor Growth to Decelerate Across Majority of Vendors



Source: AlphaWise, Morgan Stanley Research. n=60 (US and EU data)

Exhibit 33: Net Expectations (% Increase - % Decrease) on New Software Functionality Spending Over Time



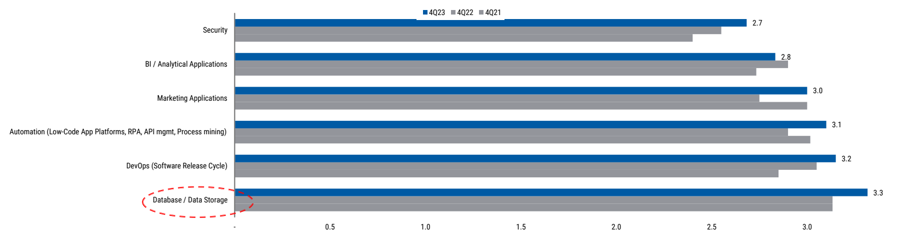
Source: AlphaWise, Morgan Stanley Research. n=60 (US and EU data)

- Microsoft screens as the vendor with the highest weighted average growth expectations in 2024 at +5.0%, moving up the ranks significantly from our 4Q22 survey, Exhibit 32 . From a net expectations perspective, Microsoft also leads the pack, with a 55% net score (% of CIOs expecting spending increase -% of CIOs expecting spending decrease), supportive of our view that the company's ability to bundle its platform offering provides an attractive value proposition that can withstand macro sensitivity (Exhibit 33). Please see here for our full Microsoft takeaways note.
- **Snowflake** also screens favorably as a vendor with high weighted average growth expectations in 2024 at +3.9%, consistent with previous surveys, Exhibit 32 . From a net expectations perspective, Snowflake is in the middle of the pack, with a 22% net score (% of CIOs expecting spending increase - % of CIOs expecting spending decrease), Exhibit 33 . While we are cognizant of Snowflake's consumption model showing demand impacts more readily than subscription models due to usage-based revenue recognition, 4Q23's survey offers proof points that workloads running in Snowflake are sticky.
- **Adobe** screens favorably on a net expectations perspective with a score of 22% (% of CIOs expecting spending increase - % of CIOs expecting spending decrease), supportive of our view that the company is well positioned to integrate Generative AI functionality into existing workflows across a broad base of subscribers, through multiple avenues of monetization.

Preference for Consolidation is the Highest for BI/Analytical Application Vendors and Lowest for Security Vendors in Three Years

*Are you attempting to consolidate the number of vendors you utilize for the following software categories **today**? Please rate using a scale of 1-5 where '1' means you consistently buy the best of breed vendor for each solution while '5' means you actively consolidate solutions into one vendor.*

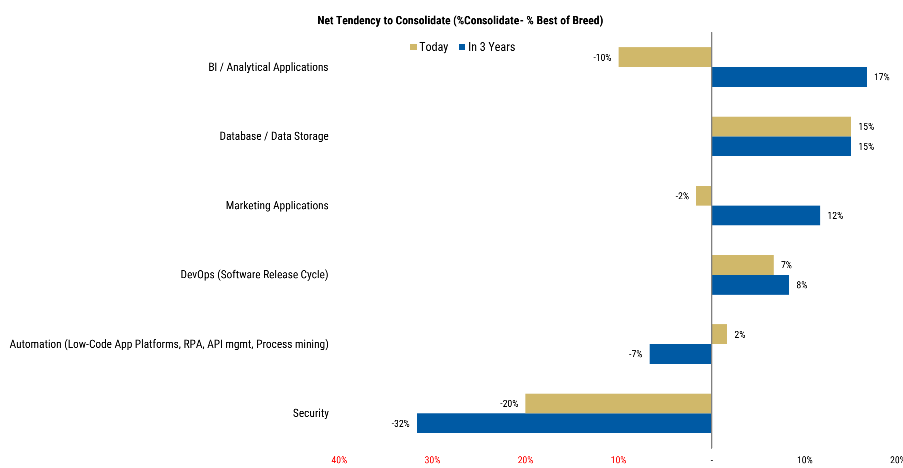
Exhibit 34: CIOs Remain Largely Neutral Across Software Categories Between Best of Breed vs. Consolidation, With a Slight Preference for Best-of-Breed Within Security



Source: AlphaWise, Morgan Stanley Research. n=60 (US and EU data)

*Are you attempting to consolidate the number of vendors you utilize for the following software categories **in 3 years**? Please rate using a scale of 1-5 where '1' means you consistently buy the best of breed vendor for each solution while '5' means you actively consolidate solutions into one vendor.*

Exhibit 35: CIOs Expect the Most Consolidation Among BI/Analytical Application Vendors in 3 Years, and the Least Consolidation in Security



Source: AlphaWise, Morgan Stanley Research. n=60 (US and EU data)

- Consistent with prior surveys, CIOs appear neutral between prioritizing consolidation versus best-of-breed solutions today. CIOs lean most heavily towards best-of-breed buying patterns for Security (net score of -20% today), while Databases / Data Storage remains the most likely to be consolidated today (net score of 15% today), Exhibit 35 .
- **In three years**, CIOs expect the most consolidation among BI/Analytical Applications, followed by Database / Data Storage vendors, and Marketing Applications; meanwhile Security Software will likely see the least amount of

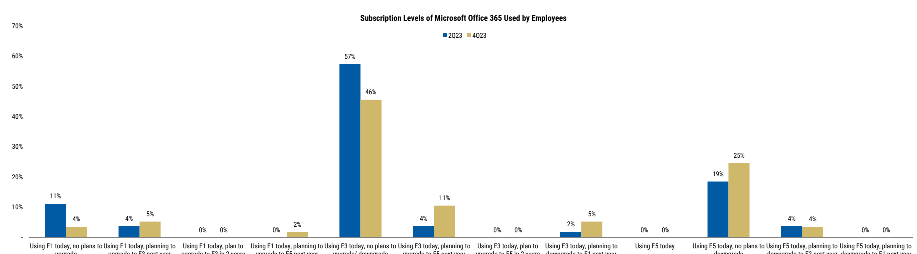
consolidation among vendors, (Exhibit 35). While Database/Data Storage Vendor consolidation trends have remained consistent across surveys, 4Q23 survey data suggests CIOs anticipate higher levels of consolidation in BI/Analytical Apps and Marketing Apps than we have seen in prior surveys, perhaps indicative of Generative AI Technology bolstering return on platform offerings. On this side of the equation, we favor names like **Microsoft** and **Adobe** which have demonstrated the ability to leverage GenAI technology- deep data sets and broader workflows help customers optimize value. On security, this trend of preference towards best-of-breed vendors is consistent with prior surveys and is indicative of security buyers' preference to manage risk by avoiding over-indexing towards any one particular vendor.

- The trend towards consolidation in core database and data storage offerings likely benefits those vendors with broad solution offerings in core operational databases (i.e. **Microsoft**, **Amazon**, **Google**, **Oracle**) as well as vendors that offer flexible database architectures that can handle various data types and schemas, such as **MongoDB**'s document model.

Continued Adoption of Microsoft O365 + GenAI Features

If you are currently using Microsoft Office 365, what subscription level (E1, E3, or E5) are the majority of your employees using today? Do you have any plans to upgrade/downgrade in the next year?

Exhibit 36: The Shift Towards Higher Subscriptions Continues with 37% of CIOs using O365 Expecting to use E5 in the Next Year, a Significant Uptick from 22% in 2Q23

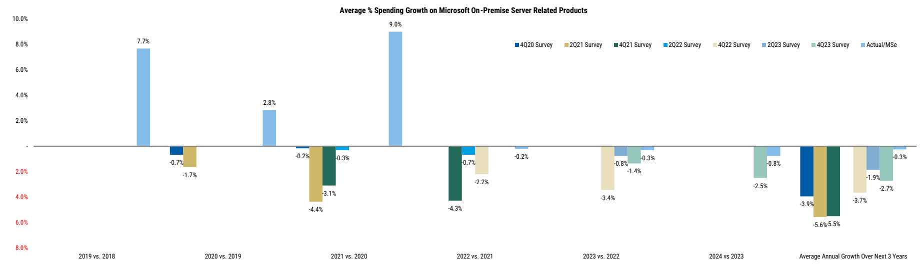


Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

- 12% of CIOs who use O365 today plan to upgrade to E5 in the next 12 months, upticking from 4% in 2Q23. This implies 37% of CIOs using O365 will be using E5 by next year, a significant uptick from 22% in 2Q23 and 28% currently (Exhibit 36).

How do you expect your spending on Microsoft On-Premise Server Related Products and Tools to change over the following time periods?

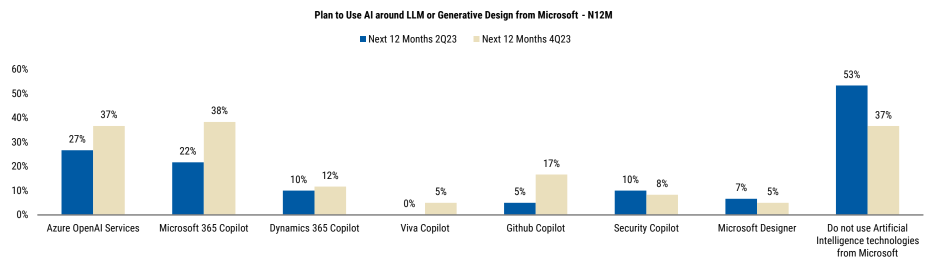
Exhibit 37: CIOs Indicate Negative Growth Expectations Over the Next 3 Years, Though Improved from Prior Surveys and Reported Results Consistently Outperform Our Survey Result



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

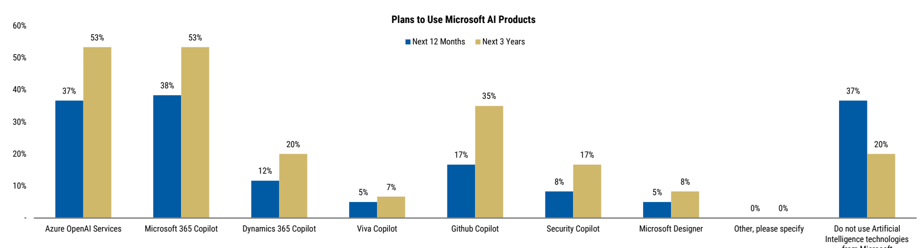
Which of the following products incorporating Generative Artificial Intelligence technology around Large Language Models (e.g. GPT 4) or Generative Design (e.g. Dall-e) do you plan to use from Microsoft in your organization in the next 12 months? Which solutions do you expect to use within the next three years?

Exhibit 38: 63% of CIOs Expect to Use Microsoft Generative AI Products Over the Next 12 Months, with Azure OpenAI Services and Microsoft 365 Copilot Screening as the Most Popular



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Exhibit 39: CIOs Plan to Increase Uptake of Microsoft's AI Products Within the Next 3 Years



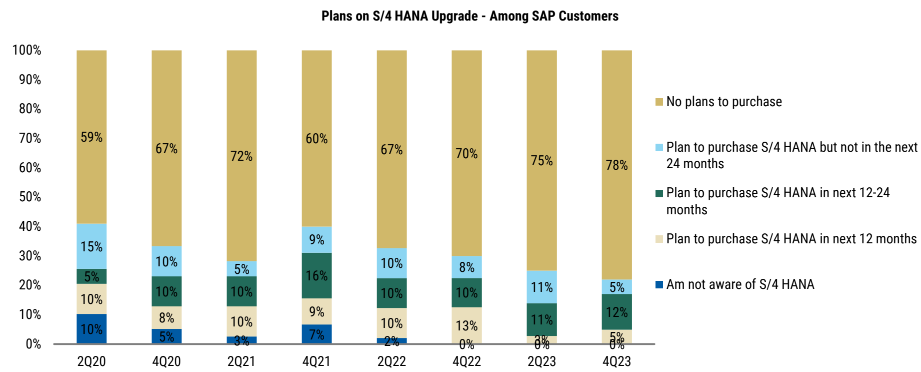
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

- 4Q23 Survey data provides us with more bullish Microsoft data points surrounding CIO intentions to leverage Microsoft's Generative AI products on a go forward basis. Specifically, our 4Q23 survey indicates 63% of CIOs expect to adopt Microsoft Generative AI products over the next 12 months (a significant uptick from 47% in 2Q23), with Azure OpenAI Services and Microsoft 365 Copilot screening as the most popular solutions within Microsoft's growing suite of GenAI offerings (Exhibit 38 . Moreover, looking forward to the next 3 years, 80% of CIOs plan to utilize Microsoft's AI products, suggesting increased acceleration in product uptake, Exhibit 39 .

SAP S/4 HANA Upgrade Intentions Moderate Slightly From 2Q23 Levels

Do you plan to upgrade to S/4 HANA or a component of S/4 HANA (e.g. Simple Finance)?

