

October 26, 2022 04:20 AM GMT

## Software | North America

3Q22 CIO Conference Call -  
Takeaways & Transcript

Our recent CIO survey showed signs of cracks emerging as IT budget growth slows against an increasingly difficult macro backdrop. The transcript from our CIO Panel Call, holds additional details on budget expectations & priorities, including Cloud, Security, Analytics, and Digital Transformation.

Last week we hosted our [3Q22 CIO Conference Call](#), where we spoke to four CIOs across various industries to discuss their intentions for IT spending in 2022 and the year ahead. Here we provide interactive excerpts from the Software focused portion of the call, with accompanying charts from the [3Q22 CIO Survey](#) and previous work on the topics discussed.

**Key Software Takeaways From The Survey & Call:**

- CIOs expect Software spending to decelerate from +3.7% in 2022 to +3.1% in 2023, below the 3-year average of +5.0% from '17-'19. While software is expected to remain the fastest growing sector in 2023, it is also expected to experience the largest magnitude of deceleration YoY, suggesting a near-term slowdown in spend is on the come.
- Cloud Computing, Security Software, DW/BI/Analytics, and Digital Transformation initiatives, — 4 of the top 5 CIO priorities in our 3Q22 survey—were all discussed as key initiatives among the CIOs on the call, highlighting the broad focus on these areas of strategic IT spend. Within Cybersecurity, CIOs are increasingly focusing on implementing modern Identity & Access Management (IAM) tools.
- Net, 3Q's survey suggests the spending environment is poised to remain choppy near-term, but favorable secular tailwinds including Public Cloud shift and Digital Transformation appear firmly intact.

*The following is a transcript of a recent conference call with four CIOs. Please note that the CIOs are not members of Morgan Stanley's Research department. Unless otherwise indicated, their views are their own and may differ from the views of the Morgan Stanley Research department and from the views of others within Morgan Stanley. We make no claim that their representations are accurate or complete.*

MORGAN STANLEY &amp; CO. LLC

**Keith Weiss, CFA**  
EQUITY ANALYST  
Keith.Weiss@morganstanley.com +1 212 761-4149

**Meta A Marshall**  
EQUITY ANALYST  
Meta.Marshall@morganstanley.com +1 212 761-0430

**Sanjit K Singh**  
EQUITY ANALYST  
Sanjit.Singh@morganstanley.com +1 415 576-2060

**Hamza Fodderwala**  
EQUITY ANALYST  
Hamza.Fodderwala@morganstanley.com +1 212 761-1083

**Elizabeth Porter, CFA**  
EQUITY ANALYST  
Elizabeth.E.Porter@morganstanley.com +1 212 761-3632

**Josh Baer, CFA**  
EQUITY ANALYST  
Josh.Baer@morganstanley.com +1 212 761-4223

## Software

North America  
IndustryView **Attractive**

Morgan Stanley does and seeks to do business with companies covered in Morgan Stanley Research. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of Morgan Stanley Research. Investors should consider Morgan Stanley Research as only a single factor in making their investment decision.

For analyst certification and other important disclosures, refer to the Disclosure Section, located at the end of this report.

# Transcript - October 11, 2022

## Operator [00:00]

Good day and welcome to the CIO Quarterly Conference Call. Today's conference is being recorded. At this time, I would like to turn the conference over to Meta Marshall. Please go ahead.

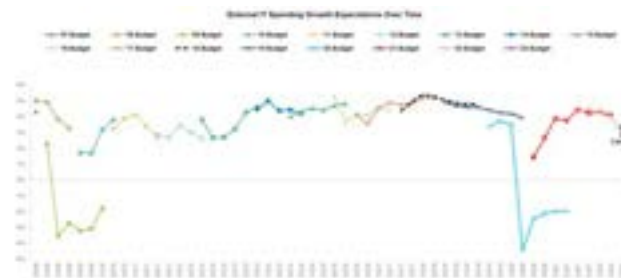
## Meta Marshall [00:14]

Great, thank you Vasim. Good morning and thank you for joining our quarterly call. I'm Meta Marshall and I'm Morgan Stanley's Networking Equipment & Communication Software Analyst. Before we get started, some quick housekeeping—for important disclosures, please see Morgan Stanley research disclosures website at [MorganStanley.com/ResearchDisclosures](https://www.morganstanley.com/ResearchDisclosures) and note that this call is being recorded.

With me on the call today for Morgan Stanley are Eric Woodring, Morgan Stanley's US Hardware Analyst, Keith Weiss, Morgan Stanley's Software Analyst, and James Faucette, Morgan Stanley's IT Services & Payments Analyst. Hopefully, you saw that we published our Fall quarterly CIO survey—full survey—last night after publishing the flash results a couple of weeks earlier. Our survey details feedback from 100 CIOs across the US and Europe—growth expectations decelerated to 3% growth in 2022 from 4% growth in our Q2 indications, the second downtick from peak in Q1. Our first look at 2023 budget's pointed to 2.8% growth (Exhibit 1). Perhaps most meaningful, the up down ratio of CIOs expecting to revise budgets lower on a go forward basis declined to 0.4x from 1.1x prior, adding a potential risk as we continue throughout 2022 and as we head into the 2023 budget cycle (Exhibit 2). CIOs expect to spend—continue to spend—the most on Software, followed by Communications, Services, and Hardware with all of these segments that are showing a deceleration in spend (Exhibit 3, Exhibit 4).

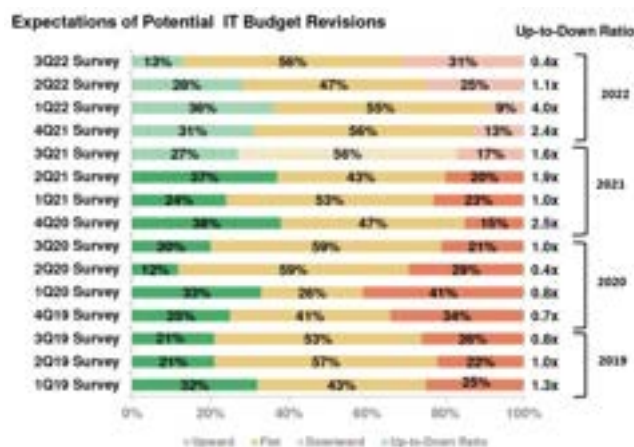
In terms of what CIOs are prioritizing across the survey, we continue to see strength across Cloud Computing, Security Software, Analytics, and Digital Transformation, whereas capex intensive projects like Data Center Buildouts, and more discretionary initiatives like Consulting have seemingly been most likely to get cut (Exhibit 5, Exhibit 6).

**Exhibit 1:** First Look at '23 Budgets Suggests CIOs See IT Budget Growth of +2.8%, Broadly In-line with '22 at +3.0%, But Below the 10-Year Pre-Covid Average of +4.1%



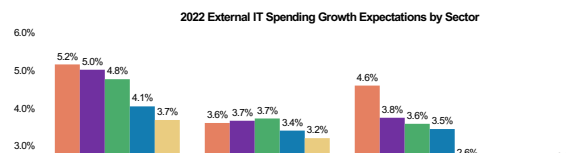
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data).

**Exhibit 2:** Up-to-down ratio moderated to 0.4X in 3Q, As Higher Proportion of CIO's (31%) Expressed Expectations of Downward Potential Revisions, Compared to Just 13% Expecting Upward Revisions

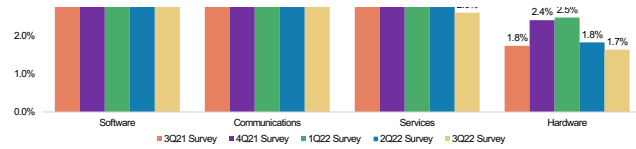


Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data).

**Exhibit 3:** Software Remains Fastest Growing Segment in CY22, But Growth Expectations Are Decelerating Across Majority of Industry Groups

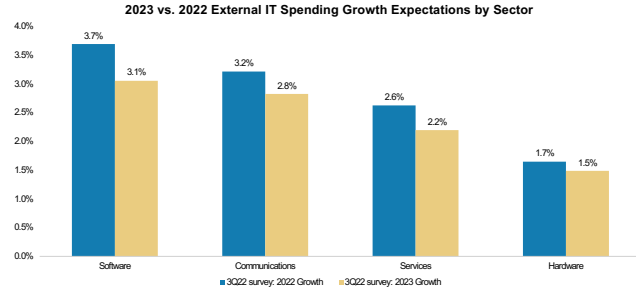


On the call today, we have the privilege of been joined by four CIOs that we will have an opportunity to hear their perspectives from on trends that we're seeing in each of their businesses. So let's start with introductions. We'll ask each of the CIOs on the call to give a sense of their budget trajectory for this year, as well as projects that may be at the top of their budget priority list. With that, let's start with Harish. Thanks so much for joining us today. You're the CIO of a CPG company—just can you maybe level set for us how you're thinking about budget trajectory this year and what your top three spending priorities are?



