Americas Technology: Software

Initiation: Cloud Software Investing Framework in a $1 Trn TAM; Buy MSFT, CRM, SPLK, NOW, Sell ORCL, ADSK

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We launch coverage on the Software industry with 12 companies. Our Buys are CRM (PT $315), MSFT (PT $285), WDAY (PT $300), ADBE (PT $580), NOW (PT $670), and SPLK (PT $240). Our Neutrals are INTU (PT $430), SNOW (PT $310), ESTC (PT $190), and VMW (PT $150). Our Sell ratings are on ADSK (PT $270) and ORCL (PT $60). We are assuming coverage of NOW, INTU, and SPLK from Chris Merwin. Given the run up in software valuations (average GS software coverage EV/Sales multiple of ~18x vs. ~11x a year ago) our Buys lean more toward reasonably valued high quality growth franchises. The pandemic drove significant customer reprioritization of spending on products in 2020 that we would consider 'defense' in software parlance (must haves such as video conferencing, remote desktops, security, etc.). With the availability of COVID-19 vaccines and the outlook for improving economic conditions as forecast by the GS Economics team, we wish to highlight as our top ideas companies such as Microsoft, Salesforce, Workday and Splunk that are likely to incrementally benefit in 2H:2021 as spending conditions potentially improve and priorities shift back toward the 'Offense' category (Public cloud, CRM, HCM, Financials, Analytics).

GS Framework for Investing in Software. We have compiled a framework for investing in software based on our experience. While quantitative metrics are often top of mind, a good measure of investing success also comes down to assimilating the intangible and qualitative aspects unique to every story. We have disaggregated the stock selection and conviction building process into eight key factors, which we go into detail in the next part of the report. The eight factors that we believe are key to driving returns are: 1) Quantifying the total available market (TAM), 2) In-depth assessment of secular themes driving the sector, sub-sector and individual companies; 3) Platform vs. Best of breed dynamics; 4) Assessing the competitive moat, which requires understanding the technology, which is unique to every company; 5) Quantifying the unit economics of customer acquisition and lifetime value (which manifests ultimately in operating margins and FCF); 6) Formulating the long term outlook and quantification of terminal value in order to estimate return potential (which is dependent upon growth rate indicators in the early stages, steady state FCF at maturity and terminal growth); 7) Entry/Exit points and understanding how sell-offs driven by exogenous and short-term company execution factors can

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create opportunities to get more aggressive; 8) ESG impact. We apply the framework individually to each of our stocks in the individual company write-ups.

We see near term debates and room for Alpha generation with MSFT, CRM, WDAY and SPLK. It is important to recognize that not all eight factors are equally important or are all important at any given point in time. The mix of factors and their relative importance can be quite dynamic. For example, TAM and customer acquisition economics have been important factors driving long-term performance of ServiceNow (NOW) and Adobe (ADBE). Every once in a while though, a sales execution miss or a dilutive but strategic acquisition followed by a reset of expectations could drive a sell-off, creating an opportune entry point. However, generating Alpha in the very short term can come down to company-specific metrics such as cRPO, billings and backlog that are too granular to be captured by a broad long term framework. For instance, we believe the Street may be underestimating the potential for Microsoft Azure to re-accelerate from the mid 40's and deliver margin expansion (likely evident in the reported commercial cloud number) especially as a cohort of customers in healthy industries becomes a larger part of the revenue stream. We believe CRM, WDAY and SPLK are likely to show re-acceleration in leading indicators (cRPO, backlog) and improved FCF conversion (versus easy comps precipitated by the pandemic). Additionally, WDAY has lagged due to tepid backlog guidance for Q4:F21(Jan) and SPLK due to lowered ARR guidance for Q4:F21(Jan) due to deal slippage in Q3:F21 (Oct), which triggered a sell-off and consequently created an entry point. We expect resolution of these issues to drive meaningful out-performance in the shares. Further, the Street may not be fully appreciating the potential for a significant rebound in cash flows in 2HCY21 once customers resume normal payment terms following concessions obtained during the COVID-19 pandemic; for CRM and WDAY, we model 2HCY21 FCF growth of +24% yoy and +33% yoy respectively.

GS survey +ve for Microsoft, AWS, Salesforce, ServiceNow and Workday and –ve for Oracle. The GS Digital Transformation (DX) survey being released with this initiating coverage report reveals that DX spending in our sample of respondents is expected to outpace IT spending. Weighted average responses indicate expectations for DX related spending to climb to ~15% of overall IT budgets over the next five years, compared to ~11% today. The top companies that are expected to have the largest customer wallet share gains are Microsoft (widest lead), AWS, Salesforce, SeviceNow and Workday. Product categories that are gaining share of wallet during the pandemic are collaboration, public cloud (IaaS and PaaS) and security. Interestingly, product categories expected to see pent-up demand post the availability of a vaccine are business intelligence/analytics, public cloud and security. The observation that public cloud and security appear to be top wallet share gainers during the pandemic while also appearing to be potential beneficiaries of pent-up demand post pandemic indicates a strong relative position in customer IT spending priorities. On the negative side, survey respondents did not seem to prioritize databases much. And our survey respondents indicated their spending with Oracle was most at risk relative to other providers.

2020 Outperformance leaves the sector vulnerable to a few short term headwinds. The significant outperformance of Software stocks in C2020 (with our broader software coverage +91% in CY20 vs. the NASDAQ +44%) leaves the group vulnerable to a few headwinds: **1)** Operating margin outperformance from lower T&E in C2020 as companies shifted to virtual meetings (T&E is an estimated 100-300 bps of revenue) shows up as tough comps beginning in Q2:C2021; **2)** Slowing new business indicators from Q1 of C2020, progressing through Q3 of C2020 manifest in decelerating revenue growth rates in the next 2-3 quarters given the lag in subscription business models; **3)** The sector's high valuation versus historical levels (average GS software coverage EV/Sales(NTM) is ~18x versus ~11x just a year ago) leaves it vulnerable to growth to value rotation and **4)** changes in investor sentiment stemming from potentially isolated company-specific misses or warnings (LinkedIn and Tableau in Jan 2016 and Workday in Oct 2018).

Our GS economics team acknowledges the possibility of higher US corporate taxes given the change in administration. Given the relatively high percentage of non-US revenues for Software companies, especially larger companies such as Microsoft, Oracle, Salesforce and Adobe in the 30-50% range, the real impact from higher US corporate taxes will likely be somewhat mitigated since overseas taxes are lower. For illustrative purposes, in our company write-ups we quantify the potential impact to EPS from higher taxes. However, IT budgets for software customers that are US dominated could be more affected, although this may not come to fruition until legislation passes. Moreover, the GS Economics Team not only makes the case for fiscal stimulus which may offset some of the pain from higher taxes, but also presents a case for why the tax increase could end up being a fraction of what was anticipated (see our GS Macro team's note for more details). Rotation into value is another concern although it has tended to be short-lived every time it has come up in the last 10 years of the present economic cycle. The software sector's relatively strong growth has made it hard for investors to ignore it for an extended period of time. While a Democratic sweep likely increases the regulatory risk for the Tech sector as a whole, historically, the prospects for brighter economic growth and therefore the duration and durability of software franchises have outweighed investor concerns about higher rates in an economic cycle. We assert in a later section of the report titled 'Entry/Exit' that corrections driven by the above factors have been a recurring phenomenon in software investing. Such corrections have presented opportunities to get more aggressive, as long as the long-term growth prospects are intact. It's hard to be tactical in Software with a short-term negative view since it's tough to predict the timing, magnitude and duration of a correction.

Regardless, key leading indicators should reflect improving fundamentals. We believe fundamentals continue to be strong as Digital Transformation catalyzes Cloud adoption and propels the sector, pandemic or not, as evidenced by our DX survey. The Street is justifiably concerned that weakening lead indicators such as billings and coincident indicators such as customer attrition in software subscription business models that we saw in 2020 will bear negatively on revenue growth in C2021. We believe that is missing the point since we have to look to leading indicators such as cRPO/Billings, which will face easier comps starting March Q 2021 and are likely to pick up in the next 1-2 Qs if vaccines are broadly effective. Such leading indicators are far more important than revenue growth, which will be negatively impacted by billings deceleration in C2020 and therefore is a lagging indicator. We also note that historical corrections driven by macroeconomic and geopolitical concerns (for example, trade wars in late 2018) turned out to be opportunities to get more aggressive. Finally, ironically, in the event that the resolution of the pandemic takes longer, enterprise prioritization on Digital Transformation will drive relatively better Software sector growth and outperformance. That said, as vaccines are expected to become more widely available, we continue to monitor the Reopening of America (see Heath Terry's latest note), and any corresponding shifts in IT spending priorities that may occur (See our DX survey for more detail).

Digital Transformation (DX) will continue to be a significant secular driver of the software industry post the pandemic and result in several young companies scaling their businesses in several sub-categories (AI, Big Data, RPA, CRM, Collaboration, IaaS, PaaS and DevOps). We also expect DX to be a growth tailwind for established leaders such as Microsoft, Salesforce, Adobe, ServiceNow, Intuit, Workday, VMware, Splunk, Snowflake and Elastic.

Many behavioral changes brought about by the pandemic could sustain Digital Transformation. We believe growing digital adoption might drive long-lasting durable changes in behaviors that are likely to sustain post pandemic. Once the pandemic causes consumers to shift typical in-branch activities such as wire transfers or check deposits to mobile banking, they are more likely to stick with and grow their digital footprint even after the pandemic. If companies learn to attract, retain, cross-sell, upsell, service and analyze customers digitally on mobile devices, catalyzed by the pandemic they are more likely to invest more in their digital initiatives. If enterprises learn to recruit, hire, onboard, evaluate and train employees digitally and virtually, they could conceivably invest more in digital projects. If companies find success in planning their financials and closing their books in the cloud remotely from a mobile device, they may expand their investment footprint in cloud-based financial systems. If some companies find that flexible/remote work is productive, that dynamic could accelerate the shift of data center workloads into the Cloud, which increases resiliency and lowers risk for IT departments. As highlighted in our DX Survey, 62% of respondents expect more than 40% of their workforce to have flexible working arrangements three years from now, compared to less than 15% pre-COVID.

We estimate ~$1 Trillion TAM for Cloud driven by Digital Transformation. We estimate the TAM for Cloud, driven by Digital Transformation to be ~$1 Trillion. We estimate that Cloud industry revenues of ~$235 bn today represent just 25bps of global GDP. Whereas, traditional enterprise IT of $1.4 Trillion is just ~165 bps of global GDP of $85 Trillion (a good measure of digitization). This suggests that the relative opportunity for Cloud is at least 7x from current levels, conservatively in a substitution scenario. However, the Cloud is not just a substitute for traditional enterprise IT. Digital Transformation drives new multibillion dollar software categories, including Collaboration, UCaaS, eCommerce, AI, Big Data, DevOps and RPA while potentially increasing adoption rates for established categories such as CRM, HCM, ERP, Vertical Apps, Creative Design, and Business Intelligence. As a result, this relative 7x multiple could go even higher as businesses digitize. Judged through the lens of financial services which has a high % of revenues spent on IT and is a good proxy for a highly digitized business (~10% according to Gartner), the Cloud's 25 bps share of global GDP leaves us with potentially a few decades of growth ahead. The Cloud also has the potential to indirectly substitute in small parts for other areas of spending including commercial real estate (US office commercial real estate leasing alone is a $280 bn/year business according to data from CoStar) and corporate T&E (Worldwide corporate travel is a $1.4 Trillion category according to McKinsey and Company). Not to mention that the Cloud also substitutes for direct energy consumption and commercial leasing by corporate data centers. Both the numerator and denominator in the calculation of DX penetration of IT are moving targets. Looking more narrowly through the lens of the US, software spending as a % of GDP was about 50 bps in the mid 90's according to data from the US Bureau of Economic Analysis. Now it's closer to 300 bps, a relative share gain of 6x. Digital Transformation (DX) will continue to be a significant secular driver of the software industry post the pandemic and result in several young companies scaling their businesses in several sub-categories. We also expect DX to be a growth tailwind for established leaders such as Microsoft, Salesforce, Adobe, ServiceNow, Intuit, Workday, Autodesk, VMware, Splunk, Snowflake and Elastic.

Digitization combined with data generation, AI and unified data models will provide significant competitive advantage for incumbents. Activities and processes in the digital era require massive computational power and more importantly generate massive amounts of data. These digital business processes also require common data models that incorporate a 360-degree view of the digital manifestation of a constituent, be it customer, employee, patient, design, building, bridge, machine, etc. These models will generate massively scalable data sets that can be harnessed through AI, which will likely provide insurmountable competitive advantage and drive category leaders such as Microsoft, Salesforce, Adobe, ServiceNow, Workday, Intuit, Autodesk, Splunk and Snowflake into becoming even larger companies.

GS Framework for Investing in Software

Based on our experience, having seen firsthand several major market downturns and generational shifts in software, we think of software investing as a blend of quantitative and qualitative factors. Where we are on that spectrum changes frequently for the sector, a sub-sector, or any software company. For newer companies and emerging markets, typically qualitative overwhelms quantitative, and for established companies and mature markets, quantitative overwhelms qualitative.

In our view, the key to success in software investing is both understanding the quantitative aspect and also constantly staying alert in the middle of debates for new data points to try to make sense of multiple possible outcomes of ever-changing circumstances. Moreover, based on our experience, every software company is unique, with its own DNA and tendencies.

In the GS Framework for Investing in Software, we have picked what we believe to be 8 key factors. In the following sections, we offer our thoughts on each.

Exhibit 1: GS Framework for Investing in Software

	GS FRAMEWORK FOR INVESTING IN SOFTWARE	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Top-down sizing Bottom-up sizing	Is pricing sustainable? Is it a feature or a real market?
SECULAR THEMES	Customers spending more on DX, UCaaS, CPaaS, CCaaS AI and IoT initial use cases	Is it a pull-forward of demand or a permanent shift? Is it a feature or a real secular trend?
ENTRY/EXIT POINTS	Technical analysis Sector historical valuation parameters	When to buy? Rotation or short-term mis-execution? When to sell? Valuation ahead of fundamentals?
LT FRAMEWORK RETURN	Long-term revenue/margins scenarios Compounded return outcomes based on long-term scenarios	Which scenario is more likely? What are possible risk-reward scenarios?
UNIT ECONOMICS	Lifetime value (LTV) calculation Customer acquisition cost (CAC) calculation; LTV/CAC	How does competition impact customer lifetime? How does upsell and cross-sell impact CAC and cost to serve?
PLATFORM/ BEST OF BREED	Diversified revenue mix Best of breed gaining market share	Are there actual synergies between the revenue streams? Can the best of breed "cross the chasm"?
COMPETITIVE MOAT	Revenue per R&D dollar Size of install base	Are there disruptive technologies? Why is the install base demanding bigger price discounts?
ESG	Carbon neutral = data center usage + carbon offsets Company becoming a large platform	What are the social impacts of AI products? What are the regulatory or security breach risks?

Source: Goldman Sachs Global Investment Research

Software total addressable market (TAM)

The fundamental reason the software sector is an attractive investment opportunity is the large and expanding TAM. For software companies that are positioned well and can consistently execute, this can result in compelling multi-year high-growth highly-profitable business models.

The software TAM is a function of several factors, each representing a long-term significant secular shift, in our view. Moreover, all these factors amplify each other, resulting in synergistic effects. For example, cloud both enables and amplifies AI; digital marketing pulls through purchases of service and cPaaS; software project management pulls through DevOps; SaaS pulls through PaaS; IaaS pulls through PaaS and vice versa, etc. Good companies that understand such synergies can over time build large, high-growth, highly profitable, predictable, and sticky platforms.

TAM = (1) cloud transition of existing markets + (2) cloud opening up the SMB market + (3) software automating new areas + (4) communications becoming software + (5) innovation driving incremental spend.

(1) While the on-premise to cloud transition is well understood, in our view what continues to be under-appreciated is the size of the market expansion that inherently results with the move to the cloud. Assuming a 3 year equivalent SaaS vs on-prem pricing, this implies over a 5-year period about 3x higher spend on SaaS vs maintenance and 1.3x higher spend on SaaS vs. license + maintenance. This has two consequences: first, at least 30% software market expansion as cloud software captures share from both hardware and services; secondly, this elongates the high-growth curve, providing

investors with extended visibility. Even mature markets can continue to grow double digits for a long period of time. For example, the Sales Cloud of Salesforce.com is still growing double-digits after 15 years despite diminishing market share gains.

Exhibit 2: On-premise vs SaaS economics

5-YEAR TCO	On-premise	SaaS
Hardware	20%	
Services	60%	20%
Software license	10%	
Software maintenance	10%	
SaaS		27%
TOTAL	**100%**	**47%**
SAVINGS		**-53%**
SaaS vs Maintenance		**2.7x**
SaaS vs on-premise total		**1.35x**

Source: Goldman Sachs Global Investment Research

(2) Cloud has made software both more accessible and affordable to SMBs. This has accelerated the penetration of software within SMBs, further expanding the TAM. With IT spend roughly split 50/50 between large enterprises and SMBs, the net result from (1) and (2), in our view, will be almost doubling of the market size vs. the on-premise world over time. As in the vast majority of cases SaaS is priced per user, growing world population should further support continuing market expansion. However, in recessionary periods, workforce reductions result in short-term revenue headwinds.

(3) Software continues to automate previously manual tasks. For example, digital marketing tools create real-time personalized consumer journeys. DevOps tools automate previously manual software development processes. RPA (robotic process automation) automates manual tasks in accounting and finance.

(4) cPaaS (communications platform as a service) enables developers to add voice, video, SMS, social channels, and email into applications, breaking-down the barriers between communications and software. We could say that software is eating the traditional telecom world. $1.3bn+ telecom spending is 2x+ higher than total software spending ($500bn), representing a large opportunity for cPaaS companies.

(5) Innovations such as AI/ML and IoT further add to the overall software TAM. While parts of both end up incorporated in existing products, other parts are sold separately.

Both AI and IoT are in the very early stages.

The net result of these 5 factors in our view is a very large, very early, and fast growing market. We have developed a bottom-up approach to size the market across the entire cloud stack – SaaS, PaaS, and IaaS. We estimate a cloud market size of ~$150bn in 2020, growing to $400bn in 2025E at 20%+ CAGR. We do not explicitly size AI, IoT, and RPA.

The available TAM in our calculation represents the full potential of the market should all available underlying units convert to software. 2020E Cloud TAM represents our estimate on current revenues for all vendors and 2025E TAM represents our view on potential cloud penetration. For example, in sales, the units are based on the number of US sales related positions of 14.5mn (US Census Bureau) — we take 80% of those (as some positions are in sales operations) times 3 to get to a global unit number. Average Selling Price (ASP) is based on Salesforce.com editions at 25% mix each, assuming 30% discount off of list price. 2020E Cloud TAM is based on vendor revenues as follows: Salesforce at $5bn + MSFT Dynamics + ORCL + others; we assume CRM has around 50% market share. This results in a $39bn available TAM with 2020E cloud penetration at 26%. We expect the sales market to grow at 18% CAGR through 2025E, consistent with recent trends. Vendors are adding additional functionality such as predictive sales lead scoring, driving incremental demand and higher ASPs, in our view.

Exhibit 3: GS bottom-up software TAM build

	TAM available ($bn)	Cloud TAM 2020E ($bn)	% cloud	TAM 2025 ($bn)	% cloud	CAGR (20-25)	Metric	ASP/mo
TOTAL SAAS	**823**	**149**	**18%**	**412**	**50%**	**23%**		
Front Office	**230**	**49**	**21%**	**145**	**63%**	**24%**		
Enterprise content management	48	17	35%	38	80%	18%	80 # of creative employees (mn)	50
Sales	39	10	26%	23	60%	18%	34 # of employees (mn)	96
Marketing	48	7	15%	26	55%	30%	2 # of companies 10+ workers (r	2,000
eCommerce	30	4	13%	24	80%	43%	1,500 GMV $ bn	2%
Go-to-market intelligence	36	2	6%	11	30%	40%	18 # of employees (mn)	171
Service	29	9	31%	22	75%	19%	20 # of employees (mn)	121
Back Office	**95**	**21**	**22%**	**52**	**55%**	**20%**		
HCM incl payroll	33	11	33%	21	65%	14%	550 # of employees (mn)	5
Finance	35	4	11%	16	45%	32%	12 # of employees (mn)	245
Travel and Expense	7	3	45%	5	70%	9%	220 # of travelling employees (mn)	2.5
Supply chain/manufacturing	20	3	15%	10	50%	27%	5 # of employees (mn)	328
Business Intelligence	22	3	14%	13	60%	35%	55 # of employees (mn)	34
Communications/collaboration	**376**	**58**	**15%**	**134**	**36%**	**18%**		
Unified Communications (UCaaS)	96	7	7%	29	30%	33%	400 # of PBX employees (mn)	20
Call center (CCaaS)	27	3	11%	11	40%	29%	15 # of PBX employees (mn)	150
Communications platforms (CPaaS)	72	4	6%	18	25%	35%	2 # of companies 10+ workers (r	3,000
Office productivity	53	30	57%	42	80%	7%	550 # of employees (mn)	8
Online storage	19	6	31%	12	60%	14%	550 # of employees (mn)	3
Project management	40	3	8%	14	35%	36%	550 # of employees (mn)	6
Desktop as a Service	69	5	7%	8	12%	11%	550 # of employees (mn)	11
IT Operations/Management & DevOps	**100**	**18**	**17%**	**69**	**69%**	**31%**		
Apps performance (APM)/infrastructure	20	4	17%	16	80%	36%	60 # of servers (mn)	28
IT Service Management (ITSM)	34	7	21%	24	70%	27%	40 # of non-devs IT employees (n	70
Security Info Event Management (SIEM)	23	3	13%	12	55%	33%	236 # of large companies ('000)	8,000
DevOps	24	4	17%	17	70%	33%	236 # of large companies ('000)	8,333
TOTAL PAAS	**138**	**27**	**20%**	**82**	**60%**	**25%**		
Database as a Service (DBaaS)	42	10	24%	23	55%	18%	6 # of database servers (mn)	584
Integration Platform as a Service (iPaaS)	40	5	13%	14	35%	23%	236 # of large companies ('000)	14,000
Application Platform as a Service (aPaaS)	57	12	21%	45	80%	30%	236 # of large companies ('000)	20,000
TOTAL IAAS	**211**	**58**	**28%**	**133**	**63%**	**18%**		
Compute	124	32	26%	81	65%	20%	60 # of servers (mn)	173
Storage	86	26	30%	52	60%	15%	60 # of servers (mn)	120
GRAND TOTAL	**1,172**	**234**	**20%**	**627**	**54%**	**22%**		
% SaaS mix	**70%**	**64%**		**66%**				
% PaaS	**12%**	**12%**		**13%**				
% IaaS	**18%**	**25%**		**21%**				

Source: Goldman Sachs Global Investment Research, US Census Bureau, IDC, Gartner, Company Documents, Company Data

In the table below, we show the underlying assumptions for each market.

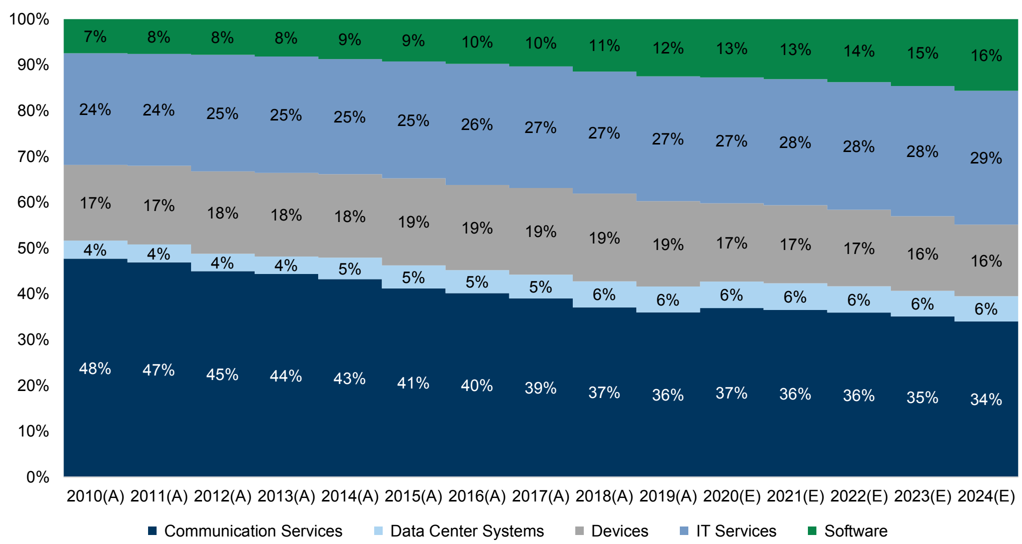
Exhibit 4: Demographic, census, and pricing data underlying our TAM calculations

MARKET	ASSUMPTIONS
Enterprise content management	ADBE at 45mn creatives + ADSK/others ~30mn users + we assume some growth through 2025 ADBE at $30/mo + ADSK at $100/mo; 2020E TAM: ADBE $9.2bn + ADSK $3.7bn + estimate for others
Sales	US sales related positions 14.5mn (US Census Bureau), we take 80% of those times 3 to get to global number ASP: Salesforce editions at 25% mix each, assuming 30% discount off of list 2020E TAM: CRM at $5bn + MSFT Dynamics + ORCL + others; assume CRM around 50% market share
Marketing	Atlassian analyst day 2020: 2mn companies >10 workers; $2K ASP is our assumption 2020E TAM: CRM ExactTarget ~$2bn + ADBE Marketing Cloud excl Magento $2.4bn + our assumptions on ORCL/SAP/others
eCommerce	Goldman Sachs Global Investment Research ecommerce estimate of 5.6tn in 2024, we assume lower captured by software We assume ASP is 2% of GMV 2020E TAM: ADBE Magento $200mn, CRM Demandware $1bn, Shopify $1.5bn, ORCL, + assumption on others
Go-to-market intelligence	US sales related jobs 14.5mn, we take 70% of those times 3 to get to global number and assume 60% need GTM intelligence ASP based on ZoomInfo ARPU; 2020E TAM: ZoomInfo $400mn + assumption on others
Service	15mn WW call center agents + we assume 5mn field service workers Salesforce editions at 33% mix each, assuming 30% discount off of list 2020E TAM: CRM at $5bn + ZEN $1bn + assumption on ORCL + others
HCM incl payroll	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) ASP is our assumption; 2020E TAM: WDAY $2.5bn + PCTY $0.6bn + Paycom $0.8bn + Ceridian $0.7bn + Ultimate Software $1.2bn + assumptions on ORCL Fusion ($4bn HCM + ERP) + others
Finance	4mn Finance US jobs (US Census Bureau) x 3 Global Netsuite $100, ORCL $600 assume 50% mix with 30% discount off list 2020E TAM: ORCL Fusion HCM + ERP $4bn, WDAY Finance ~$0.6bn + assumptions on others
Travel and Expense	550mn knowledge workers - we assume 40% travel; ASP our estimate 2020E TAM: Concur was $700mn in 2014, probably $1.5bn+ today, assume 50% share
Supply chain/manufacturing	17mn US production/transportation jobs (US Census Bureau) x 3 for global, we assume 10% will use software ASP: Average of ORCL manufacturing procurement sourcing at 30% discount off list 2020E TAM: ORCL Fusion HCM + ERP $4bn + assumptions on others
Business Intelligence	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) We assume 10% of knowledge workers Average of ORCL analytics cloud enterprise and professional editions less 30% discount off list; MSFT Power BI is $10/mo 2020E TAM: Estimate of $700mn CRM Tableau Cloud + Qlik + Domo + ORCL Analytics Cloud + MSFT Power BI
Unified Communications	400mn PBX seats install base; ASP mix: RNG $30, EGHT $22, ZM video $15 2020E TAM: ZM ~$2.5bn, RNG $1.2bn, EGHT $0.4bn, plus estimates on Vonage + others
Call center (CCaaS)	15mn WW call center agents (Gartner); ASP: FIVN $200, TWLO Flex $150 2020E TAM: FIVN $400mn, inContact/NICE probably around $1bn, RNG ~$100mn, EGHT ~$100mn plus others
Communications platforms (CPaaS)	Atlassian analyst day 2020: 2mn companies >10 workers; $2K ASP is our assumption ASP: TWLO at $$17K/yr, we assume spend will grow as larger enterprise are under-penetrated 2020E TAM: TWLO $1.7bn, Sinch $0.6bn, Nexmo/Vonage $0.5bn, estimates on others
Office productivity	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) MSFT office editions average with 30% discount 2020E TAM: MSFT ~$25bn + Google G-Suite estimate
Online storage	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) Box $15 unlimited storage, less 30% discount off list; MSFT at $10 - discounted for bundles by the hyperscalers 2020E TAM: Dropbox $1.6bn; Box $0.7bn; Carbonite $0.3bn + estimate on public cloud services
Project management	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) ASP assume Atlassian pricing; 2020E TAM: Atlassian Jira $0.9bn estimate plus others estimate
Desktop as a Service	550mn knowledge workers (we assume between 400mn PBX lines and 1.1bn knowledge workers per 2020 Atlassian Analyst Day) CTXS mid-tier edition post 30% discount; 2020E TAM: Citrix $1.6bn + VMware $1.8bn estimate + others
Apps performance (APM)/infrastructure	50mn server base estimate assuming 4+ years life of 12mn+ shipments per IDC in 2020, growing to 60mn in 2025 DDOG infr $15 or $23 per host per month, $31 for APM, we assume 50/50 mix, plus other modules such as network at $5/host/mo plus assume other modules such as real user monitoring , digital experience etc, less 30% discount 2020E TAM: DT $600mn, DDOG $600mn, NEWR $600mn, AppDynamics + others estimate
IT Service Management (ITSM)	Per Atlassian 60mn non-development IT workers, we discount it as not every IT worker will need ITSM ServiceNow $100 list discounted by 30% 2020E TAM: ServiceNow $4.5bn, assume ServiceNow has 50% share
Security Info Event Management (SIEM)	Per JFrog # of companies with > 500 employees ASP: SPLK $2bn ARR at 20,000 customers or $100K/yr 2020E TAM: SPLK cloud ARR $800mn + estimate on others
DevOps	Per JFrog # of companies with > 500 employees JFrog at $25K assuming it captures 25% of DevOps spend 2020E TAM: FROG $150mn, estimate MSFT GitHub $1bn, others estimate
Database as a Service (DBaaS)	50mn server base estimate assuming 4+ years life of 12mn+ shipments per IDC in 2020, growing to 60mn in 2025 We assume 10% of those are database servers AWS DB instance pricing ranges from 4 cents to $14, we assume $1 on average, 80% utilization AWS DB $6bn according to Gartner, plus assumptions on Azure, SAP, Oracle
Integration Platform as a Service (iPaaS)	Per JFrog # of companies with > 500 employees MuleSoft average revenue per customer was $170K/yr in 2016; we assume it grows 2020E TAM: CRM MuleSoft $1bn + assumption on others
Application Platform as a Service (aPaaS)	Per JFrog # of companies with > 500 employees; ASP is our estimate, we assume higher than iPaaS 2020E TAM: CRM PaaS $3bn plus estimates for AWS, Azure, GCP, ORCL, RHT, others (those would exclude DBaaS)
Compute	50mn server base estimate assuming 4+ years life of 12mn+ shipments per IDC in 2020, growing to 60mn in 2025 AWS compute instance pricing ranges from 4 cents to $5, we assume $0.3 on average at 80% capacity 2020E TAM: Estimate on AWS, Azure, GCP, ORCL, IBM; IDC estimates 60/40 split between compute and storage
Storage	50mn server base estimate assuming 4+ years life of 12mn+ shipments per IDC in 2020, growing to 60mn in 2025 AWS storage ranges from less than 1 cents per GB per month to a little more than 2 cents, we assume 1.5 cent per GB and 8TB attached directly or indirectly per server 2020E TAM: Estimate on AWS, Azure, GCP, ORCL, IBM; IDC estimates 60/40 split between compute and storage

Source: Goldman Sachs Global Investment Research, US Census Bureau, IDC, Gartner, Company Documents, Company Data

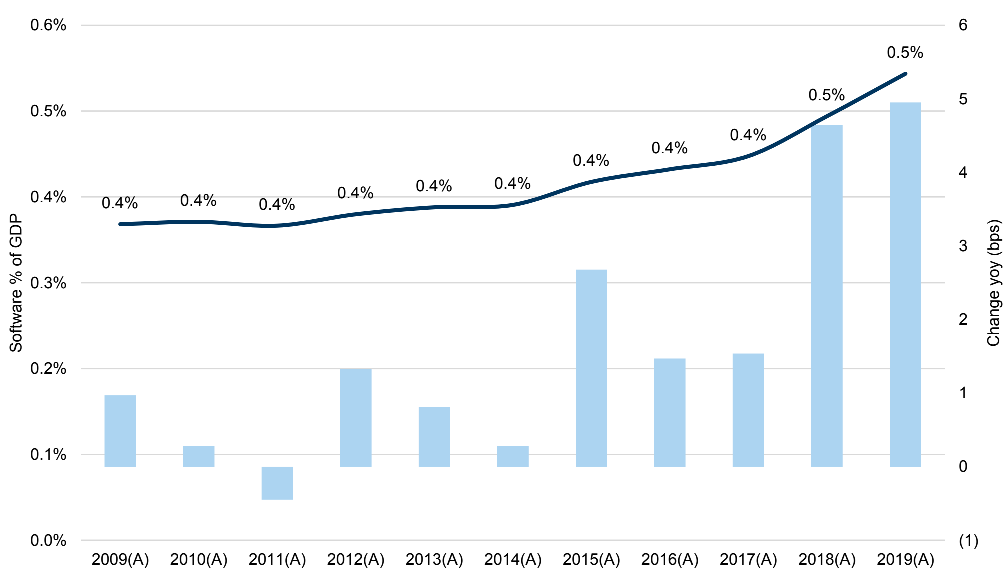
We believe that these 5 factors represent at multi-decade secular tailwind for software, resulting in software not only gaining sustained share within overall IT spending, but also in GDP. In 2010, software represented 7% of IT spend, increasing to 12% in 2019, or about 0.5% share gain per year, and is expected to increase to 16% in 2024. In 2009, software represented 0.37% of Global GDP, increasing to 0.54% in 2019, with accelerating pace of yearly increase: 0.05% in 2019, 0.04% in 2018, and 0.02% in 2017.

Exhibit 5: Software has been and is projected to continue to gain meaningful share within IT Spending



Source: Gartner, Data compiled by Goldman Sachs Global Investment Research

Exhibit 6: Software has been gaining increasing share within global GDP



Source: Gartner, St. Louis Federal Reserve, Goldman Sachs Global Investment Research

Secular themes

The value proposition of Digital Transformation is being catalyzed by the pandemic and driving shifts in how enterprises and individuals are utilizing software and technology. The pandemic is driving customer re-prioritization of spending on essential products such as video conferencing, remote desktops, e-commerce and security, thereby driving a long-term trend towards Digital Transformation. Our survey supports the case for Digital Transformation spending to outpace IT spending. The worldwide business travel market was estimated at $1.4 Trillion in 2018 by McKinsey & Company. Even modest cuts in corporate travel and commercial office leases as companies adopt a mix of in-person vs. virtual meetings and distributed workforces could create meaningful room for Digital Transformation spending. These are large numbers relative to Gartner's estimate of global cloud industry revenue at $235 billion. At a high level, Digital Transformation represents how a company invests in technology and software to streamline operations, improve efficiency, scale their online businesses, create new revenue streams from new channels, save on costs, adapt to changing consumer habits and expand their addressable markets. While there are many facets to Digital Transformation, in this report we identify five key secular and durable themes that we believe will both benefit from pent-up demand in 2021 vs. 2020 and beyond.

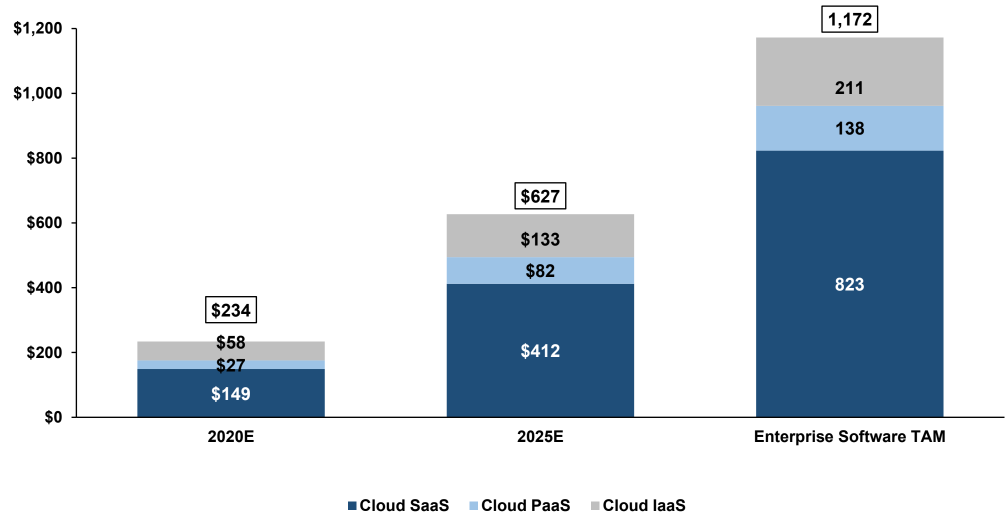
Public Cloud - Enterprises are realizing the benefits of shifting to cloud architectures

Cloud computing infrastructure, which includes public cloud, private cloud, hybrid cloud, and multi-cloud, will likely remain a top priority for CIOs as it is a key enabler to Digital Transformations. We highlight public cloud, hybrid cloud, and multi cloud as we see substantial secular tailwinds over the next 5-10 years, many accelerated/accentuated by the pandemic. While it took time for companies to become comfortable with the security and compliance of moving workloads and applications to public cloud, we believe we are over that hurdle and remain firmly in the early innings of the market potential. Underpinning our belief in the public cloud's growth potential is it addresses key CIO concerns, including: security, scalability, and reliability in supporting continuity. As our DX survey shows, public cloud adoption is a top priority for CIOs in 2021, and was among the top gainers in IT priority post the pandemic vs. before the pandemic.

Based on our bottom-up TAM build, we estimate the total enterprise software addressable market is $1,172bn. We estimate that cloud penetration is ~20% ($234bn) in 2020 and is expected to grow at a 22% CAGR through 2025 and reach 53% penetration ($627bn). We estimate that the mix within the Cloud TAM between SaaS/PaaS/IaaS is 63%/12%/25% in 2020E and will reach 66%/13%/21% in 2025E. Based on our model, the SaaS market, which includes Front Office Apps, Back Office Apps, Business Intelligence, Communications/collaboration, IT Operations/Management & DevOps, is currently a $149bn market and will grow at a 23% CAGR to reach $412bn in 2025. The PaaS market, which includes Database as a Service, Integration Platform as a Service, Application Platform as a Service is currently a $27bn market and will grow at a 25% CAGR to reach $82bn in 2025. The IaaS market, which includes Compute and

Storage is currently a $58bn market and will grow at a 22% CAGR to reach $133bn in 2025.

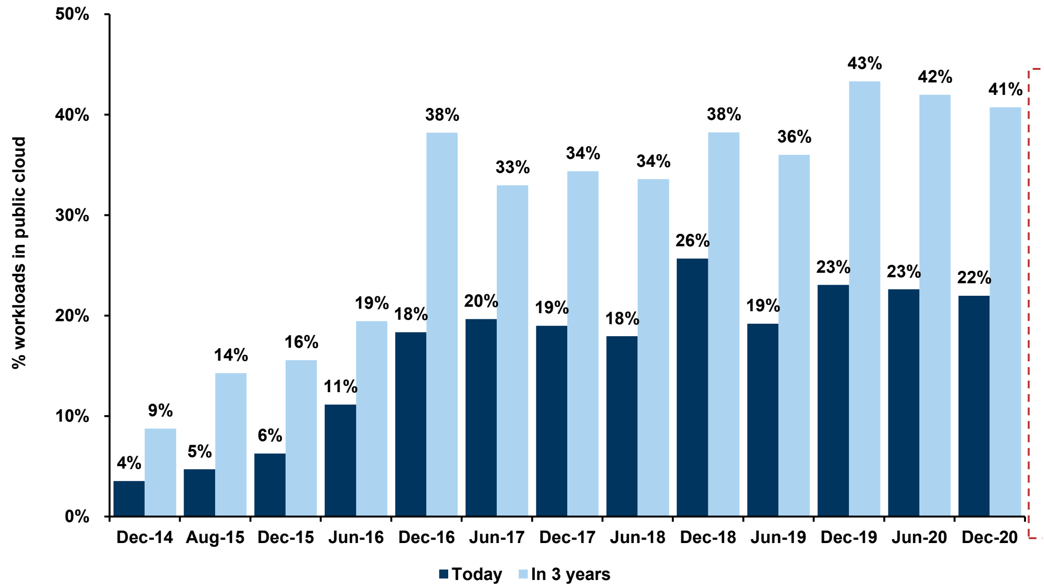
Exhibit 7: We believe Cloud Enterprise Software spend will grow from $234bn in 2020 to $627bn in 2025
$bn



Source: Goldman Sachs Global Investment Research

As our recent December 2020 CIO survey shows, workloads will increasingly shift from on-premise to a public cloud and private cloud. While only 22% of workloads are run in public clouds today, CIOs expect this will move closer to 41% by the end of 2023. These proportions are relatively in line with our survey conducted in June 2020, when survey respondents reported that 23% of workloads were in the public cloud, with 42% expected in three years. Furthermore, spend in dollar terms continues to grow and the percentage of workloads in the cloud, although stable in Dec 2020 vs Dec 2019, has been trending up from 4% in December 2014, to 6% in Dec 2015, to 18% in Dec 2016, 19% in Dec 2017, 26% in Dec 2018, 23% in Dec 2019, and 22% today. That said, the three-year forward expectations are increasing over time, from 9% in December 2014, to 16% in Dec 2015, to 38% in Dec 2016, 34% in Dec 2017, 38% in Dec 2018, 43% in December 2019 and 41% today.

Exhibit 8: Percentage of workloads in public cloud today (navy) vs. percentage of workloads in public cloud in three years (light blue)



Source: Goldman Sachs Global Investment Research

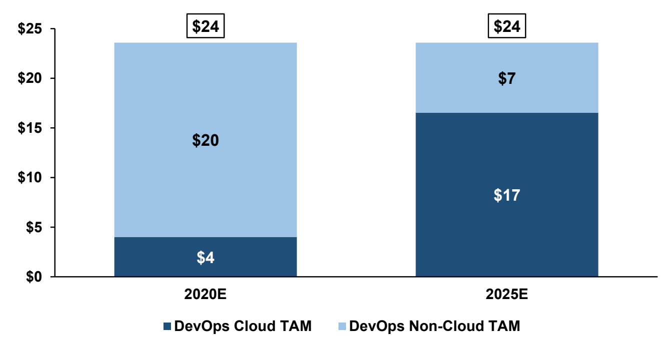
We believe that as public cloud adoption scales this will also drive use-cases to hybrid cloud and multi-cloud. There are significant advantages to companies adopting hybrid and multi cloud architectures for their IT stacks including keeping mission critical applications on-premise to maintain security and governance control of proprietary or sensitive data, avoiding vendor lock-in, and distributing workloads across multiple clouds to increase infrastructure resiliency. While this has obvious implications for dominant Cloud Service Providers (CSP), this will also likely help drive adoption of 3rd party infrastructure software offerings, including those by commercial open source companies that have faced challenges from native cloud vendors where they have introduced proprietary solutions. Leveraging solutions from a neutral 3rd-party vendor such as Elastic N.V., MongoDB, and Confluent (vs. the native CSP offering) can help deliver consistency across enterprise cloud infrastructures.