Exhibit 40: 22% of Current SAP Customers Plan to Upgrade to S/4 HANA At Some Point in the Future



Source: AlphaWise, Morgan Stanley Research, n=41 SAP Customers (US and EU data)

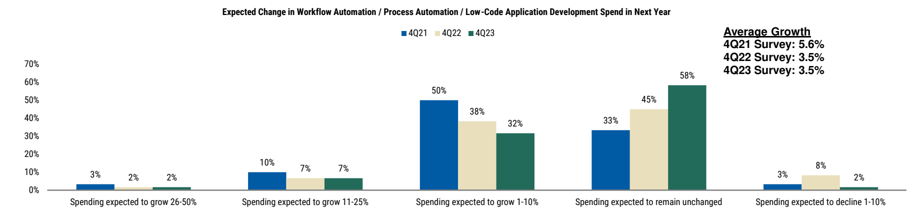
- 68% of CIO respondents are current SAP customers.
- Of current SAP customers, awareness of the S/4 HANA products is strong at 100% of customers. However, 4Q23 survey data suggests CIO intentions to upgrade is moderating- 22% of responses indicate intentions to upgrade at some point in the future, downticking from 25% in 2Q23 and 30% in 4Q22, (Exhibit 40).

Enterprise Software - Automation Takeaways

Automation Initiatives Screen As Increasingly Strategic Priority. Category is Still Emerging Today, with CIOs Preferring Incumbent Platforms.

How do you expect your organization spending on Workflow Automation / Process Automation / Low-Code Application Development to change in 2023?

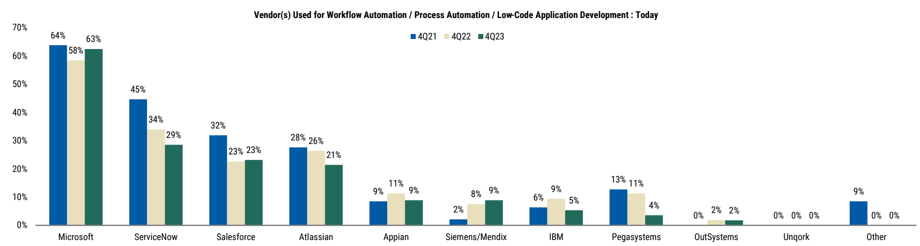
Exhibit 41: 41% of CIOs Expect Spending on Automation Technologies to Grow in 2024 versus just 2% of CIOs Expecting Automation Spend to Decline



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Which of the following vendors do you use for Workflow Automation / Process Automation / Low-Code Application Development in your organization today?

Exhibit 42: Microsoft, ServiceNow and Atlassian Are Seeing Strongest Adoption for Automation Capabilities Among 48 CIOs with Active Automation Deployments Today



Source: AlphaWise, Morgan Stanley Research, n= 56 (4Q23), n=53 (4Q22); n=47 (4Q21); (US and EU data)

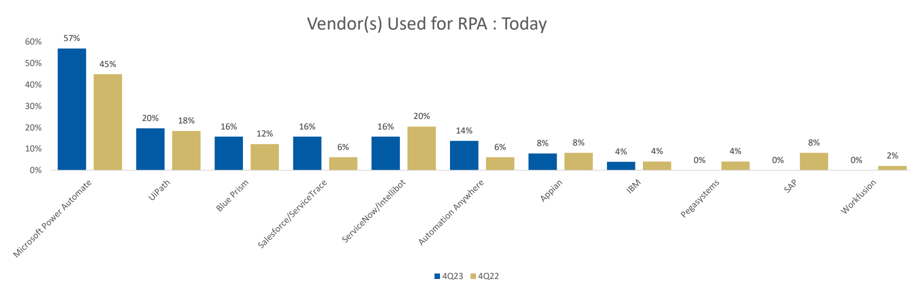
- 41% of CIOs expect spend on automation technologies to increase in 2024, compared to just 2% expecting declines, Exhibit 41 . In our view, drivers of a secular shift towards the uptake of automation technologies include: 1) a growing mandate among executive leadership that business operations need to be more resilient in the wake of the Covid-19 Pandemic; 2) the tighter labor market environment placing higher priority on automation focused projects; and 3) the potential for increased automation deployments to free up incremental budget dollars that can be allocated towards AI/ML and other innovative technologies.
- In terms of vendors most widely adopted today for automation capabilities, **Microsoft** (63% of CIOs with automation deployments today), **ServiceNow** (29% of CIOs) and **Salesforce** (23% of CIOs) screen as the most heavily adopted (Exhibit 42). Given existing relationships with CIOs, **Microsoft** and **ServiceNow** screen favorably as having an incumbency advantage with respect to gaining mind share and market share among large enterprises. Outside of the aforementioned peers,

only **Siemens** (9% vs. 8%) saw an improvement in their standing as an enterprise automation provider in 4Q23 vs. 4Q22, while the remaining vendors saw YoY declines or no change.

Enterprise Automation Stack Still Emerging, Microsoft Key Beneficiary of Standardization

Which of the following vendors do you use for Robotic Process Automation in your organization today?

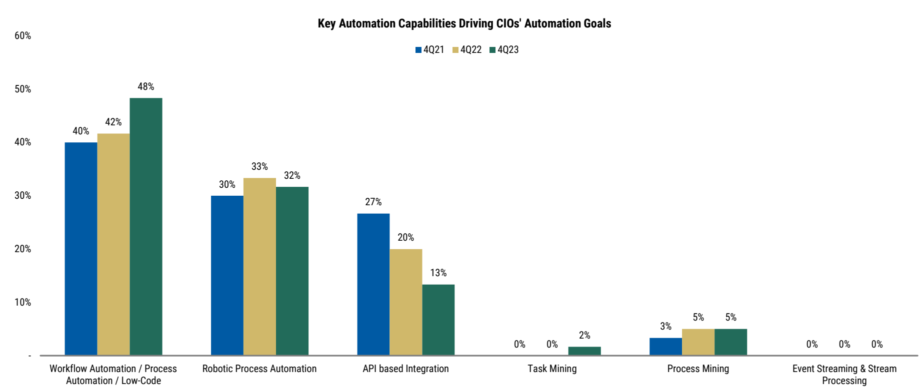
Exhibit 43: Microsoft Continues to Dominate as the Clear Market Leader Today, With 57% of CIOs With RPA Deployments Currently Adopting Microsoft Power Automate



Source: AlphaWise, Morgan Stanley Research, n = 48 (EU and US data)

In term of driving your automation objectives, which capability of the enterprise automation suite contributes the most to your organizations automation goals?

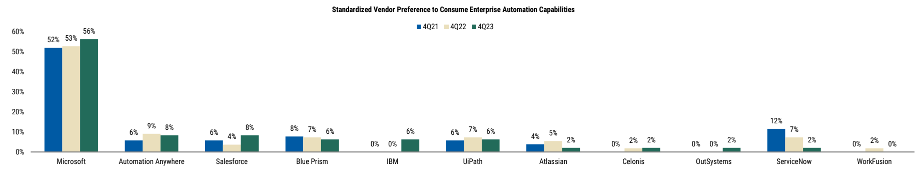
Exhibit 44: Workflow Automation, RPA and API-Based Integration Are the Key Automation Capabilities Informing CIOs' Automation Goals Today, Consistent with Our Previous Surveys



Source: AlphaWise, Morgan Stanley Research, n = 60 (EU and US data)

If you prefer to consume enterprise automation capabilities from a single vendor, which vendor(s) do you plan to standardize on?

Exhibit 45: Microsoft Leads the Pack as Preferred Vendor to Standardize On Today (56%), With A Long Tail of Competitors Vying for Market Share as Well



Source: AlphaWise, Morgan Stanley Research, n = 48 (EU and US data

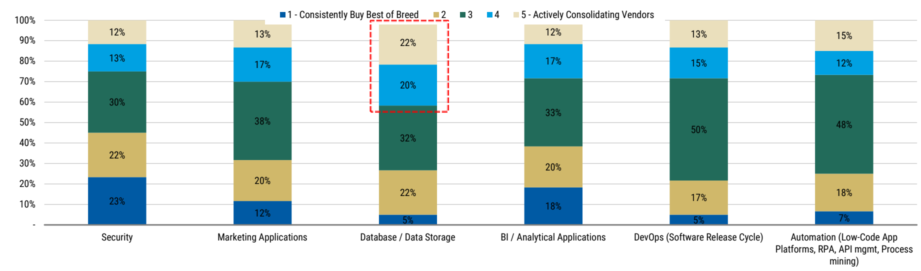
- Workflow Automation (48% of CIOs), RPA (32% of CIOs) and API based Integration (13% of CIOs) are the key automation capabilities informing CIOs automation goals today, Exhibit 44 .
- Numerous vendors in both the public and private markets screen as prospective players in the long-term, although **Microsoft** is the overwhelming favorite platform for standardization today, Exhibit 45 . Within our coverage universe, **Microsoft**, **ServiceNow**, **Salesforce**, **UiPath** , **Atlassian** and **Appian** all have offerings which aim to address this market. The long-tail of vendors vying for market share supports the theme of market convergence: previously disparate point capabilities are increasingly being consolidated (both organically and inorganically) into platform plays.
- **Microsoft**'s ability to bundle capabilities into enterprise agreements (Power Automate and Power Apps platforms span numerous automation capabilities including: low-code application platforms, process mining, RPA, iPaaS and Event Stream Processing) is a key strategic advantage that can help drive share gains over time. This strategic high ground translates to the highest proportion of CIOs expecting to standardize on the platform, by a wide margin at 56% of those CIOs with an expressed preference (Exhibit 45).

Enterprise Software – Data Management Takeaways

In 3 Years, Data Management Market Likely to See Consolidation in Software Spend

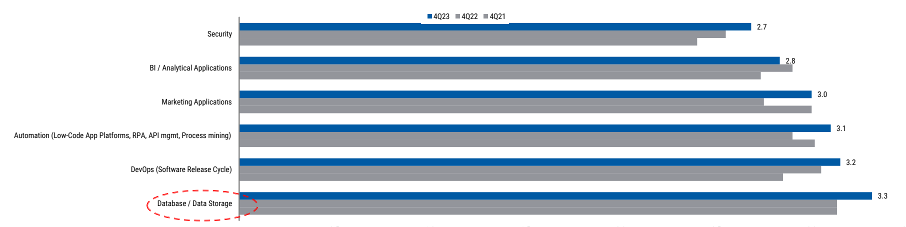
Are you attempting to consolidate the number of vendors you utilize for the following software categories? Please rate using a scale of 1-5 where '1' means you consistently buy the best of breed vendor for each solution while '5' means you actively consolidate solutions into one vendor.

Exhibit 46: Database/Data Storage Screens as the Area of Software Spend Most Likely to be Consolidated Today...



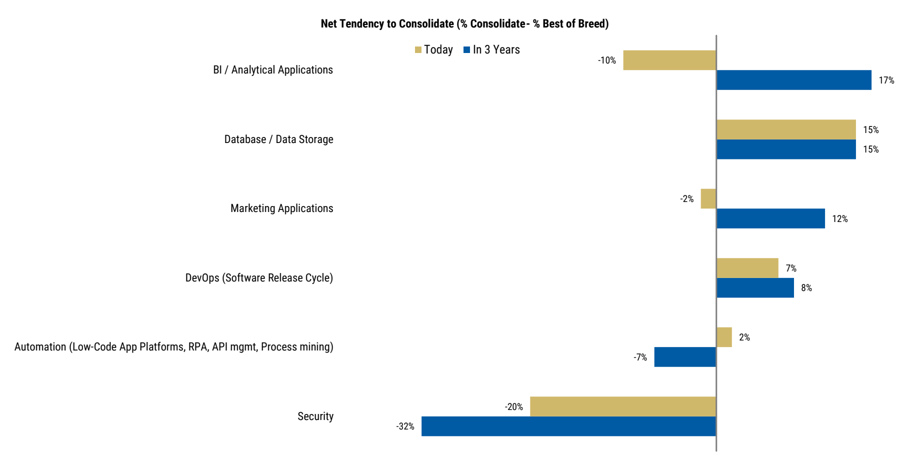
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Exhibit 47: ... Consistent with Prior Survey Results