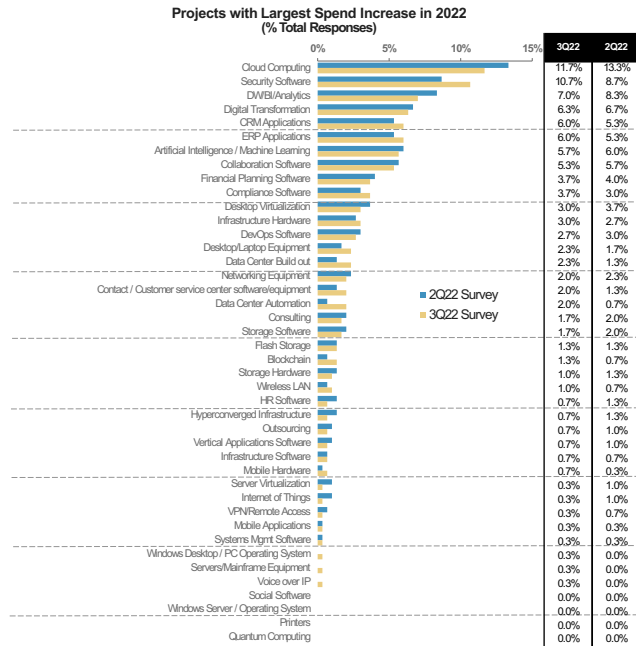
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data).

**Exhibit 4:** CIOs Expect Software to Remain the Fastest Growing Industry in 2023, Though Growth Is Expected to Decelerate Across Sectors



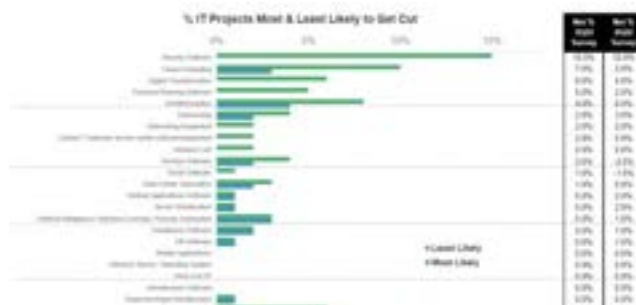
Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data).

**Exhibit 5:** Cloud Computing, Security Software, and DW/BI/Analytics Remain Atop the CIO Priority List



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

**Exhibit 6:** Security Software, Digital Transformation and Cloud Computing are atop the list of most defensive IT projects





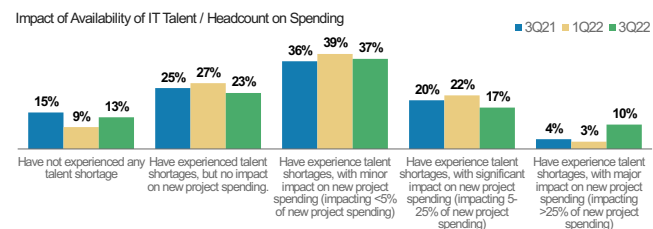
**Stefan [04:14]**

For us there was no real budget cutting or at least it was not really required. I think we had issues in staffing all of our projects, so that brought our projects down, which also brought down the cost compared to the years before because of some fluctuations we had (Exhibit 8). So the budget in this year continued even though we couldn't spend it. For next year, we see an increase—a normal increase as in normal years—so that's in line with the years before, and it's relatively true to the turnover increase in the company. And then we are then about 4% of the turnover in IT cost.

In terms of the top priorities, a top priority for us is IT Security, Cybersecurity, so we're heavily spending on there. So the increase here is more than 3x or 4x the increase in the other budgets so that's the biggest part of an increase. The second priority is for us also Digitalization, so we're spending in more projects in creating from manual processes into digital processes. And the third category is SAP, as we're doing a large SAP transformation and building around cloud solutions here as well, not just the core S4, but also the cloud solutions that the third priority where we're spending.

**Meta Marshall [05:52]**

Got it. Now, let's move to Jeff. Again thanks for being on— CIO of an Agriculture company. Just budget trajectory and sense of spending priorities?

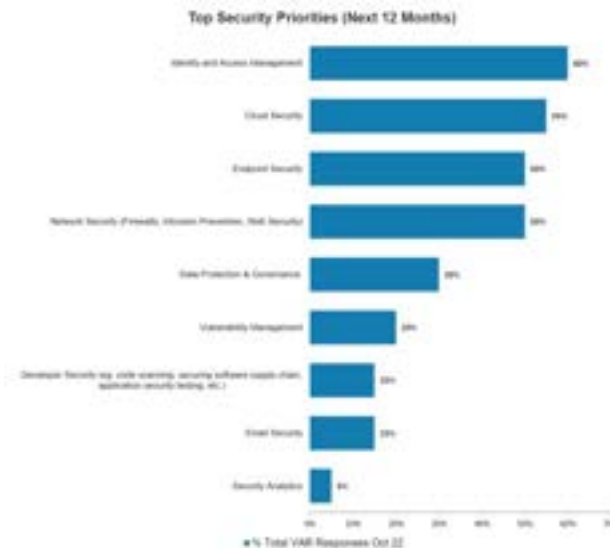
**Exhibit 8: Talent Shortages Continue to Weigh on New IT Spending Projects With 87% of CIOs Experiencing Challenges Finding Capable Headcount**

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

**Jeff [06:03]**

Okay. Yeah. Good morning, everybody. So we are a similar story to some of the other peers here. We're about a 5% to 10% increase baseline year over year. So that's been the kind of trajectory we've had the last couple of years. We are seeing a situation where we do have incremental spending above and beyond that baseline to really tackle a number of elements of our Digital Transformation, which includes SAP and a number of leading cloud provider best in breed tools. So that's probably our number one initiative. Number two, in conjunction with everybody else, Cybersecurity, but I would add, we're also doing quite a bit around Identity Management as part of that, and that's our second priority (Exhibit 9). And the third for us is as Data and Analytics. So those are three big buckets for us.

**Exhibit 9:** Our 3Q22 VAR Survey Points To Identity And Access Management (IAM), Cloud, Endpoint and Network Security As Top 3 Security Priorities Over the Next 12 Months



Source: AlphaWise, Morgan Stanley Research. n=20 (US and EU data).

**Meta Marshall [06:53]**

Okay, Perfect...Steve, is a CIO of a Life Sciences company. Can you just give us a sense of your budget trajectory as well as spend priorities?



**Steve [32:22]**

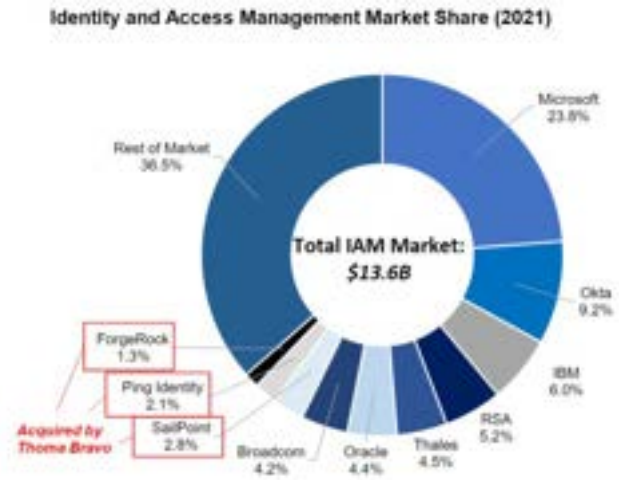
First of all to start off, again, Data Analytics is important to everybody, but in the Life Sciences companies, it's bread and butter, right—it's been for years—and it's a real differentiator, right. With that said, a lot of our stuff that we do is homegrown. It really becomes the database, it seems, you know? When you're in R&D, there's not a lot out there that can...augment what we have. There are companies—there's a company called Benchling, we're looking at that we'd do some work with. But if you think of that, it's more upfront, doing clinical trials and things like that and so forth. But our biggest thing, again, it's inside R&D, it's inside Software. So we do work with consulting companies, right. So a lot of Services are helping us out there. So we're doing work with the Cognizant, doing a lot of work with Cognizant and some of their analytical capabilities have been really good. If I want to say who else in there, again, IBM on some things and McKinsey, so a lot of consultative work going on there. So there's not a lot of packages that are available that you can buy, then there are the ones that are just up and coming, again, like a Benchling.



