

TECHNOLOGY, MEDIA & TELECOM

QUARTERLY SOFTWARE SECTOR REVIEW | 4Q 2019

HW Harris Williams

HARRIS WILLIAMS OVERVIEW

HARRIS WILLIAMS (“HW”) GLOBAL ADVISORY PLATFORM

KEY FACTS

- Founded in 1991
- 370+ professionals across eight offices globally
- 180+ closed transactions in last 24 months
- 10 industry groups



HW TECHNOLOGY, MEDIA & TELECOM (“TMT”) GROUP FOCUS AREAS

VERTICAL FOCUS AREAS

- Architecture, Engineering, and Construction
- eCommerce and Retail Software
- Education Technology
- Energy Technology
- Facilities and Real Estate Technology
- Financial Technology
- Government Technology
- Healthcare IT
- Industrial and Supply Chain Software

HORIZONTAL FOCUS AREAS

- Compliance Software
- CRM and Member Management Software
- Data and Analytics
- Enterprise Software
- Human Capital Management
- Infrastructure and Security Software
- IT and Tech Enabled Services
- Managed Services, Hosting, Data Center Solutions
- Online Marketing, Data, and Research

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SELECT RECENT HW TMT TRANSACTIONS

 has been acquired by 	 has received an investment from 	 has been acquired by 	 has been recapitalized by 	 has acquired 	 has been acquired by 	 has received an investment from 	 has been acquired by 	 has been acquired by 	 has been acquired by 	 has been acquired by 	 has been acquired by
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CASE STUDY: RECEIPT BANK

HW's TMT Group advised Receipt Bank on its \$73 million Series C Capital Raise from Insight Partners, Augmentum Fintech, Kennet Partners, and Canadian Imperial Bank of Commerce.



has received an investment from



COMPANY OVERVIEW

Receipt Bank is a leading provider of a digital bookkeeping platform for SMBs and professional accountants, offering proprietary machine learning technology that fully automates workflows across bookkeeping and accounting functions.

The Company's SaaS, AI-powered bookkeeping provides market-leading accuracy, scale, and speed, saving SMBs and bookkeepers hundreds of hours of administrative work and enabling them to focus on their business and drive revenue.

Receipt Bank serves the \$500 billion global accounting and bookkeeping services market and partners with more than 9,000 bookkeeping and accounting firms to serve over 300k SMBs.

RELEVANT SUB-SECTORS

SAAS

FINTECH

VERTICAL SOFTWARE

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SELECT SOFTWARE M&A TRANSACTIONS – 4Q 2019

Closed December 18, 2019



Buildium®

Enterprise Value: \$580M

EV / Revenue: 11.6x

Revenue: \$50M

EV / EBITDA: NA

RealPage's acquisition of Buildium

- Buildium provides cloud-based real estate software solutions to more than 17,000 real estate professionals in over 50 countries, totaling approximately two million residential units under management.
- The Company's real estate SaaS platform facilitates a wide variety of functions such as accounting, leasing, document storage, and tenant screening.
- Post acquisition, RealPage will expand Buildium's platform by incorporating both as new capabilities that improve the renter leasing / occupancy experience, improve the recovery of fees, enhance payment processing capabilities, and expand insurance offerings.

Closed December 11, 2019



VividCortex

Enterprise Value: \$117M

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

SolarWinds' acquisition of VividCortex

- VividCortex provides SaaS-based database performance management software for monitoring open source databases.
- The Company's database management solutions monitor and analyze database workloads and query performance in real time, to provide DBAs with visibility into database and query performance.
- The acquisition of VividCortex will meaningfully expand SolarWinds' legacy database monitoring solutions by integrating the capability to manage modern, open-source databases.

Closed November 1, 2019



Enterprise Value: \$470M

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

PTC's acquisition of Onshape

- Onshape provides a cloud-based product development platform that unifies computer aided design (CAD) software with data management and collaboration tools, for over 5,000 commercial users.
- The Company's 3D CAD platform enables designers and engineers to improve collaboration and reduce the time required to bring products to market.
- The acquisition of Onshape allows PTC to take advantage of the CAD and PLM market's transition toward SaaS delivery models and accelerates their ability to win new customers while fortifying their existing solutions.

Announced October 28, 2019



Enterprise Value: NA

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

Ellie Mae's pending acquisition of Capsilon

- Capsilon provides AI-powered mortgage automation software for mortgage lenders, investors, and servicers, including six of the top 10 originators and service providers.
- The Company's digital mortgage platform provides automated document recognition, classification, and data extraction tools, enabling lenders and servicers to decrease costs and timeline for loan origination, acquisition, and servicing.
- Post acquisition, Ellie Mae will integrate Capsilon's AI data solutions with their existing lending platform to offer a comprehensive, SaaS mortgage platform.

Closed October 15, 2019

THE CARLYLE GROUP



Enterprise Value: NA

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

The Carlyle Group's acquisition of HireVue

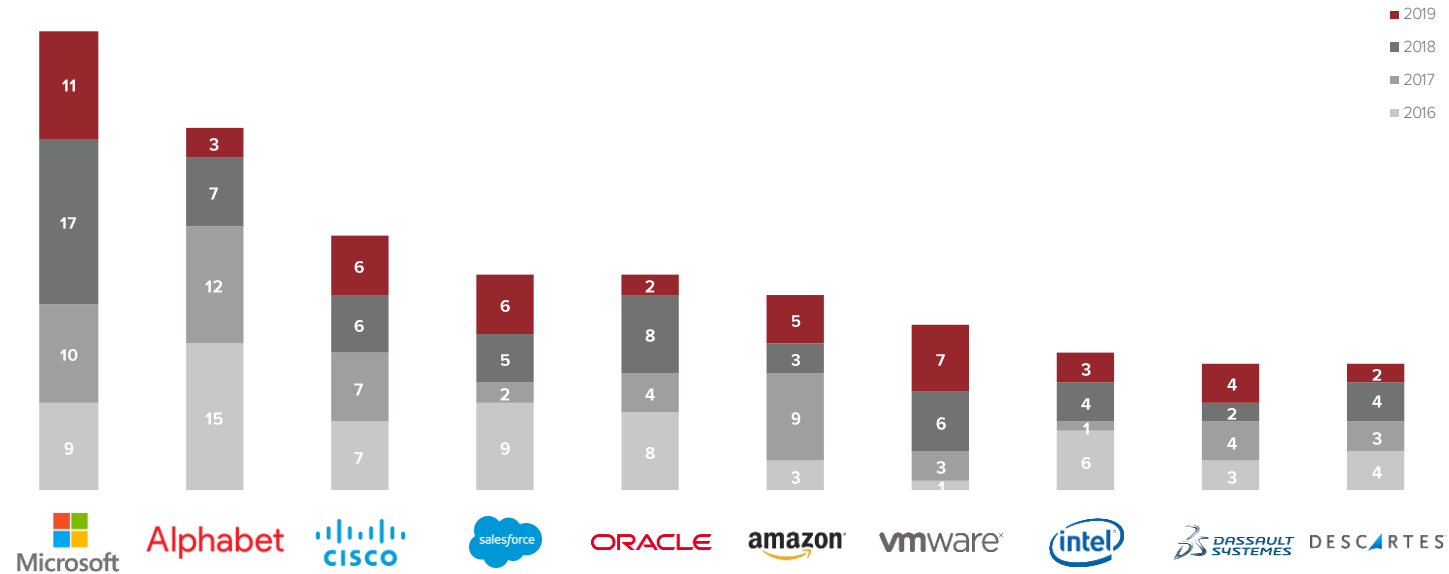
- HireVue provides a comprehensive suite of AI-driven talent assessment and video interviewing solutions to over 700 customers, including one-third of the Fortune 100.
- The Company's recruiting software combines industrial and organizational science with predictive AI capabilities to enable organizations to find and engage high quality talent.
- Following the acquisition, HireVue will leverage Carlyle's capital and operational expertise to accelerate product innovation and development, and expansion globally and into adjacent markets.

SOFTWARE ACQUISITION ACTIVITY – STRATEGIC ACQUIRERS

MOST ACTIVE STRATEGIC ACQUIRERS OF SOFTWARE ASSETS BY VOLUME¹

- Activity among the 10 largest strategic software acquirers decreased slightly compared to 2018, with 49 acquisitions in 2019.
- Microsoft was the most active strategic acquirer in 2019, completing 11 acquisitions.
- Notable 4Q 2019 strategic software transactions include RealPage's acquisition of Buildium, Microsoft's acquisition of Mover, and Salesforce's acquisition of ClickSoftware Technologies.

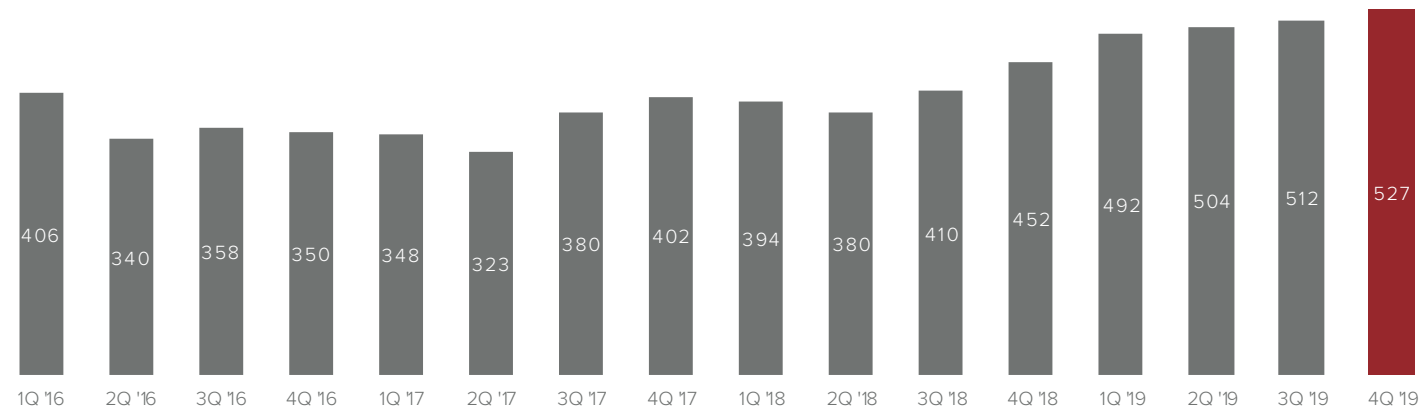
(# of Transactions)



GLOBAL STRATEGIC ACQUIRER SOFTWARE M&A ACTIVITY BY VOLUME¹

(# of Transactions)

- Global strategic software M&A registered 527 acquisitions in 4Q 2019, representing a 17% increase over 4Q 2018.
- 2019 was highlighted by enterprise software providers expanding their data analytics and business intelligence capabilities through multibillion-dollar acquisitions. Notable deals include Google's \$2.6 billion acquisition of Looker Data Sciences, Salesforce's \$15.7 billion acquisition of Tableau, and SAP's \$8 billion acquisition of Qualtrics.



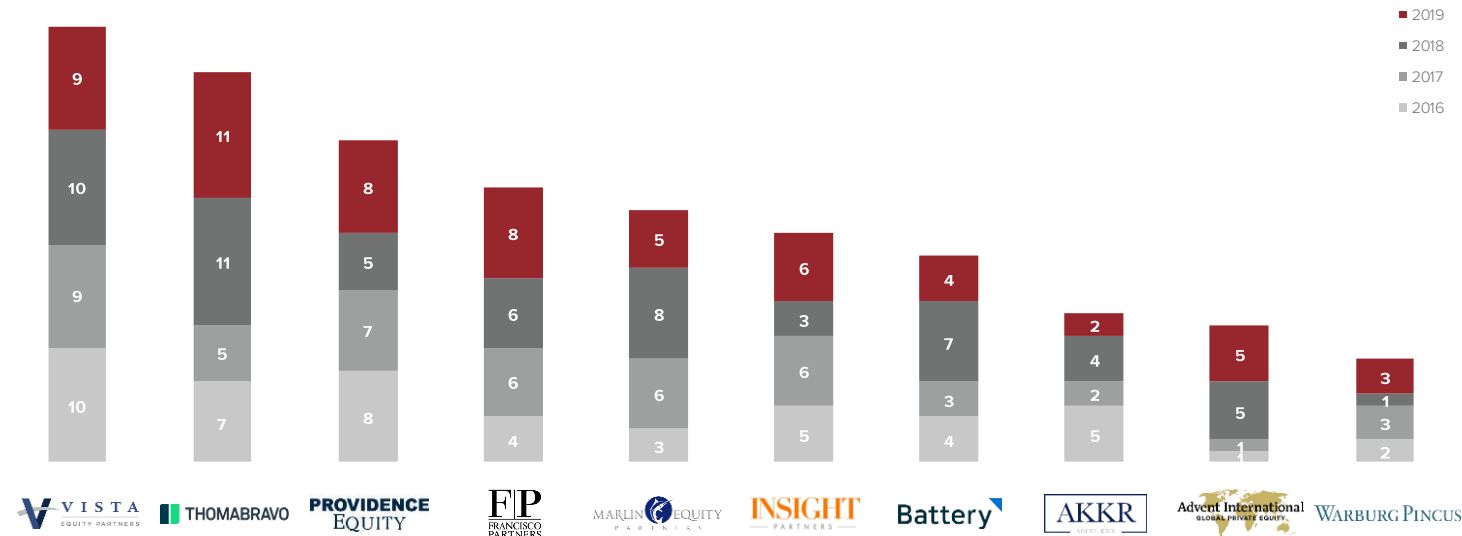
Note: Includes control investments only.

SOFTWARE ACQUISITION ACTIVITY – PRIVATE EQUITY

MOST ACTIVE PRIVATE EQUITY BUYERS OF NEW SOFTWARE PLATFORMS BY VOLUME¹

(# of Platform Transactions)

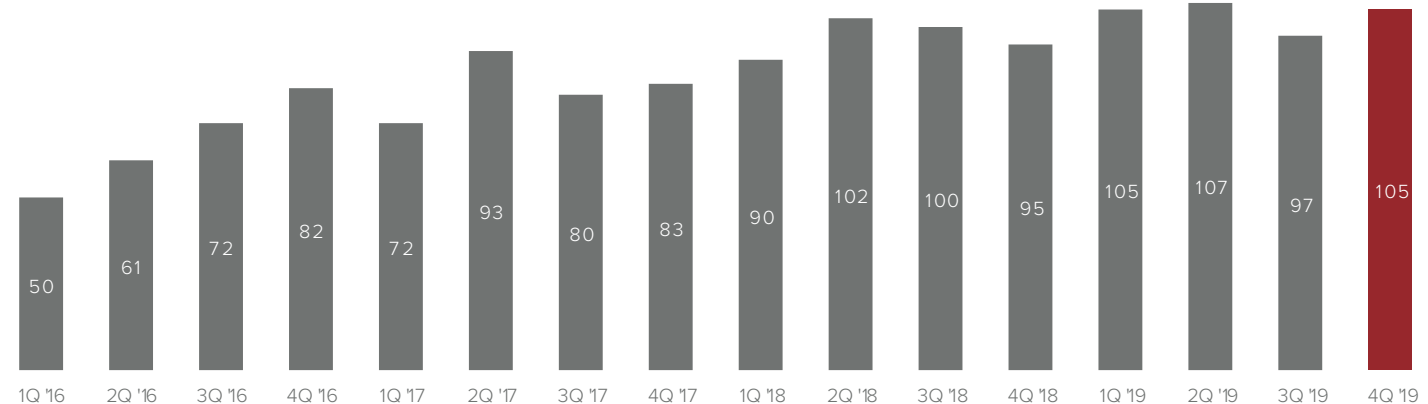
- The 10 most active software investors completed 61 new platform investments in 2019. Activity among the most active private equity software buyers remained on pace with 2018 levels.
- Thoma Bravo remained the most active software private equity firm in 2019, completing 11 platform acquisitions.
- Notable 4Q 2019 private equity platform acquisitions include Vista Equity's acquisition of Sonatype, Thoma Bravo's take private of Sophos Group, and Providence Equity's acquisition of n2y.



