



# TECHNOLOGY, MEDIA & TELECOM

QUARTERLY SOFTWARE SECTOR REVIEW | 3Q 2019

**HW** Harris Williams

# HARRIS WILLIAMS OVERVIEW

## HARRIS WILLIAMS (“HW”) GLOBAL ADVISORY PLATFORM

### KEY FACTS

- Founded in 1991
- 360+ professionals across eight offices globally
- 21<sup>st</sup> record year in 2018
- 10 industry groups



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

### VERTICAL 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

### HORIZONTAL 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

## SELECT RECENT HW TMT TRANSACTIONS

 <i>has acquired</i> 	 <i>has been acquired by</i> 	 <i>has received an investment from</i> 	 <i>has been acquired by</i> 	 <i>pending acquisition by</i> 	 <i>has been acquired by</i> 	 <i>has been acquired by</i> 	 <i>has been acquired by</i> 	 <i>has received a controlling investment from</i> 	 <i>has acquired</i> 	 <i>has been acquired by</i> 	 <i>has acquired</i> 
-----------------------------	-------------------------------------	--	-------------------------------------	---------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	---	-----------------------------	-------------------------------------	-----------------------------

### CONTENTS

- [DEALS SPOTLIGHT](#)
- [M&A TRANSACTIONS – 3Q 2019](#)
- [SOFTWARE M&A ACTIVITY](#)
- [SOFTWARE SECTOR OVERVIEWS](#)
- [SOFTWARE PRIVATE PLACEMENTS](#)
- [SOFTWARE PUBLIC COMPARABLES](#)
- [TECHNOLOGY IPOs](#)
- [DEBT MARKETS](#)
- [APPENDIX: PUBLIC COMPARABLES DETAIL](#)

### TMT CONTACTS

#### UNITED STATES

Tyler Dewing  
Managing Director  
[tdewing@harriswilliams.com](mailto:tdewing@harriswilliams.com)

Sam Hendler  
Managing Director  
[shendler@harriswilliams.com](mailto:shendler@harriswilliams.com)

Mike Wilkins  
Managing Director  
[mwilkins@harriswilliams.com](mailto:mwilkins@harriswilliams.com)

#### EUROPE

Thierry Monjauze  
Managing Director  
[tmonjauze@harriswilliams.com](mailto:tmonjauze@harriswilliams.com)

### TO SUBSCRIBE PLEASE EMAIL:

[\\*tmt\\_reader@harriswilliams.com](mailto:*tmt_reader@harriswilliams.com)

# SELECT RECENT HW SOFTWARE TRANSACTIONS

## HEALTH & SAFETY INSTITUTE (“HSI”)



- Leading provider of environmental, health, and safety compliance (“EHS”) training and workflow solutions

### Company Overview

- HSI’s comprehensive platform addresses complex and evolving EHS requirements for organizations to make workplaces safer and more compliant
- The Company’s solutions reduce both financial and reputational risk, and ensure compliance in an increasingly complex regulatory environment
- HSI’s platform registered over 4M course completions across 935+ unique online courses in 2018

### Relevant Sub-Sectors



### HW Deal Contacts

**Mike Wilkins**  
 Managing Director  
[mwilkins@harriswilliams.com](mailto:mwilkins@harriswilliams.com)  
 415-217-3411

**Andy Leed**  
 Director  
[aleed@harriswilliams.com](mailto:aleed@harriswilliams.com)  
 415-217-3420

## COMPUTEREASE



- Leading provider of construction accounting, project management, and payroll processing solutions

### Company Overview

- ComputerEase’s fully integrated, cloud-based solution is purpose built to meet the unique needs of diverse contractor trades and sizes, with complex and varying union, labor, and equipment requirements
- The Company’s solutions enable contractors to manage and gain real-time visibility into their company’s operations and financial performance
- ComputerEase serves more than 4,400 contractors across various trades in the US

### Relevant Sub-Sectors



### HW Deal Contacts

**Tyler Dewing**  
 Managing Director  
[tdewing@harriswilliams.com](mailto:tdewing@harriswilliams.com)  
 617-654-2133

**Priyanka Naithani**  
 Director  
[pnaithani@harriswilliams.com](mailto:pnaithani@harriswilliams.com)  
 617-654-2115

**Scott Reinig**  
 Vice President  
[sreinig@harriswilliams.com](mailto:sreinig@harriswilliams.com)  
 617-654-2113

# SELECT SOFTWARE M&A TRANSACTIONS – 3Q 2019

*Closed September 23, 2019*



Enterprise Value: \$500M

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

## Vista Equity's acquisition of AltaReturn

- AltaReturn provides an end-to-end investment management and reporting platform to over 200 customers in the alternative investment industry.
- The Company's SaaS platform offers fund and corporate accounting, portfolio monitoring, CRM, web portals, and business intelligence solutions, enabling LPs, GPs, and fund administrators to simplify and automate back, middle, and front office workflows.
- Following the acquisition, Vista Equity will merge AltaReturn with existing portfolio company Black Mountain Systems to form Allvue Systems to focus on meeting the needs of both single strategy and multi-asset firms, administrators, and LPs.

*Announced September 10, 2019*



Enterprise Value: NA

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

## Apax Digital's acquisition of MetaMetrics

- MetaMetrics provides education technology solutions to offer the only scientifically valid, universal scales for measuring reading, listening, and math levels for both students and testing and instructional materials.
- The Company's solutions employ predictive analytics and data science to match students with testing and instructional materials based on their ability level, allowing teachers and parents to link assessment to instruction.
- Post acquisition, MetaMetrics will leverage Apax's experience in education, data and analytics, and software to continue delivering increased value to students and educators through new product development and international expansion.

*Announced September 4, 2019*



Enterprise Value: NA

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

## TPG Capital's pending acquisition of CollabNet VersionOne

- CollabNet VersionOne provides Agile planning, DevOps, and Value Stream Management ("VSM") solutions to developers.
- The Company's software development and delivery solutions enable enterprise and government industry leaders to ideate, create, and orchestrate the flow of value through continuous delivery pipelines resulting in measurable business outcomes.
- Post acquisition, TPG plans to commit up to \$500 million of equity capital to create a leading, integrated DevOps platform for enterprise customers.

*Closed August 14, 2019*




Enterprise Value: \$1,500M

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

## Cinven's acquisition of JAGGAER

- JAGGAER provides a cloud-based spend management platform for large- and medium-sized enterprises, enabling its more than 2,000 clients to connect to a network of 4 million suppliers in 70 countries across the Americas, APAC, and EMEA.
- The Company's Source-to-Pay eProcurement and spend management solutions deliver a fluid supply chain for clients, driven by powerful spend analytics, vendor sourcing, CLM, savings tracking, and efficient accounts payable systems.
- Cinven plans to support JAGGAER's management team to drive growth through increased investment in R&D to capitalize on the success of recent product launches, as well as to continue to make further acquisitions.

*Closed August 14, 2019*



Enterprise Value: NA

EV / Revenue: NA

Revenue: NA

EV / EBITDA: NA

## Genstar Capital's investment in insightsoftware

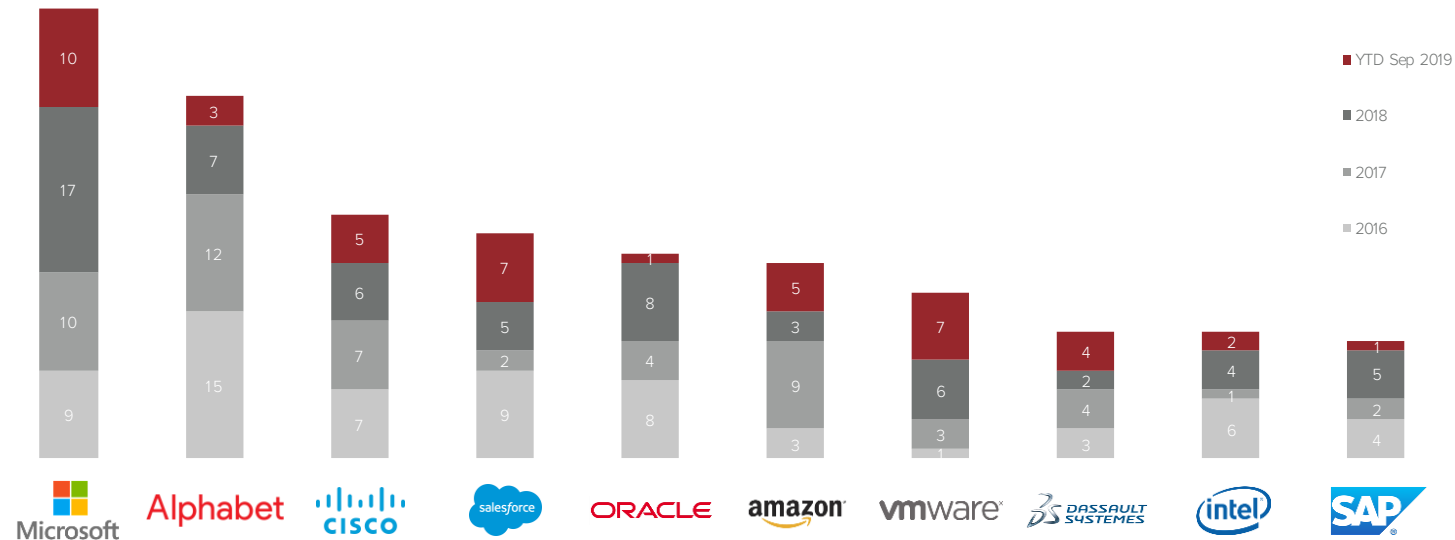
- insightsoftware provides enterprise performance management ("EPM") reporting software to over 375,000 global users across industry verticals.
- The Company's financial and operations reporting software complements ERP systems by enabling real-time automated reporting, data syncing, and analytics for hundreds of scenarios, allowing users to focus on analysis and effective business decisions.
- Under Genstar's ownership, insightsoftware plans to accelerate growth by expanding into new geographic regions, including EMEA and APAC, and new product categories, such as planning and forecasting.

# SOFTWARE ACQUISITION ACTIVITY – STRATEGIC ACQUIRERS

## MOST ACTIVE STRATEGIC ACQUIRERS OF SOFTWARE ASSETS BY VOLUME<sup>1</sup>

- The 10 most active strategic software acquirers registered 45 acquisitions through YTD Sep 2019. Activity among large strategic software acquirers remains on pace with 2018 levels.
- Microsoft was the most active strategic acquirer through YTD Sep 2019, completing 10 acquisitions.
- Notable 3Q 2019 strategic software transactions include Salesforce's pending acquisition of ClickSoftware, Cisco's pending acquisition of CloudCherry, and Microsoft's acquisitions of PromotelQ and BlueTalon.

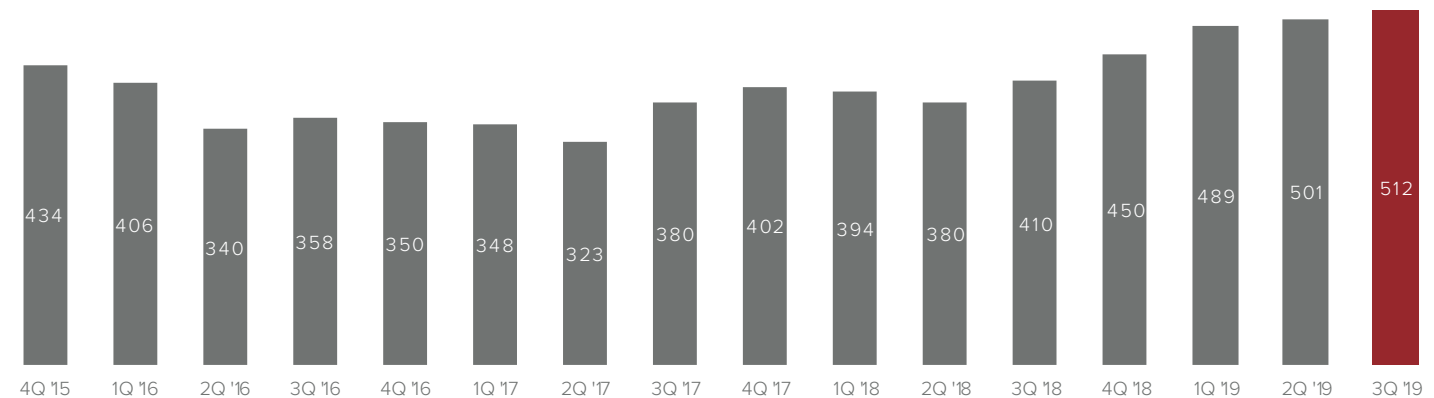
(# of Transactions)



## GLOBAL STRATEGIC ACQUIRER SOFTWARE M&A ACTIVITY BY VOLUME<sup>1</sup>

- Global strategic software M&A registered 512 acquisitions in 3Q 2019, representing a 25% increase over 3Q 2018.
- Cash-rich strategics remain highly acquisitive as management teams continue to view inorganic growth as a key value-creation strategy. Many large diversified software companies are pursuing vertical-specific software acquisitions as they look to expand into new markets and add next generation technology.

(# of Transactions)



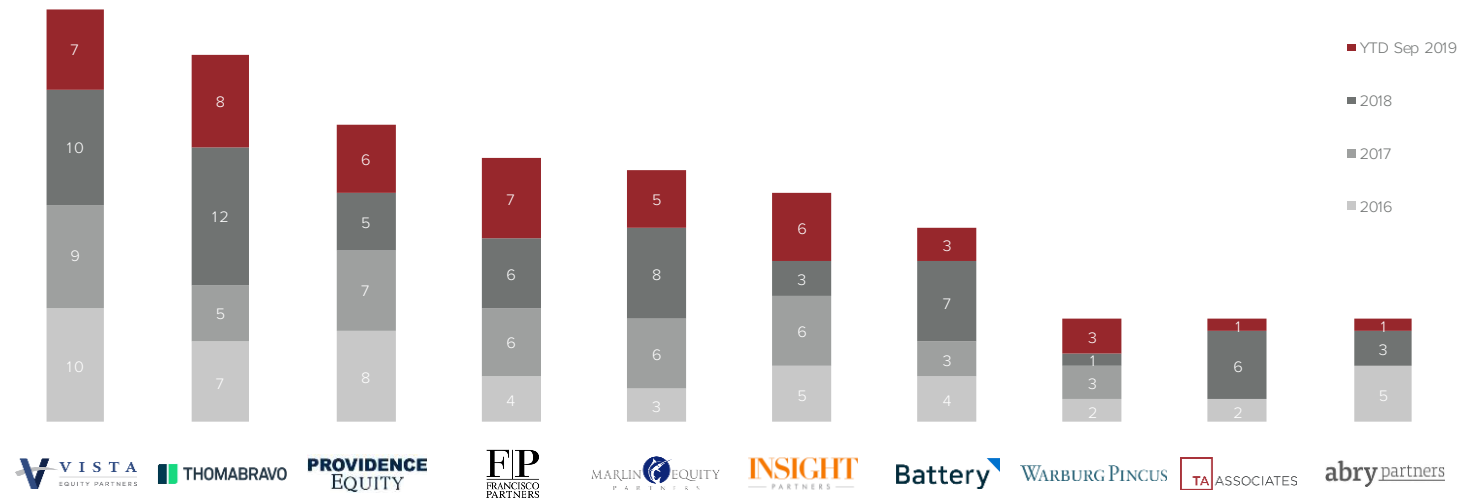
Note: Includes control investments only.