DevOps market growth driven by several growth vectors

Despite COVID resulting in a slight pause in DevOps spend as businesses prioritized communications, collaboration, and security, we believe this is a short term blip and expect DevOps spend to benefit from a normalization towards Digital Transformations. As companies undergo Digital Transformations and adopt public cloud and software tools/best practices, shift to containers and microservices, adopt distributed workforces, and focus on customer experience, this creates complexity in their backend underlying IT stacks. Shifting to DevOps can help IT and engineering teams alleviate and manage some of this complexity. Under the DevOps model, traditionally siloed and separated **Developer** and **Operations** teams are unified to work in sync through the application lifecycle (plan, build/code, test, secure, package, configure, release/delivery, monitor, operate), leveraging solutions that manage and secure applications, automating manual processes, and adopting flexible application architectures (i.e. microservices). This enables several benefits. 1) faster innovation & adaption to market conditions, 2) rapid delivery of new features and fixes, 3) increased app and infrastructure reliability, 4) processes to operate at scale, 5) increased collaboration and workforce productivity, and 6) increased security through automation. While the 2020 macro environment drove slightly weaker demand environment for DevOps as companies prioritized security, communication, and e-commerce tools, we believe normalizing IT budgets will be an even bigger positive for public cloud, AI, and analytics and DevOps. Looking beyond 2021, in our view, the DevOps market has multiple sustainable growth vectors.

- **Large and Expanding TAM**: In our bottom-up TAM build (Exhibit 3), we estimate a DevOps total TAM of $24bn in 2020 with the cloud portion at $4bn or 17% of the mix. We model the cloud DevOps market to grow at a 33% CAGR to reach $17bn in 2025 as result of the above-mentioned benefits. Given that the majority of pure-play DevOps vendors are private, we believe estimates are likely variable at this point, but remain confident in both the underlying growth trajectory to remain elevated and cloud mix to increase substantially.

Exhibit 9: Cloud DevOps market will grow from $4bn in 2020 to $17bn in 2025
$bn



Source: Goldman Sachs Global Investment Research

- **Vendor consolidation in the early innings**: The DevOps market is highly fragmented with a plethora of specialized pure-play vendors each focused on specific segments of the market. Typically, IT teams use 5-10 vendors across DevOps and integrate all of those vendors into a unified and automated software development and management stack. IT teams have multiple choices across each part of the DevOps process: 1) Plan (Atlassian, CA, Microsoft GitHub, Pivotal), 2) Code (IBM, Microsoft GitHub, Jetbrains, Apple), 3) Version Control (Microsoft GitHub, GitLab, Atlassian), 4) Build (Atlassian, CircleCi, IBM, Microsoft GitHub), 5) Repository Management (JFrog, Nexus), 6) Integration (Jenkins, Atlassian, GitLab, CircleCi, CloudBees), 7) Test (IBM, Microsoft, Qualys, Selenium, VeraCode, Micro Focus), 8) Deliver/Deploy (JFrog, HashiCorp, IBM (Red Hat)), 9) Run (Chef, HashiCorp, IBM (Red Hat), Puppet), 10) Operate/Manage (AWS, GCP, Azure), 11) Monitor (Dynatrace, Datadog, Splunk, Elastic, CA, Sumo Logic, New Relic), 12) IT Service Management (ServiceNow, BMC, Freshworks). On the Dev side of DevOps, IT teams typically still rely on internally built on-premise tools and are focused on best-of-breed cloud solutions. We note that Azure DevOps (Microsoft GitHub +

Azure), GitLab, and JFrog have all made strides in the last 12 months toward building out holistic developer tool platforms. On the Ops side of DevOps, we note that the market is slightly more mature with a handful of well-established point solutions such as: Dynatrace (Application Performance Monitoring), Datadog (Infrastructure Monitoring), Splunk (SIEM/Log Management), and Elastic (Enterprise Search/Log Management). Over the last 12-24 months, the market has been slowly shifting toward moving to Observability platforms, which allows an organization to aggregate data across multiple use cases. This shift is in the early stages as vendors have been incrementally adding functionality.

- **GTM strategies largely developer and product focused**: Go-to-market strategies for many DevOps vendors are open-source, product-led, and developer-led, meaning initial contract values are typically low, and up-sell/cross-sell opportunities are large. For example, JFrog, the leading cloud Repository Management vendor and only public pure-play DevOps vendor, employs ~5 internal enterprise sales personnel and has average revenue per customer of ~$25k. This compares to a more mature industry like application performance management (APM) where Dynatrace's average revenue per customer is ~$250K. We also note that being product-led, as opposed to using a direct salesforce, typically lead to better customer unit economics as it allows a customer to trial the product with low barrier to adoption, and gives the company the opportunity to efficiently scale their sales efforts with customer usage trends.

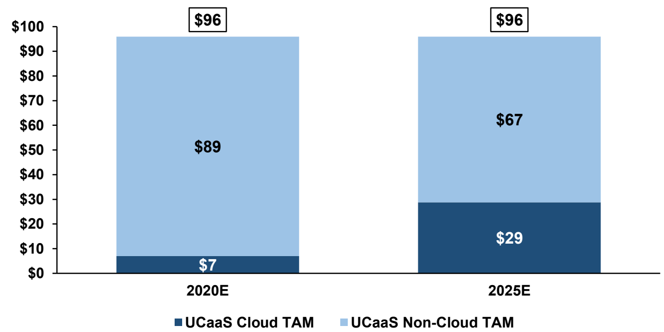
Hybrid Work – Cloud communications crosses the chasm as future of work shifts

As the Future of Work heads toward a hybrid model, we believe this presents a near- and long-term investable secular theme for cloud communications software. 2020 accelerated adoption trends, expanded the addressable market, and raised the value proposition for the cloud-based Unified Communications market, which includes: 1) Unified Communication as a Service (UCaaS), 2) Communication Platform as a Service (CPaaS), 3) Contact Center as a Service (CCaaS), and 4) Video Conferencing. As we look into 2021 and beyond, even with a COVID vaccine being rolled out and opening up the economy, we see sustained momentum for the cloud-based communication market as both employees and individuals shift and adapt to a more hybrid world. For the foreseeable future, cloud-based communication looks to be relatively secure within an organization's IT budget. Several factors keep us bullish on the secular theme of Hybrid Work:

- Market Sizing: While Unified Communications has been somewhat of a laggard with respect to cloud adoption, with roughly 80% of ~450mn global enterprise telephony seats remaining on-premise, we see the potential for an accelerated move to the cloud and a transition away from legacy, Private Branch Exchange (PBX) architectures and toward cloud-based Unified Communications as a Service (UCaaS). The Unified Communications market consists primarily of 3 main segments, including Telephony (~80% of overall spend), Conferencing (~10% of total spend) and Video Systems and related Infrastructure (~10% of total spend). We estimate that the total worldwide Unified Communications market is around $96bn. We estimate that cloud penetration is around 7% in 2020 or ~$7bn, and will grow at a

33% CAGR through 2025 to reach 30% penetration or $29bn.

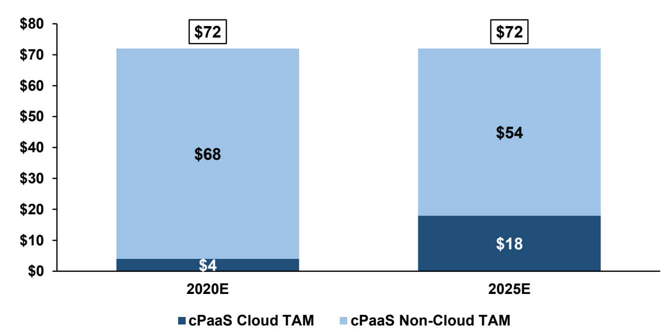
Exhibit 10: Cloud Unified Communications market will grow from $7bn in 2020 to $29bn in 2025
$ bn



Source: Goldman Sachs Global Investment Research

- The CPaaS market is well positioned to benefit from the secular shift of software to cloud-based solutions, as APIs can be leveraged by developers to embed communication capabilities like SMS, voice, video, and email directly in their applications. Early CPaaS customers were typically direct-to-consumer companies in industries such as ride sharing (Uber, Lyft) and food delivery (Grubhub) as well as social media (Twitter, Snapchat, WhatsApp) as these companies leveraged CPaaS capabilities to scale quickly and efficiently. Subsequently, more traditional companies started adopting CPaaS to digitally transform their businesses as a way to engage with their customers in real-time through a cost effective and automated approach. The Digital Transformation momentum is providing a secular tailwind to the industry.

Exhibit 11: Cloud Communication Platforms market will grow from $4bn in 2020 to $18bn in 2025
$ bn



Source: Goldman Sachs Global Investment Research

- **Cloud Penetration is low**: Based on our estimates, we believe that cloud adoption is <10% penetrated into the 400mn+ global knowledge workers, leaving significant greenfield growth opportunities for platform vendors like RingCentral, Zoom, and Twilio. We believe there is a large base of legacy on-premise PBX systems (traditional Avaya, Cisco, or Mitel desk phones), which is target for a cloud upgrade cycle. Given that many phones were updated in 2000 amid the Y2K issue, and the first renewal cycle coincided with the 2008-2010 recession, it is likely that there is a large installed base of PBX systems that are 10+ years old. These phones and systems are not equipped to handle modern software applications, smartphone/mobile technology, and distributed/hybrid workforces.

- **The market appears ready for cloud**: As hybrid work and continuity planning remains top-of-mind, we expect workforce mobility and resiliency to accelerate the pace of adoption for cloud-based solutions. As our survey shows 18% of our respondents indicated that there is pent up demand for Unified Communications. Despite COVID pulling forward demand for cloud-based unified communication, we note that generational shifts such as millennials requiring an app-centric products with flexible, reliable, mobile-first features is here to stay.
- **Platform vendors with high barriers of entry:** Communication and collaboration platforms like Zoom Video, RingCentral, Twilio, and Microsoft Teams are uniquely positioned to benefit from both high barriers to entry and sustained generational shifts toward hybrid work. For over 10+ years, each of these vendors has been focused on disrupting traditional telco-based functionality and legacy incumbent point products and built their platforms focused on cloud, flexibility, mobile, ease of use and lower cost of ownership. Cloud-based solutions remove the need for specialized IT staff to manage internal on-premise systems and combine several aspects of workforce communication: fax, email, voice, text, audio conferencing, video conferencing, and messaging, into one unified platform.
- **Competition concerns overblown**: With estimates for the number of global knowledge workers ranging from 400mn to 1bn+ (according to Synergy Research and Gartner), and cloud communication seats at ~20-25mn globally, we see ample room for multiple vendors to grow concurrently. We note that firms such as Microsoft Teams and RingCentral, which have wide distribution through channels and partnerships, as well as Zoom Video, which has seen widespread adoption and effectively become a verb, as best positioned.
- **Incumbents challenged to keep pace**: Across UCaaS (Cisco, Avaya, Mitel) and Video Conferencing (Cisco WebEx, Blue Jeans, LogMeIn/GoToMeeting), incumbent and legacy solutions have not innovated and adapted to market needs. They continue to lack key features and integrations while offering cap-ex heavy solutions even as customers have increasingly shifted their consumption model to an op-ex. In the last few years there have been multiple acquisitions/deals as the legacy vendors tried to keep up with the pure-play cloud companies: Verizon bought Blue Jeans (2020), LogMeIn bought GoToMeeting (2016), Cisco bought Broadsoft (2018), and Avaya partnered with RingCentral (2019) after going bankrupt in 2017.

Customer Experience - Customer 360 views are a strategic requirement for Digital Transformations

Customer Experience and Relationship Management (CRM) platforms have become synonymous with Digital Transformation for many organizations as companies continue to invest to form a holistic 360-view of their customers and provide a unified customer experience across channels. Our conversations with partners have pointed to some delays in new business as priorities in the last 10 months have shifted toward collaborative applications, infrastructure, and security. However, we believe this is in part due to lengthy deployment cycles and the degree of change management required to implement new CRM systems, with the average CRM deployment taking between 9-18 months depending on the level of transformation. While we do see elevated risk surrounding near-term delays in demand and elongating sales cycles, we nonetheless believe the same secular tailwinds underpinning Digital Transformation initiatives will remain relevant post the pandemic and continue to drive elevated investment. Key aspects of the CRM market include Customer Service and Support, Sales, Marketing, and E-commerce.

Customer Service & Support: At their core, customer service and support software enable enterprises to connect with customers via voice and digital channels, enable service through human, bot or self-service channels, provide access and insights to customer information, and manage resources to support customer service. This can help companies provide a differentiated customer service experience by connecting with and supporting customers through the most convenient channels (e.g. chat, video, text message, social, online communities) as well as lower cost by shifting some support to lower cost channels like chat bots or self-service.

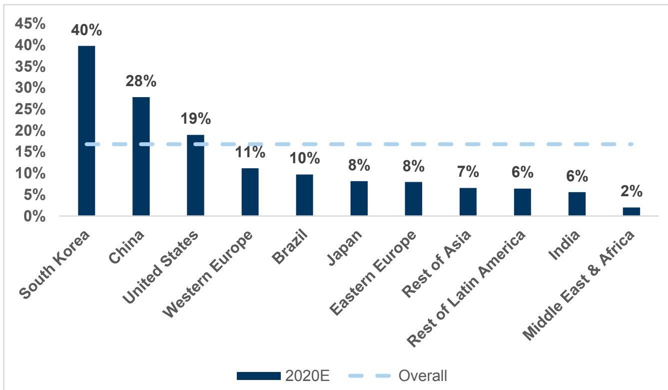
Sales: Includes technologies that aim to enable a company's salesforce and optimize sales strategy and process, including sales planning, pricing, execution, and analysis. New functionality including applying artificial intelligence to suggest next best actions for sales staff or automating low-value added tasks enable optimization across sales processes, driving better forecast accuracy, quota attainment, price maximization, and territory sizing. As customers are increasingly using different methods to interact with businesses, systems have the ability to track leads and optimize pricing, quotes and proposals across multiple channels.

Marketing: Helps organizations manage and execute marketing campaigns across channels. Typical functionality includes, lead management, loyalty management, content marketing, programmatic advertising, social and mobile marketing, customer data platform and marketing analytics. Due to growing online sales, customers' choices are becoming greater and their switching costs lower, which increases the importance of product and company differentiation. As such, companies must focus on driving the best customer experience, which will increasingly be online and mobile. We expect digital advertising to garner even faster share gains going forward, as the superior targeting and measurement characteristics only underscore the importance of this channel versus traditional media. These trends highlight the importance of an omnichannel marketing strategy as customers expect a seamless holistic experience through a wide array of channels.

Digital Commerce: Provides a consistent and personalized experience across a growing number of channels by enabling customers to purchase through an interactive and self-service experience. Digital commerce products typically include product catalog navigation, shopping cart, check-out, customer account, and supply chain integrations.

The pandemic stressed the need for companies to have a digital commerce strategy as online sales increased sharply amid people, obeying shelter-in-place and working from home guidelines, turned almost exclusively to online sales channels to purchase goods. We estimate that global e-commerce was only ~17% penetrated in 2020 (Exhibit 12) and see the potential for accelerated penetration post COVID-19. In our view, the pandemic provided a sense of urgency to businesses to accelerate their Digital Transformations from primarily in-store experiences to omnichannel ones by creating a single customer experience across channels (in-store, curbside pick-up, e-commerce, etc.).

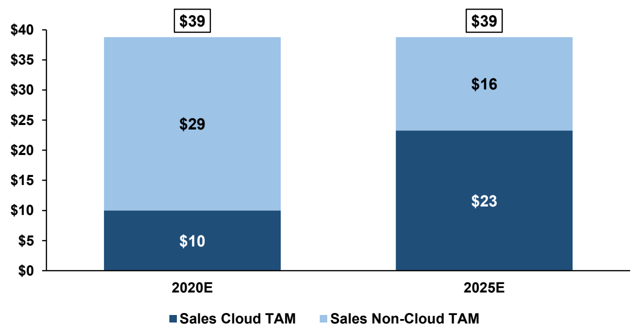
Exhibit 12: Global E-commerce penetration
Estimated E-commerce share of total retail (%) in 2020



Source: Company data, Goldman Sachs Global Investment Research, Census Bureau, Euromonitor, IBGE, IPCA, AKIT, Japan METI, iResearch, NBS China

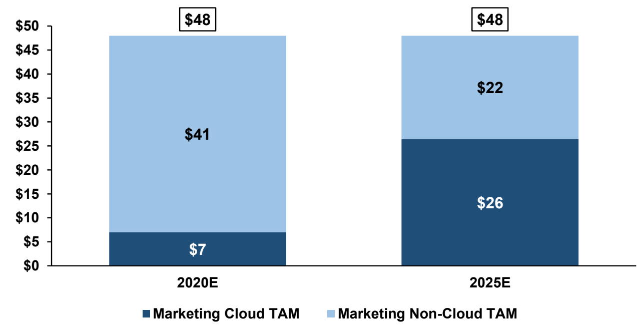
- **Market size and growth:** We believe the total addressable market for CRM, including customer service and support, sales, marketing and digital commerce software is ~$150bn. Relative to other line of business application segments, CRM cloud penetration is further along with ~20% penetration in 2020 or $30bn and we believe will reach ~65% penetration in 2025 or $96bn. However, while we do see some elevated risk in the near-term with respect to elongating sales cycles, we believe Digital Transformation initiatives across industries will continue to drive investment across the CRM landscape.

Exhibit 13: Sales Cloud market will grow from $10bn in 2020 to $23bn in 2025
$ bn



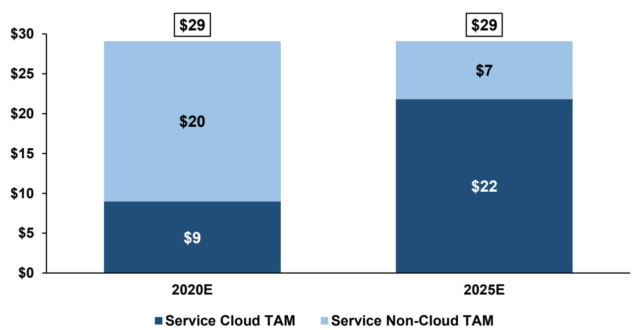
Source: Goldman Sachs Global Investment Research

Exhibit 14: Marketing Cloud market will grow from $7bn in 2020 to $26bn in 2025
$ bn



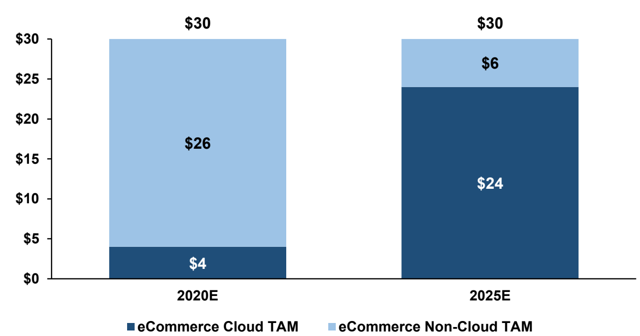
Source: Goldman Sachs Global Investment Research

Exhibit 15: Service Cloud market will grow from $9bn in 2020 to $22bn in 2025
$ bn



Source: Goldman Sachs Global Investment Research

Exhibit 16: eCommerce Cloud market will grow from $4bn in 2020 to $24bn in 2025
$ bn



Source: Goldman Sachs Global Investment Research

- **Competitive Landscape:** Given the overall breadth of applications, the broader CRM market is somewhat fragmented, with the top 5 vendors controlling a large portion of the overall market. Salesforce remains the largest company in the market with more than triple the market share of the next largest participant, SAP. However, when taking a more granular perspective, the various subcategories have varying degrees of concentration, with Sales being the most consolidated and Digital Commerce the most fragmented.

Automated Digital Workflows – Connecting data and IT to automate processes and operations

As enterprises moved to a distributed working model, it drove the need to leverage data and IT to automate previously manual processes. We believe this trend, Automated Digital Workflows, is here to stay. This theme represents the intersection of Big Data, Artificial Intelligence, and Workflow Automation, and is about how enterprises are using data and AI to automate both internal and external manual business processes. This has multiple use cases across financial planning, employee and workforce (HR) planning, DevOps (IT operations and IT asset management), and customer service management.

The number of data sources and amount of data generated has significantly increased as enterprises have been undergoing Digital Transformation, migrating to the cloud and adopting SaaS applications, leading to more heterogeneous and dynamic IT environments. Enterprises are also adopting more digital business strategies and customers are expecting more personalized interactions. The combination of these trends along with the increased accessibility of AI are causing enterprise to demand software systems and capabilities that can better serve their customer base, improve situational awareness, and drive more-precise business decisions. For example, within the DevOps monitoring space, AI for IT Operations (AIOps), has become a key feature of many monitoring platforms as vendors are adding features that present actionable insights based on the data derived from the IT ecosystem. Furthermore, (near) real-time monitoring is a competitive differentiator between vendors as customers recognize that the AI-based insights offered is only as good as the underlying data. This has further widened the gap between cloud-based monitoring solutions and legacy, on-premise monitoring tools.

We also highlight vendors such as ServiceNow, Microsoft, Salesforce, Workday, Atlassian, Twilio, Coupa, Dynatrace, Splunk, Elastic, JFrog, Automation Anywhere, UiPath, and Appian who should benefit as adoption of low code/no code platforms, robotic process automation (RPA), and workflow planning increases. Amid our belief that in 2021 and beyond, enterprises will accelerate their migration to the cloud and Digital Transformations, we expect Automated Digital Workflows to become an important part of enterprise business intelligence strategies to help drive operational and workforce efficiencies.

Entry/Exit points

Identify opportunities to get more aggressive

Significant corrections driven by external macro shocks and issues are a recurring fact of life in Software investing. History teaches us a lesson that significant corrections have been an opportune time to get more aggressive on the long side. Conversely, when valuations are running high, the sector is vulnerable to sell-offs driven by macro-economic uncertainty. While most sell-offs in the most recent economic cycle from 2009-2020 have been from macro fears, Workday's warning that it was seeing potential for deal slippage in mid-October 2019 sparked off a double-digit correction across the sector on just one day. Also, notably, the Spring 2016 correction was driven by misses from Tableau, LinkedIn and ServiceNow due to sales execution issues. Further back, the correction from late 2011 to early 2012 was driven by misses from Oracle and Salesforce. All these corrections were an opportune time to get more aggressive. Coming out of these corrections, investors realized that the TAM was large and that as long as the core franchise of a software company was intact, managements should be able to turn around sales execution.

Recurring revenue models, elevated sales growth, and mission critical technology has often justified high valuations in the software space. Software companies that have been able to demonstrate the ability to develop new products, capture large market share and keep up with digital transformation trends have been the ones to drive compelling software valuations.

A look at the brief history of pullbacks (Exhibit 17) in the technology sector reveal that corrections in tech valuations today tend to be shorter in duration, albeit sharper. During the 2002 dot-com bubble burst, multiples compressed from peak to trough valuation by -21% over 9 months in comparison to the COVID-19 related -37% multiple compression that lasted less than a month in early 2020. SaaS momentum has supported high valuations in the recent years, as more software companies pivot toward subscription-based recurring business model, along with increased cloud penetration and secular trends in Digital Transformation. In fact, in the years 2012, 2013, 2017 and 2019, multiples for GS covered Software companies expanded ~22%, ~43%, ~30% and ~31% respectively, despite external shocks such the 2012 Sovereign Debt Crisis in Europe, Greece currency instability in early 2014 and more recently the trade dispute with China in 2018/2019.

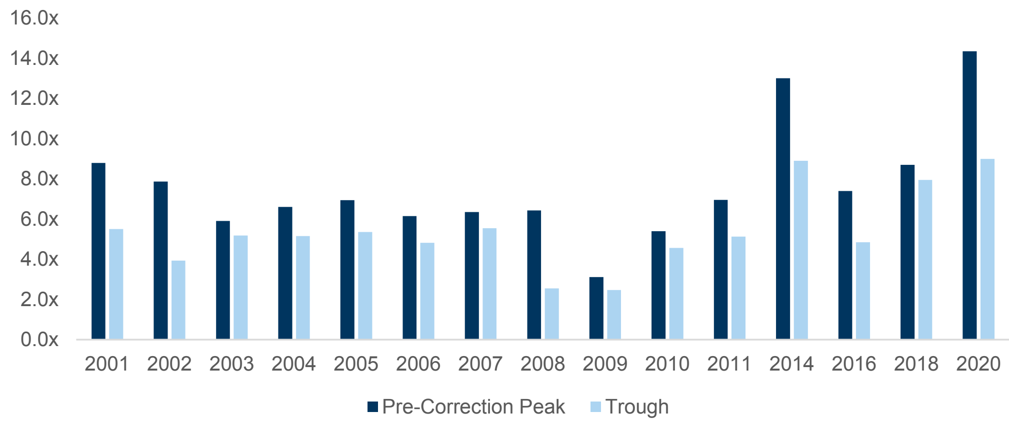
Exhibit 17: Across our universe of covered companies average multiple compression in the last 20 corrections has been ~28%

Peak Date	Pre-Correction Peak	Trough Date	Trough	Correction Duration (Months)	EV/ Sales Multiple Compression
7/17/2001	8.8x	9/27/2001	5.5x	2.4	-37%
1/9/2002	7.9x	10/7/2002	3.9x	9.0	-50%
1/14/2003	5.9x	3/11/2003	5.2x	1.9	-12%
1/20/2004	6.6x	8/12/2004	5.2x	6.8	-22%
1/3/2005	6.9x	4/28/2005	5.4x	3.8	-23%
4/27/2006	6.1x	7/13/2006	4.8x	2.6	-22%
2/21/2007	6.3x	3/13/2007	5.5x	0.7	-13%
6/5/2008	6.4x	11/20/2008	2.5x	5.6	-60%
1/6/2009	3.1x	3/9/2009	2.5x	2.1	-20%
4/26/2010	5.4x	6/30/2010	4.6x	2.2	-15%
7/7/2011	6.9x	8/19/2011	5.1x	1.4	-26%
		1/4/2012			
		1/3/2013			
3/5/2014	13.0x	4/11/2014	8.9x	1.2	-32%
		1/15/2015			
1/4/2016	7.4x	2/9/2016	4.8x	1.2	-35%
		1/3/2017			
1/26/2018	8.7x	2/8/2018	7.9x	0.4	-9%
		1/3/2019			
2/19/2020	14.3x	3/16/2020	9.0x	0.9	-37%
Average	**7.6x**		**5.4x**		**-28%**

Analysis is based on a list of 70 covered companies across GS software teams.

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 18: In the recent years compression in EV/ TTM Sales multiples have been sharper, however shorter in duration



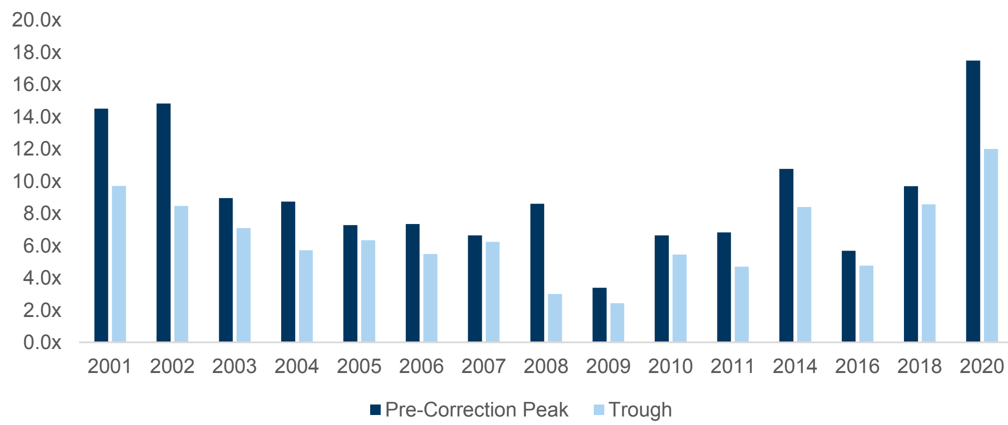
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 19: Average correction in multiples of Large Cap stocks (~27%) have been lower than that of Mid and Small caps

Peak Date	Pre-Correction Peak	Trough Date	Trough	Correction Duration (Months)	EV/ Sales Multiple Compression
7/17/2001	14.5x	9/27/2001	9.7x	2.4	-33%
1/9/2002	14.8x	10/7/2002	8.5x	9.0	-43%
1/14/2003	9.0x	3/11/2003	7.1x	1.9	-21%
1/20/2004	8.7x	8/12/2004	5.7x	6.8	-35%
1/3/2005	7.3x	4/28/2005	6.3x	3.8	-13%
4/27/2006	7.4x	7/13/2006	5.5x	2.6	-25%
2/21/2007	6.6x	3/13/2007	6.2x	0.7	-6%
6/5/2008	8.6x	11/20/2008	3.0x	5.6	-65%
1/6/2009	3.4x	3/9/2009	2.4x	2.1	-28%
4/26/2010	6.6x	6/30/2010	5.4x	2.2	-18%
7/7/2011	6.8x	8/19/2011	4.7x	1.4	-31%
		1/4/2012			
		1/3/2013			
3/5/2014	10.8x	4/11/2014	8.4x	1.2	-22%
		1/15/2015			
1/4/2016	5.7x	2/9/2016	4.8x	1.2	-16%
		1/3/2017			
1/26/2018	9.7x	2/8/2018	8.6x	0.4	-12%
		1/3/2019			
2/19/2020	17.5x	3/16/2020	12.0x	0.9	-31%
Average	**9.2x**		**6.6x**		**-27%**

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 20: Peak to trough EV/Sales compression of Large Cap Software stocks



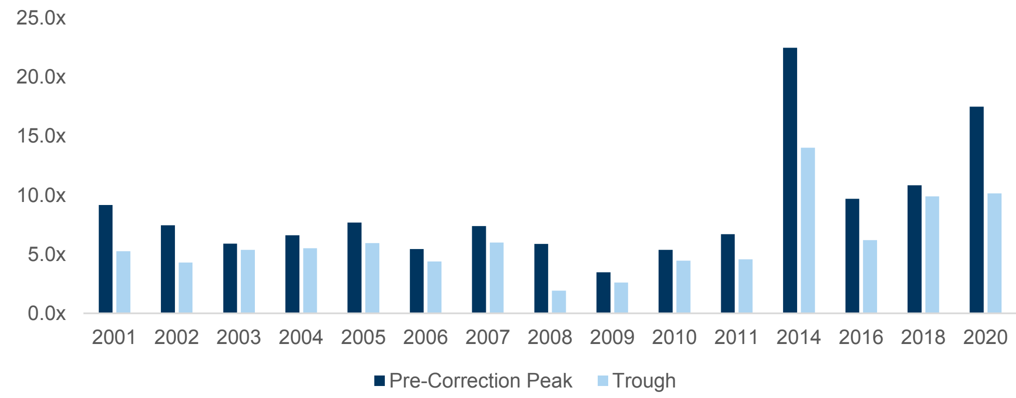
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 21: Midcap stocks averaged pre-correction peak multiples of 8.8x and troughs of 6x

Peak Date	Pre-Correction Peak	Trough Date	Trough	Correction Duration (Months)	EV/ Sales Multiple Compression
7/17/2001	9.2x	9/27/2001	5.3x	2.4	-43%
1/9/2002	7.4x	10/7/2002	4.3x	9.0	-42%
1/14/2003	5.9x	3/11/2003	5.4x	1.9	-9%
1/20/2004	6.6x	8/12/2004	5.5x	6.8	-17%
1/3/2005	7.7x	4/28/2005	5.9x	3.8	-23%
4/27/2006	5.4x	7/13/2006	4.4x	2.6	-19%
2/21/2007	7.4x	3/13/2007	6.0x	0.7	-19%
6/5/2008	5.9x	11/20/2008	1.9x	5.6	-67%
1/6/2009	3.5x	3/9/2009	2.6x	2.1	-25%
4/26/2010	5.4x	6/30/2010	4.5x	2.2	-17%
7/7/2011	6.7x	8/19/2011	4.6x	1.4	-32%
		1/4/2012			
		1/3/2013			
3/5/2014	22.5x	4/11/2014	14.0x	1.2	-38%
		1/15/2015			
1/4/2016	9.7x	2/9/2016	6.2x	1.2	-36%
1/0/1900		1/3/2017			
1/26/2018	10.8x	2/8/2018	9.9x	0.4	-9%
		1/3/2019			
2/19/2020	17.5x	3/16/2020	10.2x	0.9	-42%
Average	**8.8x**		**6.0x**		**-29%**

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 22: Peak to trough EV/Sales compression of Mid Cap Software stocks



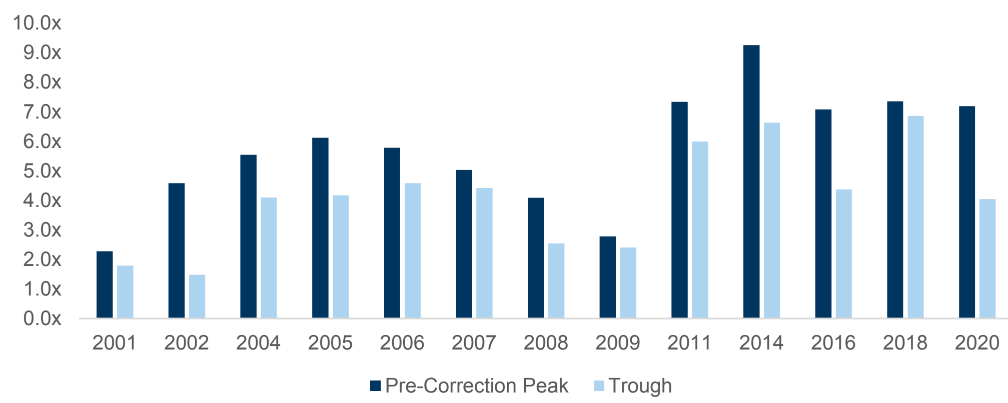
Source: FactSet, Company data, Goldman Sachs Global Investment Research

Exhibit 23: In case of sharp market declines such as 2008 and 2020, Small Cap stocks corrected (~38% and ~44%), more than Large and Midcap names

Peak Date	Pre-Correction Peak	Trough Date	Trough	Correction Duration (Months)	EV/ Sales Multiple Compression
7/17/2001	2.3x	9/27/2001	1.8x	2.4	-21%
1/9/2002	4.6x	10/7/2002	1.5x	9.0	-68%
1/20/2004	5.5x	8/12/2004	4.1x	6.8	-26%
1/3/2005	6.1x	4/28/2005	4.2x	3.8	-32%
4/27/2006	5.8x	7/13/2006	4.6x	2.6	-21%
2/21/2007	5.0x	3/13/2007	4.4x	0.7	-12%
6/5/2008	4.1x	11/20/2008	2.5x	5.6	-38%
1/6/2009	2.8x	3/9/2009	2.4x	2.1	-13%
7/7/2011	7.3x	8/19/2011	6.0x	1.4	-18%
		1/4/2012			
		1/3/2013			
3/5/2014	9.3x	4/11/2014	6.6x	1.2	-28%
		1/15/2015			
1/4/2016	7.1x	2/9/2016	4.4x	1.2	-38%
		1/3/2017			
1/26/2018	7.4x	2/8/2018	6.9x	0.4	-7%
		1/3/2019			
2/19/2020	7.2x	3/16/2020	4.0x	0.9	-44%
Average	**5.7x**		**4.1x**		**-28%**

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 24: Peak to trough EV/Sales compression of Small Cap Software stocks



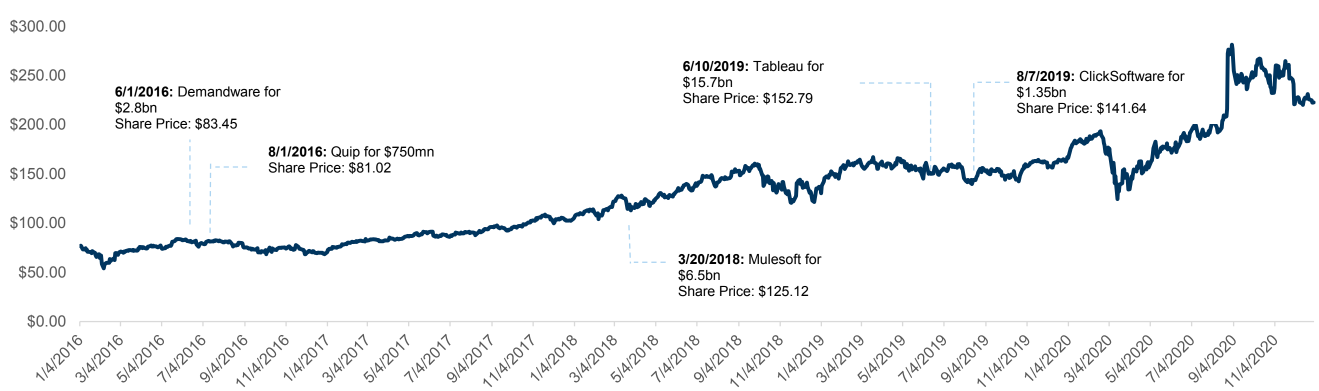
Source: FactSet, Goldman Sachs Global Investment Research

Hindsight 20/20

In this section we look at some examples from the past that could have been leveraged to build portfolio positions or book profits. Based on the cases we explored we concluded that looking at larger industry trends and monitoring leading company specific indicators such as ARR, RPOs, etc. would have presented investors with appropriate buy and sell opportunities.

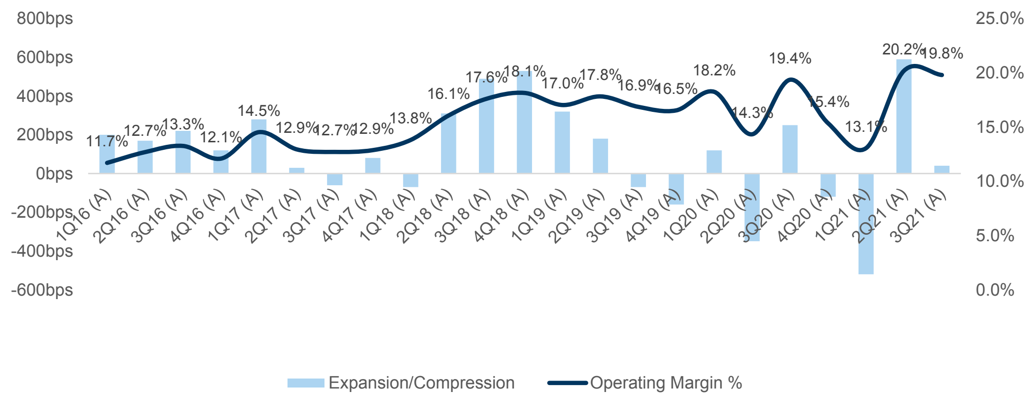
1) CRM: Buy – Investing for the long run

Exhibit 25: Historically, acquisition announcements have been followed by periods of outperformance



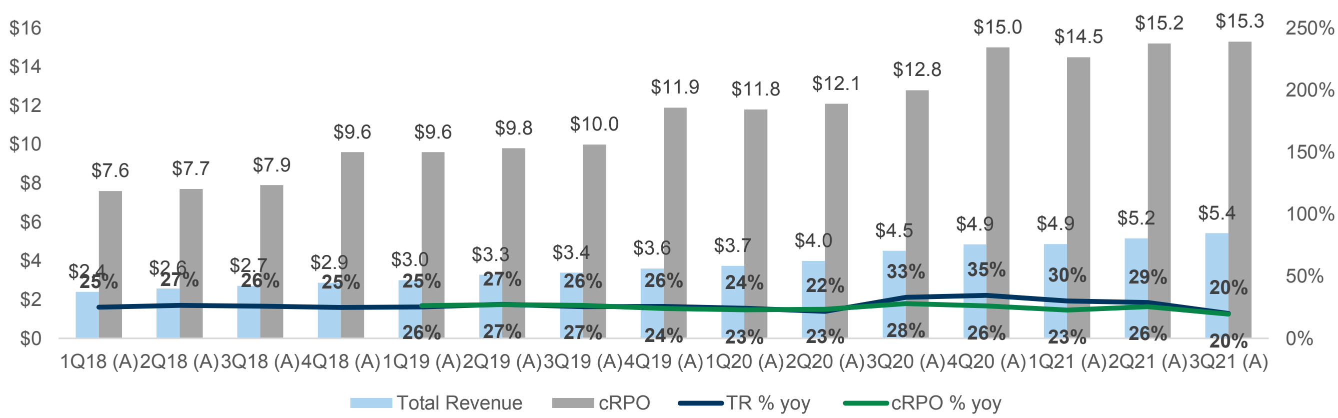
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 26: Despite temporary dilution CRM's margins have been quick to recover post acquisition announcements



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 27: Trends in cRPO growth have been a good leading indicator for future revenue growth
$bn



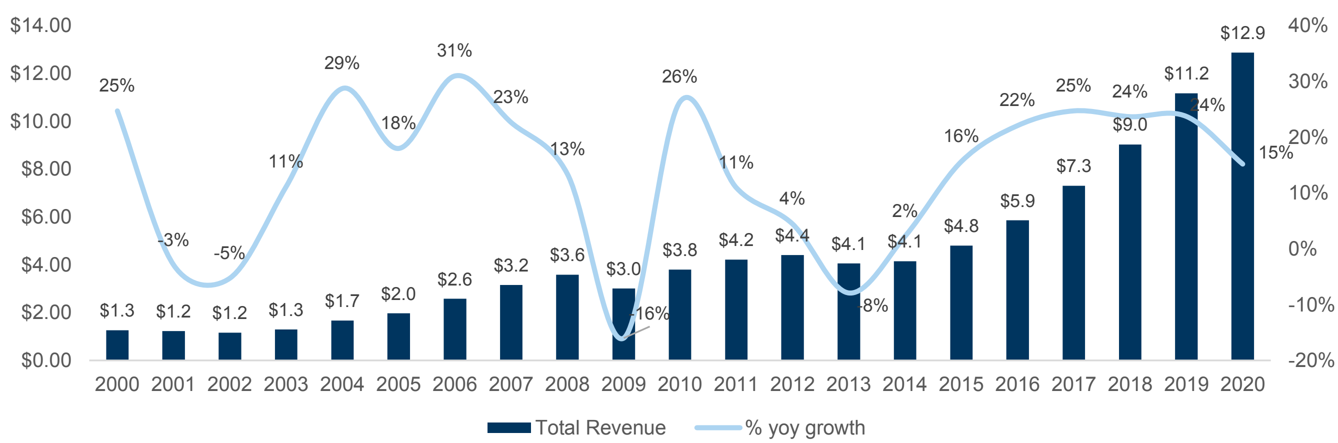
Source: Company data, Goldman Sachs Global Investment Research

Salesforce has historically used tuck-in acquisitions to enhance its CRM product portfolio. We look at the company's largest acquisitions in the last 5 years and note that the share price weakness following the announcements presented buying opportunities for long term investors. With the announcement of these acquisitions, the dip in share price offered potential entry points to build stock positions. Despite the temporary deterioration in operating margin profiles, leading indicators such as Current Remaining Performance Obligations (cRPO) proved to be a better gauge into future revenue growth and subsequent margin improvements. Historically, growth in cRPO trends have been in line with total revenue growth, total revenues grew at ~27% FY18 - FY20 CAGR, while cRPO grew at ~25% CAGR.

In June 2016 Salesforce announced the acquisition of Demandware for $2.8bn, and in FY17 operating margin expansion slowed amid acquisition related expenses, to 80bps y/y vs 180bps in FY16. However, the following year margins improved, expanding +329bps to 16.5% in FY18. Hypothetically, investing in CRM stock at the time of the acquisition announcement would have delivered ~24% CAGR return till date compared to 14% for the S&P 500. Similarly, at the time of Mulesoft's integration, F3Q19 and F4Q19 operating margins contracted -70bps and -160bps, respectively. In FY20, the year of Tableau's $15.7bn acquisition, which was the largest in Salesforce's history (until the recent Slack announcement for ~$27.7bn), operating margins declined to 16.8% (-24bps) from 17.1% the prior year. Hypothetically, investments in the stock at the time of the Mulesoft and Tableau acquisitions would have yielded ~23% and ~27% CAGR returns compared to a 12% and 18% return for the S&P 500, respectively. As of F3Q21 operating margins stand at 19.8%, having fully recovered post the recent acquisitions.