GLOBAL PRIVATE EQUITY NEW SOFTWARE PLATFORMS M&A ACTIVITY BY VOLUME¹

(# of Platform Transactions)

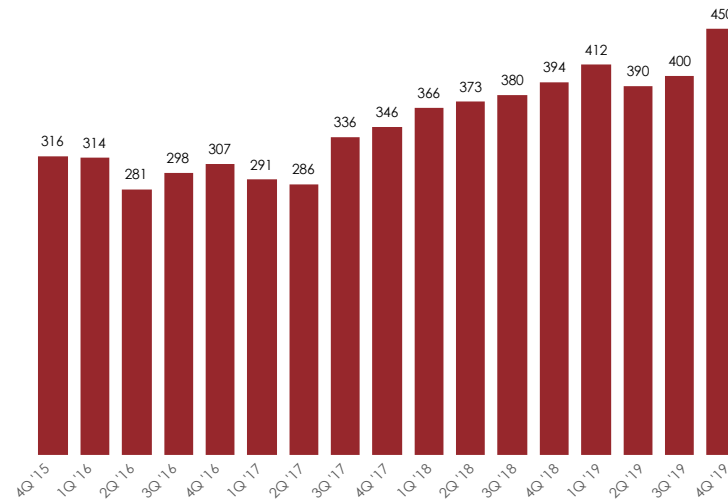
- Globally, private equity buyers registered 105 new software platform investments in 4Q 2019, a slight increase from 4Q 2018.
- Private equity investment across the software sector continues to exhibit strong momentum as dry powder is at all-time highs and fundraising activity for technology funds remains robust.
- 2019 was a record year for technology focused private equity fundraising with \$68B raised across 34 new funds, including Thoma Bravo, \$12.6B, and Vista Equity Partners, \$16.0B.



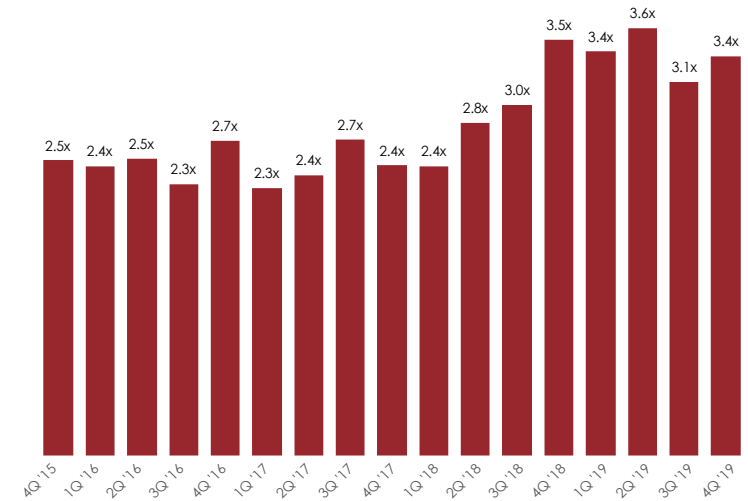
Note: Includes control new platform investments only. Excludes add-on acquisitions.

APPLICATION SOFTWARE – M&A MARKET SUMMARY

APPLICATION SOFTWARE M&A VOLUME¹ (GLOBAL)



MEDIAN M&A REVENUE MULTIPLES¹ (REPORTED)



- Application Software M&A registered 450 transactions in 4Q 2019, a 14% increase from the prior quarter.
- Median reported Application Software M&A transaction multiples increased to 3.4x revenue in 4Q 2019.

NOTABLE APPLICATION SOFTWARE M&A TRANSACTIONS^{1,5}

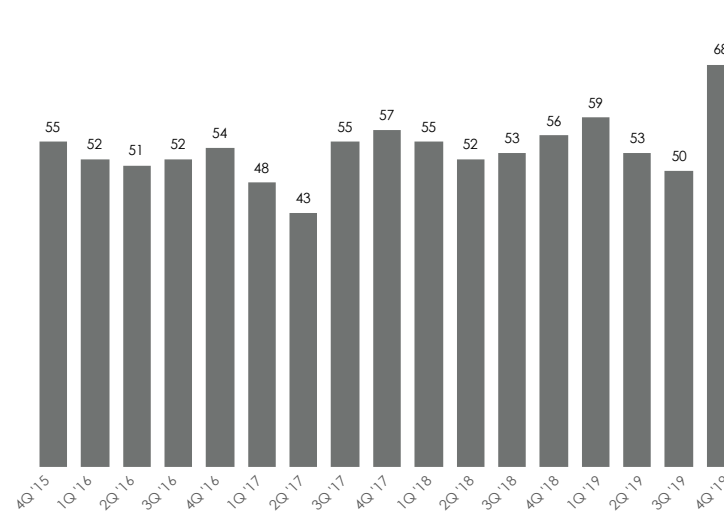
- In 4Q 2019, vertical-specific Application Software companies continued to be sought after by both strategic and financial buyers.
- Notable vertical-specific 4Q 2019 Application Software transactions include Providence Equity's acquisition of n2y (Education), Morningstar's acquisition of ADL (Fintech), and Sabre's acquisition of Radixx International (Travel).

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
Application Software					
1/01/2020	Great Hill Partners; Spectrum Equity	Sales Performance Mgmt. Business (IBM)	Provider of sales software for monitoring and improving performance.	NA	NA
Pending	Silver Lake	First Advantage Corporation	Provider of background screening, identity, and information solutions to employers and housing providers.	\$1,500	NA
Pending	Apax Partners	GRAITEC Innovation	Provider of CAD, analysis and design solutions for the construction and engineering field.	NA	NA
1/07/2020	Calero Software (Riverside)	MDSL	Provider of market data management and telecom expense management solutions.	\$350	NA
12/12/2019	Growth Street Partners	HR Acuity	Provider of employee relationship management software.	NA	NA
12/11/2019	Invesco	RedBlack Software	Provider of technology solutions to investment advisors, wealth managers, broker dealers, and financial institutions.	NA	NA
12/01/2019	Morningstar	ADL	Provider of cloud-based financial planning software products for financial advisers, licensees, brokers, and software providers.	NA	NA
11/18/2019	Providence Equity Partners	n2y	Provider of special education software, curriculum, and learning tools.	NA	NA
11/18/2019	Serenova (Marlin)	ProScheduler	Provider of workforce management software.	NA	NA
11/12/2019	Granicus (Vista)	Host Compliance	Provider of a platform for short-term rental registrations, tax collections, and enforcements needs.	NA	NA
11/05/2019	Seismic Software	Percolate Industries	Provider of a cloud-based marketing software platform.	\$401	NA
11/01/2019	PTC	Onshape	Provider of cloud-based 3D designing and drawing software.	\$470	NA
10/18/2019	Trimble	Azteca Systems	Provider of a geographic information systems-based public asset management platform.	NA	NA
10/16/2019	Charlesbank Capital Partners	WolfePak Software	Provider of financial and accounting software solutions for the oil and gas industry.	NA	NA
10/16/2019	Sabre	Radixx International	Provider of custom tailored airline reservation, distribution, and merchandizing systems.	\$110	NA
10/15/2019	The Carlyle Group	HireVue	Provider of video interviewing software solutions and assessment services for recruiting and hiring talent.	NA	NA
10/11/2019	Computer Aided Technology	Fisher Unitech	Provider of 3D computer aided design software.	NA	NA
10/08/2019	Thoma Bravo	IDS	Provider of software solutions for the asset finance industry.	NA	NA
10/01/2019	Bullhorn (Insight)	Erecruit Holdings	Provider of enterprise staffing software, vendor management systems, and onboarding software.	NA	NA
MEDIAN				\$401	NA

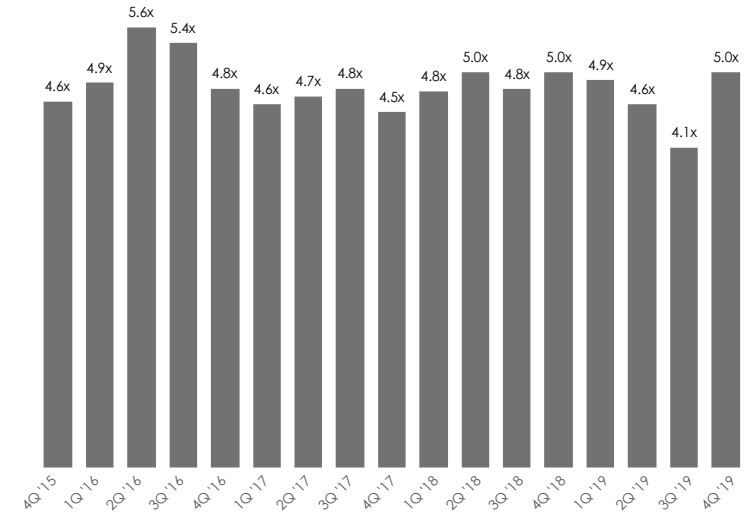
SAAS – M&A MARKET SUMMARY

SAAS M&A VOLUME¹ (GLOBAL)

- SaaS M&A volume increased by 20% since Q4 2018, registering 68 transactions in 4Q 2019.
- Median reported SaaS transaction revenue multiples decreased again to 5.0x revenue in 4Q 2019.



MEDIAN M&A REVENUE MULTIPLES¹ (REPORTED)



NOTABLE SAAS M&A TRANSACTIONS^{1,5}

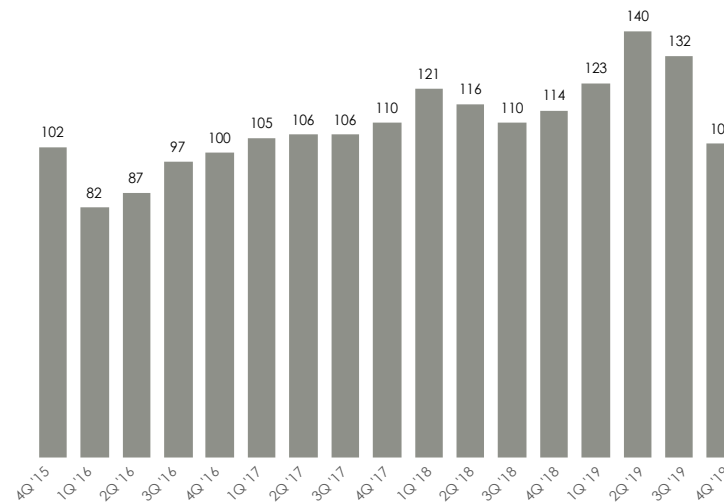
- Cloud continues to become a more desirable delivery model and sector activity remains robust, with strong interest from both private equity investors and strategic buyers.
- Notable 4Q 2019 SaaS transactions include Thoma Bravo's pending take private of Instructure, Ellie Mae's acquisition of Capsilon, and Workday's acquisition of Scout RFP.

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
SaaS					
Pending	Thoma Bravo	Instructure	Provider of a SaaS platform for learning, assessment, and performance management.	\$1,884	7.7x
Pending	Great Hill Partners	VersaPay	Provider of cloud-based accounts receivable automation software and integrated payment solutions.	\$132	17.1x
Pending	Siemens	Atlas 3D	Provider of cloud-based print preparation software for direct metal laser sintering 3D printers.	NA	NA
Pending	Ellie Mae	Capsilon	Provider of cloud-based technology solutions for the mortgage industry.	NA	NA
12/20/2019	Vista Equity Partners	Sonatype	Provider of open-source software designed to offer software supply chain automation and security products.	NA	NA
12/18/2019	RealPage	Buildium	Provider of online property management software for small businesses.	\$580	11.6x
12/12/2019	Accel-KKR	Duett	Provider of accounting and financial software.	NA	NA
12/12/2019	Thompson Street Capital Partners	Data Dimensions	Provider of information management and business process automation services.	NA	NA
12/09/2019	Workday	Scout RFP	Provider of a cloud-based sourcing platform that automates the enterprise buying process for buyers and suppliers.	\$540	NA
12/05/2019	Sanoma Learning	itslearning	Provider of learning platforms and educational software for primary, secondary, and higher education sectors.	NA	NA
9/30/2019	PowerSchool Group (Onex)	Schoolology	Provider of a cloud-based learning management system for K-12, higher education, and corporates.	NA	NA
11/21/2019	SharpSpring	Perfect Audience	Provider of an online application designed to focus on retargeting advertising.	\$5	NA
11/12/2019	Sverica Capital Management	Gryphon Networks	Provider of sales performance management and compliance software.	NA	NA
11/04/2019	SVBi; OpenGate Capital	CoreMedia	Provider of cloud-based content and digital asset management solutions.	NA	NA
10/22/2019	Anacapa Partners	I4PRO	Provider of ERP workflow solution intended to serve insurance companies.	NA	NA
10/21/2019	Alarm.com	OpenEye	Provider of a cloud-managed video surveillance software.	NA	NA
10/17/2019	ADT	I-View Now	Provider of a SaaS platform for alarm verification and video guard tour services.	NA	NA
10/08/2019	LLR Partners; Parthenon	DaySmart Software	Provider of business management software and workflow solutions to consumer facing small and medium sized enterprises.	NA	NA
10/14/2019	Lovell Minnick Partners	BILLHIGHWAY	Provider of cloud-based solutions that combine payment processing, banking, and accounting for financial processing in real time.	NA	NA
9/30/2019	The Blackstone Group	Vungle	Provider of a performance marketing platform for mobile businesses, advertisers, and publishers worldwide.	\$750	NA
MEDIAN				\$560	11.6x

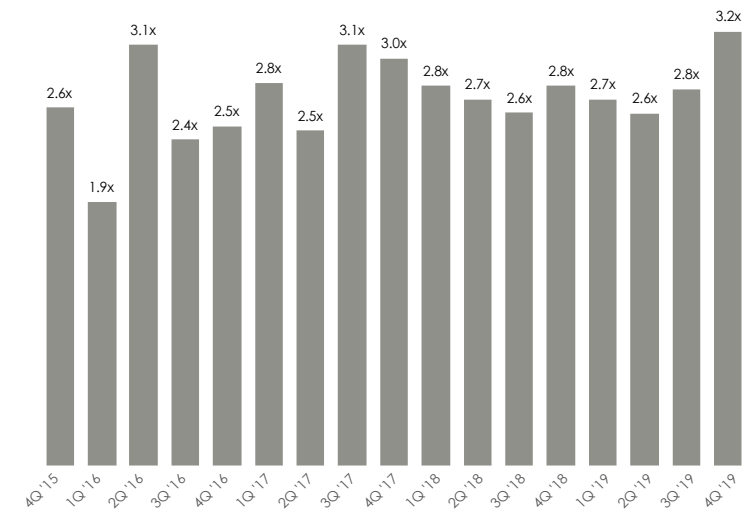
DATA AND ANALYTICS – M&A MARKET SUMMARY

DATA AND ANALYTICS M&A VOLUME¹ (GLOBAL)

- Data and Analytics M&A registered 103 transactions in 4Q 2019, a decline from the prior quarter and year.
- Median reported Data and Analytics transaction multiples increased to 3.2x in 4Q 2019.