# SOFTWARE ACQUISITION ACTIVITY – PRIVATE EQUITY

## MOST ACTIVE PRIVATE EQUITY BUYERS OF NEW SOFTWARE PLATFORMS BY VOLUME<sup>1</sup>

(# of Platform Transactions)

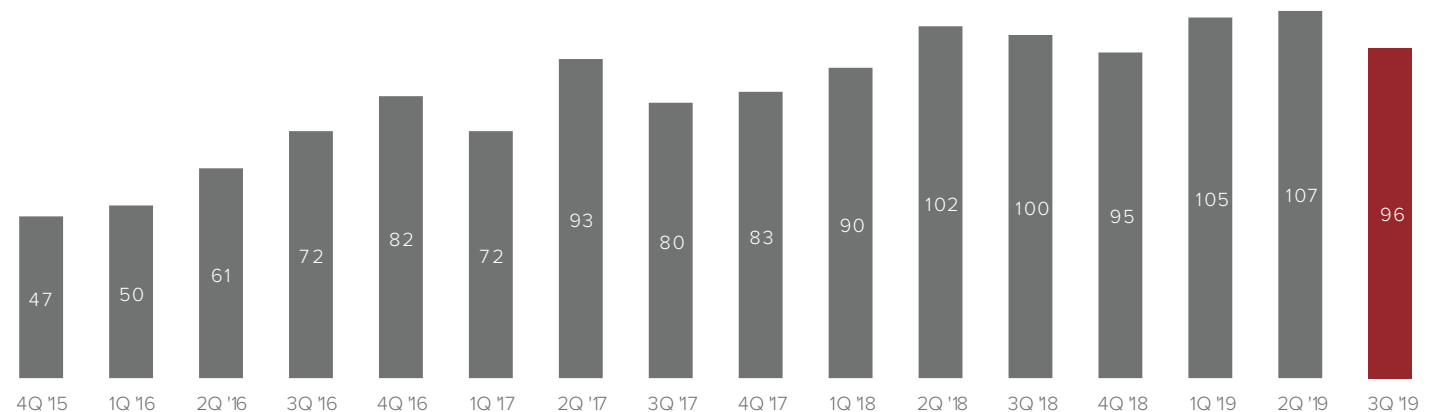
- The 10 most active software investors completed 47 new platform investments through YTD Sep 2019.
- Thoma Bravo remained the most active software private equity firm through YTD Sep 2019, completing eight platform acquisitions.
- Notable 3Q 2019 private equity platform acquisitions include Vista Equity's pending acquisition of Acquia, Francisco Partners' pending acquisition of LegalZoom, and Warburg Pincus' acquisition of WebPT.



## GLOBAL PRIVATE EQUITY NEW SOFTWARE PLATFORMS M&A ACTIVITY BY VOLUME<sup>1</sup>

(# of Platform Transactions)

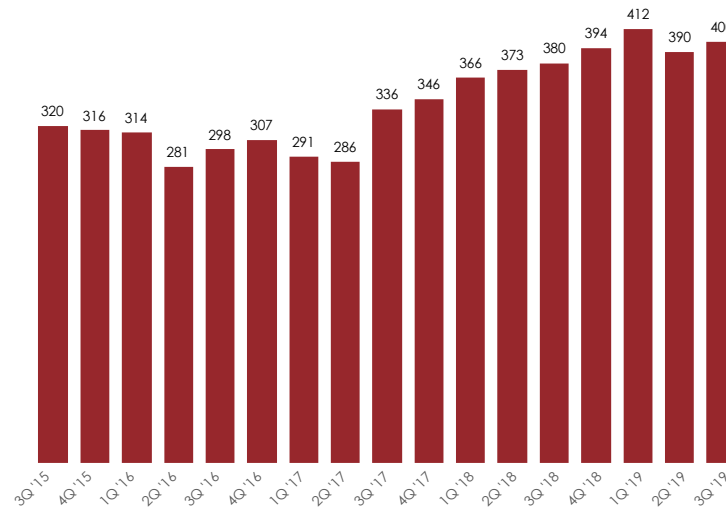
- Globally, private equity buyers registered 96 new software platform investments in 3Q 2019, a slight decrease from 2Q 2019.
- Private equity investment across the software sector continues to exhibit strong momentum as dry powder remains at all-time highs and fundraising activity continues its strong momentum, especially for technology focused funds.



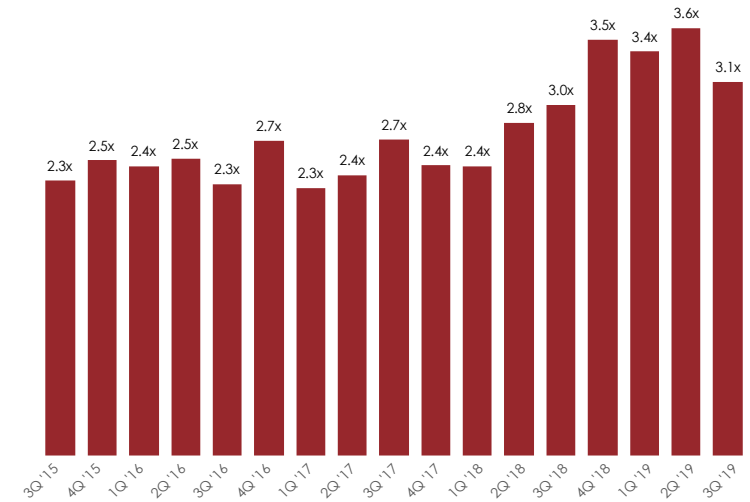
Note: Includes control new platform investments only. Excludes add-on acquisitions.

# APPLICATION SOFTWARE – M&A MARKET SUMMARY

## APPLICATION SOFTWARE M&A VOLUME<sup>1</sup> (GLOBAL)



## MEDIAN M&A REVENUE MULTIPLES<sup>1</sup> (REPORTED)



- Application Software M&A registered 400 transactions in 3Q 2019, remaining in line with historical averages.
- Median reported Application Software M&A transaction multiples decreased slightly to 3.1x revenue in 3Q 2019.

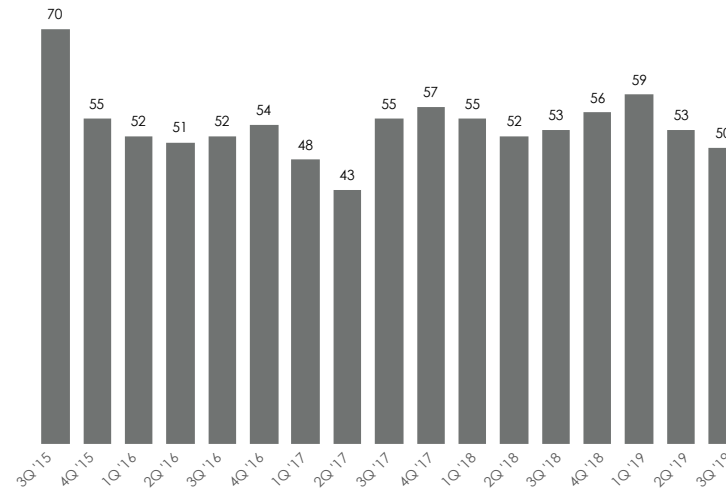
## NOTABLE APPLICATION SOFTWARE M&A TRANSACTIONS<sup>1,5</sup>

- In 3Q 2019, both strategic and financial buyers were highly active in pursuing application software targets, as vertical-specific software companies remain highly sought after.
- Notable 3Q 2019 vertical-specific transactions include Advent's pending acquisition of Transaction Services Group (Membership Management), Lovell Minnick Partners' acquisition of Inside Real Estate (Real Estate), and Providence Strategic Growth's acquisition of I'Car Systems (Automotive).

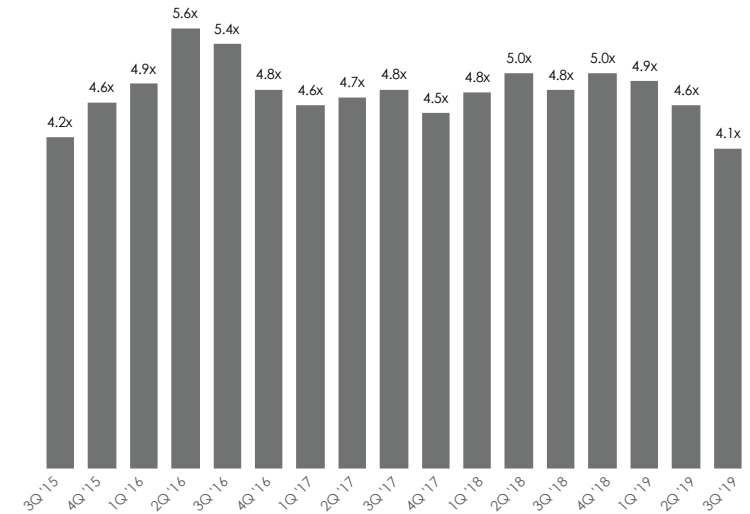
DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
<b>Application Software</b>					
Pending	ANSYS	Livermore Software Technology	Provider of explicit dynamics and advanced finite element analysis software.	\$775	NA
Pending	Advent International	Transaction Services Group	Provider of business management software and integrated payments solutions.	HW CONFIDENTIAL	
Pending	Ford	Journey Holding Corporation	Provider of a mobile application to detect the geographical location of vehicles.	NA	NA
10/03/2019	ECI Software Solutions (Apax Partners)	Trivest Software Group	Provider of industry-specific software solutions to the SME manufacturing sector.	NA	NA
9/26/2019	Genstar Capital	OECConnection	Provider of automotive software for OEM distribution networks.	NA	NA
9/13/2019	Riverside Company	Affinity	Provider of marketing software for OEMs, dealership groups, and individual dealerships.	NA	NA
9/09/2019	Lovell Minnick Partners	Inside Real Estate	Provider of online marketing software for real estate agents.	NA	NA
9/09/2019	Tailwind Capital Group	Ventiv Technology	Provider of risk, claims, and safety management software for insurance transactions.	HW CONFIDENTIAL	
9/05/2019	Providence Strategic Growth	I'Car Systems	Provider of an integrated dealer management system to simplify and streamline dealership activity.	NA	NA
9/03/2019	Waud Capital Partners	Health & Safety Institute	Provider of environmental, health, and safety compliance training and workflow solutions.	HW CONFIDENTIAL	
8/16/2019	Frontline Education (Thoma Bravo)	Perennial EdTech	Provider of fund accounting and payroll software for educational organizations.	NA	NA
8/14/2019	Cinven	JAGGAER, Inc.	Provider of a spend management platform for large- and medium-sized enterprises.	\$1,500	NA
8/14/2019	Genstar Capital	insightSoftware	Provider of enterprise resource planning and performance management reporting software.	NA	NA
7/31/2019	GI Partners	Insurity	Provider of policy and claims administration software to the property and casualty insurance industry.	NA	NA
7/09/2019	Frontier Capital	GovQA	Provider of government enterprise workflow software.	NA	NA
7/03/2019	KKR	Corel Corporation	Provider of graphics and office productivity packaged software.	\$1,000	NA
7/02/2019	GermanPersonnel (Riverside Company)	Compana Software	Provider of recruitment software for the temporary staffing sector.	NA	NA
<b>MEDIAN</b>				<b>\$775</b>	<b>5.6x</b>

# SAAS – M&A MARKET SUMMARY

## SAAS M&A VOLUME<sup>1</sup> (GLOBAL)



## MEDIAN M&A REVENUE MULTIPLES<sup>1</sup> (REPORTED)



- SaaS M&A volume again decreased slightly, registering 50 transactions in 3Q 2019.
- Median reported SaaS transaction revenue multiples decreased to 4.1x revenue in 3Q 2019.

## NOTABLE SAAS M&A TRANSACTIONS<sup>1,5</sup>

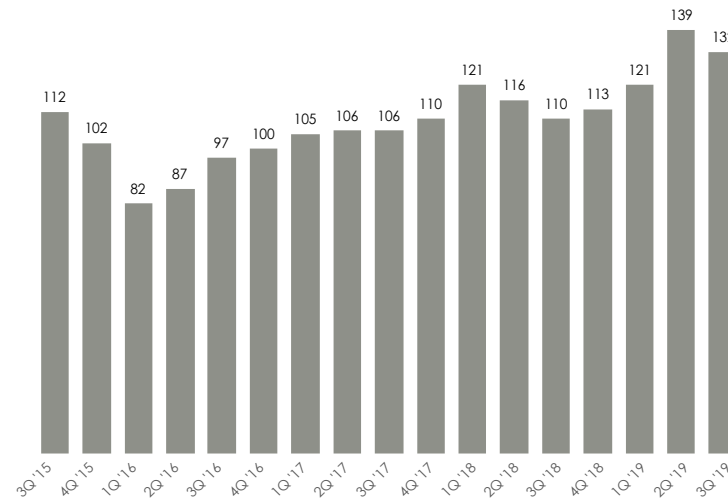
- Demand for cloud-based delivery models remains strong, resulting in continued robust M&A activity by both strategic and private equity buyers.
- Notable 3Q 2019 SaaS transactions include Salesforce's acquisition of ClickSoftware, Vista Equity's acquisition of AltaReturn, and Roper's acquisition of iPipeline.

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
<b>SaaS</b>					
Pending	Procore Technologies	Honest Buildings	Provider of a project management and capital planning platform for the construction industry.	NA	NA
10/01/2019	Salesforce	ClickSoftware Technologies	Provider of automated mobile workforce management and optimization software.	\$1,350	NA
9/23/2019	Vista Equity Partners	AltaReturn	Provider of an end-to-end investment management and reporting platform.	\$500	NA
9/11/2019	Luminate Capital Partners	MSI Data	Provider of a field workforce automation software platform.	NA	NA
9/09/2019	Providence Strategic Growth	MAPAL Software	Provider of workforce management and business analytics software for the restaurant and retail sectors.	NA	NA
9/05/2019	OpenGov	ViewPoint Government Solutions	Provider of cloud-based permitting and licensing software for government agencies.	NA	NA
9/05/2019	Luminate Capital Partners	Thought Industries	Provider of customer training and learning software solutions.	NA	NA
9/05/2019	Martis Capital	Credible Behavioral Health	Provider of EHR and practice management software.		<b>HW CONFIDENTIAL</b>
9/04/2019	Providence Equity Partners	TimeClock Plus	Provider of time and attendance workforce management software.	NA	NA
8/30/2019	Clearrent (Advent International)	Service Autopilot	Provider of cloud-based business automation software.	NA	NA
8/29/2019	ClearCourse Partnership (Aquiline Capital)	BrightOffice	Provider of SaaS-based hosted, enterprise CRM software solutions.	NA	NA
8/22/2019	Roper	iPipeline	Provider of a web-based sales distribution software platform.	\$1,625	NA
8/19/2019	Deltek (Roper)	ComputerEase	Provider of accounting and project management software for the construction industry.		<b>HW CONFIDENTIAL</b>
8/06/2019	NAVEX Global	LockPath	Provider of an enterprise integrated risk management platform.	NA	NA
8/02/2019	Alcumus (Inflexion)	eCompliance Management Solutions	Provider of occupational health and safety software.	\$30	NA
7/24/2019	Toast	StratEx	Provider of HR management and payroll software for restaurants.	NA	NA
7/12/2019	Spectrum Equity	Visual Lease	Provider of cloud-based lease management and accounting software.	NA	NA
7/08/2019	Bregal Sagemount	Buyers Edge Platform	Provider of procurement software, group purchasing, and data analytics to the food service industry.	NA	NA
<b>MEDIAN</b>				<b>\$500</b>	<b>9.3x</b>

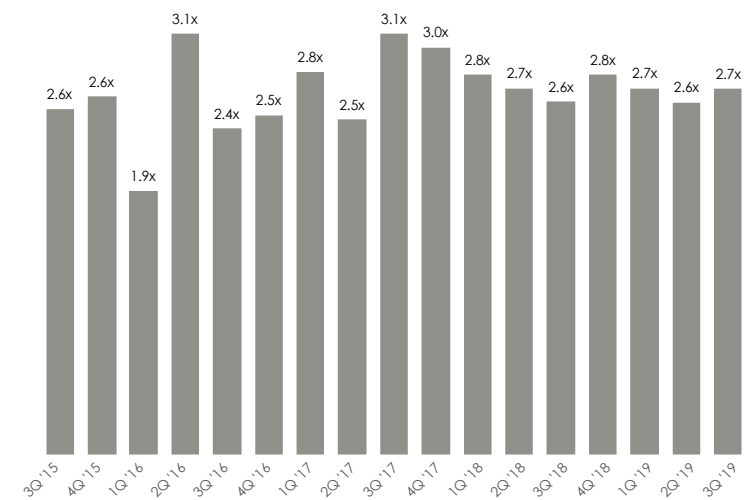


# DATA AND ANALYTICS – M&A MARKET SUMMARY

## DATA AND ANALYTICS M&A VOLUME<sup>1</sup> (GLOBAL)



## MEDIAN M&A REVENUE MULTIPLES<sup>1</sup> (REPORTED)



- Data and Analytics M&A registered 132 transactions in 3Q 2019, a slight decrease from the prior quarter.
- Median reported Data and Analytics transaction multiples increased slightly to 2.7x in 3Q 2019.