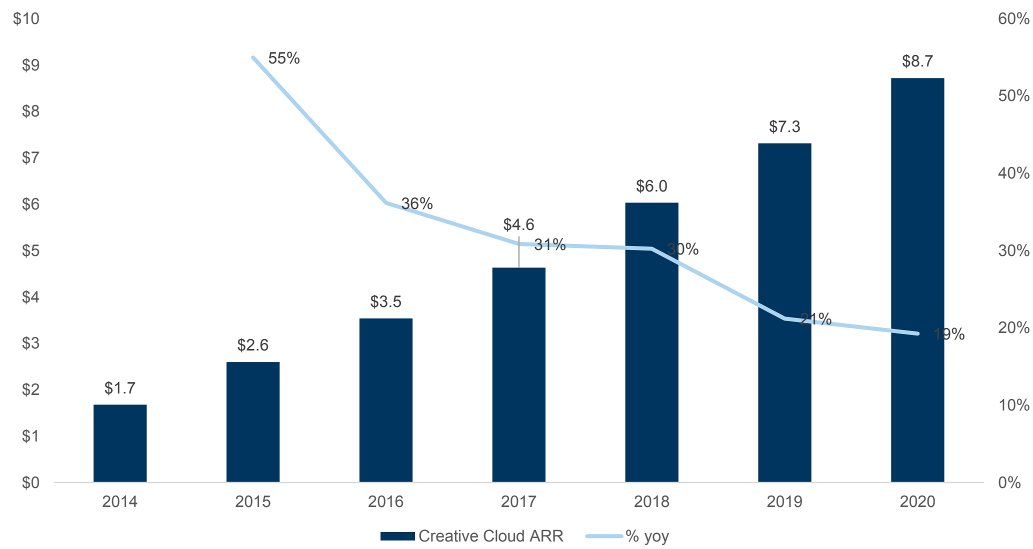
2) ADBE: Buy – Investing through a model transition

Exhibit 28: ADBE Revenue trends show that prior to transitioning to the cloud, its perpetual license model resulted in more volatile revenue growth
$ bn



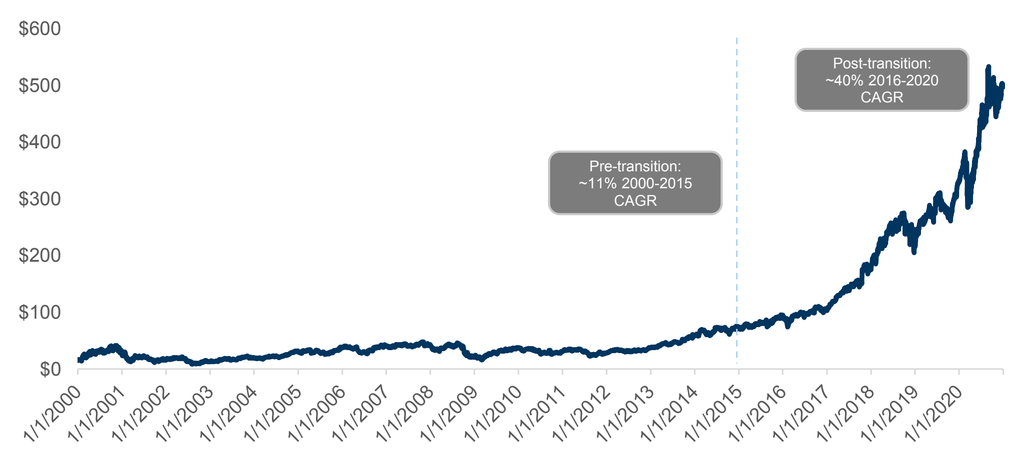
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 29: During the transition from Creative Suite to Creative Cloud closely monitoring ARR trends would have signaled early signs of revenue recovery
$ bn



Source: FactSet, Company data, Goldman Sachs Global Investment Research

Exhibit 30: Hypothetically, investment in ADBE's stock when fundamentals started to stabilize after the initial transition headwind, would have yielded higher returns than a 15 year holding period prior to that



Source: FactSet, Goldman Sachs Global Investment Research

In 2011 Adobe first announced its intentions to move its Creative Suite business to the cloud. Prior to the transition Adobe's revenue growth was fairly volatile with large swings both up and down, attributable to its perpetual license model. In case of a perpetual software license model much of the revenue is recognized upfront, resulting in volatile revenue growth movements not just down, but also negative, especially during market downturns. This can be seen in -16% revenue growth in 2009 in the aftermath of the Global Financial Crisis. The shift to the cloud changed revenue recognition models, as subscription-based contracts provide a recurring revenue stream, instilling stability and scale to the business model. Starting in 2016, Adobe's revenue growth has been much more stable in comparison to its volatile history. During the transition phase revenues faced a short-term headwind as perpetual licenses were discontinued and customers transitioned to subscription payment terms. Therefore, observing forward-looking metrics such as Annualized Recurring Revenue (ARR) would have provided more meaningful insight into future revenue growth. Creative cloud ARR grew +55% y/y in FY15, translating to total revenue growth of +16% y/y versus 2% in FY14 and -8% in FY13. Investors who closely monitored Adobe's transition would have started to see this early success in the cloud transition process. An investment in the stock from 2016 to 2020 would have delivered ~40% CAGR returns as opposed to ~11% from a 15 years holding period prior to that compared to returns of ~13% and ~2% for the S&P 500 respectively.

Details on company specific estimates, valuation and ratings can be found in their respective sections inside of this report.

Long-term framework and compounded returns

Subscription software business models naturally result in high profits in the out years, leaving investors to contend with high-level of uncertainty in the early years. Valuation frameworks in the early stages of the life of a software company are limited to revenue-based multiples. Even the slightest change in revenue growth expectations can result in high stock volatility.

That's why, in our view, it is important for investors to understand and evaluate early the underlying unit economics for each software company (a topic we address in a separate section). Assuming that unit economics are defensive and sustainable, investors can focus on evaluating the profit potential later in a mature growth state. In other words, after understanding competitive moat, market size, and management's ability to execute among other factors, how large can a software company become over time and what is the likely revenue-margin trade-off at maturity.

Any changes in customer acquisition cost, customer support costs, gross margin profile, competitive dynamics, or business model, can have a meaningful impact on the long-term margin profile. However, there are many cloud companies at scale that have proven the power of cloud business models. As the number of at-scale cloud companies has increased, investor sentiment in the software sector has improved.

As the number of data points from successful cloud companies increases, we can recognize several important patterns. One is investor willingness to assign higher valuation multiples to software companies. This is driven by increased confidence in the compounding effect of revenues as a software company scale, unleashing the underlying profitability of the installed base. It is that predictability and visibility that allows investors to value software companies using long-term valuation frameworks even in the very early stages of a company's life.

There are many approaches to long-term frameworks including standard DCFs, variations of standard DCFs, and IRR-based techniques. These frameworks have different levels of complexity and assumptions.

Here we propose a simple compounded growth based framework that examines possible revenue trajectories, implied market share, the standard Rule of 40 at maturity (revenue growth + FCF margin), and a range of FCF to market cap valuation multiples. We do not model the various levels of cost structure as we assume relatively stable unit economics. We discount the market cap at maturity to the current market cap and assuming annual share dilution of ~4%, we arrive at a post share-dilution compounded growth. The range of compounded growth outcomes provides investors with a framework to evaluate entry and exit points and various risk-reward scenarios. In the scenario tables we begin with the current share price and provide investors with a range of entry and exit points so they can evaluate potential compounded growth outcomes.

The benefit of this hypothetical framework is its simplicity and the avoidance of potential compounding of many layers of assumptions. We use it in conjunction with detailed revenue builds, DCFs, and more detailed frameworks for extra level of comfort.

In the example below, we look at Adobe. The company has built a technology, customer, and go-to-market moat. The company has a defensible competitive position in a large addressable market, and we believe is poised for multiple years of TAM realization and share gains. With efficient unit economics and run by an experienced management team, we believe that Adobe could become a large company, with potential for ~$30bn in revenues. The upside case below includes the impact of improved execution in the company's Digital Experience segment and sustained subscriber gains in the core Creative business, resulting in a sustained 18% revenue CAGR and 20% FCF CAGR through FY2025E. Despite the stock run in 2020, the upside case shows high-double digit to low mid 20% compounded growth. The base case reflects our current estimates, largely in-line with Street, resulting in a low to mid double digit compounded growth. The scenarios show stock levels where it will be prudent to take profits or buy. In the scenario tables, we chose stock prices that represent ~10% upside/downside to current levels, but note that they can be adjusted by investors to measure potential risk/reward scenarios. In our analysis we assume the Rule of 55 in the base case, but note that given Adobe's efficient customer acquisition model, exposure to secular tailwinds, and potential to scale its Digital Experience business, the company may be able to expand toward the rule of 60, providing another positive valuation lever.

Our base case assumptions are based on our working model. Our bull case assumptions assume faster revenue growth from upside to Creative Cloud subscriber additions and Digital Experience execution. Our bear case assumptions assume slower revenue growth from potentially slower Creative Cloud subscriber additions and Digital Experience execution. Our base case target multiple is largely in-line with Adobe's current EV/FCF multiple, justified in our view given the durability of revenue growth + free cash flow growth. Our bull case target multiple represents a slight premium to the base case target multiple given faster revenue growth and better free cash flow margins, and is in-line with peers at a similar revenue growth + free cash flow margin. Our bear case target multiple represents a slight premium to the base case target multiple given slower revenue growth and slightly lower free cash flow margins, and is in-line with peers at a similar revenue growth + free cash flow margin.

Exhibit 31: Hypothetical long-term valuation analysis for Adobe (ADBE)
$ bn, except per share items

BEAR CASE	2020E	2021E	2022E	2023E	2024E	2025E
Revenues ($bn)	$12.9	$15.0	$17.0	$18.8	$20.6	$22.4
y/y		16%	13%	11%	10%	9%
Market size ($bn)	147	147	147	147	147	147
Market share	8.8%	10.2%	11.5%	12.8%	14.0%	15.2%
Share gain (bps)		143bps	135bps	123bps	124bps	120bps
Operating Income	$5.5	$6.5	$7.4	$8.2	$9.0	$9.8
Operating Margin %	42.9%	43.2%	43.4%	43.6%	43.7%	43.8%
Incremental Operating Margin		45.0%	45.0%	45.0%	45.0%	45.0%
Other Income	-$0.1	-$0.1	-$0.1	-$0.1	-$0.1	$0.0
Taxes	$0.5	$1.1	$1.3	$1.4	$1.6	$1.7
Tax Rate	10.0%	17.5%	17.5%	17.5%	17.5%	17.5%
Net Income	$4.9	$5.3	$6.0	$6.7	$7.4	$8.0
EPS	$10.10	$10.90	$12.59	$14.17	$15.89	$17.64
Diluted Shares Outstanding	0.49	0.48	0.48	0.47	0.46	0.46
Share Creep		(1%)	(1%)	(1%)	(2%)	(2%)
FCF margin	41%	40%	40%	40%	40%	40%
Rule of 40 (revenue growth + FCF margins)						48%
FCF ($bn)						8.9
FCF multiple						35x
Market cap ($bn)	227.1					310.6
Per share	470					528
Bear compounded return pre stock dilution	6%					
- stock dilution per year	1%					
Bear compounded return post stock dilution	8%					

Bear compounded return post stock dilution		FCF Multiple at Maturity				
		25x	30x	35x	40x	45x
	410	4%	7%	11%	14%	16%
Current	440	2%	6%	9%	12%	15%
Share	470	1%	4%	8%	11%	13%
Price	500	0%	3%	6%	9%	12%
	530	-2%	2%	5%	8%	11%
Implied revs multiple		9.9x	11.9x	13.9x	15.9x	17.9x

BASE CASE	2020E	2021E	2022E	2023E	2024E	2025E
Revenues ($bn)	$12.9	$15.2	$17.6	$19.8	$22.1	$24.4
y/y		18%	15%	13%	12%	11%
Market size ($bn)	147	147	147	147	147	147
Market share	8.8%	10.4%	11.9%	13.5%	15.0%	16.6%
Share gain (bps)		161bps	158bps	151bps	157bps	159bps
Operating Income	$5.5	$6.9	$8.0	$9.1	$10.3	$11.7
Operating Margin %	42.9%	45.5%	45.8%	46.2%	46.8%	47.8%
Incremental Operating Margin		59.4%	47.8%	49.4%	51.9%	57.1%
Other Income	-$0.1	-$0.1	-$0.1	-$0.1	-$0.1	$0.0
Taxes	$0.5	$1.2	$1.4	$1.6	$1.8	$2.0
Tax Rate	10.0%	17.5%	17.5%	17.5%	17.5%	17.5%
Net Income	$4.9	$5.6	$6.6	$7.5	$8.5	$9.6
EPS	$10.10	$11.68	$13.76	$15.85	$18.28	$21.05
Diluted Shares Outstanding	0.49	0.48	0.48	0.47	0.46	0.46
Share Creep		(1%)	(1%)	(1%)	(2%)	(2%)
FCF margin	41%	42%	43%	42%	43%	44%
Rule of 40 (revenue growth + FCF margins)						54%
FCF ($bn)						10.7
FCF multiple						40x
Market cap ($bn)	227.1					426.9
Per share	470					726
Base compounded return pre stock dilution	13%					
- stock dilution per year	1%					
Base compounded return post stock dilution	15%					

Base compounded return post stock dilution		FCF Multiple at Maturity				
		30x	35x	40x	45x	50x
	410	11%	15%	18%	21%	23%
Current	440	10%	13%	16%	19%	21%
Share	470	8%	12%	15%	17%	20%
Price	500	7%	10%	13%	16%	18%
	530	6%	9%	12%	15%	17%
Implied revs multiple		13.1x	15.3x	17.5x	19.7x	21.8x

UPSIDE CASE	2020E	2021E	2022E	2023E	2024E	2025E
Revenues ($bn)	$12.9	$15.7	$18.8	$21.9	$25.3	$29.0
y/y		22%	19%	17%	16%	15%
Market size ($bn)	147	147	147	147	147	147
Market share	8.8%	10.7%	12.8%	14.9%	17.2%	19.8%
Share gain (bps)		196bps	206bps	213bps	234bps	251bps
Operating Income	$5.5	$7.0	$8.5	$10.0	$11.8	$13.6
Operating Margin %	42.9%	44.2%	45.1%	45.8%	46.4%	46.9%
Incremental Operating Margin		50.0%	50.0%	50.0%	50.0%	50.0%
Other Income	-$0.1	-$0.1	-$0.1	-$0.1	-$0.1	$0.0
Taxes	$0.5	$1.2	$1.5	$1.7	$2.0	$2.4
Tax Rate	10.0%	17.5%	17.5%	17.5%	17.5%	17.5%
Net Income	$4.9	$5.7	$6.9	$8.2	$9.7	$11.2
EPS	$10.10	$11.74	$14.52	$17.43	$20.81	$24.56
Diluted Shares Outstanding	0.49	0.48	0.48	0.47	0.46	0.46
Share Creep		(1%)	(1%)	(1%)	(2%)	(2%)
FCF margin	41.0%	42.0%	43.0%	44.0%	45.0%	46.0%
Rule of 40 (revenue growth + FCF margins)						61%
FCF ($bn)						13.4
FCF multiple						45x
Market cap ($bn)	227.1					601.2
Per share	470					1022
Upside compounded return pre stock dilution	21%					
- stock dilution per year	1%					
Upside compounded return post stock dilution	23%					

Upside compounded return post stock dilution		FCF Multiple at Maturity				
		35x	40x	45x	50x	55x
	410	20%	23%	26%	29%	31%
Current	440	18%	22%	24%	27%	29%
Share	470	17%	20%	23%	25%	28%
Price	500	15%	18%	21%	24%	26%
	530	14%	17%	20%	22%	25%
Implied revs multiple		16.1x	18.4x	20.7x	23.0x	25.3x

Source: FactSet, Company data, Goldman Sachs Global Investment Research

We highlight a summary of our long-term framework for each company in our coverage in Exhibit 32.

Exhibit 32: Long-term CAGR valuation analysis for our software coverage

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		LT Model	Revenue			Operating Income			Net Income			EPS			Free Cash Flow			LT FCF	Implied LT	
		Timeframe	2020	Long-term	CAGR	2020	Long-term	CAGR	2020	Long-term	CAGR	2020	Long-term	CAGR	2020	Long-term	CAGR	Multiple	Fair Value	Compounded return
	Bear	2025E	$12.9	$22.4	12%	$5.5	$9.8	12%	$4.9	$8.0	10%	$10.10	$17.64	12%	$5.3	$8.9	11%	35x	$311	8%
ADBE	Base	2025E	$12.9	$24.4	14%	$5.5	$11.7	16%	$4.9	$9.6	14%	$10.10	$21.05	16%	$5.3	$10.7	15%	40x	$427	15%
	Bull	2025E	$12.9	$29.0	18%	$5.5	$13.6	20%	$4.9	$11.2	18%	$10.10	$24.56	19%	$5.3	$13.4	20%	45x	$601	23%
	Bear	2025E	$3.8	$6.3	11%	$1.1	$2.4	17%	$0.9	$2.0	18%	$3.96	$9.08	18%	$1.3	$2.8	16%	20x	$56	-4%
ADSK	Base	2025E	$3.8	$7.3	14%	$1.1	$3.2	24%	$0.9	$2.7	26%	$3.96	$12.32	26%	$1.3	$3.8	23%	25x	$94	6%
	Bull	2025E	$3.8	$8.2	17%	$1.1	$3.8	28%	$0.9	$3.2	30%	$3.96	$14.57	30%	$1.3	$4.4	27%	30x	$133	14%
	Bear	2027E	$21.1	$51.6	14%	$3.7	$12.4	19%	$4.3	$10.2	13%	$4.63	$8.21	9%	$4.2	$11.0	15%	30x	$330	3%
CRM	Base	2027E	$21.1	$60.5	16%	$3.7	$18.7	26%	$4.3	$15.0	20%	$4.63	$10.59	13%	$4.2	$17.0	22%	35x	$595	12%
	Bull	2027E	$21.1	$69.4	19%	$3.7	$21.9	29%	$4.3	$17.6	22%	$4.63	$14.20	17%	$4.2	$20.7	26%	40x	$828	18%
	Bear	2031E	$0.5	$1.8	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.0	$0.6	NM	30x	$19	-2%
ESTC	Base	2031E	$0.5	$3.2	18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.0	$1.1	NM	35x	$37	5%
	Bull	2031E	$0.5	$5.3	23%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.0	$1.5	NM	40x	$60	18%
	Bear	2025E	$8.1	$13.6	11%	$3.0	$4.6	9%	$2.3	$3.5	9%	$8.18	$13.12	10%	$2.6	$3.4	5%	30x	$102	0%
INTU	Base	2025E	$8.1	$14.9	13%	$3.0	$5.2	12%	$2.3	$4.0	12%	$8.23	$14.88	13%	$2.6	$4.5	11%	35x	$156	9%
	Bull	2025E	$8.1	$18.2	18%	$3.0	$7.0	19%	$2.3	$5.3	19%	$8.18	$19.89	19%	$2.6	$6.4	19%	40x	$254	20%
	Bear	2025E	$150.4	$240.9	10%	$57.1	$110.8	14%	$48.3	$95.4	15%	$6.32	$13.13	16%	$48.9	$89.9	13%	24x	$2,159	6%
MSFT	Base	2025E	$150.4	$263.6	12%	$57.1	$124.7	17%	$48.3	$107.1	17%	$6.32	$14.74	18%	$48.9	$101.9	16%	30x	$3,056	13%
	Bull	2025E	$150.4	$288.1	14%	$57.1	$139.6	20%	$48.3	$119.7	20%	$6.32	$16.47	21%	$48.9	$114.7	19%	35x	$4,016	20%
	Bear	2025E	$4.5	$12.5	23%	$1.1	$3.1	23%	$0.9	$2.5	23%	$4.50	$11.01	20%	$1.4	$3.1	17%	35x	$110	-2%
NOW	Base	2025E	$4.5	$13.6	25%	$1.1	$4.2	31%	$0.9	$3.4	30%	$4.50	$14.94	27%	$1.4	$4.5	26%	40x	$179	8%
	Bull	2025E	$4.5	$15.3	28%	$1.1	$5.4	38%	$0.9	$4.3	37%	$4.50	$19.20	34%	$1.4	$5.4	31%	45x	$241	15%
	Bear	2025E	$39.4	$41.7	1%	$18.3	$19.7	2%	$13.1	$13.9	1%	$4.15	$5.49	6%	$12.1	$11.0	-2%	12x	$132	-3%
ORCL	Base	2025E	$39.4	$45.9	3%	$18.3	$22.4	4%	$13.1	$16.1	4%	$4.15	$6.35	9%	$12.1	$12.8	1%	16x	$204	6%
	Bull	2025E	$39.4	$50.6	5%	$18.3	$25.3	7%	$13.1	$18.4	7%	$4.15	$7.26	12%	$12.1	$14.7	4%	20x	$294	14%
	Bear	2030E	$0.6	$6.5	27%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.1	$1.4	NM	45x	$64	-9%
SNOW	Base	2030E	$0.6	$13.9	37%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.11	$2.6	NM	60x	$156	0%
	Bull	2030E	$0.6	$28.2	47%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.1	$5.4	NM	80x	$428	11%
	Bear	2031E	$2.2	$10.0	15%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.3	$3.5	NM	25x	$87	5%
SPLK	Base	2031E	$2.2	$14.5	19%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.3	$4.4	NM	30x	$131	13%
	Bull	2031E	$2.2	$19.1	22%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-$0.3	$4.8	NM	35x	$167	25%
	Bear	2027E	$4.3	$9.1	11%	$0.8	$2.5	17%	$0.7	$2.0	17%	$2.68	$6.64	14%	$0.7	$2.0	15%	35x	$69	0%
WDAY	Base	2027E	$4.3	$13.0	17%	$0.8	$3.6	24%	$0.7	$3.0	24%	$2.68	$9.02	19%	$0.7	$3.0	22%	50x	$149	12%
	Bull	2027E	$4.3	$14.3	19%	$0.8	$4.1	26%	$0.7	$3.4	26%	$2.68	$10.95	22%	$0.7	$3.4	24%	60x	$201	17%
	Bear	2025E	$11.7	$16.6	7%	$3.7	$4.8	5%	$3.0	$4.1	7%	$7.03	$9.68	7%	$3.4	$6.3	13%	12x	$75	5%
VMW	Base	2025E	$11.7	$18.2	9%	$3.7	$5.1	6%	$3.0	$4.4	8%	$7.03	$10.39	8%	$3.4	$6.8	14%	15x	$101	12%
	Bull	2025E	$11.7	$20.0	11%	$3.7	$5.5	8%	$3.0	$4.7	10%	$7.03	$11.17	10%	$3.4	$7.3	16%	16x	$117	15%

Calendar Year used in this analysis

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Unit economics

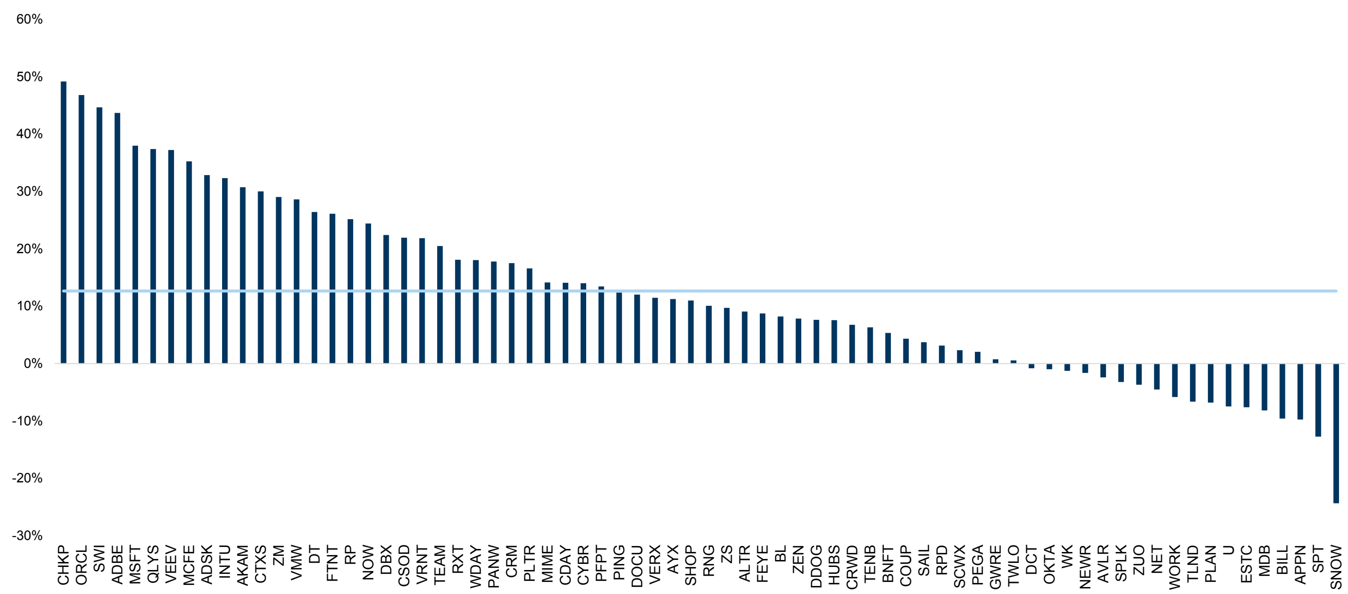
Distribution wins long term but customer acquisition economics determine profitability

Software is unique in that the biggest investment to scale the business longer term is distribution (S&M) versus R&D in the early stages. Gross margins are generally very high, 70's to 80's, even 90's (as in the case of ADBE) and primarily a function of infrastructure hosting costs and secondarily a function of mix of subscription (higher margin) versus services (lower margin). Once the product meets minimum viability of market acceptance, S&M (mostly quota carrying sales) takes over. Distribution size is critical and the companies have to multiply revenues many times over before they can become a viable business. As critical as distribution is to establish viability, it also determines long-term profitability. And the metric that helps determine that is customer acquisition economics.

Many of the names in our software coverage remain in relatively early stages of their lifecycles, rapidly expanding topline to address large and growing market opportunities underpinned by a variety of secular trends, including digital transformation, SaaS and public cloud adoption, rapid growth in data and analytics, and artificial intelligence (amongst others). As companies continue to invest ahead of growth, current measures of profitability often understate the long-term earnings potential of the business, particularly as companies invest heavily to acquire new customers. Investment also includes acquisitions since they usually come with a viable product(s) and an established customer base. With predictable, recurring revenue inherent in many SaaS business models, correspondingly low revenue attrition (or churn) and relatively high economic margins, large upfront investments in customer acquisition are expected to translate to profitability over time, particularly as growth slows and the company reaches maturity. As outlined in Exhibit 33, while more mature software companies enjoy operating margins north of 35% (ORCL, ADBE, MSFT, etc.), the average consensus CY21 operating margin across our software coverage footprint is just shy of 13% and nearly a quarter of the companies are expected to generate negative operating margins. We believe unit economics can be useful in framing the long-term earnings potential of software companies within our coverage universe to help understand the long-term earnings power of the business and relative efficiency of the company's go-to-market motion.

Exhibit 33: CY21 Consensus software operating margins

CY21 Consensus Operating Margins



Source: FactSet

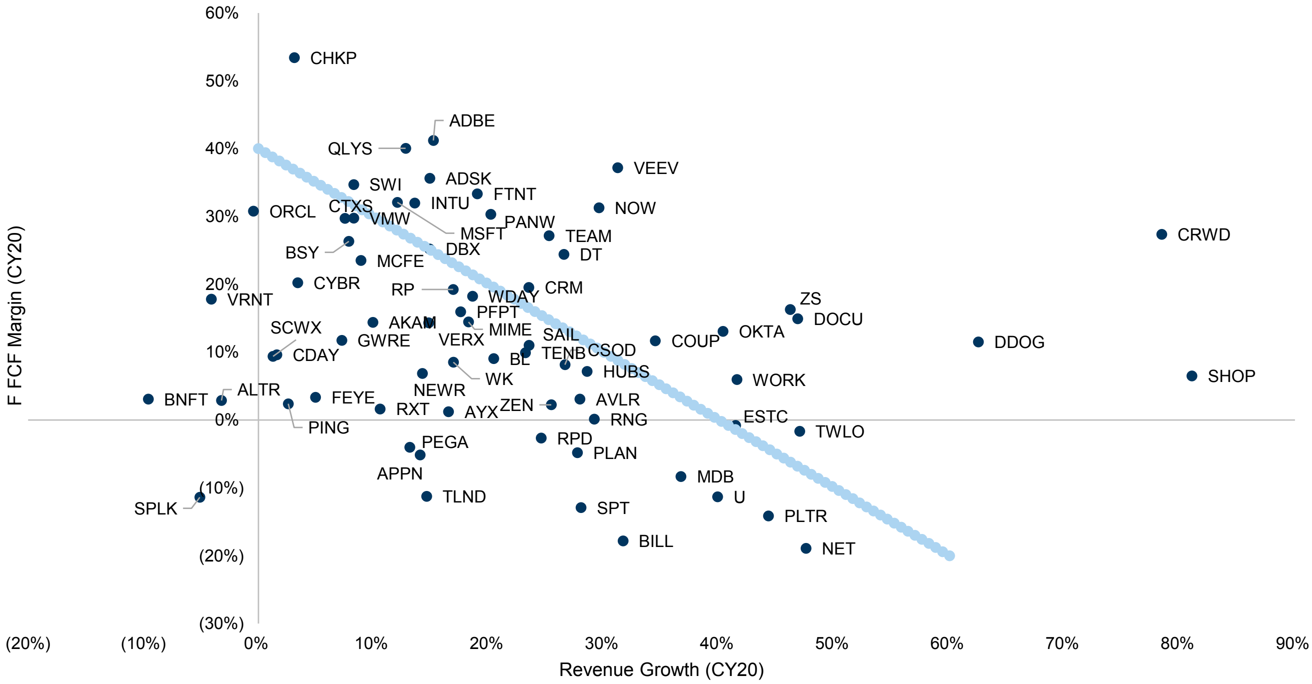
While we view unit economics as meaningful indicators of efficiency and ultimately profitability, unit economics metrics underwrite assumptions that may not necessarily hold over time and should be evaluated alongside other aspects of the business including industry structure, competitive dynamics, competitive moat, customer switching costs, etc. For example, customer acquisition costs (CAC) typically increase over time, as businesses move upmarket, expand internationally, and move into adjacencies. Generally, selling into 1-2 markets can afford a company like Adobe (Creative and Marketing) very high margins (+40%). The more the number of end markets, as is the case with Salesforce which sells into 8 markets (Sales, Service, Marketing, eCommerce, Analytics, Integration, Platform, Collaboration) the lower are the margins (~20%). This is because it takes a while to go from customer push to pull, trying to gain critical mass and leadership, which lowers CAC. While by no means exhaustive, we outline a few key metrics below, including customer acquisition costs (CAC), lifetime value (LTV), and the rule of 40 (revenue growth + FCF margins).

- **Customer acquisition costs (CAC):** or the cost to acquire a new dollar of annually recurring subscription revenue (ARR) is a key measure of efficiency in our view and one of the most important metrics in subscription software. While there are many different ways to calculate CAC, with many derived on a per customer basis, we define customer acquisition costs as TTM GAAP Sales & Marketing expenses divided by net new ARR (yoy change in annualized subscription revenue). Given disparate levels of disclosure surrounding customer metrics and annually recurring revenue, we believe this method is most useful in establishing comparability across our coverage footprint.
- **Lifetime value (LTV):** as outlined in Exhibit 35, many of the companies in our coverage invest heavily to acquire new customers, often spending in excess of new

ARR (~80% of companies with in our software coverage have a CAC > 1), with the expectations that these upfront investments will translate to profit over the lifetime of a customer. As its name implies, lifetime value aims to capture the discounted value of the $1 in acquired ARR over a typical customer lifetime. While, like CAC, there are a variety of ways to derive lifetime value, we calculate LTV as GAAP subscription gross margin divided by the sum of gross churn and a standardized discount rate (8%). While we acknowledge current subscription gross margins may not be indicative of the true economic cost to serve a subscription customer, we have limited insight into gross margin and other operational costs associated with serving existing subscription customers.

- **Lifetime value to customer acquisition cost (LTV:CAC):** at risk of stating the obvious, lifetime value to customer acquisition costs attempts to derive the net present value of $1 of ARR divided by the cost in obtaining that $1, with higher LTV:CAC indicating greater efficiency in the company's go-to-market motion, and likely pointing to greater potential profitability at scale (all else equal). While we note the underlying assumptions can and do change, we believe LTV:CAC can be useful as a benchmarking tool in assessing both efficiency and steady-state profitability.
- **Rule of 40:** as companies balance growth and profitability, the rule of 40 has become a standard in benchmarking SaaS companies across both dimensions. Simply, the rule of 40, which is comprised of the sum of revenue growth and free cash flow margin, aims to capture both growth and profitability, using 40 as a benchmarking standard. For example a company growing 60% and operating at (20%) free cash flow margins would be operating at the rule of 40. Just under 40% of companies outlined in Exhibit 34 are expected to come in above the rule of 40 in CY20, with the average across the comp group coming in ~40%.

Exhibit 34: Nearly 60% of software companies are expected to come in below the Rule of 40 in CY20
Based on FactSet Consensus



Source: FactSet, Goldman Sachs Global Investment Research

- **Net Expansion Rates:** another key driver of software models is a company's ability to expand within its existing installed base, either through greater volume (seats, usage, etc.), pricing, or additional modules and functionality. As new customer acquisition can be relatively expensive, growth from within the installed base typically carries less friction and costs, bringing higher incremental margins and driving efficiency.

In Exhibit 35 we highlight various efficiency and unit economics metrics for companies within this initiation report and how they compare across a broader set of software peers. For more details and context around our unit economics measure and calculations, see the benchmarking software report.

Exhibit 35: Efficiency and profitability benchmarking

Sorted from highest to lowest EV/Sales (CY21)

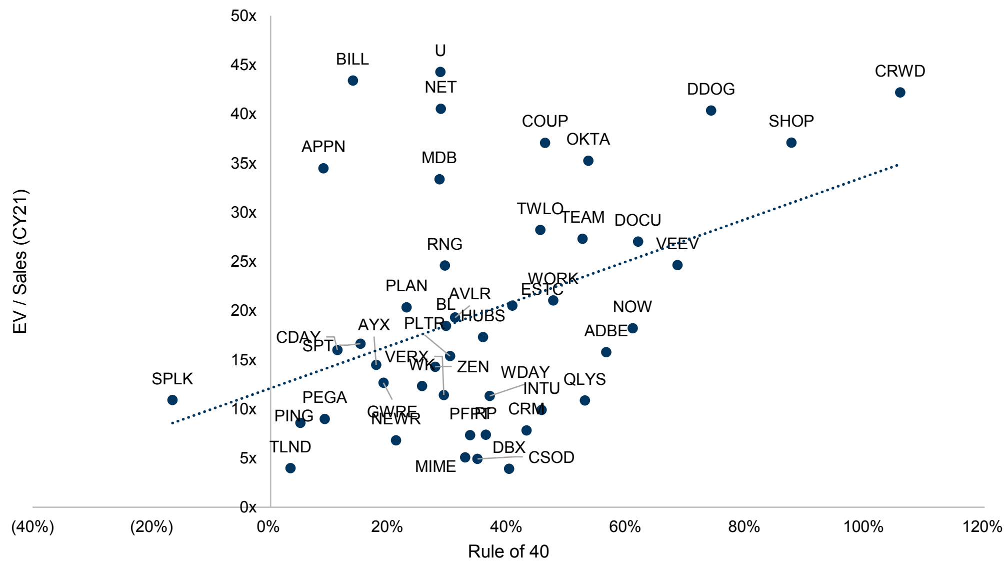
	Sales Growth		3Q20	LTV:CAC	CY20	Rank			
Ticker	CY21	CY22	CAC	High	Rule 40	CAC	LTV:CAC	Rule 40	Average
SNOW	89%	62%	1.3	6.4x	100%	12	5	3	7
U	26%	30%	0.7	8.4x	29%	3	4	32	13
BILL	26%	34%	0.8	4.2x	14%	5	14	41	20
CRWD	39%	30%	0.9	8.5x	106%	9	3	2	5
NET	35%	29%	1.3	4.7x	29%	11	11	31	18
DDOG	36%	34%	0.8	6.3x	74%	8	6	5	6
SHOP	33%	37%	0.4	6.2x	88%	2	7	4	4
COUP	26%	26%	1.7	3.6x	46%	22	17	14	18
OKTA	30%	28%	1.6	4.8x	53%	17	10	10	12
APPN	14%	15%	2.4	3.4x	9%	35	21	44	33
MDB	27%	27%	1.8	2.2x	28%	26	32	33	30
ZM	35%	20%	0.2	10.2x	361%	1	2	1	1
TWLO	32%	30%	0.8	4.0x	45%	7	16	16	13
TEAM	14%	22%	0.8	5.3x	52%	6	9	12	9
DOCU	32%	30%	1.4	2.5x	62%	15	30	7	17
VEEV	19%	18%	0.8	12.4x	68%	4	1	6	4
RNG	23%	25%	2.0	2.5x	29%	30	29	29	29
WORK	28%	23%	1.7	2.0x	47%	20	36	13	23
ESTC	23%	23%	1.4	3.2x	41%	14	23	18	18
PLAN	24%	22%	2.9	2.2x	23%	39	33	36	36
AVLR	26%	22%	1.8	3.2x	31%	23	22	26	24
BL	18%	18%	3.1	2.5x	29%	41	28	28	32
NOW	25%	24%	1.7	5.4x	61%	21	8	8	12
HUBS	22%	21%	1.9	1.8x	36%	27	40	22	30
SPT	27%	26%	2.0	1.9x	15%	28	39	40	36
CDAY	15%	17%	4.0	1.6x	11%	46	44	42	44
PLTR	31%	27%	1.6	1.7x	30%	18	41	27	29
AYX	16%	26%	2.0	3.6x	18%	29	19	39	29
ADBE	18%	13%	1.5	4.5x	56%	16	12	9	12
ZEN	24%	24%	2.3	2.0x	28%	33	35	34	34
GWRE	1%	8%	2.9	2.6x	19%	40	27	38	35
WK	16%	15%	2.7	2.3x	25%	37	31	35	34
VERX	8%	13%	2.4	1.7x	29%	34	43	30	36
WDAY	16%	18%	1.8	4.2x	37%	24	15	20	20
SPLK	20%	26%	2.1	2.7x	(16%)	31	25	47	34
QLYS	13%	14%	1.7	3.6x	53%	19	18	11	16
INTU	19%	10%	3.2	1.4x	46%	42	46	15	34
PEGA	18%	20%	3.7	2.1x	9%	45	34	43	41
PING	15%	19%	2.4	2.7x	5%	36	26	45	36
CRM	21%	18%	2.8	1.9x	43%	38	37	17	31
RP	11%	11%	1.1	4.3x	36%	10	13	21	15
PFPT	14%	17%	3.2	1.7x	34%	43	42	24	36
NEWR	8%	16%	6.0	0.9x	21%	47	47	37	44
MIME	14%	19%	2.2	3.1x	33%	32	24	25	27
CSOD	15%	6%	1.3	3.5x	35%	13	20	23	19
TLND	14%	20%	3.5	1.5x	3%	44	45	46	45
DBX	11%	10%	1.8	1.9x	40%	25	38	19	27

Sales growth and Rule of 40 based on FactSet Consensus

Source: FactSet, Company data, Goldman Sachs Global Investment Research

While, in our view, unit economics can be helpful in assessing the long-term profitability and relative efficiency of software companies, there can often be a disconnect between valuation and unit economics. As outlined in Exhibit 36 and Exhibit 37, the R-squared for valuation (EV/CY21 Sales) and Rule of 40 and LTV to CAC were relatively low at 0.11 and 0.28 respectively. Rather, consensus expectations for CY21 sales growth appears to be much more explicative of current valuations (Exhibit 38), with an R-squared of 0.72. While general macroeconomic uncertainty, the scarcity of growth, and low interest rates coupled with increasing investor confidence in acceleration in the pace of digital transformation initiatives and the outlook for software spending may place a premium on growth, we nonetheless would view the disconnect as a potential opportunity to focus on names with strong underlying business models.

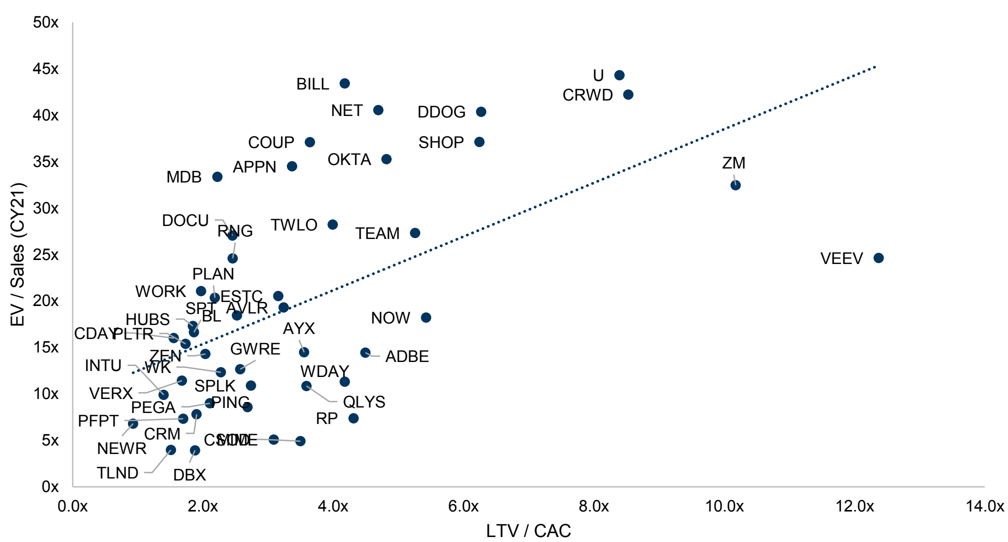
Exhibit 36: Rule of 40 vs EV/Sales (CY21)



Rule of 40 based on CY20 FactSet Consensus

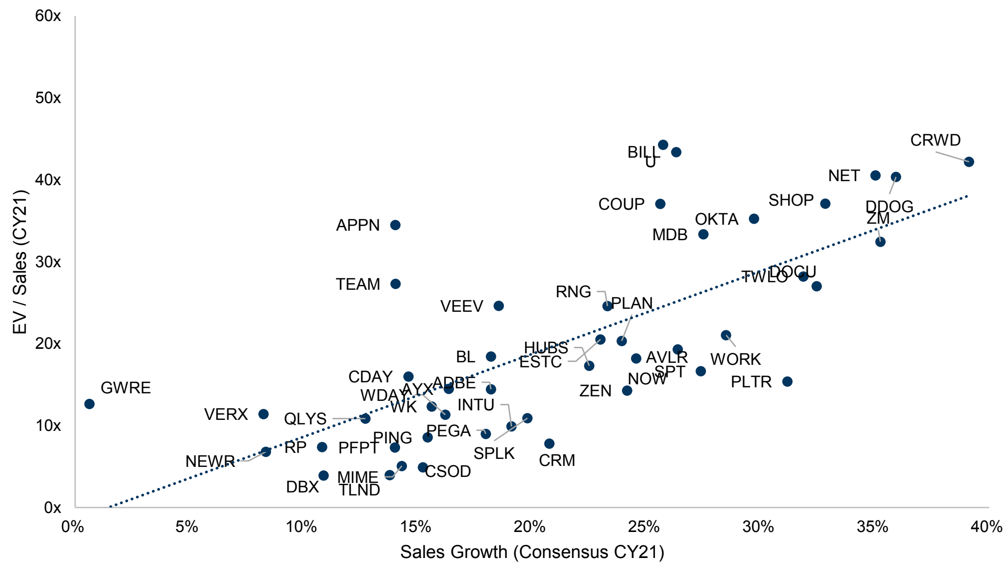
Source: FactSet, Company Data, Goldman Sachs Global Investment Research

Exhibit 37: LTV:CAC vs EV/Sales (CY21)



Source: FactSet, Company Data, Goldman Sachs Global Investment Research

Exhibit 38: Sales Growth vs EV/Sales (CY21)



Sales growth based on CY21 FactSet Consensus

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Software Business Models: Best of breed to Platforms

In software, there is a spectrum of business models, ranging from best of breed to a platform, and in-between. Best of breed companies address very specific business problems that require deep technical solutions. A best of breed company can move along the spectrum over time and become a platform. The reverse is also true: a platform company might realize that they need to develop a vertical expertise to address specific customer pain points.