MEDIAN M&A REVENUE MULTIPLES¹ (REPORTED)

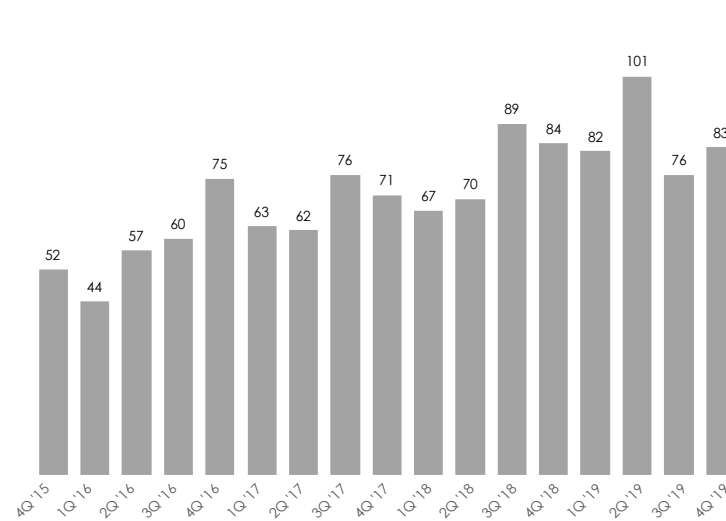
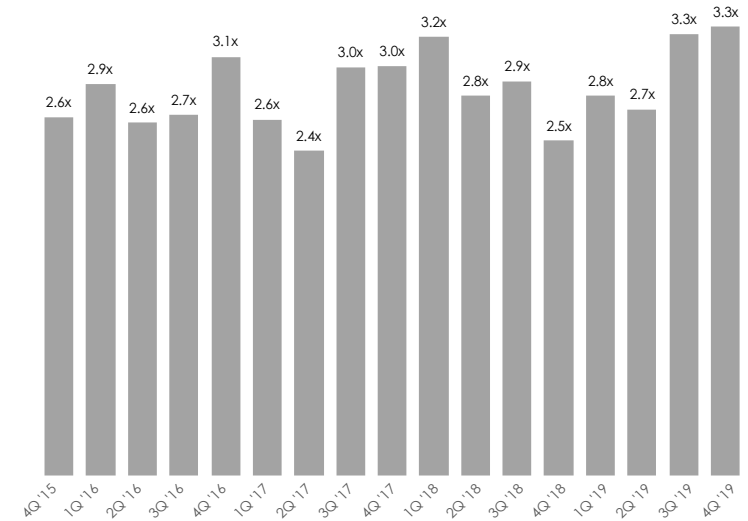


NOTABLE DATA AND ANALYTICS M&A TRANSACTIONS¹

- Data and Analytics continues to represent a key focus area in 4Q 2019 for strategic acquirers and financial buyers, as decision making continues to be driven by complex and real-time data.
- Notable 4Q 2019 Data and Analytics transactions include Vista Equity Partners' pending acquisition of Accelya Solutions, Veeva's acquisition of Crossix, and Thomson Reuters' acquisition of FC Business Intelligence.

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
Data and Analytics					
Pending	Kibo Software (Vista)	Monetate	Provider of a platform that allows marketers to create, test, and deploy personalized digital experiences.	NA	NA
Pending	Vista Equity Partners	Accelya Solutions	Provider of software to the travel and transport industry.	\$13,714	3.1x
12/13/2019	Acquia (Vista)	AgilOne	Provider of a predictive marketing cloud technology that helps retailers deliver omni-channel experiences.	NA	NA
Pending	Verisk Analytics	FAST	Provider of insurance software for financial service clients.	\$194	NA
Pending	Cubic Corporation	PIXIA	Provider of data access software to the media industry.	\$250	NA
Pending	Manthan Software	RichRelevance	Provider of omni-channel personalization solutions to multinational companies.	\$255	NA
12/16/2019	Thoma Bravo	J.D. Power	Provider of data, analytics, and advisory services to clients.	\$2,000	NA
11/11/2019	JPMorgan Chase & Co.	Limeglass	Provider of a SaaS technology to analyze research documents.	NA	NA
11/04/2019	BV Investment Partners	EDCO Health Information Solutions	Provider of healthcare software and services for digital capture and indexing of medical records.	NA	NA
11/01/2019	Veeva Systems	Crossix Solutions	Provider of a data analytics platform for media and marketing for the healthcare sector.	\$550	NA
10/31/2019	Five Points Capital; Pleasant Bay Capital	Grammatech	Provider of software-development tools for startups, companies, educational institutions, and government agencies.	NA	NA
10/29/2019	Confluence Technologies (TA)	StatPro Group	Provider of software and data solutions to the asset management industry.	\$192	3.4x
10/29/2019	DoubleVerify (Providence Equity)	Ad-Juster	Provider of a media analytics platform that provides automated data and reporting solutions for digital advertising.	NA	NA
10/29/2019	Renaissance Learning (FP)	SCHOOLZILLA	Provider of a data management platform that turns achievement and operational data into interactive reports.	NA	NA
10/28/2019	RIB Software	datapine	Provider of a data visualization and business intelligence SaaS solution.	NA	NA
10/22/2019	Inmar	ownerIQ	Provider of an online advertising solutions that digitally connects brands and retailers through second-party data.	NA	NA
10/18/2019	Llamosoft (TPG)	Opex Analytics	Provider of artificial intelligence solutions for predictive analytics.	NA	NA
10/04/2019	Thomson Reuters	FC Business Intelligence	Provider of business intelligence solutions.	NA	NA
MEDIAN				\$255	3.3x

INFRASTRUCTURE SOFTWARE – M&A MARKET SUMMARY

INFRASTRUCTURE SOFTWARE M&A VOLUME¹ (GLOBAL)

MEDIAN M&A REVENUE MULTIPLES¹ (REPORTED)


- Infrastructure Software M&A registered 83 transactions in 4Q 2019, a slight increase from 76 in 3Q 2019.
- In 4Q 2019, median reported Infrastructure Software transaction multiples remained flat at 3.3x revenue.

NOTABLE INFRASTRUCTURE SOFTWARE M&A TRANSACTIONS¹

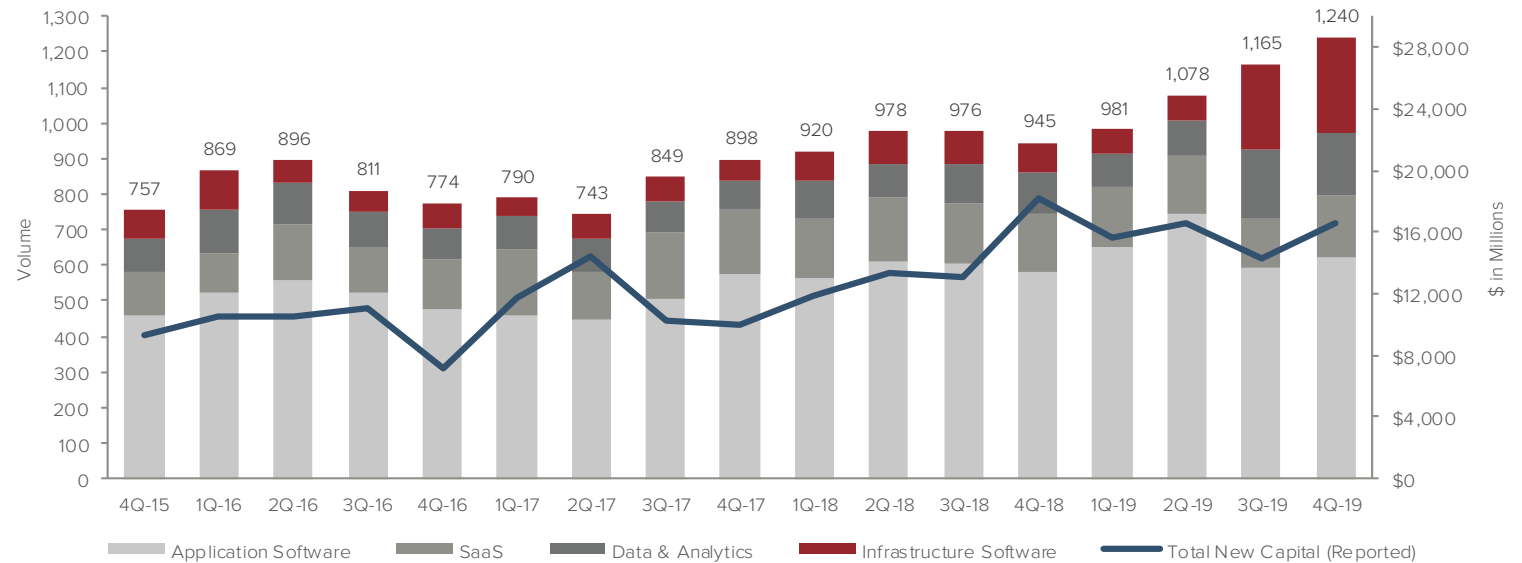
- M&A activity within Infrastructure Software remained strong in 4Q 2019, as both strategics and private equity investors view M&A as an attractive strategy to accelerate growth and create holistic security platforms.
- Noteworthy Infrastructure Software M&A transactions in 4Q 2019 include Thoma Bravo's pending take private of Sophos Group, Francisco Partners' pending take private of LogMeIn, SolarWind's acquisition of VividCortex, and Google's acquisition of CloudSimple.

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
Infrastructure Software					
Pending	Charlesbank; TA Associates	HelpSystems	Provider of IT infrastructure software in the areas of systems and network management, BI, and security and compliance.	\$1,200	NA
Pending	Thoma Bravo	Sophos Group	Provider of cloud-enabled end-user and network security solutions.	\$3,121	4.3x
Pending	Apax Partners	Coalfire Systems	Provider of information technology audit and compliance services.	NA	NA
1/24/2020	F5 Networks	Shape Security	Provider of cybersecurity solutions to defend web and mobile applications from malicious automated cyber attacks.	\$1,000	16.7x
Pending	Francisco Partners; Evergreen Coast	LogMeIn	Provider of cloud-based communication and collaboration, identity and access, and customer engagement and support solutions.	\$4,558	3.7x
12/23/2019	Palo Alto Networks	Aporeto	Provider of cloud-native security solutions for deploying and operating cloud-native applications.	\$150	NA
12/10/2019	SolarWinds	VividCortex	Provider of SaaS based MySQL monitoring and analysis tools.	\$117	NA
11/25/2019	Proofpoint	ObserveIT	Provider of an insider threat management platform designed to help companies identify and eliminate insider threats.	\$225	NA
11/18/2019	Google	CloudSimple	Provider of a platform to deploy, manage, and monitor infrastructure in cloud locations.	NA	NA
11/12/2019	Mirantis	Enterprise Platform Business of Docker	Provider of Kubernetes-as-a-service for developers for any cloud and on-prem infrastructure.	NA	NA
11/07/2019	Infoblox (Vista)	SnapRoute	Provider of an open-source platform designed to change data centers' creation and maintenance.	NA	NA
11/04/2019	Turbonomic	SevOne	Provider of an infrastructure performance monitoring and analytics solution.	\$49	NA
11/04/2019	Sumo Logic	JASK	Provider of cybersecurity analytics software designed to modernize security operations.	NA	NA
10/28/2019	Fortinet	enSilo	Provider of a real-time automated data protection platform.	\$20	NA
10/25/2019	Coreview	Alpin	Provider of a cloud identity management platform that allows users and companies to find and manage their cloud software.	NA	NA
10/21/2019	Microsoft	Mover	Provider of solutions to back up, copy, and migrate files between cloud storage services.	NA	NA
10/16/2019	TA Associates; Clearlake Capital	DigiCert	Provider of secure socket layer certificates and management tools for small and large companies.	NA	NA
10/15/2019	SailPoint Technologies	OverWatch ID	Provider of converged identity security solutions for cloud / computing, hybrid IT environments, and on-premises infrastructures.	\$21	NA
10/09/2019	Periscope Equity	Mobile Solutions Services	Provider of SaaS-based full life-cycle managed mobility services.	NA	NA
10/08/2019	TPG Capital	CollabNet	Provider of enterprise value stream management solutions designed to accelerate high-value software development and delivery	\$500	NA
MEDIAN				\$225	4.3x

PRIVATE PLACEMENT ACTIVITY BY SOFTWARE SECTOR

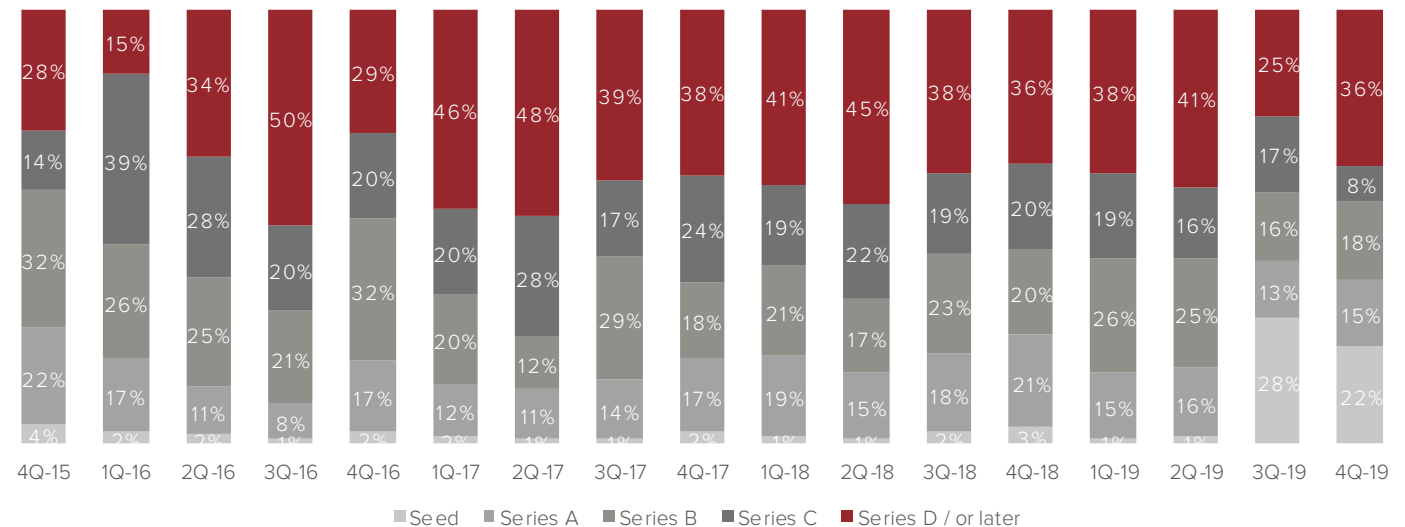
PRIVATE PLACEMENTS BY SOFTWARE SUB-SECTOR AND NEW CAPITAL RAISED^{1,4}

- There were 1,240 private placement financings in 4Q 2019, which represented a 31% increase over 4Q 2018.
- Total reported capital investment in the software sector increased in 4Q 2019 to around the yearly median.



PRIVATE PLACEMENT CAPITAL RAISED BY ROUND^{1,4} (AS PERCENTAGE OF TOTAL REPORTED PRIVATE PLACEMENT CAPITAL)

- In 4Q 2019, there was a near-even split on private placement capital invested across early stage (Seed – B) and late stage (C – later) rounds.
- Notable private placements across stages included Databricks' \$400 million Series F led by Andreessen Horowitz, Reonomy's \$60 million Series D investment led by Georgian Partners, and Freshworks' \$150 million Series H investment led by Accel, CapitalG, and Sequoia.