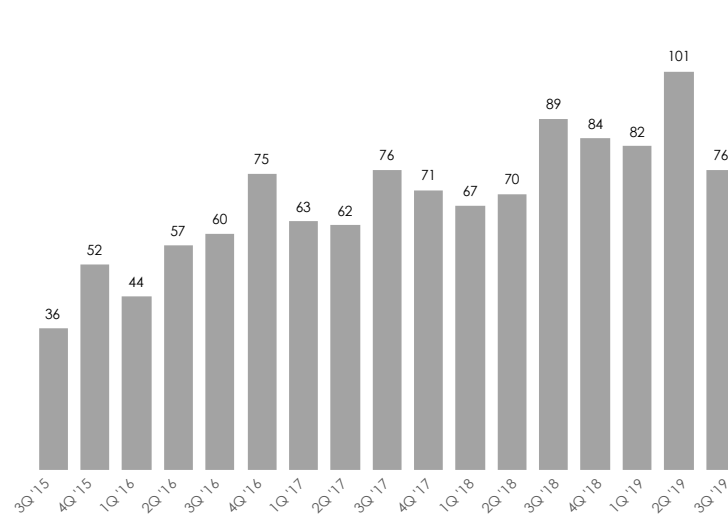
## NOTABLE DATA AND ANALYTICS M&A TRANSACTIONS<sup>1</sup>

- Data and Analytics remained a key focus area for enterprises in 3Q 2019 as companies increasingly seek data-driven insights and visibility to support critical decision-making.
- Notable 3Q 2019 Data and Analytics transactions include Cisco's pending acquisition of CloudCherry, Salesforce's acquisition of Tableau, and Publicis' acquisition of Epsilon Data Management.

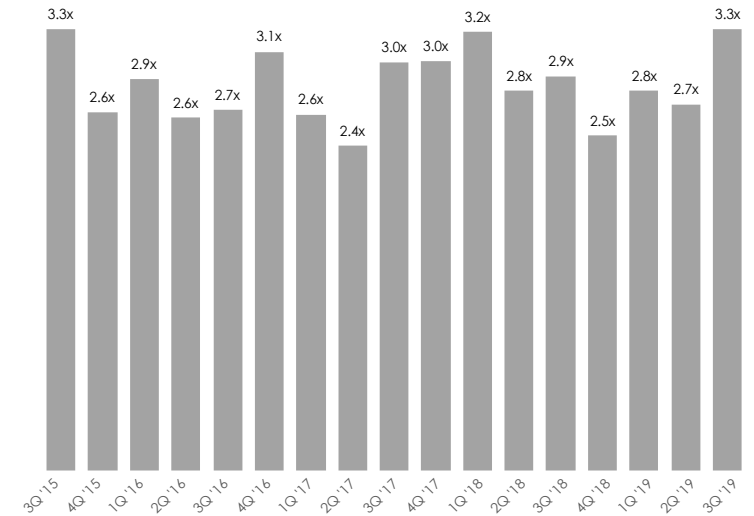
DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
<b>Data and Analytics</b>					
Pending	Wood Mackenzie (Verisk)	Genscape	Provider of real-time data and intelligence for the commodity and energy markets.	\$364	3.6x
Pending	Cisco Systems	CloudCherry	Provider of customer experience management and tracking software.	NA	NA
9/28/2019	Sage	Ocrex	Provider of optical character recognition software to automate data entry.	NA	NA
9/16/2019	Spectrum Equity	Datassential	Provider of data, intelligence, and market research for the food service industry.	NA	NA
9/11/2019	KKR	Burning Glass Technologies	Provider of resume parsing, job matching, and real-time labor market analytics software.	NA	NA
9/10/2019	Apax Digital	MetaMetrics	Provider of education technology solutions to measure and scale reading, listening, and math levels for students.	NA	NA
9/06/2019	Valence Media	Nielsen (Music-Industry Data & Analytics Unit)	Provider of data and analytics software for the music industry.	NA	NA
8/30/2019	Accenture	Analytics8	Provider of data management, reporting and visualization, data science, and analytics solutions.	NA	NA
8/29/2019	Banneker Partners	Dairy	Provider of supply chain management software for the dairy sector.	NA	NA
8/26/2019	Synsort (Centerbridge & Clearlake)	Pitney Bowes (Software Solutions Unit)	Provider of data quality and management software solutions.	\$700	NA
8/21/2019	Synsort (Centerbridge & Clearlake)	SQData	Provider of enterprise-class data integration software.	NA	NA
8/13/2019	Battery Ventures	Forest2Market	Provider of data, analytics, and supply chain solutions to the global forest products industry.	NA	NA
8/12/2019	Syndigo (The Jordan Company)	Sellpoints	Provider of an eCommerce optimization platform for brands.	NA	NA
8/06/2019	NIKE	Celect	Provider of a predictive analytics and inventory optimization platform.	NA	NA
7/31/2019	Salesforce	Tableau Software	Provider of a self-service data analytics platform.	\$16,322	13.7x
7/31/2019	Turvo	ODYN	Provider of AI-enabled visibility and predictive analytics software solutions for the supply chain.	NA	NA
7/15/2019	Syndigo (The Jordan Company)	WiseBase	Provider of an online database to exchange data between suppliers, retailers, and store operators.	NA	NA
7/12/2019	Aspen Technology	Mnubo	Provider of purpose-built AI and analytics infrastructure for IoT.	\$78	NA
7/01/2019	Publicis	Epsilon Data Management	Provider of data-driven marketing, predictive modelling, and analytics solutions.	\$4,400	2.3x
MEDIAN				<b>\$700</b>	<b>3.6x</b>

# INFRASTRUCTURE SOFTWARE – M&A MARKET SUMMARY

## INFRASTRUCTURE SOFTWARE M&A VOLUME<sup>1</sup> (GLOBAL)



## MEDIAN M&A REVENUE MULTIPLES<sup>1</sup> (REPORTED)



- Infrastructure Software M&A registered 76 transactions in 3Q 2019, a decline from the record high of 101 in 2Q 2019.
- In 3Q 2019, median reported Infrastructure Software transaction multiples increased to 3.3x revenue.

## NOTABLE INFRASTRUCTURE SOFTWARE M&A TRANSACTIONS<sup>1</sup>

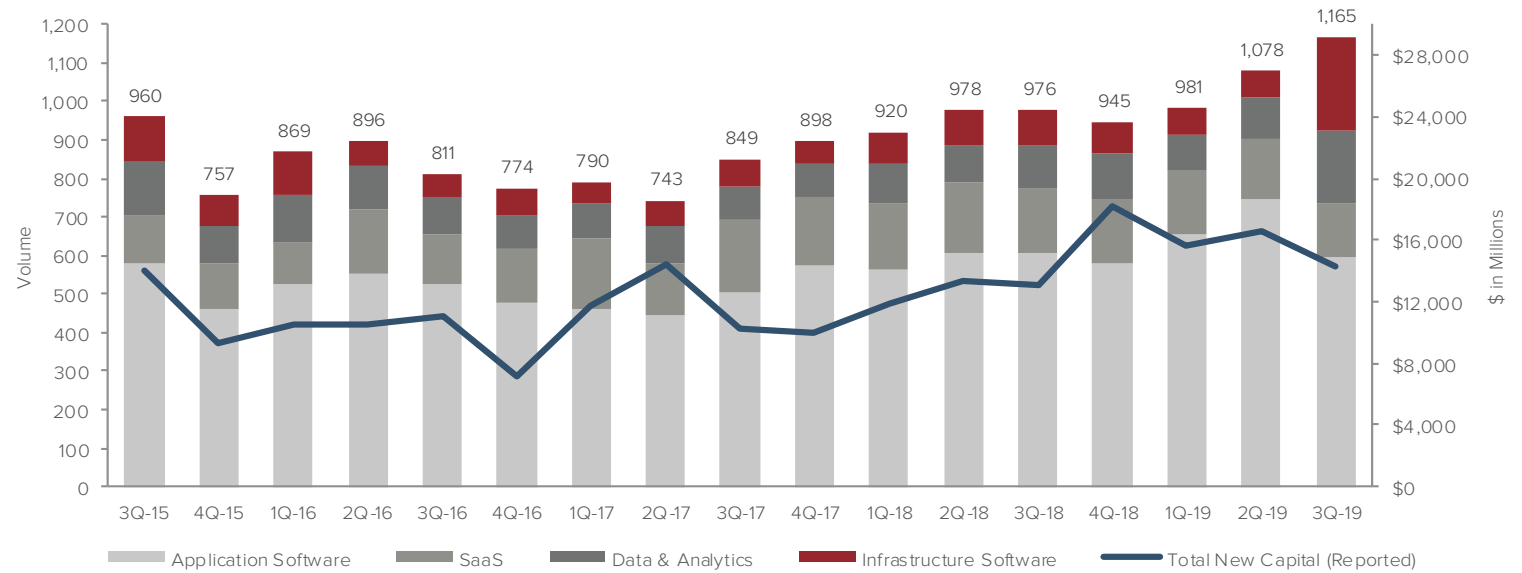
- Infrastructure Software M&A activity remained robust in 3Q 2019, as both private equity investors and established software vendors continue to acquire software assets to build holistic security platforms.
- Noteworthy Infrastructure Software M&A transactions in 3Q 2019 include Broadcom's pending acquisition of Symantec's Enterprise Security Assets, VMware's pending acquisition of Pivotal Software, and TPG Capital's pending acquisition of CollabNet VersionOne.

DATE CLOSED	ACQUIRER	TARGET	DESCRIPTION	ENTERPRISE VALUE (MM)	REVENUE MULTIPLE
<b>Infrastructure Software</b>					
Pending	Broadcom	Symantec (Enterprise Security Assets)	Provider of cloud-based enterprise cybersecurity solutions.	\$10,700	4.6x
Pending	VMware	Pivotal Software	Provider of a cloud-native platform to accelerate and streamline software development.	\$3,081	4.3x
Pending	BC Partners	Presidio	Provider of digital infrastructure, cloud, and security software solutions.	\$2,375	0.8x
Pending	Bridgepoint	QualiTest	Provider of quality assurance and software testing solutions.	\$420	NA
Pending	TPG Capital	CollabNet VersionOne	Provider of Agile planning, DevOps, and Value Stream management solutions to developers.	\$234	11.8x
Pending	Clearlake	DigiCert	Provider of identity and encryption cybersecurity software.	NA	NA
Pending	Splunk	SignalFx	Provider of a cloud monitoring platform to accelerate problem detection and troubleshooting in real time.	NA	NA
10/08/2019	Elastic	Endgame	Provider of an endpoint security platform to provide early prevention from known and unknown threats.	NA	NA
10/01/2019	Vista Equity Partners	Acquia	Provider of a cloud-based content management platform.	\$1,000	NA
9/25/2019	Temenos	Kony	Provider of a low-code software development platform.	\$580	NA
9/20/2019	Palo Alto Networks	ZingBox	Provider of web-based IoT cybersecurity solutions.	\$75	NA
8/29/2019	SmartBear (Francisco Partners)	Bitbar	Provider of a SaaS-based mobile application testing platform.	NA	NA
8/21/2019	BlackRock	Cofense	Provider of intelligent phishing defense software.	NA	NA
8/06/2019	Ricoh	DocuWare	Provider of document management and workflow automation software.	NA	NA
8/05/2019	Microsoft	PromoteIQ	Provider of an automated vendor marketing platform.	NA	NA
7/29/2019	Microsoft	BlueTalon	Provider of data-centric security solutions for Hadoop.	NA	NA
7/23/2019	AVI-SPL (H.I.G. Capital)	Digital Video Networks	Provider of audiovisual, unified communications and digital workplace collaboration solutions.	NA	NA
7/09/2019	Palo Alto Networks	Twistlock	Provider of a comprehensive cloud native security platform.	\$410	NA
7/02/2019	Exabeam	SkyFormation	Provider of cloud application security solutions to provide unified visibility of security related activities and flows.	NA	NA
7/02/2019	Keyfactor (Insight Partners)	Redtrust	Provider of centralized certificate and digital signature management software.	NA	NA
<b>MEDIAN</b>				<b>\$580</b>	<b>4.5x</b>

# PRIVATE PLACEMENT ACTIVITY BY SOFTWARE SECTOR

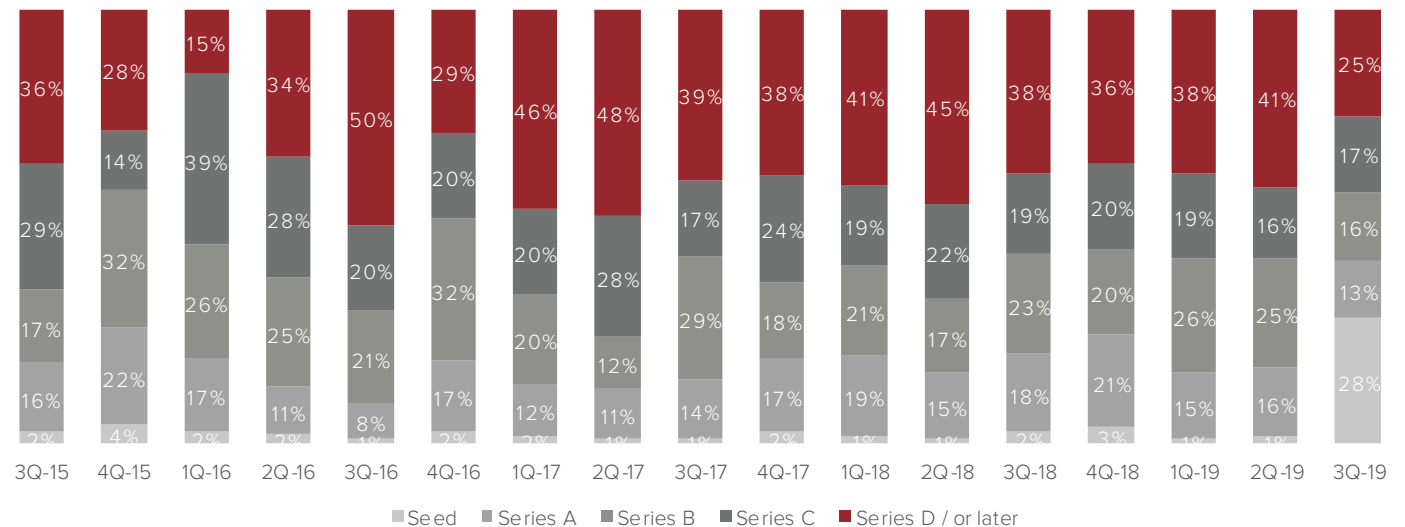
## PRIVATE PLACEMENTS BY SOFTWARE SUB-SECTOR AND NEW CAPITAL RAISED<sup>1,4</sup>

- There were 1,165 private placement financings in 3Q 2019, which represents a 19% increase over 3Q 2018.
- Total reported capital investment in the software sector declined slightly in 3Q 2019.