**Keith Weiss [33:44]**

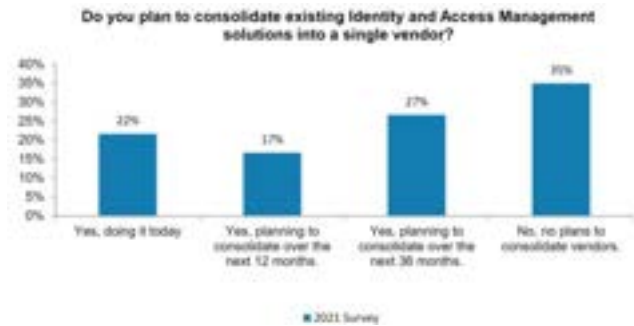
Got it, that's super helpful. I'm going to switch gears a little bit and switch to the Security space—that's a top priority for all of our CIOs today. And one that got mentioned, I think, across multiple CIOs was Identity and a focus on Identity Management there. Sounds like a lot going on your side of the fence—also a lot going on our side of the fence. There's a lot of vendor consolidation going on (Exhibit 11, Exhibit 12). We saw another vendor, ForgeRock, is being taken private by Thoma Bravo today (see *ForgeRock: Acquisition by Thoma Bravo Signals Further Consolidation in IAM Market (11 Oct 2022)*). Maybe—again, we'll stick with you, Steve, and then we can move to Stefan and Jeff—with that focus on Identity, what is the initiative that you're actually trying to kind of push forward at this point because, I mean, everybody has an Identity framework. Where's the incremental investment?

**Exhibit 11: IAM Companies Acquired By Thoma Bravo Represent ~6.2% Of The Total IAM Market**



Source: IDC, Morgan Stanley Research

**Exhibit 12: Growing Convergence of Various IAM Tools Over the Next 3 Years**



Source: 2021 Survey of Chief Security Officers (n=60), Morgan Stanley Research

**Steve [34:33]**

Yeah, it's such a good point, right, because if you think about it, oh my, everybody's got a company that's been digital and the internet for years has got Identity Management, so the real issue is getting more into role-based Identity, right? It's the trick of not saying, "This person should have access to this," it's saying, "When this person is logging and this identifier, this unique identifier, needs access to things," because a lot of times when you preset things up, you got to think this through. When you set it up, someone's going and hardwired somewhere that this role or this person should have access to these things, but with Artificial Intelligence, you can tell by where this person has been using things before say, "What should I give them access to?" Because any part of this chain that's static is an opportunity for something to age and something that ages has an opportunity to have an opening for somebody to come in and do bad things. So it's really trying to get into more of a dynamic environment around access and around the role base of the access and around the current uses of those access and putting that together to see, "Hey, why should I have to go in somewhere and put down 'this should have access to that?'" Whereas, through Artificial Intelligence, it can tell me that this role and this prior access means that this person should also be able to touch these things. Does that make sense?

**Keith Weiss [36:01]**

Yeah, totally. Stefan, same question to you. You mentioned Identity is a key area of Security investment. Maybe you could dig in a little bit to what areas of Identity are incremental and maybe help us touch on kind of which vendors are you evaluating for that type of capability?

**Stefan [36:21]**

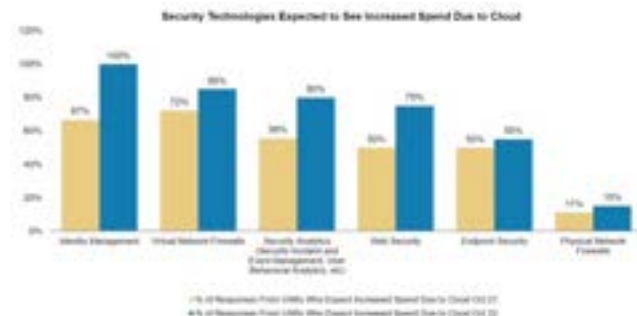
I mean, it's absolutely the same—we're trying to get more on the behavior of users because I think that's the fundamental of trying to get the security even better because, I mean, for access control and things, you can always have patterns in there and need admins and so on, so forth. However, if you try to analyze the behavior, especially with AI, then you could see things that are not in the same way as a user worked before, even if the identity was stolen, for example, so that's one area (Exhibit 13).

The second area is all on two-factor authentication. I think that's the way to move for the applications, for everything that we're now trying to get in a second. That's not just the password. It's as we see, for example, with initiatives of trying to see if our users reveal their passwords and they do. So therefore, the second factor is a key, and we're trying to roll this out to all applications also to the Windows log in and so on and so forth. We have it with the with the Office environment, which brings me to your questions on vendor. I think the fundamental thing in IT Security is that the more holistic view on the users and everything in the environment you have, the better you can protect the environment. That makes it difficult if you go with one vendor in an area like, for example, Microsoft, then to switch to other vendors and integrate them, I mean that's possible. However, the more you have in an integrated environment, the better it is. So for us, it is quite heavily on Microsoft with their different Security tools. We see that they are investing quite a lot and it's a good combination that we have and we are with Microsoft. However, with the network, we are with a second vendor with Darktrace, for example. But that's also more on the behavior of users of what's happening in the in the network. So it's the behavior of things rather than rules. It's Artificial Intelligence that we're settling on and heavily relying on Microsoft. So for example, in the E5 license where you have quite a good package of ready Security tools out there.

**Keith Weiss [39:01]**

Got it, outstanding. And then same question to you, Jeff. believe you have a big Identity project that you're looking to go live with next year as well?

**Exhibit 13: Identity Management, Virtual Network Firewalls and Security Analytics Most Likely to Benefit From Cloud Migration In 3Q22 VAR Survey**



Source: AlphaWise, Morgan Stanley Research, n=20 (US and EU data).

**Jeff [39:10]**

Yeah, so we've made a decision to really a combination of both Microsoft, as well as—we're pretty heavily invested with Saviynt as our IAM tool (Exhibit 14). Very similar reasoning behind both of the other previous gentlemen right around authentication capabilities as well as we're really looking at kind of holistic role-based authentication across the entire organization. It's a challenge for us and that spans everything from our SAP environment to, again, integration with our Microsoft environment to a lot of our cloud tools. It's just become impossible to manage in a very manual process we have today.

**Keith Weiss[39:48]**

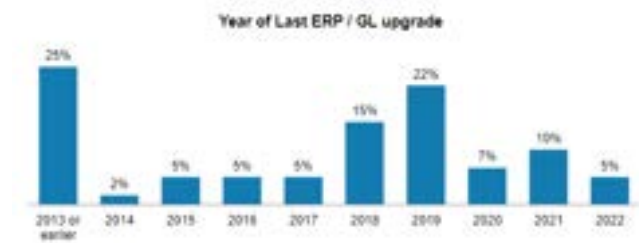
Got it, perfect. I want to switch gears again here and talk about some of the ERP work that you guys are embarking on. And the two kind of integrated questions that I have, one side of the equation is what's the actual work that you're looking to do? What are the systems that you're looking to upgrade? And two, what was the catalyst? For me, again, similar to Identity, it's always interesting to understand the catalyst for investment in ERP systems. Larger enterprises such as yourselves, you obviously have ERP systems in place, so it's almost always going to be a refresh (Exhibit 15, Exhibit 16). What was the catalyst to kind of refreshing those systems? And maybe we could start with you again, Steve.

**Exhibit 14:** Per 3Q22 VAR Survey Data, Microsoft (Azure Active Directory) Is The Leading Share Gainer in IAM, Followed Closely By Okta



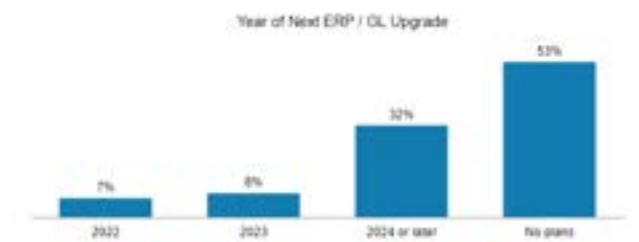
Source: AlphaWise, Morgan Stanley Research. n=20 (US and EU data).

**Exhibit 15:** As of our June Domain Survey, 22% of CIOs had upgraded ERP / GL systems since 2020



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

**Exhibit 16:** In our June Domain Survey, 32% of CIOs anticipated waiting until at least 2024 to next upgrade ERP / GL Systems, with 53% of CIOs indicating no plans at all



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

**Steve [40:34]**

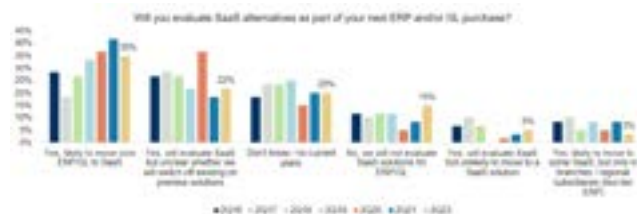
This is near and dear to my heart. When I joined our company 10 years ago, one of the things we had was over 120 different, I'd say versions, but different instances of ERP systems, globally. And that's because we had a philosophy in the past that said, when you do acquire, you do any merges, let's everybody keep the systems they have. And, as you know, that complexity over time just brings you to your knees, so our focus has been over, really, the last eight years, of whittling down our ERP capability, down to a couple of major systems, but really only one major technology, and that is SAP in the cloud ([Exhibit 17](#)). So we made that decision about three years ago. It's been a lot of getting down to some final versions in our different business unit, but that's been our focus.