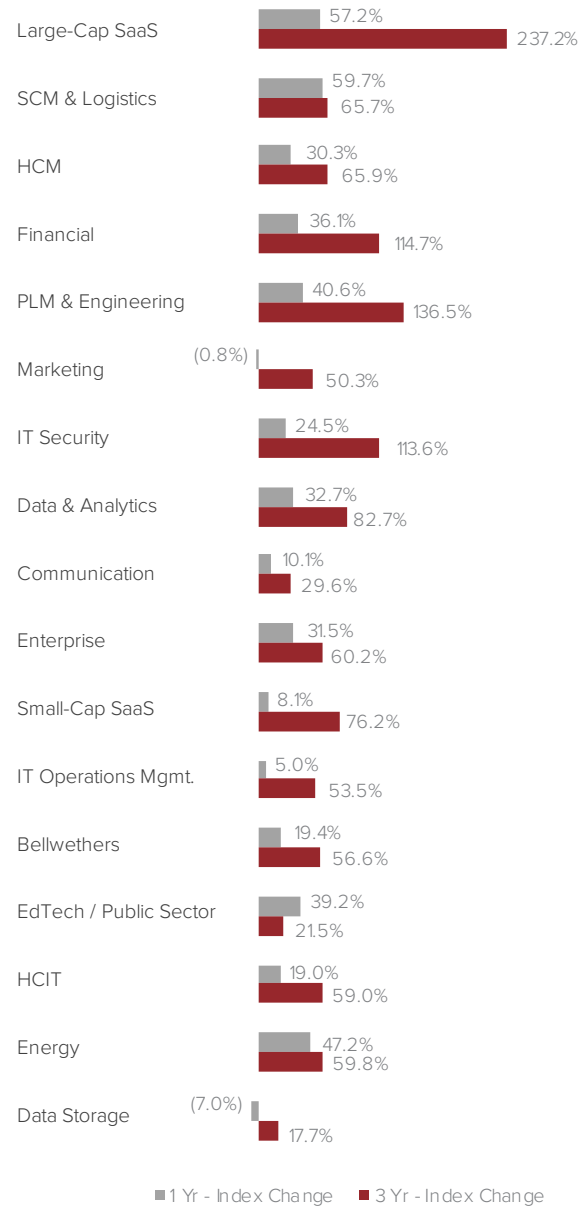
SELECT RECENT SOFTWARE PRIVATE PLACEMENTS^{1,4}

DATE	COMPANY	SECTOR	ROUND	ROUND SIZE (\$MM)	TOTAL RAISED (\$MM)	INVESTORS (CURRENT ROUND)	DESCRIPTION
11/20/19	edcast	SaaS	D	\$35	\$101	Avathon Capital; State Street; REV Venture Partners; National Grid Partners	Provider of a cloud-based learning experience platform for corporate learning.
11/20/19	Kustomer	SaaS	E	\$60	\$174	Coatue Management; Battery Ventures; Tiger Global Management	Provider of a software platform for managing customer experience, service, and support.
11/11/19	workato	Infrastructure	C	\$70	\$111	Redpoint Ventures; Battery Ventures; Norwest Venture Partners; Storm Ventures; Geodesic Capital	Provider of a cloud automation and integration platform for workflow automation across applications.
11/07/19	reonomy	Data & Analytics	D	\$60	\$138	Georgian Partners; SoftBank; Citi Ventures; Bain Capital Ventures; Primary Venture Partners; Sapphire Ventures; Wells Fargo	Provider of commercial real estate data and analytics.
11/04/19	freshworks	SaaS	H	\$150	\$401	Accel Partners; Sequoia Capital; CapitalG	Provider of business management and customer engagement software.
10/24/19	VERY GOOD SECURITY	Infrastructure	B	NA	\$45	Goldman Sachs Merchant Banking; Andreessen Horowitz; Vertex Ventures; GGV Capital	Provider of cloud-based data security software.
10/24/19	SHIPWELL	SaaS	B	\$35	\$47	Georgian Partners; Fifth Wall; Global Founders Capital; Aspect Ventures; BoxGroup	Provider of a cloud platform for supply chain visibility.
10/24/19	Ally	Infrastructure	B	\$15	\$26	Tiger Global Management; Accel; Vulcan Capital; Founders' Co-op; Lee Fixel	Provider of cloud-based OKR tracking software.
10/22/19	databricks	Data & Analytics	F	\$400	\$897	Andreessen Horowitz; Microsoft; New Enterprise Associates; Tiger Global Management; Coatue Management; BlackRock; T. Rowe Price	Provider of a unified data analytics cloud platform for data engineering and collaborative data science.
10/22/19	benevity	Application	C	\$40	\$60	General Atlantic; JMI Equity	Provider of a workplace giving and volunteer management platform.
10/15/19	flowhub	Application	A	\$23	\$27	Poseidon Asset Management; e.ventures; Evolv Ventures; Kraft Heinz; 9Yards Capital	Provider of a cloud-based retail management platform designed for the cannabis industry.
10/08/19	CONTENTSTACK™	SaaS	A	\$32	\$32	Insight Partners; Illuminate Ventures; GingerBread Capital	Provider of a cloud-based content management system for omni-channel content.
10/02/19	snapLogic	Infrastructure	G	\$72	\$244	Arrowroot Capital; Golub Capital	Provider of a self-service data integrations platform for enterprise applications.

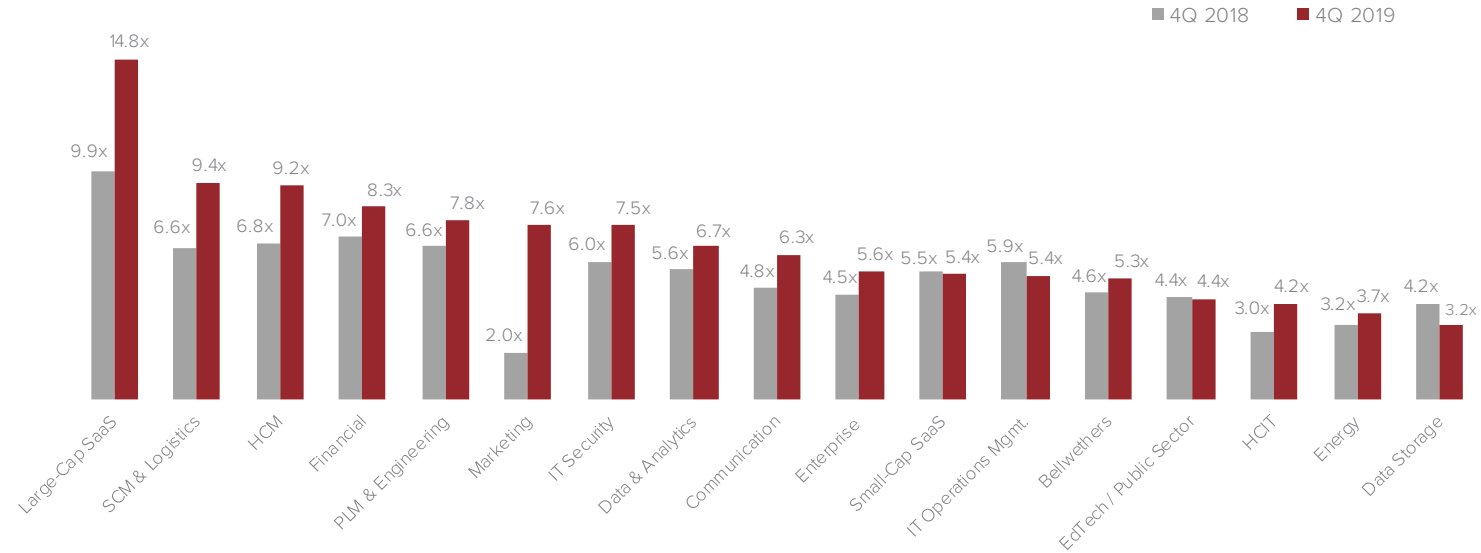
Note: Financial information presented above represents reported capital raised only.

PUBLIC SOFTWARE VALUATION MULTIPLES BY SECTOR¹

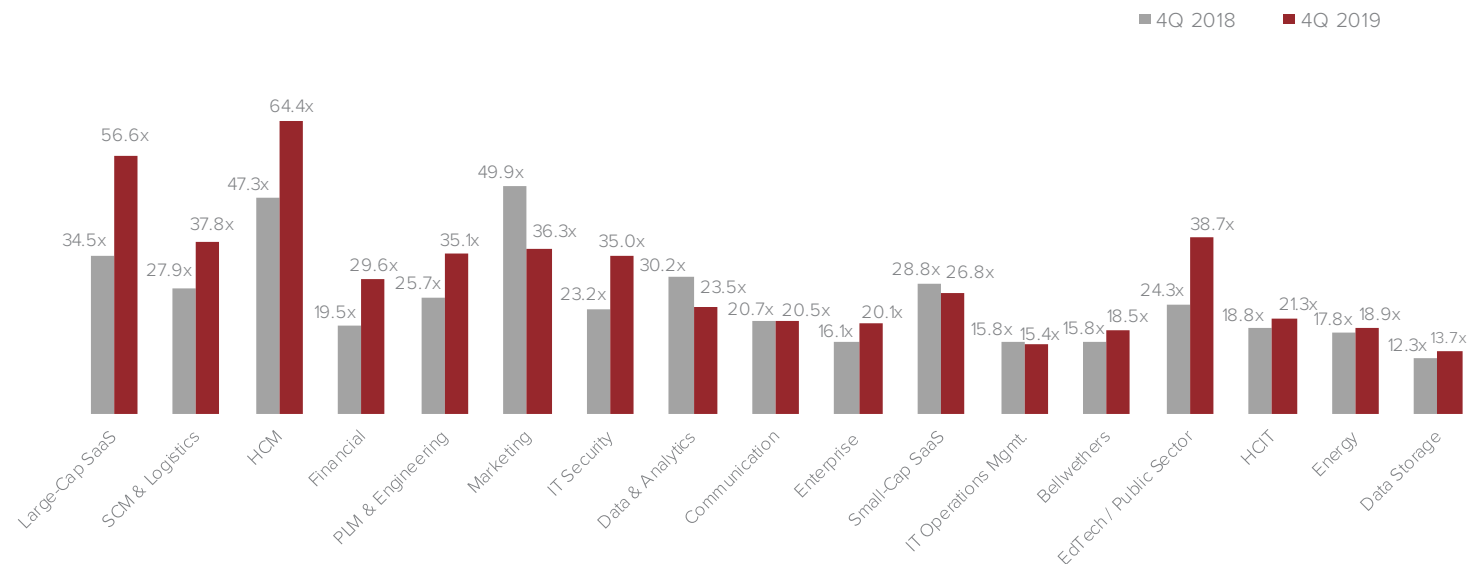
STOCK PERFORMANCE (1- & 3-YEAR)



















REVENUE MULTIPLE COMPARISON 4Q 2018 VS. 4Q 2019



EBITDA MULTIPLE COMPARISON 4Q 2018 VS. 4Q 2019

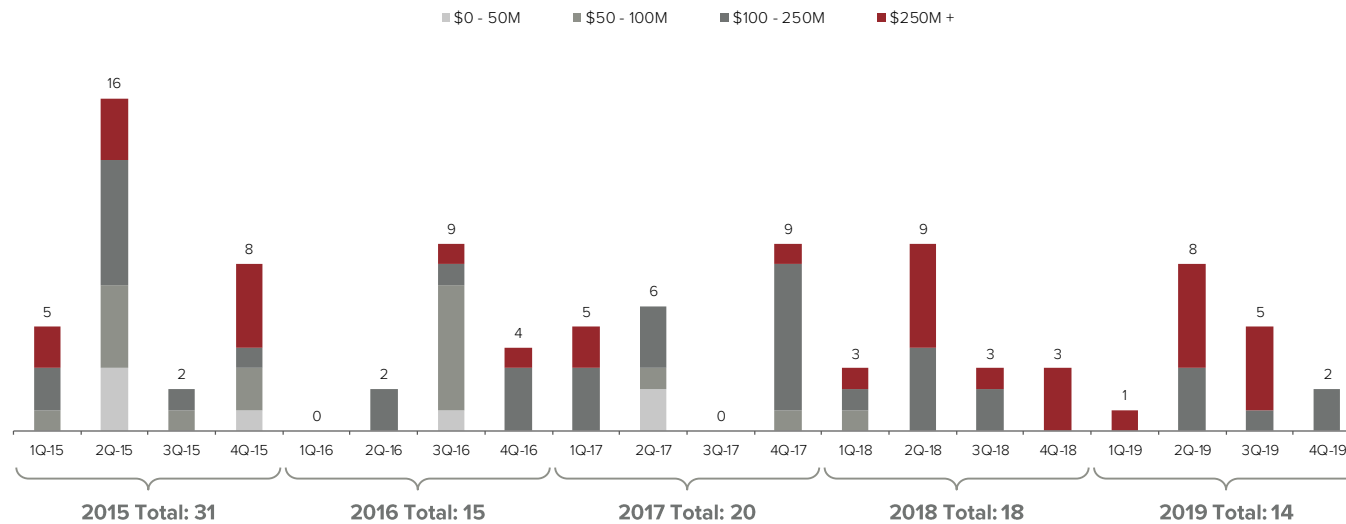


KEY METRICS BY SECTOR – COMPARABLE PUBLIC SOFTWARE COMPANIES¹

	COMPARABLE COMPANY SET MEDIANS				CORRELATION WITH EV / REVENUE MULTIPLE		
	EV / LTM REVENUE MULTIPLE	NTM REVENUE GROWTH	NTM EBITDA GROWTH	LTM EBITDA MARGIN	NTM REVENUE GROWTH	NTM EBITDA GROWTH	LTM EBITDA MARGIN
Large-Cap SaaS	 14.8x	26%	155%	9%	75%	12%	-
SCM & Logistics	 9.4x	11%	49%	20%	90%	-	67%
HCM	 9.2x	14%	45%	22%	69%	-	28%
Financial	 8.3x	8%	39%	33%	51%	-	47%
PLM & Engineering	 7.8x	11%	52%	22%	65%	18%	36%
Marketing	 7.6x	21%	104%	12%	72%	-	91%
IT Security	 7.5x	13%	55%	21%	66%	-	59%
Data & Analytics	 6.7x	14%	72%	20%	91%	-	100%
Communication	 6.3x	11%	33%	21%	84%	100%	-
Enterprise	 5.6x	9%	22%	28%	75%	39%	30%
Small-Cap SaaS	 5.4x	16%	54%	19%	59%	80%	-
IT Operations Mgmt.	 5.4x	8%	41%	25%	76%	95%	-
Bellwethers	 5.3x	11%	16%	28%	71%	54%	33%
EdTech / Public Sector	 4.4x	11%	72%	15%	-	-	64%
HCIT	 4.2x	9%	54%	23%	79%	-	33%
Energy	 3.7x	3%	17%	19%	-	-	89%
Data Storage	 3.2x	11%	66%	20%	45%	43%	-

SUMMARY OF TECHNOLOGY IPOs

RECENT U.S. TECHNOLOGY IPO ACTIVITY (BY OFFERING SIZE)¹

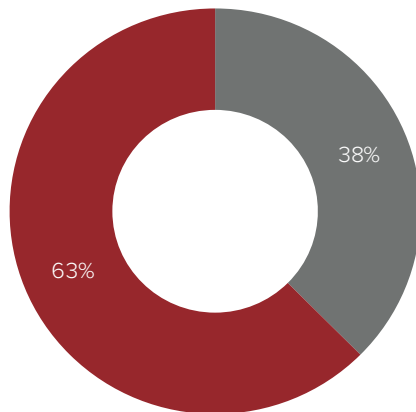


- Technology IPO activity slowed in 4Q, with total 2019 activity slightly down from the past two years.
- 4Q 2019 IPOs include Sprout Social and Bill.com.
- 2019 was highlighted by the listing of notable unicorns including Uber, Pinterest, and Slack, with a backlog of companies, including Airbnb, GitLab and Procore expressing a desire to go public in 2020.
- Public listing activity has slowed as weak post-listing performance from high-profile IPOs, and a continued abundance of private capital, has resulted in technology companies reevaluating their IPO timelines.