## PRIVATE PLACEMENT CAPITAL RAISED BY ROUND<sup>1,4</sup> (AS PERCENTAGE OF TOTAL REPORTED PRIVATE PLACEMENT CAPITAL)

- In 3Q 2019, the majority of private capital invested was in late stage (C – later) rounds, comprising 58% of total capital invested.
- Notable late stage rounds included TouchBistro's \$119 million Series E investment led by OMERS, GitLab's \$268 million Series E investment led by Goldman Sachs and ICONIQ, and Lucidworks' \$100 million Series F investment led by Francisco Partners and TPG.



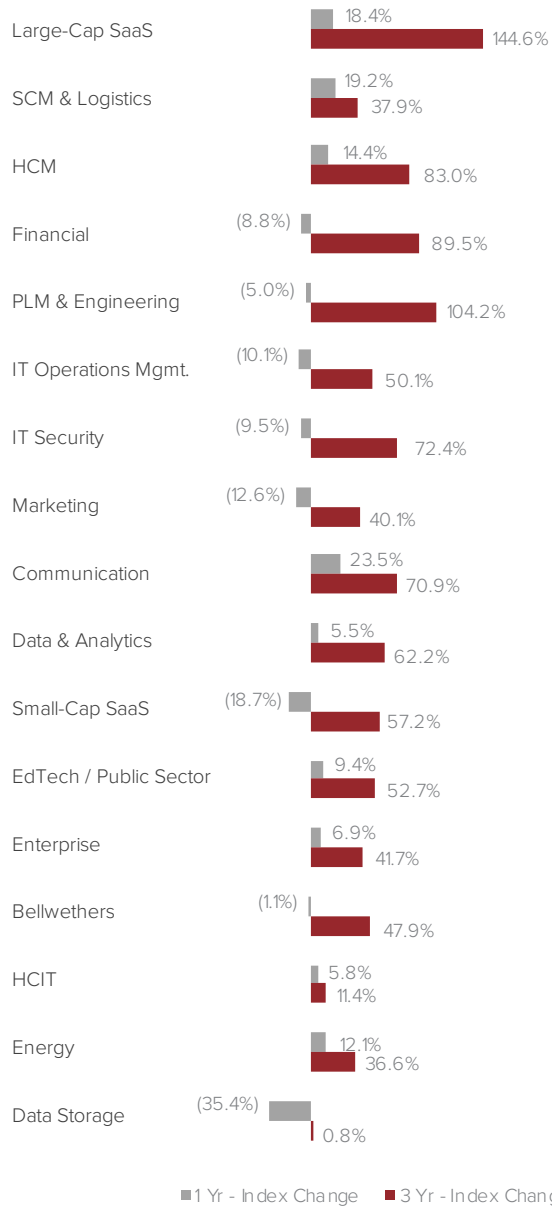
# SELECT RECENT SOFTWARE PRIVATE PLACEMENTS<sup>1,4</sup>

DATE	COMPANY	SECTOR	ROUND	ROUND SIZE (\$MM)	TOTAL RAISED (\$MM)	INVESTORS (CURRENT ROUND)	DESCRIPTION
09/18/19	TouchBistro	SaaS	E	\$119	\$212	OMERS; Barclays; RBC Ventures; BMO Capital Partners; Kensington Capital Partners; BDC IT Venture Fund; Napier Park Financial; Recruit Holdings; JPMorgan	Provider of iPad-compatible POS SaaS for restaurants, bars, food trucks, and other foodservice establishments.
09/17/19	GitLab	Infrastructure	E	\$268	\$414	Goldman Sachs; ICONIQ Capital	Provider of an open-source, code-collaboration platform to unify issues, code review, CI, and CD into a single UI.
09/16/19	FIELDWIRE	SaaS	C	\$34	\$50	Menlo Ventures; Brick & Mortar Ventures; Hilti Group; Formation 8	Provider of a cloud-based field collaboration platform for the commercial construction industry.
09/04/19	Clio	SaaS	D	\$250	\$275	TCV; JMI Equity	Provider of a cloud-based practice management platform for the legal industry.
08/22/19	DAVISWARE	SaaS	Late Stage	NA	NA	Serent Capital	Provider of an ERP platform for field services businesses.
08/22/19	ZENOTI	SaaS	C1	\$20	\$94	Steadview Capital	Provider of a comprehensive, SaaS-based bookings, payments, and management platform for the spa, salon, and med spa industry.
08/19/19	groups360 YOUR NEXT MEETING STARTS HERE.	SaaS	Late Stage	\$50	\$56	Marriott International; IHG; Accor; Hilton	Provider of a meetings and events lead generation and CRM portal.
08/12/19	Lucidworks	Data & Analytics	F	\$100	\$219	Francisco Partners; TPG Sixth Street Partners; Shasta Ventures; Granite Ventures; AllegisCyber; Top Tier Capital Partners	Provider of AI-powered data discovery and search applications
08/06/19	cybereason	Infrastructure	E	\$200	\$390	SoftBank	Provider of a cloud-based endpoint detection and cyber security platform.
07/24/19	gusto	SaaS	D	\$200	\$521	Fidelity; Generation Investment Management; General Catalyst; T. Rowe Price; Y Ventures; Dragoner Investment Group	Provider of a SaaS-based payroll, benefits, and HR management platform for SMBs.
07/23/19	circleci	Infrastructure	D	\$56	\$113	Owl Rock Capital; Next Equity; Scale Venture Partners; Top Tier Capital; Threshold Ventures; Baseline Ventures; Industry Ventures; Heavybit; Harrison Metal	Provider of automated testing and continuous integration tools.
07/17/19	icertis™	SaaS	E	\$115	\$212	Greycroft; Premjinvest; B Capital Group; Cross Creek Advisors; Eight Roads; Ignition Partners; Meritech Capital Partners; PSP Growth	Provider of cloud-based, AI-enabled enterprise contract lifecycle management software.
07/03/19	OneTrust Privacy Management Software	Infrastructure	A	\$200	\$200	Insight Partners	Provider of privacy, consent, preference, and risk management software.

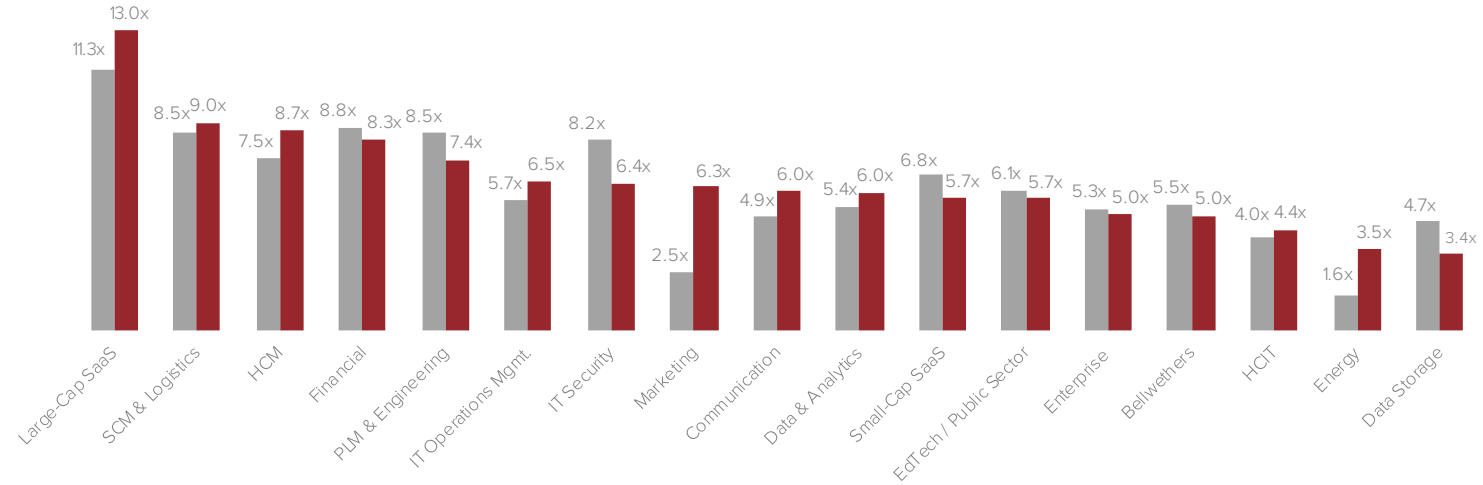
Note: Financial information presented above represents reported capital raised only.

# PUBLIC SOFTWARE VALUATION MULTIPLES BY SECTOR<sup>1</sup>

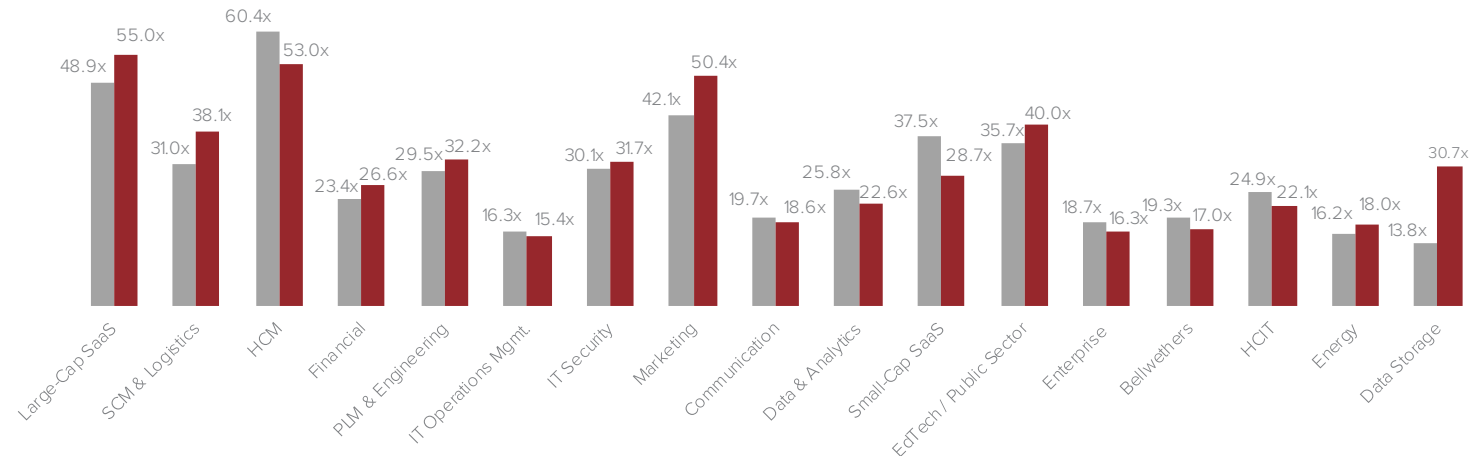
## STOCK PERFORMANCE (1- & 3-YEAR)





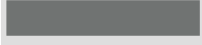












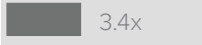
## REVENUE MULTIPLE COMPARISON 3Q 2018 VS. 3Q 2019



## EBITDA MULTIPLE COMPARISON 3Q 2018 VS. 3Q 2019

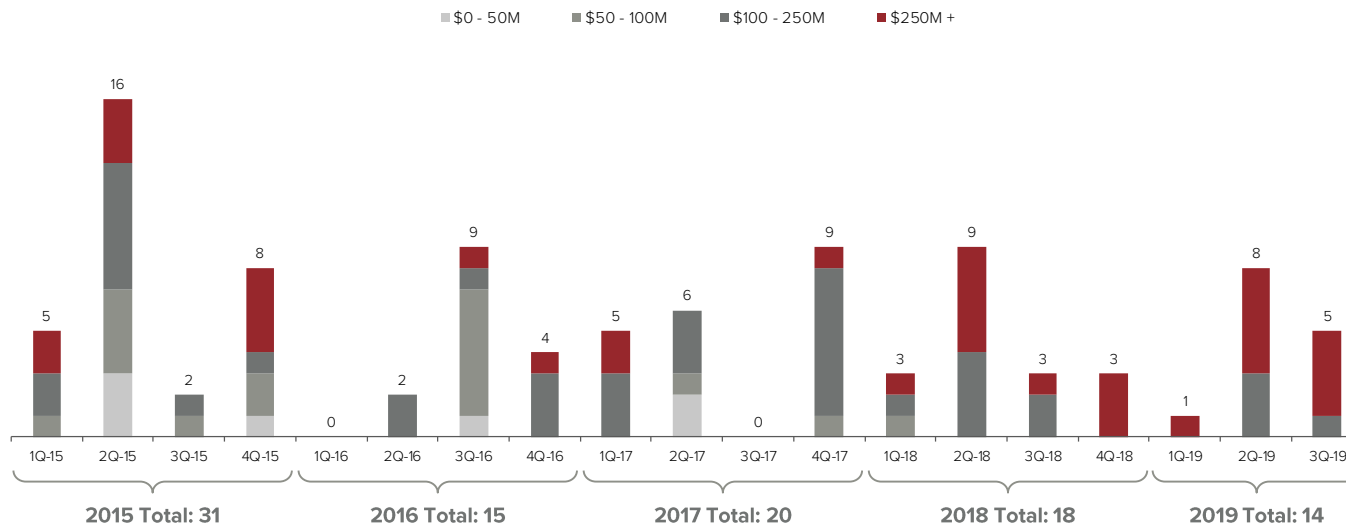


# KEY METRICS BY SECTOR – COMPARABLE PUBLIC SOFTWARE COMPANIES<sup>1</sup>

	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	 13.0x	25%	135%	11%	80%	-	-
SCM & Logistics	 9.0x	12%	45%	20%	91%	-	61%
HCM	 8.7x	14%	49%	21%	69%	-	35%
Financial	 8.3x	8%	44%	32%	48%	-	45%
PLM & Engineering	 7.4x	9%	48%	21%	58%	19%	33%
IT Operations Mgmt.	 6.5x	11%	33%	27%	90%	91%	-
IT Security	 6.4x	13%	61%	21%	68%	-	68%
Marketing	 6.3x	22%	99%	12%	74%	-	88%
Communication	 6.0x	9%	30%	21%	85%	100%	-
Data & Analytics	 6.0x	11%	66%	21%	54%	-	99%
Small-Cap SaaS	 5.7x	17%	54%	18%	64%	81%	-
EdTech / Public Sector	 5.7x	15%	72%	17%	-	-	58%
Enterprise	 5.0x	4%	22%	29%	85%	54%	24%
Bellwethers	 5.0x	4%	20%	29%	75%	61%	32%
HCIT	 4.4x	7%	51%	23%	36%	-	67%
Energy	 3.5x	2%	21%	15%	-	-	93%
Data Storage	 3.4x	11%	112%	10%	14%	38%	13%

# SUMMARY OF TECHNOLOGY IPOs

## RECENT U.S. TECHNOLOGY IPO ACTIVITY (BY OFFERING SIZE)<sup>1</sup>

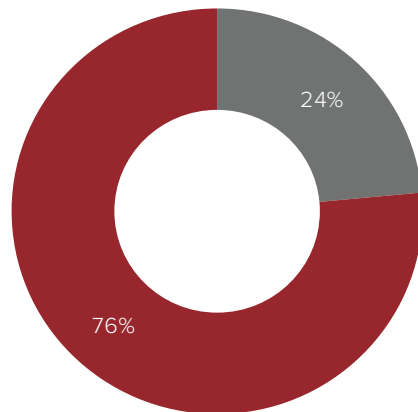


- Continuing the momentum from the previous quarter, IPO activity remained strong with five technology companies listing publicly in 3Q 2019.
- Public investors have signaled a renewed focus and scrutiny on fundamentals, as unprofitable but highly touted IPOs are trading at or below their IPO price.
- Notable 3Q 2019 IPOs include Ping Identity, Datadog, Cloudflare, and Dynatrace.