When you say what drove that? It wasn't just the technical legacy underneath and the complexity, it was the speed of business, the speed of getting data in the hands of different business partners—whether they be in distribution, transportation, anywhere in logistics—but also more important, going the back way. And what's really been helpful with the cloud versions that have come on now, is connecting them up to our partners. Our suppliers, our source, when they can get direct access into what's going on and see the sales earlier, all the way to weekly performance, we don't have to order things anymore. They can basically place the fulfillment channel for our fulfillment products for us, and then we just reconcile things every so often. So it's really working, moving in the right direction. But that's really been it—it's been the end-to-end supply chain and increase in the speed of business that's driven us to go where we're going.

**Keith Weiss [42:21]**

Got it, that's super interesting. Same question to you, Stefan.

**Exhibit 17:** In Our June Domain Survey, 60% of CIOs Surveyed Were Evaluating SaaS for ERP/GL and Likely to Move to Some Type of SaaS solution, Down from 68% in 2Q21 and below the 6-yr average of 65% from 2016-2021



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

**Stefan [42:27]**

I think for us it's as well the consolidation, harmonization of processes and systems. So we also have developed a landscape over the years and switching now to S4 gives the opportunity to actually do a process redesign and consolidate some of the systems as there is different functionality into the systems (Exhibit 18). And we're trying now to bring all the functionality to all the users, which is one of the driving factors. Second one is as well to look into the cloud environment because for us at least, the strategy of bringing everything in the cloud is not really there for me at the moment so the appetite to bring everything out there, and then also be locked in with a vendor like, like for example, and then SAP and in this case for ERP is currently not the strategy. So I'm trying to keep the S4 system then onsite and then linking it into the cloud solution or the different cloud solution that SAP offers, for example, like SuccessFactors or the Sales Cloud. So we are trying then to combine the environment of on-premise and cloud systems, consolidating our systems and harmonizing the processes, which will be a tough one as we are distributed quite over the world and have brought in a lot of companies that have then different processes. So we'll see how we can actually maximize the process harmonization in this area. But it's definitely driven that we want to reduce complexity, that we want to harmonize processes and systems and interfaces, of course, and then integrating it into the cloud world of SAP, but still having S4 on-premise because always the slogan is the internal IT doesn't have to make a margin where everybody else has to make a margin in their services. And that's why I see a cost benefit and also a data protection thing for us at the moment to have then S4 still onsite.

**Exhibit 18:** 31% of current SAP customers plan to upgrade to S/4 HANA at some point in the future as of our 2Q22 Domain Survey



Source: AlphaWise, Morgan Stanley Research, n=49 SAP Customers (US and EU data).



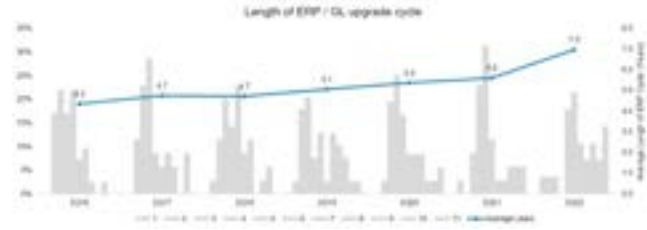
**Keith Weiss [47:07]**

Got it. That's definitely something to keep an eye on. Harish, to you, same question on the ERP transition. You're moving to the cloud for ERP—what's the system you're moving to and what's the system that you're moving from and what was the catalyst (Exhibit 20)?

**Harish [47:25]**

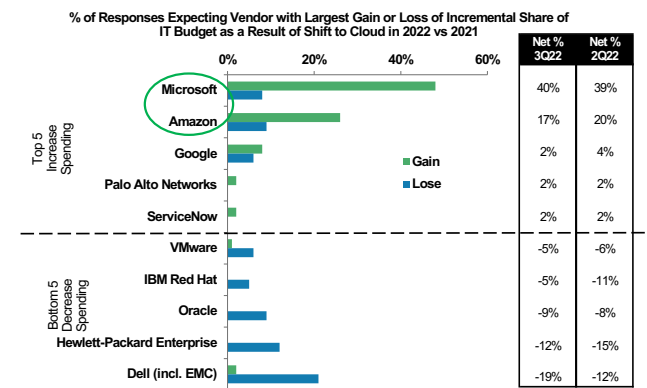
Yes. So we took a different approach. We were traditionally a monolithic, one ERP—we were running on Oracle. We made a decision two years ago to go to more best of breed, so the approach we took was we defined our application systems and business processes in two buckets—one of systems of differentiation and another bucket of systems of record. So the areas that fell into the system of differentiation, we decided to use a best of breed approach. So for us, warehouse management, supply chain planning, transportation management, quality management, CRM, direct to consumer, e-commerce—those type of systems or applications fell into the differentiation, so that's where we would differentiate ourselves in the market. And our ERP, we fell into system records. So things like procurement, quality management, finance, order management— those things we're going to continue to do in our ERP and that we're going to do last. We're going to shift to the cloud with Oracle on their Fusion platform, but that will be the last one we will do because it works today on the on-prem (Exhibit 21, Exhibit 22). But we wanted to focus on our differentiation systems, so that's the approach we took. We picked Manhattan for our warehouse management. We're evaluating currently our supply chain planning solution and the transportation management Manhattan has a solution as well that we're considering, and the same thing with QM. Quality Management, we're looking at some different alternatives for that solution as well.

**Exhibit 20:** June Domain Survey Data Shows Length of ERP / GL Upgrade Cycle Has Extended for the Last Several Years



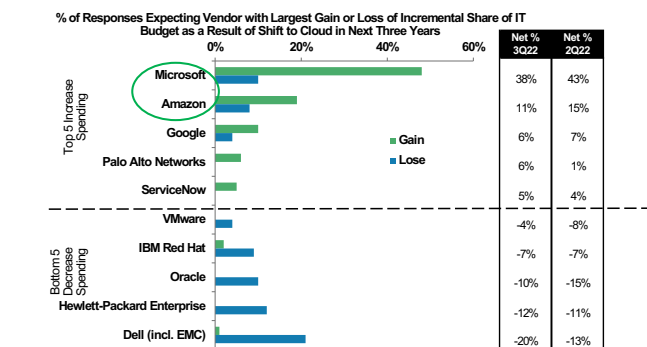
Source: AlphaWise, Morgan Stanley Research, n=60 (US and EU data)

**Exhibit 21:** Expected IT budget share gains / losses in 2022 among large cap vendors



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

**Exhibit 22:** Expected IT budget share gains / losses over next three years among large cap technology vendors



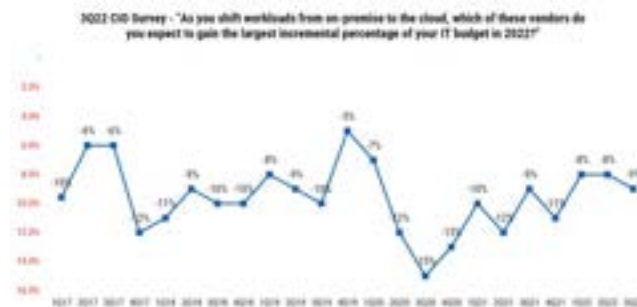
Source: AlphaWise, Morgan Stanley Research, n=100 (US and EU data)



**Keith Weiss [49:09]**

Got it. One last one, I'll just sneak in. You're evaluating OCI from Oracle as well—would that be part of the ERP migration or is there a broader use case you're looking at OCI for (Exhibit 23)?

**Exhibit 23: CIOs Continue To Express Expected IT Budget Share Losses To Oracle From On-Prem To Cloud Transitions**



Note: Results suggest that for Oracle the expected incremental share loss of the IT budget from on-premise to cloud transitions is -9% based on the net of CIOs indicating that Oracle would gain/lose share in 3Q22. Source: AlphaWise, Morgan Stanley Research. n=100 (US and EU data)

**Harish [49:22]**

That would be part of the ERP migration.

**Keith Weiss [49:25]**

Got it, got it. Fascinating conversation— thank you for the time. I'm going to hand it over to James Faucette, who covers the Consulting and Services names for us, to bring us home. So off to you, James.