OFFERING SIZE AT IPO (LTM)¹

(All tech IPOs over the last 12 months)

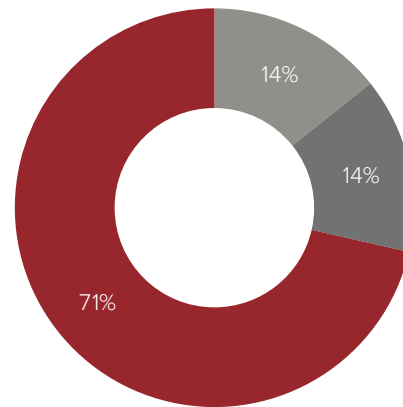
■ \$50 - 100M ■ \$100 - 250M ■ \$250M +



MARKET CAP AT IPO (LTM)¹

(All tech IPOs over the last 12 months)

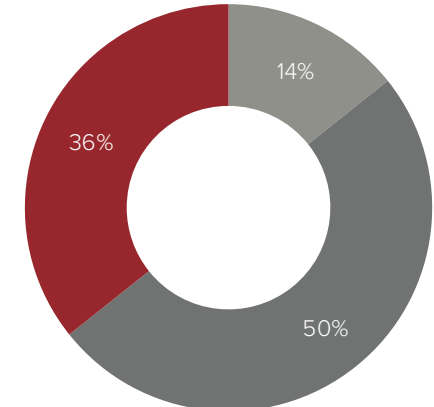
■ \$0-50M ■ \$50-500M ■ \$500M-\$1B ■ \$1B+



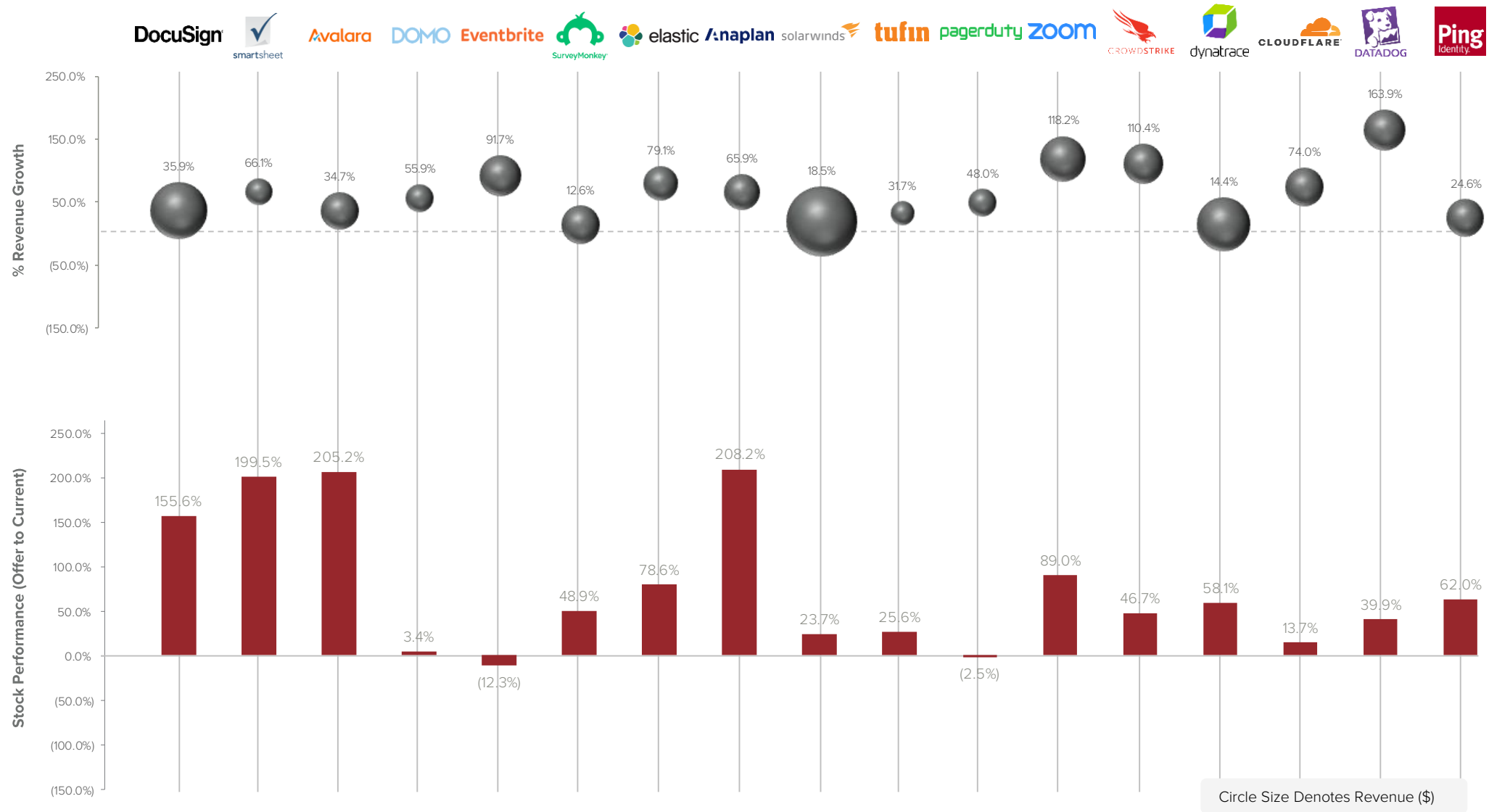
REVENUE GROWTH (1YR PRIOR TO IPO)¹

(All tech IPOs over the last 12 months)

■ < 25% ■ 25 - 75% ■ > 75%



KEY PERFORMANCE METRICS FOR RECENT SOFTWARE IPOs¹



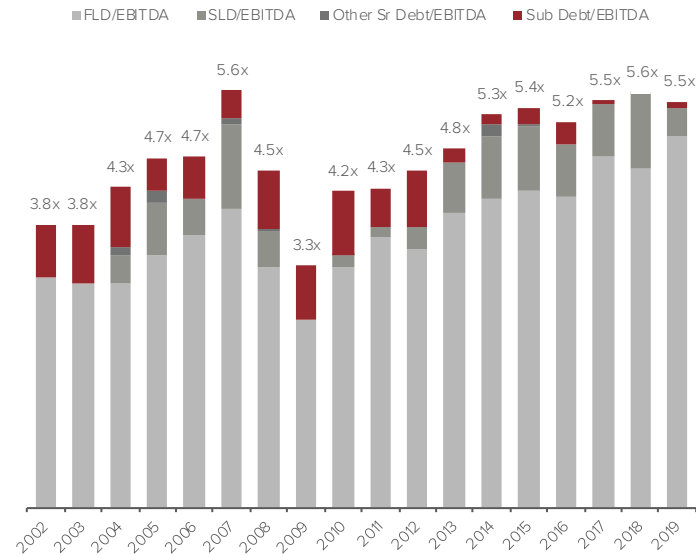
IPO DATE	4/26/18	4/26/18	6/14/18	6/28/18	9/19/18	9/25/18	10/4/18	10/11/18	10/18/18	4/10/19	4/10/19	4/17/19	6/11/19	7/31/19	9/13/19	9/18/19	9/19/19
OFFER PRICE PER SHARE	\$29.00	\$15.00	\$24.00	\$21.00	\$23.00	\$12.00	\$36.00	\$17.00	\$15.00	\$14.00	\$24.00	\$36.00	\$34.00	\$16.00	\$15.00	\$27.00	\$15.00
MARKET CAP AT OFFER (\$M)	\$4,411.2	\$174.5	\$1,559.5	\$455.5	\$1,800.0	\$1,493.7	\$2,501.7	\$2,067.9	\$4,649.1	\$454.1	\$1,766.7	\$1,157.2	\$703.8	\$4,486.6	\$1,299.2	\$745.2	\$1,192.7
OFFERING SIZE (\$M)	\$629.3	\$174.5	\$180.0	\$193.2	\$230.0	\$180.0	\$252.0	\$263.5	\$375.0	\$107.8	\$217.7	\$751.3	\$612.0	\$569.8	\$525.0	\$648.0	\$187.5
OFFER TO CURRENT	155.6%	199.5%	205.2%	3.4%	(12.3%)	48.9%	78.6%	208.2%	23.7%	25.6%	(2.5%)	89.0%	46.7%	58.1%	13.7%	39.9%	62.0%

DEBT MARKET OVERVIEW

MIDDLE MARKET LBO LOAN MULTIPLES^{2,3}

Defined as Issuers with EBITDA of \$50 Million or Less

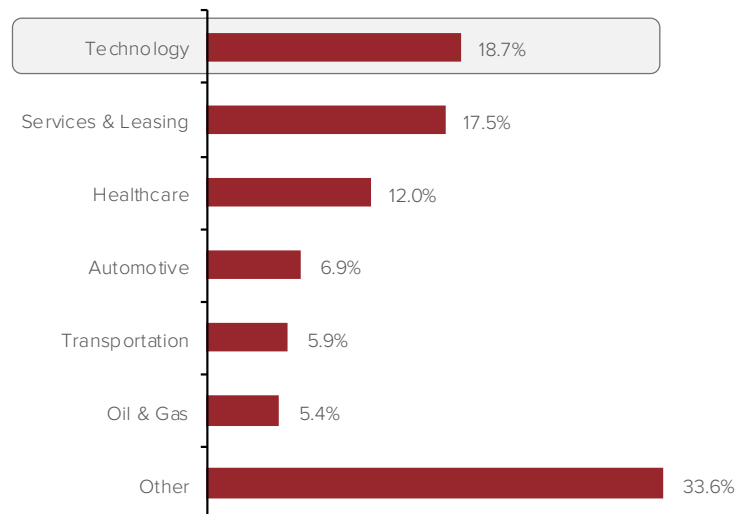
- Median middle market LBO loan multiples in 2019 decreased slightly to 5.5x total leverage.
- Middle market LBO loan volume significantly declined in 4Q 2019, totaling \$0.3 billion.



LBO LOAN VOLUME BY INDUSTRY^{2,3}

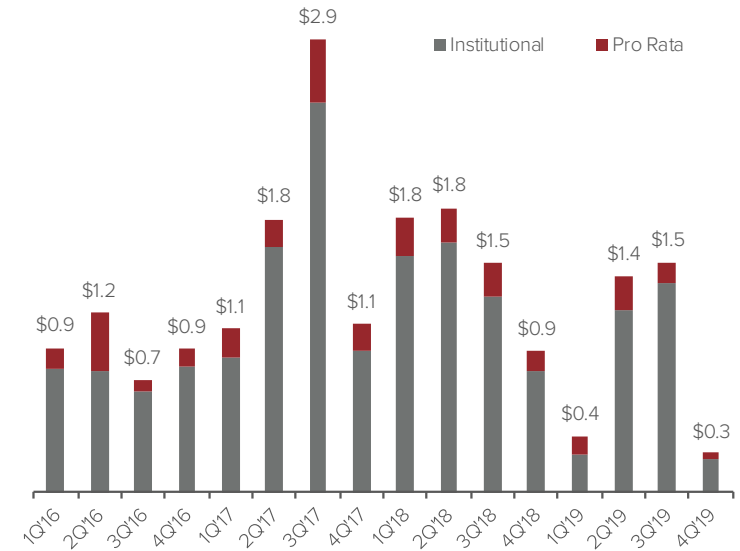
YTD New Issue LBO Loans

- Technology companies remained the largest recipients of middle market LBO loans in 2019, representing 18.7% of new issuance.
- Median LBO debt percentages again decreased slightly to 46% of total purchase price in 2019.



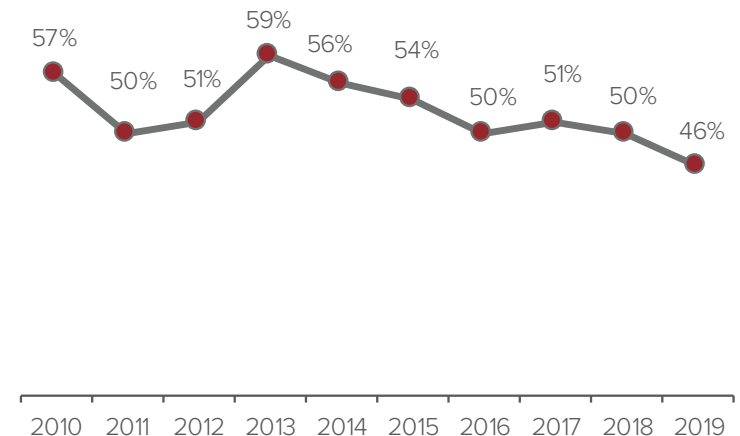
MIDDLE MARKET LBO VOLUME BY QUARTER^{2,3}

Defined as Issuers with EBITDA of \$50 Million or Less
(\$ in billions)



MEDIAN LBO DEBT PERCENTAGES^{3,4}

Percentage of Total Purchase Price



SELECT HW TMT TRANSACTIONS

 acquired by Bregal Unternehmenskapital	 investment from INSIGHT PARTNERS Kennet Augustum	 acquired by WENDEL	 recapitalized by SQUIRE SQUARE	 acquired ventiv PRE-1.0.0.0	 acquired by Waud Capital	 significant growth investment from MARTIS CAPITAL	 acquired by Deltek	 acquired by Advent International GLOBAL PRIVATE EQUITY	 significant growth investment from THOMABRAVO	 acquired by eSolutions	 acquired by Datix	 has received a controlling investment from COVE HILL PARTNERS	 acquired CALIBER SOFTWARE	 acquired by pec
 acquired mailgun	 strategic investment from INSIGHT PARTNERS	 acquired by DiscoverOrg	 acquired combell.group	 acquired by DASSAULT SYSTEMES	 acquired Wrike	 acquired by CUBIC	 acquired by WCAS	 acquired sympplr	 acquired by BERTELSMANN	 acquired by LIGHTYEAR CAPITAL & OAK HC/FT	 acquired PIXOMONDO	 acquired by illuminate education	 acquired by GENSTAR CAPITAL	 acquired by THE JORDAN COMPANY
 acquired JTRelation	 acquired by imprivata & inspirata	 invested in RL Datix	 majority investment from Hg	 acquired by GI PARTNERS	 acquired by BDT CAPITAL PARTNERS	 acquired by PAMPONA CAPITAL MANAGEMENT	 acquired by EQUIAN	 acquired by PROVIDENCE EQUITY & GSV SECURED JOINT VENTURES	 investment from INSIGHT PARTNERS	 acquired PERFORCE	 acquired by H.L.G. CAPITAL	 merged with research now	 investment from bv PARTNERSHIP PARTNERS	 acquired by accruent
 acquired by MSOUTH SOUTH CAPITAL CO.	 acquired Healthlogistics	 acquired by RIVERSIDE PARTNERS	 investment from INSIGHT PARTNERS	 acquired by amazon	 acquired by intelligent	 acquired by V-VISTA EQUITY PARTNERS	 acquired by Itron	 acquired abila	 majority investment from GENSTAR CAPITAL	 growth investment from PAMICO CAPITAL	 acquired by Ministry Brands	 majority investment from INSIGHT PARTNERS	 acquired by exponent private equity	 majority investment from THE CARLYLE GROUP
 recapitalized by GI PARTNERS	 acquired by PHILIPS	 acquired MedHOK	 acquired by WorkForce SOFTWARE	 acquired by WASSERSTEIN & CO.	 acquired by SYKES	 acquired by RPX NATIONAL PATENT	 acquired by BOLD EQUITY MANAGEMENT	 recapitalized by GENSTAR CAPITAL	 acquired by H.L.G. CAPITAL	 acquired by BIOCLINICA	 acquired by technicolor	 acquired by CIP CAPITAL	 acquired by ParkerGale	 acquired by kpn
 acquired by SoTera	 acquired by ROPER	 acquired a majority stake in access	 acquired by GI PARTNERS	 majority investment from HGGC	 minority investment from SUNPOWER	 acquired by blackbaud	 acquired by YASKAWA	 acquired by emdeon	 acquired by THE CARLYLE GROUP	 strategic investment from TCV	 merged with Accellos	 acquired by Automatic	 acquired by THE CARLYLE GROUP	 acquired by HEARST
 acquired by inVentiv Health	 acquired by RELIAS LEARNING	 acquired by GENPACT ACHARD & LUTHELL LLP OF PHOENIX	 acquired by TX THE TEXAS COMPANY	 acquired by PAREXEL	 acquired by LGP	 acquired by HEARST	 acquired by V-VISTA EQUITY PARTNERS	 acquired by SUMMIT PARTNERS	 acquired by Imtech	 acquired by ARROWHART Capital Partners	 majority recapitalization by PAMICO CAPITAL	 recapitalized by Goldman Sachs	 acquired by THOMSON REUTERS	 acquired by EQUISTONE