## OFFERING SIZE AT IPO (LTM)<sup>1</sup>

(All tech IPOs over the last 12 months)

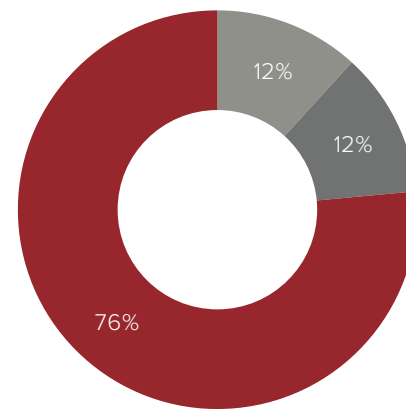
■ \$50 - 100M ■ \$100 - 250M ■ \$250M +



## MARKET CAP AT IPO (LTM)<sup>1</sup>

(All tech IPOs over the last 12 months)

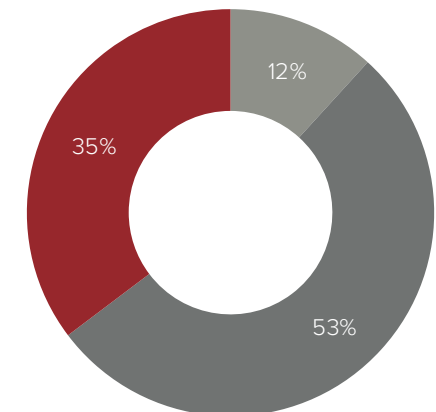
■ \$0-50M ■ \$50-500M ■ \$500M-\$1B ■ \$1B+



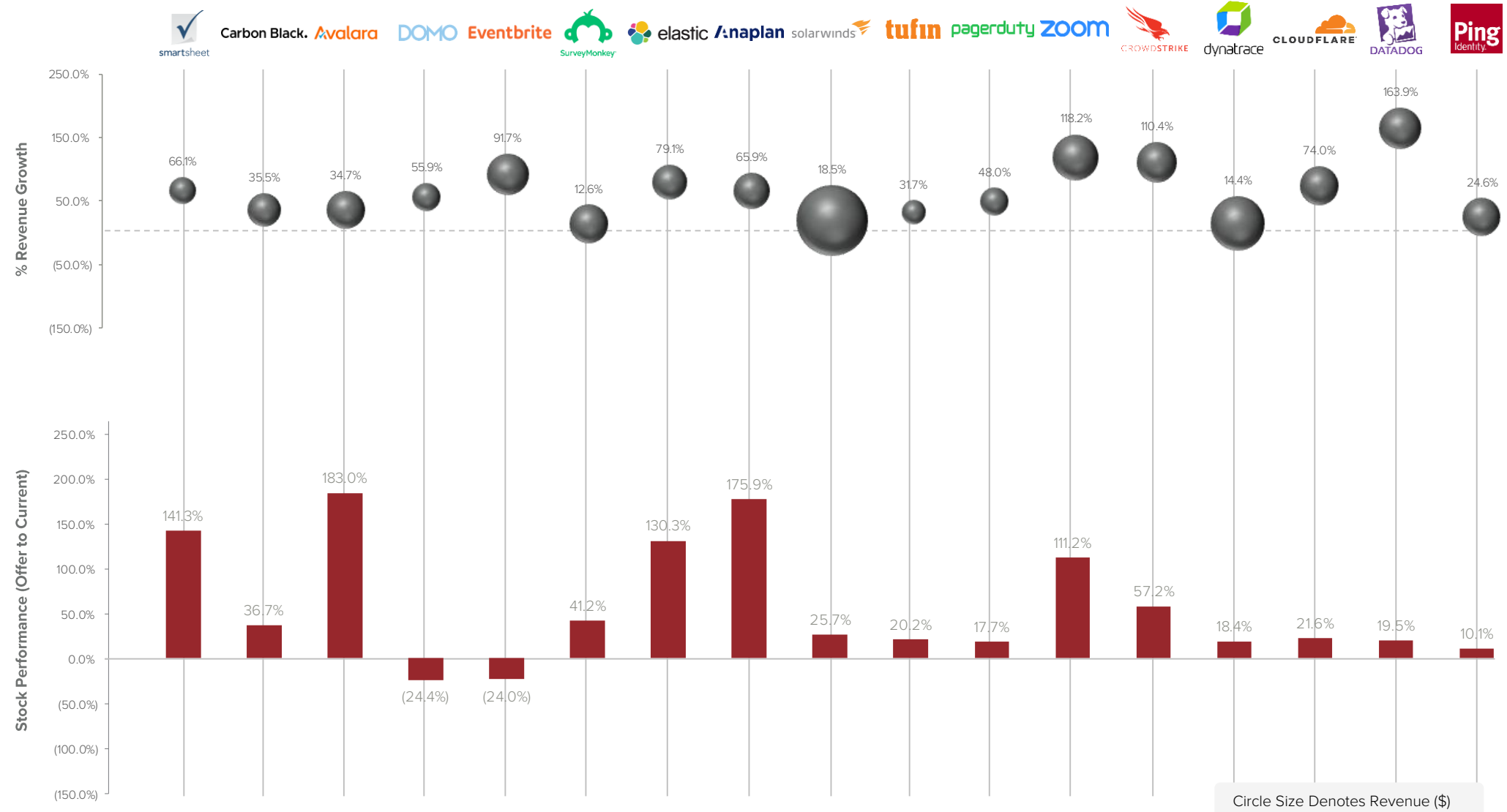
## REVENUE GROWTH (1YR PRIOR TO IPO)<sup>1</sup>

(All tech IPOs over the last 12 months)

■ < 25% ■ 25 - 75% ■ > 75%



# KEY PERFORMANCE METRICS FOR RECENT SOFTWARE IPOs<sup>1</sup>



IPO DATE	4/26/18	5/3/18	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	\$15.00	\$19.00	\$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)	\$174.5	\$1,250.7	\$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	\$1,220.4	\$745.2	\$1,164.6
OFFERING SIZE (\$M)	\$174.5	\$152.0	\$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	141.3%	36.7%	183.0%	(24.4%)	(24.0%)	41.2%	130.3%	175.9%	25.7%	20.2%	17.7%	111.2%	57.2%	18.4%	21.6%	19.5%	10.1%

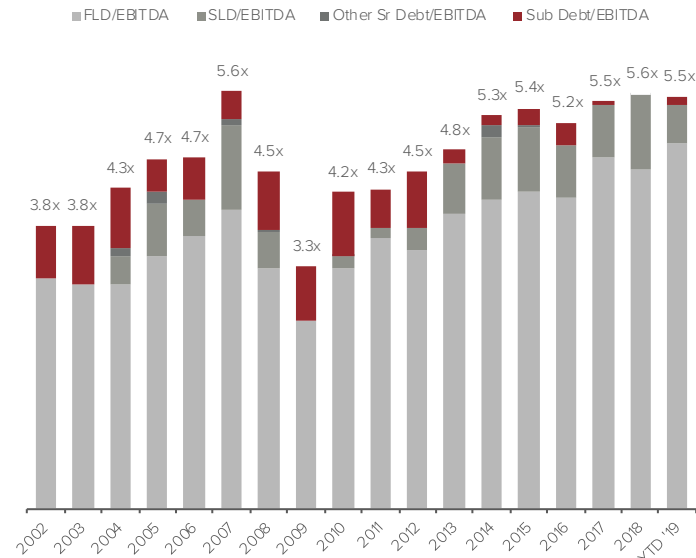


# DEBT MARKET OVERVIEW

## MIDDLE MARKET LBO LOAN MULTIPLES<sup>2,3</sup>

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

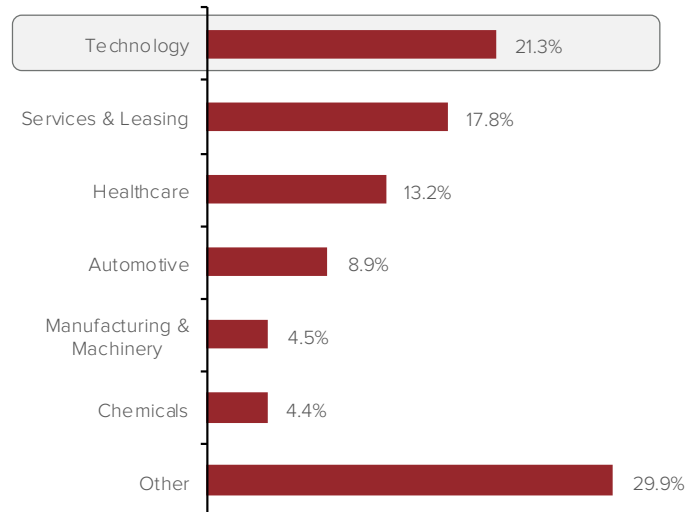
- Median middle market LBO loan multiples in YTD 2019 decreased slightly to 5.5x total leverage.
- Middle market LBO loan volume decreased to \$1.1 billion in 3Q 2019.



## LBO LOAN VOLUME BY INDUSTRY<sup>2,3</sup>

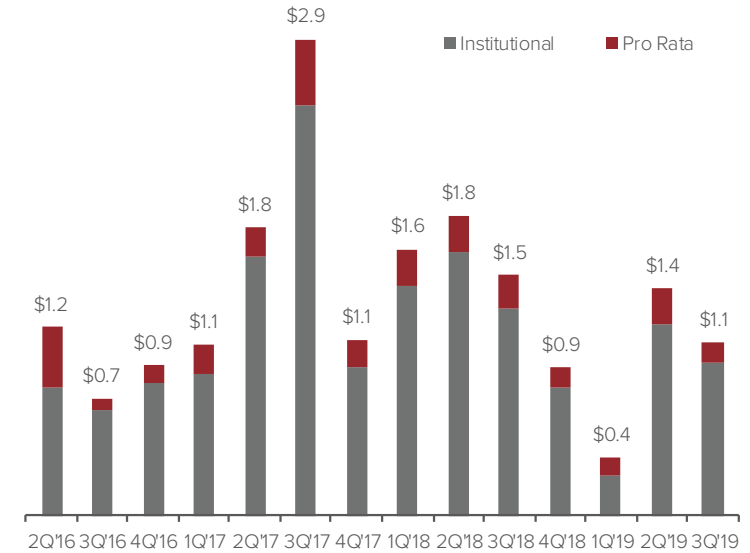
YTD New Issue LBO Loans

- Technology companies were the largest recipients of middle market LBO loans in YTD 2019, representing 21.3% of new issuance.
- Median LBO debt percentages again decreased slightly to 46% of total purchase price in YTD 2019.



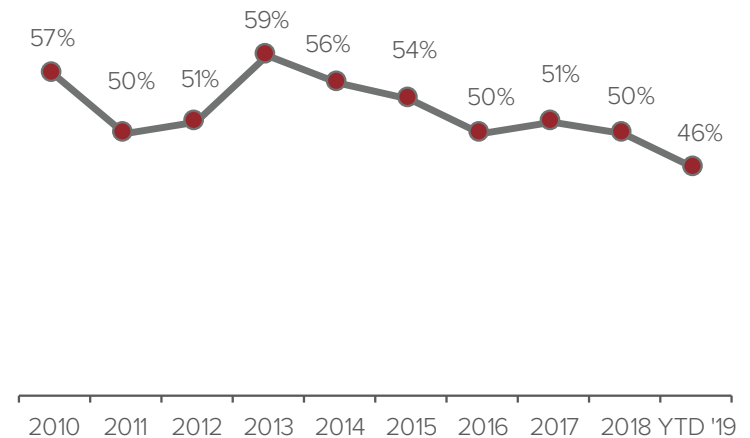
## MIDDLE MARKET LBO VOLUME BY QUARTER<sup>2,3</sup>

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



## MEDIAN LBO DEBT PERCENTAGES<sup>3,4</sup>

Percentage of Total Purchase Price



# SELECT HW TMT TRANSACTIONS

 acquired 	 acquired by Waud Capital	 investment from MARTIS CAPITAL	 acquired by Deltek	 pending acquisition by Advent International	 acquired by THOMABRAVO	 acquired by eSolutions	 acquired by Datix	 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 sympir	 acquired by BERTELSMANN	 acquired by LIGHTYEAR CAPITAL & OAK HC/FT	 acquired PIXOMONDO	 acquired by illuminate education	 acquired by GENSTAR	 acquired by THE JORDAN COMPANY	 acquired iTRelation	 a wholly-owned affiliate of GE Healthcare acquired by imprivata & inspirata	 invested in Datix	 majority investment from Hg
 acquired by GI PARTNERS	 acquired by BDT CAPITAL PARTNERS	 acquired by PAMPLONA CAPITAL MANAGEMENT	 acquired by EQUIAN	 acquired by PROVIDENCEEQUITY & GSV	 investment from INSIGHT PARTNERS	 acquired PERFORME	 acquired by H I G CAPITAL	 merged with research now	 investment from bv	 acquired by accruent	 acquired by MSOUTH EQUITY PARTNERS	 acquired Healthlogistics	 acquired by Riverside PARTNERS	 investment from INSIGHT PARTNERS
 acquired by amazon	 acquired by intelligent	 acquired by Vista Equity Partners	 acquired by Itron	 acquired abila	 majority investment from GENSTAR	 growth investment from PAMLICO CAPITAL	 acquired by Ministry Brands	 majority investment from INSIGHT PARTNERS	 acquired by exponent	 majority investment from THE CARLYLE GROUP	 recapitalized by GI PARTNERS	 acquired by PHILIPS	 acquired MedHOK'S	 acquired by WorkForce SOFTWARE
 acquired by SYKES	 acquired by RPX	 recapitalized by GENSTAR	 acquired by H I G CAPITAL	 acquired by BIOCLINICA	 acquired by technicolor	 acquired by CIP CAPITAL	 acquired by ParkerGale	 acquired by kpn	 acquired by SoLera	 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 emdeon	 acquired by THE CARLYLE GROUP	 strategic investment from TCV	 merged with Accellos	 acquired by Automic	 acquired by THE CARLYLE GROUP	 acquired by HEARST	 acquired by inVentiv Health	 acquired by RELIAS LEARNING	 acquired by GENPACT	 acquired by DX	 acquired by PAREXEL	 acquired by GI PARTNERS	 acquired by HEARST
 acquired by Vista Equity Partners	 acquired by SUMMIT PARTNERS	 acquired by ARRIVAL   Capital Partners	 majority recapitalization by PAMLICO CAPITAL	 recapitalized by Goldman Sachs	 acquired by THOMSON REUTERS	 acquired by EQUISTONE	 acquired gateway	 acquired by KPMG	 acquired by DELL	 acquired by F.I.L.	 significant equity investment from Goldman Sachs	 acquired by SFW	 acquired by TransUnion	 minority investment from JMI