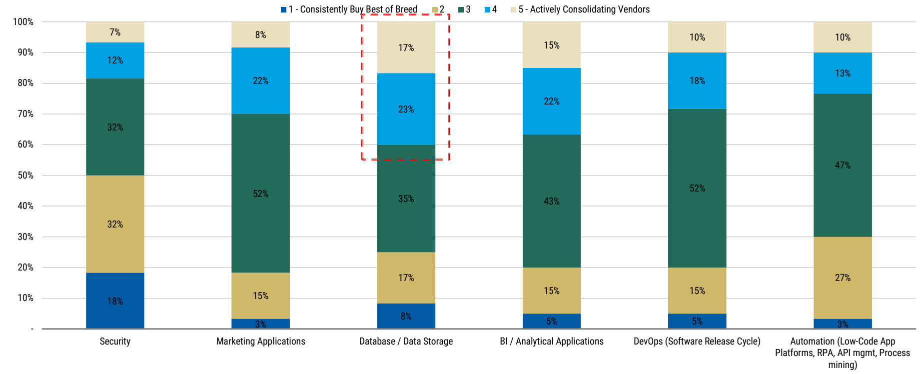
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Exhibit 48: On a Net Tendency to Consolidate Basis (% Consolidate- % Best of Breed), Database/ Data Storage Vendors Screen as Second Highest, Behind BI/Analytical Applications



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Exhibit 49: 40% of CIOs Anticipate Consolidating Database/Data Storage Vendors in 3 Years



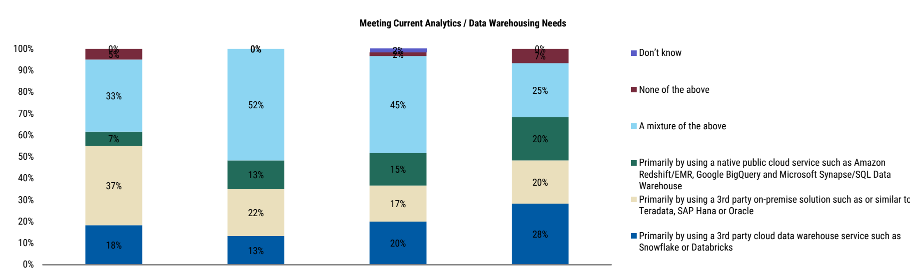
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

- As in prior survey results, Database / Data Storage screens as the mostly likely area to be consolidated today, with Security Software remaining the industry group with best-of-breed buying patterns, Exhibit 47
- While BI/Analytical Application Vendors emerges as the most likely candidate for consolidation over the next three years on a net consolidation basis (Exhibit 48), database/data storage vendors follow in a very close second, with 40% of CIOs indicating intent to consolidate spend here (most likely consolidator on an *absolute basis*), Exhibit 49 .
- This trend towards consolidation in core database and data storage offerings likely benefits those vendors with broad solution offerings in core operational databases (i.e. Microsoft, Amazon, Google, Oracle) as well as vendors that offer flexible database architectures that can handle various data types and schemas, such as MongoDB's document model.

Customers Standardizing on Multi and Hybrid Cloud Database Environments

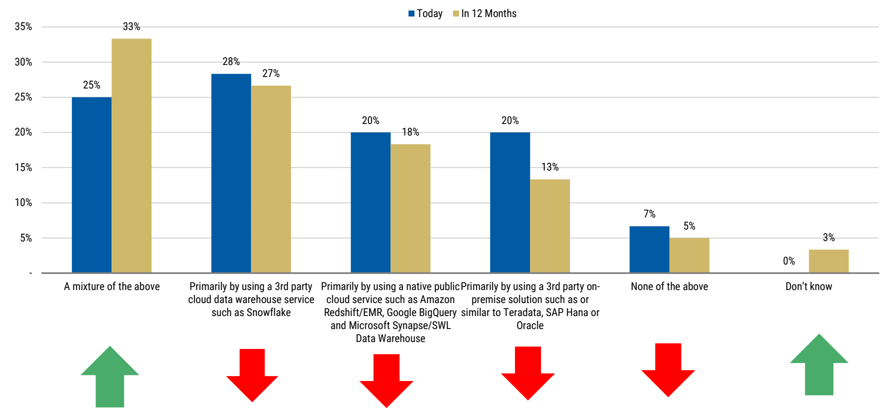
How are you currently meeting your Analytics/Data Warehousing needs? How will you meet your Analytics/Data Warehousing needs 12 months from now?

Exhibit 50: The Landscape is Fairly Evenly Mixed, but Today, 3P Serviced like Snowflake and Databricks Continue to Gain Share



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

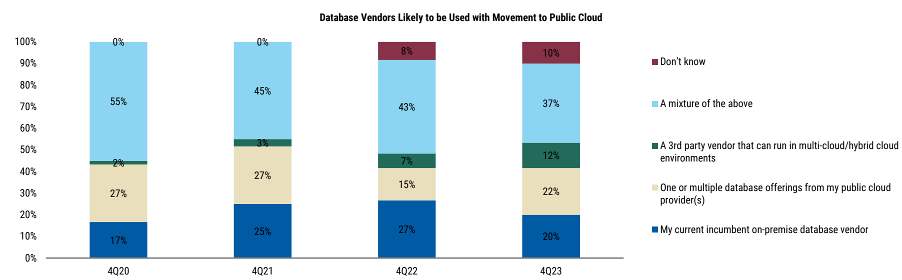
Exhibit 51: The Data Warehousing Landscape is Mixed Today, With This Dynamic Poised to Continue Over the Next 12 Months



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

As more of your workloads and data move to the public cloud, the database vendors you are more likely to use will be…?

Exhibit 52: The Majority of CIOs (37%) Expect to Use a Mixture of Database Deployment Options, Including On-Prem, Multiple Clouds from CSPs and 3rd Party Vendors in Hybrid/Multi Cloud Environments



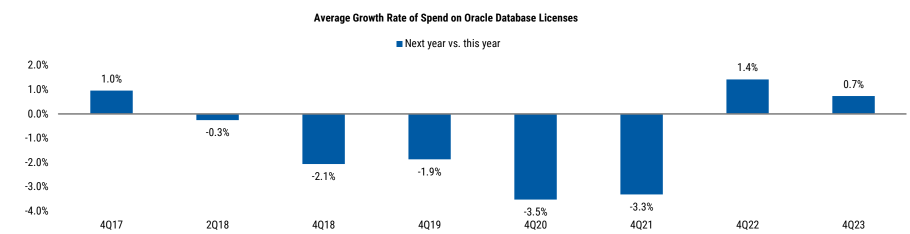
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

- The data analytics/ data warehousing segment of the market is currently in the process of shifting away from primarily on-premise solutions- while there was a slight uptick observed in 4Q23 survey data (20% in 4Q23 vs 17% in 4Q22), the over-arching trend of moving towards a blend of on-prem, 3rd party cloud, and native cloud solutions is apparent (Exhibit 50). CIOs expect this shift to continue over the next 12 months, with the mixed solution representing the largest share of CIO' expectations for meeting analytics/ data warehousing needs, Exhibit 51 .
- Among CIOs not expecting to operate a mixed environment, 22% of the total expect to use one or more database offerings from their public cloud provider (up from 15% in 4Q22), 20% from the incumbent on-premise provider (down from 27% in 4Q22) and 12% expect to use a third party vendor that can run in multi-cloud / hybrid cloud environments (uptick from 7% in 4Q22), Exhibit 52 .
- As vendors increasingly move workloads and data to the public cloud, the majority of CIOs (37%) are expecting to standardize on database architectures that include a mixture of their incumbent on-premise vendor, one or more database offerings from their public cloud provider as well as a third party vendor that can run in multi-cloud / hybrid cloud environments, Exhibit 52 . **With the market highly**

mixed and the size of the database market large (and growing), we expect this dynamic to support attractive growth across a number of different classes of vendors (native cloud and hybrid/multi-cloud, relational , NoSQL and NewSQL, etc.).

How would you quantify your spend on new Oracle database licenses (excluding cloud)?

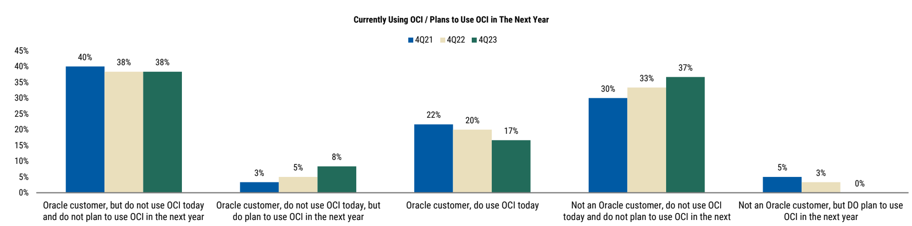
Exhibit 53: While Holding in Positive Territory, Growth is Expected to Slow in the Year Ahead



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

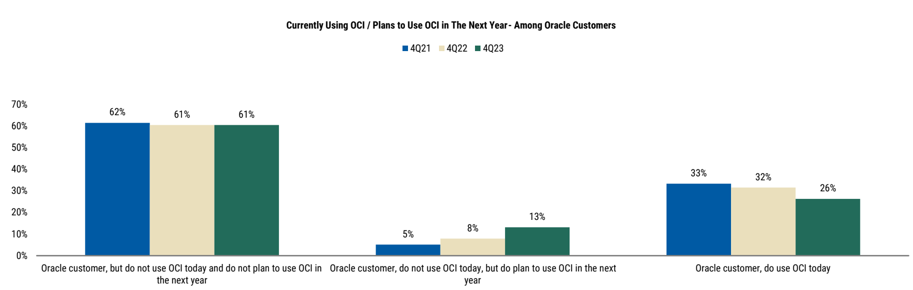
Are you currently using Oracle's Cloud Infrastructure (OCI) or have plans to use in the next year?

Exhibit 54: Within the Total Sample, 17% of CIOs Use OCI Today, and an Additional 8% of CIOs Plan to Use OCI in the Next Year



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

Exhibit 55: Among CIOs Who Are Oracle Customers Today, 26% Currently Use OCI and 13% Have Plans to Do So in the Future



Source: AlphaWise, Morgan Stanley Research, n=38 Oracle Customers (US and EU data)

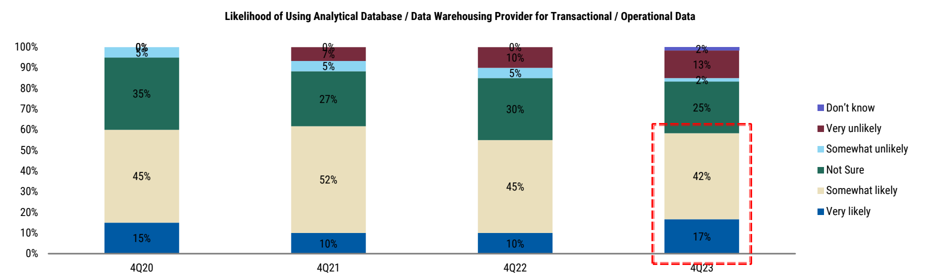
- **Oracle database spending intentions remain positive in 4Q23, but decelerate to +0.7% from +1.4% in 4Q22 (Exhibit 53).** The pullback in database license spending intentions comes inline with F2Q results, where a topline growth miss was driven in part by softness in licenses.

- In recent years Oracle has invested behind improving its cloud offerings, including Oracle Cloud Infrastructure, Autonomous Database and Cloud@Customer to provide an additional vector of growth. Among CIOs that are currently Oracle customers (63% of CIOs in our 4Q23 survey), 26% are using OCI today and 13% are planning to use in the next year, suggesting runway for further penetration of the existing customer base (~61% of CIOs that are currently customers do not have plans to use in the next year), Exhibit 55 .

Customers Looking to Consolidate Transactional and Analytical Data and Workloads with One Provider

How likely are you to use an Analytical Database/Data Warehousing provider for transactional or operational data if they provide the ability to handle both transactional operations and analytical operations?

Exhibit 56: The Majority of CIOs (59%) are Likely to Use an Analytical Database for Transactional Data and Workloads



Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

- 59% of CIOs note that they are likely (42% somewhat likely and 17% very likely) to use an analytical database for transactional / operational data and workloads if it could handle both data types. The percentage of CIOs that suggested they were unlikely to use a database for OLAP and OLTP use cases held stable sequentially at 15% (2% somewhat unlikely and 13% very unlikely), Exhibit 56
- It is still early days for hybrid transactional / analytical databases, but survey data continues to support growth prospects for vendors building out a hybrid vision (Snowflake, MongoDB, Microsoft (Azure SQL) and Google (Cloud Spanner)) databases with the majority of CIOs indicating a likeliness to use hybrid database.