*This marks the end of the Software portion of the 3Q22 CIO Conference Call. Audio replay of the full call can be accessed [here](#).*

## Disclosure Section

The information and opinions in Morgan Stanley Research were prepared by Morgan Stanley & Co. LLC, and/or Morgan Stanley C.T.V.M. S.A., and/or Morgan Stanley Mexico, Casa de Bolsa, S.A. de C.V., and/or Morgan Stanley Canada Limited. As used in this disclosure section, "Morgan Stanley" includes Morgan Stanley & Co. LLC, Morgan Stanley C.T.V.M. S.A., Morgan Stanley Mexico, Casa de Bolsa, S.A. de C.V., Morgan Stanley Canada Limited and their affiliates as necessary.

For important disclosures, stock price charts and equity rating histories regarding companies that are the subject of this report, please see the Morgan Stanley Research Disclosure Website at [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures), or contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY, 10036 USA.

For valuation methodology and risks associated with any recommendation, rating or price target referenced in this research report, please contact the Client Support Team as follows: US/Canada +1 800 303-2495; Hong Kong +852 2848-5999; Latin America +1 718 754-5444 (U.S.); London +44 (0)20-7425-8169; Singapore +65 6834-6860; Sydney +61 (0)2-9770-1505; Tokyo +81 (0)3-6836-9000. Alternatively you may contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY 10036 USA.

### Analyst Certification

The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report: Josh Baer, CFA; Hamza Fodderwala; Meta A Marshall; Elizabeth Porter, CFA; Sanjit K Singh; Keith Weiss, CFA.

### Global Research Conflict Management Policy

Morgan Stanley Research has been published in accordance with our conflict management policy, which is available at [www.morganstanley.com/institutional/research/conflictolicies](http://www.morganstanley.com/institutional/research/conflictolicies). A Portuguese version of the policy can be found at [www.morganstanley.com.br](http://www.morganstanley.com.br)

### Important Regulatory Disclosures on Subject Companies

The analyst or strategist (or a household member) identified below owns the following securities (or related derivatives): Elizabeth Porter, CFA - Microsoft (common or preferred stock).

As of September 30, 2022, Morgan Stanley beneficially owned 1% or more of a class of common equity securities of the following companies covered in Morgan Stanley Research: 2u Inc, 8x8 Inc, Adobe Inc., Akamai Technologies, Inc., Asana Inc, Autodesk, Bill.com Holdings, Box Inc, C3.ai, Chegg Inc, Cloudflare Inc, Confluent, Inc., Coupa Software Inc, CrowdStrike Holdings Inc, CyberArk Software Ltd, Datadog, Inc., DocuSign Inc, Domo Inc, Fastly Inc., Five9 Inc, Freshworks Inc, GoDaddy Inc, HashiCorp, Intuit, Lightspeed POS Inc., Liveramp Holdings Inc, Microsoft, MongoDB Inc, NortonLifeLock Inc, Okta, Inc., PagerDuty, Inc., Palo Alto Networks Inc, Qualtrics, Qualys Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Samsara Inc, Semrush Holdings Inc -A, ServiceNow Inc, Shopify Inc, Snowflake Inc., Splunk Inc, Sumo Logic Inc, Twilio Inc, Veeva Systems Inc, Wix.Com Ltd, Zendesk, Inc, Zoom Video Communications Inc, ZoomInfo Technologies Inc.

Within the last 12 months, Morgan Stanley managed or co-managed a public offering (or 144A offering) of securities of Confluent, Inc., DigitalOcean Holdings Inc, HashiCorp, KnowBe4, Qualtrics, Samsara Inc, Semrush Holdings Inc -A, Udemy Inc, UserTesting Inc., Workday Inc.

Within the last 12 months, Morgan Stanley has received compensation for investment banking services from 2u Inc, BigCommerce Holdings, Inc., Confluent, Inc., Cvent, DigitalOcean Holdings Inc, Docebo Inc., Fastly Inc., HashiCorp, Instructure Holdings Inc, Intuit, KnowBe4, Matterport Inc, Palantir Technologies Inc., Qualtrics, Sabre Corp, Salesforce.com, Samsara Inc, Semrush Holdings Inc -A, Shopify Inc, Toast, Inc., Udemy Inc, UserTesting Inc., Workday Inc, ZoomInfo Technologies Inc.

In the next 3 months, Morgan Stanley expects to receive or intends to seek compensation for investment banking services from 2u Inc, 8x8 Inc, Adobe Inc., Akamai Technologies, Inc., Alteryx Inc, Amplitude Inc., Appian Corp, Asana Inc, Atlassian Corporation PLC, Autodesk, BigCommerce Holdings, Inc., Bill.com Holdings, Box Inc, C3.ai, Check Point Software Technologies Ltd., Chegg Inc, Cloudflare Inc, Confluent, Inc., Couchbase, Inc., Coupa Software Inc, Coursera, Inc., Cvent, CyberArk Software Ltd, Datadog, Inc., DigitalOcean Holdings Inc, Docebo Inc., DocuSign Inc, Fastly Inc., Five9 Inc, ForgeRock Inc, Fortinet Inc., Freshworks Inc, GoDaddy Inc, HashiCorp, HubSpot, Inc., Instructure Holdings Inc, Intuit, JFrog Ltd., Karooooo Ltd, KnowBe4, LegalZoom.com Inc, Lightspeed POS Inc., Liveramp Holdings Inc, Matterport Inc, Microsoft, MongoDB Inc, New Relic Inc, NICE Ltd., NortonLifeLock Inc, Okta, Inc., Oracle Corporation, PagerDuty, Inc., Palantir Technologies Inc., Palo Alto Networks Inc, Qualtrics, Qualys Inc, Rapid7 Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Samsara Inc, Semrush Holdings Inc -A, SentinelOne, Inc., ServiceNow Inc, Shopify Inc, Smartsheet Inc, Snowflake Inc., Solarwinds Corp, Splunk Inc, Sprinklr Inc, Sprout Social Inc, Sumo Logic Inc, Tenable Holdings Inc, Toast, Inc., Twilio Inc, Udemy Inc, UiPath Inc, UserTesting Inc., Veeva Systems Inc, Vertex Inc., WalkMe Ltd, Workday Inc, Zendesk, Inc, Zeta Global Holdings Corp, Zoom Video Communications Inc, ZoomInfo Technologies Inc, Zscaler Inc.

Within the last 12 months, Morgan Stanley has received compensation for products and services other than investment banking services from Adobe Inc., Akamai Technologies, Inc., Atlassian Corporation PLC, Autodesk, Box Inc, Check Point Software Technologies Ltd., DocuSign Inc, GoDaddy Inc, Intuit, Liveramp Holdings Inc, Microsoft, NICE Ltd., NortonLifeLock Inc, Oracle Corporation, Qualys Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Snowflake Inc., Solarwinds Corp, Workday Inc, Zoom Video Communications Inc, Zscaler Inc.

Within the last 12 months, Morgan Stanley has provided or is providing investment banking services to, or has an investment banking client relationship with, the following company: 2u Inc, 8x8 Inc, Adobe Inc., Akamai Technologies, Inc., Alteryx Inc, Amplitude Inc., Appian Corp, Asana Inc, Atlassian Corporation PLC, Autodesk, BigCommerce Holdings, Inc., Bill.com Holdings, Box Inc, C3.ai, Check Point Software Technologies Ltd., Chegg Inc, Cloudflare Inc, Confluent, Inc., Couchbase, Inc., Coupa Software Inc, Coursera, Inc., Cvent, CyberArk Software Ltd, Datadog, Inc., DigitalOcean Holdings Inc, Docebo Inc., DocuSign Inc, Fastly Inc., Five9 Inc, ForgeRock Inc, Fortinet Inc., Freshworks Inc, GoDaddy Inc, HashiCorp, HubSpot, Inc., Instructure Holdings Inc, Intuit, JFrog Ltd., Karooooo Ltd, KnowBe4, LegalZoom.com Inc, Lightspeed POS Inc., Liveramp Holdings Inc, Microsoft, MongoDB Inc, New Relic Inc, NICE Ltd., NortonLifeLock Inc, Okta, Inc., Oracle Corporation, PagerDuty, Inc., Palantir Technologies Inc., Palo Alto Networks Inc, Qualtrics, Qualys Inc, Rapid7 Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Samsara Inc, Semrush Holdings Inc -A, SentinelOne, Inc., ServiceNow Inc, Shopify Inc, Smartsheet Inc, Snowflake Inc., Solarwinds Corp, Splunk Inc, Sprinklr Inc, Sprout Social Inc, Sumo Logic Inc, Tenable Holdings Inc, Toast, Inc., Twilio Inc, Udemy Inc, UiPath Inc, UserTesting Inc., Veeva Systems Inc, Vertex Inc., WalkMe Ltd, Workday Inc, Zendesk, Inc, Zeta Global Holdings Corp, Zoom Video Communications Inc, ZoomInfo Technologies Inc, Zscaler Inc.