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY UNIVERSE¹

		Software Bellwethers	Microsoft	Alphabet	Cisco	Oracle	SAP	Adobe	Salesforce	IBM	HPE
APPLICATION SOFTWARE	HORIZONTAL	Communication Software	Zoom	Twilio	Slack	NICE	Nuance	MobileIron	Synchronoss		
		Enterprise Software	Oracle	SAP	Adobe	IBM	ADP	Intuit	Amadeus	Constellation	OpenText Sage
		Human Capital Management (HCM)	ADP	Workday	Paychex	Paycom	Ceridian	Paylocity	Cornerstone	Benefitfocus	
		Marketing Software	Adobe	Salesforce	HubSpot	Acxiom	Criteo	ChannelAdvisor	Marin		
		PLM & Engineering Software	Dassault	Autodesk	Ansys	Synopsys	Hexagon AB	Cadence	Trimble	PTC	Nemetschek Altair
		Supply Chain & Logistics Software	Trimble	Coupa	Wisetech	Manhattan	Descartes	Kinaxis	SPS	American	
	VERTICAL	Energy Software	Trimble	AVEVA	AspenTech	Itron	PSI				
		Financial Software	Fiserv	Square	MSCI	SS&C	Jack Henry	Black Knight	Q2 Holdings	Envestnet	Oracle FSS Blackline
		Healthcare IT (HCIT)	Cerner	Veeva	Inovalon	HMS	Allscripts	Premier	Change Health	Model N	NextGen Evolent Health
		EdTech / Public Sector Software	Constellation	Tyler Tech	Blackbaud	2U	NIC	K12			
SAAS		Large-Cap SaaS (≥ \$3Bn Mkt Cap)	Salesforce	ServiceNow	Workday	Atlassian	Veeva	Zoom	Check Point	Paycom	RingCentral DocuSign
		Large-Cap SaaS (cont'd)	CrowdStrike	Coupa	Guidewire	ZenDesk	Xero	Dynatrace	Anaplan	HubSpot	Proofpoint Avalara
		Large-Cap SaaS (cont'd)	Smartsheet	RealPage	CyberArk	Five9	Medallia	Q2 Holdings	AppFolio	Cornerstone	Qualys
		Small-Cap SaaS (< \$3Bn Mkt Cap)	Rapid7	Mimecast	Box	LivePerson	Alarm.Com	Workiva	SPS	PagerDuty	Eventbrite Yext
		Small-Cap SaaS (cont'd)	Talend	Model N	Ebix	Upland	Benefitfocus	Domo	Castlight Health		
		Data & Analytics	Verisk	Splunk	Datadog	Pegasystems	Verint	Teradata	Inovalon	PROS Holdings	MicroStrategy Talend
INFRASTRUCTURE SOFTWARE		IT Operations Management	VMware	ServiceNow	Arista	Citrix	F5 Networks	Dynatrace	SolarWinds	Micro Focus	New Relic Software AG
		IT Operations Management (cont'd)	Fastly	Progress	PagerDuty	NetScout	Radware				
		Data Storage	NetApp	Iron Mountain	Dropbox	Nutanix	Pure Storage	Box	CommVault	Carbonite	
		IT Security	Cisco	Palo Alto	VeriSign	Fortinet	Check Point	CrowdStrike	Trend Micro	Proofpoint	Cloudflare CyberArk
		IT Security (cont'd)	FireEye	Qualys	Rapid7	Mimecast	Varonis	SailPoint	Ping	ForeScout	SecureWorks Tufin
		IT Security (cont'd)	Cheetah Mobile	Symantec							

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTMEBITDA	Earnings	
SOFTWARE BELLWETHERS															Software Bellwethers
Microsoft Corporation	MSFT	\$1,152,024	\$1,203,063	98.8%	55.3%	153.8%	13.0%	10.7%	44.2%	8.9x	8.0x	20.1x	18.2x	29.3x	Communication
Alphabet Inc.	GOOGL	816,642	922,946	NA	NA	NA	19.4%	18.2%	28.4%	5.3x	4.5x	18.5x	12.4x	28.3x	
Cisco Systems, Inc.	CSCO	195,067	203,459	82.3%	10.7%	58.7%	3.4%	(2.0%)	31.2%	3.8x	3.8x	12.0x	10.4x	18.5x	Enterprise
Oracle Corporation	ORCL	197,041	169,941	87.6%	17.3%	37.8%	0.3%	2.2%	40.9%	5.0x	4.9x	12.2x	10.5x	15.5x	
SAP SE	SAP	173,130	161,172	96.3%	35.7%	54.5%	5.0%	11.4%	26.2%	5.9x	5.3x	22.5x	15.4x	43.6x	HCM
Adobe Inc.	ADBE	159,042	159,080	99.1%	45.8%	220.4%	23.7%	17.9%	34.5%	14.2x	12.1x	41.2x	25.9x	53.9x	
salesforce.com, inc.	CRM	144,226	144,262	97.1%	18.7%	137.6%	26.4%	26.4%	14.5%	9.1x	7.2x	62.9x	25.2x	196.0x	Marketing
IBM Corporation	IBM	179,517	118,711	87.6%	17.9%	(19.2%)	(4.0%)	2.1%	21.6%	2.3x	2.3x	10.8x	9.4x	15.4x	
Hewlett Packard Enterprise Co.	HPE	30,624	20,506	90.2%	20.1%	(31.5%)	(5.6%)	(0.1%)	18.7%	1.1x	1.1x	5.6x	6.0x	19.5x	PLM & Engineering
Median		\$179,517	\$161,172	93.2%	19.4%	56.6%	5.0%	10.7%	28.4%	5.3x	4.9x	18.5x	12.4x	28.3x	
COMMUNICATION SOFTWARE															SCM & Logistics
Zoom Video Communications, Inc.	ZM	\$18,051	\$18,806	63.4%	NA	NA	256.6%	47.8%	4.0%	33.4x	22.6x	NM	136.1x	NM	Energy
Twilio, Inc.	TWLO	12,221	13,479	65.1%	10.1%	240.7%	79.6%	36.4%	NM	12.1x	8.9x	NM	140.2x	NM	
Slack Technologies, Inc.	WORK	11,614	12,373	53.5%	NA	NA	158.7%	39.0%	NM	20.4x	14.6x	NM	NM	NM	Financial
NICE Systems Ltd.	TASE:NICE	9,782	9,635	94.8%	44.1%	127.3%	9.0%	7.6%	25.7%	6.3x	5.8x	24.4x	18.3x	51.7x	
Nuance Communications, Inc.	NUAN	6,274	5,067	97.9%	34.8%	19.7%	(1.0%)	(16.9%)	20.7%	3.4x	4.1x	16.6x	16.9x	23.7x	HCIT
MobileIron, Inc.	MOBL	464	544	62.4%	5.9%	29.6%	9.1%	4.2%	NM	2.3x	2.2x	NM	103.0x	NM	
Synchronoss Technologies, Inc.	SNCR	454	198	52.5%	(22.6%)	(87.6%)	(14.2%)	10.9%	NM	1.5x	1.4x	NM	22.8x	NM	EdTech / Public Sector
Median		\$9,782	\$9,635	63.4%	10.1%	29.6%	9.1%	10.9%	20.7%	6.3x	5.8x	20.5x	62.9x	37.7x	
ENTERPRISE SOFTWARE															Large-Cap SaaS
Oracle Corporation	ORCL	\$197,041	\$169,941	87.6%	17.3%	37.8%	0.3%	2.2%	40.9%	5.0x	4.9x	12.2x	10.5x	15.5x	Small-Cap SaaS
SAP SE	SAP	173,130	161,172	96.3%	35.7%	54.5%	5.0%	11.4%	26.2%	5.9x	5.3x	22.5x	15.4x	43.6x	
Adobe Inc.	ADBE	159,042	159,080	99.1%	45.8%	220.4%	23.7%	17.9%	34.5%	14.2x	12.1x	41.2x	25.9x	53.9x	Data & Analytics
IBM Corporation	IBM	179,517	118,711	87.6%	17.9%	(19.2%)	(4.0%)	2.1%	21.6%	2.3x	2.3x	10.8x	9.4x	15.4x	
Automatic Data Processing, Inc.	ADP	75,255	73,775	97.7%	30.0%	65.9%	5.9%	6.1%	24.8%	5.2x	4.9x	21.1x	18.8x	31.1x	IT Operations
Intuit Inc.	INTU	66,702	68,182	88.6%	33.1%	128.5%	13.1%	10.4%	30.0%	9.6x	8.7x	32.1x	23.9x	43.2x	
Amadeus IT Group	BME:AMS	38,797	35,213	97.1%	17.3%	79.3%	7.3%	9.5%	40.2%	6.5x	5.9x	16.1x	14.7x	29.5x	Data Storage
Constellation Software Inc.	TSX:CSU	21,062	20,605	87.5%	51.8%	114.1%	15.4%	16.1%	15.2%	6.3x	5.4x	41.1x	19.8x	49.0x	
Open Text Corporation	OTEX	13,729	11,875	98.7%	35.2%	42.6%	2.0%	2.2%	31.2%	4.7x	4.6x	15.2x	11.9x	36.7x	IT Security
Sage Group plc	LSE:SGE	11,345	10,824	90.7%	29.4%	22.7%	(1.1%)	8.2%	24.9%	4.8x	4.4x	19.1x	17.1x	33.1x	
Median		\$70,978	\$70,979	93.5%	31.5%	60.2%	5.4%	8.8%	28.1%	5.6x	5.1x	20.1x	16.3x	34.9x	

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS

(CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTMEBITDA	Earnings	
HUMAN CAPITAL MANAGEMENT SOFTWARE															
Automatic Data Processing, Inc.	ADP	\$75,255	\$73,775	97.7%	30.0%	65.9%	5.9%	6.1%	24.8%	5.2x	4.9x	21.1x	18.8x	31.1x	Software Bellwethers
Workday, Inc.	WDAY	37,271	37,824	72.5%	3.0%	148.8%	31.5%	20.5%	NM	10.8x	9.0x	NM	43.5x	NM	Communication
Paychex, Inc.	PAYX	30,835	30,484	96.2%	30.6%	39.7%	15.1%	5.6%	41.1%	7.6x	7.2x	18.6x	17.5x	28.3x	Enterprise
Paycom Software, Inc.	PAYC	15,217	15,265	94.6%	116.2%	482.0%	31.0%	24.3%	34.0%	21.9x	17.6x	64.4x	41.5x	91.6x	
Ceridian HCM Holding, Inc.	CDAY	10,214	9,773	98.9%	96.8%	NA	10.2%	11.8%	18.5%	12.7x	11.4x	68.7x	50.7x	129.8x	
Paylocity Holding Corp.	PCTY	6,420	6,465	98.5%	100.7%	302.6%	24.5%	20.0%	15.3%	13.0x	10.8x	85.0x	37.5x	111.7x	HCM
Cornerstone Ondemand, Inc.	CSOD	3,553	3,555	93.4%	16.1%	38.4%	6.3%	11.4%	3.0%	6.3x	5.6x	NM	22.3x	NM	
Benefitfocus, Inc.	BNFT	869	718	36.2%	(52.0%)	(26.1%)	12.5%	15.3%	NM	3.1x	2.7x	NM	42.2x	NM	
Median		\$12,715	\$12,519	95.4%	30.3%	65.9%	13.8%	13.6%	21.7%	9.2x	8.1x	64.4x	39.5x	91.6x	Marketing
MARKETING SOFTWARE															
Adobe Inc.	ADBE	\$159,042	\$159,080	99.1%	45.8%	220.4%	23.7%	17.9%	34.5%	14.2x	12.1x	41.2x	25.9x	53.9x	PLM & Engineering
salesforce.com, inc.	CRM	144,226	144,262	97.1%	18.7%	137.6%	26.4%	26.4%	14.5%	9.1x	7.2x	62.9x	25.2x	196.0x	SCM & Logistics
HubSpot, Inc.	HUBS	6,415	6,787	76.2%	26.1%	237.2%	33.1%	24.3%	NM	10.1x	8.2x	NM	65.3x	NM	
Acxiom Holdings, Inc.	ACXM	2,499	3,254	NA	NA	NA	34.2%	30.0%	NM	7.6x	5.8x	NM	NM	3.5x	
Criteo SA	CRTO	922	1,110	56.2%	(23.7%)	(57.8%)	(1.1%)	(59.0%)	9.5%	0.4x	1.0x	4.2x	3.2x	12.8x	Energy
Channeladvisor Corporation	ECOM	222	254	65.4%	(20.4%)	(37.0%)	(0.4%)	3.1%	5.4%	1.7x	1.7x	31.4x	10.6x	NM	Financial
Median		\$4,457	\$5,021	76.2%	18.7%	137.6%	25.0%	21.1%	12.0%	8.3x	6.5x	36.3x	25.2x	33.4x	
PLM & ENGINEERING SOFTWARE															
Dassault Systemes SA	ENXTPA:DSY	\$40,316	\$42,738	98.4%	38.5%	115.2%	8.4%	25.5%	29.3%	9.6x	7.6x	32.6x	22.1x	62.9x	HCIT
Autodesk, Inc.	ADSK	41,386	40,367	98.8%	42.6%	147.9%	30.4%	21.7%	12.3%	13.3x	10.9x	108.1x	34.6x	NM	EdTech / Public Sector
ANSYS, Inc.	ANSS	21,404	22,029	99.0%	80.1%	178.3%	22.4%	12.0%	39.4%	14.8x	13.2x	37.5x	29.0x	50.2x	
Synopsys, Inc.	SNPS	20,369	20,954	94.9%	65.2%	136.5%	7.7%	7.9%	20.6%	6.1x	5.6x	29.4x	18.5x	39.4x	
Hexagon AB	OM:HEXA B	23,034	20,655	91.3%	22.4%	56.7%	(0.5%)	5.3%	28.7%	5.4x	5.2x	18.9x	14.8x	26.3x	Large-Cap SaaS
Cadence Design Systems, Inc.	CDNS	19,271	19,462	90.0%	59.5%	175.0%	11.4%	6.0%	27.3%	8.4x	7.9x	30.6x	24.0x	45.5x	Small-Cap SaaS
Trimble Inc.	TRMB	12,091	10,386	90.1%	26.7%	38.3%	6.7%	0.8%	19.9%	3.7x	3.7x	18.9x	16.2x	32.3x	
PTC Inc.	PTC	9,021	8,649	73.1%	(9.7%)	61.9%	1.1%	15.9%	13.2%	7.2x	6.2x	54.4x	17.7x	NM	
Nemetschek SE	XTRA:NEM	7,715	7,621	97.2%	80.6%	239.4%	15.3%	19.1%	22.5%	13.2x	11.1x	58.8x	37.4x	58.6x	Data & Analytics
Altair Engineering Inc.	ALTR	2,534	2,577	83.0%	30.2%	NA	14.3%	10.1%	5.9%	5.8x	5.3x	97.9x	48.1x	NM	IT Operations
Median		\$19,820	\$20,059	93.1%	40.6%	136.5%	9.9%	11.0%	21.5%	7.8x	6.9x	35.1x	23.1x	45.5x	
															Data Storage
															IT Security