IT Services – Key Takeaways

- **2024 IT Services spending intentions expected to slightly accelerate vs. 2023 levels.** 2024 IT Services spending intentions are expected to uptick to +2.6% y/y growth vs. +2.4% y/y growth in 2023, which is consistent with our 3Q23 survey results polling +2.6% y/y growth amongst respondents. Geographic spending intentions across the US and EU continue to fluctuate, as US and EU IT Services budgets are expected to grow +2.5% and +2.8%, respectively (vs. +3.2% in the US and +1.4% in the EU per 3Q23 survey results).
- **12% of CIOs surveyed indicate they expect to overspend relative to the prior year.** CIO confidence around IT Services spending continues to normalize, with 15% of companies expected to underspend on IT Services, down further from 18% in 2Q22, while 12% of CIOs expect to overspend - a meaningful step-down from 2Q23 levels bracketing 22%. The 4Q23 over-to-under ratio of 0.8x marks the lowest over-to-under ratio since 2Q21, with consecutive downwards revisions since 4Q22 at 2.7x, followed by 2Q23 at 1.2x.
- **Macroeconomic uncertainty is driving project delays.** 67% of CIOs are delaying IT Services-related projects due to macroeconomic concerns, consistent with broad-based management commentary about elongated decision cycles. However, project delays appear to be transitory, with 47% of CIOs noting project delays of 3–6 months.
- **Record low levels of attrition reflect easing supply constraints.** As competition for talent normalizes in a challenged macro, we note 35% of respondents noted increasing utilization of IT Services providers due to internal talent shortages, a modest downtick from 43% seen in our 2Q23 survey results, while 17% of respondents are not experiencing any talent shortages (down from 10% in 2Q23).
- **Infrastructure Outsourcing leads spending categories, followed by Application Maintenance.** Infrastructure Outsourcing has been a beneficiary of shifting IT Services spending towards mission-critical IT solutions, allowing it to screen comparatively defensive vs. more discretionary offerings. Similarly, Application Maintenance polls favorably, as enterprises increasingly shift spend from long-term discretionary projects to critical maintenance tasks.
- **Security, Software Upgrades, and Cloud Computing are the top three IT Services-related initiatives in 2024.** Security retains its position as the top spending initiative as CIOs look to prioritize securing a remote workforce while migrating workloads to the cloud. Software Upgrades and Cloud Computing rank as the second and third highest priorities, respectively.
- **Budgetary restrictions around discretionary spend help drive discounting.** Per our survey results, companies appear more willing to discount services, with seven companies—CTSH, TCS, INFY, DXC, HCLTech, IBM and Wipro—recording net positive discounting scores, consistent with industry commentary pointing to a softer pricing environment amidst macroeconomic uncertainty. We note CTSH, DXC, and HCLTech now show positive net discounting scores relative to our 2Q23 survey, while ACN moved from a

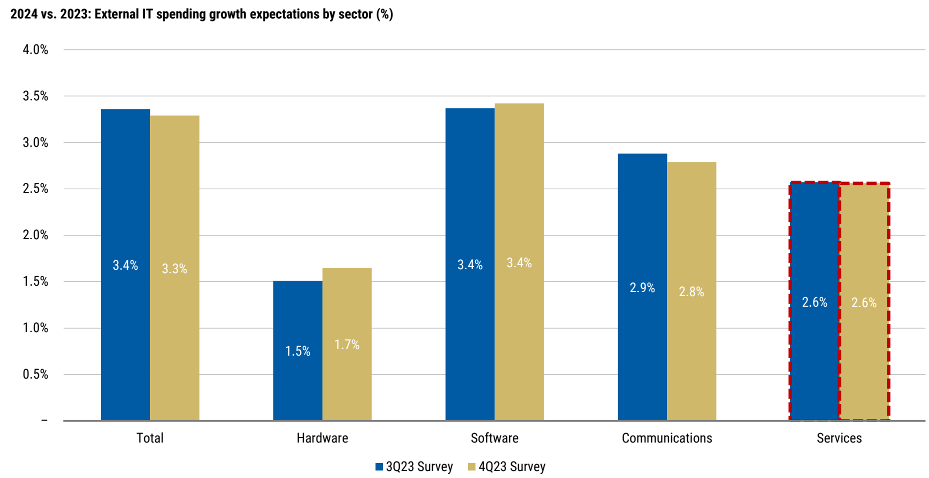
positive to a flat net discounting score.

- **42% of respondents are consolidating vendor relationships, broadly consistent with the 40% in 2Q23.** On a net basis, subtracting the percentage of share losses from share gains, ACN screened as the greatest beneficiary of vendor consolidation, while CTSH screened as the greatest net donor.
- **IBM pulls ahead as the best-positioned to benefit from customer spend, followed by ACN.** Over the past few years, management has worked to strengthen IBM's position in consulting through a variety of organizational changes such as expanding partnership ecosystems and optimizing the internal salesforce. While many have believe that IBM's recent consulting performance has been more macro-driven, we remain open to the possibility that company performance could be more idiosyncratic. Despite Consulting being identified as the least defensible area of spend in a downturn, we remain unsurprised by ACN screening well from a net spending perspective. ACN provides diversified capabilities across consulting and managed services, allowing it to help enterprises navigate growth, cost management, and transformation opportunities amidst uncertain macroeconomic conditions. Exposure to “new” digital, security, and cloud-related services makes it a beneficiary of spend geared toward modernization initiatives, while managed services capabilities allow ACN to benefit from helping enterprises scale operations efficiently. While spending intentions for EPAM appear challenged with net spending (50)%, we note a small sample size of 8 respondents, with 1 indicating increasing spend, 4 indicating flat spend, and 3 indicating decreasing spend over the next 12 months.

IT Services spending intentions beginning to show moderation

What is your estimated spending for 2024 vs. 2023?

Exhibit 53 Survey results show IT Services spending expectations remain broadly consistent with 3Q23 figures, with CIOs continuing to expect +2.6% spending growth

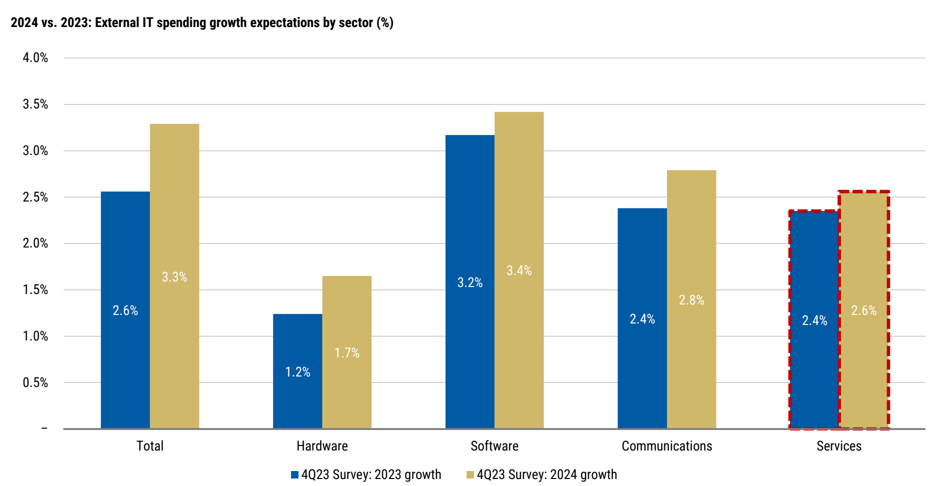


Source: AlphaWise, Morgan Stanley Research; n=100 (US and EU data)

- IT Services spending expectations are broadly in-line with 3Q23 figures, with CIOs continuing to expect +2.6% spending growth

By what percentages did your company's external IT spending change for each of the following technology areas in 2023 vs. 2022? What is your estimated spending for 2024 vs. 2023?

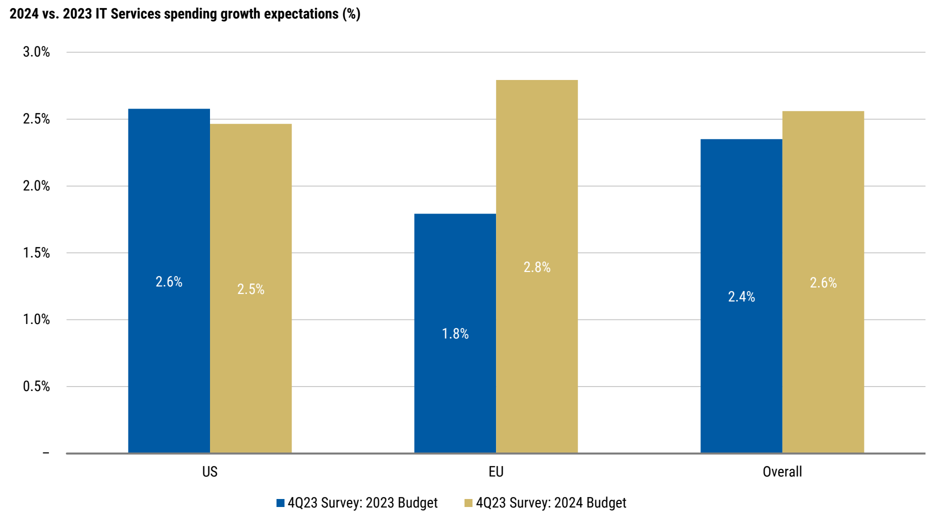
Exhibit 54 2024 IT Services spending growth expectations show a +21bps acceleration vs. 2023 levels



Source: AlphaWise, Morgan Stanley Research; n=100 (US and EU data)

- Survey respondents indicated they expect to increase their total IT Services spend, with growth expectations of +2.6% y/y in 2024 vs. +2.4% in 2023

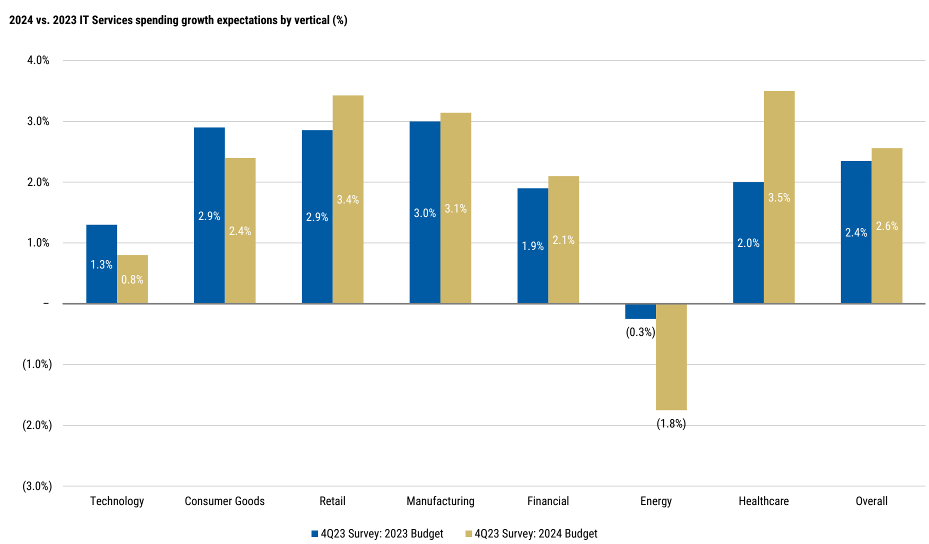
Exhibit 55 IT Services spending intentions look to accelerate in the EU, while spending intentions look to slightly moderate in the US



Source: AlphaWise, Morgan Stanley Research; n=100 (US and EU data)

- Within IT Services, EU spending expectations appear better than that of US respondents, with EU budgets expected to grow +2.8% y/y vs. +2.5% y/y in the US.

Exhibit 56 IT Services spending intentions across industry verticals are relatively balanced, with Energy and Healthcare exhibiting the sharpest deceleration and acceleration, respectively

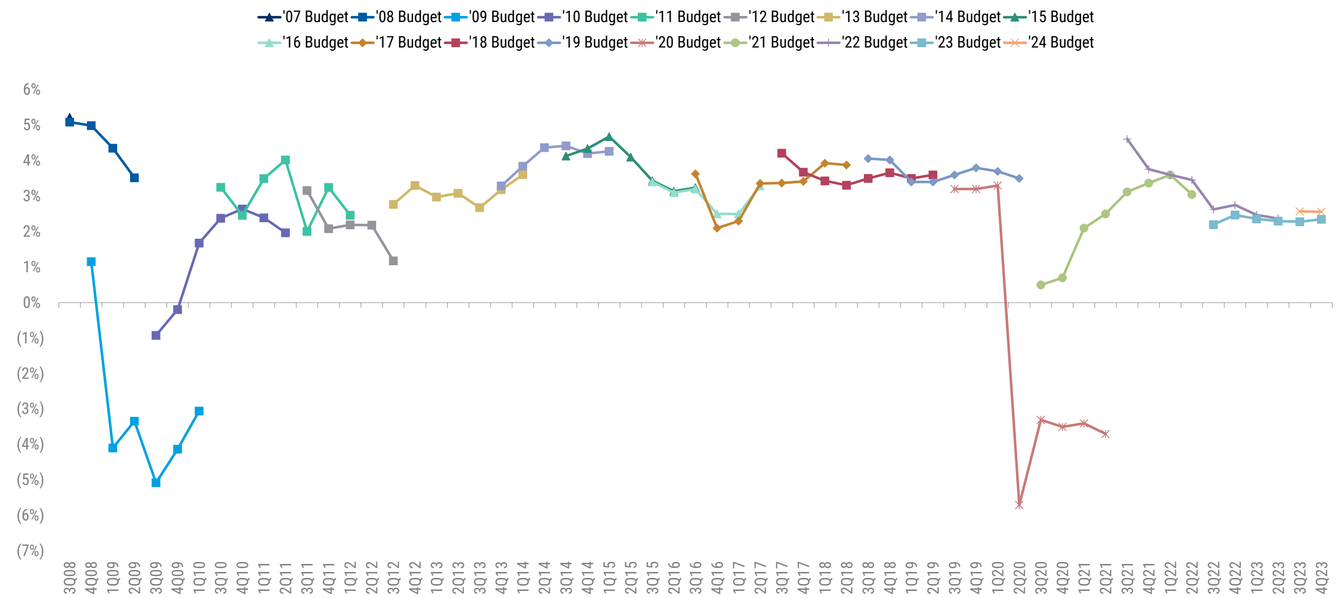


Source: AlphaWise, Morgan Stanley Research; n=100 (US and EU data)

- Expectations amongst CIOs is broadly split across industry verticals, with Retail, Manufacturing, Financial, and Healthcare showing a sequential improvement, while Technology, Consumer Goods, and Energy show modest deceleration.
- Energy saw the sharpest deceleration across verticals, decelerating (150)bps, balanced by Healthcare, which saw +150bps of acceleration.