Within the last 12 months, Morgan Stanley has either provided or is providing non-investment banking, securities-related services to and/or in the past has entered into an agreement to provide services or has a client relationship with the following company: 2u Inc, 8x8 Inc, Adobe Inc., Akamai Technologies, Inc., Atlassian Corporation PLC, Autodesk, BigCommerce Holdings, Inc., Box Inc, Check Point Software Technologies Ltd., Chegg Inc, Coupa Software Inc, CyberArk Software Ltd, Datadog, Inc., DocuSign Inc, Five9 Inc, Fortinet Inc., GoDaddy Inc, HubSpot, Inc., Intuit, Liveramp Holdings Inc, Microsoft, MongoDB Inc, NICE Ltd., NortonLifeLock Inc, Okta, Inc., Oracle Corporation, PagerDuty, Inc., Palo Alto Networks Inc, Qualys Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Secureworks Corp, ServiceNow Inc, Shopify Inc, Snowflake Inc., Solarwinds Corp, Splunk Inc, Twilio Inc, VMware Inc, Wix.Com Ltd, Workday Inc, Zendesk, Inc, Zoom Video Communications Inc, Zscaler Inc.

An employee, director or consultant of Morgan Stanley is a director of Tenable Holdings Inc. This person is not a research analyst or a member of a research analyst's household.

Morgan Stanley & Co. LLC makes a market in the securities of 2u Inc, 8x8 Inc, Adobe Inc., Akamai Technologies, Inc., Alteryx Inc, Amplitude Inc., Appian

Corp, Atlassian Corporation PLC, Autodesk, BigCommerce Holdings, Inc., Box Inc, Check Point Software Technologies Ltd., Chegg Inc, Confluent, Inc., Couchbase, Inc., Coursera, Inc., CyberArk Software Ltd, Datadog, Inc., Docebo Inc., DocuSign Inc, Domo Inc, Five9 Inc, Fortinet Inc., Freshworks Inc, GoDaddy Inc, HashiCorp, Intuit, JFrog Ltd., Karooooo Ltd, KnowBe4, LegalZoom.com Inc, Liveramp Holdings Inc, Microsoft, New Relic Inc, NortonLifeLock Inc, Oracle Corporation, PagerDuty, Inc., Palo Alto Networks Inc, Qualys Inc, Rapid7 Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Secureworks Corp, Semrush Holdings Inc -A, ServiceNow Inc, Shopify Inc, Smartsheet Inc, Solarwinds Corp, Splunk Inc, Sprinklr Inc, Sprout Social Inc, Sumo Logic Inc, Tenable Holdings Inc, Udemy Inc, UserTesting Inc., Varonis Systems, Inc., Veeva Systems Inc, Vertex Inc., VMware Inc, WalkMe Ltd, Wix.Com Ltd, Workday Inc, Zendesk, Inc, Zoom Video Communications Inc, ZoomInfo Technologies Inc, Zscaler Inc.

The equity research analysts or strategists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality of research, investor client feedback, stock picking, competitive factors, firm revenues and overall investment banking revenues. Equity Research analysts' or strategists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

Morgan Stanley and its affiliates do business that relates to companies/instruments covered in Morgan Stanley Research, including market making, providing liquidity, fund management, commercial banking, extension of credit, investment services and investment banking. Morgan Stanley sells to and buys from customers the securities/instruments of companies covered in Morgan Stanley Research on a principal basis. Morgan Stanley may have a position in the debt of the Company or instruments discussed in this report. Morgan Stanley trades or may trade as principal in the debt securities (or in related derivatives) that are the subject of the debt research report.

Certain disclosures listed above are also for compliance with applicable regulations in non-US jurisdictions.

### STOCK RATINGS

Morgan Stanley uses a relative rating system using terms such as Overweight, Equal-weight, Not-Rated or Underweight (see definitions below). Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold and sell. Investors should carefully read the definitions of all ratings used in Morgan Stanley Research. In addition, since Morgan Stanley Research contains more complete information concerning the analyst's views, investors should carefully read Morgan Stanley Research, in its entirety, and not infer the contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations.

### Global Stock Ratings Distribution

(as of September 30, 2022)

The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm. For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
<b>Overweight/Buy</b>	<b>1342</b>	<b>38%</b>	<b>295</b>	<b>41%</b>	<b>22%</b>	<b>590</b>	<b>39%</b>
<b>Equal-weight/Hold</b>	<b>1582</b>	<b>45%</b>	<b>335</b>	<b>47%</b>	<b>21%</b>	<b>702</b>	<b>46%</b>
<b>Not-Rated/Hold</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0%</b>	<b>0</b>	<b>0%</b>
<b>Underweight/Sell</b>	<b>610</b>	<b>17%</b>	<b>84</b>	<b>12%</b>	<b>14%</b>	<b>219</b>	<b>14%</b>
<b>TOTAL</b>	<b>3,534</b>		<b>714</b>			<b>1511</b>	

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.

### Analyst Stock Ratings

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.

Equal-weight (E). The stock's total return is expected to be in line with 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.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to 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.

Underweight (U). The stock's total return is expected to be below 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.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

### Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe -

MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

### **Important Disclosures for Morgan Stanley Smith Barney LLC & E\*TRADE Securities LLC Customers**

Important disclosures regarding the relationship between the companies that are the subject of Morgan Stanley Research and Morgan Stanley Smith Barney LLC or Morgan Stanley or any of their affiliates, are available on the Morgan Stanley Wealth Management disclosure website at [www.morganstanley.com/online/researchdisclosures](http://www.morganstanley.com/online/researchdisclosures). For Morgan Stanley specific disclosures, you may refer to [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures).

Each Morgan Stanley research report is reviewed and approved on behalf of Morgan Stanley Smith Barney LLC and E\*TRADE Securities LLC. This review and approval is conducted by the same person who reviews the research report on behalf of Morgan Stanley. This could create a conflict of interest.

### **Other Important Disclosures**

Morgan Stanley & Co. International PLC and its affiliates have a significant financial interest in the debt securities of Adobe Inc., Akamai Technologies, Inc., Alteryx Inc, Autodesk, Bill.com Holdings, Box Inc, Cloudflare Inc, Coupa Software Inc, CrowdStrike Holdings Inc, Cvent, CyberArk Software Ltd, DigitalOcean Holdings Inc, DocuSign Inc, Intuit, KnowBe4, LegalZoom.com Inc, Microsoft, NortonLifeLock Inc, Okta, Inc., Oracle Corporation, Palantir Technologies Inc., Palo Alto Networks Inc, Rapid7 Inc, RingCentral Inc, Sabre Corp, Salesforce.com, Splunk Inc, Toast, Inc., Workday Inc, Zendesk, Inc, Zscaler Inc.

Morgan Stanley Research policy is to update research reports as and when the Research Analyst and Research Management deem appropriate, based on developments with the issuer, the sector, or the market that may have a material impact on the research views or opinions stated therein. In addition, certain Research publications are intended to be updated on a regular periodic basis (weekly/monthly/quarterly/annual) and will ordinarily be updated with that frequency, unless the Research Analyst and Research Management determine that a different publication schedule is appropriate based on current conditions. Morgan Stanley is not acting as a municipal advisor and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Morgan Stanley produces an equity research product called a "Tactical Idea." Views contained in a "Tactical Idea" on a particular stock may be contrary to the recommendations or views expressed in research on the same stock. This may be the result of differing time horizons, methodologies, market events, or other factors. For all research available on a particular stock, please contact your sales representative or go to Matrix at <http://www.morganstanley.com/matrix>.

Morgan Stanley Research is provided to our clients through our proprietary research portal on Matrix and also distributed electronically by Morgan Stanley to clients. Certain, but not all, Morgan Stanley Research products are also made available to clients through third-party vendors or redistributed to clients through alternate electronic means as a convenience. For access to all available Morgan Stanley Research, please contact your sales representative or go to Matrix at <http://www.morganstanley.com/matrix>.

Any access and/or use of Morgan Stanley Research is subject to Morgan Stanley's Terms of Use (<http://www.morganstanley.com/terms.html>). By accessing and/or using Morgan Stanley Research, you are indicating that you have read and agree to be bound by our Terms of Use (<http://www.morganstanley.com/terms.html>). In addition you consent to Morgan Stanley processing your personal data and using cookies in accordance with our Privacy Policy and our Global Cookies Policy ([http://www.morganstanley.com/privacy\\_pledge.html](http://www.morganstanley.com/privacy_pledge.html)), including for the purposes of setting your preferences and to collect readership data so that we can deliver better and more personalized service and products to you. To find out more information about how Morgan Stanley processes personal data, how we use cookies and how to reject cookies see our Privacy Policy and our Global Cookies Policy ([http://www.morganstanley.com/privacy\\_pledge.html](http://www.morganstanley.com/privacy_pledge.html)).