In our view, while a best of breed solution can create shareholder value in the near-term, longer-term value creation favors those best of breed solutions that can, through either organic innovation or inorganic acquisitions, expand into adjacent markets and transform into holistic platforms. For longer term value creation, multi-faceted yet synergistic software platforms have proven more durable over singular best of breed software solutions, in our view. Typically, platforms begin as a best of breed solution with competitively differentiated technology, gain a dominant share of the market, acquire a large customer base, use that foundation to invest and expand into adjacent markets, and through cross-sell and upsell into a large install base drive lower customer acquisition and support cost. Companies that have successfully navigated this transformation include Microsoft, Salesforce.com, Adobe, and Intuit.

The journey from best of breed to end-to-end platform can be a difficult and expensive process. This can represent an opportunity for patient investors to benefit from near-term business disruption, knowing that the company is run by a management team that can ultimately execute. Breaking through the single-product to multi-product barrier can lead to significant value creation for both customers (consolidating workflows, processes, vendors, data, better pricing) and the company itself (higher retention rates, upsell, unit economics, larger TAM).

There seem to be a few key factors that we believe allow best of breed companies to successfully navigate the journey to becoming a platform:

- **Founder-led.** Typically, companies that are led by their entrepreneurial founders are able to take a longer term view into market opportunities and can tolerate more risk as they expand into adjacent markets.
- **Core technology advantage.** Differentiated technology can allow best of breed companies to sustain elevated growth as they gain market share in their core market and as a result can afford to fund an expansion into adjacent opportunities.
- **Large market share in the core market.** Companies that have a large market share in their core market typically have both a large and loyal base of customers and credibility with channel and other partners. This foundation enables companies to more easily upsell and cross sell their base of customers and provides an on-ramp for new customer adoption.
- **Structural market shifts.** Shifting market dynamics as technology and generational shifts occur. This creates opportunities for companies to innovate, and expand into adjacent markets as customers seek to consolidate vendors. We highlight four segments of the market that we believe are going through structural shifts: Application Monitoring, Communications, DevOps, and Security.
- **Ability to build a multi-faceted sales organization.** As a company adds more products to sell, this inherently requires the rebuilding from a focused sales team to a multi-faceted sales team. This process is almost always disruptive, but the longer term benefits of becoming a platform outweigh the near-term disruption. The quality of the sales management team is of critical importance in such transitions.

Exhibit 39: Evolution of Salesforce from best of breed to a platform

	2004	2010	2015	2020E	2020E vs 2004
Market cap	**2.5**	**15**	**54**	**204**	**82x**
CAGR		35%	29%	30%	
Subcription Revenues ($mn)	**$100**	**$1,551**	**$6,205**	**$19,500**	**195x**
CAGR		58%	32%	26%	
Operating profit ($mn)	**$4**	**$238**	**$830**	**$3,695**	**924x**
CAGR		98%	28%	35%	
% of subscription revenues	4%	15%	13%	19%	
% subscription revenue mix					
Sales	100%	81%	43%	26%	
Service		10%	29%	26%	
Platform		10%	17%	18%	
Marketing			11%	11%	
Commerce				5%	
Integration				5%	
BI				7%	

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Competitive moat

A frequent topic of discussion with investors is what is the competitive moat of a software company and how sustainable it is. The competitive moat is a major determinant of the risk-reward for an investment in software.

Sustained innovation. As a rule, over the long-term, all technology becomes a "commodity", i.e., in the long-term it becomes easier for other vendors to produce similar software. That is why, the ability to sustain innovation is important, in our view. Take for example the software backup market – it is a crowded market with a very well understood software stack. But even in "commodity" software markets, vendors can innovate and carve-out a niche for example in specific verticals. At the extreme, software companies have to completely cannibalize their legacy businesses during times of generational shifts in software. Classic examples are the shift from mainframes to client-server computing and currently the ongoing shift to the cloud. Sometimes, there are markets where unique software development skills are required that can be very difficult to replicate. For example, in unified communications and communication platform as a service, from software programming point of view, doing communication across various channels in real-time at enterprise quality requires 10+ years of development efforts, based on the experience of various vendors.

A large customer install base. A large install base can allow a software company to drive value creation by upselling and cross-selling multiple adjacent products at a much lower customer acquisition cost. The result of the power of the install base can be the creation of large and highly profitable software franchises. This can be especially the case when a good management team can clearly see the inherent synergies in adjacent markets. Such a strategy naturally amplifies the different products that a software vendor can offer and further lowers customer acquisition and support costs. For example, SaaS amplifies PaaS and vice versa, IaaS amplifies PaaS and vice versa, Windows amplifies Office and vice versa, and many other examples.

A large ecosystem. Software vendors do not exist in isolation, but in a broad ecosystem of various direct or indirect partners. Facilitating the ecosystem can result in the creation of a large and profitable business. For example, Red Hat was able to build by far the largest open-source software company by building deep partnerships over many years, including certifications with hardware and chip vendors, other software companies, system integrators and others. In this way, the company became an inextricable part of a large web of partners, ensuring the creation of a large and growing business. The ultimate purpose of any ecosystem is to ensure customer success – as long as that is the case, it can create a sustainable competitive moat.

A large go-to-market engine. Over many years, a software company can build a wide and deep network of go-to-market partners, including system integrators and various channel partners, and/or a large direct sales force. Large and scalable go-to-market engines can drive customer stickiness, increased ability to cross-sell and upsell, and lower customer acquisition costs. In the context of "in the long-term, all software become a commodity," this moat is important as what matters ultimately is the relationship with and the support of the customer. This type of moat can be expensive and time-consuming to build.

Business model innovation. Software companies continue to break the mold and come up with innovative business models. One example is companies like Atlassian and Twilio that have built a go-to-market engine at half the cost of traditional software sales approach by leveraging word-of-mouth and freemium go-to-market approach, anchored in large ecosystems, the IT department and developers, respectively. This allows the companies to invest more in R&D. Over time, this creates a flywheel effect as the software vendor can create not just better but more products, faster than traditional software business models.

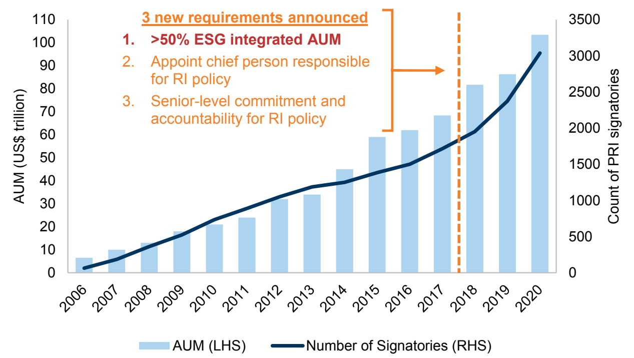
The bottom-line for software investors is to learn from the history of successful software companies and try to identify companies with strong competitive moats, as it is those franchises that can drive value creation for long periods of time. It is a developed, not acquired skill, as it takes time to study both the successful and unsuccessful software case studies. For example, one pattern we have seen over the years is that SMB-centric premium-priced software vendors, unless they develop some sort of moat or diversify early, can face significant revenue deceleration as they saturate the early adopters and try to cross-the-chasm onto the price-sensitive mainstream.

Finally, the more competitive moats a software vendor has, the better the risk-reward is. For example, in the long-term all software has the danger of becoming a commodity, so an innovative software company should look to develop an ecosystem or a large go-to-market engine.

ESG

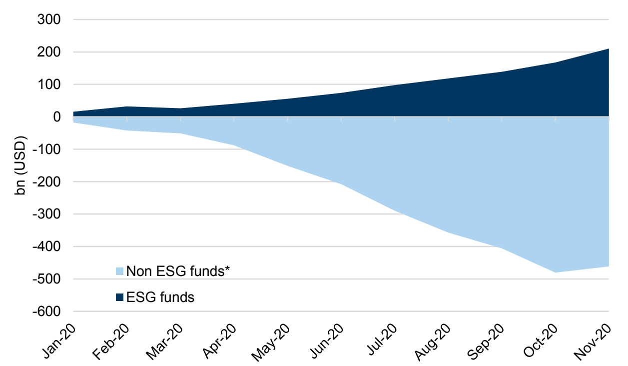
We believe ESG will continue to gain traction within the investment community. While corporate governance has long been a focal point of modern finance and the investment community broadly, ESG, or Environmental, Social, and Governance, remains a relatively new framework and continues to gain incremental focus within the investment community encompassing a broad spectrum of topics from diversity and inclusion to water and waste. As noted in our GS SUSTAIN team's note, The PM's Guide to the ESG Revolution 2, growth in ESG assets under management (AUM) continues to climb higher alongside heightened focus from the investment community with the number of PRI (Principles for Responsible Investing) signatories climbing to over 3,000 in early 2020, representing AUM of $103tn (+20% yoy or +$17.1tn); this compares to +6% yoy (+$4.6tn) growth in AUM in 2019 (Exhibit 40). Similarly, ESG fund flows have consistently remained positive, adding over $200bn in AUM in 2020 (through November 2020), compared to net outflows of ~$460bn for non-ESG equity funds (Exhibit 41). As ESG continues gain incremental traction, we highlight a few key areas where believe software, more specifically SaaS and public cloud, have the potential to drive greater efficiency in enterprise computing architectures while also reducing carbon emissions.

Exhibit 40: PRI AUM and signatory count is accelerating…
PRI Signatory Growth and AUM, 2006-2020



Source: PRI, Goldman Sachs Global Investment Research

Exhibit 41: ...helping drive consistently positive flow of AUM into ESG funds
Cumulative global flows for ESG and non-ESG equity funds



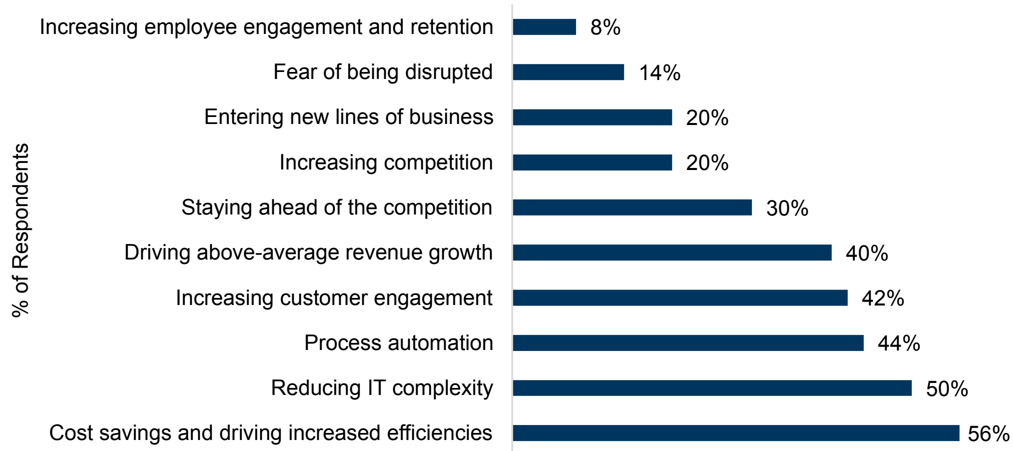
Source: Morningstar, Goldman Sachs Global Investment Research

Cloud adoption has the potential to create value for shareholders and stakeholders through lower costs and reduced carbon emissions. Alongside growing investor interest in socially responsible investing and ESG, we believe rising SaaS and public cloud adoption has the potential to drive greater efficiency across the economy. While there are numerous advantages to cloud adoption, including ease of access, simplified management, increased efficiency and lower costs, we believe the cloud is ultimately more environmentally friendly and has the potential to reduce waste and drive increased efficiencies, in addition to enabling new more efficient ways of conducting business and delivering services. Through more efficient power and cooling, greater compute utilization, and greater hardware efficiency alone, cloud adoption has the potential to reduce carbon emissions as enterprises migrate workloads from corporate data centers to SaaS and public cloud infrastructure. According to a study conducted by Accenture, the average enterprise-owned to cloud migration can generate 65% reduction in energy consumption and 84% carbon reduction. Moreover, we see the potential for further reduction as the cloud enables new ways of conducting business and delivering services like reducing corporate travel by enabling more seamless communication and collaboration across distributed locations. We continue to see runway for accelerated cloud adoption driving both shareholder and stakeholder value as inherent efficiencies in cloud computing architectures alongside new use cases simultaneously drive lower costs and reduce carbon emissions.

Digital Transformation Survey: potential for accelerated spending

The onset of shelter in place orders in the wake of COVID-19 brought about abrupt changes in the global economy, with much of the world's workforce transitioning to working from home seemingly overnight and commerce continuing to shift more toward digital channels. While it can be debated how long these trends will persist and how durable the changes will ultimately be, we see the potential for accelerated digital transformation (DX) related spending in the wake of the global pandemic, as some of the pain points of legacy architectures and applications have become more acute in a more distributed and digital world. We believe companies will continue to invest in modernizing their IT stacks to drive efficiencies, reduce complexity, streamline operations, increase customer engagement, and drive revenue growth (Exhibit 42).

Exhibit 42: IT efficiency, process automation, and customer engagement are top motivations for pursuing DX initiatives
Which of the following represent your organizations motivations for undergoing digital transformation initiatives?



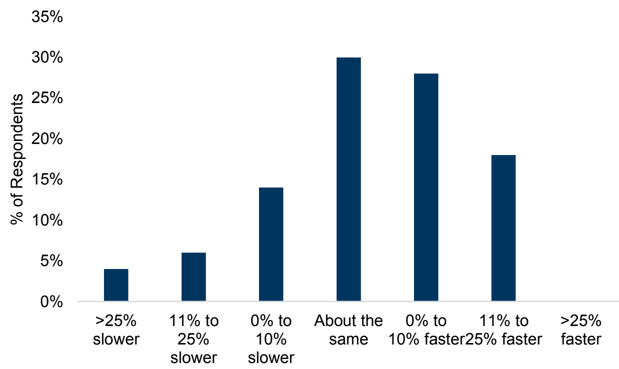
Source: Goldman Sachs Global Investment Research

As we look ahead into 2021, we conducted a survey of 50 CIOs to gauge overall IT spending priorities and the health of IT spending, particularly as it pertains to their digital transformation (DX) budgets going forward. Respondents were from diverse industry verticals with a majority of participants from Financial Services (18%), followed by Healthcare (16%), manufacturing (14%), and technology (10%). Similarly, respondents spanned various IT budget sizes with 36% of respondents indicating IT budgets less than $50mn, 28% between $50mn and $150mn, 24% between $150mn and $500mn, and 12% greater than $500mn. For more details on the composition of respondents, see Exhibit 51 through Exhibit 53.

Going forward, we expect DX related spending to outpace overall IT related spending, with over 45% of respondents indicating they expect their digital transformation spending to grow faster than their overall IT spending; this compares to less than 25% who indicated they expect DX spending growth to trail overall IT related spending (Exhibit 43). Similarly, we expect DX initiatives to capture greater share of enterprise's overall IT budgets, with weighted average responses indicating expectations for DX related spending to climb to ~15% of overall IT budgets over the next five years, compared to ~11% today (Exhibit 44). Over 60% of respondents indicated they spend 10% or less of their overall IT budget on DX, while only 36% indicating they expect to spend 10% or less on DX five years from now.

Exhibit 43: Over 45% of respondents expect DX related spending to outpace overall IT spending…

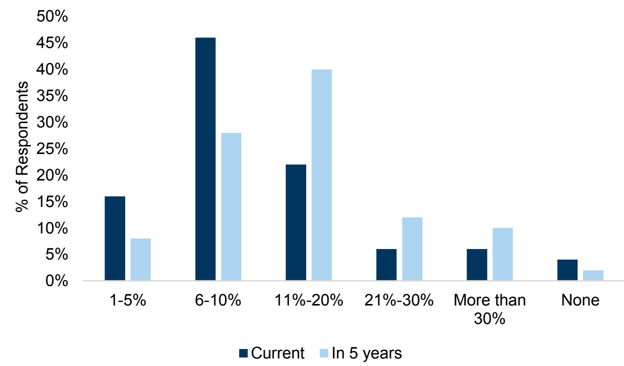
In 2021, how do you expect digital transformation spending to compare to your overall IT related spending?



Source: Goldman Sachs Global Investment Research

Exhibit 44: …with DX expected to climb to ~15% of total IT spending over the next 5 years

What percent of your IT budget are you currently spending on digital transformation this year? Five years from now?

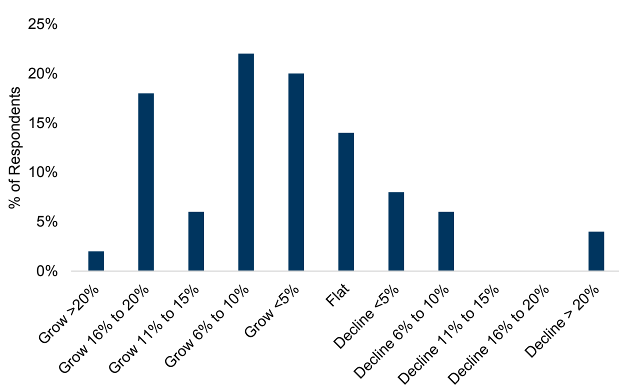


Source: Goldman Sachs Global Investment Research

Overall, the outlook for spending growth in 2021, as it pertains to DX budgets, remains fairly healthy, with 68% of respondents indicating they expect their DX related spend to grow (compared to 18% expecting a decline) and 20% of respondents expecting growth above 15% (Exhibit 45). With vaccines beginning to be distributed, we asked CIOs how the availability of a vaccine is shifting DX related spending; while the majority (~75%) of respondents have not changed spending, over 20% noted an increase in spend, compared to only 4% indicating a decline in spending (Exhibit 46).

Exhibit 45: 20% of respondents expect their DX budgets to grow above 15% in 2021

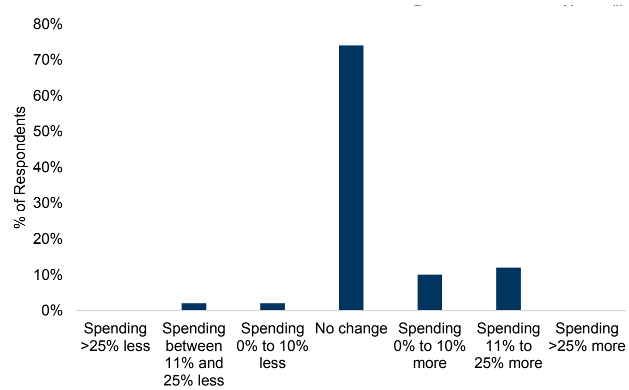
Looking ahead to 2021, how do you expect your digital transformation related spending to compare to actual 2020 spending?



Source: Goldman Sachs Global Investment Research

Exhibit 46: The majority of respondents have not changed DX spending with the potential upcoming availability of a vaccine

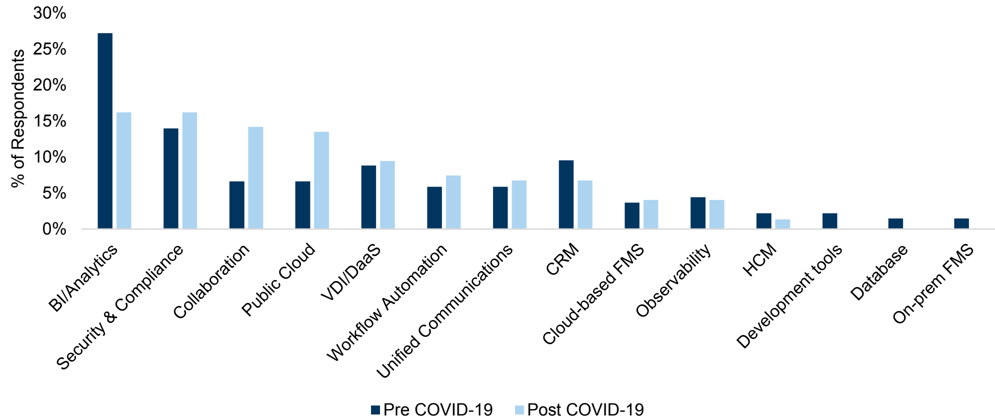
How has the potential upcoming availability of a COVID-19 vaccine caused you to shift your spending on digital transformation initiatives?



Source: Goldman Sachs Global Investment Research

As noted above, the onset of shelter in place orders in the wake of COVID-19 brought about abrupt changes in the global economy; this in turn, drove re-prioritization within overall IT budgets, as companies grappled with increasingly distributed workforces and shifts in commerce and customer engagement to more digital channels (amongst other things). In Exhibit 47, we highlight how respondents indicated their overall spending priorities shifted with the onset of COVID-19. Specifically, security & compliance, collaboration, and public cloud saw notable increases in prioritization.

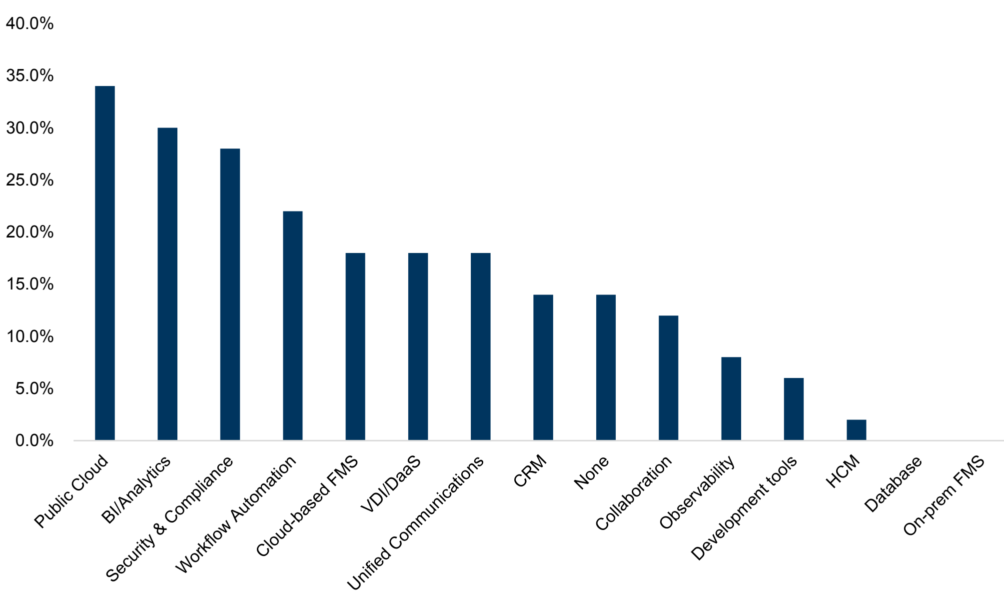
Exhibit 47: The COVID-19 pandemic brought about shifts in IT spending priorities
Heading into 2020, prior to COVID-19, what were your top priorities for digital transformation initiatives? What were your top priorities for digital transformation immediately following COVID-19?



Source: Goldman Sachs Global Investment Research

Following a re-prioritization of IT spending post COVID-19, as companies grappled with enabling and securing distributed workforces, we asked CIOs about any potential pent-up demand for categories of spending once an effective vaccine is available in sufficient volume. Across 15 categories of DX related spending, 34%, 30%, and 28% of CIOs indicated they saw pent up demand for public cloud, BI and analytics, and security and compliance, while only 14% indicated no pent-up demand for the categories listed (Exhibit 48).

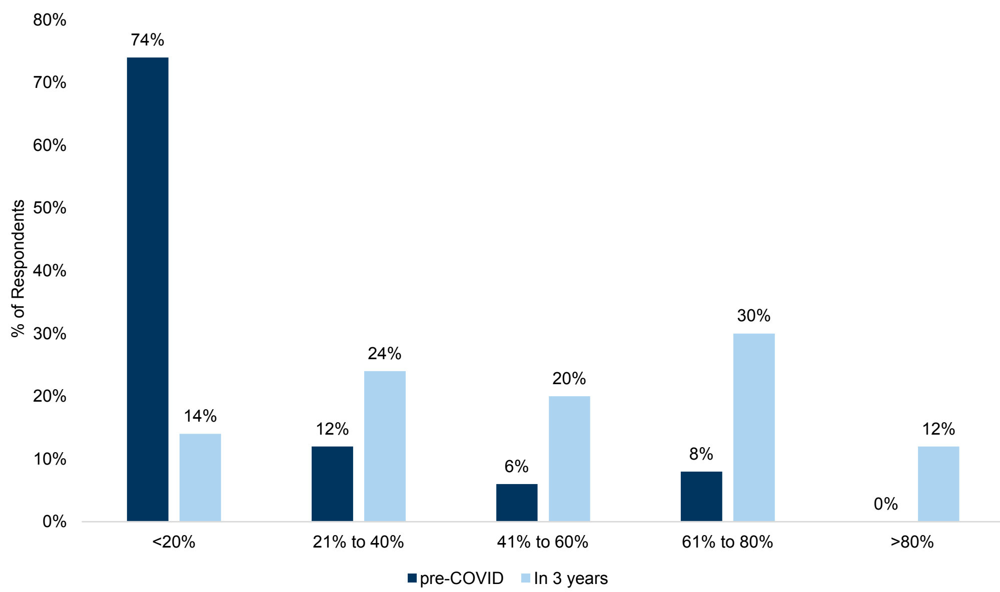
Exhibit 48: Public Cloud spending is expected to top priority lists, post economic reopening
Which parts of your software spending do you see pent up demand for, once an effective vaccine is available in sufficient volume?



Source: Goldman Sachs Global Investment Research

While the durability of some the changes brought about by COVID-19 and associated shelter-in-place orders can be debated, we note that survey respondents indicated expectations for more flexible work policies going forward. More specifically, we note that, less than 15% of respondents indicated that more than 40% of their workforce had flexible working arrangements prior to COVID-19, while 62% of respondents expect more than 40% of their workforce to have flexible working arrangements three years from now (Exhibit 49). Even as workforces eventually begin to return to the office, we believe rising adoption of communication, collaboration, SaaS and public cloud technologies is durable, particularly as business continuity planning is likely to remain top of mind and the benefits of more modernized IT stacks and software applications are more fully realized.

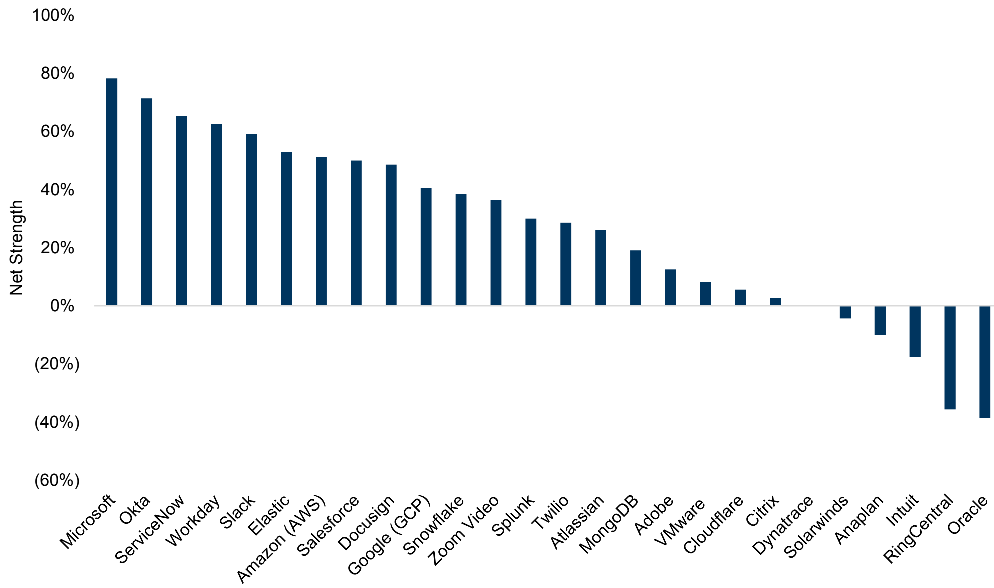
Exhibit 49: CIOs expect more widespread flexible working arrangements over the next three years
What percentage of your workforce had flexible working arrangements prior to the COVID-19 pandemic? Three years from now?



Source: Goldman Sachs Global Investment Research

With respect to individual vendors, we asked CIOs which vendors were gaining share of wallet with respect to their overall DX budgets. Overall, Microsoft exhibited the greatest net strength at 78% (% of respondents indicating they expect the vendor to gain share of wallet - % of respondents indicating they expect the vendor to lose share of wallet). Similarly, Okta, ServiceNow, and Workday ranked amongst the top vendors in our survey with net strength of 71%, 65% and 63% respectively (Exhibit 50).

Exhibit 50: Microsoft, Okta, Servicenow, and Workday showed the greatest net strength in our survey
As it pertains to your digital transformation budget, which of the following vendors do you expect to gain or lose share of wallet next year?

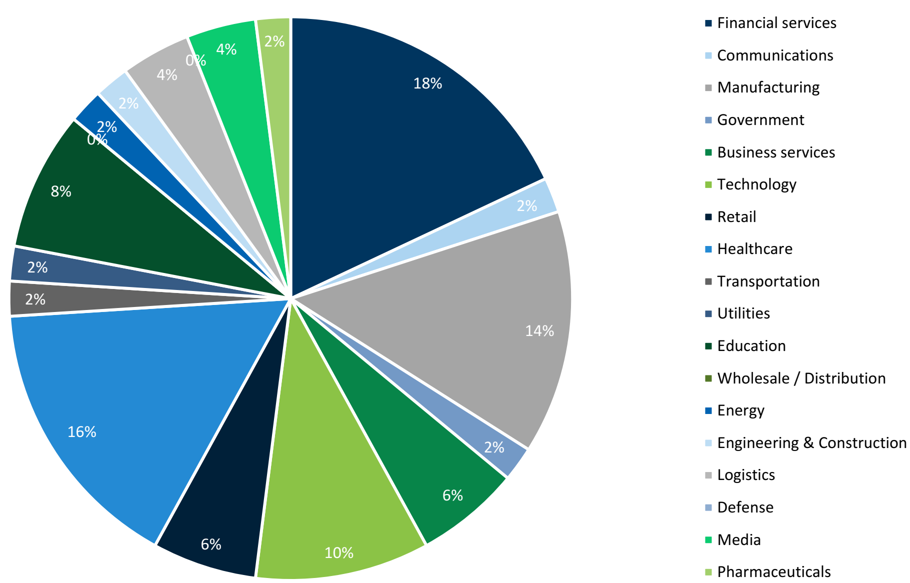


Net strength = % of respondents indicating they expect the vendor to gain share of wallet - % of respondents indicating they expect the vendor to lose share of wallet

Source: Goldman Sachs Global Investment Research

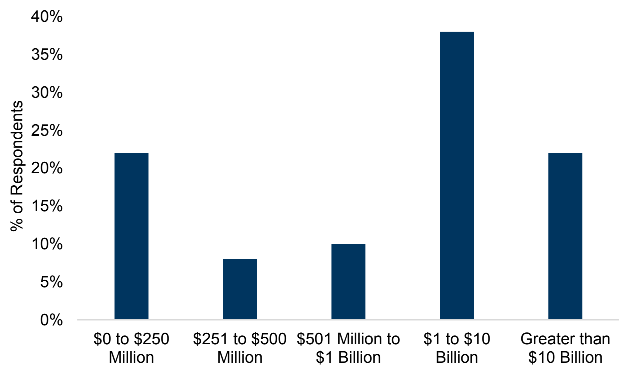
Respondent Overview

Exhibit 51: Industries represented
What industry are you in?



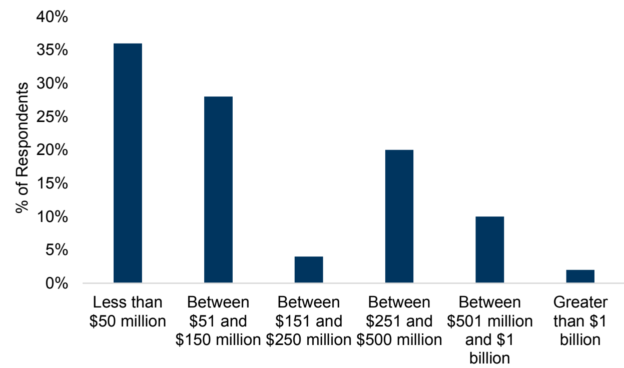
Source: Goldman Sachs Global Investment Research

Exhibit 52: Respondents by revenue
What is the size of your company in revenues?



Source: Goldman Sachs Global Investment Research

Exhibit 53: Respondents by IT budget
What is the size of your total IT budget?



Source: Goldman Sachs Global Investment Research

Adobe (ADBE, Buy): A market leader with sustainable revenue and earnings growth

Investment view

We are initiating coverage of Adobe (ADBE) with a Buy rating and price target of $580. Our price target is based on a three-pronged, equally weighted valuation approach using a 10-year DCF, EV/Revenue and P/E. Our thesis is that Adobe is a market leading franchise with a dominant position and pricing power in its core Creative market, which is poised to grow its subscribers mid-teens driven by Digital Transformation initiatives. This leaves us with potentially several years of durable double digit revenue, earnings, and cash flow growth. Adobe's franchise stands out as one with a loyal and growing customer base, which consider the brand to be the default tool of their profession despite several attempts by large and small competitors to change the game. Our F26 model has Adobe at ~54mn creative subscribers and generating $26/share in FCF. Adobe is not standing still despite forging a strong position as the industry standard in Creative and Document clouds but continues to innovate aggressively. While growth in the Digital Experience cloud (Digital Marketing) has been challenging of late, there are signs that a turnaround is well underway, which could accelerate overall top-line growth rate. Despite Adobe's high operating margin of 43%, we believe the longer-term margins can approach mid to high 40s. This coupled with double digit top line growth rate should drive several years of durable and low to mid-teens earnings growth rate.

ADBE through the lens of the GS Framework for Investing in Software

Adobe maps well in our GS framework, including in a large TAM, Competitive Moat, Unit Economics, Secular Themes and LT Framework, among others. The company is well positioned to continue to capitalize on the digital inflection in advertising, media, marketing and ecommerce. This gives us conviction in our Buy rating as we believe despite already impressive scale with ~$15bn revs and 40%+ operating margins, Adobe has a long runway ahead.

Our LT framework also suggests compelling potential returns longer-term.

Exhibit 54: Mapping Adobe to the GS Framework for Investing in Software

	OUR VIEW ON ADOBE	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Large TAM: Creative ($41bn), Document ($21bn), Experience ($85bn) Reaching $30bn in revenue is achievable	TAM realization and expansion Moving upmarket in Digital Experience segment
SECULAR THEMES	Digital Transformations Ecommerce, Digital Engagement, Marketing, E-signature	Strong position with both professional and individual creators
ENTRY/EXIT POINTS	Stock supported by share repurchases	Clarity around growth/margin profile for Digital Experience
LT FRAMEWORK RETURN	Bear case: 8% compounded return; Base: 15%; Upside: 23%	Rule of 60+ garners premium multiple Path to 50% FCF margins
UNIT ECONOMICS	Direct to Adobe.com, Data Driven Operating Model 40%+ operating margins, S&M / Incremental Revs ~1.4x	Majority of EPS growth from Digital Media Incremental margin impact of Digital Experience as mix shifts
PLATFORM/ BEST OF BREED	Customer data + AI to create marketing/commerce platform Broad portfolio of apps across Creative market	Single use case vs multi use case Potential vendor lock-in
COMPETITIVE MOAT	Strong foundation and pricing power in Creative Cloud Large install base; access to personalized customer data	Differentiation vs Creative pure-play apps Competition vs CRM, SAP, Oracle in Digital Experience Platform
ESG	Goal to operate with 100% renewable energy by 2035 Potential return to M&A	Potential social impacts of products and potential risks from security breaches

Source: Goldman Sachs Global Investment Research, Company Data

Key debates

Despite the strength of Creative Cloud revenue growth at high-teens to low 20%'s, many investors question the sustainability of this impressive growth rate going forward. There are also questions about how solid and reliable the turnaround in the Digital Experience cloud business will be. Investors also wonder whether Adobe's operating margins are too high at 42% and whether there is any more operating leverage left in the business. Finally, as Adobe has matured into a strong $15bn business that no longer operates in hyper-growth mode, it has become increasingly harder to beat estimates by the wide margins that it used to previously.

Our view

New subscribers mix signals TAM expansion. Our differentiated view is that Adobe's stock is mostly about the TAM. The large TAM, particularly in Adobe's core Creative cloud of $41bn, should allow the company to generate multiple years of durable growth relative to the current $8.7bn ARR footprint. One important aspect of Adobe creative business, which we believe has been largely overlooked by the Street, is the increasing percentage of the installed base on a year-by-year basis that is represented by subscribers that are new to the Adobe franchise. Generally, as a company matures, the percentage of new subscribers in the mix would go down but it has been going up for Adobe. It is not well-appreciated that the Adobe customer demographic is increasingly younger, which is the best possible sign of robust growth prospects. This is a sign that Adobe's total available market and awareness of its Creative cloud products are expanding.

75% of Creative cloud subscribers in F2020 (November) buying the individual edition (50% of revenues and much larger as percentage of units) are new to the Adobe franchise. More than 45% of its Creative Cloud subscribers base built up cumulatively from May 2012 are new to the franchise versus the pre-cloud license cycle which ended in 2014. This suggests that the TAM in the Cloud cycle at present is least 2x that of the pre-cloud cycle. This is evident in the Creative business, which is roughly 3x that of the pre-cloud cycle and still growing at high teens. Adobe's TAM is poised to grow with new creative employment which we estimate at roughly 1.5-2.0mn new seats per year.

Opportunity for upsell, conversion to full suite offering. Adobe has a significant opportunity ahead to convert its customers who are using point solutions (which accounts for ~50% of revenues and more as a percentage of units) into full suite customers, which represents between 2-3x ASP uplift. We also note future opportunities to convert customers using old pirated copies to legally paid subscriptions is another potential growth tailwind. Furthermore, if the market was really maturing, as some suspect, Adobe would likely be more aggressive with upsell and targeting piracy. Rather, the TAM appears to be expanding nicely as evidenced by growth in low ASP subscribers.

Digital Experience poised for growth inflection. While the Experience cloud has gone through some execution volatility, we believe that following leadership changes and potential for pick up in discretionary spending in 2H:21 this business is poised for a rebound. This should lead to accelerating topline growth for Adobe. We believe that long-term operating margins could grow to mid to high 40s, which should allow the company to grow earnings in the low to mid-teens CAGR long-term.

For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 55.

Exhibit 55: GS estimates vs Consensus and guidance

$ mn, except per share items

	4Q20 (A)	1Q21 (E)	1Q21 (E)		2Q21 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus
Digital Media	$2,495	$2,812	$2,734	$2,675	$2,658	$2,641	$9,233	$11,088	$10,925	$12,945	$12,475	$14,796	$13,199
YoY	20%	26%	26%	23%	19%	18%	20%	20%	18%	17%	14%	14%	6%
QoQ	7%	13%	10%	7%	-3%	-1%							
Creative Cloud Revenue	$2,084		$2,292		$2,212		$7,736	$9,244		$10,865		$12,464	
YoY	20%		26%		18%		19%	19%		18%		15%	
QoQ	6%		10%		-4%								
Document Cloud revenue	$411		$442		$446		$1,497	$1,844		$2,081		$2,331	
YoY	21%		26%		24%		22%	23%		13%		12%	
QoQ	10%		8%		1%								
Digital Experience	$819	$921	$893	$906	$906	$945	$3,125	$3,707	$3,820	$4,231	$4,388	$4,637	$4,988
YoY	10%	19%	19%	20%	17%	22%	12%	19%	22%	14%	15%	10%	14%
QoQ	5%	12%	9%	11%	2%	4%							
Publishing	$110		$124		$112		$510	$438		$380		$350	
YoY	-36%		-26%		-8%		-24%	-14%		-13%		-8%	
QoQ	1%		13%		-10%								
Total revenue	$3,424	$3,750	$3,751	$3,760	$3,676	$3,704	$12,868	$15,233	$15,195	$17,556	$17,350	$19,783	$19,504
YoY	14%	20%	21%	22%	18%	18%	15%	18%	18%	15%	14%	13%	12%
QoQ	6%	10%	10%	10%	-2%	-1%							
Gross Profit	$3,056		$3,332	$3,319	$3,274	$3,284	$11,405	$13,576	$13,459	$15,653	$15,384	$17,705	$16,290
% margin	89.3%		88.8%	88.3%	89.1%	88.7%	88.6%	89.1%	88.6%	89.2%	88.7%	89.5%	83.5%
Total operating expenses	$1,518		$1,676	$1,673	$1,616	$1,682	$5,884	$6,649	$6,817	$7,615	$7,699	$8,566	$7,270
YoY	14%		15%	14%	12%	16%	11%	13%	16%	15%	13%	12%	-6%
QoQ	4%		10%	10%	-4%	1%							
Operating Income	$1,538		$1,656	$1,646	$1,658	$1,602	$5,521	$6,927	$6,643	$8,038	$7,686	$9,138	$9,020
% margin	44.9%		44.1%	43.8%	45.1%	43.2%	42.9%	45.5%	43.7%	45.8%	44.3%	46.2%	46.2%
Diluted EPS (ex ESO exp)	$2.81	$2.78	$2.78	$2.79	$2.79	$2.71	$10.10	$11.68	$11.28	$13.76	$13.24	$15.85	$15.25
Creative ARR (cc)	$8,719		$9,151		$9,432		$8,719	$10,300		$11,761		$13,261	
YoY	19%		21%		19%		19%	18%		14%		13%	
Period Increase	$425		$367		$282		$1,466	$1,516		$1,461		$1,500	
Document Cloud ARR (cc)	$1,462		$1,520		$1,581		$1,462	$1,710		$1,906		$2,125	
YoY	34%		32%		27%		34%	17%		11%		11%	
Period Increase	$123		$46		$61		$384	$236		$196		$218	
Digital Media ARR (cc)	$10,181	$10,591	$10,671		$11,014		$10,181	$12,011		$13,667		$15,386	
YoY	21%	15%	22%		20%		21%	18%		14%		13%	
Period Increase	$548	$410	$413		$343		$1,850	$1,753		$1,657		$1,719	
CFO	$1,782		$1,553	$1,555	$1,373	$1,456	$5,727	$6,907	$6,317	$7,976	$7,391	$8,952	$8,266
YoY	29%		17%	17%	16%	23%	30%	21%	10%	15%	17%	12%	12%
FCF	$1,679		$1,449	$1,423	$1,268	$1,291	$5,308	$6,446	$5,879	$7,469	$6,877	$8,395	$7,675
YoY	31%		18%	16%	17%	19%	30%	21%	11%	16%	17%	12%	12%

Source: FactSet, Company data, Goldman Sachs Global Investment Research

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes, we test our models for the potential for increased marginal tax rates. For Adobe, we estimate that a hypothetical 1% increase in taxes will represent a ~1.5% headwind to EPS growth in FY21, all else equal.