Exhibit 57 IT Services spending growth expectations have remained relatively durable

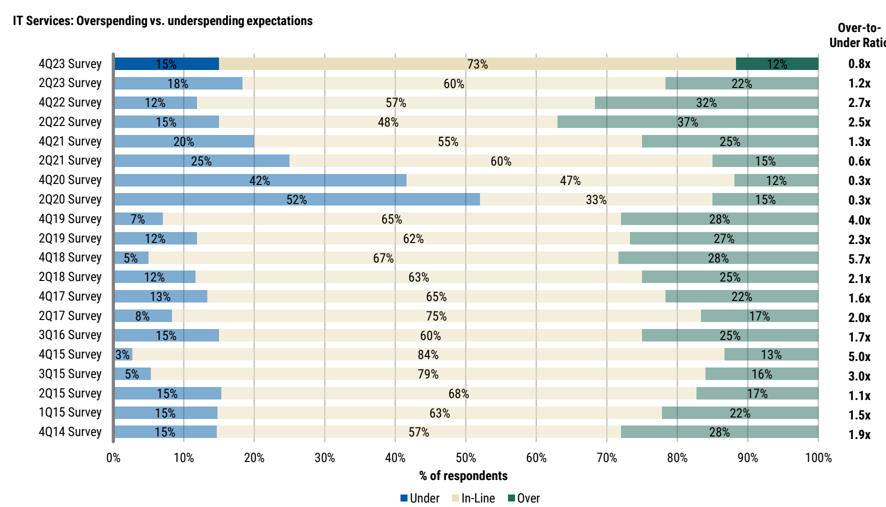
IT Services spending growth expectations over time



Source: AlphaWise, Morgan Stanley Research; n=100 (US and EU data)

Do you expect your professional IT Services spending in 2024 to be in-line with your budget this year, or is your organization more likely to over- or under-spend its 2023 budget?

Exhibit 58 4Q23 exhibits the lowest over-to-under ratio for IT Services spending expectations since 2Q21



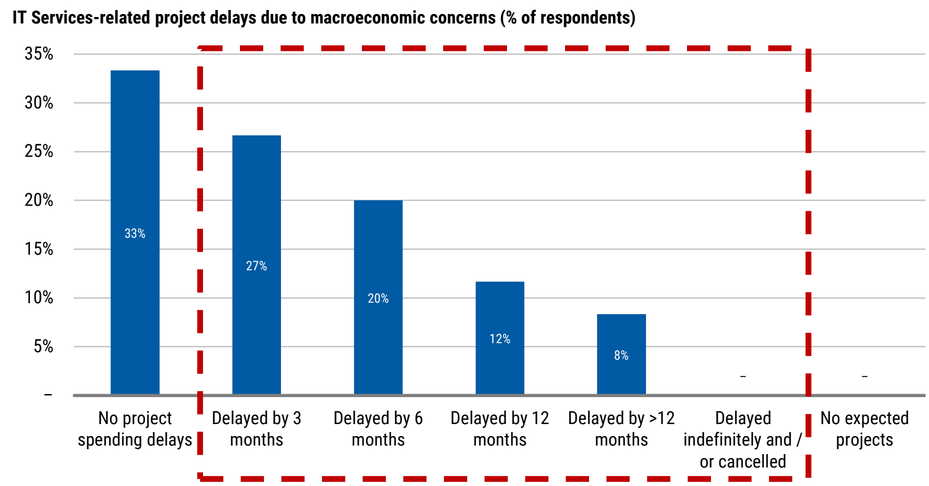
Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- 12% of CIOs surveyed indicate they expect to overspend relative to the prior year.
- The ratio of CIOs expecting to overspend vs. underspend relative to prior year IT Services budgets is 0.8x (2024 vs. 2023), the lowest over-to-under ratio since the 2Q21, with more CIOs looking to underspend.

Macroeconomic concerns driving project delays

Are your expected professional IT Services-related projects (e.g., digital transformation, cloud migration) delayed due to macroeconomic and / or geopolitical concerns?

Exhibit 57: 67% of respondents are delaying IT Services-related projects due to macroeconomic concerns



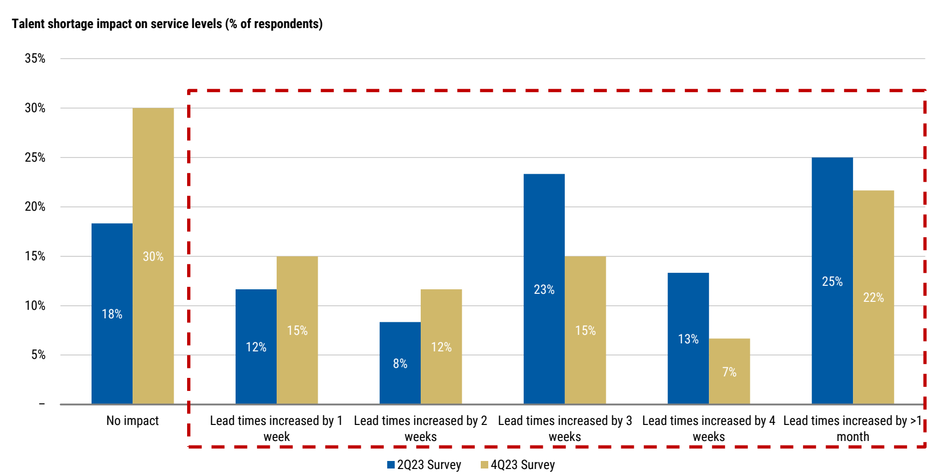
Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- 67% of CIOs are delaying IT Services-related projects due to macroeconomic concerns. Project delays appear to be relatively temporary, with 47% of CIOs noting projects delays of 3–6 months.

Supply Challenges Continue to Abate Amidst Macro Uncertainty

Are talent shortages impacting service levels you receive from your IT Services providers?

Exhibit 60 Talent shortages at IT Services providers are increasing lead times for 70% of respondents

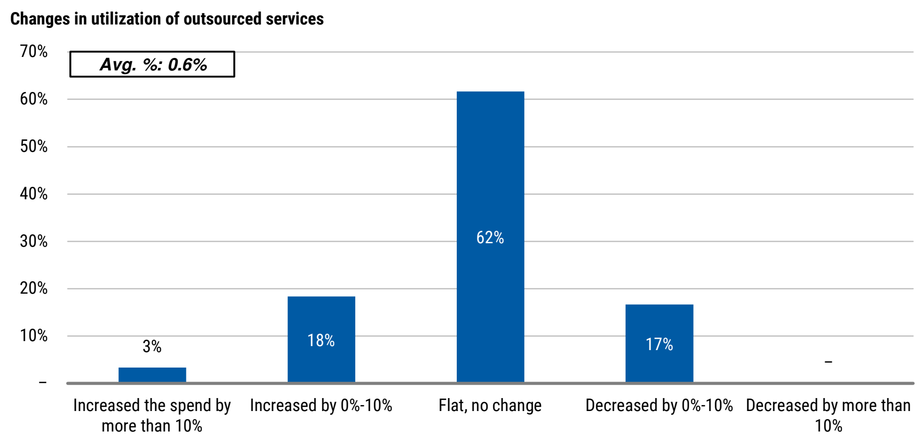


Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- 70% of CIOs surveyed indicated that lead times from IT Services providers have increased due to talent shortages, down from 82% in 2Q23 and 80% in 4Q22, implying competition for talent is normalizing. 22% of respondents noted lead times increasing by over one month, a slight downtick from 25% of respondents surveyed in 2Q23, consistent with record low levels of attrition driven by macroeconomic uncertainty.

Are you changing your mix of spending on resources in-house vs. outsourced? Please share the degree of change regarding utilization of outsourced services.

Exhibit 61 22% of respondents expect to increase utilization of outsourced services

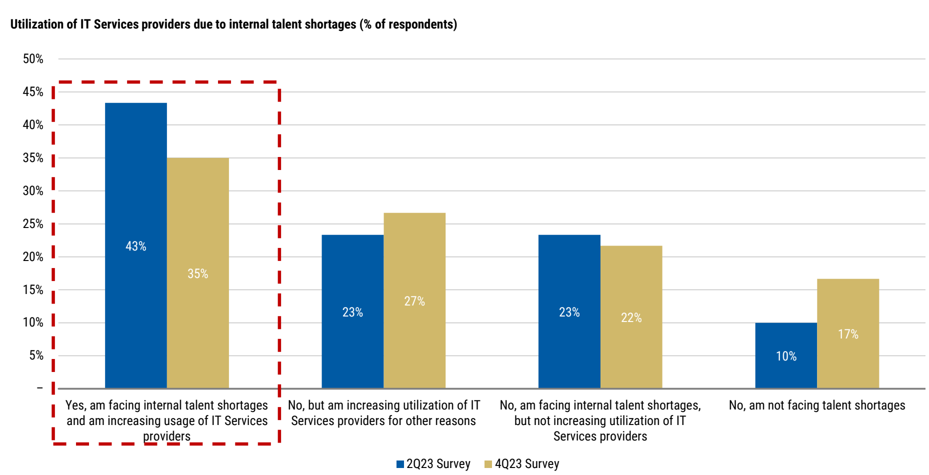


Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- 22% of respondents indicate they are increasing utilization of outsourced services, which is the lowest percentage recorded since 4Q20, with 17% that are looking to shift work in-house. This is consistent with the expectation that spend on Outsourced Resources is expected to normalize over the next 12 months.

Are you increasing utilization of IT Services providers due to internal talent shortages?

Exhibit 58: 35% of respondents noted increasing usage of IT Services providers due to internal talent shortage



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

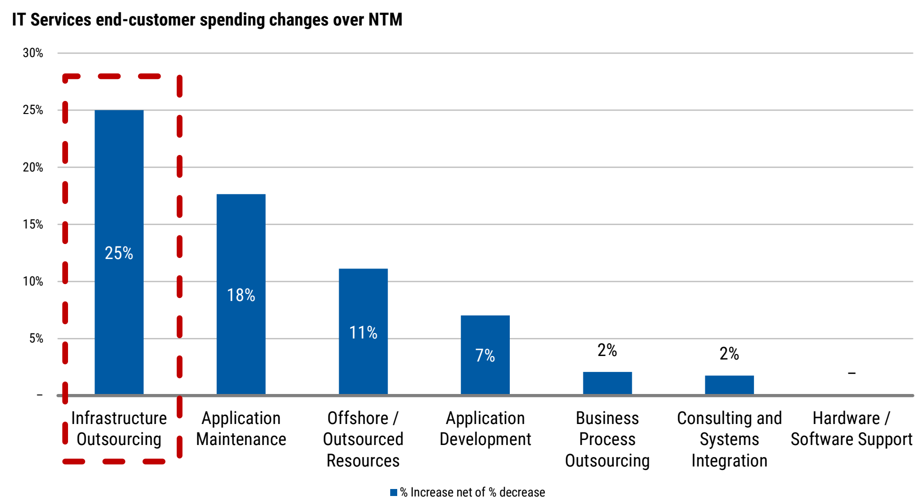
- Post-pandemic supply and demand imbalances continue to normalize as 35% of respondents noted they are increasing usage of IT Services providers in response to talent shortages, down from 43% in 2Q23.

- 27% of respondents are increasing utilization of IT Services providers, despite not facing internal talent shortages, up from 23% in 2Q22.
- CIOs appear more comfortable with not addressing talent shortages by utilizing IT Services providers, exhibited by the 22% of respondents facing talent shortages but not increasing spend, slightly down from 23% in 2Q23.
- 17% of respondents noted not facing talent shortages, up from 10% in 2Q23, signaling easing of labor supply pressures.