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY UNIVERSE<sup>1</sup>

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

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS<sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
<b>SOFTWARE BELLWETHERS</b>														
Microsoft Corporation	MSFT	\$1,014,174	\$1,061,551	97.7%	21.6%	141.4%	14.0%	11.3%	43.4%	8.1x	7.2x	18.6x	16.6x	27.1x
Alphabet Inc.	GOOGL	739,163	845,993	NA	NA	NA	19.7%	18.7%	29.3%	5.0x	4.2x	17.0x	11.7x	24.3x
Oracle Corporation	ORCL	202,295	180,637	91.0%	6.7%	40.1%	0.1%	2.1%	40.9%	5.1x	5.0x	12.5x	10.9x	16.5x
Cisco Systems, Inc.	CSCO	201,014	209,760	84.8%	1.6%	55.8%	5.2%	2.0%	30.7%	3.9x	3.8x	12.6x	10.5x	18.1x
IBM Corporation	IBM	160,982	128,824	94.2%	(3.8%)	(8.5%)	(3.6%)	1.8%	22.1%	2.1x	2.0x	9.4x	8.7x	14.7x
SAP SE	SAP	136,381	140,411	86.3%	(4.5%)	29.3%	7.9%	4.2%	25.0%	4.6x	4.4x	18.3x	12.1x	39.6x
Adobe Inc.	ADBE	134,213	133,727	88.2%	2.3%	154.5%	24.2%	18.4%	33.5%	12.6x	10.6x	37.6x	23.0x	48.1x
salesforce.com, inc.	CRM	130,327	129,937	88.6%	(6.7%)	108.1%	24.3%	29.3%	14.0%	8.8x	6.8x	63.1x	27.0x	136.8x
Hewlett Packard Enterprise Co.	HPE	28,852	19,806	89.1%	(7.0%)	(33.3%)	(2.3%)	(2.2%)	17.5%	1.0x	1.0x	5.5x	5.5x	NM
Median		\$160,982	\$140,411	88.9%	(1.1%)	47.9%	7.9%	4.2%	29.3%	5.0x	4.4x	17.0x	11.7x	25.7x
<b>COMMUNICATION SOFTWARE</b>														
Zoom Video Communications, Inc.	ZM	\$20,143	\$20,845	71.0%	NA	NA	662.5%	51.8%	4.3%	43.4x	28.6x	NM	195.8x	NM
Twilio, Inc.	TWLO	13,685	14,942	72.8%	27.4%	70.9%	78.9%	47.8%	NM	15.5x	10.5x	NM	124.1x	NM
Slack Technologies, Inc.	WORK	12,137	12,911	56.5%	NA	NA	382.5%	42.5%	NM	23.9x	16.8x	NM	NM	NM
NICE Systems Ltd.	TASE:NICE	9,213	9,126	93.3%	29.7%	119.8%	9.5%	7.6%	25.7%	6.0x	5.6x	23.5x	18.1x	50.5x
Nuance Communications, Inc.	NUAN	5,909	4,659	89.8%	(5.8%)	12.5%	11.6%	(7.0%)	21.1%	2.9x	3.1x	13.7x	12.6x	66.0x
MobileIron, Inc.	MOBL	635	719	84.0%	23.5%	138.0%	9.7%	9.1%	NM	3.1x	2.9x	NM	77.5x	NM
Synchronoss Technologies, Inc.	SNCR	458	220	59.7%	(18.2%)	(86.9%)	(7.4%)	7.8%	NM	1.4x	1.3x	NM	13.6x	NM
Median		\$9,213	\$9,126	72.8%	23.5%	70.9%	11.6%	9.1%	21.1%	6.0x	5.6x	18.6x	47.8x	58.2x
<b>ENTERPRISE SOFTWARE</b>														
Oracle Corporation	ORCL	\$202,295	\$180,637	91.0%	6.7%	40.1%	0.1%	2.1%	40.9%	5.1x	5.0x	12.5x	10.9x	16.5x
IBM Corporation	IBM	160,982	128,824	94.2%	(3.8%)	(8.5%)	(3.6%)	1.8%	22.1%	2.1x	2.0x	9.4x	8.7x	14.7x
SAP SE	SAP	136,381	140,411	86.3%	(4.5%)	29.3%	7.9%	4.2%	25.0%	4.6x	4.4x	18.3x	12.1x	39.6x
Adobe Inc.	ADBE	134,213	133,727	88.2%	2.3%	154.5%	24.2%	18.4%	33.5%	12.6x	10.6x	37.6x	23.0x	48.1x
Automatic Data Processing, Inc.	ADP	70,312	70,008	92.5%	7.1%	83.0%	6.4%	6.3%	24.6%	5.0x	4.7x	20.2x	18.1x	30.5x
Intuit Inc.	INTU	66,860	69,164	89.9%	16.9%	141.7%	12.6%	10.7%	30.4%	9.9x	8.9x	32.5x	24.1x	44.4x
Amadeus IT Group	BME:AMS	34,390	30,883	80.0%	(22.9%)	43.4%	8.8%	3.8%	40.5%	5.7x	5.5x	14.1x	13.6x	26.5x
Constellation Software Inc.	TSX:CSU	21,520	21,180	99.1%	36.0%	121.8%	16.4%	15.1%	16.6%	6.6x	5.7x	40.0x	21.1x	52.4x
Open Text Corporation	OTEX	12,662	10,986	91.7%	7.3%	25.8%	1.9%	3.8%	31.0%	4.4x	4.3x	14.2x	11.0x	38.5x
Sage Group plc	LSE:SGE	9,780	9,261	83.7%	11.2%	(11.5%)	(0.4%)	(0.7%)	27.5%	3.9x	4.0x	14.3x	15.9x	22.6x
Median		\$68,586	\$69,586	90.4%	6.9%	41.7%	7.1%	4.0%	28.9%	5.0x	4.8x	16.3x	14.7x	34.5x

Software Bellwethers

Communication

Enterprise

HCM

Marketing

PLM &amp; Engineering

SCM &amp; Logistics

Energy

Financial

HCIT

EdTech / Public Sector

Large-Cap SaaS

Small-Cap SaaS

Data &amp; Analytics

IT Operations

Data Storage

IT Security

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
<b>HUMAN CAPITAL MANAGEMENT SOFTWARE</b>														
Automatic Data Processing, Inc.	ADP	\$70,312	\$70,008	92.5%	7.1%	83.0%	6.4%	6.3%	24.6%	5.0x	4.7x	20.2x	18.1x	30.5x
Workday, Inc.	WDAY	38,367	38,751	74.9%	16.4%	85.4%	33.6%	22.8%	NM	11.8x	9.6x	NM	47.3x	NM
Paychex, Inc.	PAYX	29,727	29,643	93.6%	12.4%	43.0%	13.2%	6.3%	41.1%	7.6x	7.2x	18.5x	17.4x	28.1x
Paycom Software, Inc.	PAYC	12,043	12,077	80.7%	34.8%	317.9%	31.1%	24.9%	33.6%	18.4x	14.8x	55.0x	34.8x	77.3x
Ceridian HCM Holding, Inc.	CDAY	7,570	7,092	83.7%	17.5%	NA	9.1%	10.5%	18.4%	9.7x	8.8x	53.0x	37.9x	NM
Paylocity Holding Corp.	PCTY	5,018	5,180	86.8%	21.5%	119.5%	23.9%	21.6%	15.8%	10.7x	8.8x	67.9x	30.9x	96.2x
Cornerstone OnDemand, Inc.	CSOD	3,301	3,327	87.5%	(3.4%)	19.3%	6.7%	9.2%	2.8%	6.0x	5.5x	NM	23.2x	NM
Benefitfocus, Inc.	BNFT	917	779	39.3%	(41.1%)	(40.4%)	10.4%	17.0%	NM	3.4x	2.9x	NM	58.2x	NM
Median		\$9,807	\$9,585	85.3%	14.4%	83.0%	11.8%	13.7%	21.5%	8.7x	8.0x	53.0x	32.8x	53.9x
<b>MARKETING SOFTWARE</b>														
Adobe Inc.	ADBE	\$134,213	\$133,727	88.2%	2.3%	154.5%	24.2%	18.4%	33.5%	12.6x	10.6x	37.6x	23.0x	48.1x
salesforce.com, inc.	CRM	130,327	129,937	88.6%	(6.7%)	108.1%	24.3%	29.3%	14.0%	8.8x	6.8x	63.1x	27.0x	136.8x
HubSpot, Inc.	HUBS	6,068	6,443	72.9%	0.4%	163.1%	33.9%	25.6%	NM	10.3x	8.2x	NM	62.4x	NM
Acxiom Holdings, Inc.	ACXM	1,925	2,906	NA	NA	NA	29.6%	30.7%	NM	6.3x	4.8x	NM	NM	2.9x
Criteo SA	CRTO	1,025	1,218	60.6%	(18.5%)	(46.8%)	(2.3%)	(57.6%)	9.5%	0.4x	1.1x	4.7x	3.5x	14.3x
ChannelAdvisor Corporation	ECOM	231	262	65.0%	(25.1%)	(27.8%)	1.8%	2.3%	1.2%	1.8x	1.7x	150.8x	11.1x	NM
Median		\$3,996	\$4,675	72.9%	(6.7%)	108.1%	24.2%	22.0%	11.8%	7.6x	5.8x	50.4x	23.0x	31.2x
<b>PLM &amp; ENGINEERING SOFTWARE</b>														
Dassault Systemes SA	ENXTPA:DSY	\$34,796	\$37,016	88.8%	(4.7%)	64.2%	10.6%	6.9%	25.7%	8.2x	7.6x	31.7x	21.2x	54.3x
Autodesk, Inc.	ADSK	33,598	32,433	82.5%	(5.4%)	104.2%	30.8%	22.7%	9.8%	11.5x	9.3x	117.2x	29.7x	NM
Synopsys, Inc.	SNPS	20,088	20,627	93.6%	39.2%	131.3%	9.3%	6.4%	19.3%	6.1x	5.7x	31.5x	19.9x	33.0x
Hexagon AB	OM:HEXA B	20,069	17,670	88.1%	(17.6%)	10.5%	5.8%	(1.4%)	27.9%	4.5x	4.6x	16.3x	13.6x	21.8x
Cadence Design Systems, Inc.	CDNS	18,346	18,513	85.7%	45.8%	158.8%	11.7%	5.6%	27.1%	8.1x	7.7x	29.9x	23.5x	43.5x
ANSYS, Inc.	ANSS	18,092	18,617	99.8%	18.6%	139.0%	19.2%	12.2%	39.9%	13.0x	11.6x	32.6x	25.8x	42.5x
Trimble Inc.	TRMB	11,426	9,772	83.9%	(10.7%)	35.9%	11.5%	2.9%	19.6%	3.5x	3.4x	18.0x	14.9x	30.8x
PTC Inc.	PTC	8,251	7,853	63.5%	(35.8%)	53.9%	(0.2%)	14.1%	10.4%	6.7x	5.9x	64.4x	16.7x	NM
Nemetschek SE	XTRA:NEM	6,067	5,897	80.8%	4.6%	149.8%	19.8%	11.9%	21.9%	10.4x	9.3x	47.5x	32.6x	62.1x
Altair Engineering Inc.	ALTR	2,432	2,480	78.7%	(20.3%)	NA	11.3%	17.4%	7.7%	5.7x	4.9x	74.9x	33.2x	NM
Median		\$18,219	\$18,091	84.8%	(5.0%)	104.2%	11.4%	9.4%	20.7%	7.4x	6.7x	32.2x	22.3x	42.5x

Software  
Bellwethers

Communication

Enterprise

HCM

Marketing

PLM &  
Engineering

SCM &amp; Logistics

Energy

Financial

HCIT

EdTech /  
Public SectorLarge-Cap  
SaaSSmall-Cap  
SaaSData &  
Analytics

IT Operations

Data Storage

IT Security

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
<b>SUPPLY CHAIN AND LOGISTICS SOFTWARE</b>														
Trimble Inc.	TRMB	\$11,426	\$9,772	83.9%	(10.7%)	35.9%	11.5%	2.9%	19.6%	3.5x	3.4x	18.0x	14.9x	30.8x
Coupa Software, Inc.	COUP	8,089	8,143	83.0%	63.8%	NA	45.5%	32.2%	NM	25.4x	19.2x	NM	180.6x	NM
Wisetech Global Ltd.	ASX:WTC	7,247	7,423	89.5%	46.5%	436.1%	49.0%	30.0%	29.2%	29.7x	22.8x	101.5x	69.9x	195.6x
Manhattan Associates, Inc.	MANH	5,112	5,189	90.1%	47.7%	40.0%	3.5%	3.5%	22.8%	8.7x	8.4x	38.1x	38.4x	53.9x
Descartes Systems Group Inc.	TSX:DSG	3,407	3,398	95.5%	19.2%	87.8%	15.3%	14.3%	34.5%	11.4x	9.9x	33.0x	26.2x	107.3x
Kinaxis, Inc.	TSX:KXS	1,517	1,705	87.6%	(13.3%)	27.9%	13.4%	20.5%	17.5%	9.3x	7.7x	53.1x	30.2x	103.0x
SPS Commerce, Inc.	SPSC	1,464	1,642	79.6%	(5.1%)	28.2%	12.5%	10.3%	18.0%	5.6x	5.0x	30.9x	20.1x	53.3x
American Software, Inc.	AMSWA	388	471	NA	NA	NA	(4.0%)	4.2%	7.9%	3.6x	3.4x	45.2x	24.9x	71.7x
Median		\$4,260	\$4,294	87.6%	19.2%	37.9%	12.9%	12.3%	19.6%	9.0x	8.1x	38.1x	28.2x	71.7x
<b>ENERGY SOFTWARE</b>														
Trimble Inc.	TRMB	\$11,426	\$9,772	83.9%	(10.7%)	35.9%	11.5%	2.9%	19.6%	3.5x	3.4x	18.0x	14.9x	30.8x
Aspen Technology, Inc.	AZPN	8,563	8,415	86.6%	8.1%	163.0%	15.3%	0.1%	48.5%	14.3x	14.3x	29.5x	28.2x	32.0x
AVEVA Group plc	LSE:AVV	7,177	7,334	87.4%	20.5%	NA	46.3%	1.1%	14.9%	7.2x	7.1x	48.4x	26.3x	166.6x
Itron, Inc.	ITRI	3,885	2,918	95.1%	15.2%	32.6%	9.1%	2.2%	11.7%	1.6x	1.6x	13.7x	14.0x	47.6x
PSI Aktiengesellschaft	XTRA:PSAN	312	320	99.2%	12.1%	37.3%	6.7%	2.8%	9.1%	1.3x	1.3x	14.2x	9.9x	26.3x
Median		\$7,177	\$7,334	87.4%	12.1%	36.6%	11.5%	2.2%	14.9%	3.5x	3.4x	18.0x	14.9x	32.0x
<b>FINANCIAL SOFTWARE</b>														
Fiserv, Inc.	FISV	\$76,125	\$70,409	94.2%	25.7%	108.3%	3.5%	157.0%	32.3%	12.7x	5.0x	39.5x	12.9x	73.3x
Square, Inc.	SQ	26,327	26,461	61.2%	(37.4%)	431.3%	47.1%	(33.7%)	0.9%	6.7x	10.1x	NM	52.1x	NM
SS&C Technologies Holdings, Inc.	SSNC	21,197	13,086	76.1%	(9.3%)	60.4%	101.8%	6.6%	36.3%	4.8x	4.5x	13.3x	11.4x	41.2x
MSCI Inc.	MSCI	20,437	18,443	88.0%	22.7%	159.4%	7.7%	9.1%	52.0%	13.8x	12.7x	26.6x	23.2x	31.8x
Jack Henry & Associates, Inc.	JKHY	11,146	11,240	90.1%	(8.8%)	70.6%	5.6%	6.5%	27.4%	7.2x	6.7x	26.2x	20.9x	41.3x
Black Knight Financial Services, Inc.	BKFS	10,677	9,005	NA	NA	NA	6.2%	6.5%	32.6%	9.3x	8.8x	28.6x	17.5x	57.4x
Q2 Holdings, Inc.	QTWO	3,586	3,757	84.2%	30.3%	175.2%	28.6%	25.5%	NM	13.0x	10.3x	NM	115.3x	NM
Envestnet, Inc.	ENV	3,584	2,959	76.7%	(7.0%)	55.6%	10.5%	16.5%	9.6%	4.3x	3.7x	44.5x	16.0x	NM
Oracle Financial Services Software Ltd.	BSE:532466	3,372	3,855	77.1%	(16.8%)	(7.3%)	4.0%	2.6%	43.7%	4.8x	4.6x	10.9x	9.9x	19.5x
BlackLine, Inc.	BL	2,521	2,645	84.1%	(15.3%)	NA	26.0%	22.0%	NM	9.9x	8.1x	NM	100.9x	NM
Median		\$10,911	\$10,122	84.1%	(8.8%)	89.5%	9.1%	7.9%	32.4%	8.3x	7.4x	26.6x	19.2x	41.3x