Key risks: Risks to the downside include: 1) prolonged and worse than expected COVID-19 impact causing slower net new business, deal delays, and longer sales cycles, 2) slower and more volatile Digital Experience growth, 3) slower net new subscriber additions, 4) higher expense growth limiting margin expansion, and 5) increased competition.

Valuation: Our 12-month price target of $580 is based on a three-pronged, equal-weighted blend of a 10-year DCF (3% perpetuity growth rate, 7% WACC), EV/Revenue multiple of 15x on our Q5:Q8 revenue estimates, and P/E multiple of 41x on our Q5:Q8 EPS estimates. At $470, the stock is currently trading at 15x our CY21E / 13x our CY22E revenue estimates and 40x our CY21E / 34x our CY22E EPS estimates. We believe our premium multiples are justified given Adobe's strong market position, and the durability of the business model.

Autodesk Inc. (ADSK, Sell): Category leader; however, the health of

end-markets remains uncertain

Investment view

We are initiating coverage on Autodesk (ADSK) with a Sell rating and price target of $270. Our price target is based on an equal blend of a DCF (~2% perpetuity growth rate), EV/FCF (28x Q5-Q8 FCF), and P/E (40x Q5-Q8 P/E). Our thesis is that Autodesk is poised to grow into a dominant design, automation software company in the cloud in key end markets including architecture, engineering, construction, and manufacturing, and potentially commanding operating margins north of 40% in the long-term. Autodesk is on track to achieving tits FY23 (January) targets of revenue of $5.11bn to $5.38bn (16% to 18% FY20-FY23 CAGR) and $2.4bn in FCF (~$11.00/share) and operating margins of 40%. Autodesk products are often considered the gold standard for how work gets done in their end markets, and therefore very sticky in terms of user loyalty and critical in terms of user engagement. Our 12-month price target of $270 represents ~13% downside to the current market price which compares to an average ~18% upside across our coverage.

ADSK through the lens of our framework for investing in software: We note that Autodesk screens well across a variety of key areas. Notably, the company is addressing a large and growing market (~$69bn FY25 TAM per the company), with strong secular tailwinds, particularly rising digitization within the construction industry. Similarly, we view Autodesk's broad portfolio of applications across AEC and large installed base as driving sustainable competitive advantages moving forward, with the potential to drive operating margins north of 40% in the long-term. That said, we remain concerned over the near-term health of the company's end-markets, most notably commercial construction, in the wake of the global pandemic. With the stock trading at 16x EV/Sales (CY21), we view the risk/reward as skewed to the downside at current levels and would wait for a more attractive entry point before becoming more constructive.

Exhibit 56: Mapping Autodesk to the GS Framework for Investing in Software

	OUR VIEW ON AUTODESK	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Large and expanding TAM FY25 TAM ~$69bn	Achievability of the TAM Health of the end-markets post-pandemic
SECULAR THEMES	Cloud adoption, digitization within AEC, convergence of design and manufacturing	The pace of digitization in construction given the industry has been a laggard with respect to tech adoption
ENTRY/EXIT POINTS	The stock currently trades at 44x our CY21 FCF estimate of $1.6bn	We believe risk/reward is skewed negatively at current levels
LT FRAMEWORK RETURN	Bear case: -4% compounded return; Base: 6%; Upside: 14%	Sustainability of long-term growth drivers beyond FY23
UNIT ECONOMICS	Strong ARPU expansion which carries high incremental margins.	Durability of growth driven by ARPU expansion versus volume/unit growth
PLATFORM/ BEST OF BREED	Broad and expanding platform across AEC, manufacturing, and media & entertainment	Sustainability of growth driven by ARPU expansion
COMPETITIVE MOAT	High switching costs, large installed base, breadth product portfolio	Potential for competitors to make inroads as they expand their platforms
ESG	Cloud services and offices use 100% renewable energy.	Driving efficiencies through digitization of construction and manufacturing, reducing overall waste.

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key debates

A key debate on the stock is whether or not Autodesk's business can bounce back from the pandemic inflicted downturn in its end markets. If so, when will that bounce back be. One question that has revolved around the stock for the better part of the last 10 years has been the timing of opening up of the construction software market which complements the company's core architecture and engineering market. Another pressure point is the increasing, and perhaps unsustainable, dependence upon longer duration contracts which benefit long-term deferred revenue and therefore FCF generation. Finally, there is a bit of debate with respect to how sustainable ARPU growth is given the shift towards higher end and higher priced SKUs.

Our view

FY23 targets, while achievable, are back end loaded. Our differentiated view is that while we do not dispute the attainability of Autodesk's long-term targets, namely it FY23 revenue, FCF, and operating margin targets outlined in Exhibit 57, we believe the company's end markets are inherently cyclical. The stock's valuation, however, at 16x CY21 revenue is discounting a growth story with a considerably large (FY25) TAM of $69bn despite a slowdown in growth from 27% yoy in FY20 to 13% yoy in F3Q21. Further, with slowing revenue growth in FY21, FY23 targets have become increasingly back end loaded. Therefore, we view the risk/reward at current levels skewed to the downside.

Exhibit 57: While still achievable, FY23 targets are increasingly back end loaded
$ mn

	FY20 (A)	FY23 (E) Guidance		FY23 (E)	
	Actual	Low	High	GSe	Consensus
Revenue	**$3,274**	**$5,111**	**$5,380**	**$5,062**	**$5,081**
CAGR (FY20-FY23)		16%	18%	16%	16%
Operating Income	**$803**	**$2,044**	**$2,152**	**$1,938**	**$1,936**
Operating Margin %	25%	40%	40%	38%	38%
Free Cash Flow	**1,362**	**$2,400**	**$2,400**	**2,306**	**2,380**
FCF Margin %	42%	47%	45%	46%	47%

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Growth driven by ARPU. Moreover, growth in the past two years has been driven by a significant mix shift toward higher end SKUs such as Collections and less so by unit growth. As a contrast to this dynamic, Adobe has shown sustainable growth in its core Creative Cloud end market and has demonstrated solid evidence of an expanding TAM by driving unit growth higher than revenue growth. With Autodesk driving more of its growth from ARPU versus unit growth at this stage in the cycle leaves us questioning the practicality and achievability of its TAM of $69bn, notwithstanding the significant value proposition of its marquee products.

Exhibit 58: ADSK FY25 TAM

Architecture, Engineering and Construction (AEC)	Design	Make	Total
FY25 TAM ($bn)	$18	$13	$31
Professionals (mn)	12	19	31
Design & Manufacturing	**Design**	**Make**	**Total**
FY25 TAM ($bn)	$19	$14	$33
Professionals (mn)	9	20	29
Media & Entertainment			**Total**
FY25 TAM ($bn)			$5
Professionals (mn)			2
Autodesk FY25 TAM ($bn)			**$69**

Source: Company data, Goldman Sachs Global Investment Research

The health of the commercial construction market post-pandemic remains uncertain. In a post pandemic world, if workforces remain virtual and distributed to some extent, there is a logical question as to what happens to growth in commercial construction. We note that in our DX survey, prior to COVID-19 less than 15% of respondents indicated that more than 40% of their workforce had flexible working arrangements, while 62% of respondents expect more than 40% of their workforce to have flexible working arrangements three years from now. Increasing urban density has been a significant part of the Autodesk core thesis. While an increasingly distributed workforce may drive higher levels of residential and suburban construction, this may not fully compensate for stagnation in the commercial construction market.

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes we test our models for the potential for increased marginal tax rates. For Autodesk, we estimate that a hypothetical 1% increase in the company's effective tax rate will represent a ~1.5% headwind to EPS growth in FY22, all else equal.

Our FY22 revenue, EPS, and CFO estimates of $4.27bn (+14% yoy), $5.25, and $1.68bn compare to consensus of $4.30bn (+14% yoy), $5.13, and $1.72bn respectively. For the upcoming F4Q21, we are modeling revenue of $1.01bn (+12% yoy) and EPS of $1.08 compared to consensus of $1.01bn (+12% yoy) and $1.07 respectively. For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 59.

Exhibit 59: GS estimates vs Consensus and guidance

$ mn, except per share items

	3Q21 (A)	4Q21 (E)		4Q21 (E)	1Q22 (E)		FY20 (A)	FY21 (E)		FY21 (E)	FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	GS Est.	Consensus
License and other revenue	$28	$23	$35		$21	$21	$136	$93	$104		$93	$100	$97	$105
YoY	(23%)	(45%)	(16%)		0%	1%	3%	(32%)	(24%)		0%	(4%)	5%	5%
QoQ	36%	(18%)	25%		(11%)	(10%)								
Subscription Plan Revenue	$884	$956	$945		$980	$948	$2,752	$3,485	$3,473		$4,134	$4,129	$4,961	$4,949
YoY	24%	23%	22%		22%	18%	53%	27%	26%		19%	19%	20%	20%
QoQ	5%	8%	7%		2%	(1%)								
Maintenance Plan Revenue	$40	$32	$30		$16	$25	$387	$185	$183		$46	$67	$4	$35
YoY	(56%)	(60%)	(63%)		(75%)	(60%)	(39%)	(52%)	(53%)		(75%)	(63%)	(92%)	(48%)
QoQ	(22%)	(20%)	(25%)		(51%)	(22%)								
Subscription and Maintenance Revenue	$924	$988	$975		$995	$973	$3,139	$3,670	$3,657		$4,180	$4,196	$4,965	$4,984
YoY	15%	15%	14%		15%	12%	29%	17%	17%		14%	15%	19%	19%
QoQ	4%	7%	5%		1%	(2%)								
Total Revenue	$952	$1,011	$1,010	$999 - $1,014	$1,016	$993	$3,274	$3,762	$3,761	$3,750 - $3,765	$4,273	$4,295	$5,062	$5,090
YoY	13%	12%	12%	11% - 13%	15%	12%	27%	15%	15%	15% - 15%	14%	14%	18%	18%
QoQ	4%	6%	6%	5% - 6%	0%	(2%)								
Total Non-GAAP Expenses (COGS + Opex)	$665	$713	$714		$680	$689	$2,472	$2,667	$2,668	$2,663 - $2,673	$2,851	$2,884	$3,124	$3,147
YoY	8%	11%	11%		7%	8%	10%	8%	8%	8% - 8%	7%	8%	10%	9%
QoQ	2%	7%	7%		(5%)	(3%)								
Non-GAAP Op. Income	$287	$298	$296		$336	$305	$803	$1,096	$1,094	$1,088 - $1,092	$1,422	$1,411	$1,938	$1,942
% margin	30.1%	29.5%	29.3%		33.0%	30.7%	24.5%	29.1%	29.1%	29.0% - 29.0%	33.3%	32.8%	38.3%	38.2%
Non-GAAP EPS	$1.04	$1.08	$1.07	$1.04 - $1.10	$1.24	$1.11	$2.80	$3.96	$3.95	$3.91 - $3.97	$5.25	$5.13	$7.25	$7.16
Total ARR	$3,697	$3,952	$3,898		$3,981	$3,892	$3,429	$3,952	$3,898		$4,507	$4,579	$5,370	
YoY	15%	15%	14%		15%	12%	25%	15%	14%		14%	17%	19%	
QoQ	4%	7%	5%		1%	(2%)								
QoQ $ ARR Increase	$127	$256	$202		$28	($6)								
Billings	$1,006	$1,451	$1,433		$1,004	$1,000	$4,190	$4,128	$4,110		$4,938	$4,872	$6,032	$5,899
YoY	(1%)	(2%)	(4%)		14%	13%	55%	(1%)	(2%)		20%	19%	22%	21%
QoQ	28%	44%	42%		(31%)	(31%)								
CFO	$361	$655	$656		$334	$254	$1,415	$1,435	$1,436		$1,675	$1,724	$2,417	$2,380
CFO/Share	$1.62	$2.95	$2.95		$1.50	$1.14	$6.37	$6.46	$6.47		$7.53	$7.76	$10.87	$10.71
FCF	$340	$628	$629		$312	$233	$1,362	$1,340	$1,342		$1,572	$1,635	$2,306	$2,284
FCF/Share	$1.53	$2.82	$2.83		$1.41	$1.05	$6.15	$6.03	$6.04		$7.07	$7.35	$10.37	$10.28
Diluted shares outstanding	222	222	222		222	222	222	222	222		222	222	222	222

Source: FactSet, Company data, Goldman Sachs Global Investment Research

What would make us more positive?

While we remained concerned over the health of the company's end markets, particularly the commercial construction market in the wake of the COVID-19 pandemic, signs of a recovery in the commercial market alongside more robust suburban, residential and infrastructure construction would make us incrementally more positive. Further, while we believe digitization of construction has generally lagged other industries for a variety of reasons, incremental traction in the pace of technology adoption could also make us more positive, as we believe the company remains well positioned to compete with the breadth of the company's cloud construction portfolio. Lastly, incremental traction with the company's efforts to monetize non-compliant users would make us incrementally more constructive.

Key risks: Upside risks to our thesis include: faster than expected software adoption within the construction industry, more resilient than expected construction activity (particularly within commercial construction), faster than expected monetization of non-compliant users, and faster than expected operating margin expansion.

Valuation: Our 12-month price target of $270 is based on an equal weighted DCF analysis, a EV/FCF multiple and a P/E multiple. Our DCF analysis is based on a terminal growth rate of ~2% and ~8% WACC, while our relative valuation is based on a 28x (Q5-Q8) EV/FCF multiple and a 40x (Q5-Q8) P/E multiple. This compares to an average EV/FCF (CY21) of ~42x and an average P/E (CY21) of ~45x across our coverage group and a P/E (CY21) of ~24x for the broader S&P 500.

Salesforce.com Inc. (CRM, Buy): Digital transformation leader with scale and sustainable growth

Investment view

We are initiating coverage of Salesforce.com with a Buy rating and a 12-month price target of $315. Our price target is based on an equal weighting of a DCF (~1% perpetuity growth rate), EV/Sales (10x Q5-Q8 sales) and EV/FCF (48x Q5-Q8 FCF). We believe that Salesforce remains poised to be one of the most strategic application software companies in the $1 Trillion TAM cloud industry. Despite its size at ~$25bn estimated revenues in FY22 (CY21), the company's cRPO (current revenue performance obligation) is organically growing in the high teens. Salesforce is most broadly positioned to benefit from adoption of Digital Transformation, which has been accelerated by COVID-19. The pandemic is transforming how companies initiate, build and harness customer relationships digitally. The company's robust and strategically built product portfolio, spanning sales, service, marketing, ecommerce, analytics, artificial intelligence, custom applications, integration and collaboration cover virtually all aspects of Digital Transformation, addressing a combined (FY25) TAM of $175 bn according to the company. In the era of AI, we believe the Customer 360 platform uniquely positions the company to develop the most comprehensive view of the customer across a myriad of touchpoints, which will prove to be a critical competitive advantage. Furthermore, we believe Salesforce, while not having used pricing as a growth lever, has the option should the company ever need it (like ADBE has done with its core Creative Software). While a series of sizeable acquisitions has slowed down the pace of operating margin expansion, we think revenues and margins have the potential to double in the next 5-6 years, potentially quadrupling earnings in steady state.

CRM through the lens of our framework for investing in software: As noted above, we believe Salesforce remains poised to capitalize on a number of secular trends driving growth within the company's large and expanding TAM. In our view, Salesforce remains broadly positioned to capitalize on digital transformation, particularly as companies look to form a holistic view of their customers across channels and touchpoints. Further, as noted in our DX survey, we see potential for accelerated digital transformation efforts in the wake of the COVID-19 pandemic, particularly as workforces remain distributed and commerce shifts toward more digital channels. We see room for continued improvement in unit economics, as the company's large installed base and expansive portfolio across sales, service, marketing, commerce, integration, and business intelligence/analytics position the company to expand share of wallet within its customers' overall IT budgets. Lastly, given recent underperformance in the stock (as noted below), we view current levels as an attractive entry point, with the stock currently trading at ~8x CY21 sales.

Exhibit 60: Mapping Salesforce to the GS Framework for Investing in Software

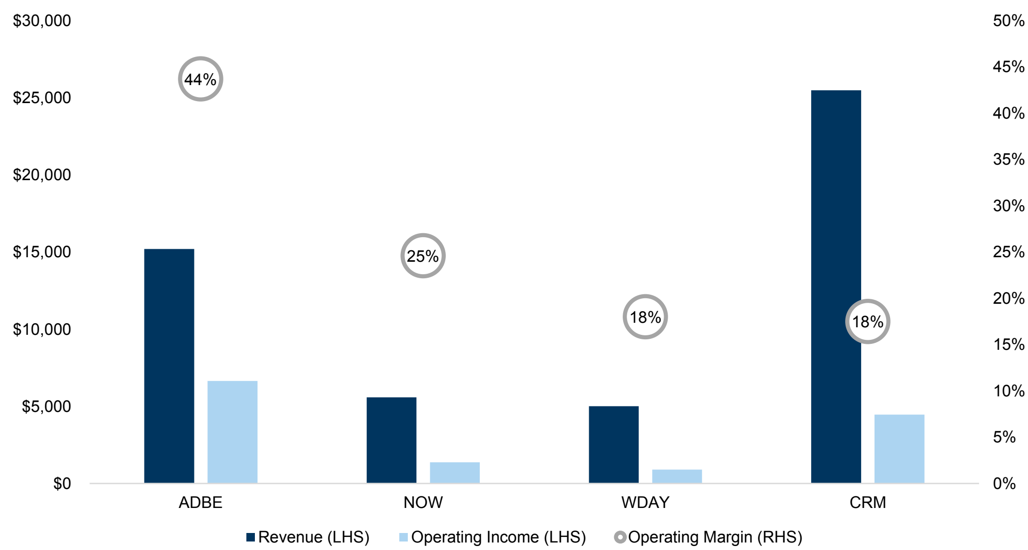
	OUR VIEW ON SALESFORCE	
8 KEY FACTORS	**TANGIBLE**	**INTANGIBLE**
TAM	Large and expanding TAM FY25 TAM of ~$175bn	Potential for future acquisitions expand the company's TAM
SECULAR THEMES	Digital transformation, e-commerce, AI, business intelligence/analytics and customer experience	Strong competitive positioning across its portfolio Well positioned to capitalize on digital transformation spending
ENTRY/EXIT POINTS	The stock currently trades ~8x our CY21 sales estimate	Recent stock underpformance creates an attractive entry point
LT FRAMEWORK RETURN	Bear case: 3% compounded return; Base: 12%; Upside: 18%	Potential future acquisitions impact on long-term returns The sustainability of organic growth
UNIT ECONOMICS	Opportunity for improving unit economics Subscription economic margins ~40%	The pace of overall margin expansion as the company continues to scale
PLATFORM/ BEST OF BREED	The product portfolio continues to expand across sales, service, marketing, commerce, platform, BI, and integration	CRM's competitive positioning across each respective cloud How are customers thinking about platforms vs best-of-breed?
COMPETITIVE MOAT	Large installed base of customers, breadth of product portfolio and at scale go-to-market motion.	Traction in expanding wallet share within the company's large installed base. Competitive positioning across clouds.
ESG	Achieved net-zero greenhouse gas emissions in 2017 Working toward 100% renewable energy for global operations	The pace of M&A going forward and potential impacts to margins and returns

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key debates

Given its history, we believe the key issues of debate are the potential dilution from further acquisitions and corresponding muted operating margin expansion, as the company continues to expand its broad portfolio addressing the $175bn market opportunity. Since the WSJ reported Salesforce's intent to acquire Slack (pending) in late November, the stock has underperformed the broader NASDAQ by ~26%, declining 14% versus a 12% gain for the NASDAQ since 11/24. This reversed meaningful outperformance following F2Q21 results in August with a breakout (F2Q21) quarter for non-GAAP operating margins and cRPO which beat consensus by ~430bps and ~800ps respectively. We believe many investors remain concerned about potential margin dilution from future acquisitions, following margin recovery post the acquisitions of MuleSoft and Tableau. Salesforce's sub 20% margin profile, which we believe is attributable to its acquisition strategy, has left investors making unfavorable margin comparisons to relatively smaller (but large in an absolute sense) companies such as Adobe, ServiceNow, and Workday where consensus CY21 operating margins are ~2,600bps, ~700bps, and ~50bps higher respectively.

Exhibit 61: Despite significantly greater scale, CRM operating margins lag software peers
CY21 Consensus revenue and operating income ($ mn)



Source: FactSet, Company data, Goldman Sachs Global Investment Research

Our view

Our differentiated view is that growth is sustainable and operating margins have significant upside from current levels. The story of Salesforce has been one of trading near-term profitability for long-term size and scale given a series of acquisitions. For patient investors, we believe the company can achieve both size and margins in a steady state scenario, whereas smaller companies, while being able to show higher operating margins, may not achieve scale and size without acquisitions. Given the size of the market opportunity, long-term secular growth drivers, and healthy unit economics, we believe investing in strategic assets today should ultimately translate to greater earnings potential longer-term.

We believe investors may not fully appreciate that the core business can grow in the high-teens organically, while acquisitions continue to augment the core business. While SaaS penetration of the ~$60bn+ CRM industry is further along, reaching over 70% in 2019 (IDC), cloud based CRM is expected to grow at an 11% CAGR through CY24 according to IDC; along with strong, double digit market growth for cloud CRM deployments, Salesforce's strong competitive positioning as a category leader and breadth of the company's platform has the potential to drive high-teens core growth for several years ahead. cRPO, the best forward-looking metric to judge the health of the business, in our view, will be increasingly weighted toward growth businesses with substantial runway ahead, such as collaboration, integration, business intelligence, and ecommerce. Salesforce's market share in these businesses is sub-scale but poised to go higher given its large and high quality distribution. As the company gains share in sub-scale businesses such as marketing, analytics, integration and collaboration, customer acquisition costs should decline, thereby potentially boosting margins. We believe the company's core business is well positioned for sustainable high-teens growth. We also note that business intelligence and analytics continued to rank as a top priority in our latest CIO survey, with 30% of respondents in our DX survey indicating pent-up demand for BI/analytics software following a vaccine in sufficient volume (second to public cloud at 34%). Lastly, as Salesforce continues to leverage its large installed base and go-to-market motion, we note that the company continues to gain share of wallet within its customer base; according to our DX survey, roughly 62% of respondents indicated they expect Salesforce to gain share of wallet within their digital transformation budgets next year, compared to only 12% who expect the company to lose share.

We see the potential for continued margin expansion. We believe many investors, while apprehensive about the sub 20% operating margin profile for a $20bn+ business, do not fully appreciate the operating margin and earnings capacity of the business at maturity ($50bn in revenue and more modest growth), which, in our view, could approach $23 to $25bn at 40% to 45% operating margins and FCF of $23 to $25bn at 45% to 50%. The S-curve in technology and market adoption will likely be followed by an S-curve in profit generation, evidenced by ADBE and ORCL, the highest operating margins at scale in software.

Current market proxies such as ADBE, which has solid top-line growth (low-teens), high (40%+) operating margins, and sticky subscription revenues is valued at ~15x NTM (GSe) revenues, and are an appropriate way to gauge how CRM could be valued in a more mature, long-term scenario when it potentially reaches $50bn in revenues. This compares to CRM trading at ~8.5x NTM (GSe) revenue. Front-end loaded strategic acquisitions over the last 2-3 years, while causing near-term hit to operating margins, should ultimately put the company into position to command higher wallet share of its customer base as these acquisitions increasingly synergize with the core business, thereby driving substantial operating margin growth over the next 3-4 years.

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes we test our models for the potential for increased marginal tax rates. For Salesforce, we estimate that a hypothetical 1% increase in the company's effective tax rate will represent a ~1% headwind to EPS growth in FY22, all else equal.

Our FY22 revenue, EPS, and CFO estimates of $24.9bn, $3.48, and $5.9bn (we do not include the announced acquisition of Slack Technologies in our estimates) compared to consensus of $25.4bn, $3.49, and $6.0bn respectively. Recall, on the company's F3Q21 earnings call in December, management guided to an anticipated $600mn FY22 revenue impact from the pending Slack acquisition assuming the deal closes late in F2Q22. In the near-term, for the upcoming F4Q21 quarter, we are modeling 17% cRPO growth yoy above consensus and guidance of 16% growth yoy. Similarly, for FY22, we are modeling +19% yoy cRPO growth, above consensus of +18% yoy. Further, the Street may not be fully appreciating the potential for a significant rebound in cash flows in CY2H21 once customers resume normal payment terms following concessions obtained during the COVID-19 pandemic. For a more detailed summary of our estimates relative to Consensus and guidance, see Exhibit 62.

Exhibit 62: GS estimates vs Consensus and guidance

$ mn, except per share items

	3Q21 (A)	4Q21 (E)		4Q21 (E)			1Q22 (E)		FY20 (A)	FY21 (E)		FY21 (E)			FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	GS Est.	Consensus	Guidance			GS Est.	Consensus	Actual	GS Est.	Consensus	Guidance			GS Est.	Consensus	GS Est.	Consensus
Subscription/ Support Revenue	$5,085	$5,339	$5,333				$5,353	$5,369	$16,043	$19,839	$19,826				$23,420	$23,908	$27,635	$28,423
YoY	20%	17%	17%				17%	17%	29%	24%	24%				18%	21%	18%	19%
QoQ	5%	5%	5%				0%	1%										
Professional Services Revenue	$334	$337	$337				$348	$338	$1,055	$1,272	$1,273				$1,526	$1,505	$1,801	$1,735
YoY	22%	17%	17%				20%	16%	21%	21%	21%				20%	18%	18%	15%
QoQ	7%	1%	1%				3%	0%										
GAAP Total Revenue	$5,419	$5,676	$5,675	$5,665	-	$5,675	$5,701	$5,724	$17,098	$21,111	$21,096	$21,100	-	$21,110	$24,946	$25,409	$29,436	$30,127
YoY	20%	17%	17%	17%	-	17%	17%	18%	29%	23%	23%	23%	-	23%	18%	20%	18%	19%
QoQ	5%	5%	5%	5%	-	5%	0%	1%										
YoY cc	19%	17%					17%		29%	23%					18%		18%	
Total Gross Profit	$4,259	$4,475	$4,442				$4,488	$4,486	$13,507	$16,625	$16,458				$19,637	$19,886	$23,171	$23,664
% margin	78.6%	78.8%	78.3%				78.7%	78.4%	79.0%	78.7%	78.0%				78.7%	78.3%	18%	19%
Operating Income	$1,073	$947	$952				$723	$940	$2,874	$3,695	$3,710				$4,322	$4,451	$5,676	$5,543
% margin	19.8%	16.7%	16.8%				12.7%	16.4%	16.8%	17.5%	17.6%				17.3%	17.5%	19.3%	18.4%
Expansion	40 bps	130 bps	145 bps				-40 bps	335 bps	-24 bps	70 bps	80 bps				-20 bps	-5 bps	200 bps	90 bps
Non-GAAP EPS	$1.74	$0.74	$0.75	$0.73	-	$0.74	$0.59	$0.76	$2.99	$4.63	$4.64	$4.62	-	$4.63	$3.48	$3.49	$4.43	$4.25
Billings (CF)	$4,631	$10,192	$10,067				$4,084	$3,803	$19,196	$22,888	$22,807				$26,773	$27,436	$31,405	$32,363
YoY	10%	18%	16%				23%	15%	29%	19%	19%				17%	20%	17%	18%
QoQ	(3%)	120%	117%				(60%)	(62%)										
Unearned Revenues	$7,923	$12,439	$12,343				$10,822	$10,422	$10,662	$12,439	$12,373				$14,266	$14,400	$16,235	$16,637
YoY	16%	17%	16%				19%	14%	24%	17%	16%				15%	16%	14%	16%
QoQ	(9%)	57%	56%				(13%)	(16%)										
Δ Unearned (BS)	($788)	$4,516	$4,392				($1,617)	($1,921)	$2,098	$1,777	$1,711				$1,827	$2,027	$1,969	$2,237
Current RPO	$15,300	$17,595	$17,430	$17,400	-	$17,400	$17,155	$16,860	$15,000	$17,595	$17,427				$20,922	$20,630	$24,325	$23,980
YoY	20%	17%	16%	16%	-	16%	18%	16%	26%	17%	16%				19%	18%	16%	16%
QoQ	1%	15%	14%	14%	-	14%	(3%)	(3%)										
CFO	$339	$2,233	$2,224				$2,146	$2,233	$4,331	$4,860	$4,950	$4,851	-	$4,894	$5,941	$6,018	$7,134	$7,477
YoY	14%	37%	36%				15%	20%	27%	12%	14%	12%	-	13%	22%	22%	20%	24%
Free Cash Flow	$215	$2,131	$2,056				$1,791	$2,026	$3,688	$4,197	$4,220				$5,212	$5,153	$6,332	$6,431
YoY	68%	42%	37%				17%	32%	32%	14%	14%				24%	22%	21%	25%

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: key risks to our thesis include sales execution, macroeconomic slowdown, unsustainable pace of acquisitions, slower than expected operating margin expansion or higher than expected expense growth, and adverse changes in the IT spending environment. With the company's broad and expanding portfolio of applications, any shift in IT spending priorities or slowdowns in the overall IT spending environment could adversely affect the company's growth outlook. Similarly, given the pace of acquisitions, margin expansion could be slower than expected and not reflective of the actual underlying unit economics of the business.

Valuation: Our 12-month price target of $315 is based on an equal blend of DCF, EV/FCF, and EV/sales. Our DCF assumes a perpetuity growth rate of ~1% and WACC of ~7%, our Q5-Q8 EV/FCF assumes 48x, and our Q5-Q8 EV/sales analysis assumes 10x Q5-Q8 sales. This compares to an average ~20x EV/Sales (CY21) and average ~42x EV/FCF (CY21) across our coverage group.

Elastic (ESTC, Neutral): A unique approach to a competitive market dynamic

Investment view

We are initiating coverage of Elastic with a Neutral rating and a 12-month price target of $190. Our price target is based on our fundamental valuation framework (equally weighted between DCF and EV/Revenue multiple). Our thesis is that Elastic's combination of powerful and extensible technology and differentiated customer approach has the potential to disrupt a fragmented $78bn IT Operations market. However, while the company's view is that buying centers in IT Operations are consolidating from best-of-breed solutions across APM, Logging, SIEM, Infrastructure Monitoring, and Search to full-stack Observability platforms, we are less certain and expect large incumbent specialists to remain dominant in the near-term. Still, we appreciate the uniqueness of Elastic's open-source approach, its large base within the developer community, efficient product-led go-to-market motion, foundation as the dominant Enterprise Search solution, investments in a cloud model, and expansion into adjacent markets, and believe the company's value proposition will continue to rise within IT departments. Despite our favorable view on the secular positioning of the company and strong upside to revenue estimates, given the ~41% run up since 2Q21 earnings on December 2nd, vs. the NASDAQ up ~9%, we believe the upside is largely priced in and await a better entry point.

ESTC through the lens of the GS Framework for Investing in Software

In our view, Elastic maps well with a large TAM and exposure to secular themes, and is in the early innings of shifting to an end to end Search + Observability + Security platform. However, while the company has a competitive moat with its core Search offering, it faces competition from large and established vendors in APM, Observability and security. Given the recent run-up in the stock and valuation, we are on the sidelines and await a more compelling entry point.

Exhibit 63: Mapping Elastic to the GS Framework for Investing in Software

	OUR VIEW ON ELASTIC	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Large TAM: 2021 TAM of $78bn Scaling to $1bn, $5bn of revenues	TAM expansion through increased data creation Well positioned in a hybrid and multi cloud world
SECULAR THEMES	Digital Transformations, Data Creation Logging, APM, Observability, DevOps, Public Cloud, Security	Strong position in core Enterprise Search Gaining traction in Security and Observability
ENTRY/EXIT POINTS	Stock at high-teens forward revs is a premium to peers	Pent-up demand to benefit observability in 2H21
LT FRAMEWORK RETURN	Bear case: -2% compounded return; Base: 5%; Upside: 18%	Adoption across Search, Observability, Security Potential to sustain 20%+ revenue growth
UNIT ECONOMICS	Open-source creates large top-of-the-funnel installed base Changing revenue/bookings mix	Competition and potential for price discounting SaaS mix impact revs and margins
PLATFORM/ BEST OF BREED	Cloud offerings in-line with where IT is going Increasing penetration across multiple buying centers	Low penetration of full stack log/security/observability How are customers thinking about platforms vs best-of-breed?
COMPETITIVE MOAT	Differentiated go-to-market motion Large paid and unpaid installed base	Alternatives in APM, Infrastructure Monitoring, DevOps
ESG	Commitment to open-source	Leadership changes- Head of Sales, CPO, CMO Potential risks from security breaches

Source: Goldman Sachs Global Investment Research, Company Data

Key debates

We believe the key issues of debate center on the potential for both: 1) increased competition from incumbent monitoring and security vendors such as Splunk, Dynatrace, Datadog, New Relic, Sumo Logic, as the market begins to consolidate from best of breed solutions to end to end observability platforms, and 2) near-term execution issues amid macro uncertainty, longer sales cycles, and increased deal scrutiny. Despite the business holding up well through COVID, investors also rightly question how well Elastic can execute on its transition from being an open-source Enterprise Search solution to a full end-to-end platform that can have an impact in APM, logging, and security. Longer-term investors question the sustainability of Elastic's growth rate, and as Elastic approaches the scale of Splunk, if growth will rival Splunk's 40%+ or decelerate to mid-20%.

Our view

Transitioning from best-of-breed to holistic platform. While Elastic's near-term story has been about strong execution and widening revenue beats in the face of a tough macro environment, we believe this is already largely reflected in the current stock price, and argue that what is more important is the longer-term secular story about the company transitioning from an open-source best of breed Enterprise Search vendor into a full unified suite encompassing Enterprise Search, Observability, and Security.

Near-term numbers look conservative. Addressing the near-term, despite the company saying that 2H21 will look similarly challenged to 1H21, vs. earlier calls for an improvement in 2H, we believe the near-term set up is favorable for a number of reasons. First off, management has historically been conservative with the guide, and in our view, were prudent in June 2020 as they lowered expectations for FY21. This has led to widening revenue beats with the company beating consensus by 5.7% in 4Q, 6.6% in 1Q21, and 11.0% in 2Q21. Given strong recent execution, we are modeling 33% y/y revs growth for 3Q21, vs the guide for 29% y/y, and 29.4% y/y for consensus. Similarly, 3Q and 4Q Street estimates look conservative and imply net new ARR or Subscription + SaaS q/q growth of ~$28mn in 2H21 vs $81mn in 1H21 and $89mn in 2H20.

Early innings of upsell opportunity. We see a number factors that should enable Elastic to sustain revenue and market share gains over the long-term. Elastic has a strong foundation in its core Enterprise Search market, where it is the best-of-breed solution and faces no large incumbent competition. Furthermore, Elastic's core open-source technology is extensible, enabling both paid and unpaid customers to apply the software across multiple use-cases and gives the company a natural foot in the door. This, coupled with the company's product-led go-to market strategy creates an efficient land and expand story, with net expansion rates >130% for the last 10+ quarters. We note that despite being in the early innings of its upsell and upmarket motion, Elastic has had good success thus far. While Elastic has been used in expanded use cases such as logging, APM and Security for multiple years, it has only recently begun to commercialize these into individual offerings and now offers three specific use-cases: Elastic Search, Observability, and Security. While the majority (>50%) of its ~600+ customers with >$100K ACV are using only one Elastic solution vs <20% using all three Elastic solutions, of its 50+ large customers with >$1mn ACV <25% are using only one Elastic solution, vs >45% using all three Elastic solutions. Average revenue per customer of ~$40K is below Splunk's ~$100K and Dynatrace's ~$250K.

DX Survey points to solid end market exposure. Amid our belief that the pandemic brought on a digital inflection point for enterprises, we believe that Elastic is well positioned given its end-market exposure. This is supported by our Digital Transformation survey, with Elastic poised to gain share in 2021 with 9 respondents noting they expect Elastic to gain wallet share, 0 noting Elastic will lose wallet share, and 8 expecting Elastic's wallet share to remain about the same. We note that on a net basis, defined as respondents who expect the company to gain wallet share minus those that expect the company to lose wallet share, Elastic was in-line with peer Splunk. We also note that our December CIO survey suggested security software spending will remain healthy in the near term, with spending expected to increase 6.1% over the next three years, up vs 5.7% in our June 2020 survey.

Investors under-appreciate durability of cloud business. We also do not think that investors fully appreciate the durability of growth in the cloud business, the impact it will have on key metrics such as billings and RPO, and the fact that cloud is additive to the business and is not a substitute for self-managed on-prem spend. Cloud adoption has been strong, increasing mix to 26% in 2Q21E vs 22% in FY20 and 17% in FY19 and represented ~40% of revenue growth over the trailing twelve months. We are modeling 57% y/y in FY22, 47% y/y in FY23 and 39% in FY24. With the monthly mix of the cloud business increasing to 10%+ vs 5% at the time of IPO, and the fact that monthly cloud bookings do not having a deferred revenue or RPO component, we note that key metrics are stronger than reported. We model that adjusted billings grew +44% y/y in 2Q21 vs 39% reported.

Over the long-term, what will be important is if Elastic proves that it can execute and grow its business at scale. Currently, we are modeling Elastic to reach ~$2bn of ARR in FY27E, at a mid-teens growth rate, which is materially below peers. At $2bn ARR, both Splunk and ServiceNow were growing at 40%+. While we believe that our base case will likely prove conservative, we also note that for Splunk to achieve its growth at scale it went through business model changes and acquisitions, something that Elastic might also have to do. For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 64.

Exhibit 64: GS estimates vs Consensus and guidance

$ mn, except per share items

	2Q21 (A)	3Q21 (E)	3Q21 (E)		4Q21 (E)		FY20 (A)	FY21 (E)		FY21 (E)	FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	GS Est.	Consensus
Customer count	**12,900**		**13,674**		**14,426**		**11,300**	**14,426**			**17,535**		**20,711**	
Subscription & support revenue	$134.2		$140.6	$136.7	$150.5	$141.3	$392.2	$546.6	$532.1		$717.1	$667.1	$909.5	$819.6
YoY	*46%*		*35%*	*31%*	*32%*	*24%*	*58%*	*39%*	*36%*		*31%*	*25%*	*27%*	*23%*
QoQ	*11%*		*5%*	*2%*	*7%*	*3%*								
Professional services & other revenue	$10.7		$9.4	$9.6	$10.2	$10.1	$35.5	$37.9	$37.6		$45.4	$41.8	$54.5	$43.6
YoY	*13%*		*5%*	*6%*	*5%*	*4%*	*52%*	*7%*	*6%*		*20%*	*11%*	*20%*	*4%*
QoQ	*42%*		*(12%)*	*(11%)*	*8%*	*6%*								
Total revenue	**$144.9**	**$145 - $147**	**$150.0**	**$146.5**	**$160.7**	**$151.1**	**$427.6**	**$584.5**	**$571.5**	**$568 - $572**	**$762.5**	**$711.7**	**$964.0**	**$871.5**
YoY	*43%*	*28% - 30%*	*33%*	*29%*	*30%*	*22%*	*57%*	*37%*	*34%*	*33% - 34%*	*30%*	*25%*	*26%*	*22%*
QoQ	*12%*	*0% - 1%*	*4%*	*1%*	*7%*	*3%*								
Gross profit (non-GAAP)	$111.5		$114.9	$110.6	$123.0	$114.0	$319.4	$448.1	$435.0		$594.2	$542.4	$753.3	$668.0
YoY	*48%*		*36%*	*31%*	*31%*	*22%*	*59%*	*40%*	*36%*		*33%*	*25%*	*27%*	*23%*
Gross margin	76.9%		76.6%	75.5%	76.6%	75.5%	74.7%	76.7%	76.1%		77.9%	76.2%	78.1%	76.6%
Operating expenses (non-GAAP)	$113.2		$128.0	$122.1	$131.8	$132.4	$394.9	$476.0	$471.1		$616.8	$589.2	$763.3	$696.6
YoY	*21%*		*22%*	*16%*	*24%*	*24%*	*54%*	*21%*	*19%*		*30%*	*25%*	*24%*	*18%*
QoQ	*10%*		*13%*	*8%*	*3%*	*8%*								
Operating income (non-GAAP)	**($1.7)**	**($12.3) - ($11.0)**	**($13.1)**	**($11.5)**	**($8.8)**	**($18.4)**	**($75.6)**	**($27.9)**	**($36.1)**	**(39.8) - (34.3)**	**($22.6)**	**($46.8)**	**($10.0)**	**($28.5)**
YoY	*NM*	*(39%) - (45%)*	*NM*	*(43%)*	*NM*	*NM*	*NM*	*NM*	*(52%)*	*(47%) - (55%)*	*NM*	*30%*	*NM*	*(39%)*
QoQ	*NM*	*605% - 530%*	*NM*	*559%*	*NM*	*NM*								
Operating margin	*(1.2%)*	*(8.5%) - (7.5%)*	*(8.7%)*	*(7.9%)*	*(5.4%)*	*(12.2%)*	*(17.7%)*	*(4.8%)*	*(6.3%)*	*(7.0%) - (6.0%)*	*(3.0%)*	*(6.6%)*	*(1.0%)*	*(3.3%)*
EPS (non-GAAP)	**($0.03)**	**($0.16) - ($0.14)**	**($0.17)**	**($0.15)**	**($0.13)**	**($0.22)**	**($0.93)**	**($0.26)**	**($0.34)**	**($0.40) ($0.32)**	**($0.37)**	**($0.51)**	**($0.21)**	**($0.27)**
Billings (via CF)	$178		$164	$155	$217	$213	$513	$689	$675		$894	$834	$1,121	$1,000
YoY	*42%*		*33%*	*26%*	*24%*	*22%*	*49%*	*34%*	*32%*		*30%*	*24%*	*25%*	*20%*
Deferred revenue (total)	**$309**		**$323**	**$317**	**$380**	**$262**	**$260**	**$380**	**$261**		**$511**	**$354**	**$668**	**$354**
YoY	*54%*		*54%*	*51%*	*46%*	*1%*	*52%*	*46%*	*1%*		*35%*	*35%*	*31%*	*0%*
QoQ	*11%*		*5%*	*3%*	*17%*	*(17%)*								
OCF	**($17.3)**		**$3.3**	**($0.4)**	**$11.4**	**($12.6)**	**($30.6)**	**$19.4**	**($8.4)**		**$54.7**	**$22.4**	**$92.1**	**$53.8**
YoY	*(6062%)*		*(114%)*	*(98%)*	*(293%)*	*NM*	*28%*	*(164%)*	*(73%)*		*NM*	*(368%)*	*68%*	*140%*
FCF	**($18.6)**		**$0.3**	**($0.0)**	**$8.2**	**($15.9)**	**($35.6)**	**$11.6**	**($12.7)**		**$39.3**	**$13.7**	**$72.6**	**$44.8**
YoY	*1270%*		*(101%)*	*(100%)*	*(222%)*	*NM*	*30%*	*(132%)*	*(64%)*		*NM*	*(207%)*	*85%*	*228%*

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: In the upside case, key risks to our thesis include faster market adoption of secular trends such as search, logging, APM, big data and SIEM, and Elastic being potentially acquired. In the downside case, key risks to our thesis include sales execution, macroeconomic slowdown resulting in increased deal scrutiny and longer sales cycles, slower than expected operating margin expansion or higher than expected expense growth, and adverse changes in the IT spending environment.

Valuation: Our 12-month price target of $190 is based on our fundamental valuation framework (equal blend of DCF and EV/revenue). Our DCF assumes a WACC of 8%, perpetuity growth rate of ~4% and terminal EV/FCF multiple of 29x, and our EV/revenue valuation is based on 26x our Q5:Q8E revenue estimate.