If you do not agree to our Terms of Use and/or if you do not wish to provide your consent to Morgan Stanley processing your personal data or using cookies please do not access our research.

Morgan Stanley Research does not provide individually tailored investment advice. Morgan Stanley Research has been prepared without regard to the circumstances and objectives of those who receive it. Morgan Stanley recommends that investors independently evaluate particular investments and strategies, and encourages investors to seek the advice of a financial adviser. The appropriateness of an investment or strategy will depend on an investor's circumstances and objectives. The securities, instruments, or strategies discussed in Morgan Stanley Research may not be suitable for all investors, and certain investors may not be eligible to purchase or participate in some or all of them. Morgan Stanley Research is not an offer to buy or sell or the solicitation of an offer to buy or sell any security/instrument or to participate in any particular trading strategy. The value of and income from your investments may vary because of changes in interest rates, foreign exchange rates, default rates, prepayment rates, securities/instruments prices, market indexes, operational or financial conditions of companies or other factors. There may be time limitations on the exercise of options or other rights in securities/instruments transactions. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. If provided, and unless otherwise stated, the closing price on the cover page is that of the primary exchange for the subject company's securities/instruments.

The fixed income research analysts, strategists or economists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality, accuracy and value of research, firm profitability or revenues (which include fixed income trading and capital markets profitability or revenues), client feedback and competitive factors. Fixed Income Research analysts', strategists' or economists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

The "Important Regulatory Disclosures on Subject Companies" section in Morgan Stanley Research lists all companies mentioned where Morgan Stanley owns 1% or more of a class of common equity securities of the companies. For all other companies mentioned in Morgan Stanley Research, Morgan Stanley may have an investment of less than 1% in securities/instruments or derivatives of securities/instruments of companies and may trade them in ways different from those discussed in Morgan Stanley Research. Employees of Morgan Stanley not involved in the preparation of Morgan Stanley Research may have investments in securities/instruments or derivatives of securities/instruments of companies mentioned and may trade them in ways different from those discussed in Morgan Stanley Research. Derivatives may be issued by Morgan Stanley or associated persons.

With the exception of information regarding Morgan Stanley, Morgan Stanley Research is based on public information. Morgan Stanley makes every effort to use reliable, comprehensive information, but we make no representation that it is accurate or complete. We have no obligation to tell you when opinions or information in Morgan Stanley Research change apart from when we intend to discontinue equity research coverage of a subject company. Facts and views presented in Morgan Stanley Research have not been reviewed by, and may not reflect information known to, professionals in other Morgan Stanley business areas, including investment banking personnel.

Morgan Stanley Research personnel may participate in company events such as site visits and are generally prohibited from accepting payment by the company of associated expenses unless pre-approved by authorized members of Research management.

Morgan Stanley may make investment decisions that are inconsistent with the recommendations or views in this report.

To our readers based in Taiwan or trading in Taiwan securities/instruments: Information on securities/instruments that trade in Taiwan is distributed by Morgan Stanley Taiwan Limited ("MSTL"). Such information is for your reference only. The reader should independently evaluate the investment risks and is solely responsible for their investment decisions. Morgan Stanley Research may not be distributed to the public media or quoted or used by the public media without the express written consent of Morgan Stanley. Any non-customer reader within the scope of Article 7-1 of the Taiwan Stock Exchange Recommendation Regulations accessing and/or receiving Morgan Stanley Research is not permitted to provide Morgan Stanley Research to any third party (including but not limited to related parties, affiliated companies and any other third parties) or engage in any activities regarding Morgan Stanley Research which may create or give the appearance of creating a conflict of interest. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation or a solicitation to trade in such securities/instruments. MSTL may not execute transactions for clients in these securities/instruments.

Morgan Stanley is not incorporated under PRC law and the research in relation to this report is conducted outside the PRC. Morgan Stanley Research does not constitute an offer to sell or the solicitation of an offer to buy any securities in the PRC. PRC investors shall have the relevant qualifications to invest in such securities and shall be responsible for obtaining all relevant approvals, licenses, verifications and/or registrations from the relevant governmental authorities themselves. Neither this report nor any part of it is intended as, or shall constitute, provision of any consultancy or advisory service of securities investment as defined under PRC law. Such information is provided for your reference only.

Morgan Stanley Research is disseminated in Brazil by Morgan Stanley C.T.V.M. S.A. located at Av. Brigadeiro Faria Lima, 3600, 6th floor, São Paulo - SP, Brazil; and is regulated by the Comissão de Valores Mobiliários; in Mexico by Morgan Stanley México, Casa de Bolsa, S.A. de C.V which is regulated by Comisión Nacional Bancaria y de Valores. Paseo de los Tamarindos 90, Torre 1, Col. Bosques de las Lomas Floor 29, 05120 Mexico City; in Japan by Morgan Stanley MUFG Securities Co., Ltd. and, for Commodities related research reports only, Morgan Stanley Capital Group Japan Co., Ltd; in Hong Kong by Morgan Stanley Asia Limited (which accepts responsibility for its contents) and by Morgan Stanley Bank Asia Limited; in Singapore by Morgan Stanley Asia (Singapore) Pte. (Registration number 199206298Z) and/or Morgan Stanley Asia (Singapore) Securities Pte Ltd (Registration number 200008434H), regulated by the Monetary Authority of Singapore (which accepts legal responsibility for its contents and should be contacted with respect to any matters arising from, or in connection with, Morgan Stanley Research) and by Morgan Stanley Bank Asia Limited, Singapore Branch (Registration number T14FC0118J); in Australia to "wholesale clients" within the meaning of the Australian Corporations Act by Morgan Stanley Australia Limited A.B.N. 67 003 734 576, holder of Australian financial services license No. 233742, which accepts responsibility for its contents; in Australia to "wholesale clients" and "retail clients" within the meaning of the Australian Corporations Act by Morgan Stanley Wealth Management Australia Pty Ltd (A.B.N. 19 009 145 555, holder of Australian financial services license No. 240813, which accepts responsibility for its contents; in Korea by Morgan Stanley & Co International plc, Seoul Branch; in India by Morgan Stanley India Company Private Limited; in Canada by Morgan Stanley Canada Limited; in Germany and the European Economic Area where required by Morgan Stanley Europe S.E., authorised and regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin) under the reference number 149169; in the US by Morgan Stanley & Co. LLC, which accepts responsibility for its contents. Morgan Stanley & Co. International plc, authorized by the Prudential Regulatory Authority and regulated by the Financial Conduct Authority and the Prudential Regulatory Authority, disseminates in the UK research that it has prepared, and approves solely for the purposes of section 21 of the Financial Services and Markets Act 2000, research which has been prepared by any of its affiliates. RMB Morgan Stanley Proprietary Limited is a member of the JSE Limited and A2X(Pty) Ltd. RMB Morgan Stanley Proprietary Limited is a joint venture owned equally by Morgan Stanley International Holdings Inc. and RMB Investment Advisory (Proprietary) Limited, which is wholly owned by FirstRand Limited. The information in Morgan Stanley Research is being disseminated by Morgan Stanley Saudi Arabia, regulated by the Capital Market Authority in the Kingdom of Saudi Arabia, and is directed at Sophisticated investors only.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (DIFC Branch), regulated by the Dubai Financial Services Authority (the DFSA), and is directed at Professional Clients only, as defined by the DFSA. The financial products or financial services to which this research relates will only be made available to a customer who we are satisfied meets the regulatory criteria to be a Professional Client. A distribution of the different MS Research ratings or recommendations, in percentage terms for Investments in each sector covered, is available upon request from your sales representative.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (QFC Branch), regulated by the Qatar Financial Centre Regulatory Authority (the QFCRA), and is directed at business customers and market counterparties only and is not intended for Retail Customers as defined by the QFCRA.

As required by the Capital Markets Board of Turkey, investment information, comments and recommendations stated here, are not within the scope of investment advisory activity. Investment advisory service is provided exclusively to persons based on their risk and income preferences by the authorized firms. Comments and recommendations stated here are general in nature. These opinions may not fit to your financial status, risk and return preferences. For this reason, to make an investment decision by relying solely to this information stated here may not bring about outcomes that fit your expectations.

The trademarks and service marks contained in Morgan Stanley Research are the property of their respective owners. Third-party data providers make no warranties or representations relating to the accuracy, completeness, or timeliness of the data they provide and shall not have liability for any damages relating to such data. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P.