Software  
Bellwethers

Communication

Enterprise

HCM

Marketing

PLM &  
Engineering

SCM &amp; Logistics

Energy

Financial

HCIT

EdTech /  
Public SectorLarge-Cap  
SaaSSmall-Cap  
SaaSData &  
Analytics

IT Operations

Data Storage

IT Security

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings
<b>HEALTHCARE IT</b>														
Cerner Corporation	CERN	\$21,932	\$21,705	89.1%	5.8%	10.4%	5.3%	6.5%	21.8%	4.0x	3.7x	18.2x	12.3x	36.5x
Veeva Systems Inc	VEEV	21,186	22,596	86.3%	40.2%	269.9%	26.1%	19.7%	29.8%	21.9x	18.3x	73.3x	47.2x	78.5x
Inovalon Holdings, Inc.	INOV	3,451	2,528	92.1%	63.1%	11.4%	22.8%	14.9%	27.5%	5.9x	5.1x	21.5x	16.2x	NM
HMS Holdings Corp.	HMSY	3,006	3,011	84.7%	5.0%	55.5%	11.3%	7.1%	24.6%	4.8x	4.5x	19.6x	16.1x	29.9x
Allscripts Healthcare Solutions, Inc.	MDRX	2,654	1,830	76.6%	(22.9%)	(16.6%)	14.2%	4.4%	6.6%	1.5x	1.5x	22.8x	8.5x	10.1x
Change Healthcare, Inc.	CHNG	1,505	1,508	77.9%	NA	NA	NM	NM	NA	NM	0.5x	NM	1.5x	NM
NextGen Healthcare, Inc.	QSII	1,056	1,025	NA	NA	NA	(1.0%)	3.7%	7.2%	2.0x	1.9x	27.6x	10.7x	44.4x
Model N, Inc.	MODN	899	908	94.9%	75.1%	149.9%	(7.9%)	5.3%	NM	6.4x	6.0x	NM	62.4x	NM
Evolent Health Inc.	EVH	823	603	25.1%	(74.7%)	(70.8%)	44.9%	25.2%	NM	1.1x	0.9x	NM	24.4x	NM
Median		\$2,654	\$1,830	85.5%	5.8%	11.4%	12.8%	6.8%	23.2%	4.4x	3.7x	22.1x	16.1x	36.5x
<b>EDTECH / PUBLIC SECTOR SOFTWARE</b>														
Constellation Software Inc.	TSX:CSU	\$21,520	\$21,180	99.1%	36.0%	121.8%	16.4%	15.1%	16.6%	6.6x	5.7x	40.0x	21.1x	52.4x
Tyler Technologies, Inc.	TYL	10,125	10,128	99.1%	7.1%	53.3%	12.4%	15.1%	19.1%	10.1x	8.8x	52.9x	30.8x	78.0x
Blackbaud, Inc.	BLKB	4,975	4,328	88.4%	(11.0%)	36.2%	5.1%	4.9%	13.7%	5.7x	5.4x	41.7x	27.3x	163.2x
Instructure, Inc.	INST	1,440	1,437	77.2%	9.4%	52.7%	25.0%	22.3%	NM	6.2x	5.1x	NM	NM	NM
NIC Inc.	EGOV	1,209	1,383	88.1%	39.5%	(12.1%)	(1.4%)	6.1%	21.9%	3.5x	3.3x	16.1x	13.8x	26.7x
2U, Inc.	TWOU	1,120	1,031	20.2%	(78.3%)	(57.5%)	38.4%	37.9%	NM	2.3x	1.7x	NM	NM	NM
K12 Inc.	LRN	769	1,028	70.5%	49.2%	84.0%	10.7%	1.0%	6.5%	0.8x	0.7x	11.6x	5.5x	27.6x
Median		\$1,440	\$1,437	88.1%	9.4%	52.7%	12.4%	15.1%	16.6%	5.7x	5.1x	40.0x	21.1x	52.4x

Software  
Bellwethers

Communication

Enterprise

HCM

Marketing

PLM &  
Engineering

SCM &amp; Logistics

Energy

Financial

HCIT

EdTech /  
Public SectorLarge-Cap  
SaaSSmall-Cap  
SaaSData &  
Analytics

IT Operations

Data Storage

IT Security

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
<b>LARGE-CAP SAAS (Market Cap &gt; \$3Bn)</b>															Software Bellwethers
salesforce.com, inc.	CRM	\$130,327	\$129,937	88.6%	(6.7%)	108.1%	24.3%	29.3%	14.0%	8.8x	6.8x	63.1x	27.0x	136.8x	
ServiceNow, Inc.	NOW	47,041	47,587	83.7%	29.8%	220.7%	33.1%	30.2%	5.5%	15.6x	12.0x	NM	42.9x	NM	Communication
Workday, Inc.	WDAY	38,367	38,751	74.9%	16.4%	85.4%	33.6%	22.8%	NM	11.8x	9.6x	NM	47.3x	NM	Enterprise
Atlassian Corp. Plc	TEAM	29,612	30,470	83.7%	30.5%	318.6%	37.4%	28.4%	NM	24.5x	19.1x	NM	73.4x	NM	
Veeva Systems Inc	VEEV	21,186	22,596	86.3%	40.2%	269.9%	26.1%	19.7%	29.8%	21.9x	18.3x	73.3x	47.2x	78.5x	
Zoom Video Communications, Inc.	ZM	20,143	20,845	71.0%	NA	NA	662.5%	51.8%	4.3%	43.4x	28.6x	NM	195.8x	NM	HCM
Check Point Software Technologies Ltd.	CHKP	15,055	16,670	82.5%	(6.9%)	41.1%	4.0%	3.9%	46.6%	7.7x	7.4x	16.5x	14.7x	20.8x	
CrowdStrike Holdings, Inc.	CRWD	12,348	13,175	57.2%	NA	NA	195.6%	54.5%	NM	35.2x	22.8x	NM	NM	NM	Marketing
Paycom Software, Inc.	PAYC	12,043	12,077	80.7%	34.8%	317.9%	31.1%	24.9%	33.6%	18.4x	14.8x	55.0x	34.8x	77.3x	
DocuSign, Inc.	DOCU	10,764	10,895	95.2%	17.8%	NA	37.4%	29.1%	NM	13.0x	10.1x	NM	149.0x	NM	
RingCentral, Inc.	RNG	10,273	10,426	85.8%	35.0%	431.1%	33.7%	24.6%	0.9%	13.2x	10.6x	NM	82.4x	NM	PLM & Engineering
Zendesk, Inc.	ZEN	8,253	8,088	76.8%	2.6%	137.3%	39.0%	31.8%	NM	11.7x	8.9x	NM	115.2x	NM	
Coupa Software, Inc.	COUP	8,089	8,143	83.0%	63.8%	NA	45.5%	32.2%	NM	25.4x	19.2x	NM	180.6x	NM	SCM & Logistics
Guidewire Software, Inc.	GWRE	7,840	8,656	93.0%	4.3%	75.7%	10.2%	6.4%	5.6%	10.9x	10.2x	193.9x	63.8x	NM	
Proofpoint, Inc.	PFPT	7,110	7,236	97.1%	21.4%	72.4%	29.9%	20.2%	NM	8.9x	7.4x	NM	44.3x	NM	Energy
Dynatrace, Inc.	DT	6,660	5,236	67.9%	NA	NA	NM	20.5%	NM	14.6x	12.1x	NM	48.0x	NM	
RealPage, Inc.	RP	6,273	5,811	94.9%	(4.6%)	144.6%	20.1%	12.3%	16.6%	6.7x	6.0x	40.6x	20.5x	139.4x	Financial
HubSpot, Inc.	HUBS	6,068	6,443	72.9%	0.4%	163.1%	33.9%	25.6%	NM	10.3x	8.2x	NM	62.4x	NM	
Xero Limited	ASXXRO	5,910	5,922	90.4%	18.4%	196.3%	28.0%	20.5%	5.5%	15.7x	13.0x	NM	65.2x	NM	HCIT
Anaplan, Inc.	PLAN	5,893	6,196	77.9%	NA	NA	45.9%	34.5%	NM	20.2x	15.0x	NM	NM	NM	
Avalara Inc	AVLR	4,638	5,080	71.3%	92.6%	NA	35.4%	25.8%	NM	14.4x	11.4x	NM	NM	NM	
LogMeIn, Inc.	LOGM	3,708	3,508	73.3%	(20.4%)	(21.5%)	9.7%	3.9%	26.6%	3.0x	2.9x	11.3x	9.0x	155.6x	EdTech / Public Sector
Smartsheet, Inc.	SMAR	3,697	4,200	64.6%	15.3%	NA	55.9%	44.1%	NM	16.8x	11.7x	NM	NM	NM	
Q2 Holdings, Inc.	QTWO	3,586	3,757	84.2%	30.3%	175.2%	28.6%	25.5%	NM	13.0x	10.3x	NM	115.3x	NM	Large-Cap SaaS
Cornerstone OnDemand, Inc.	CSOD	3,301	3,327	87.5%	(3.4%)	19.3%	6.7%	9.2%	2.8%	6.0x	5.5x	NM	23.2x	NM	
AppFolio Inc	APPF	3,272	3,239	86.6%	21.4%	389.4%	33.8%	29.5%	8.1%	14.8x	11.4x	182.5x	77.1x	92.4x	Small-Cap SaaS
CyberArk Software Ltd.	CYBR	3,269	3,767	67.1%	25.0%	101.4%	32.3%	17.0%	19.0%	8.4x	7.2x	44.1x	27.4x	63.5x	
Five9, Inc.	FIVN	3,174	3,259	82.1%	23.0%	242.7%	28.4%	16.6%	6.8%	11.0x	9.4x	161.6x	53.4x	NM	Data & Analytics
Medallia, Inc.	MDLA	3,082	3,500	61.3%	NA	NA	NM	17.6%	NM	8.6x	7.3x	NM	NM	NM	
Qualys, Inc.	QLYS	2,706	2,965	77.8%	(15.2%)	97.9%	17.5%	15.0%	30.5%	9.0x	7.8x	29.5x	20.3x	44.0x	IT Operations
Median		\$6,885	\$6,840	82.3%	18.4%	144.6%	32.7%	24.7%	11.1%	13.0x	10.3x	55.0x	48.0x	78.5x	
															Data Storage
															IT Security



# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
<b>SMALL-CAP SAAS (Market Cap &lt; \$3Bn)</b>															Software Bellwethers
Box, Inc.	BOX	\$2,644	\$2,447	66.4%	(30.7%)	5.1%	18.1%	11.3%	NM	4.0x	3.6x	NM	36.5x	NM	Software Bellwethers
Mimecast Limited	MIME	2,254	2,203	65.4%	(14.8%)	86.5%	28.0%	22.0%	7.8%	6.2x	5.1x	80.2x	28.5x	NM	Communication
Rapid7 Inc.	RPD	2,229	2,217	68.8%	22.9%	157.2%	28.1%	25.2%	NM	7.9x	6.3x	NM	164.5x	NM	Enterprise
Alarm.com Holdings, Inc.	ALRM	2,218	2,261	65.2%	(18.7%)	61.6%	21.6%	5.4%	16.9%	4.8x	4.6x	28.7x	20.9x	98.0x	Enterprise
LivePerson, Inc.	LPSN	2,212	2,243	87.1%	37.6%	324.5%	14.3%	19.2%	NM	8.3x	6.9x	NM	111.7x	NM	Enterprise
Ebix, Inc.	EBIX	2,029	1,284	52.6%	(46.8%)	(25.9%)	28.3%	17.4%	31.0%	3.7x	3.1x	11.9x	9.9x	13.9x	HCM
Workiva, Inc.	WK	1,923	2,020	68.4%	11.0%	141.8%	19.1%	15.9%	NM	7.2x	6.2x	NM	NM	NM	HCM
PagerDuty, Inc.	PD	1,814	2,155	47.2%	NA	NA	79.2%	28.5%	NM	12.7x	9.9x	NM	NM	NM	Marketing
Yext, Inc.	YEXT	1,633	1,792	66.5%	(33.0%)	NA	32.9%	30.6%	NM	6.2x	4.7x	NM	NM	NM	Marketing
SPS Commerce, Inc.	SPSC	1,464	1,642	79.6%	(5.1%)	28.2%	12.5%	10.3%	18.0%	5.6x	5.0x	30.9x	20.1x	53.3x	PLM & Engineering
Instructure, Inc.	INST	1,440	1,437	77.2%	9.4%	52.7%	25.0%	22.3%	NM	6.2x	5.1x	NM	NM	NM	PLM & Engineering
Upland Software, Inc.	UPLD	1,084	880	63.5%	7.9%	295.7%	51.3%	25.3%	24.1%	5.9x	4.7x	24.5x	12.6x	NM	SCM & Logistics
Eventbrite, Inc.	EB	1,055	1,466	45.1%	(53.4%)	NA	22.0%	7.9%	NM	3.4x	3.1x	NM	124.4x	NM	SCM & Logistics
Talend SA	TLND	1,040	1,041	48.3%	(51.3%)	29.9%	28.2%	19.7%	NM	4.6x	3.8x	NM	NM	NM	SCM & Logistics
Benefitfocus, Inc.	BNFT	917	779	39.3%	(41.1%)	(40.4%)	10.4%	17.0%	NM	3.4x	2.9x	NM	58.2x	NM	Energy
Model N, Inc.	MODN	899	908	94.9%	75.1%	149.9%	(7.9%)	5.3%	NM	6.4x	6.0x	NM	62.4x	NM	Energy
Domo, Inc.	DOMO	405	440	33.9%	(25.5%)	NA	27.4%	13.6%	NM	2.6x	2.2x	NM	NM	NM	Financial
Median		\$2,029	\$2,155	66.5%	(10.0%)	61.6%	25.0%	19.2%	17.4%	6.2x	5.1x	29.8x	28.5x	53.3x	Financial
															HCIT
															EdTech / Public Sector
															Large-Cap SaaS
															<b>Small-Cap SaaS</b>
															Data & Analytics
															IT Operations
															Data Storage
															IT Security