Intuit (INTU, Neutral): Intuit on path to $15bn of revenue at 40% operating margin in FY25

Investment view

We are assuming coverage of Intuit (INTU), with a Neutral rating and a price target of $430. Our price target is based on an equally weighted valuation approach using a target EV/FCF multiple, target P/E multiple and 10-year DCF. Our thesis is that Intuit is in the early innings of a strategic shift that will see it focus on revenue per customer growth unlocking margin expansion vs traditionally being a unit growth company, driven by TAM expansion, cross-sell and up-sell of new higher priced online services, and international growth. The timing of this shift is ideal in our view, as the pandemic has accentuated both consumers and businesses to adopt digital services, and we believe amid the rollout of a COVID vaccine and a recovering macro landscape, the SMB outlook is increasingly favorable. We see multiple potential levers for growth including synergies with Credit Karma's offerings and customer base, traction with TurboTax Live, International expansion, momentum with QuickBooks Advanced and QuickBooks Live and attach of ancillary SMB products such as Payroll, Payments, Commerce, and Cash. We believe this shift has the potential to drive upside to both revenues and margins, and we believe the company can approach FY25 with ~$15bn of revenue and 40% operating margins. We think that comparison to Adobe today as it approaches $15bn of revenue with 40%+ operating margins at >2x Intuit's market cap is fair. However, given the recent performance in the stock, with Intuit trading at ~43.8x CY21 P/E, a premium to peers Adobe (40.5x) and Microsoft (32.0x), we await a better entry point.

INTU through the lens of the GS Framework for Investing in Software

While Intuit's unit economics are not very compelling and its competitive ecosystem is fragmented and crowded, we believe it has a very large TAM and is well positioned to benefit from both consumers and small- and medium-sized businesses undergoing digital transformation. Furthermore, we believe the company can unlock considerable value as it leverages its core TurboTax offering and Credit Karma to create a holistic consumer finance platform.

Exhibit 65: Mapping Intuit to the GS Framework for Investing in Software

	OUR VIEW ON INTUIT	
8 KEY FACTORS	**TANGIBLE**	**INTANGIBLE**
TAM	Large and expanding TAM 800mn SMB and Self-Employed TAM, 300mn Consumer TAM	Leveraging Credit Karma product and customer installed base TAM realization as INTU moves upmarket with Quick Books Advanced
SECULAR THEMES	Digital Transformations Virtual assistance in tax and accounting: TT Live + QBO Live	Strong competitive positioning across its portfolio Macro impacts to SMB segment
ENTRY/EXIT POINTS	Stock trading at 10x our CY21 revs, 36x our CY21 FCF	Clarity around growth/margin/mix of Credit Karma ARPC growth to drive margin expansion
LT FRAMEWORK RETURN	Bear case: 0% compounded return; Base: 9%; Upside: 20%	Potential for 40% FCF margins International expansion
UNIT ECONOMICS	ARPU expansion through upsell to drive highger incremental margins.	LT margins for Tax + Credit Karma platform Macro impacts to attrition and new customer growth
PLATFORM/ BEST OF BREED	Broad and holistic portfolio of offerings across multiple layers of the tax and accounting market	Evolving into holistic Consumer Finance Platform Increasing engagment/retention through new services
COMPETITIVE MOAT	Strong foundation and pricing power Large install base; access to personalized customer data	Maintaining differentiation vs pure-play competitors Pricing power vs upmarket incumbents
ESG	100% renewable electricity for global operations Platforms fosters virtual tax and accounting meetings	Potential risks from security breaches Consumer data privacy

Source: Goldman Sachs Global Investment Research, Company Data

Key debates

On the SMB business, investors are somewhat concerned about the pandemic's ongoing impacts to SMB attrition and question Intuit's strategy to cross-sell its installed base and move upmarket. On the consumer business, investors are concerned about the uncertainty surrounding the tough comps in FY21 from the pandemic and question how sustainable will adoption of digital tax solutions be amid a substantial vaccine roll-out. Investors are also trying to understand the long-term strategy of the Credit Karma acquisition.

Our view

Our differentiated view is that Intuit, while accentuated by the pandemic which is driving a shift towards digital solutions for small businesses and consumers, is in the midst of multiple strategic pivots that can boost ARPC and drive the company toward $15bn of revenue and 40% operating margins in FY2025.

Scale and growth levers for SMB in the early phases of materialization. Investors still predominantly view Intuit as a consumer tax story and in our view, do not fully appreciate the scale and growth levers of the SMB business. We note that the SMB business is both larger and growing faster than the consumer tax segment. The online ecosystem of the SMB segment (54% of FY20 SMB revenues vs 47% in FY19) is also in the early stages of scaling, and we believe can exceed the company's LT targets for 30% growth. The drivers are ARPC growth through up-sell/cross-sell of higher margin added services such as payments and payroll, moving upmarket with Quick Books Advanced, and International growth.

Story shifts from unit growth to ARPC growth. While historically the SMB business was about unit growth, and focused on self-employed customers, we believe the story is changing to ARPC growth while still delivering very strong unit growth, through added services and moving upmarket. Despite higher pandemic-related SMB attrition in FY4Q20 remaining a near-term headwind, as we saw in the 2008 financial crisis, the pendulum will likely swing back in FY2H21 and FY22 and bring with it elevated SMB demand for digital accounting and financial software. This will lead to not only lower attrition, but also will drive upsell and thus ARPC growth as SMBs adopt Intuit's 'Live' offerings and added services (payments, payroll, cash, and commerce).

Taking on Oracle Netsuite in the premium priced SMB segment. We also believe that Intuit is showing signs that it is ready to move upmarket. While Oracle NetSuite is the market leader in the higher end of the SMB market for cloud-based ERP, investor perception has been that Intuit cannot move upmarket. However, momentum upmarket in companies with 10-100 employees with QuickBooks Advanced tells another story. Despite only launching QuickBooks Advanced ~18 months ago, in FY20, QuickBooks Advanced grew subscribers to 75,000, up +100% y/y and Intuit saw its subscriber base with >$1,000 ARPC grow 56% y/y vs its subscribers with <$200 ARPC remaining flat y/y. With a price point of ~$2,000 vs competitor tools at $10,000-$25,000, we believe that QuickBooks Advanced is poised to competitively disrupt the market. We also note that with Advanced a ~2x price uplift vs core QuickBooks Online will help drive ARPC and margin uplift. The upmarket opportunity is significant and in our bottom-up TAM build (Exhibit 3), we point to a $25bn total addressable market for financial software, with cloud penetration at only 11% or $4bn in 2020 and growing at a 32% CAGR through 2025, to reach 45% penetration or $16bn.

Consumer tax in the S curve of profitability. While we believe that Intuit's Consumer Tax business's adoption and technology dynamics are well understood, what investors may not be getting right is that the business is also approaching an S curve in profitability. The pandemic is creating a marketing vortex around Intuit's assisted online solutions as consumers are now incrementally much more comfortable with online tax and consumer finance solutions. This is highlighted by: 1) TurboTax Live customer growth of 70% y/y in FY20, and 2) 70% of new TurboTax Live customers used an assisted method in the prior year. Despite tougher comps in FY21, we believe Intuit will benefit from the pandemic accelerating the digitization of the tax and consumer finance market in a secular way. As consumers continue to adopt the higher priced TurboTax Live offering, and the company can attach new services with higher engagement, we note that incremental margins of these higher priced and new services are very high.

We also believe that the Credit Karma acquisition presents compelling TAM expansion and margin leverage opportunities through combining with Intuit's TurboTax/Mint offerings. While Credit Karma has a member base of ~110mn consumers we estimate that 60-65% of Credit Karma's members do not use TurboTax for filing taxes, with the majority of these consumers receiving assistance in some form to file taxes today. While we expect the FY21 tax season to be more of a learning year as Intuit experiments with marketing campaigns across the Credit Karma member base, we see opportunities for more profound cross-selling in the FY22 tax season. Perhaps more importantly, we believe that Intuit can leverage Credit Karma's offerings to create an end-to-end holistic consumer finance platform that enables consumers to maximize tax refunds, access paychecks, borrow funds more seamlessly, and gain access to tailored advice on appropriate financial products, such as credit cards, home, auto and personal loans, etc. This could unlock network effects and lead to higher retention rates and increased engagement.

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes we test our models for the potential for increased marginal tax rates. For Intuit, we estimate that a hypothetical 1% increase in taxes will represent a ~1.25% headwind to EPS growth in FY21, all else equal.

For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 66.

Exhibit 66: GS estimates vs Consensus and guidance

$ mn, except per share items

	1Q21 (A)	2Q21 (E)		2Q21 (E)	3Q21 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	Actual	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus
Total Revenue	**$1,323**	**$1,949**	**$1,953**	**$1,935 - $1,965**	**$4,178**	**$4,155**	**$7,679**	**$8,968**	**$8,858**	**$10,422**	**$10,263**	**$11,772**	**$11,633**
YoY	*14%*	*15%*	*15%*	*14% - 16%*	*39%*	*38%*	*13%*	*17%*	*15%*	*16%*	*16%*	*13%*	*13%*
QoQ	*(27%)*	*47%*	*48%*	*46% - 49%*	*114%*	*113%*							
Gross Profit	$1,082	$1,576	$1,580		$3,707	$3,649	$6,373	$7,485	$7,334	$8,685	$8,412	$9,804	$9,288
YoY	*22%*	*15%*	*15%*		*43%*	*41%*	*12%*	*17%*	*15%*	*16%*	*15%*	*13%*	*10%*
Gross Margin	*81.8%*	*80.9%*	*80.9%*		*88.7%*	*87.8%*	*83.0%*	*83.5%*	*82.8%*	*83.3%*	*82.0%*	*83.3%*	*79.8%*
Operating Income (Non-GAAP)	**$334**	**$465**	**$463**	**$455 - $475**	**$2,266**	**$2,182**	**$2,668**	**$3,038**	**$2,976**	**$3,554**	**$3,475**	**$4,085**	**$4,042**
YoY	*159%*	*21%*	*21%*	*18% - 24%*	*47%*	*42%*	*17%*	*14%*	*12%*	*17%*	*17%*	*15%*	*16%*
Operating Income Margin	*25.2%*	*23.9%*	*23.7%*	*23.5% - 24.2%*	*54.2%*	*52.5%*	*34.7%*	*33.9%*	*33.6%*	*34.1%*	*33.9%*	*34.7%*	*34.7%*
EPS (Non-GAAP)	**$0.94**	**$1.26**	**$1.29**	**$1.25 - $1.31**	**$6.21**	**$6.08**	**$7.86**	**$8.38**	**$8.37**	**$9.77**	**$9.72**	**$11.36**	**$11.24**
Billings (BS)	$1,245	$2,090	$2,125		$4,160	$4,154	$7,712	$9,025	$8,881	$10,511	$10,359	$11,872	--
YoY	*13%*	*15%*	*17%*		*39%*	*39%*	*13%*	*17%*	*15%*	*16%*	*17%*	*13%*	--
QoQ	*(31%)*	*68%*	*71%*		*99%*	*95%*							
Deferred Revenue (total)	$574	$715	$763		$696	$762	$652	$709	$691	$798	$787	$898	--
YoY	*4%*	*7%*	*14%*		*6%*	*16%*	*5%*	*9%*	*6%*	*13%*	*14%*	*13%*	--
QoQ	*(12%)*	*25%*	*33%*		*(3%)*	*(0%)*							
OCF	$45	$483	$340		$2,438	$2,522	$2,414	$2,696	$2,736	$3,168	$3,263	$3,602	$4,033
OCF Margin	*3.4%*	*24.8%*	*17.4%*		*58.3%*	*60.7%*	*31.4%*	*30.1%*	*30.9%*	*30.4%*	*31.8%*	*30.6%*	*34.7%*
FCF	**$7**	**$450**	**$429**		**$2,390**	**$2,586**	**$2,277**	**$2,526**	**$2,574**	**$2,968**	**$3,090**	**$3,375**	**$3,479**

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key Risks: Risks to the downside include: 1) increased SMB failures and churn related to extended COVID headwinds, 2) higher than expected competition in both SMB and consumer businesses limiting Intuit share gains, 3) decelerating customer growth, 4) higher than expected attrition, and 5) slower than expected adoption of QuickBooks Online, QuickBooks Advanced, and TurboTax Live.

Valuation: Our 12-month price target of $430 is derived from a three-pronged, equal-weighted blend of a EV/FCF multiple, STM P/E multiple and DCF. Our EV/FCF target multiple is 40x our Q5:Q8 FCF estimates vs the peer average of 41x and our P/E target multiple is 41x Q5:Q8 EPS vs. the peer average of 44x. We believe a slightly higher multiple is warranted given INTU's strong moats and dominant market position and slightly above-average growth. In addition, the recent acquisition of Credit Karma is likely to be dilutive to earnings in the medium term, but positions the company well to be able to accelerate revenue and margin growth longer term, which warrants a premium, in our view. Our 10-year DCF assumes a sales CAGR of 11.5%, a discount rate of 7%, and perpetual growth rate of ~3%.

Microsoft Corp. (MSFT, Buy): Commercial Cloud traction driving

sustainable double-digit growth

Investment view

We are initiating coverage on Microsoft (MSFT) with a Buy rating and a 12-month price target of $285. Microsoft stands out very uniquely in the technology world given its strong presence across all layers of the cloud stack including applications platforms and infrastructure. Our investment thesis is that Microsoft is well positioned to double its $60bn+ commercial cloud business (Azure, Office 365, Dynamics, and LinkedIn Commercial) into a $120bn to $140bn business longer term. We believe that Microsoft's installed base of on premise Windows Servers (25-30mn GSe) alone represents $80bn to $90bn in potential Azure business. New customers and new workloads from existing customers would represent upside to this number. We also believe that Office 365 could potentially double its installed base from 255mn+ to 500mn given the massive number of knowledge workers worldwide, which is over 1.2bn according to Forrester. The gross margins of the commercial cloud business at 71% have room for meaningful upside as the Azure segment, which we estimate to be at a $25.6bn run rate, gains scale and drives expanding margins. We believe MSFT is on track to generating ~$15.83in EPS and ~$120bn in FCF in FY26.

MSFT through the lens of our framework for investing in software: With a broad portfolio and strong presence across all layers of the cloud stack, we note MSFT screens well across our framework, with an expansive TAM and a number of secular tailwinds underpinning sustainable long-term growth, including cloud adoption and digital transformation. While MSFT competes with a number of best of breed and platform providers across various layers of the tech stack, we believe the company's breadth of offerings and large installed base position the company to expand its share of wallet within customers' IT budgets, with MSFT exhibiting the greatest net strength in our DX Survey (Exhibit 50). As commercial cloud continues to grow as a percentage of the overall mix, we see the potential for sustained long-term growth and note our base case in our long-term framework (Exhibit 32) points to a 13% annualized return over the next 5 years.

Exhibit 67: Mapping Microsoft to the GS Framework for Investing in Software

	OUR VIEW ON MICROSOFT	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Large and growing TAM Product portfolio across all layers of the cloud stack	The health of the overall IT spending environment The pace of cloud and SaaS adoption
SECULAR THEMES	Cloud adoption, digital transformation, AI/ML, business intelligence and analytics, and DevOps (amongst others)	Well positioned to continue to capitalize on cloud migrations across SaaS, IaaS, and PaaS.
ENTRY/EXIT POINTS	The stock currently trades ~32x our CY21 EPS estimate	The health of IT spending and the pace of digital transformation post-pandemic
LT FRAMEWORK RETURN	Bear case: 6% compounded return; Base: 13%; Upside: 20%	Room for margin expansion within Commercial Cloud, particularly with respect to Azure gross margins as IaaS/PaaS mix increases
UNIT ECONOMICS	Strong ability to bundle and consolidate functionality across categories which should carry high incremental margins.	The pace of overall margin expansion, as the mix continues to shift more towards cloud services
PLATFORM/ BEST OF BREED	Broad portfolio of offerings across various layers of the tech stack.	Competitive positioning across product offerings Ability to bundles and compete against point products
COMPETITIVE MOAT	Broad platform across software with a large installed base of customers globally. Large and growing share in public cloud	Well positioned across public and hybrid cloud Customer concerns around vendor lock in
ESG	Carbon neutral since 2012 with a goal of being carbon negative by 2030	Potential social impacts of products and potential risks from security breaches

Source: FactSet, Goldman Sachs Global Investment Research

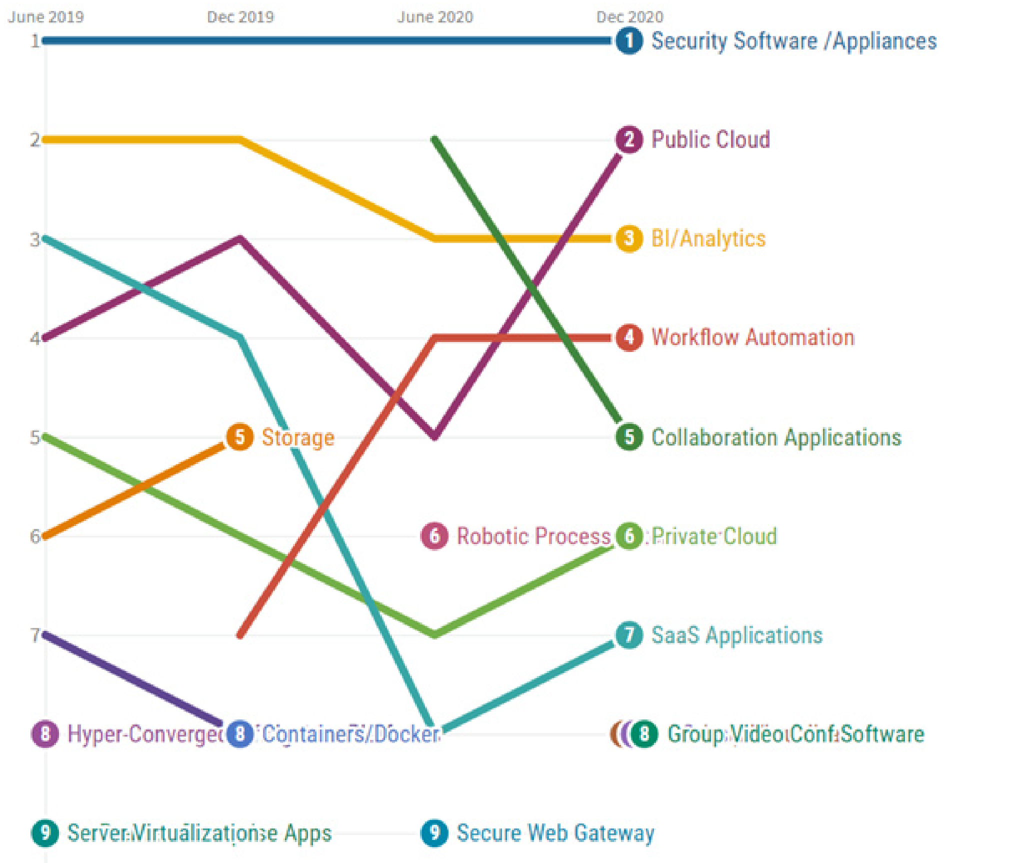
Key debates

Given the increasing importance of digital transformation and the potential for accelerated cloud adoption following the COVID-19 pandemic, investors are anticipating sustained Azure growth in the 40's with some potential for acceleration. Working from home during the pandemic is also driving investor expectations for a potential rebound in the Windows business, particularly the professional segment. Finally, operating expense efficiencies gained through virtual selling during the pandemic has become an important topic in regard to its sustainability in a post-pandemic world.

Our view

We see potential upside to Azure growth. While we believe that Azure's existing growth rate of high 40's is very impressive, particularly given the scale of the business, we believe that CY2H21 has the potential to see some acceleration, particularly as the company begins to lap negative consumption impact from highly affected verticals during the pandemic (i.e. travel, transportation and hospitality) in the June quarter, leading to a rebasing of revenues with a healthy base going forward. Since cloud migration and digital transformation are higher priories for the core group of healthy industries they should become larger parts of the revenue mix which would be a positive for Azure growth and potential acceleration. More broadly, as workforces are likely to remain distributed to some extent for the foreseeable future, we see the potential for accelerated public cloud adoption, with public cloud climbing ranking among the top priorities for CIO spending in our latest IT Spending Survey.

Exhibit 68: We see potential for accelerated cloud adoption following the COVID-19 pandemic, with public cloud ranking as a top priority for investment
Top 10 spending priorities, ranked over time (June 2019 - Dec 2020 surveys)



Source: Goldman Sachs Global Investment Research

Microsoft remains well positioned to capitalize on DX spending, where we see potential for acceleration post-pandemic. More recently, in our Digital Transformation (DX) survey, we note that public cloud, business intelligence (BI) and analytics, and security and compliance ranked as top categories of spending where CIOs saw pent up demand once an effective COVID-19 vaccine became available in sufficient volume. More specifically 34%, 30%, and 28% of CIOs indicated they saw pent up demand for public cloud, BI and analytics, and security and compliance (Exhibit 48). We note that Microsoft remains well positioned to capitalize across these areas of spending with a strong competitive offering within each category. To that end, we note that Microsoft showed the greatest net strength in our DX survey, with nearly 85% of CIOs expecting Microsoft to gain share of wallet within their DX budgets as opposed to less than 7% that expect the company to lose share of wallet within their DX budgets.

Commercial cloud continues to grow as a percentage of the overall mix. We believe that Microsoft is on the cusp of an inflection point in the next year whereby the run rate of its commercial cloud business is poised to hit ~50% of its revenues. Given the 31% yoy growth of commercial cloud in the most recent quarter and the opportunities for growth, we see sustainable double-digit top line growth rate for Microsoft for several years to come. Furthermore, given that cloud CapEx appears to be increasingly productive driving favorable price/performance characteristics, gross margins for the commercial cloud business have the potential to reach 74-75%, exceed the corporate average of 70%.

We are also at a point where after several quarters of tough comparisons to CY19, which benefited from the end of support of Windows Server and SQL Server 2008 in F3Q19, we are entering a period of easier comparisons beginning in the June quarter. Finally, given that Microsoft has the potential to generate $15.83 in FY26, driven by solid topline growth and margin expansion, we believe the stock deserves a higher multiple vs the S&P 500's ~24x, especially given its annuity business with high predictability.

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes we test our models for the potential for increased marginal tax rates. For Microsoft, we estimate that a hypothetical 1% increase in the company's effective tax rate will represent ~1.5% headwind to EPS growth in CY21, all else equal.

Our FY21 revenue, EPS, and CFO estimates of $158.6bn (+11% yoy), $6.71, and $72.5bn compare to consensus of $158.3bn (+11% yoy), $6.77, and $69.1bn respectively. For Intelligent cloud, PBP and MPC, we are modeling growth of 18% yoy, 10% yoy, and 4% yoy compared to consensus of 17% yoy, 11% yoy, and 3% yoy respectively. For the upcoming F2Q21, we are modeling revenue of $40.2bn (+9% yoy) and EPS of $1.64 compared to consensus of $40.2bn (+9% yoy) and $1.64 respectively. For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 69.

Exhibit 69: GS estimates vs Consensus and guidance

$ mn, except per share items

	1Q21 (A)	2Q21 (E)	2Q21 (E)		3Q21 (E)		4Q21 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus
Productivity and Business Process	$12,319	$12,750 - $13,000	$12,955	$12,882	$12,956	$12,890	$13,030	$13,249	$46,398	$51,259	$51,350	$58,092	$56,593	$66,635	$62,805
YoY	*11%*	*8% - 10%*	*10%*	*9%*	*10%*	*10%*	*11%*	*13%*	*13%*	*10%*	*11%*	*13%*	*10%*	*15%*	*11%*
C/C	*11%*	*7% - 9%*	*9%*	*8%*											
QoQ	*5%*	*3% - 6%*	*5%*	*5%*	*0%*	*0%*	*1%*	*3%*							
Intelligent Cloud	$12,986	$13,550 - $13,800	$13,790	$13,771	$14,435	$14,089	$15,958	$15,529	$48,366	$57,169	$56,457	$68,160	$65,741	$80,303	$76,307
YoY	*20%*	*14% - 16%*	*16%*	*16%*	*18%*	*15%*	*19%*	*16%*	*24%*	*18%*	*17%*	*19%*	*16%*	*18%*	*16%*
C/C	*29%*	*13% - 15%*	*15%*	*15%*											
QoQ	*-3%*	*4% - 6%*	*6%*	*6%*	*5%*	*2%*	*11%*	*10%*							
More Personal Computing	$11,849	$13,200 - $13,600	$13,466	$13,501	$11,333	$11,594	$13,515	$12,863	$48,251	$50,163	$49,813	$53,933	$51,179	$55,889	$54,014
YoY	*6%*	*0% - 3%*	*2%*	*2%*	*3%*	*5%*	*5%*	*0%*	*6%*	*4%*	*3%*	*8%*	*3%*	*4%*	*6%*
C/C	*6%*	*0% - 3%*	*2%*	*2%*											
QoQ	*-8%*	*11% - 15%*	*14%*	*14%*	*-16%*	*-14%*	*19%*	*11%*							
Total revenue	**$37,154**	**$39,500 - $40,400**	**$40,211**	**$40,225**	**$38,724**	**$38,742**	**$42,503**	**$41,941**	**$143,015**	**$158,592**	**$158,261**	**$180,186**	**$175,798**	**$202,827**	**$198,479**
YoY	*12%*	*7% - 9%*	*9%*	*9%*	*11%*	*11%*	*12%*	*10%*	*14%*	*11%*	*11%*	*14%*	*11%*	*13%*	*13%*
C/C	*12%*	*6% - 8%*	*8%*	*8%*											
QoQ	*-2%*	*6% - 9%*	*8%*	*8%*	*-4%*	*-4%*	*10%*	*8%*							
Cost of revenue	$11,002	$13,750 - $13,950	$13,936	$13,758	$12,658	$12,257	$14,384	$13,098	$46,078	$51,981	$50,209	$60,903	$56,397	$64,329	$64,320
YoY	*6%*	*11% - 13%*	*13%*	*11%*	*15%*	*12%*	*17%*	*6%*	*7%*	*13%*	*9%*	*17%*	*12%*	*6%*	*14%*
QoQ	*-11%*	*25% - 27%*	*27%*	*25%*	*-9%*	*-11%*	*14%*	*7%*							
Gross profit	**$26,152**	**$25,750 - $26,450**	**$26,275**	**$26,468**	**$26,066**	**$26,485**	**$28,119**	**$28,844**	**$96,937**	**$106,611**	**$108,052**	**$119,283**	**$119,401**	**$138,498**	**$134,159**
YoY	*15%*	*5% - 8%*	*7%*	*8%*	*8%*	*10%*	*9%*	*12%*	*17%*	*10%*	*11%*	*12%*	*11%*	*16%*	*12%*
QoQ	*2%*	*-2% - 1%*	*0%*	*1%*	*-1%*	*0%*	*8%*	*9%*							
Gross margin	*70%*	*65% - 65%*	*65%*	*66%*	*67%*	*68%*	*66%*	*69%*	*68%*	*67%*	*68%*	*66%*	*68%*	*68%*	*68%*
Operating expenses	$10,276	$11,400 - $11,500	$11,481	$11,562	$11,879	$12,004	$13,141	$13,168	$43,978	$46,777	$47,053	$50,589	$51,683	$54,545	$56,187
YoY	*3%*	*7% - 8%*	*8%*	*8%*	*7%*	*8%*	*7%*	*7%*	*10%*	*6%*	*7%*	*8%*	*10%*	*8%*	*9%*
QoQ	*-16%*	*11% - 12%*	*12%*	*13%*	*3%*	*4%*	*11%*	*10%*							
Operating income	**$15,876**	**$14,350 $14,950**	**$14,794**	**$14,906**	**$14,187**	**$14,480**	**$14,977**	**$15,676**	**$52,959**	**$59,834**	**$60,999**	**$68,694**	**$67,718**	**$83,953**	**$77,972**
YoY	*25%*	*3% 8%*	*7%*	*7%*	*9%*	*12%*	*12%*	*17%*	*23%*	*13%*	*15%*	*15%*	*11%*	*22%*	*15%*
QoQ	*18%*	*-10% - -6%*	*-7%*	*-6%*	*-4%*	*-3%*	*6%*	*8%*							
Operating margin	*43%*	*36% 37%*	*37%*	*37%*	*37%*	*37%*	*35%*	*37%*	*37%*	*38%*	*39%*	*38%*	*39%*	*41%*	*39%*
EPS	**$1.82**	**$1.59 $1.65**	**$1.64**	**$1.64**	**$1.58**	**$1.59**	**$1.68**	**$1.71**	**$5.76**	**$6.71**	**$6.77**	**$7.72**	**$7.47**	**$9.58**	**$8.65**
										16%	17%	15%	10%	24%	16%
Commercial Cloud															
Revenue	$15,200		$16,398		$17,166		$18,702		$51,700	$67,465		$85,921		$107,773	
YoY	*31%*		*31%*		*29%*		*31%*		*36%*	*30%*		*27%*		*25%*	
Gross margin	*71%*		*71%*		*71%*		*71%*		*66%*	*71%*		*72%*		*74%*	
Billings (via CF)	$34,090		$37,488	$37,815	$38,724	$38,009	$52,913	$51,491	$145,227	$163,216	$161,254	$185,356	$179,906	$208,448	$201,969
YoY	*13%*		*10%*	*11%*	*13%*	*11%*	*13%*	*10%*	*11%*	*12%*	*11%*	*14%*	*12%*	*12%*	*12%*
QoQ	*-27%*		*10%*	*10%*	*3%*	*1%*	*37%*	*35%*							
Deferred revenue (total)	$36,305		$33,582	$33,895	$33,582	$33,162	$43,993	$42,711	$39,180	$43,993	$42,173	$49,163	$46,281	$54,784	$49,770
YoY	*7%*		*8%*	*9%*	*10%*	*9%*	*12%*	*9%*	*5%*	*12%*	*8%*	*12%*	*10%*	*0%*	*8%*
QoQ	*-7%*		*-8%*	*-7%*	*0%*	*-2%*	*31%*	*29%*							
OCF	**$19,335**		**$13,971**	**$11,565**	**$19,713**	**$17,023**	**$19,506**	**$20,364**	**$60,675**	**$72,525**	**$69,063**	**$80,582**	**$76,889**	**$94,500**	**$88,591**
YoY	*40%*		*31%*	*8%*	*13%*	*-3%*	*4%*	*9%*	*16%*	*20%*	*14%*	*11%*	*11%*	*17%*	*15%*
Capex	$4,907		$4,320	$4,108	$3,588	$4,560	$5,336	$4,936	$15,441	$18,151	$19,220	$19,761	$21,167	$21,737	$22,562
YoY	*45%*		*22%*	*16%*	*-5%*	*21%*	*12%*	*4%*	*11%*	*18%*	*24%*	*9%*	*10%*	*10%*	*7%*
FCF	**$14,428**		**$9,651**	**$7,457**	**$16,125**	**$11,979**	**$14,170**	**$14,306**	**$45,234**	**$54,374**	**$48,219**	**$60,821**	**$53,478**	**$72,762**	**$65,075**
YoY	*38%*		*35%*	*5%*	*17%*	*-13%*	*2%*	*3%*	*18%*	*20%*	*7%*	*12%*	*11%*	*20%*	*22%*

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: key risks to the downside include 1) slower than anticipated public cloud adoption which could adversely impact the growth in Microsoft's Azure business, specifically IaaS and PaaS, 2) a prolonged slowdown in the overall IT spending environment could have an adverse effect on the company's outlook give the size and breadth of Microsoft's product portfolio, 3) the pace of overall margin expansion, particularly as the business mix continues to shift toward cloud offerings and the upcoming Xbox console cycle could have an adverse impact on reported gross margins, 4) Adverse changes in the competitive landscape as the company competes across a wide variety of categories.

Valuation: Our 12-month price target of $285 is based on an equal blend of DCF, P/E, and EV/FCF. Our DCF assumes a perpetuity growth rate of ~2% and WACC of ~7.5%, our P/E analysis assumes 35x Q5-Q8 EPS, and our EV/FCF analysis assumes 35x Q5-Q8 sales. This compares to an average EV/FCF (CY21) of ~42x and an average P/E (CY21) of ~45x across our coverage group, and a P/E (CY21) of ~24x for the broader S&P 500.

ServiceNow (NOW, Buy): Expanding beyond its core toward $15bn of revenue

Investment view

We are assuming coverage of ServiceNow (NOW) with Buy rating and a price target of $670. Our price target is based on an equal weight to our fundamental valuation framework of a 10-year DCF, target EV/Sales multiple and target EV/FCF multiple. Our thesis is that ServiceNow is well positioned to become a $15bn+ revenue cloud applications software company by the year 2026. If that materializes, we believe operating margins could hit 30-35% and free cash flow margins could potentially reach 35-40% driven by its very efficient customer acquisition economics ($1.5 sales and marketing for a dollar of new revenue) and expansion beyond its core ITSM market into adjacent markets. The wide range operating margin and free cash flow margin is due to the relatively wide range of exit growth rate of 20-25% in 2026. ServiceNow is one of the very few companies in software that successfully sells products used by IT professionals and business professionals (employee-facing and customer-facing) at scale, and with a high level of engagement. As a result of its wide reach and user base, we believe the company addresses a very large end market, that can potentially rival Microsoft Office 365's installed base of 250mn knowledge worker in the long term, and hence supportive of our $15bn revenue target longer-term.

NOW through the lens of the GS Framework for Investing in Software

In our view, ServiceNow scores well in many aspects of our framework, particularly a very large TAM of ~$165bn. It also has the benefit of diversity in secular themes as enterprises undergo digital transformations, and adopt DevOps practices and Automated Digital Workflows. The company also has a deep competitive moat in its core ITSM product and has a strong installed base to sell adjacent offerings. Furthermore, the company is unlocking a substantial addressable market opportunity as it shifts from a best of breed ITSM solution into a platform across ITOM, HR, and CSM use-cases.

Exhibit 70: Mapping ServiceNow to the GS Framework for Investing in Software

	OUR VIEW ON SERVICENOW	
8 KEY FACTORS	**TANGIBLE**	**INTANGIBLE**
TAM	Large and expanding TAM 2023 TAM of $165bn	TAM realization through upsell and cross-sell Growing base from ~7,000 enterprise customers
SECULAR THEMES	Digital Transformations, Data Creation Automated Digital Workflows	Strong position in core ITSM Well positioined to capitalize on digital transformation spending
ENTRY/EXIT POINTS	Stock trading at 18x our CY21 revs, 58x our CY21 FCF	Potential for 25%+ revenue growth + margin expansion
LT FRAMEWORK RETURN	Bear case: -2% compounded return; Base: 8%; Upside: 15%	Long-term mix of solutions Potential to reach $15bn revenue in 2026
UNIT ECONOMICS	ARPU growth to drive margin expansion 98% gross retention rates	Expanding SI partner network, ITSM Pro upsell Leveraging ITSM installed base for cross-sell into ITOM, CSM, HR solutions
PLATFORM/ BEST OF BREED	Expanding into ITOM, CSM, HR, custom applications to create a unified platform with a single code base	Competitive positioning across expanding product portfolio Customers building custom apps on NOW platform
COMPETITIVE MOAT	Large installed base of enterprise customers, breadth of product portfolio and at scale go-to-market motion	Traction in cross-sell and upsell Taking share from incumbents
ESG	Commitment to gender pay parity ($0.99 woman / $1.00 men) ~100% of retired data center equipment recycled or re-sold	NOW automates traditionally manual process, removing complexity and manual work

Source: Goldman Sachs Global Investment Research, Company Data

Key Debates

The Street is somewhat concerned about the impact of slowing subscription revenue in the past couple of quarters (low 30%'s vs mid-30%'s pre-pandemic) and potential ramifications for FY21 revenue growth rate. It is highly likely that the guide for FY21 revenue growth rate will be in the low-to-mid 20%'s when the company guides later in January. Furthermore, there is also concern that the company's 300 basis points operating margin improvement in 2020 vs 2019 will pose tough comparisons given that the rate of improvement of selling efficiencies cannot be sustained in 2021.

Our Differentiated Take

Potential for re-accelerating billings growth. We believe that revenue growth rate will not tell the real story this year and that instead, investors should focus on billings and cRPO as the leading indicators. While reported revenue growth rate will decelerate to the low to mid 20s in 1H21, we believe that the availability of a COVID-19 vaccine will strengthen demand in 2H21. As a result, we believe that emphasis will shift from declining revenue growth rate to potentially re-accelerating billings growth. We believe that in the very near-term ServiceNow may have set the bar for the billings really low at 24-26% for upcoming Q4, albeit against a tough comparison to last year's Q4 at 33%. However, we believe the risk is to the upside based on management's track record and our independent channel checks. Looking at cRPO, another leading indicator throughout CY20 running in the low-to-mid 30% range, we believe that forward indicators continue to be very strong.

Strong enterprise installed base, but plenty of runway ahead. Investors do not fully appreciate that ServiceNow has fewer than 7,000 customers, a number which we believe can potentially approach 100,000 in the long-run given the broad horizontal applicability of the product set and strong competitive position. This customer base would be more or less consistent with the size of the installed base of leading application software franchise companies such as SAP and Salesforce.com.

NOW can achieve $15bn of revenue in 2026. We note that ServiceNow has roughly 50% penetration into its core ITSM market. Assuming the customer base can quadruple by the end of 2026, the TAM for its core ITSM products can approach $25bn. To achieve $15bn in total revenue in CY 2026, we believe ITSM can grow into a $6-7bn business, roughly 2x from current levels, ITOM could be a $2-3 billion business, while HR and Customer Service Management, plus Other Custom Applications, based on App Engine, have the potential to generate ~$6bn in revenue. Cloud application software leaders such as Salesforce.com and Workday have already marked the trails for their Service Automation and HR products with a TAM of $25bn+, which we view as a positive for ServiceNow. ServiceNow's CSM and HR products mostly complement Salesforce and Workday in the core markets, are applicable to the same user base, and can command an equivalent dollar attach rate. Combined across ITSM, ITOM, CSM and HR, the TAM can exceed $50bn.

Our Digital Transformation survey suggests that ServiceNow will be a wallet share gainer in 2021. On a net spend gain basis, defined as respondents who expect the company to gain wallet share minus those that expect the company to lose wallet share, ServiceNow scored a 17, which is among the top-5 companies in the entire survey. We also note that ServiceNow's core ITSM market increased as a spending priority pre vs post COVID.

Push into specific verticals could yield TAM realization. Finally, ServiceNow's vertical industry custom apps for financial services and telecommunications could be the beginning of a larger TAM realization story, arguably approaching $100bn, whereby more verticals could come into play, enabling several years of durable growth ahead. An often overlooked factor is that the cumulative investment in home-grown on-premises custom applications in the United States alone is close to $1 Trillion, which represents a significant cloud substitution opportunity for ServiceNow and brethren such as Salesforce and Workday.

For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 71.

Exhibit 71: GS estimates vs Consensus and guidance
$ mn, except per share items

	3Q20 (A)	4Q20 (E)	4Q20 (E)		1Q21 (E)		FY19 (A)	FY20 (E)		FY21 (E)		FY22 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus
Subscription Revenue	$1,091	$1,155 - $1,160	$1,158	$1,158	$1,265	$1,244	$3,255	$4,259	$4,260	$5,422	$5,350	$6,887	$6,682
YoY	*30.7%*	*28.4% - 29.0%*	*28.7%*	*28.8%*	*27.2%*	*25.1%*	*34.4%*	*30.8%*	*30.9%*	*27.3%*	*25.6%*	*27.0%*	*24.9%*
QoQ	*7.5%*	*5.8% - 6.3%*	*6.1%*	*6.1%*	*9.3%*	*7.4%*	--	--	--	--	--	--	--
Service Revenue	$61		$58	$58	$54	$56	$205	$225	$225	$237	$241	$248	$258
YoY	*19.0%*		*10.0%*	*10.2%*	*5.0%*	*9.0%*	*9.5%*	*9.7%*	*9.8%*	*5.0%*	*6.8%*	*5.0%*	*14.4%*
QoQ	*9.5%*		*(4.5%)*	*(4.3%)*	*(6.3%)*	*(2.9%)*	--	--	--	--	--	--	--
Total Revenue	**$1,152**		**$1,215**	**$1,215**	**$1,319**	**$1,300**	**$3,460**	**$4,485**	**$4,478**	**$5,659**	**$5,599**	**$7,135**	**$6,992**
YoY	*30.0%*		*27.7%*	*27.6%*	*26.1%*	*24.2%*	*32.6%*	*29.6%*	*29.4%*	*26.2%*	*25.0%*	*26.1%*	*24.9%*
QoQ	*7.6%*		*5.5%*	*5.5%*	*8.6%*	*7.0%*	--	--	--	--	--	--	--
Non GAAP Gross Profit	**$948**		**$998**	**$993**	**$1,098**	**$1,074**	**$2,804**	**$3,697**	**$3,685**	**$4,702**	**$4,618**	**$5,975**	**$5,768**
Gross Margin	*82.3%*		*82.1%*	*81.7%*	*83.2%*	*82.6%*	*81.0%*	*82.4%*	*82.3%*	*83.1%*	*82.5%*	*83.7%*	*82.5%*
Non GAAP Operating Income	**$299**	$243 - $244	**$256**	**$258**	**$330**	**$310**	**$740**	**$1,101**	**$1,102**	**$1,442**	**$1,379**	**$1,896**	**$1,816**
Operating Margin	*25.9%*	*21.0% - 21.0%*	*21.0%*	*21.2%*	*25.0%*	*23.8%*	*21.4%*	*24.5%*	*24.6%*	*25.5%*	*24.6%*	*26.6%*	*26.0%*
YoY	*31.0%*	*15.7% - 16.2%*	*22.1%*	*22.9%*	*31.4%*	*23.6%*	*40.1%*	*48.8%*	*49.0%*	*31.1%*	*25.2%*	*31.5%*	*31.6%*
Non GAAP EPS	**$1.21**		**$1.02**	**$1.06**	**$1.30**	**$1.26**	**$3.33**	**$4.50**	**$4.52**	**$5.64**	**$5.55**	**$7.27**	**$7.10**
Total Billings (CF)	$1,149		$1,695	$1,684	$1,399	$1,358	$3,998	$5,031	$5,019	$6,379	$6,259	$8,055	$7,740
YoY	*24.8%*		*25.3%*	*24.4%*	*26.5%*	*22.8%*	*29.9%*	*25.8%*	*25.5%*	*26.8%*	*24.7%*	*26.3%*	*23.7%*
QoQ	*6.4%*		*47.5%*	*46.6%*	*(17.5%)*	*(19.4%)*	--	--	--	--	--	--	--
Total Deferred Revenue	$2,312		$2,792	$2,797	$2,872	$2,893	$2,226	$2,792	$2,797	$3,512	$3,495	$4,432	$4,353
YoY	*28.2%*		*25.4%*	*25.6%*	*27.3%*	*28.3%*	*31.7%*	*25.4%*	*25.6%*	*25.8%*	*25.0%*	*26.2%*	*55.6%*
QoQ	*1.3%*		*20.8%*	*21.0%*	*2.9%*	*3.5%*	--	--	--	--	--	--	--
OCF	$241		$664	$639	$467	$512	$1,236	$1,765	$1,744	$2,123	$2,092	$2,855	$2,668
OCF Margin	*21.0%*		*54.7%*	*52.6%*	*35.4%*	*39.4%*	*35.7%*	*39.4%*	*39.0%*	*37.5%*	*37.4%*	*40.0%*	*38.2%*
FCF	**$150**		**$588**	**$552**	**$388**	**$435**	**$971**	**$1,404**	**$1,406**	**$1,783**	**$1,709**	**$2,427**	**$2,199**

Source: FactSet, Goldman Sachs Global Investment Research, Company Data

Key risks: Risks to the downside include: 1) prolonged and worse than expected COVID-19 impact causing slower net new business, deal delays, and longer sales cycles, 2) exposure to industries negatively impacted by COVID, 3) limited traction with emerging products, and 4) higher expense growth limiting margin expansion.