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /			Price /		
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
SUPPLY CHAIN AND LOGISTICS SOFTWARE															
Trimble Inc.	TRMB	\$12,091	\$10,386	90.1%	26.7%	38.3%	6.7%	0.8%	19.9%	3.7x	3.7x	18.9x	16.2x	32.3x	Software Bellwethers
Coupa Software, Inc.	COUP	9,259	9,331	91.4%	132.7%	484.8%	47.6%	29.3%	NM	26.2x	20.3x	NM	155.5x	NM	Communication
Wisetech Global Ltd.	ASX:WTC	5,042	5,224	60.2%	37.8%	301.9%	49.0%	35.4%	29.2%	20.6x	15.2x	70.6x	47.3x	137.7x	Enterprise
Manhattan Associates, Inc.	MANH	5,023	5,096	89.1%	88.2%	50.4%	9.0%	3.7%	21.8%	8.2x	7.9x	37.8x	37.0x	53.7x	
Descartes Systems Group Inc.	TSX:DSG	3,595	3,601	95.5%	62.1%	100.8%	16.7%	12.3%	35.4%	11.5x	10.2x	32.5x	26.7x	107.6x	
Kinaxis, Inc.	TSX:KXS	1,827	2,022	91.8%	59.7%	65.7%	18.2%	19.7%	17.2%	10.5x	8.8x	61.3x	35.2x	109.8x	HCM
SPS Commerce, Inc.	SPSC	1,749	1,931	93.7%	34.5%	58.6%	12.6%	10.5%	18.8%	6.4x	5.8x	34.2x	22.3x	60.9x	
American Software, Inc.	AMSWA	384	475	NA	NA	NA	(5.3%)	4.8%	7.0%	3.5x	3.4x	50.2x	26.6x	67.1x	Marketing
Median		\$4,309	\$4,348	91.4%	59.7%	65.7%	14.7%	11.4%	19.9%	9.4x	8.4x	37.8x	31.0x	67.1x	
ENERGY SOFTWARE															
Trimble Inc.	TRMB	\$12,091	\$10,386	90.1%	26.7%	38.3%	6.7%	0.8%	19.9%	3.7x	3.7x	18.9x	16.2x	32.3x	PLM & Engineering
AVEVA Group plc	LSE:AVV	9,953	9,937	97.9%	99.9%	NA	27.5%	13.3%	19.4%	9.8x	8.7x	50.7x	29.1x	140.3x	SCM & Logistics
Aspen Technology, Inc.	AZPN	8,546	8,248	85.1%	47.2%	121.2%	22.1%	(1.2%)	48.8%	13.8x	14.0x	28.3x	27.4x	30.4x	
Itron, Inc.	ITRI	4,257	3,322	98.3%	77.5%	33.6%	5.2%	2.5%	11.4%	1.7x	1.7x	15.2x	14.8x	57.0x	Energy
PSI Aktiengesellschaft	XTRA:PSAN	356	366	95.9%	30.3%	81.2%	4.8%	9.3%	9.1%	1.5x	1.4x	16.6x	10.7x	30.8x	
Median		\$8,546	\$8,248	95.9%	47.2%	59.8%	6.7%	2.5%	19.4%	3.7x	3.7x	18.9x	16.2x	32.3x	Financial
FINANCIAL SOFTWARE															
Fiserv, Inc.	FISV	\$101,985	\$78,616	98.0%	57.3%	117.6%	32.9%	107.3%	33.0%	13.3x	6.4x	40.2x	17.2x	84.4x	HCIT
Square, Inc.	SQ	26,776	26,881	75.2%	11.5%	359.0%	45.3%	(38.2%)	1.8%	6.2x	10.0x	NM	55.2x	NM	
MSCI Inc.	MSCI	23,751	21,870	96.5%	75.1%	227.7%	7.5%	10.2%	52.3%	15.7x	14.2x	30.0x	25.9x	36.9x	EdTech / Public Sector
SS&C Technologies Holdings, Inc.	SSNC	23,395	15,516	90.7%	36.1%	114.7%	65.2%	4.1%	37.0%	5.2x	4.9x	13.9x	12.4x	43.6x	
Jack Henry & Associates, Inc.	JKHY	11,185	11,207	95.3%	15.1%	64.1%	6.4%	6.1%	27.8%	7.0x	6.6x	25.2x	20.9x	40.4x	Large-Cap SaaS
Black Knight Financial Services, Inc.	BKFS	11,199	9,522	NA	NA	NA	6.1%	3.0%	32.6%	9.6x	9.4x	29.6x	18.9x	68.7x	
Q2 Holdings, Inc.	Q TWO	3,725	3,904	86.6%	63.6%	181.0%	31.1%	30.9%	NM	12.6x	9.6x	NM	175.3x	NM	Small-Cap SaaS
Envestnet, Inc.	ENV	4,251	3,654	94.2%	41.6%	97.5%	10.8%	14.9%	10.3%	4.9x	4.2x	47.4x	18.4x	NM	
Oracle Financial Services Software Ltd.	BSE:532466	2,779	3,305	69.7%	(27.8%)	(16.2%)	5.9%	6.5%	44.1%	4.1x	3.8x	9.2x	8.3x	17.1x	Data & Analytics
BlackLine, Inc.	BL	2,672	2,869	91.6%	25.9%	86.6%	25.8%	21.8%	NM	9.9x	8.1x	NM	89.4x	NM	
Median		\$11,192	\$10,365	91.6%	36.1%	114.7%	18.3%	8.4%	32.8%	8.3x	7.3x	29.6x	19.9x	42.0x	IT Operations
															Data Storage
															IT Security



APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS

(CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3- Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
HEALTHCARE IT															
Cerner Corporation	CERN	\$23,591	\$23,052	96.0%	40.0%	54.9%	5.7%	4.0%	19.8%	4.2x	4.0x	21.3x	12.7x	45.5x	Software Bellwethers
Veeva Systems Inc	VEEV	19,433	20,900	79.5%	57.5%	245.6%	25.6%	28.1%	30.2%	19.0x	14.8x	62.9x	40.9x	68.3x	Communication
Inovalon Holdings, Inc.	INOV	3,844	2,917	99.8%	32.7%	82.7%	19.6%	14.2%	27.2%	6.4x	5.6x	23.3x	16.7x	NM	Enterprise
HMS Holdings Corp.	HMSY	2,591	2,608	72.8%	5.2%	63.0%	4.7%	12.5%	23.3%	4.2x	3.7x	18.0x	13.5x	25.3x	
Allscripts Healthcare Solutions, Inc.	MDRX	2,503	1,594	79.2%	1.8%	(3.9%)	16.3%	4.7%	7.4%	1.4x	1.4x	19.3x	7.8x	7.5x	HCM
Premier, Inc.	PINC	2,465	2,517	90.2%	1.4%	24.8%	13.0%	4.1%	42.4%	2.0x	1.9x	4.7x	4.2x	22.5x	
Change Healthcare, Inc.	CHNG	2,072	2,048	98.0%	NA	NA	NM	NM	NA	NM	0.6x	NM	2.0x	NM	Marketing
Model N, Inc.	MODN	1,141	1,157	97.9%	165.1%	296.3%	(8.7%)	8.7%	NM	8.1x	7.4x	NM	81.5x	NM	
NextGen Healthcare, Inc.	QSII	1,060	1,052	NA	NA	NA	0.1%	4.3%	7.4%	2.0x	1.9x	26.9x	11.0x	65.4x	PLM & Engineering
Evolent Health Inc.	EVH	979	759	41.6%	(54.6%)	(38.9%)	46.6%	16.3%	NM	1.2x	1.0x	NM	22.0x	NM	
Median		\$2,484	\$2,282	90.2%	19.0%	59.0%	13.0%	8.7%	23.3%	4.2x	2.8x	21.3x	13.1x	35.4x	SCM & Logistics
EDTECH / PUBLIC SECTOR SOFTWARE															
Constellation Software Inc.	TSX:CSU	\$21,062	\$20,605	87.5%	51.8%	114.1%	15.4%	16.1%	15.2%	6.3x	5.4x	41.1x	19.8x	49.0x	Energy
Tyler Technologies, Inc.	TYL	11,527	11,697	99.5%	61.5%	110.1%	14.1%	13.7%	18.8%	11.1x	9.7x	58.9x	34.2x	89.1x	
Blackbaud, Inc.	BLKB	4,410	3,815	81.8%	26.6%	24.4%	4.6%	4.8%	12.9%	5.0x	4.8x	38.7x	25.2x	191.5x	Financial
2U, Inc.	TWOU	1,681	1,523	29.8%	(51.7%)	(20.4%)	37.4%	32.4%	NM	3.2x	2.4x	NM	NM	NM	
NIC Inc.	EGOV	1,299	1,497	91.7%	79.1%	(6.5%)	(1.1%)	7.9%	20.6%	3.8x	3.5x	18.2x	14.1x	29.7x	HCIT
K12 Inc.	LRN	682	797	54.4%	(17.9%)	18.6%	8.6%	1.9%	5.9%	0.7x	0.7x	11.3x	5.0x	22.3x	
Median		\$3,046	\$2,669	84.6%	39.2%	21.5%	11.4%	10.8%	15.2%	4.4x	4.1x	38.7x	19.8x	49.0x	EdTech / Public Sector
Large-Cap SaaS															
Small-Cap SaaS															
Data & Analytics															
IT Operations															
Data Storage															
IT Security															



APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS

(CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
LARGE-CAP SAAS (Market Cap > \$3Bn)															Software Bellwethers
salesforce.com, inc.	CRM	\$144,226	\$144,262	97.1%	18.7%	137.6%	26.4%	26.4%	14.5%	9.1x	7.2x	62.9x	25.2x	196.0x	
ServiceNow, Inc.	NOW	52,887	53,234	93.1%	58.6%	279.8%	32.0%	28.6%	7.4%	16.4x	12.8x	NM	44.7x	NM	Communication
Workday, Inc.	WDAY	37,271	37,824	72.5%	3.0%	148.8%	31.5%	20.5%	NM	10.8x	9.0x	NM	43.5x	NM	
Atlassian Corp. Plc	TEAM	28,753	29,383	80.3%	35.2%	399.8%	37.1%	27.5%	NM	22.0x	17.3x	NM	68.4x	NM	Enterprise
Veeva Systems Inc	VEEV	19,433	20,900	79.5%	57.5%	245.6%	25.6%	28.1%	30.2%	19.0x	14.8x	62.9x	40.9x	68.3x	
Zoom Video Communications, Inc.	ZM	18,051	18,806	63.4%	NA	NA	256.6%	47.8%	4.0%	33.4x	22.6x	NM	136.1x	NM	
Check Point Software Technologies Ltd.	CHKP	15,208	16,892	83.6%	8.1%	31.4%	4.2%	3.7%	45.5%	7.7x	7.4x	16.9x	14.6x	21.3x	HCM
Paycom Software, Inc.	PAYC	15,217	15,265	94.6%	116.2%	482.0%	31.0%	24.3%	34.0%	21.9x	17.6x	64.4x	41.5x	91.6x	
RingCentral, Inc.	RNG	14,367	14,523	94.8%	104.6%	718.8%	33.9%	23.3%	1.0%	17.1x	13.9x	NM	115.9x	NM	Marketing
DocuSign, Inc.	DOCU	13,273	13,299	97.2%	84.9%	NA	38.3%	28.3%	NM	14.8x	11.5x	NM	149.8x	NM	
CrowdStrike Holdings, Inc.	CRWD	9,417	10,251	48.9%	NA	NA	96.9%	53.1%	NM	23.0x	15.0x	NM	NM	NM	PLM & Engineering
Coupa Software, Inc.	COUP	9,259	9,331	91.4%	132.7%	484.8%	47.6%	29.3%	NM	26.2x	20.3x	NM	155.5x	NM	
Guidewire Software, Inc.	GWRE	8,476	9,065	88.8%	36.8%	122.5%	(4.0%)	13.8%	2.1%	12.2x	10.7x	NM	58.0x	NM	SCM & Logistics
Zendesk, Inc.	ZEN	8,748	8,596	80.8%	31.3%	261.5%	38.4%	30.7%	NM	11.5x	8.8x	NM	94.5x	NM	
Xero Limited	ASX:XRO	7,914	7,927	94.7%	89.8%	357.7%	26.0%	40.4%	8.7%	19.9x	14.2x	NM	63.6x	NM	Energy
Dynatrace, Inc.	DT	7,456	7,098	92.1%	NA	NA	18.8%	22.4%	NM	15.4x	12.6x	NM	48.2x	NM	
Anaplan, Inc.	PLAN	6,745	7,001	86.8%	97.4%	NA	46.5%	34.8%	NM	21.1x	15.7x	NM	NM	NM	Financial
HubSpot, Inc.	HUBS	6,415	6,787	76.2%	26.1%	237.2%	33.1%	24.3%	NM	10.1x	8.2x	NM	65.3x	NM	
Proofpoint, Inc.	PFPT	6,227	6,480	85.9%	37.0%	62.5%	26.7%	20.0%	NM	7.4x	6.2x	NM	36.6x	NM	
Avalara Inc	AVLR	5,189	5,636	77.7%	135.2%	NA	38.9%	25.8%	NM	14.8x	11.7x	NM	NM	NM	HCIT
Smartsheet, Inc.	SMAR	4,779	5,277	80.5%	80.7%	NA	54.2%	43.1%	NM	19.5x	13.7x	NM	NM	NM	
RealPage, Inc.	RP	5,441	4,974	81.5%	11.5%	79.2%	15.7%	15.2%	17.0%	5.7x	4.9x	33.4x	17.6x	112.3x	EdTech / Public Sector
CyberArk Software Ltd.	CYBR	3,909	4,416	78.4%	57.2%	156.2%	31.4%	17.8%	18.8%	9.5x	8.0x	50.3x	28.9x	66.4x	
Five9, Inc.	FIVN	3,906	4,006	93.9%	50.0%	362.2%	28.0%	16.0%	6.4%	12.7x	10.9x	199.1x	63.3x	NM	Large-Cap SaaS
Medallia, Inc.	MDLA	3,673	3,992	69.6%	NA	NA	45.0%	20.2%	NM	9.7x	8.1x	NM	NM	NM	
Q2 Holdings, Inc.	QTWO	3,725	3,904	86.6%	63.6%	181.0%	31.1%	30.9%	NM	12.6x	9.6x	NM	175.3x	NM	Small-Cap SaaS
AppFolio Inc	APPF	3,777	3,745	94.0%	85.7%	361.0%	34.6%	29.3%	7.4%	15.8x	12.2x	NM	83.4x	108.5x	
Cornerstone Ondemand, Inc.	CSOD	3,553	3,555	93.4%	16.1%	38.4%	6.3%	11.4%	3.0%	6.3x	5.6x	NM	22.3x	NM	Data & Analytics
Qualys, Inc.	QLYS	2,972	3,232	85.8%	11.5%	163.4%	16.3%	14.0%	30.7%	9.6x	8.4x	31.1x	20.1x	51.2x	
Median		\$7,914	\$7,927	85.9%	57.2%	237.2%	31.5%	25.8%	8.7%	14.8x	11.5x	56.6x	53.1x	80.0x	IT Operations
															Data Storage
															IT Security