Infrastructure Outsourcing Leads Spending Categories, Followed By Application Maintenance

How do you expect your professional IT Services spending in the following segments to change in the next 12 months?

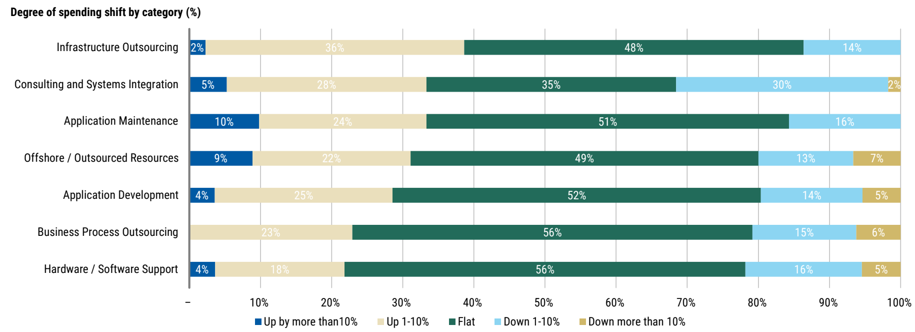
Exhibit 59: Respondents indicate a meaningful acceleration in Infrastructure Outsourcing spending intentions



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- On a net basis, subtracting the percentage of respondents indicating a decline, Infrastructure Outsourcing (25%) and Application Maintenance (18%) are expected to see meaningful spending increases over the next twelve months.
- Infrastructure Outsourcing saw the greatest number of respondents expecting spending increases (39%), and the fewest respondents expecting spending decreases (14%). This is likely due to CIOs looking to streamline operations and harness IT efficiencies, particularly as clients leverage IT Services providers in maintaining business-critical infrastructure.

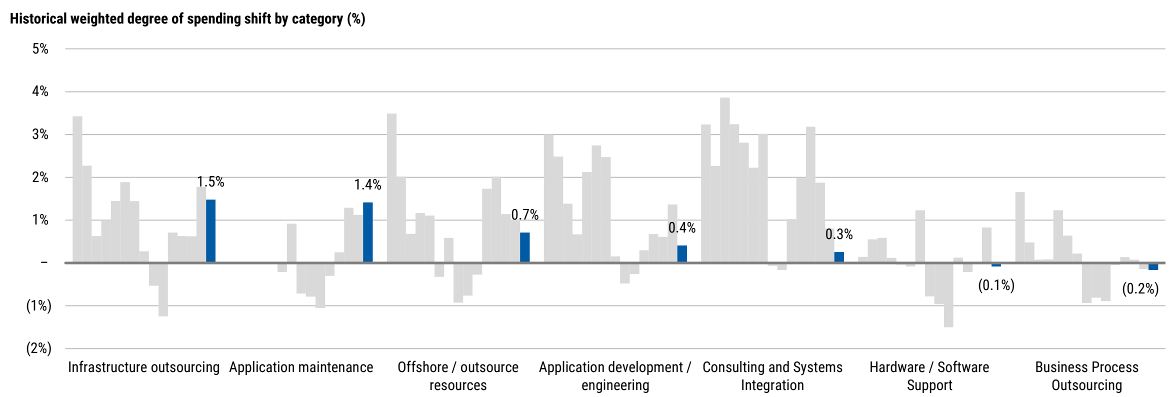
Exhibit 60: Infrastructure Outsourcing saw the largest percentage of respondents indicating an increase in spend



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- Application Maintenance saw the greatest percentage of respondents indicating an expectation that spending could increase by over 10% (10% of respondents).
- Offshore / Outsourced Resources saw the greatest percentage of respondents indicating an expectation that spending could decrease by over 10% (7% of respondents), slightly above Business Process Outsourcing.

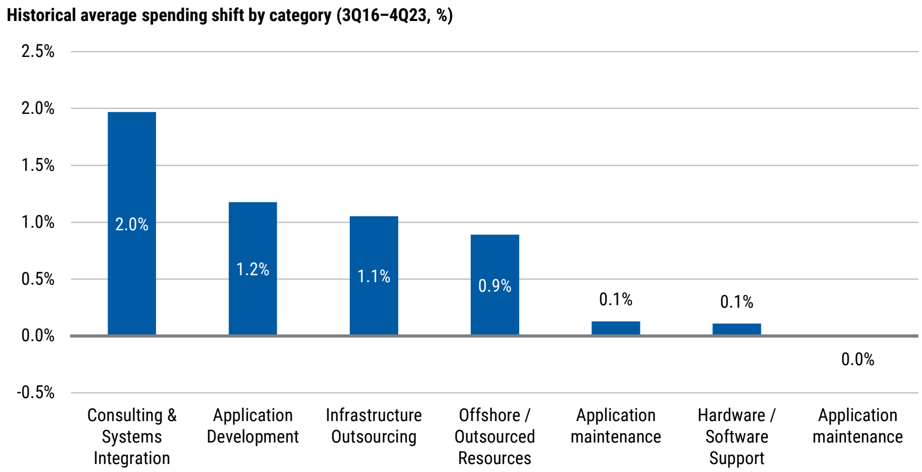
Exhibit 61: Weighted by magnitude of expected change, Infrastructure Outsourcing and Application Maintenance are expected to see the greatest increase



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- Weighted by the magnitude of expected spend change (% increase or decrease over the next year), respondents indicated that they expect increased spend across most IT Services initiatives, with the greatest positive spending shift in Infrastructure Outsourcing (+1.5%) and Application Maintenance (+1.4%).

Exhibit 62: Historically, Consulting & Systems Integration and Application Development see the greatest weighted average spend increase (3Q16–4Q23)

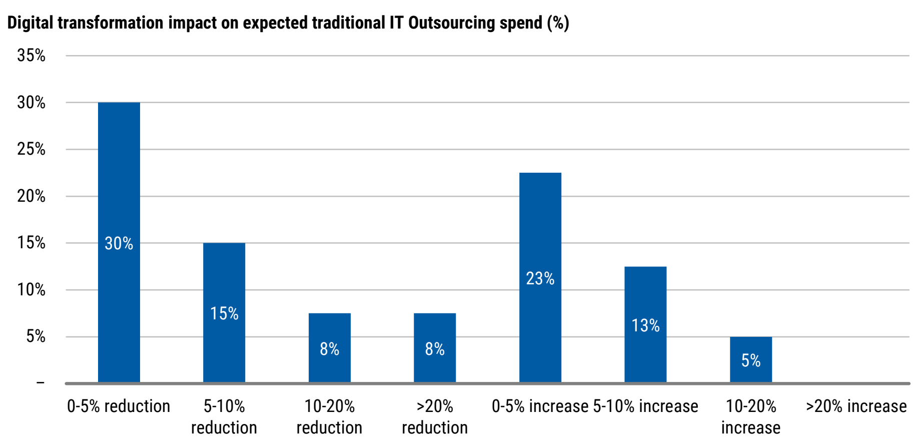


Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- Historically, Consulting & Systems Integration spending has seen the greatest average weighted spending increase since 3Q16, increasing on average +2.0%. This is followed by Application Development (+1.2%). We recognize both services as vehicles to enable digital transformation.

How are digital initiatives impacting your traditional outsourcing spend? We are defining IT outsourcing as BPO, application maintenance, and IT outsourcing / infrastructure maintenance.

Exhibit 63: Digital initiatives are driving companies to reduce legacy spend



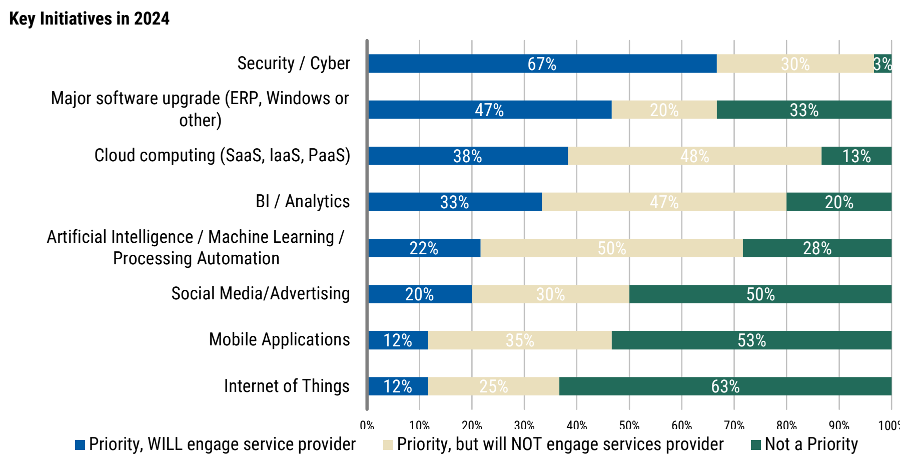
Source: AlphaWise, Morgan Stanley Research; n=40 (US and EU data)

- **Transformation projects funded by legacy spend.** Of the respondents indicating changes to traditional outsourcing spend due to digital transformation, 60% indicate at least some level of reduction in spend. We believe this reinforces the view that digital projects are funded by traditional lines of IT Services spend.

Security, Software Upgrades, and Cloud Computing Areas of Near-Term Demand

Are any of the following initiatives a priority for your company in 2024? If so, is your company engaging or planning to engage outside professional IT Services providers to help with the planning or execution?

Exhibit 64: Respondents indicate that Security, Software Upgrades, and Cloud Computing are near-term priorities



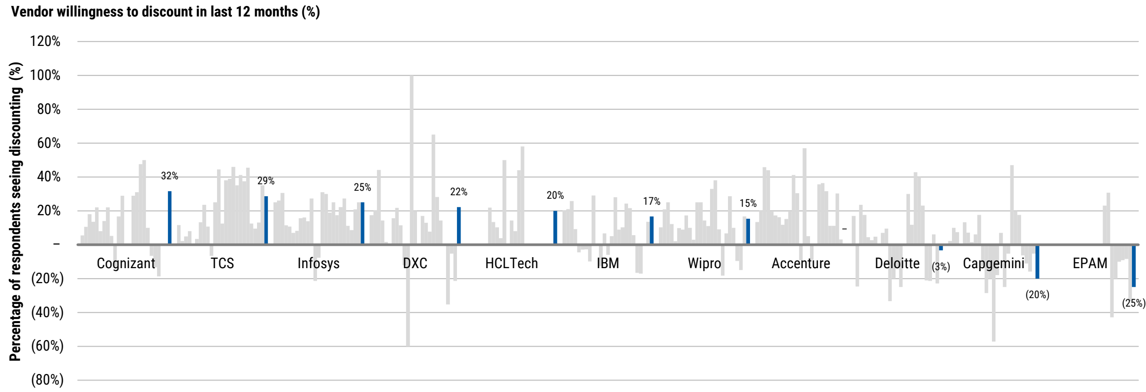
Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- In terms of priorities for spend that respondents indicated they will act upon in the next 12 months, the categories with the highest percentage of respondents remain **Security / Cyber**, with 67% of respondents indicating an intention to engage a service provider (vs. 68% in 2Q23), **Software Upgrades**, with 47% of respondents indicating an intention to engage a service provider (vs. 43% in 2Q23), and **Cloud Computing**, with 38% of respondents looking to engage a service provider (vs. 40% in 2Q23). We continue to see ACN as best-positioned to benefit from increased Security spend, as the company has heavily invested in building out its Security practice via tuck-in acquisitions. Platform partnerships with core software providers should also drive demand for ACN's services aligned with CIO priorities for software upgrades. DAVA should also be a beneficiary of broader priorities given its respective pure-play digital capabilities.

Continued Discounting Across IT Services Vendors

How would you describe the following vendors' willingness to discount pricing over the past 12 months?

Exhibit 65: We see incrementally more discounting across the space



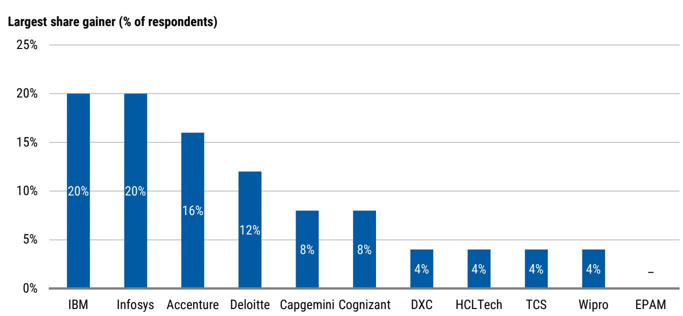
Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- **Macroeconomic uncertainty likely drives greater discounting.** We see incrementally more discounting across the space, in-line with broad-based commentary from management teams about a shift to cost optimization initiatives at end customers. The industry continues to be open to discounting with 7 of 11 vendors having positive net discounting scores, which is slightly above the 5 of 11 vendors observed in our 2Q23 survey. We note Indian-centric players, namely Cognizant, TCS, Wipro, HCLTech and INFY, show the greatest willingness to discount relative to industry peers. We note Cognizant, DXC, and HCLTech now show positive net discounting scores relative to our 2Q23 survey, while ACN moved from a positive to a flat net discounting score.
- **CTSH more willing to discount.** CTSH's positive net discounting score of +32% in our 4Q23 survey (vs. flat in 2Q23), likely implies increased pricing competition driven by the muted discretionary spending environment.