Valuation: Our 12-month price target of $670 is based on our fundamental framework (equally-weighted between DCF, target EV/Sales multiple, EV/FCF multiple). Our 10-year DCF assumes a sales CAGR of 23%, 36% long-term operating margins, a 7.8% discount rate, and a ~3% terminal growth rate. We use a 21x EV/Sales multiple on our Q5:Q8 revenue estimates of $6.7bn and use a 64x EV/FCF multiple on our Q5:Q8 FCF estimates of $2.2bn.

Oracle (ORCL, Sell): Initiating with a Sell rating; Too many moving pieces to gain confidence in sustained revenue re-acceleration

Investment view

We are initiating coverage of Oracle with a Sell rating and a 12-month price target of $60. Our price target is based on an equal blend of DCF, EV/FCF, and P/E. Our $60 price target represents ~2% downside to current market price, which compares to an average ~18% upside across our coverage universe. Our view is supported by our DX survey – when we asked CIOs which vendors will gain or lose share in DX budgets, amongst all vendors, ORCL did not perform well, with net strength of -39% defined as % gaining share less % losing share (gaining share: 3 respondents; losing share: 15 respondents; about the same: 13 respondents).

Oracle's focus for several years now has been on organic development and creating tighter integration and innovation within its IaaS, PaaS, SaaS stack. The company has not made major acquisitions for several years. The net result of this strategy has been a steady deceleration in revenue growth from 4% in FY14-15 to 0.3% in FY20. Unlike other cloud transition stories, Oracle's move to the cloud has taken much longer than expected. In fact, the company backed away from moving its highly profitable database business to database as a service a couple of years ago, instead offering bring your own license (BYOL) to customers. As a result, impact on operating margins has been relatively muted, with operating margins declining from a peak of 47% in FY13-FY14 to 44.5% in FY20. The company no longer reports revenues in SaaS and PaaS/IaaS and thus it is difficult to evaluate cloud progress.

The result of this strategy has been slow growth. Oracle's middleware business has been under secular pressure. In SaaS, Oracle continues to lose market share in front office, while the back office business is growing 30%+ but not large enough yet to move the needle. In database, Oracle is focusing on its innovative autonomous database and seems to have some initial traction.

The company has supported the share price with large share repurchases financed with debt. Shares outstanding declined by 12% each in the last two years as FCF declined 6% in FY19 and 10% in FY20. Net debt of ~$25bn is just 2x FCF and 1.5x operating income, providing the company with further ability to continue to reduce share count.

ORCL through the lens of the GS Framework for Investing in Software

In our view, Oracle scores mixed in our framework. The company has a large TAM, deep technology stack, large install base, innovative strategy in Autonomous Database, and scale in ERP. However, market share losses seem to continue, Oracle is new in IaaS/PaaS, outside of ERP customers have various alternatives to Oracle, and Oracle does not seem to have meaningful exposure to new apps. A stock catalyst could be potential re-acceleration in revenue growth.

Exhibit 72: Mapping Oracle to the GS Framework for Investing in Software

	OUR VIEW ON ORACLE	
8 KEY FACTORS	**TANGIBLE**	**INTANGIBLE**
TAM	Large TAM Market share losses across the board	Ability to stem share losses Position in a multi-cloud world
SECULAR THEMES	DBaaS, PaaS, IaaS, SaaS	Ability of Autonomous Database to contribute meaningfully Fusion ERP growth trajectory
ENTRY/EXIT POINTS	Stock supported by share repurchases	Stock could revalue if revenues re-accelerate
LT FRAMEWORK RETURN	Bear case: -3% compounded return; Base: 6%; Upside: 14%	Potential revenues inflection as the mix changes
UNIT ECONOMICS	Potential for favorable change in revenue mix Stable margins	Potential revenues inflection as the mix changes Improvement in gross margins
PLATFORM/ BEST OF BREED	End-to-end IaaS, PaaS, SaaS stack	Ability to gain meaningful share in IaaS and PaaS Potential vendor lock-in
COMPETITIVE MOAT	Deep integrated technology stack Large install base; innovative Autonomous Database	Outside of ERP, customers have various alternatives to Oracle Oracle does not seem to have meaningful exposure to new apps

Source: Goldman Sachs Global Investment Research

Key debate: Can total revenues re-accelerate?

Currently investors are grappling with several moving pieces – ongoing cloud transition, upcoming major database product cycle, competition in SaaS and the public cloud, and frugal sales and marketing spend, among others. The pivotal question is whether the company could be finally poised to re-accelerate revenues. This is in the context of: 1) Oracle's positioning with its customers in the long run, which is uncertain; 2) Oracle has major, aggressive, and well-executing competitors across each layer of the technology stack. Re-acceleration of revenue growth hinges on the success of the innovative Oracle autonomous database and fusion ERP moving the needle.

Our view

Potential revenue re-acceleration hinges on: 1) revenue mix; 2) can autonomous database re-accelerate the overall database business.

Revenue mix shift. Half of Oracle's business is stable (maintenance), about a quarter is declining and a quarter is growing. Due to this mix, for Oracle to achieve sustained revenue re-acceleration, maintenance has to remain relatively stable (steady erosion is inevitable in our view), the rate of decline of the declining business has to come down (possible), and the growing business has to maintain or accelerate growth rate (possible). In other words, there has to be perfect alignment amongst the three pieces for revenue re-acceleration to occur – we do not see signs of that yet.

Cloud services and license support (CSLS), which includes both maintenance and cloud revenues, is the most important metric in our view and has been growing steadily in the 3%-5% range since 1QFY19 down from 7% in FY18. This is a ~$28bn business of which ~$20bn is maintenance and the rest ~$8bn is SaaS/PaaS/IaaS. With maintenance flattish/slightly down, this implies that the cloud business is growing high single digits/low double-digits, well below peers. Even if the cloud business were to hypothetically re-accelerate to 20% growth, CSLS will re-accelerate to 6%, still below FY18 levels. Interestingly, 1HFY21 S&M as % of revenues declined to 18.5% (likely on T&E savings) from 20% in FY20. It is highly unusual for a software company to re-accelerate revenues while S&M spend is declining. Salesforce alone is currently outspending ORCL on S&M. While Oracle has solid technology in certain areas, we are concerned that Oracle is not getting the visibility in the marketplace it deserves, and sustained and meaningful revenue re-acceleration might be difficult to accomplish. We believe that if the company sacrifices some margin in the near-term, that can drive revenue re-acceleration. While Fusion ERP is doing well, it is not large enough to move the needle yet. We believe it is important for Oracle to try to re-assert its importance in front office. However, we find Salesforce's comprehensive front office strategy including Customer 360 difficult to compete against.

Autonomous database. We estimate the Oracle's database business at $18bn, or approximately half of total revenues, growing low single digits. At a high level, due to the sheer scale of the business, it will take Autonomous Database, even if very successful, a long time to move the needle, in our view. More importantly, the database market is very competitive. According to Gartner, Oracle's database business grew 4% in 2019 vs Microsoft's growth of 24% to $13.7bn which is fast approaching the size of

Oracle's business, AWS grew 50% at $9.4bn and is already at 50% the size of Oracle's business, as well as Google's database business doubling to $1.5bn. Oracle's 2019 market share of 27.5% is down from 49% in 2011.

Oracle Autonomous Database is an innovative product, using machine learning to automate routine tasks such as security, updates, tuning, and backups. This decreases both the need for human labor and human error. The database is optimized for the Oracle stack including IaaS 2.0. Our view is that while the capabilities of the product are impressive and potential return on investment for customers can be high, Oracle's mind share in database is fast decreasing as evidenced by the market share trends.

What would make us more positive?

What would make us positive on the shares are several factors: 1) Visibility on the mix between the growing, stable, and declining businesses, and signs for shift in the mix lending credibility to the possibility for sustained revenue re-acceleration; 2) visibility into revenue growth rates in the overall SaaS, PaaS, and IaaS businesses; 3) sustained success of Autonomous Database at scale, lending credibility that it can move the needle on overall revenues; 4) at least a moderate acceleration in S&M spend to give Oracle's technology more visibility in the marketplace.

Our estimates on Oracle are lower than Street estimates. For FY21, we model revenue and EPS of $40.0bn (+2% yoy) and $4.35 compared to consensus of $40.0bn (+2% yoy) and $4.36 respectively. For FY22, we model revenue and EPS of $40.8bn (+2% yoy) and $4.67 compared to consensus of $41.1bn (+3% yoy) and $4.67 respectively.

Exhibit 73: GS estimates vs Consensus and guidance

$ mn, except per share items

	2Q21 (A)	3Q21 (E)	3Q21 (E)		4Q21 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	GS Est.	Consensus	GS Est.	Consensus
Cloud services and license support	$7,112		$7,252	$7,257	$7,214	$7,252	$27,396	$28,526	$28,610	$29,950	$29,893	$31,533	$31,167
YoY	4%		5%	5%	5%	6%	3%	4%	4%	5%	4%	5%	4%
QoQ	2%		2%	2%	(1%)	(0%)							
C/C	3%		4%		5%			4%		5%		5%	
Cloud license and on-premise license	$1,092		$1,231	$1,207	$1,959	$1,950	$5,128	$5,168	$5,148	$4,910	$5,056	$4,566	$5,047
YoY	(3%)		0%	(2%)	0%	(0%)	(12%)	1%	0%	(5%)	(2%)	(7%)	(0%)
QoQ	23%		13%	11%	59%	62%							
C/C	(5.0%)		(1.0%)		0.0%			(0.1%)		(5.0%)		(7.0%)	
Software and cloud revenue	**$8,204**		**$8,483**	**$8,464**	**$9,173**	**$9,202**	**$32,524**	**$33,694**	**$33,758**	**$34,860**	**$34,949**	**$36,099**	**$36,214**
YoY	3%		4%	4%	4%	5%	(0%)	4%	4%	3%	4%	4%	4%
QoQ	5%		3%	3%	8%	9%							
C/C	2.3%		3%		4.2%			3.1%		3.5%		3.6%	
Hardware revenue	$844		$831	$846	$793	$878	$3,444	$3,282	$3,382	$3,200	$3,299	$3,040	$3,255
YoY	(3%)		(3%)	(1%)	(12%)	(3%)	(7%)	(5%)	(2%)	(3%)	(2%)	(5%)	(1%)
Services revenue	$752		$752	$744	$752	$727	$3,105	$2,976	$2,937	$2,789	$2,936	$2,730	$2,972
YoY	(7%)		(3%)	(4%)	2%	(1%)	(4%)	(4%)	(5%)	(6%)	(0%)	(2%)	1%
Total revenue	**$9,800**	**$9,993 - $10,189**	**$10,066**	**$10,053**	**$10,718**	**$10,822**	**$39,073**	**$39,952**	**$40,049**	**$40,849**	**$41,094**	**$41,870**	**$42,357**
YoY	2%	2% - 4%	3%	3%	3%	4%	(1%)	2%	2%	2%	3%	2%	3%
QoQ	5%	2% - 4%	3%	3%	6%	8%							
C/C	1%	1.0% - 3.0%	2%		3%			2%		2%		2%	
Gross profit (non-GAAP)	$7,914		$8,103	$8,143	$8,765	$8,869	$31,311	$32,315	$32,440	$33,242	$33,293	$34,140	$34,388
YoY	4%		3%	3%	3%	4%	(1%)	3%	4%	3%	3%	3%	3%
Gross margin	80.8%		80.5%	81.0%	81.8%	82.0%	80.1%	80.9%	81.0%	81.4%	81.0%	81.5%	81.2%
Operating expenses (non-GAAP)	$3,326		$3,580	$3,398	$3,717	$3,575	$13,928	$13,978	$13,662	$14,427	$14,157	$14,791	$14,656
YoY	(7%)		2%	(3%)	10%	6%	(3%)	0%	(2%)	3%	4%	3%	4%
QoQ	(1%)		8%	2%	4%	5%							
Operating income (non-GAAP)	**$4,588**		**$4,523**	**$4,745**	**$5,047**	**$5,294**	**$17,383**	**$18,337**	**$18,778**	**$18,814**	**$19,136**	**$19,349**	**$19,732**
YoY	13%		4%	9%	(2%)	3%	(0%)	5%	8%	3%	2%	3%	3%
QoQ	10%		(1%)	3%	12%	12%							
Operating margin	46.8%		44.9%	47.2%	47.1%	48.9%	44.5%	45.9%	46.9%	46.1%	46.6%	46.2%	46.6%
YoY	+480 bps		+50 bps	+272 bps	-220 bps	-33 bps	+50 bps	+140 bps	+241 bps	+20 bps	-32 bps	+20 bps	+2 bps
EPS (non-GAAP)	**$1.06**	**$1.09 - $1.13**	**$1.10**	**$1.11**	**$1.28**	**$1.28**	**$3.85**	**$4.35**	**$4.36**	**$4.67**	**$4.67**	**$4.96**	**$5.07**
EPS (non-GAAP, c/c)	**$1.05**	**$1.06 - $1.10**	**$1.09**		**$1.28**		**$3.94**	**$4.36**		**$4.67**		**$4.96**	
OCF	**$1,388**		**$3,179**	**$3,306**	**$3,690**	**$3,561**	**$13,139**	**$14,209**	**$14,658**	**$14,507**	**$15,205**	**$14,779**	**$16,492**
YoY	171%		6%	10%	2%	(1%)	(10%)	8%	12%	2%	4%	2%	8%
Capital expenditures	**$568**		**$644**	**$787**	**$705**	**$621**	**$1,564**	**$2,353**	**$2,580**	**$2,706**	**$2,504**	**$3,112**	**$2,772**
FCF	**$820**		**$2,534**	**$2,519**	**$2,985**	**$2,940**	**$11,575**	**$11,856**	**$12,078**	**$11,801**	**$12,701**	**$11,667**	**$13,720**
YoY	400%		(3%)	(4%)	(6%)	(8%)	(10%)	2%	4%	(0%)	5%	(1%)	8%
ST deferred revenue	**$8,062**		**$7,901**	**$7,923**	**$8,296**	**$7,430**	**$8,002**	**$8,296**	**$8,030**	**$8,019**	**$8,056**	**$7,751**	**$8,853**
YoY	(0%)		1%	1%	4%	(7%)	(4%)	4%	0%	(3%)	0%	(3%)	10%
QoQ	(18%)		(2%)	(2%)	5%	(6%)							

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: key risks to our thesis include Oracle becoming more strategic to customers as the layers of its stack are more integrated and it opens its platforms to other vendors such as VMware, reversal of market share losses in database, favorable shift in revenue mix leading to sustained revenue re-acceleration, overall meaningful improvement in competitive position, autonomous database having meaningful success in the marketplace, and increased S&M efficiency.

Valuation: Our 12-month price target of $60 is based on an equal blend of DCF, EV/FCF, and P/E. Our DCF assumes a perpetuity growth rate of ~0.5%, 5.9% WACC, our Q5-Q8 EV/FCF assumes 17x (vs CTXS and VMW at ~15x-18x CY21), and our Q5-Q8 P/E analysis assumes 13x CY22E P/E (vs VMW and CTXS at ~19x-21x CY21). We see ~2% downside to our target price.

Snowflake Inc. (SNOW, Neutral): Emerging category leader but risk/reward remains balanced at current levels

Investment view

We are initiating coverage on Snowflake (SNOW) with a Neutral rating and a 12-month price target of $310. Snowflake remains well positioned to continue to capitalize on long-term secular tailwinds including cloud migration and secure data sharing. Rising digitization across verticals and corresponding growth in data will continue to drive increasing need for data analytics and business intelligence tools which have consistently ranked as a top priority for investment in our CIO surveys and is likely to remain a priority for investment for the foreseeable future. We believe this is underscored by the recent pandemic where heightened volatility and macroeconomic uncertainty place a premium on continuously updated intelligence and data analytics. We believe Snowflake continues to remain well positioned to replace incumbent data warehousing solutions driven by the company's scalable and elastic cloud-native data platform, ease of use, consumption based model, and network effects allowing customers to break down data silos and enhance data governance. That said, we believe that this is largely reflected in the company's current valuation. At ~$282 Snowflake currently trades at ~87x our CY21 sales estimate of $1.11bn (consensus of $1.10bn).

SNOW through the lens of our framework for investing in software: Across our framework for investing in software, we note that Snowflake screens well on a variety of metrics, including addressing a large and growing TAM. As the company continues to expand its cloud data platform and enable new use cases through its efficient, cloud-native architecture, we see upside to current TAM estimates. Moreover, we believe several long-term secular trends will continue to underpin sustainable growth over the medium-term, particularly cloud adoption, digital transformation, and AI/ML. As outlined in our DX survey, business intelligence and analytics remains a top priority, with 30% of respondents indicating they saw pent up demand for the category once an effective vaccine is available in sufficient volume. That said, with the stock trading at ~87x our CY21 sales estimate, we would wait for a better entry point to become more constructive and view risk/reward as more balanced at current levels.

Exhibit 74: Mapping Snowflake to the GS Framework for Investing in Software

	OUR VIEW ON SNOWFLAKE	
8 KEY FACTORS	**TANGIBLE**	**INTANGIBLE**
TAM	Large and expanding TAM, while new use cases and efficiencies have the potential to expand the market	Potential to expand the overall addressable market The company's ability to continue to gain market share
SECULAR THEMES	Cloud adoption, digital transformation, AI/ML, and secure data sharing	SNOW remains well positioned to capitalize on data growth and data migrations to the cloud. BI & analytics remain a top priority
ENTRY/EXIT POINTS	The stock currently trades ~87x our CY21 Sales estimate	At current levels we view risk/reward as more balanced
LT FRAMEWORK RETURN	Bear case: -9% compounded return; Base: 0%; Upside: 11%	The ultimate size of the overall market opportunity and how much market share the company can capture
UNIT ECONOMICS	Best-in-class net expansion rates and low churn should support operating leverage as the company continues to scale	Sustainability of current expansion rates Ability to drive higher utilization and better pricing from CSPs
PLATFORM/ BEST OF BREED	The company continues to add support for various data types and workloads, expanding its cloud data platform	Ability to expand use cases and workloads on the platform Potential competition from proprietary solutions from CSPs
COMPETITIVE MOAT	We view the company's cloud native architecture and ease of use as differentiated relative to the competition	Ability for CSPs to narrow the feature functionality gap and leverage existing customer relationships to maintain/grow share
ESG	The company's cloud-native architecture drives increased efficiencies while enabling use cases like secure data sharing	Potential for secure data sharing to drive enhanced security and data governance. Dual class voting structure

Source: FactSet, Goldman Sachs Global Investment Research

Key debates

We believe Snowflake remains well positioned to capitalize on long-term secular trends including cloud adoption, digital transformation, artificial intelligence and machine learning, and secure data sharing. We note that business intelligence and analytics ranked as a top priority in our latest IT spending survey and the top area for pent up digital transformation spending following a vaccine according to our DX survey. That said, with the company trading at ~87x CY21 sales, we believe this is largely priced in at current levels and risk/reward is balanced. Aside from valuation, much of the investor debate has centered on the competitive landscape and the company's ability to continue to widen its differentiation relative to competing products from the major cloud service providers (CSPs). Additionally, given the stock's ~$100bn valuation, another area of investor focus is likely to be the company's ability to expand its addressable market as the efficiency and scalability of the cloud data platform enable new use cases like secure data sharing through the company's data exchange.

Our view

We believe Snowflake remains well positioned relative to incumbent vendors and proprietary solutions from CSPs. With respect to the competitive landscape, we believe Snowflake's cloud native data platform remains well positioned to take share from incumbent data warehousing solutions and to continue to capitalize on long-term secular growth drivers as enterprises continue to analyze large and growing volumes of data across disparate sources. Our customer conversations point to ease of use and maintenance, elasticity and scalability, the ability to support global multi-cloud deployments, and the ability to facilitate data sharing as key differentiators of Snowflake's Cloud Data Platform relative to the competition. Additionally, we believe the platform benefits from network effects; as more customers adopt the platform and move large volumes of data to the cloud, more data can be exchanged on the platform, enhancing the value of the platform to all users. This in turn attracts more customers and data to the platform. Exhibit 75 below details customer ratings and reviews for Snowflake relative to select competitive offerings.

Exhibit 75: Snowflake screens as a top vendor for data management solutions for analytics

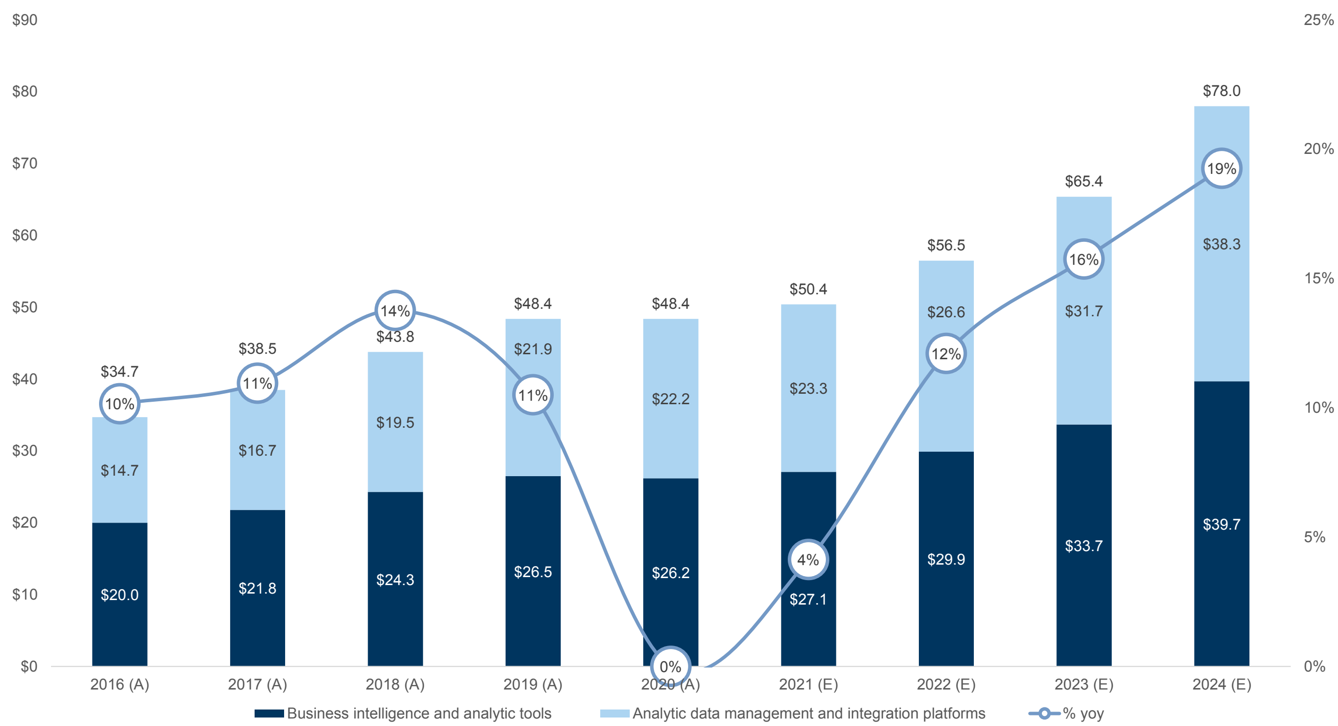
Data Management Solutions for Analytics	Amazon Redshift	Google BigQuery	Oracle Autonomous Data Warehouse	Snowflake Data Warehouse
Overall Peer Rating	4.3	4.6	4.6	4.7
Number of Reviews (last 12 months)	8	22	12	18
Willingness to recommend	100% Yes	100% Yes	92% Yes	94% Yes
Overall Capability Score	4.0	4.8	4.5	4.8
Customer Experience				
Evaluation & Contracting	4.1	4.6	4.4	4.4
Pricing Flexibility	4	4.5	4.8	4.1
Integration & Deployment	4.3	4.5	4.5	4.8
Ease of Deployment	4.0	4.6	5	4.9
Service & Support	4.4	4.6	4.6	4.8
Timeliness of Vendor Response	4.2	4.6	4.8	4.8
Quality of Technical Support	4.2	4.5	5.0	4.8

Source: Gartner, Data compiled by Goldman Sachs Global Investment Research

Relative to competing solutions from the major CSPs, we acknowledge that like some other SaaS companies leveraging public cloud infrastructure to run their platforms, Snowflake is positioned as both a partner and competitor with the three major CSPs — AWS, Azure and GCP. Yet Snowflake has been able to successfully navigate their relationship with the CSPs, gaining market traction because of its cloud-native platform while certain public cloud solutions though deployed in the cloud suffer from weaknesses in their underlying architecture. Further, as large enterprise customers continue to migrate workloads to the public cloud, multi-cloud roadmaps continue to remain in focus, particularly as large enterprise customers navigate the potential for vendor lock in and preserve optionality. To that end, Snowflake's ability to abstract away complexities of underlying infrastructure and provide customers the ability to run the company's Cloud Data Platform across the major public cloud providers preserves optionality and enables multi-cloud architectures. Relative to AWS Redshift, Azure Synapse (formerly SQL Data Warehouse) and GCP's BigQuery.

Snowflake is gaining share in a large and expanding TAM. Snowflake's Cloud Data Platform addresses a wide array of analytics and data management solutions including Business intelligence and analytic tools ($26.5bn in 2019) an Analytic data management and integration platforms ($21.9bn in 2019) which are expected to grow at an 8% and 12% CAGR through 2024 respectively (IDC). While our industry conversations point to Snowflake's heritage as a data warehouse addressing the $12bn relational data warehouse market, as the cloud data platform has continued to expand alongside new use cases and the growing importance of business intelligence and analytics more broadly, we believe Snowflake will continue to expand its opportunity set over time. For example, Snowflake announced support for unstructured data in addition to semi-structured and structured data during its Data Cloud Summit in November (alongside several other product announcements). One clear example of the platform enabling new use cases is Snowflake's data exchange (introduced in 2019), which facilitates secure and compliant sharing of data sets both within and across organizations on the Snowflake Data Cloud Platform. With Snowflake's data exchange, data sets can be shared without the need to copy or send the data by allowing users within an outside an organization to query datasets while retaining control over data and enforcing granular access controls.

Exhibit 76: Snowflakes addressable market is expected to grow at a 10% CAGR through 2024, reaching $78bn



Source: IDC, Goldman Sachs Global Investment Research

The company's ability to expand its addressable market as the efficiency and scalability of the cloud data platform enable new use cases, is underscored by management's bottom up TAM estimate of $81bn as of January 31, 2020. The analysis is based on the number of companies with at least 200 employees globally (per S&P Capital IQ) with companies further segmented by size into companies with over 5,000 employees, companies with between 1,000 and 4,999 employees, and companies with between 200 and 999 employees. For each category, management applies the average annualized revenue from all customers in that category during the three months ended January 31, 2020, driving an estimated $81bn global market opportunity.

We view Snowflake as well positioned to continue to capitalize on long-term secular growth drivers including cloud migrations and secure data sharing with the company's scalable and elastic cloud native data platform well positioned to replace incumbent data warehousing solutions. Similarly, we see the company's addressable market as underestimated, particularly as the platform's efficiency and secure data sharing enables use cases. That said, at ~87x our CY21 Sales estimate of $1.1bn (consensus of $1.1bn), we believe this is largely priced in at current levels.

Our FY22 revenue, EPS, and CFO estimates of $1.11bn (+92% yoy), ($0.82), and $68.8mn compare to consensus of $1.10bn (+89% yoy), ($0.86), and $35.7mn respectively. For the upcoming F4Q21, we are modeling revenue of $179mn (+104% yoy) and EPS of ($0.17) compared to consensus of $179mn (+104% yoy) and ($0.17) respectively. For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 77.

Exhibit 77: GS estimates vs Consensus and guidance

$ mn, except per share items

	3Q21 (A)	4Q21 (E)		1Q22 (E)		FY20 (A)	FY21 (E)		FY21 (E)	FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	GS Est.	Consensus
Product Revenue	$148.5	$167.3	$166.8	$193.7	$195.7	$252.2	$542.8	$542.3	$538 - $543	$1,028.1	$1,013.2	$1,677.5	$1,666.2
YoY	*115%*	*103%*	*102%*	*90%*	*92%*	*164%*	*115%*	*115%*	*113% - 115%*	*89%*	*87%*	*63%*	*207%*
QoQ	*19%*	*13%*	*12%*	*16%*	*17%*	--	--	--		--	--	--	--
Professional Services	$11.2	$11.3	$12.2	$16.8	$17.5	$12.5	$37.3	$38.3		$85.8	$84.5	$116.2	$119.2
YoY	*194%*	*114%*	*132%*	*140%*	*150%*	*1174%*	*198%*	*206%*		*130%*	*121%*	*35%*	*211%*
QoQ	*41%*	*1%*	*10%*	*49%*	*43%*	--	--	--		--	--	--	--
Total Revenue	**$159.6**	**$178.6**	$178.5	**$210.5**	$213.1	**$264.7**	**$580.2**	$580.1		**$1,113.9**	$1,095.2	**$1,793.7**	$1,790.6
YoY	*119%*	*104%*	*104%*	*93%*	*96%*	*174%*	*119%*	*119%*		*92%*	*89%*	*61%*	*209%*
QoQ	*20%*	*12%*	*12%*	*18%*	*19%*	--	--	--		--	--	--	--
Non GAAP Gross Profit	**$99.6**	**$112.1**	$116.4	**$128.1**	$141.3	**$145.5**	**$354.2**	$375.2		**$695.2**	$737.4	**$1,163.2**	$1,236.6
Gross Margin	*67.1%*	*67.0%*	*65.2%*	*66.1%*	*66.3%*	*57.7%*	*65.3%*	*64.7%*		*67.6%*	67.3%	*69.3%*	69.1%
Non GAAP Operating Expenses	**$155.1**	**$171.1**	$169.9	**$220.3**	$215.7	**$430.9**	**$609.0**	$608.3		**$993.6**	$1,005.7	**$1,427.0**	$1,492.7
YoY	*39%*	*45%*	*44%*	*57%*	*54%*	*141%*	*41%*	*41%*		*63%*	*65%*	*44%*	*145%*
QoQ	*9%*	*10%*	*9%*	*29%*	*27%*	--	--	--		--	--	--	--
Non GAAP Operating Income	**($48.1)**	**($51.5)**	($53.5)	**($81.1)**	($74.5)	**($278.2)**	**($230.4)**	($233.1)	($215) - ($217)	**($240.3)**	($268.3)	**($183.2)**	($256.1)
Operating Margin	*(30.1%)*	*(28.8%)*	*(30.0%)*	*(38.5%)*	*(34.9%)*	*(105.1%)*	*(39.7%)*	*(40.2%)*	*(40%) - (40%)*	*(21.6%)*	*(24.5%)*	*(10.2%)*	*(14.3%)*
YoY	*(28%)*	*(19%)*	*(16%)*	*12%*	*3%*	*111%*	*(17%)*	*(16%)*		*4%*	*15%*	*(24%)*	*10%*
Non GAAP EPS	**($0.28)**	**($0.17)**	($0.17)	**($0.28)**	($0.24)	**$0.00**	**($0.98)**	($0.89)		**($0.82)**	($0.86)	**($0.59)**	($0.70)
Total Billings (CF)	**$224.6**	**$388.9**	$342.6	**$204.0**	$205.5	**$487.7**	**$902.3**	$856.0		**$1,547.8**	$1,482.2	**$2,285.1**	$2,271.5
YoY	*101%*	*92%*	*69%*	*92%*	*94%*	*177%*	*85%*	*76%*		*72%*	*73%*	*48%*	*165%*
QoQ	*23%*	*73%*	*53%*	*(48%)*	*(40%)*	--	--	--		--	--	--	--
ST Deferred Revenue	**$438.2**	**$648.6**	--	**$642.1**	--	**$327.1**	**$648.6**	--		**$1,082.4**	--	**$1,573.8**	--
YoY	*107%*	*98%*	--	*98%*	--	*214%*	*98%*	--		*67%*	--	*45%*	--
QoQ	*35%*	*48%*	--	*(1%)*	--	--	--	--		--	--	--	--
LT Deferred Revenue	**$3.5**	**$3.5**	--	**$3.5**	--	**$2.9**	**$3.5**	--		**$3.5**	--	**$3.5**	--
YoY	*18%*	*20%*	--	*41%*	--	*(3%)*	*20%*	--		*0%*	--	*0%*	--
QoQ	*41%*	*0%*	--	*0%*	--	--	--	--		--	--	--	--
Total Deferred Revenue	**$441.7**	**$652.1**	--	**$645.6**	--	**$330.0**	**$652.1**	--		**$1,085.9**	--	**$1,577.3**	--
YoY	*106%*	*98%*	--	*97%*	--	*208%*	*98%*	--		*67%*	--	*45%*	--
QoQ	*35%*	*73%*	--	*(1%)*	--	--	--	--		--	--	--	--
OCF	**($19.8)**	**$6.6**	$1.5	**$32.9**	$24.0	**($176.6)**	**($58.4)**	($58.1)		**$68.8**	$35.7	**$180.1**	$99.6
YoY	*(17%)*	*(115%)*	*(104%)*	*(598%)*	*(464%)*	*23%*	*(67%)*	*(67%)*		*(218%)*	*(161%)*	*162%*	*(271%)*
FCF	**($37.9)**	**($12.8)**	($14.4)	**$17.2**	$10.3	**($199.4)**	**($105.8)**	($101.8)	($97) - ($98)	**$10.6**	($19.2)	**$105.4**	$53.5
YoY	*34%*	*(73%)*	*(70%)*	*(259%)*	*(195%)*	*35%*	*(47%)*	*(49%)*	*(18%) (18%)*	*(110%)*	*(81%)*	*895%*	*(153%)*

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: Upside risks include faster than expected adoption of cloud based data warehousing solutions, better than expected margin improvement as the company continues to leverage its scale to drive better pricing from third party cloud infrastructure providers, and faster than expected cloud adoption. Key downside risks include competition, particularly from well-established cloud service providers (CSPs) with substantial resources and broader portfolios. Moreover, Snowflake currently only offers its Cloud Data Platform on AWS, Microsoft Azure, and GCP which are also its primary competitors. Additional downside risks include FCF burn as we are forecasting a -18% FCF margin in FY21, potential outages as the company leverages public cloud infrastructure to run its cloud data platform, and customer concentration as Capital One Services generated 17% and 11% of total revenue in FY19 and FY20 respectively (which is expected to be below 10% in FY21, according to the company).

Valuation: Our 12-month price target of $310 is based on an equal weighted DCF analysis and EV/Sales multiple. Our DCF analysis is based on a terminal growth rate of roughly ~5% and WACC of ~6.5%, while our relative valuation is based on a 65x (Q5-Q8) EV/Sales multiple. This compares to an average ~20x EV/Sales (CY21) across our coverage group. We note that our estimated 92% yoy revenue growth for SNOW in

CY21 compares to an average expected CY21 sales growth of ~23% yoy for our coverage group based on consensus.

Splunk (SPLK, Buy): An attractive asset with a strategic value proposition at a favorable risk/reward

Investment view

We are assuming coverage of Splunk with a Buy rating and $240 price target. Our price target is based on a 35% weight to a 10-year DCF, 35% weight to a target EV/Sales multiple, and a 30% weight to an M&A target multiple. Splunk was up ~12 % in 2020 vs the NASDAQ up ~44%, and is currently trading at 10.4x EV/CY21E revs and 8.2x EV/CY22E revs, which is a discount to the large cap peer group. Despite near-term execution risks amid macroeconomic related deal delays, we believe at these levels Splunk's risk/reward is favorable, and it is an attractive asset with a unique and strategic value proposition. We are bullish on Splunk's rapidly scaling cloud business (~$580mn revs run rate with +80% y/y growth), long-term fundamentals and enhanced value proposition exiting COVID. Splunk is one of few pure-play big data companies, is a leader in IT Operations and Security, has a large installed base of 20,000+ enterprises, and has a strong track record of technology innovation and differentiation. As the company laps its two significant transitions: 1) customers moving workloads from on-premises to cloud, and 2) shifting from perpetual licenses to annually invoiced term and cloud subscriptions, we believe Splunk will become a secular growth story with 20%+ revs growth, expanding operating margins, and improved free cash flow generation. Based on our long-term framework, we believe there is upside to Splunk's current stock price. In our Base Case, we assume that Splunk can reach ~$14.5bn of revenues with a FCF margin of ~30% in 2031. Applying a 30x FCF multiple to ~$4.4bn of FCF in CY31, post 4% dilution per year, this would yield a compounded return of 13%, which is supportive of our Buy rating.

SPLK through the lens of the GS Framework for Investing in Software

In our view, Splunk maps strongly in our Software Framework with a large and under-penetrated TAM and a compelling long-term framework. As we highlight in our Secular Theme section, the company will continue to benefit from increased data growth as companies adopt Digital Transformation initiatives and shift to public cloud, hybrid cloud and DevOps. While the competitive landscape is crowded, we believe current stock levels and valuation represent a compelling entry point.

Exhibit 78: Mapping Splunk to the GS Framework for Investing in Software

8 KEY FACTORS	OUR VIEW ON SPLUNK: TANGIBLE	OUR VIEW ON SPLUNK: INTANGIBLE
TAM	Large TAM: 2020 TAM of $81bn Reaching $10bn in revenue is achievable	TAM expansion through increased data creation Well positioned in a hybrid and multi cloud world
SECULAR THEMES	Digital Transformations, Data Creation Logging, APM, Observability, DevOps, Public Cloud, Security	Strong position in both SIEM and logging use-cases
ENTRY/EXIT POINTS	Stock at 10x forward revs is a discount to peers Near-term execution headwind presents compelling entry point	Pent-up demand to benefit observability in 2H21
LT FRAMEWORK RETURN	Bear case: 5% compounded return; Base: 13%; Upside: 25%	Near-term revs pressure amid transition from perpetual license to cloud
UNIT ECONOMICS	Near-term pressure on numbers from transition to Cloud Changing revenue/bookings mix	Sustainable 25%+ revs growth post on-prem/perpetual license transition Competition and potential for price discounting
PLATFORM/ BEST OF BREED	Cloud offerings in-line with where IT is going Increasing penetration across multiple buying centers	Low penetration of full stack log/security/observability Potential vendor lock-in
COMPETITIVE MOAT	Deep integrated technology stack Large install base, differentiated log and SIEM offering	Cross-sell and up-sell base with DSP, SignalFx, Phantom Alternatives in APM, Infrastructure Monitoring, DevOps
ESG	Increasing shift to cloud can drive efficiencies Use cases including data governance, SIEM, security, APM	Changes to Sales leadership Potential risks from security breaches

Source: Goldman Sachs Global Investment Research, Company Data

Key Debates

Despite strong ARR growth that outpaces peers at similar scale, concern remains about Splunk's near term execution amid deal delays and persisting macroeconomic risk. These questions are heightened by the company suspending its mid-term targets for ARR to exit FY23 at ~$4.5bn, implying a 40% CAGR from FY20 to FY23 and Operating Cash Flow to reach $1bn exiting FY23. Investors also remain concerned that Splunk has become too reliant on its installed base expansion and conversion from perpetual licenses and as renewals trail off in FY23, it may struggle to sustain 30%+ ARR growth.

Our Differentiated Take

Splunk should be a beneficiary of pent up cloud and DevOps spend. While the 3Q21 results were disappointing we note several silver linings and remain bullish on Splunk's long-term strategic value and secular growth opportunity. Despite an upbeat and bullish analyst day on October 21, 2020, in the final 10 days of the quarter, Splunk experienced significantly higher levels of deal scrutiny from its largest deals. The company normally closes 7 to 9 of its largest 10 deals in the pipeline heading into a quarter with most deals signed off by a customer C-suite level executive. However, in 3Q Splunk closed only 3 of its largest deals amid heightened deal scrutiny during the last few days of the quarters with board members and external parties delaying deal closures. While the magnitude of the deal delays is concerning, we note: 1) none of the deal delays are due to competition and the company believes all of the deals are still in play, 2) Splunk was able to close a few of the deals already in 4Q, 3) the delayed deals resulted in a $50-60mn haircut to ARR, meaning including these deals ARR growth would have been stable at ~48% y/y vs 50% in 2Q, signaling that the underlying demand environment remains strong. While elevated deal scrutiny may remain in 4Q, we believe this is largely priced into the stock and note that amid a vaccine and normalization, Splunk will likely be a key beneficiary of pent-up public cloud and DevOps spend. As our Digital Transformation survey suggests, Splunk is poised to gain wallet share of DX budgets in 2021. With 13 respondents expecting Splunk to gain wallet share, this is among the largest gainers and rivals both ServiceNow and VMware. We also note that our survey suggests that there is pent-up demand for both business intelligence and analytics software, and security software, which is a positive for Splunk.

Current stock level presents a compelling entry point. We also note that the recent underperformance presents a compelling entry point as software companies with a strong franchise and large TAM typically rebound after an execution issue. This was also the case with Splunk, which had execution issues in early 2016. We also note that the 3Q21 results is not cause for major concerns and can be explained by the company not lowering expectations earlier in the year like peers such as Elastic and Dynatrace did, as well as the announcement of the departure of the Head of Sales. In the long-term, Splunk will likely scale up its sales and distribution team and add more seasoned senior leaders. We point to other large software companies with strong and durable franchises that recovered from one-off execution issues such as Salesforce (execution issues in October 2011 and April 2017) and ServiceNow (early 2016).

Investors do not fully appreciate scale and growth of cloud business. Furthermore, we do not think investors fully appreciate Splunk's cloud business, which continues to outperform, is accelerating at a large scale, and reinforces our view that ASP uplift improves unit economics. At a $580mn run rate, growing +80% y/y, this looks very impressive vs Datadog's $620mn revs run rate growing +61% y/y in 3Q20, and Elastic's subscription + SaaS revs run rate of $475mn at ~50% y/y in FY2Q21. We see a large and sustainable growth opportunity ahead for the cloud business, and we are modeling $553mn of revenue in FY21E, $958mn in FY22E, and $1,642mn in FY23E, culminating in a 73% CAGR through FY23E. This view is driven by multiple factors, including: 1) Splunk is prioritizing cloud at the center of its growth strategy, highlighted by cloud bookings growing from 25% of total software bookings in FY19 to ~60% in FY21E, 2) 42% of cloud customers are hybrid deployments, suggesting a further conversion opportunity at a higher ASP (cloud ASPs are ~50% higher than term ASPs), 3) ~70% of total ARR is from on-premise deployments, suggesting that the ARR renewal base is on track to roughly triple over the next two years, 4) when a customer switches from on-premise to cloud, average ARR increases by 2.6x in the first year, and increases by 5.4x after three years, and 5) as data volumes increase and renewals come up, Splunk can attach Data Stream Processor (DSP) and SignalFx.

Based on our hypothetical scenario analysis in Exhibit 79, we believe the cloud business may be worth ~$24bn or 85% of the company's current EV of $28bn. This is based on a multiple of 25x CY21E/FY22E EV/revs, and CY21E/FY22E cloud revs growth of 73% (vs $553mn, +77% y/y in CY20E). We note that Datadog is trading at 40x consensus CY21 revenue estimates. As shown in our scenario analysis below, given Splunk's cloud business's sustained elevated growth rate and improving margin profile, it could warrant a higher multiple.