Morgan Stanley Research, or any portion thereof may not be reprinted, sold or redistributed without the written consent of Morgan Stanley.

Indicators and trackers referenced in Morgan Stanley Research may not be used as, or treated as, a benchmark under Regulation EU 2016/1011, or any other similar framework.

The issuers and/or fixed income products recommended or discussed in certain fixed income research reports may not be continuously followed. Accordingly, investors should regard those fixed income research reports as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or individual fixed income products.

Morgan Stanley may hold, from time to time, material financial and commercial interests regarding the company subject to the Research report.

**INDUSTRY COVERAGE: Software**

COMPANY (TICKER)	RATING (AS OF)	PRICE* (10/25/2022)
<b>Elizabeth Porter, CFA</b>		
Amplitude Inc. (AMPL.O)	E (10/25/2021)	\$16.05
GoDaddy Inc (GDDY.N)	E (07/19/2021)	\$79.65
LegalZoom.com Inc (LZ.O)	U (07/28/2022)	\$8.53
Liveramp Holdings Inc (RAVP.N)	O (07/15/2019)	\$18.30
Matterport Inc (MTTR.O)	E (04/19/2022)	\$3.63
Semrush Holdings Inc -A (SEMR.N)	E (06/06/2022)	\$12.05
Sprinklr Inc (CXMN)	E (07/19/2021)	\$9.31
Sprout Social Inc (SPT.O)	E (11/17/2020)	\$58.86
UserTesting Inc. (USER.N)	E (10/19/2022)	\$3.94
Wix.Com Ltd (WIX.O)	E (05/19/2022)	\$85.97
Zendesk, Inc (ZEN.N)	++	\$76.35
Zeta Global Holdings Corp (ZETA.N)	E (07/06/2021)	\$7.99
ZoomInfo Technologies Inc (ZI.O)	O (11/18/2020)	\$46.68

**Hamza Fodderwala**

Check Point Software Technologies Ltd. (CHKP.O)	U (01/13/2020)	\$116.73
CrowdStrike Holdings Inc (CRWD.O)	O (06/06/2022)	\$162.11
CyberArk Software Ltd (CYBR.O)	O (10/01/2020)	\$156.19
ForgeRock Inc (FORG.N)	E (10/11/2021)	\$22.47
Fortinet Inc. (FTNT.O)	O (10/07/2022)	\$55.92
KnowBe4 (KNBE.O)	++	\$24.52
NortonLifeLock Inc (NLOK.O)	E (03/29/2022)	\$22.25
Okta, Inc. (OKTA.O)	E (09/01/2022)	\$58.31
Palo Alto Networks Inc (PANW.O)	O (10/10/2017)	\$166.19
Qualys Inc (QLYS.O)	U (02/09/2021)	\$139.07
Rapid7 Inc (RPD.O)	E (08/11/2015)	\$45.03
Secureworks Corp (SCWX.O)	E (09/09/2020)	\$8.18
SentinelOne, Inc. (S.N)	O (07/25/2021)	\$23.71
Tenable Holdings Inc (TENB.O)	O (01/15/2019)	\$34.23
Varonis Systems, Inc. (VRNS.O)	E (06/27/2022)	\$27.31
Zscaler Inc (ZS.O)	O (01/18/2022)	\$157.09

**Josh Baer, CFA**

2u Inc (TWOU.O)	E (11/24/2020)	\$5.54
Asana Inc (ASAN.N)	E (10/26/2020)	\$21.86
Box Inc (BOX.N)	O (10/03/2022)	\$28.71
Chegg Inc (CHGG.N)	E (11/02/2021)	\$22.19
Coursera, Inc. (COUR.N)	O (04/26/2021)	\$12.35
Cvent (CVT.O)	E (06/17/2022)	\$5.83
DigitalOcean Holdings Inc (DOCN.N)	U (07/11/2022)	\$38.31
Docebo Inc. (DCBO.O)	E (04/26/2022)	\$29.58
DocuSign Inc (DOCU.O)	U (10/03/2022)	\$50.23
Instructure Holdings Inc (INST.N)	O (12/09/2021)	\$24.05
Lightspeed POS Inc. (LSPD.N)	E (02/18/2021)	\$18.52
Sabre Corp (SABR.O)	E (03/16/2021)	\$5.60
Smartsheet Inc (SMAR.N)	O (05/22/2018)	\$34.83
Toast, Inc. (TOST.N)	O (12/16/2021)	\$22.22
Udemy Inc (UDMY.O)	E (11/23/2021)	\$14.33
WalkMe Ltd (WKME.O)	E (06/07/2022)	\$7.90

**Keith Weiss, CFA**

Adobe Inc. (ADBE.O)	E (06/21/2022)	\$323.79
Akamai Technologies, Inc. (AKAM.O)	E (04/29/2020)	\$88.45
Atlassian Corporation PLC (TEAM.O)	O (01/13/2020)	\$206.04
Autodesk (ADSK.O)	E (08/19/2021)	\$215.72
BigCommerce Holdings, Inc. (BIGC.O)	E (05/11/2021)	\$14.66
Bill.com Holdings (BILL.N)	O (09/12/2022)	\$133.80
Cloudflare Inc (NET.N)	E (06/18/2020)	\$57.55
Coupa Software Inc (COUP.O)	O (04/14/2020)	\$54.27
Freshworks Inc (FRSH.O)	E (10/18/2021)	\$13.84
HubSpot, Inc. (HUBS.N)	O (03/25/2020)	\$290.58
Intuit (INTU.O)	O (10/05/2020)	\$432.08
Microsoft (MSFT.O)	O (01/13/2016)	\$250.66
Oracle Corporation (ORCL.N)	E (01/15/2019)	\$73.14
Palantir Technologies Inc. (PLTR.N)	E (03/07/2022)	\$8.66
Qualtrics (XMO)	O (12/16/2021)	\$11.38
Salesforce.com (CRMN)	O (05/19/2021)	\$165.27
Samsara Inc (IOT.N)	O (01/10/2022)	\$12.31
ServiceNow Inc (NOW.N)	O (11/12/2020)	\$376.66
Shopify Inc (SHOP.N)	E (06/24/2022)	\$29.83
Snowflake Inc. (SNOW.N)	O (02/07/2022)	\$181.82
Splunk Inc (SPLK.O)	E (04/27/2021)	\$82.87
UiPath Inc (PATH.N)	E (09/07/2022)	\$12.40
Veeva Systems Inc (VEEV.N)	E (12/16/2021)	\$166.68
Vertex Inc. (VERX.O)	U (04/07/2021)	\$17.20
VMware Inc (VMW.N)	++	\$111.42
Workday Inc (WDAY.O)	O (04/14/2020)	\$156.18

**Meta A Marshall**

8x8 Inc (EGHT.N)	E (01/13/2020)	\$3.55
Five9 Inc (FIVN.O)	E (10/10/2022)	\$59.79
NICE Ltd. (NICE.O)	E (12/16/2021)	\$196.18
RingCentral Inc (RNG.N)	E (12/16/2021)	\$35.12
Twilio Inc (TWLO.N)	O (09/19/2019)	\$76.61
Zoom Video Communications Inc (ZMO)	E (10/11/2022)	\$84.09

**Roy D Campbell**

Karoo Ltd (KARO.O)	O (04/27/2021)	\$23.79
--------------------	----------------	---------

**Sanjit K Singh**

Alteryx Inc (AYX.N)	E (04/01/2021)	\$48.54
Appian Corp (APPN.O)	E (12/03/2021)	\$47.87
C3.ai (AI.N)	U (01/04/2021)	\$12.76
Confluent, Inc. (CFLT.O)	E (07/19/2021)	\$28.00
Couchbase, Inc. (BASE.O)	E (08/16/2021)	\$12.86
Datadog, Inc. (DDOG.O)	O (05/21/2021)	\$88.75
Domo Inc (DOMO.O)	O (12/17/2020)	\$19.16
Fastly Inc. (FSLY.N)	U (07/11/2022)	\$8.77
HashiCorp (HCP.O)	E (01/03/2022)	\$33.94
JFrog Ltd. (FROG.O)	E (10/12/2020)	\$26.36
MongoDB Inc (MDB.O)	O (12/17/2020)	\$200.69
New Relic Inc (NEWR.N)	E (07/11/2022)	\$61.06
PagerDuty, Inc. (PD.N)	E (05/06/2019)	\$25.25
Solarwinds Corp (SWM.N)	E (11/13/2018)	\$9.00
Sumo Logic Inc (SUMO.O)	E (10/12/2020)	\$7.46

Stock Ratings are subject to change. Please see latest research for each company.

\* Historical prices are not split adjusted.

© 2022 Morgan Stanley