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
<b>DATA &amp; ANALYTICS</b>															
Verisk Analytics Inc	VRSK	\$28,491	\$25,857	95.9%	31.2%	94.6%	8.2%	8.3%	43.9%	11.4x	10.6x	26.1x	22.3x	43.3x	Software Bellwethers
Splunk Inc.	SPLK	17,168	17,838	82.0%	(2.5%)	100.9%	36.1%	23.1%	NM	8.4x	6.8x	NM	40.5x	NM	Communication
Datadog, Inc.	DDOG	10,087	9,950	81.8%	NA	NA	NM	NM	NM	37.9x	NM	NM	NM	NM	Enterprise
Pegasystems Inc.	PEGA	5,299	5,385	85.4%	8.7%	130.8%	0.0%	10.8%	NM	6.0x	5.4x	NM	81.7x	NM	Enterprise
Teradata Corporation	TDC	3,563	3,537	62.7%	(17.8%)	NA	(6.4%)	(2.5%)	7.3%	1.7x	1.8x	23.8x	8.1x	160.8x	Enterprise
Inovalon Holdings, Inc.	INOV	3,451	2,528	92.1%	63.1%	11.4%	22.8%	14.9%	27.5%	5.9x	5.1x	21.5x	16.2x	NM	HCM
Verint Systems Inc.	VRNT	3,369	2,856	66.9%	(14.6%)	13.7%	6.6%	11.4%	14.0%	2.6x	2.4x	18.8x	9.5x	48.9x	HCM
PROS Holdings, Inc.	PRO	2,312	2,397	79.1%	70.2%	163.6%	20.7%	20.5%	NM	10.4x	8.7x	NM	NM	NM	Marketing
MicroStrategy Incorporated	MSTR	1,062	1,519	96.7%	5.5%	(11.4%)	(3.7%)	4.0%	NM	2.2x	2.1x	NM	27.9x	53.3x	Marketing
Talend SA	TLND	1,040	1,041	48.3%	(51.3%)	29.9%	28.2%	19.7%	NM	4.6x	3.8x	NM	NM	NM	Marketing
Median		\$3,507	\$3,197	81.9%	5.5%	62.2%	8.2%	11.4%	20.8%	6.0x	5.1x	22.6x	22.3x	51.1x	PLM & Engineering
<b>IT OPERATIONS MANAGEMENT</b>															
VMware, Inc.	VMW	\$63,352	\$61,319	72.6%	(3.8%)	104.6%	13.8%	10.8%	26.5%	6.7x	6.0x	25.2x	16.2x	9.8x	SCM & Logistics
ServiceNow, Inc.	NOW	47,041	47,587	83.7%	29.8%	220.7%	33.1%	30.2%	5.5%	15.6x	12.0x	NM	42.9x	NM	SCM & Logistics
Arista Networks, Inc.	ANET	16,158	18,312	72.1%	(10.1%)	180.8%	24.5%	15.3%	34.2%	6.8x	5.9x	20.0x	16.0x	25.1x	Energy
Citrix Systems, Inc.	CTXS	13,061	12,635	86.0%	(13.2%)	13.3%	3.2%	1.8%	26.1%	4.4x	4.3x	16.7x	12.9x	23.9x	Energy
F5 Networks, Inc.	FFIV	7,457	8,443	71.9%	(29.6%)	12.7%	3.7%	4.1%	28.5%	3.4x	3.2x	11.8x	8.9x	18.1x	Financial
SolarWinds Corp.	SWI	7,423	5,659	86.9%	NA	NA	11.8%	14.0%	24.6%	8.4x	7.4x	34.3x	15.6x	NM	Financial
Dynatrace, Inc.	DT	6,660	5,236	67.9%	NA	NA	NM	20.5%	NM	14.6x	12.1x	NM	48.0x	NM	HCIT
Micro Focus International plc	LSE:MCRO	6,547	4,650	45.3%	(37.8%)	(62.5%)	18.1%	8.4%	33.7%	2.2x	2.0x	6.4x	4.8x	3.6x	HCIT
New Relic, Inc.	NEWR	3,305	3,589	56.4%	(34.8%)	60.4%	33.6%	20.6%	NM	6.5x	5.4x	NM	37.2x	NM	EdTech / Public Sector
Fastly, Inc.	FSLY	2,048	2,243	68.1%	NA	NA	NM	28.8%	NM	12.1x	9.4x	NM	NM	NM	EdTech / Public Sector
NetScout Systems, Inc.	NTCT	1,893	1,749	76.1%	(8.7%)	(21.2%)	(7.8%)	1.1%	15.0%	2.1x	2.1x	14.1x	NM	NM	EdTech / Public Sector
Software AG	XTRA:SOW	1,877	2,034	61.4%	(39.7%)	NA	0.6%	(3.0%)	29.0%	1.9x	1.9x	6.4x	7.0x	11.0x	Large-Cap SaaS
Progress Software Corporation	PRGS	1,853	1,702	80.0%	7.8%	39.9%	3.1%	6.4%	33.1%	4.5x	4.2x	13.6x	10.3x	31.8x	Large-Cap SaaS
PagerDuty, Inc.	PD	1,814	2,155	47.2%	NA	NA	79.2%	28.5%	NM	12.7x	9.9x	NM	NM	NM	Small-Cap SaaS
Radware Ltd.	RDWR	904	1,138	89.9%	(8.3%)	76.6%	9.5%	7.8%	11.1%	3.7x	3.4x	33.4x	20.8x	59.3x	Small-Cap SaaS
Median		\$6,547	\$4,650	72.1%	(10.1%)	50.1%	11.8%	10.8%	26.5%	6.5x	5.4x	15.4x	15.8x	21.0x	Data & Analytics
<b>IT OPERATIONS</b>															
Data Storage															
IT Security															

# APPENDIX: SOFTWARE SECTOR PUBLIC COMPANY METRICS (CONT'D) <sup>1</sup>

Company	Ticker	Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue Growth		LTM EBITDA	Enterprise Value /				Price /	
		Value (\$mm)	Cap (\$mm)	Week High	Performance	Performance	LTM	NTM	Margin	LTM Rev.	NTM Rev.	LTM EBITDA	NTM EBITDA	Earnings	
<b>DATA STORAGE</b>															Software Bellwethers
Iron Mountain, Inc.	IRM	\$19,594	\$9,299	86.8%	(6.2%)	(13.7%)	4.5%	2.1%	33.2%	4.6x	4.5x	13.9x	13.0x	26.2x	
NetApp, Inc.	NTAP	10,679	12,493	60.5%	(38.9%)	46.6%	(2.7%)	(2.4%)	20.2%	1.8x	1.9x	8.9x	7.4x	12.6x	Communication
Dropbox	DBX	8,233	8,338	74.3%	(24.8%)	NA	22.1%	16.8%	7.1%	5.4x	4.6x	76.5x	19.0x	NM	Enterprise
Nutanix, Inc.	NTNX	4,508	4,957	48.0%	(38.6%)	(29.1%)	7.0%	11.7%	NM	3.6x	3.3x	NM	NM	NM	
Pure Storage, Inc.	PSTG	3,741	4,340	64.3%	(34.7%)	25.0%	28.4%	19.6%	NM	2.5x	2.1x	NM	20.7x	NM	
Box, Inc.	BOX	2,644	2,447	66.4%	(30.7%)	5.1%	18.1%	11.3%	NM	4.0x	3.6x	NM	36.5x	NM	HCM
CommVault Systems, Inc.	CVLT	1,588	2,020	63.6%	(36.1%)	(15.8%)	(1.8%)	(2.5%)	6.1%	2.3x	2.3x	37.5x	17.6x	NM	
Carbonite, Inc.	CARB	1,107	537	42.6%	(56.5%)	0.8%	34.8%	45.4%	10.1%	3.1x	2.1x	30.7x	7.7x	NM	
Median		\$4,124	\$4,649	64.0%	(35.4%)	0.8%	12.5%	11.5%	10.1%	3.4x	2.8x	30.7x	17.6x	19.4x	Marketing
<b>IT SECURITY</b>															PLM & Engineering
Cisco Systems, Inc.	CSCO	\$201,014	\$209,760	84.8%	1.6%	55.8%	5.2%	2.0%	30.7%	3.9x	3.8x	12.6x	10.5x	18.1x	
VeriSign, Inc.	VRSN	22,899	22,328	85.1%	17.8%	141.1%	3.0%	3.2%	68.4%	18.7x	18.1x	27.3x	25.4x	35.4x	
Palo Alto Networks, Inc.	PANW	18,396	19,770	78.2%	(9.5%)	27.9%	27.5%	19.5%	3.9%	6.3x	5.3x	161.7x	22.7x	NM	SCM & Logistics
Symantec Corporation	SYMC	17,576	14,604	90.6%	11.0%	(5.9%)	0.1%	0.9%	22.5%	3.6x	3.6x	16.2x	8.0x	124.8x	Energy
Check Point Software Ltd.	CHKP	15,055	16,670	82.5%	(6.9%)	41.1%	4.0%	3.9%	46.6%	7.7x	7.4x	16.5x	14.7x	20.8x	
CrowdStrike Holdings, Inc.	CRWD	12,348	13,175	57.2%	NA	NA	195.6%	54.5%	NM	35.2x	22.8x	NM	NM	NM	
Fortinet, Inc.	FTNT	11,333	13,125	79.2%	(16.8%)	107.9%	19.9%	15.3%	17.1%	5.8x	5.0x	34.0x	18.9x	35.2x	Financial
Proofpoint, Inc.	PFPT	7,110	7,236	97.1%	21.4%	72.4%	29.9%	20.2%	NM	8.9x	7.4x	NM	44.3x	NM	
Cloudflare, Inc.	NET	5,662	5,447	84.1%	NA	NA	176.8%	NM	NM	24.1x	NM	NM	NM	NM	HCIT
Trend Micro Incorporated	TSE:4704	5,128	6,608	67.9%	(26.2%)	37.2%	7.3%	3.6%	32.0%	3.4x	3.3x	10.6x	10.2x	25.0x	
CyberArk Software Ltd.	CYBR	3,269	3,767	67.1%	25.0%	101.4%	32.3%	17.0%	19.0%	8.4x	7.2x	44.1x	27.4x	63.5x	EdTech / Public Sector
FireEye, Inc.	FEYE	2,912	2,820	64.7%	(21.5%)	(9.4%)	6.5%	4.6%	NM	3.4x	3.2x	NM	22.7x	NM	
Qualys, Inc.	QLYS	2,706	2,965	77.8%	(15.2%)	97.9%	17.5%	15.0%	30.5%	9.0x	7.8x	29.5x	20.3x	44.0x	Large-Cap SaaS
Mimecast Limited	MIME	2,254	2,203	65.4%	(14.8%)	86.5%	28.0%	22.0%	7.8%	6.2x	5.1x	80.2x	28.5x	NM	
Rapid7 Inc.	RPD	2,229	2,217	68.8%	22.9%	157.2%	28.1%	25.2%	NM	7.9x	6.3x	NM	164.5x	NM	Small-Cap SaaS
Varonis Systems, Inc.	VRNS	1,732	1,813	74.7%	(18.4%)	98.6%	11.8%	(2.2%)	NM	6.4x	6.5x	NM	NM	NM	
ForeScout Technologies, Inc.	FSCT	1,689	1,752	81.7%	0.4%	NA	24.9%	25.4%	NM	5.2x	4.2x	NM	148.6x	NM	
SailPoint Technologies	SAIL	1,615	1,666	54.1%	(45.1%)	NA	26.2%	11.0%	4.7%	6.0x	5.4x	127.3x	57.5x	NM	Data & Analytics
Ping Identity Holding Corp.	PING	1,499	1,339	82.1%	NA	NA	24.6%	NM	20.2%	7.0x	NM	34.4x	NM	NM	
SecureWorks Corp.	SCWX	963	1,050	51.9%	(11.7%)	3.4%	8.2%	4.4%	NM	1.8x	1.7x	NM	156.7x	NM	IT Operations
Tufin Software Technologies Ltd	TUFN	455	560	53.0%	NA	NA	48.9%	23.9%	NM	4.7x	3.8x	NM	NM	NM	
Cheetah Mobile, Inc.	CMCM	120	489	34.4%	(63.6%)	(71.3%)	(4.5%)	(11.0%)	3.9%	0.2x	0.2x	4.4x	NM	3.5x	Data Storage
Median		\$3,090	\$3,366	76.3%	(10.6%)	64.1%	22.2%	13.0%	20.2%	6.3x	5.2x	29.5x	24.1x	35.2x	IT Security

# OUR FIRM

Harris Williams has a broad range of industry expertise, which create powerful opportunities. Our clients benefit from our deep-sector experience, integrated industry intelligence and collaboration across the firm, and our commitment to learning what makes them unique. For more information, visit our website at [www.harriswilliams.com/industries](http://www.harriswilliams.com/industries).



## HARRIS WILLIAMS OFFICE LOCATIONS

### UNITED STATES

#### Boston

One International Place  
Suite 2620  
Boston, Massachusetts 02110  
Phone: +1 (617) 482-7501

#### Cleveland

1900 East 9th Street  
20th Floor  
Cleveland, Ohio 44114  
Phone: +1 (216) 689-2400

#### Minneapolis

222 South 9th Street  
Suite 3350  
Minneapolis, Minnesota 55402  
Phone: +1 (612) 359-2700

#### Richmond (Headquarters)

1001 Haxall Point  
9th Floor  
Richmond, Virginia 23219  
Phone: +1 (804) 648-0072

#### San Francisco

575 Market Street  
31st Floor  
San Francisco, California 94105  
Phone: +1 (415) 288-4260

#### Washington, D.C.

800 17th St. NW  
2nd Floor  
Washington, D.C. 20006  
Phone: +1 (202) 207-2300

### EUROPE

#### Frankfurt

Bockenheimer Landstrasse 33-35  
60325 Frankfurt  
Germany  
Phone: +49 069 3650638 00

#### London

63 Brook Street  
London W1K 4HS, England  
Phone: +44 (0) 20 7518 8900

### NETWORK OFFICES

Beijing

Hong Kong

Mumbai

New Delhi

Shanghai

## SOURCES

---

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

## DISCLOSURES

---

The information [www.harriswilliams.com](http://www.harriswilliams.com) report were prepared by Harris Williams LLC (“Harris Williams”). It is not a research report, as such term is defined by applicable law and regulations, and is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any securities or financial instruments or to participate in any particular trading strategy. The information contained herein is believed by Harris Williams to be reliable but Harris Williams makes no representation as to the accuracy or completeness of such information. Harris Williams and/or its affiliates may be market makers or specialists in, act as advisers or lenders to, have positions in and effect transactions in securities of companies mentioned herein and also may provide, may have provided, or may seek to provide investment banking services for those companies. In addition, Harris Williams and/or its affiliates or their respective officers, directors and employees may hold long or short positions in the securities, options thereon or other related financial products of companies discussed herein. Opinions, estimates and projections in this report constitute Harris Williams’ judgment and are subject to change without notice. The securities and financial instruments discussed in this report may not be suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. Also, past performance is not necessarily indicative of future results. No part of this material may be copied or duplicated in any form or by any means, or redistributed, without Harris Williams’ prior written consent.

Harris Williams LLC is a registered broker-dealer and member of FINRA and SIPC. Harris Williams & Co. Ltd is a private limited company incorporated under English law with its registered office at 5th Floor, 6 St. Andrew Street, London EC4A 3AE, UK, registered with the Registrar of Companies for England and Wales (registration number 07078852). Harris Williams & Co. Ltd is authorized and regulated by the Financial Conduct Authority. Harris Williams & Co. Corporate Finance Advisors GmbH is registered in the commercial register of the local court of Frankfurt am Main, Germany, under HRB 107540. The registered address is Bockenheimer Landstrasse 33-35, 60325 Frankfurt am Main, Germany (email address: [hwgermany@harriswilliams.com](mailto:hwgermany@harriswilliams.com)). Geschäftsführer/Directors: Jeffery H. Perkins, Paul Poggi. (VAT No. awaited). Harris Williams is a trade name under which Harris Williams LLC, Harris Williams & Co. Ltd and Harris Williams & Co. Corporate Finance Advisors GmbH conduct business.