42% of respondents consolidating vendor relationships

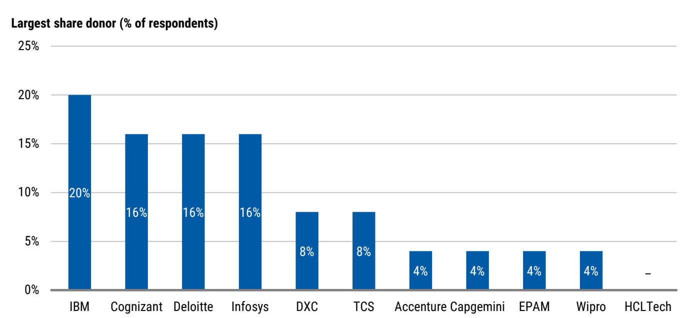
Has your organization consolidated vendor relationships? If so, which IT Services vendor was the largest share gainer, and which was the largest share donor?

Exhibit 66: Of respondents undertaking vendor consolidation, IBM screened as the largest share gainer...



Source: AlphaWise, Morgan Stanley Research; n=25 (US and EU data)

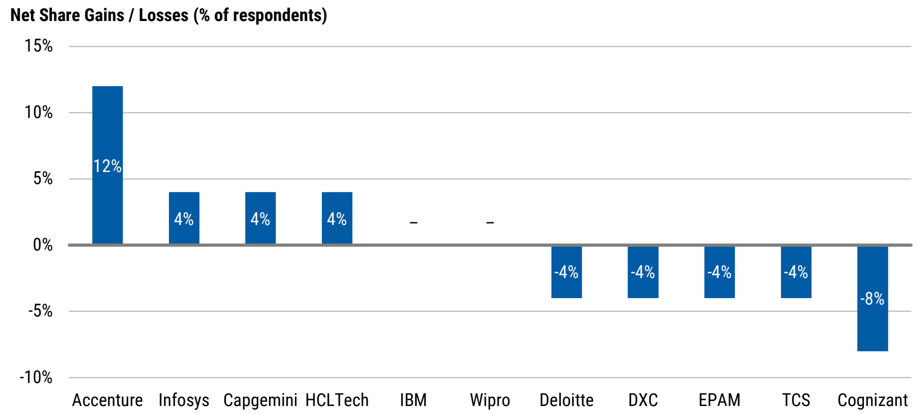
Exhibit 67: ...while also screening as the largest share donor



Source: AlphaWise, Morgan Stanley Research; n=25 (US and EU data)

Exhibit 68:

Net-net, ACN screens as a leader in vendor consolidation share gains



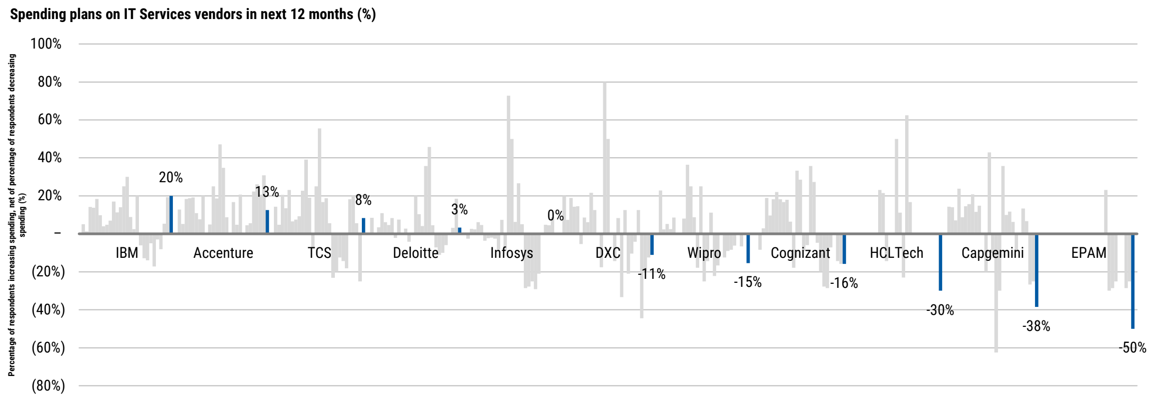
Source: AlphaWise, Morgan Stanley Research; n=25 (US and EU data)

- **ACN screened as the greatest net beneficiary of vendor consolidation.** On a net basis, subtracting the percentage of share losses from share gains, ACN recorded +12% share gains amongst the 25 respondents undergoing vendor consolidation, likely driven by the company's breadth of offerings across both consulting and outsourcing, as well as the company's leadership in strategic transformation. Channel conversations point to high-quality delivery, competence around key platforms, and an ability to hire and retain strong talent as drivers of share gains. Of the 24 respondents highlighting share gainers, 4 respondents highlighted ACN as the greatest beneficiary, with those respondents pointing to DXC, Deloitte, CTSH, and IBM as among the greatest share donors.
- **CTSH screened as the greatest net donor in vendor consolidation.** Of the 4 respondents highlighting CTSH as the greatest share donor, ACN, IBM, Deloitte and TCS screened as share gainers.

IBM and ACN insulated from spending cuts

Over the next twelve months, what are your IT Services spending plans as it relates to specific vendors?

Exhibit 69: Spending intentions appear more balanced across providers



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

- **IBM pulls ahead as the best-positioned to benefit from customer spend, followed by ACN.** Over the past few years, management has worked to strengthen IBM's position in consulting through a variety of organizational changes such as expanding partnership ecosystems and optimizing the internal salesforce. While many have believe that IBM's recent consulting performance has been more macro-driven, we remain open to the possibility that company performance could be more idiosyncratic. Despite Consulting being identified as the least defensible area of spend in a downturn, we remain unsurprised by ACN screening well from a net spending perspective. ACN provides diversified capabilities across consulting and managed services, allowing it to help enterprises navigate growth, cost management, and transformation opportunities amidst uncertain macroeconomic conditions. Exposure to “new” digital, security, and cloud-related services makes it a beneficiary of spend geared toward modernization initiatives, while managed services capabilities allow ACN to benefit from helping enterprises scale operations efficiently.
- **EPAM results not statistically meaningful.** While spending intentions for EPAM appear challenged with net spending (50)%, we note a small sample size of 8 respondents, with 1 indicating increasing spend, 4 indicating flat spend, and 3 indicating decreasing spend over the next 12 months.

Morgan Stanley CIO Survey Demographics

This report contains the results of our CIO Survey. The survey was conducted by telephone and online interviews with 100 decision makers, representing 100 enterprise Information Technology organizations, during October through December 2023. 71 of respondents are from the US and 29 from Europe. Survey respondents hold responsibility for purchasing, integrating and maintaining technology. Their responses represent enterprise customer adoption and purchasing behaviors for Q4 2023

- **Software Domain:** we conducted telephone and online interviews with 60 respondents (38 US / 22 EU), representing 60 enterprise Information Technology organizations. Survey respondents hold responsibility for purchasing, integrating and maintaining hardware infrastructure based technology strategies.
- **IT Services Domain:** we conducted telephone and online interviews with 60 respondents (43 US / 17 EU), representing 60 enterprise Information Technology organizations. Survey respondents hold responsibility for purchasing, integrating and maintaining software/services technology strategies.

Exhibit 70: By Revenue

Revenue		
Total Respondents = 100		
$500 Million - $1 Billion	21	21%
$1-5 Billion	41	41%
$5-10 Billion	14	14%
$10-15 Billion	5	5%
$15-20 Billion	4	4%
>$20 Billion	15	15%

Source: AlphaWise, Morgan Stanley Research

Exhibit 71: By Industry Vertical

Vertical		
Total Respondents = 100		
Aerospace / Defense	2	2%
Business services	0	0%
Communications	4	4%
Consumer Goods	10	10%
Education	8	8%
Energy	4	4%
Financial	10	10%
Healthcare	14	14%
Legal	0	0%
Manufacturing	14	14%
Pharmaceuticals	3	3%
Retail	7	7%
Services	8	8%
Technology	10	10%
Transportation	4	4%
Wholesale / Distribution	2	2%

Source: AlphaWise, Morgan Stanley Research

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(as of December 31, 2023)

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	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
Stock Rating Category	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1346	37%	266	41%	20%	605	39%
Equal-weight/Hold	1668	46%	317	49%	19%	717	46%
Not-Rated/Hold	3	0%	0	0%	0%	1	0%
Underweight/Sell	598	17%	61	9%	10%	224	14%
Total	3,615		644			1547	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

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INDUSTRY COVERAGE: Software

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
Chris Quintero		
Blackline Inc (BL.O)	E (09/18/2023)	$58.17

Vertex Inc. (VERX.O)	O (09/18/2023)	$25.73
Elizabeth Porter, CFA		
Amplitude Inc. (AMPL.O)	E (10/25/2021)	$12.33
Freshworks Inc (FRSH.O)	E (10/18/2021)	$23.32
GoDaddy Inc (GDDY.N)	E (07/19/2021)	$104.70
HubSpot, Inc. (HUBS.N)	O (03/21/2023)	$569.89
Klaviyo, Inc (KVYO.N)	E (10/16/2023)	$26.56
LegalZoom.com Inc (LZ.O)	U (07/28/2022)	$10.85
Liveramp Holdings Inc (RAMP.N)	O (07/15/2019)	$36.04
Matterport Inc (MTTR.O)	E (04/19/2022)	$2.41
Semrush Holdings Inc -A (SEMR.N)	E (06/06/2022)	$12.49
Sprinklr Inc (CXM.N)	E (07/19/2021)	$12.09
Sprout Social Inc (SPT.O)	E (11/17/2020)	$60.70
Wix.Com Ltd (WIX.O)	E (05/19/2022)	$122.18
Zeta Global Holdings Corp (ZETA.N)	E (07/06/2021)	$9.13
ZoomInfo Technologies Inc (ZI.O)	O (11/18/2020)	$16.15
Hamza Fodderwala		
Check Point Software Technologies Ltd. (CHKP.O)	E (10/16/2023)	$155.22
Cloudflare Inc (NET.N)	E (10/30/2023)	$80.97
CrowdStrike Holdings Inc (CRWD.O)	O (01/09/2024)	$282.04
CyberArk Software Ltd (CYBR.O)	E (01/09/2024)	$218.80
Fortinet Inc. (FTNT.O)	O (10/07/2022)	$61.37
Gen Digital Inc. (GEN.O)	O (11/21/2023)	$22.82
Okta, Inc. (OKTA.O)	E (09/01/2022)	$83.95
Palo Alto Networks Inc (PANW.O)	O (10/10/2017)	$316.09
Qualys Inc (QLYS.O)	U (02/09/2021)	$188.63
Rapid7 Inc (RPD.O)	E (08/11/2015)	$54.36
Secureworks Corp (SCWX.O)	E (09/09/2020)	$6.99
SentinelOne, Inc. (S.N)	O (06/12/2023)	$24.53
Tenable Holdings Inc (TENB.O)	O (01/09/2024)	$46.31
Varonis Systems, Inc. (VRNS.O)	O (10/16/2023)	$45.39
Zscaler Inc (ZS.O)	E (01/12/2023)	$225.40
Josh Baer, CFA		
2u Inc (TWOU.O)	E (11/24/2020)	$0.98
Asana Inc (ASAN.N)	E (10/26/2020)	$19.23
BigCommerce Holdings, Inc. (BIGC.O)	E (05/11/2021)	$8.65
Box Inc (BOX.N)	O (10/03/2022)	$25.01
CCC Intelligent Solutions Holdings Inc (CCCS.O)	E (12/12/2023)	$10.97
Chegg Inc (CHGG.N)	U (11/20/2023)	$10.80
Coursera, Inc. (COUR.N)	O (04/26/2021)	$19.37
DigitalOcean Holdings Inc (DOCN.N)	E (08/11/2023)	$36.53
Docebo Inc. (DCBO.O)	O (08/17/2023)	$47.14
DocuSign Inc (DOCU.O)	U (10/03/2022)	$56.11
Instructure Holdings Inc (INST.N)	O (12/09/2021)	$25.39
Lightspeed POS Inc. (LSPD.N)	E (02/18/2021)	$19.18
Sabre Corp (SABR.O)	E (03/16/2021)	$4.37
Smartsheet Inc (SMAR.N)	O (05/22/2018)	$48.09
Toast, Inc. (TOST.N)	O (12/16/2021)	$19.10
Udemy Inc (UDMY.O)	E (11/23/2021)	$13.38
WalkMe Ltd (WKME.O)	E (06/07/2022)	$10.76
Keith Weiss, CFA		
Adobe Inc. (ADBE.O)	O (07/31/2023)	$591.03
Akamai Technologies, Inc. (AKAM.O)	E (04/29/2020)	$116.08
Atlassian Corporation PLC (TEAM.O)	O (01/13/2020)	$244.21