- Software Bellwethers
- Communication
- Enterprise
- HCM
- Marketing
- PLM & Engineering
- SCM & Logistics
- Energy
- Financial
- HCIT
- EdTech / Public Sector
- Large-Cap SaaS
- Small-Cap SaaS
- Data & Analytics
- IT Operations
- Data Storage
- IT Security

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3- Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
SMALL-CAP SAAS (Market Cap < \$3Bn)															
Rapid7 Inc.	RPD	\$2,782	\$2,767	84.9%	79.8%	360.3%	30.5%	24.2%	NM	9.1x	7.4x	NM	184.5x	NM	Software Bellwethers
Mimecast Limited	MIME	2,733	2,689	79.5%	29.0%	142.3%	26.9%	21.8%	7.5%	7.1x	5.9x	95.2x	32.1x	NM	Communication
Box, Inc.	BOX	2,735	2,511	67.3%	(0.6%)	21.1%	16.3%	10.8%	NM	4.0x	3.7x	NM	32.5x	NM	Enterprise
LivePerson, Inc.	LPSN	2,339	2,349	86.3%	96.2%	390.1%	15.2%	20.2%	NM	8.4x	7.0x	NM	NM	NM	
Alarm.com Holdings, Inc.	ALRM	2,029	2,087	60.1%	(17.2%)	54.4%	18.9%	10.9%	16.0%	4.3x	3.9x	26.8x	19.6x	43.1x	HCM
Workiva, Inc.	WK	1,787	1,954	65.6%	17.2%	208.1%	20.3%	16.1%	NM	6.3x	5.5x	NM	NM	NM	
SPS Commerce, Inc.	SPSC	1,749	1,931	93.7%	34.5%	58.6%	12.6%	10.5%	18.8%	6.4x	5.8x	34.2x	22.3x	60.9x	Marketing
PagerDuty, Inc.	PD	1,460	1,806	39.1%	NA	NA	44.1%	28.5%	NM	9.5x	7.4x	NM	NM	NM	
Eventbrite, Inc.	EB	1,244	1,702	61.4%	(27.5%)	NA	15.0%	10.3%	NM	3.9x	3.5x	NM	NM	NM	PLM & Engineering
Yext, Inc.	YEXT	1,529	1,656	61.8%	(2.9%)	NA	32.3%	27.0%	NM	5.4x	4.3x	NM	NM	NM	
Talend SA	TLND	1,187	1,205	73.7%	5.5%	76.2%	24.5%	19.0%	NM	5.0x	4.2x	NM	NM	NM	SCM & Logistics
Model N, Inc.	MODN	1,141	1,157	97.9%	165.1%	296.3%	(8.7%)	8.7%	NM	8.1x	7.4x	NM	81.5x	NM	
Ebix, Inc.	EBIX	1,711	1,019	52.3%	(21.5%)	(41.4%)	22.4%	19.3%	27.8%	3.0x	2.5x	10.8x	9.2x	12.2x	Energy
Upland Software, Inc.	UPLD	1,137	902	65.1%	31.4%	299.0%	52.2%	27.5%	23.9%	5.6x	4.4x	23.5x	11.6x	NM	
Benefitfocus, Inc.	BNFT	869	718	36.2%	(52.0%)	(26.1%)	12.5%	15.3%	NM	3.1x	2.7x	NM	42.2x	NM	Financial
Domo, Inc.	DOMO	589	605	46.1%	10.6%	NA	25.2%	15.9%	NM	3.5x	3.1x	NM	NM	NM	
Castlight Health, Inc.	CSLT	159	194	32.0%	(38.7%)	(73.1%)	(1.7%)	(9.1%)	NM	1.1x	1.2x	NM	NM	NM	HCIT
Median		\$1,787	\$1,954	67.3%	11.3%	109.3%	20.3%	19.0%	16.0%	6.3x	5.5x	34.2x	32.1x	52.0x	
															EdTech / Public Sector
															Large-Cap SaaS
															Small-Cap SaaS
															Data & Analytics
															IT Operations
															Data Storage
															IT Security



APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS

(CONT'D)¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
DATA & ANALYTICS														
Verisk Analytics Inc	VRSK	\$27,102	\$24,472	90.5%	37.0%	84.0%	8.2%	9.4%	42.0%	10.7x	9.7x	25.4x	20.8x	52.8x
Splunk Inc.	SPLK	23,530	23,360	97.5%	42.8%	192.8%	33.5%	23.7%	NM	10.7x	8.7x	NM	51.1x	NM
Datadog, Inc.	DDOG	10,477	11,176	85.7%	NA	NA	208.4%	50.3%	NM	33.7x	22.4x	NM	NM	NM
Pegasystems Inc.	PEGA	6,279	6,319	99.8%	66.5%	121.3%	0.2%	13.4%	NM	7.0x	6.2x	NM	136.0x	NM
Verint Systems Inc.	VRNT	4,212	3,699	86.6%	30.8%	57.0%	6.3%	10.4%	13.7%	3.3x	2.9x	23.7x	11.6x	72.4x
Teradata Corporation	TDC	3,159	3,012	54.2%	(30.2%)	(1.5%)	(9.5%)	(5.9%)	7.9%	1.6x	1.7x	20.1x	8.4x	NM
Inovalon Holdings, Inc.	INOV	3,844	2,917	99.8%	32.7%	82.7%	19.6%	14.2%	27.2%	6.4x	5.6x	23.3x	16.7x	NM
PROS Holdings, Inc.	PRO	2,520	2,657	79.5%	90.8%	178.4%	24.1%	17.4%	NM	10.6x	9.1x	NM	NM	NM
MicroStrategy Incorporated	MSTR	1,001	1,464	89.8%	11.6%	(27.7%)	(3.5%)	6.6%	NM	2.1x	1.9x	NM	15.5x	57.5x
Talend SA	TLND	1,187	1,205	73.7%	5.5%	76.2%	24.5%	19.0%	NM	5.0x	4.2x	NM	NM	NM
Median		\$4,028	\$3,356	88.2%	32.7%	82.7%	13.9%	13.8%	20.5%	6.7x	5.9x	23.5x	16.7x	57.5x
IT OPERATIONS MANAGEMENT														
VMware, Inc.	VMW	\$65,836	\$62,220	73.4%	10.7%	92.8%	13.3%	12.8%	25.4%	6.8x	6.0x	26.6x	16.4x	9.5x
ServiceNow, Inc.	NOW	52,887	53,234	93.1%	58.6%	279.8%	32.0%	28.6%	7.4%	16.4x	12.8x	NM	44.7x	NM
Arista Networks, Inc.	ANET	13,195	15,540	61.4%	(3.5%)	110.2%	21.3%	(7.3%)	34.9%	5.4x	5.8x	15.4x	15.8x	20.2x
Citrix Systems, Inc.	CTXS	14,903	14,441	96.7%	8.2%	24.2%	1.8%	2.5%	24.9%	5.0x	4.8x	19.9x	14.3x	22.5x
F5 Networks, Inc.	FFIV	7,518	8,490	80.5%	(13.8%)	(3.5%)	3.7%	4.6%	26.5%	3.4x	3.2x	12.7x	8.8x	19.8x
Dynatrace, Inc.	DT	7,456	7,098	92.1%	NA	NA	18.8%	22.4%	NM	15.4x	12.6x	NM	48.2x	NM
SolarWinds Corp.	SWI	7,390	5,695	87.4%	34.1%	NA	11.8%	12.8%	24.2%	8.2x	7.2x	33.7x	15.6x	NM
Micro Focus International plc	LSE:MCRO	6,720	4,677	42.3%	(33.7%)	(59.8%)	18.1%	8.2%	33.7%	2.2x	2.0x	6.6x	5.1x	3.6x
New Relic, Inc.	NEWR	3,580	3,863	60.3%	(18.8%)	132.6%	31.3%	17.6%	NM	6.6x	5.6x	NM	39.0x	NM
Software AG	XTRA:SOW	2,374	2,582	88.3%	(3.5%)	NA	(2.8%)	3.8%	29.6%	2.4x	2.3x	8.2x	8.6x	14.1x
Fastly, Inc.	FSLY	1,701	1,880	56.9%	NA	NA	73.8%	30.5%	NM	9.3x	7.1x	NM	NM	NM
Progress Software Corporation	PRGS	2,012	1,861	87.3%	17.1%	30.1%	3.9%	6.0%	33.1%	4.9x	4.6x	14.7x	11.2x	34.7x
PagerDuty, Inc.	PD	1,460	1,806	39.1%	NA	NA	44.1%	28.5%	NM	9.5x	7.4x	NM	NM	NM
NetScout Systems, Inc.	NTCT	2,030	1,801	79.4%	1.9%	(23.6%)	(5.3%)	3.2%	14.9%	2.3x	2.2x	15.4x	NM	NM
Radware Ltd.	RDWR	1,007	1,209	95.6%	13.5%	76.8%	8.5%	7.8%	11.8%	4.1x	3.8x	34.2x	21.4x	52.2x
Median		\$6,720	\$4,677	80.5%	5.0%	53.5%	13.3%	8.2%	25.4%	5.4x	5.6x	15.4x	15.7x	20.0x

- Software Bellwethers
- Communication
- Enterprise
- HCM
- Marketing
- PLM & Engineering
- SCM & Logistics
- Energy
- Financial
- HCIT
- EdTech / Public Sector
- Large-Cap SaaS
- Small-Cap SaaS
- Data & Analytics
- IT Operations
- Data Storage
- IT Security

APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS

(CONT'D) ¹

		Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
Company	Ticker	Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
DATA STORAGE														
NetApp, Inc.	NTAP	\$13,005	\$14,207	79.5%	4.3%	76.5%	(6.7%)	0.7%	20.2%	2.3x	2.2x	11.2x	9.0x	14.3x
Iron Mountain, Inc.	IRM	19,492	9,151	85.4%	(1.7%)	(1.9%)	2.1%	1.7%	33.5%	4.6x	4.5x	13.7x	12.9x	23.1x
Dropbox	DBX	7,309	7,438	67.6%	(12.3%)	NA	20.4%	15.8%	5.8%	4.6x	4.0x	78.8x	16.3x	NM
Nutanix, Inc.	NTNX	5,735	6,010	57.2%	(24.8%)	17.7%	3.7%	20.2%	NM	4.6x	3.9x	NM	NM	NM
Pure Storage, Inc.	PSTG	3,810	4,455	72.7%	6.4%	51.3%	23.2%	16.7%	NM	2.4x	2.1x	NM	18.9x	NM
Box, Inc.	BOX	2,735	2,511	67.3%	(0.6%)	21.1%	16.3%	10.8%	NM	4.0x	3.7x	NM	32.5x	NM
CommVault Systems, Inc.	CVLT	1,584	2,041	64.5%	(24.5%)	(13.2%)	(2.1%)	(0.8%)	7.2%	2.3x	2.3x	31.7x	15.2x	NM
Carbonite, Inc.	CARB	13	20	74.8%	(19.6%)	(39.7%)	(27.9%)	NM	44.0%	2.1x	NM	4.8x	NM	7.9x
Median		\$4,773	\$5,232	70.2%	(7.0%)	17.7%	2.9%	10.8%	20.2%	3.2x	3.7x	13.7x	15.8x	14.3x
IT SECURITY														
Cisco Systems, Inc.	CSCO	\$195,067	\$203,459	82.3%	10.7%	58.7%	3.4%	(2.0%)	31.2%	3.8x	3.8x	12.0x	10.4x	18.5x
Palo Alto Networks, Inc.	PANW	21,670	22,653	88.7%	22.8%	84.9%	24.2%	20.2%	3.0%	7.2x	6.0x	NM	26.3x	NM
VeriSign, Inc.	VRSN	23,190	22,622	86.9%	29.9%	153.3%	2.1%	3.4%	69.0%	18.9x	18.2x	27.4x	25.0x	35.0x
Fortinet, Inc.	FTNT	16,361	18,260	96.8%	51.6%	254.4%	19.8%	16.5%	18.1%	8.0x	6.9x	44.0x	24.9x	46.4x
Check Point Software Ltd.	CHKP	15,208	16,892	83.6%	8.1%	31.4%	4.2%	3.7%	45.5%	7.7x	7.4x	16.9x	14.6x	21.3x
CrowdStrike Holdings, Inc.	CRWD	9,417	10,251	48.9%	NA	NA	96.9%	53.1%	NM	23.0x	15.0x	NM	NM	NM
Trend Micro Incorporated	TSE:4704	5,576	7,165	86.4%	(5.3%)	44.8%	7.9%	4.5%	32.6%	3.7x	3.5x	11.3x	11.0x	26.1x
Proofpoint, Inc.	PFPT	6,227	6,480	85.9%	37.0%	62.5%	26.7%	20.0%	NM	7.4x	6.2x	NM	36.6x	NM
Cloudflare, Inc.	NET	4,484	5,121	77.3%	NA	NA	91.7%	36.4%	NM	17.3x	12.7x	NM	NM	NM
CyberArk Software Ltd.	CYBR	3,909	4,416	78.4%	57.2%	156.2%	31.4%	17.8%	18.8%	9.5x	8.0x	50.3x	28.9x	66.4x
FireEye, Inc.	FEYE	3,621	3,528	88.6%	2.0%	38.9%	6.4%	6.2%	NM	4.2x	3.9x	NM	24.9x	NM
Qualys, Inc.	QLYS	2,972	3,232	85.8%	11.5%	163.4%	16.3%	14.0%	30.7%	9.6x	8.4x	31.1x	20.1x	51.2x
Rapid7 Inc.	RPD	2,782	2,767	84.9%	79.8%	360.3%	30.5%	24.2%	NM	9.1x	7.4x	NM	184.5x	NM
Mimecast Limited	MIME	2,733	2,689	79.5%	29.0%	142.3%	26.9%	21.8%	7.5%	7.1x	5.9x	95.2x	32.1x	NM
Varonis Systems, Inc.	VRNS	2,304	2,369	97.1%	46.9%	190.0%	5.2%	0.0%	NM	8.6x	8.6x	NM	NM	NM
SailPoint Technologies	SAIL	1,987	2,105	73.2%	0.5%	NA	18.6%	12.5%	3.9%	7.1x	6.3x	180.3x	104.3x	NM
Ping Identity Holding Corp.	PING	1,929	1,935	95.5%	NA	NA	14.8%	7.4%	21.2%	8.2x	7.7x	38.8x	87.3x	NM
ForeScout Technologies, Inc.	FSCT	1,502	1,547	70.6%	26.2%	NA	19.7%	11.8%	NM	4.5x	4.1x	NM	NM	NM
SecureWorks Corp.	SCWX	1,245	1,353	66.9%	(1.4%)	57.3%	6.4%	5.1%	NM	2.3x	2.2x	NM	115.3x	NM
Tufin Software Technologies Ltd	TUFN	515	613	56.7%	NA	NA	58.6%	22.5%	NM	5.0x	4.1x	NM	NM	NM
Cheetah Mobile, Inc.	CMCM	185	506	45.4%	(40.6%)	(62.0%)	(16.1%)	(17.4%)	NM	0.3x	0.4x	NM	NM	2.9x
Symantec Corporation	SYMC	74	44	56.6%	(33.5%)	(56.3%)	3.2%	NM	44.1%	1.7x	NM	3.9x	NM	30.1x
Median		\$3,296	\$3,380	83.0%	17.2%	73.7%	17.5%	12.5%	25.9%	7.3x	6.3x	31.1x	26.3x	30.1x
IT Security														

Software
Bellwethers

Communication

Enterprise

HCM

Marketing

PLM &
Engineering

SCM & Logistics

Energy

Financial

HCIT

EdTech /
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SaaSData &
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SOURCES

1. FactSet.
2. PNC Capital Markets.
3. S&P LCD stats.
4. PitchBook.
5. HW proprietary transaction information.

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