Exhibit 79: Splunk Cloud business may be worth 85% of current EV

	FY19A	FY20A	FY21E	FY22E	FY23E
Total Revenue ($mn)	1,803	2,359	2,178	2,670	3,415
y/y growth	*38%*	*31%*	*-8%*	*23%*	*28%*
Cloud Revenue ($mn)	171	312	553	957	1,642
y/y growth	81%	*83%*	*77%*	*73%*	*71%*

Cloud Revenue CY21/FY22 ($mn)	957
EV/Revenue Multiple	25.0x
Cloud EV ($mn)	23,937
Splunk EV ($mn)	28,204
Cloud EV as % of Total Splunk EV	85%
Implied EV/Rev Multipe on non-cloud business	2.5x

		FY22E Cloud EV/Revenue Multiple				
	85%	**15.0x**	**20.0x**	**25.0x**	**30.0x**	**35.0x**
FY22E Cloud Revenue Growth	**63%**	48%	64%	80%	96%	112%
	68%	49%	66%	82%	99%	115%
	73%	51%	68%	85%	102%	119%
	78%	52%	70%	87%	105%	122%
	83%	54%	72%	90%	108%	126%

Source: Company data, Goldman Sachs Global Investment Research, Factset

At its current ARR of $2.1bn, Splunk's +44% y/y growth (~47-48% adjusted for SignalFx lap), is higher than peers including CRM (36% y/y growth at $2.2bn scale), WDAY (31% y/y at $2.1bn), and NOW (40% y/y at $2.2bn scale). Splunk is not only growing faster than peers, but we are modeling that it will sustain its elevated ARR growth and reach $4bn of ARR in 7-8 quarters. In comparison, it took CRM 8 quarters to go from $2.2bn to $4bn, it took WDAY 11 quarters to go from $2.1bn to $4bn, and it took NOW 8 quarters to go from $2.2bn to $4bn.

For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 80.

Exhibit 80: GS estimates vs Consensus and guidance

$ mn, except per share items

	3Q21 (A)	4Q21 (E)		4Q21 (E)	1Q22 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	**Actual**	**GS Est.**	**Consensus**	**Guidance**	**GS Est.**	**Consensus**	**Actual**	**GS Est.**	**Consensus**	**GS Est.**	**Consensus**	**GS Est.**	**Consensus**
License Revenue	$240	$326	$334		$163	$128	$1,373	$891	$901	$981	$895	$1,069	$938
YoY	*(35.7%)*	*(37.0%)*	*(35.5%)*		*10.0%*	*(13.5%)*	*33.3%*	*(35.1%)*	*(34.4%)*	*10.0%*	*(0.7%)*	*9.0%*	*4.8%*
QoQ	*35.9%*	*35.7%*	*39.0%*		*(49.9%)*	*(61.5%)*							
Cloud Services Revenue	$145	$170	$171		$188	$191	$312	$553	$554	$957	$939	$1,642	$1,483
YoY	*80.2%*	*71.7%*	*72.6%*		*68.0%*	*70.7%*	*82.9%*	*77.2%*	*77.6%*	*73.2%*	*69.6%*	*71.5%*	*57.9%*
QoQ	*29.0%*	*17.5%*	*18.1%*		*10.9%*	*12.1%*							
Maintenance & Service Revenue	$174	$198	$289		$178	$309	$674	$734	$1,075	$732	$1,398	$704	$2,104
YoY	*0.8%*	*13.2%*	*65.3%*		*2.9%*	*78.1%*	*(12.8%)*	*8.9%*	*59.6%*	*(0.3%)*	*30.1%*	*(3.8%)*	*50.5%*
QoQ	*(8.1%)*	*13.8%*	*66.3%*		*(9.7%)*	*7.0%*							
Total Revenue	**$559**	**$694**	**$678**	**$650 - $700**	**$530**	**$508**	**$2,359**	**$2,178**	**$2,167**	**$2,670**	**$2,612**	**$3,415**	**$3,331**
YoY	*(10.8%)*	*(12.3%)*	*(14.3%)*	*(17.8%) - (11.5%)*	*22.1%*	*17.1%*	*30.8%*	*(7.7%)*	*(8.1%)*	*22.6%*	*20.5%*	*27.9%*	*27.6%*
QoQ	*13.6%*	*24.2%*	*21.3%*	*16.4% - 25.3%*	*(23.6%)*	*(25.0%)*							
Non GAAP Gross Profit	**$446**	**$555**	**$553**		**$403**	**$386**	**$2,005**	**$1,716**	**$1,715**	**$2,048**	**$2,063**	**$2,575**	**$2,648**
Gross Margin	*79.9%*	*80.0%*	*81.6%*		*76.1%*	*75.9%*	*85.0%*	*78.8%*	*79.1%*	*76.7%*	*79.0%*	*75.4%*	*79.5%*
Non GAAP Operating Income	**($10)**	**$7**	**$10**	**($26) - $21**	**($77)**	**($109)**	**$335**	**($177)**	**($170)**	**$52**	**($48)**	**$415**	**$236**
Operating Margin	*(1.7%)*	*1.0%*	*1.5%*	*(4.0%) - 3.0%*	*(14.5%)*	*(21.4%)*	*14.2%*	*(8.1%)*	*(7.9%)*	*2.0%*	*(1.8%)*	*12.2%*	*7.1%*
YoY	*(109.0%)*	*(96.5%)*	*(94.6%)*	*(113.6%) - (89.0%)*	*(30.9%)*	*(16.5%)*	*46.7%*	*(152.8%)*	*(150.8%)*	*(129.6%)*	*(71.7%)*	*694.0%*	*(589.9%)*
Non GAAP EPS	**($0.07)**	**$0.03**	**$0.03**		**($0.49)**	**($0.53)**	**$1.88**	**($0.93)**	**($0.93)**	**$0.08**	**($0.31)**	**$1.84**	**$0.95**
Total Billings (BS)	$529	$894	$816		$530	$495	$2,487	$2,246	$2,176	$2,920	$2,876	$3,690	$3,962
YoY	*(21.7%)*	*(5.1%)*	*(13.4%)*		*51.4%*	*41.4%*	*23.6%*	*(9.7%)*	*(12.5%)*	*30.0%*	*32.2%*	*26.4%*	*37.8%*
QoQ	*11.7%*	*69.0%*	*54.3%*		*(40.7%)*	*(39.3%)*							
Total Deferred Revenue	$874	$1,074	$1,013		$1,074	$999	$1,006	$1,074	$1,015	$1,324	$1,280	$1,599	$1,910
YoY	*2.2%*	*6.8%*	*0.6%*		*16.5%*	*8.4%*	*14.6%*	*6.8%*	*0.9%*	*23.3%*	*26.1%*	*20.8%*	*49.3%*
QoQ	*(3.3%)*	*22.9%*	*15.8%*		*************	*(1.3%)*							
OCF	($43)	($133)	($25)		$35	$21	($288)	($300)	($202)	$200	$164	$793	$662
OCF Margin	*(7.7%)*	*(19.2%)*	*(3.6%)*		*6.6%*	*4.1%*	*(12.2%)*	*(13.8%)*	*(9.3%)*	*7.5%*	*6.3%*	*23.2%*	*19.9%*
FCF	**($46)**	**($147)**	**($43)**		**$27**	**($3)**	**($389)**	**($342)**	**($254)**	**$159**	**$85**	**$742**	**$573**

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: Risks to the downside include: 1) prolonged and worse than expected COVID-19 impact causing slower net new business, deal delays, and longer sales cycles, 2) increased competition from IT Operation incumbents including Elastic, Dynatrace, Datadog, New Relic and AppDynamics, and 3) higher expense growth limiting margin expansion.

Valuation: Our 12-month price target of $240 is based on a three-pronged valuation framework based on a 35% weight to a DCF, 35% weight to a target EV/Sales multiple, and a 30% weight to an M&A target multiple. Our 10-year DCF assumes a sales CAGR of ~20%, 32% long-term operating margins, a 7.5% discount rate, and a ~23x EV/FCF terminal multiple. We use a 12x EV/Sales multiple on our Q5:Q8 revenue estimates of $3.3bn. For our M&A framework, we apply a 13x multiple to our Q1:Q4 revenue estimates of $2.5bn, which implies a ~20% upside to the current stock price. Our M&A target multiple is largely in-line with precedent transactions in the Infrastructure and Analytics markets, as shown in Exhibit 81.

Exhibit 81: M&A Precedent Transactions

Date	Target Name	Acquirer Name	Subgroup	Transaction Value	NTM Sales ($mn)	TV / NTM Sales	NTM EBITDA ($mn)	TV / NTM EBITDA
28-Oct-18	Red Hat, Inc.	IBM	Infrastructure	$34,000	$3,617	9.4x	$982	34.6x
20-Mar-18	Mulesoft	Salesforce.com	Infrastructure	$6,500	$411	15.8x	-	-
24-Jan-17	AppDynamics	Cisco Systems	Analytics	$3,576	$298	12.0x	-	-
		Mean		$14,692	$1,442	12.4x	$982	34.6x
		Median		$6,500	$411	12.0x	$982	34.6x

Source: Company data, Goldman Sachs Global Investment Research, FactSet

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Within this context, we rank SPLK as "1", and weight our M&A valuation by 30% (reflecting the probability implied by this ranking) within our price target methodology. We believe Splunk may be an M&A candidate given its large installed base, exposure to strong secular markets, and next-generation core logging and SIEM technology.

Workday Inc. (WDAY, Buy): Sustainable growth ahead as digital transformation initiatives accelerate

Investment view

We are initiating coverage of Workday (WDAY) with a Buy rating. Our 12-month price target of $300 is based on an equal weighting of a DCF (~4% perpetuity growth rate) and EV/Sales (13x Q5-Q8 sales). Our thesis is that Workday is a uniquely positioned application software company addressing massive cloud replacement cycles in a $90bn+ TAM spanning human capital resources (HCM), financials, analytics, planning, and procurement. We believe Workday is poised to grow into a $10bn+ business catalyzed by financials moving to the cloud following its core HCM marquee product. The pandemic is driving customers to accelerate their digital transformation so that they can operate their businesses virtually in the cloud, where we believe Workday remains well positioned to capitalize on rising cloud adoption, particularly within financials. We believe that there is pent-up demand for large strategic projects pertinent to Workday's products which should drive accelerating top line growth in F2H22.

WDAY through the lens of our framework for investing in software: While HCM may be further along in cloud penetration, we see the opportunity for several secular trends to drive long-term sustainable growth in Workday's business, most notably adoption of cloud based financials, digital transformation, and the growing importance of business intelligence and analytics. Moreover, the company's large, $90bn+ TAM provides ample runway for sustained growth, while Workday's breadth of offerings across HCM, financials, planning, procurement and analytics alongside a large and growing installed base of large, enterprise customers leave the company well positioned to compete. As the number of SKUs continues to expand, we see runway for continued upsell and cross-sell within the company's installed base which, in our view, should drive strong unit economics, and therefore operating margins, over the long-term.

Exhibit 82: Mapping Workday to the GS Framework for Investing in Software

	OUR VIEW ON WORKDAY	
8 KEY FACTORS	TANGIBLE	INTANGIBLE
TAM	Large and expanding $90bn+ TAM	HCM and Financials prioritization within enterprise IT budgets Ability to expand the platform and add feature/functionality
SECULAR THEMES	cloud adoption, (particularly with respect to cloud based financials), digital transformation, AI/ML, and analytics	The pace of cloud adoption for core financials within large enterprise customers
ENTRY/EXIT POINTS	The stock currently trades ~10x our CY21 Sales estimate	Recent underperformance on the back of tepid F4Q21 subscription backlog guidance creates an attractive entry point
LT FRAMEWORK RETURN	Bear case: 0% compounded return; Base: 12%; Upside: 17%	The pace of enterprise cloud migrations for core financials and the pace of margin expansion
UNIT ECONOMICS	Continued traction with back to base efforts, alongside low churn should be supportive operating leverage at scale	Relative efficiency of the company's go-to-market motion as the company continues to invest ahead of growth and expand
PLATFORM/ BEST OF BREED	Broad and expanding platform across HCM and financial management systems (FMS)	Continued traction with cross-sell and upsell into the company's installed customer base
COMPETITIVE MOAT	Large installed base of enterprise customers and broad and expanding portfolio across HCM and FMS	Potential competition from point solutions and other platform providers
ESG	100% renewable electricity used in offices and datacenters	Potential social impacts of products and potential risks from security breaches. Dual class voting structure

Source: FactSet, Company data, Goldman Sachs Global Investment Research

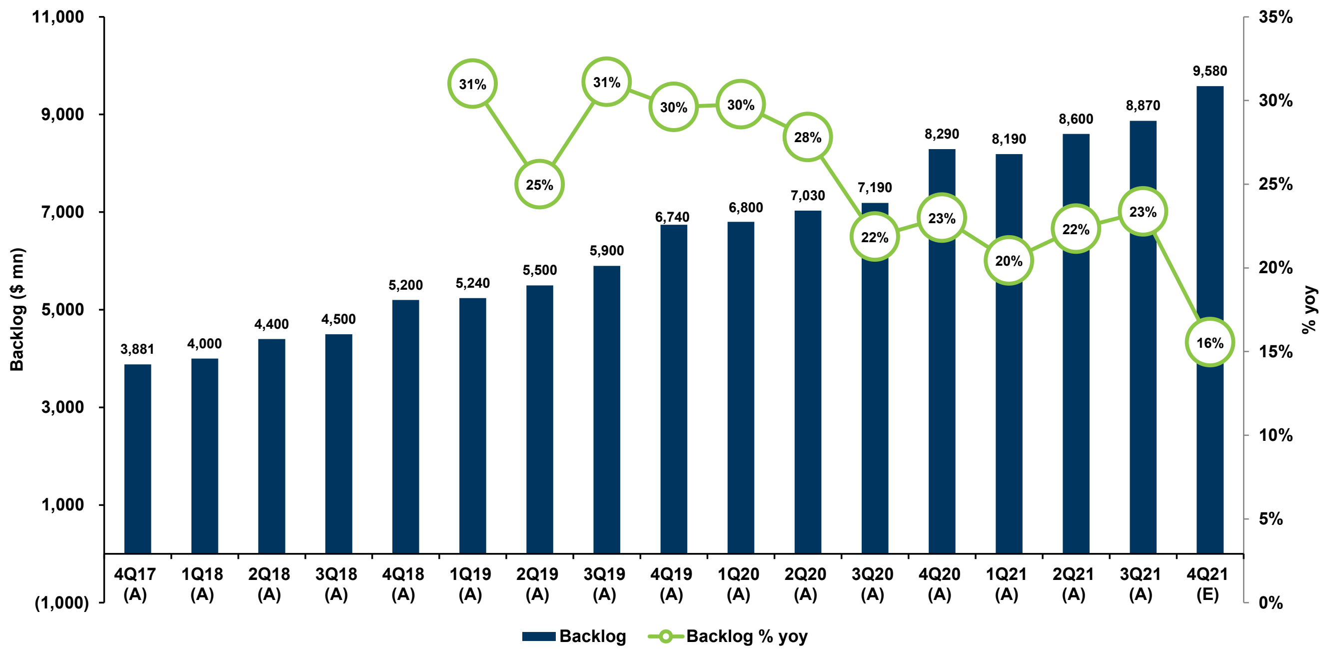
Key debates

Investors have been waiting for signs of an inflection in the pace of financials cloud migrations. There have also been recent concerns about the maturation and therefore growth rate deceleration of the core human capital management (HCM) pillar. Workday's 40%+ share of Fortune 500 customers for its core HCM pillar has investors worried about saturation and growth prospects. Most recently, despite strong F3Q results, the company's F4Q21 subscription revenue backlog guidance of +14% to +16% yoy was lower than Street expectations of high-teens, notwithstanding a tougher compare against F4Q20 subscription backlog growth of +23% yoy in F4Q20 (vs +22% yoy in F3Q20). Similarly, while management did not provide initial FY22 guidance on their F3Q21 earnings call in November, given heightened macro uncertainty, tempered commentary in regards to COVID related headwinds, particularly with respect to net new bookings, weighing on subscription revenue growth in the near term was also met with disappointment. Finally, the Street is concerned whether the large magnitude of operating margin beats, most recently ~515bps and ~535bps in F3Q21 and F2Q21 respectively, driven in part by COVID related T&E savings, can be sustained into CY21 (FY22), as management outlined expectations for accelerating the pace of hiring in FY22, particularly focusing on sales, marketing, and product investments aimed at accelerating pipeline growth.

Our view

Our differentiated take is that growth in the core market is sustainable and that bookings growth in F4Q21 has upside. We believe that growth in the core HCM market could potentially accelerate in F2H22 given pent up demand and increasing importance of digital transformation. While guidance for backlog growth of 14% - 16% in the upcoming F4Q21 breaks an improving trend of 20%, 21% and 23% in the last three quarters, we believe it is not a reflection of any incremental weakening of demand conditions but mostly related to a tough comp of +23% yoy in F4Q20. With vaccines beginning to be distributed, we believe that corporations are getting ready to revisit strategic initiatives that may have been temporarily delayed, which could lead to Workday coming in higher than its initial guidance of +14% to 16% yoy backlog growth in the upcoming F4Q21. We acknowledge that slowing subscription revenue growth in FY22 (Jan) as a result of having booked new business below pre-COVID pandemic plan in FY21 is an issue. However, we believe that subscription revenues are a lagging indicator and that new business bookings in FY22 could end up being a positive leading indicator, particularly as larger digital transformation initiatives regain momentum, particularly with respect to cloud based financials.

Exhibit 83: Subscription revenue backlog has been accelerating since F1Q21 as demand trends continue to improve
$ mn

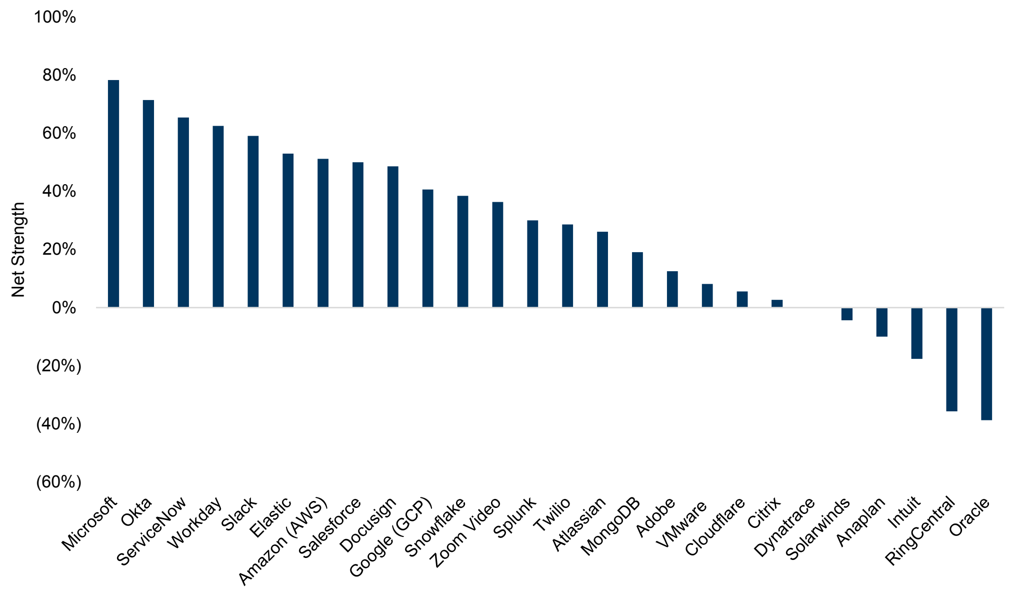


Source: Company data, Goldman Sachs Global Investment Research

We see runway for continued growth within the installed base and new logos. Our channel checks indicate that several Workday projects that were put on hold are likely to be resumed. Furthermore, the overall pipeline looks strong at both late and early stages. Our conversations also indicate that running financials in the cloud has become a higher priority for enterprises following the pandemic particularly as workforces are likely to remain distributed to some extent for the foreseeable future. Furthermore, Workday's relatively new products such as planning, procurement, and analytics are just getting started in terms of attach rates within its installed base, which leaves room for significant growth. We believe that net new ACV growth within the installed base which will begin to lap 50%+ growth yoy over the last few quarters can nonetheless remain a significant contributor to topline growth and margin expansion. In our digital transformation survey, Workday ranked among the top vendors in terms of net strength as it pertains to digital transformation budgets (% of respondents where the vendor is expected to gain share of wallet - % of respondents where the vendor is expected to lose share of wallet); further evidence that the company's "back to base" strategy continues to gain traction.

Exhibit 84: With respect to digital transformation budgets, Workday continues to gain wallet share within its growing customer base

Net Strength (% expecting to gain share of wallet - % expecting to lose share of wallet)



Source: Goldman Sachs Global Investment Research

Finally, while margin growth does face a headwind in FY21, we also believe that continued margin growth will be driven by increasingly higher retention rates as the business pivots more toward financials and planning. Not to mention some of the efficiencies in distribution gained through virtual selling are likely to remain to some extent, even if workforces return to pre-pandemic travel regimes.

The Democratic party, strengthened by a Senate majority, could be in a better position to pass legislation for higher corporate taxes. Consequently, for illustrative purposes we test our models for the potential for increased marginal tax rates. For Workday, we estimate that a hypothetical 1% increase in the company's effective tax rate will represent ~1.5% headwind to EPS growth in FY22 (all else equal).

Our FY22 revenue, EPS, and CFO estimates of $5.1bn (+19% yoy), $3.14, and $1.2bn compare to consensus of $5.0bn (+17% yoy), $2.89, and $1.3bn respectively. For the upcoming F4Q21, we are modeling revenue of $1.1bn (+14% yoy) and EPS of $0.54 compared to consensus of $1.1bn (+14% yoy) and $0.55 respectively. For a more detailed summary of our estimates relative to consensus and guidance see Exhibit 85.

Exhibit 85: GS estimates vs Consensus and guidance

$ mn, except per share items

	3Q21 (A)	4Q21 (E)	4Q21 (E)		1Q22 (E)		FY20 (A)	FY21 (E)		FY21 (E)	FY22 (E)		FY23 (E)	
All figures in $ mns	Actual	Guidance	GS Est.	Consensus	GS Est.	Consensus	Actual	GS Est.	Consensus	Guidance	GS Est.	Consensus	GS Est.	Consensus
Subscription revenue	$969	$991 - $993	$993	$993	$1,023	$1,026	$3,096	$3,775	$3,776	$3,773 - $3,775	$4,535	$4,451	$5,525	$5,298
YoY	*21%*	*18% - 18%*	*18%*	*18%*	*16%*	*16%*	*30%*	*22%*	*22%*	*22% - 22%*	*20%*	*18%*	*22%*	*19%*
QoQ	*4%*	*2% - 3%*	*2%*	*3%*	*3%*	*3%*								
Prof services revenue	$137	$121 - $121	$121	$122	$150	$134	$531	$525	$526	$525 - $525	$578	$564	$635	$633
YoY	*(2%)*	*(11%) - (11%)*	*(12%)*	*(11%)*	*10%*	*(2%)*	*22%*	*(1%)*	*(1%)*	*(1%) - (1%)*	*10%*	*7%*	*10%*	*12%*
QoQ	*5%*	*(12%) - (12%)*	*(12%)*	*(11%)*	*24%*	*10%*								
Total revenue	**$1,106**	**$1,112 - $1,114**	**$1,113**	**$1,115**	**$1,173**	**$1,162**	**$3,627**	**$4,300**	**$4,302**	**$4,298 - $4,300**	**$5,112**	**$5,020**	**$6,160**	**$5,893**
YoY	*18%*	*14% - 14%*	*14%*	*14%*	*15%*	*14%*	*29%*	*19%*	*19%*	*18% - 19%*	*19%*	*17%*	*21%*	*17%*
QoQ	*4%*	*1% - 1%*	*1%*	*1%*	*5%*	*4%*								
Gross profit (non-GAAP)	$864		$870	$868	$884	$897	$2,739	$3,322	$3,302		$3,986	$3,889	$4,850	$4,630
YoY	*21%*		*18%*	*18%*	*16%*	*18%*	*30%*	*21%*	*21%*		*20%*	*18%*	*22%*	*19%*
Gross margin	78%		78%	78%	75%	77%	76%	77%	77%		78%	77%	79%	79%
Operating expenses (non-GAAP)	$595		$701	$697	$756	$712	$2,255	$2,497	$2,475		$2,988	$2,984	$3,549	$3,477
YoY	*5%*		*13%*	*12%*	*20%*	*13%*	*24%*	*11%*	*10%*		*20%*	*21%*	*19%*	*17%*
QoQ	*(17%)*		*18%*	*17%*	*8%*	*2%*								
Operating income (non-GAAP)	**$268**	**$167 - $167**	**$168**	**$171**	**$128**	**$185**	**$484**	**$824**	**$827**	**$817 - $817**	**$998**	**$905**	**$1,301**	**$1,153**
YoY	*NM*		*44%*	*47%*	*(2%)*	*42%*	*66%*	*70%*	*71%*	*69% - 69%*	*21%*	*9%*	*30%*	*27%*
QoQ	*21%*		*(37%)*	*(36%)*	*(24%)*	*8%*								
Operating margin	*24.2%*	*15.0% - 15.0%*	*15.1%*	*15.3%*	*10.9%*	*15.9%*	*13.4%*	*19.2%*	*19.2%*	*19.0% - 19.0%*	*19.5%*	*18.0%*	*21.1%*	*19.6%*
EPS (non-GAAP)	**$0.86**		**$0.54**	**$0.55**	**$0.41**	**$0.58**	**$1.88**	**$2.68**	**$2.69**		**$3.14**	**$2.89**	**$3.92**	**$3.57**
Billings (via CF)	**$1,107**		**$1,614**	**$1,588**	**$954**	**$971**	**$3,982**	**$4,561**	**$4,536**		**$5,493**	**$5,385**	**$6,567**	**$6,363**
YoY	*19%*		*15%*	*13%*	*19%*	*21%*	*26%*	*15%*	*14%*		*20%*	*19%*	*20%*	*18%*
QoQ	*7%*		*46%*	*43%*	*(41%)*	*(39%)*								
Short-term billings	**$1,103**		**$1,614**	**$1,575**	**$961**	**$942**	**$4,013**	**$4,577**	**$4,539**		**$5,506**	**$5,411**	**$6,578**	**$6,395**
YoY	*18%*		*15%*	*12%*	*19%*	*17%*	*24%*	*14%*	*13%*		*20%*	*19%*	*19%*	*18%*
QoQ	*5%*		*46%*	*43%*	*(40%)*	*(40%)*								
Subscription billings (via CF)	**$970**		**$1,493**	**$1,466**	**$804**	**$834**	**$3,456**	**$4,036**	**$4,010**		**$4,915**	**$4,817**	**$5,932**	**$5,768**
YoY	*22%*		*18%*	*16%*	*21%*	*26%*	*24%*	*17%*	*16%*		*22%*	*20%*	*21%*	*20%*
QoQ	*7%*		*54%*	*51%*	*(46%)*	*(43%)*								
ST unearned revenue	$2,000		$2,501	$2,460	$2,288	$2,240	$2,223	$2,501	$2,460		$2,894	$2,852	$3,312	$3,353
QoQ	*(0%)*		*25%*	*23%*	*(9%)*	*(9%)*								
LT unearned revenue	$69		$70	$78	$63	$72	$86	$70	$78		$56	$81	$45	$79
QoQ	*7%*		*1%*	*13%*	*(9%)*	*(7%)*								
Unearned revenue (total)	**$2,069**		**$2,570**	**$2,519**	**$2,351**	**$2,311**	**$2,309**	**$2,570**	**$2,522**		**$2,950**	**$2,892**	**$3,357**	**$3,433**
YoY	*10%*		*11%*	*9%*	*12%*	*11%*	*18%*	*11%*	*9%*		*15%*	*15%*	*14%*	*19%*
QoQ	*0%*		*24%*	*22%*	*(9%)*	*(8%)*								
OCF	**$294**		**$309**	**$362**	**$314**	**$363**	**$865**	**$1,024**	**$1,081**		**$1,215**	**$1,250**	**$1,367**	**$1,516**
YoY	*14%*		*4%*	*22%*	*19%*	*38%*	*43%*	*18%*	*25%*		*19%*	*16%*	*13%*	*21%*
FCF	**$215**		**$239**	**$280**	**$268**	**$276**	**$521**	**$744**	**$791**		**$982**	**$898**	**$1,123**	**$1,119**
YoY	*19%*		*(2%)*	*14%*	*33%*	*37%*	*144%*	*43%*	*52%*		*32%*	*13%*	*14%*	*25%*

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: key risks to our thesis include 1) the pace of SaaS adoption in financials as large-scale core financials migrations have been de-prioritized in the wake of COVID-19 based on our conversations, 2) The pace of deceleration in the company's core HCM business as SaaS penetration is further along relative to financials, 3) changes in the competitive landscape within HCM and Financials could adversely affect the growth outlook for the company, 3) a macroeconomic slowdown or adverse changes in the overall spending environment could adversely affect fundamentals as could shifts in IT spending priorites, 4) slower than expected margin expansion as the company continues to invest ahead of revenue growth.

Valuation: Our 12-month price target of $300 is based on an equal blend of DCF and EV/sales. Our DCF assumes a perpetuity growth rate of ~4% and WACC of ~8.5% and our Q5-Q8 EV/sales analysis assumes 13x Q5-Q8 sales. This compares to an average ~20x EV/Sales (CY21) across our coverage group.

VMware (VMW, Neutral): Initiating with a Neutral rating; Confident in

$20bn revenue target, but several near-term headwinds

Investment view

We are initiating coverage of VMware with a Neutral rating and a 12-month price target of $150. Our price target is based on an equal blend of DCF, EV/FCF, and P/E. Our view is supported by our DX survey published in this report – when we asked CIOs which vendors will gain or lose share in DX budgets, amongst all vendors, VMware's performance was somewhat muted, with net strength of +8% (defined as % gaining share less % losing share; gaining share: 14 respondents; losing share: 11 respondents; about the same: 12 respondents).

VMware is the most successful infrastructure software company to have attained scale and profitability. Albeit growth has been modest recently, this is understandable since the company is successfully pivoting to the cloud. Once caught in between the crossroads of on-premise and Cloud, VMware's long-term strategic positioning has successfully pivoted to the Cloud, which increases the relevance of the company to its customers and therefore to investors. VMware's most strategic cloud partner — AWS — has the potential to catalyze a migration of VMware's massive installed base of 70-80 million virtual workloads, which could provide a long tail of growth opportunity.

In July 2020, Dell announced it is exploring a potential tax-free spin-off of VMware, amongst other options. According to company documents, if a spin-off is completed, VMware will pay a special dividend to shareholders (via increased debt), with Dell likely to use proceeds to de-lever its balance sheet, in our view. Dell has stated that it will not spin off VMware until Sept. 2021 at the earliest, but has not set any deadline for a potential spin-off. An update regarding VMware's relationship with Dell before September could be a potential catalyst, but details about the capital, governance and control structure have not been disclosed.

VMW through the lens of the GS Framework for Investing in Software

In our view, VMware scores well in many aspects of our framework, including a large TAM, deep technology stack, large install base, differentiated strategy in security and networking, among others. While the transition to SaaS is depressing near-term numbers, as the company comes out of the transition and operating margins increase to low 30s assuming high-single/double-digit revenue growth, VMware could again demonstrate Rule of 40+ at scale. While the company has a strong position in both virtual machines and containers on-premise, it is yet to be determined if VMware can leverage its install base and its cloud partnerships to gain meaningful share with containers in the public cloud with Project Tanzu. We also note that the CEO transition creates near-term uncertainty.

Exhibit 86: Mapping VMware to the GS Framework for Investing in Software

8 KEY FACTORS	OUR VIEW ON VMWARE: TANGIBLE	OUR VIEW ON VMWARE: INTANGIBLE
TAM	Large TAM Achieving $20bn in revenue is achievable	Ability to execute on all segments of the stack
SECULAR THEMES	The infrastructure stack behind Digital Transformation Security, remote work, cloud, DevOps customer priorities	Strong position on-prem both with VMs and containers Ability to gain meaningful share in public cloud containers
ENTRY/EXIT POINTS	Stock at low teens forward EV/FCF vs historical mid/high teens	Clarity around Dell's plans for VMware could be stock catalyst
LT FRAMEWORK RETURN	Bear case: 5% compounded return; Base: 12%; Upside: 15%	Near-term pressure on numbers from transition to SaaS
UNIT ECONOMICS	Near-term pressure on numbers from transition to SaaS Changing revenue mix	Timing of inflection of revenues as SaaS mix increases Timing of inflection of margins as SaaS mix increases
PLATFORM/ BEST OF BREED	End-to-end infrastructure stack Multi-cloud strategy in-line with where IT is going	For smaller customers it is cheaper to go native on public clouds Potential vendor lock-in
COMPETITIVE MOAT	Deep integrated technology stack Large install base; differentiated security, networking etc stack	Ability to gain meaningful share in public cloud containers Install base has alternatives: cloud native or OpenShift
ESG	Dell ownership	Complex dynamics with Dell ownership

Source: Goldman Sachs Global Investment Research

Key debate: Is the $20bn revenue target achievable? How to reconcile increasing strategic relevance with near-term headwinds?

Currently investors are grappling with several moving pieces. The company has an aspirational goal of $20bn in revenues, up from the current of ~$12bn. A high-single digit growth implies about 7 years to get to $20bn and low double digits imply 5 years. With the company's increasing relevance in a multi-cloud world, this goal seems achievable, yet a significant portion of VMware's business has been negatively impacted by COVID-19. This apparent dichotomy is compounded by a business model transition to cloud (parts of EUC, management, and on-premise move to AWS) which inherently depresses growth rates in the near-term. Secular demand for NSX, vSAN, EUC, security, PaaS in a post-pandemic world is key in regaining investor confidence. The AWS opportunity could be potentially significant and while the AWS business is inflecting, the ultimate opportunity is still difficult to estimate. The % of non-recurring business is decreasing rapidly, and the subscription business is at scale at $2.7bn run-rate growing 40%+, potentially approaching $4bn+ in a couple of years. Applying a mid-teens revenue multiple to the SaaS business implies VMware's total market capitalization today, i.e. the market is currently assigning zero value to the non-SaaS business (76% of revenues). We believe this value dis-connect is largely due to the uncertainty regarding the relationship with Dell.

Our view

In our view, near-term fundamentals are a bit challenged since the pandemic has shifted customer demand to cloud. This has resulted in lower customer demand for VMware's on-premise core business.

Revenue mix getting better over time. The growth businesses of VMware (AWS, NSX, EUC, vSAN, security, PaaS, management), nonetheless, in our estimation, account for ~60% of revenues and are projected to grow double digits, in our view. License revenues, while a bit lumpy, are now 20% of revenues, down from 40%+ from four years ago. Since license deals are large and lumpy, they can result in volatility of billings, thereby whipsawing investor sentiment, while the real story longer term is about the transition to the cloud. While that alone might be somewhat acceptable to investors, we believe the added uncertainty regarding the Dell relationship and the uncertainty related to the ongoing CEO transition are other overhangs for the stock.

Uncertainty related to Dell ownership. We believe today's VMW valuation reflects a discount (stock trades at low teens forward EV/FCF vs. historical mid to high teens) attributable to the uncertainty related to the Dell relationship (and attendant capital structure questions about how much leverage VMware will need to take on in future) and partially to the recent mixed quarterly results (billings decline of 5% in 3Q and 1% in 2Q vs 16% growth in FY20). A successful resolution of the Dell overhang could be a positive catalyst for VMware, in our view.

Our estimates on VMware are largely in-line with Street estimates. For FY22 we model revenue and EPS of $12.8bn (+9% yoy) and $7.36 compared to consensus of $12.7bn (+8% yoy) and $6.99 respectively. For F4Q21, we are modeling revenue and EPS of $3.2bn (+5% yoy) and $2.04 compared to consensus of $3.2bn (+5% yoy) and $2.05 respectively.

Exhibit 87: GS estimates vs Consensus and guidance

GS estimates vs Consensus and guidance

	3Q21 (A)	4Q21 (E)		1Q22 (E)		FY20 (A)	FY21 (E)		FY22 (E)		FY23 (E)	
All figures in $ mns	**Actual**	**GS Est.**	**Consensus**	**GS Est.**	**Consensus**	**Actual**	**GS Est.**	**Consensus**	**GS Est.**	**Consensus**	**GS Est.**	**Consensus**
License revenue	**$639**	**$961**	**$938**	**$627**	**$616**	**$3,181**	**$2,979**	**$2,955**	**$2,986**	**$2,941**	**$3,046**	**$2,980**
YoY	*(12%)*	*(7%)*	*(9%)*	*(5%)*	*(15%)*	*5%*	*(6%)*	*(7%)*	*0%*	*(0%)*	*2%*	*1%*
QoQ	*(11%)*	*50%*	*47%*	*(35%)*	*(34%)*							
Maintenance revenue	$1,282	$1,338	$1,306	$1,340	$1,322	$4,755	$5,135	$5,103	$5,495	$5,382	$5,830	$5,703
YoY	*7%*	*8%*	*6%*	*8%*	*10%*	*9%*	*8%*	*7%*	*7%*	*5%*	*6%*	*6%*
QoQ	*1%*	*4%*	*2%*	*0%*	*1%*							
Professional services revenue	$267	$228	$270	$278	$263	$999	$1,007	$1,049	$1,088	$1,084	$1,197	$1,125
YoY	*3%*	*(8%)*	*9%*	*8%*	*2%*	*9%*	*1%*	*5%*	*8%*	*3%*	*10%*	*4%*
QoQ	*5%*	*(15%)*	*1%*	*22%*	*(3%)*							
Services revenue	$1,549	$1,566	$1,566	$1,617	$1,584	$5,754	$6,142	$6,141	$6,582	$6,457	$7,026	$6,772
YoY	*6%*	*6%*	*6%*	*8%*	*9%*	*9%*	*7%*	*7%*	*7%*	*5%*	*7%*	*5%*
QoQ	*2%*	*1%*	*1%*	*3%*	*1%*							
Subscription & SaaS revenue	$676	$696	$726	$715	$738	$1,877	**$2,575**	$2,605	**$3,218**	$3,297	$3,958	$4,157
YoY	*44%*	*25%*	*30%*	*25%*	*57%*	*44%*	*37%*	*39%*	*25%*	*27%*	*23%*	*26%*
QoQ	*7%*	*3%*	*7%*	*3%*	*2%*							
Subscription & SaaS + License revenue	**$1,315**	**$1,657**	**$1,664**	**$1,342**	**$1,354**	**$5,057**	**$5,554**	**$5,560**	**$6,204**	**$6,238**	$7,004	**$7,137**
YoY	*10%*	*4%*	*5%*	*9%*	*13%*	*16%*	*10%*	*10%*	*12%*	*12%*	*13%*	*14%*
QoQ	*(3%)*	*26%*	*27%*	*(19%)*	*(19%)*							
Total revenue	**$2,864**	**$3,222**	**$3,233**	**$2,959**	**$2,928**	**$10,811**	**$11,695**	**$11,706**	**$12,787**	**$12,692**	**$14,031**	**$13,836**
YoY	*8%*	*5%*	*5%*	*8%*	*10%*	*12%*	*8%*	*8%*	*9%*	*8%*	*10%*	*9%*
QoQ	*(0%)*	*13%*	*13%*	*(8%)*	*(9%)*							
Operating expenses (non-GAAP)	$1,548	$1,725	$1,687	$1,797	$1,699	$6,037	$6,313	$6,228	$7,488	$7,168	$8,374	$7,753
YoY	*2%*	*6%*	*4%*	*19%*	*12%*	*12%*	*5%*	*3%*	*19%*	*15%*	*12%*	*8%*
QoQ	*1%*	*11%*	*9%*	*4%*	*1%*							
Operating income (non-GAAP)	**$888**	**$1,079**	**$1,085**	**$727**	**$792**	**$3,261**	**$3,735**	**$3,748**	**$3,618**	**$3,634**	**$3,812**	**$4,097**
YoY	*17%*	*2%*	*3%*	*(11%)*	*4%*	*11%*	*15%*	*15%*	*(3%)*	*(3%)*	*5%*	*13%*
QoQ	*(7%)*	*21%*	*22%*	*(33%)*	*(27%)*							
Operating margin	**31.0%**	**33.5%**	**33.6%**	**24.6%**	**27.1%**	**30.2%**	**31.9%**	**32.0%**	**28.3%**	**28.6%**	**27.2%**	**29.6%**
Operating margin expansion	*+247 bps*	*-83 bps*	*+336 bps*	*-537 bps*	*-148 bps*	*-50 bps*	*+177 bps*	*+185 bps*	*-364 bps*	*-338 bps*	*-112 bps*	*+98 bps*
EPS (non-GAAP)	**$1.66**	**$2.04**	**$2.05**	**$1.40**	**$1.48**	**$6.27**	**$7.03**	**$7.05**	**$7.36**	**$6.99**	**$7.78**	**$7.91**
YoY	*17%*	*(0%)*	*0%*	*(8%)*	*4%*	*5%*	*12%*	*12%*	*5%*	*(1%)*	*6%*	*13%*
Billings (via CF)	**$2,712**	**$4,065**	**$4,217**	**$2,959**	**$2,874**	**$12,607**	**$12,472**	**$12,644**	**$14,263**	**$13,711**	**$16,008**	**$14,872**
YoY	*(5%)*	*(1%)*	*2%*	*10%*	*1%*	*16%*	*(1%)*	*0%*	*14%*	*8%*	*12%*	*8%*
QoQ	*(10%)*	*50%*	*55%*	*(27%)*	*(32%)*							
ST deferred revenue	$5,205	$5,726	$5,680	$5,726	$5,628	$5,218	$5,726	$5,680	$6,493	$6,181	$7,505	$6,584
LT deferred revenue	$4,030	$4,352	$4,339	$4,352	$4,320	$4,050	$4,352	$4,339	$5,061	$4,759	$6,027	$5,129
Deferred revenue (total)	**$9,235**	**$10,078**	**$10,019**	**$10,078**	**$9,948**	**$9,268**	**$10,078**	**$10,019**	**$11,554**	**$10,939**	**$13,532**	**$11,713**
YoY	*12%*	*9%*	*8%*	*9%*	*21%*	*25%*	*9%*	*8%*	*15%*	*9%*	*17%*	*7%*
QoQ	*(2%)*	*9%*	*8%*	*0%*	*(1%)*							
OCF	**$992**	**$664**	**$698**	**$388**	**$1,502**	**$3,872**	**$3,749**	**$3,758**	**$4,318**	**$4,213**	**$5,400**	**$4,635**
YoY	*32%*	*(39%)*	*(36%)*	*(72%)*	*100%*	*6%*	*(3%)*	*(3%)*	*15%*	*12%*	*25%*	
Capex	**$84**	**$56**	**$63**	**$96**	**$78**	**$280**	**$303**	**$309**	**$334**	**$332**	**$367**	**$364**
YoY	*62%*	*(12%)*	*(2%)*	*10%*	*50%*	*10%*	*8%*	*11%*	*10%*	*7%*	*10%*	
FCF	**$908**	**$607**	**$646**	**$292**	**$1,443**	**$3,592**	**$3,445**	**$3,456**	**$3,985**	**$3,873**	**$5,033**	**$4,304**
YoY	*30%*	*(41%)*	*(37%)*	*(77%)*	*106%*	*5%*	*(4%)*	*(4%)*	*16%*	*12%*	*26%*	

Source: FactSet, Company data, Goldman Sachs Global Investment Research

Key risks: Upside risks to our thesis include VMware becoming more strategic to customers, acceleration in favorable shift in revenue mix including AWS partnership, meaningful improvement in competitive position, market share gains, and increased S&M efficiency. Downside risks include potential increase in leverage related to Dell considering a spin off of VMware amongst other options, continued pressure on the on-premise business, slower than expected shift from license to SaaS, and slower SaaS growth rates.

Valuation: Our 12-month price target of $150 is based on an equal blend of DCF, EV/FCF, and P/E. Our DCF assumes a perpetuity growth rate of ~-7%, 6.7% WACC, our Q5-Q8 EV/FCF assumes 13x (vs CTXS and ORCL at 15x-18x CY21), and our Q5-Q8 P/E analysis assumes 19.5x P/E (vs. CTXS at ~21x CY21).

Disclosure Appendix

Reg AC

I, Kash Rangan, hereby certify that all of the views expressed in this report accurately reflect my personal views about the subject company or companies and its or their securities. I also certify that no part of my compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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