Autodesk (ADSK.O)	E (08/19/2021)	$238.82
Bill.com Holdings (BILL.N)	E (06/12/2023)	$76.39
Intuit (INTU.O)	O (10/05/2020)	$608.70
Microsoft (MSFT.O)	O (01/13/2016)	$382.77
Oracle Corporation (ORCL.N)	E (01/15/2019)	$103.92
Palantir Technologies Inc. (PLTR.N)	U (08/31/2023)	$16.79
Salesforce.com (CRM.N)	O (12/21/2023)	$264.13
Samsara Inc (IOT.N)	E (03/23/2023)	$32.86
ServiceNow Inc (NOW.N)	O (11/12/2020)	$714.30
Shopify Inc (SHOP.N)	E (06/24/2022)	$81.10
Snowflake Inc. (SNOW.N)	O (02/07/2022)	$197.40
Splunk Inc (SPLK.O)	++	$152.49
UiPath Inc (PATH.N)	E (09/07/2022)	$22.74
Workday Inc (WDAY.O)	O (04/14/2020)	$276.81
Meta A Marshall		
8x8 Inc (EGHT.O)	E (01/13/2020)	$3.57
Five9 Inc (FIVN.O)	E (10/10/2022)	$77.08
NICE Ltd. (NICE.O)	O (10/16/2023)	$211.76
RingCentral Inc (RNG.N)	E (08/08/2023)	$33.28
Twilio Inc (TWLO.N)	O (09/19/2019)	$71.26
Zoom Video Communications Inc (ZM.O)	E (10/11/2022)	$68.18
Roy D Campbell		
Karooooo Ltd (KARO.O)	O (04/27/2021)	$25.01
Sanjit K Singh		
Alteryx Inc (AYX.N)	++	$47.22
Appian Corp (APPN.O)	E (12/03/2021)	$34.16
C3.ai (AI.N)	U (01/04/2021)	$28.54
Confluent, Inc. (CFLT.O)	O (04/12/2023)	$22.67
Couchbase, Inc. (BASE.O)	E (08/16/2021)	$22.46
Datadog, Inc. (DDOG.O)	O (05/21/2021)	$120.19
Domo Inc (DOMO.O)	E (01/20/2023)	$9.81
Fastly Inc. (FSLY.N)	E (04/20/2023)	$17.71
HashiCorp (HCP.O)	E (01/03/2022)	$23.13
JFrog Ltd. (FROG.O)	O (12/21/2023)	$33.68
MongoDB Inc (MDB.O)	O (04/12/2023)	$393.15
PagerDuty, Inc. (PD.N)	O (01/20/2023)	$26.50
Solarwinds Corp (SWI.N)	E (11/13/2018)	$11.79

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INDUSTRY COVERAGE: Telecom & Networking Equipment

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
Meta A Marshall		
Arista Networks (ANET.N)	O (10/31/2023)	$249.23
Axon Enterprise Inc (AXON.O)	E (08/22/2023)	$249.02
Bandwidth Inc (BAND.O)	E (04/05/2021)	$14.00
Ciena Corporation (CIEN.N)	E (03/29/2023)	$48.50
Cisco Systems Inc (CSCO.O)	++	$50.24
Coherent Corp (COHR.N)	E (12/13/2023)	$41.79
CommScope Holding Company Inc (COMM.O)	E (08/05/2022)	$2.64
Corning Inc (GLW.N)	O (06/09/2023)	$30.69
F5 Inc (FFIV.O)	E (04/12/2022)	$175.72
Infinera Corp (INFN.O)	E (11/13/2018)	$4.58
Juniper Networks Inc (JNPR.N)	E (01/10/2024)	$37.59

Keysight Technologies Inc (KEYS.N)	O (09/15/2023)	$153.00
KORE Group Holdings Inc (KORE.N)	E (12/17/2021)	$0.97
Lumentum Holdings Inc (LITE.O)	E (05/12/2021)	$52.00
Motorola Solutions Inc (MSI.N)	E (09/14/2022)	$315.04
Viavi Solutions Inc (VIAV.O)	E (05/20/2015)	$10.14
Zebra Technologies Corporation (ZBRA.O)	U (09/20/2023)	$255.27

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INDUSTRY COVERAGE: Technology - Software & Services

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
Adam Wood		
Amadeus IT Holdings S.A. (AMA.MC)	O (12/16/2015)	€64.60
Atos SA (ATOS.PA)	U (12/08/2021)	€6.04
Capgemini (CAPP.PA)	E (12/12/2022)	€182.45
Dassault Systemes SA (DAST.PA)	O (09/26/2019)	€42.77
Hexagon AB (HEXAb.ST)	U (03/20/2020)	SKr 116.60
Indra (IDR.MC)	E (03/25/2022)	€14.26
Sage (SGE.L)	O (12/08/2021)	1,159p
SAP SE (SAPG.DE)	O (03/20/2020)	€142.04
Temenos Group AG (TEMN.S)	U (12/15/2017)	SFr 77.74
Trustpilot (TRST.L)	O (12/08/2021)	146p
Alastair P Nolan		
Computacenter PLC (CCC.L)	E (03/09/2021)	2,738p
Exclusive Networks (EXN.PA)	O (09/27/2022)	€19.10
Softcat PLC (SCTS.L)	E (12/08/2021)	1,293p
Software AG (SOWGn.DE)	E (03/03/2023)	€37.32
Softwareone Holding AG (SWON.S)	E (03/04/2022)	SFr 16.26
George W Webb		
Darktrace PLC (DARK.L)	O (01/25/2023)	336p
IONOS Group SE (IOSn.DE)	O (06/14/2023)	€17.06
Nemetschek SE (NEKG.DE)	E (07/13/2022)	€75.62
Netcompany Group A/S (NETCG.CO)	E (01/26/2023)	DKr 220.20
OVH GROUPE SAS (OVH.PA)	E (10/25/2023)	€8.40
TeamViewer AG (TMV.DE)	U (12/12/2022)	€13.86
Laura C Metayer		
CompuGroup Medical SE & Co KgaA (COP1n.DE)	U (06/14/2023)	€35.66
Sinch AB (SINCH.ST)	E (05/03/2023)	SKr 31.71
Sopra Steria Group (SOPR.PA)	E (07/28/2023)	€192.40
Mark Hyatt		
Fortnox AB (FNOX.ST)	U (10/06/2023)	SKr 54.32
Tietoevry Oyj (TIETO.HE)	E (03/10/2021)	€21.26

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INDUSTRY COVERAGE: Internet

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
Brian Nowak, CFA		
Airbnb Inc (ABNB.O)	U (12/06/2022)	$139.76
Alphabet Inc. (GOOGL.O)	O (08/11/2015)	$142.28
Amazon.com Inc (AMZN.O)	O (04/24/2015)	$153.73
Booking Holdings Inc (BKNG.O)	E (01/09/2019)	$3,521.15

DoorDash Inc (DASH.O)	E (04/24/2022)	$105.59
Expedia Inc. (EXPE.O)	E (01/09/2019)	$151.85
Lyft Inc (LYFT.O)	E (10/24/2019)	$13.34
Meta Platforms Inc (META.O)	O (03/20/2023)	$370.47
Mondee Holdings Inc (MOND.O)	E (01/04/2024)	$2.24
Nextdoor Holdings Inc (KIND.N)	E (02/24/2022)	$1.67
Pinterest Inc (PINS.N)	E (03/28/2022)	$37.76
Snap Inc. (SNAP.N)	U (07/25/2022)	$17.37
Uber Technologies Inc (UBER.N)	O (06/04/2019)	$62.41
Lauren Schenk		
Bumble Inc. (BMBL.O)	E (03/08/2021)	$14.20
Chewy Inc (CHWY.N)	O (10/31/2023)	$19.94
eBay Inc (EBAY.O)	U (06/23/2022)	$42.56
Etsy Inc (ETSY.O)	E (08/04/2021)	$74.72
Farfetch Ltd. (FTCHF.PK)	NR (12/18/2023)	$0.08
FIGS, Inc. (FIGS.N)	E (06/21/2021)	$6.16
Match Group Inc (MTCH.O)	O (06/17/2021)	$38.78
Peloton Interactive, Inc. (PTON.O)	E (03/14/2022)	$6.11
RealReal Inc (REAL.O)	E (11/17/2020)	$1.95
Rent the Runway, Inc. (RENT.O)	E (11/18/2022)	$0.73
Revolve Group Inc (RVLV.N)	E (02/24/2022)	$14.81
Rover Group Inc (ROVR.O)	E (08/06/2021)	$10.90
Shutterstock Inc (SSTK.N)	E (07/28/2022)	$48.98
Stitch Fix Inc (SFIX.O)	E (12/03/2021)	$3.33
ThredUp Inc. (TDUP.O)	E (04/20/2021)	$2.06
WW International Inc (WW.O)	O (07/25/2023)	$6.50
Matthew Cost		
AppLovin Corp (APP.O)	E (11/27/2022)	$40.53
Compass, Inc. (COMP.N)	E (07/20/2022)	$3.69
Criteo SA (CRTO.O)	E (01/26/2016)	$24.42
DoubleVerify Holdings Inc (DV.N)	O (12/12/2023)	$35.76
Electronic Arts Inc (EA.O)	E (08/04/2021)	$137.63
Innovid Corp (CTV.N)	E (01/17/2023)	$1.52
Integral Ad Science Holding Corp. (IAS.O)	O (07/26/2021)	$14.35
Opendoor Technologies Inc (OPEN.O)	E (07/24/2023)	$3.68
Playtika Holding Corp (PLTK.O)	E (11/27/2022)	$7.95
Roblox Corporation (RBLX.N)	E (08/10/2023)	$41.78
Take-Two Interactive Software (TTWO.O)	O (02/01/2018)	$159.21
Trade Desk Inc (TTD.O)	O (06/01/2023)	$68.48
Unity Software Inc (U.N)	E (11/27/2022)	$37.13
Yelp Inc (YELP.N)	U (01/10/2019)	$44.38
Zillow Group Inc (Z.O)	E (04/18/2018)	$54.60

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INDUSTRY COVERAGE: IT Services

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
James E Faucette		
Accenture Plc (ACN.N)	O (02/26/2020)	$345.33
Cognizant Technology Solutions Corp (CTSH.O)	E (01/10/2022)	$73.35
DXC Technology Company (DXC.N)	E (01/29/2021)	$23.28
Endava PLC (DAVA.N)	O (01/10/2022)	$75.10
EPAM Systems Inc (EPAM.N)	E (06/08/2023)	$299.64
TaskUs, Inc. (TASK.O)	E (08/15/2022)	$12.51

TELUS International (Cda) Inc. (TIXT.N)	E (03/01/2021)	$8.67

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INDUSTRY COVERAGE: IT Hardware

COMPANY (TICKER)	RATING (AS OF)	PRICE* (01/10/2024)
Erik W Woodring		
Apple, Inc. (AAPL.O)	O (05/26/2009)	$186.19
CDW Corporation (CDW.O)	E (12/12/2023)	$220.27
Cricut Inc (CRCT.O)	U (08/12/2021)	$6.33
Dell Technologies Inc. (DELL.N)	O (05/01/2023)	$78.25
Garmin Ltd (GRMN.N)	E (01/07/2015)	$123.25
GoPro Inc (GPRO.O)	U (12/12/2023)	$3.29
HP Inc. (HPQ.N)	O (12/12/2023)	$30.34
IBM (IBM.N)	E (01/18/2023)	$161.23
Kornit Digital Ltd. (KRNT.O)	O (08/10/2023)	$16.63
Logitech International SA (LOGI.O)	E (05/01/2023)	$95.94
NCR Corp. (VYX.N)	E (09/19/2022)	$16.18
Resideo Technologies Inc (REZI.N)	E (03/16/2021)	$17.22
Seagate Technology (STX.O)	E (04/21/2023)	$82.66
SmartRent, Inc. (SMRT.N)	E (02/14/2022)	$2.84
Snap One Holdings Corp. (SNPO.O)	E (12/08/2021)	$8.68
Sonos Inc. (SONO.O)	O (12/12/2023)	$16.81
Teradata (TDC.N)	O (09/19/2021)	$44.57
Xerox Corp (XRX.O)	U (02/03/2021)	$16.23
Meta A Marshall		
Hewlett Packard Enterprise (HPE.N)	E (11/30/2023)	$16.43
NetApp Inc (NTAP.O)	E (07/26/2023)	$86.66
Nutanix Inc (NTNX.O)	E (05/28/2019)	$48.76
Pure Storage Inc (PSTG.N)	O (10/31/2022)	$36.65

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