



# GP Bullhound

*Global Software Market Perspectives*

*Q3 2018*

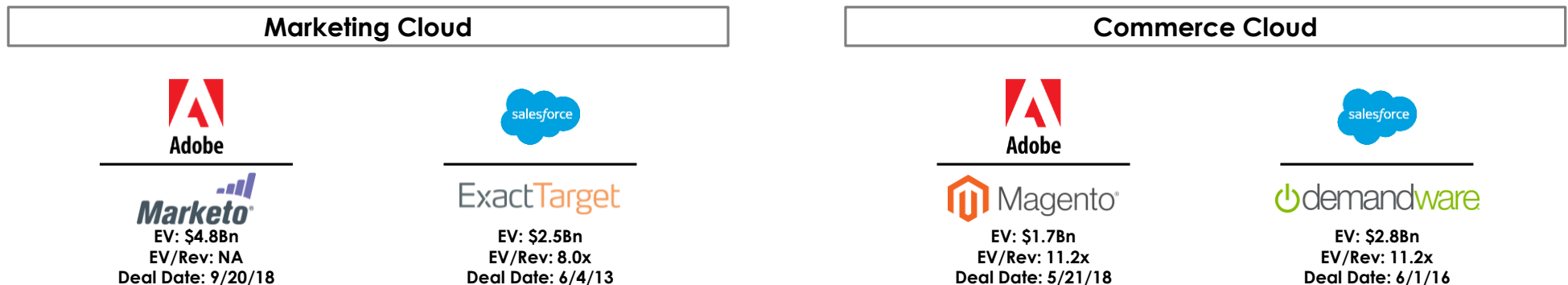
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- 1** **Key Sector Takeaways**
- 2** Recent Software Transaction Trends
- 3** Public Market SaaS Analyses
- 4** SaaS CEO Commentary
- 5** Key SaaS Metrics
- 6** Appendix A: GP Bullhound SaaS Index
- 7** Appendix B: Software Public Comps by Category
- 8** Appendix C: GP Bullhound Software Report Overview, Software Credentials & Team

# GP Bullhound's Views on Current Trends in Software

- **The war for the most comprehensive marketing cloud is in full swing with Adobe's acquisition of Marketo, the latest move by a large consolidator in this space**
  - Adobe, Oracle, Salesforce and SAS lead the space, and continue to strive for an all in one multichannel marketing hub that aims to serve all of their customer's marketing needs, keeping them in the ecosystem and providing the most comprehensive CX
  - Adobe is bolstering its B2B capabilities with their latest acquisition, and now has an even more extensive offering in marketing, alongside commerce, creating obvious cross selling opportunities in adjacent verticals
  - With consolidation already occurring in the social media space, we believe this may be the next area that the large marketing cloud and PR software consolidators target, building out their increasingly important social offerings



- **Though the artificial intelligence and machine learning market is still nascent, more and more large enterprises are seeking out platform solutions that can address all of their AI/ML needs**
  - While some point solutions are hyper vertical or focused on one particular solution within the AI landscape, the largest enterprises have a need for a suite of AI solutions that can optimize the wide range of business processes used across their organization
  - Platform companies can apply off the shelf smart processes to core business functions, while also applying machine learning to specific business needs
  - CROs now need the technical understanding required to harness the revenue generating (and cost saving) powers of AI/ML
  - We see this trend continuing, and over time platforms will build out vertical specificity and product depth through consolidation of some of the smaller point solutions in the market

# GP Bullhound's Views on Current Trends in Software (Cont'd)

- **Cybersecurity companies are increasingly relying on machine learning algorithms to defend against the tidal wave of threats and attacks that continue to plague enterprises and individuals**

- The number of connected devices is increasing exponentially creating a disconnect between the number of skilled cyber workers and the threats faced - this has led to an emphasis on machine learning to plug the gap
- However, there are risks associated with this. Hackers can corrupt data by switching labels to disguise malware as clean code, or work out the features of a model being used to combat malware, and then tweak their own code to avoid being detected, to name a few
- Despite the risks that some cybersecurity companies are taking in becoming overly reliant on machine learning, 2018 has been a bumper year for cybersecurity with:
  - » 4 IPOs - Avast, Carbon Black, Tenable and this years best tech IPO performer Zscaler
  - » Some very large fundraises:



Funds Raised: \$175m  
Deal Date: 5/15/18



Funds Raised: \$200m  
Deal Date: 6/21/18



Funds Raised: \$120m  
Deal Date: 7/1/18



Funds Raised: \$200m  
Deal Date: 10/2/18

- **Enterprises are increasingly adopting Software Asset Management “SAM” Systems to optimize IT spending**

- SAM is the management and optimization of software applications and licenses by enterprises
- The majority of US enterprises are running their applications on public cloud software, alongside using hundreds of SaaS solutions to optimize business processes, it has become necessary for enterprises to track and monitor software use to control costs and optimize SaaS spend
- Large software companies that operate in adjacent spaces like ITSM, or ERP understand that SAM is increasingly a focus of finance teams, leading to ongoing consolidation of technology and teams in the space
  - » ServiceNow / VendorHawk (Apr 2018), Flexera / MetaSaaS (May 2018)



Transaction Value: Undisclosed  
Deal Date: 4/27/18



Transaction Value: Undisclosed  
Deal Date: 5/2/18

# GP Bullhound's Views on Current Trends in Software (Cont'd)

- **An increasing number of organizations are looking to containerization technology to simplify and streamline application deployment and management**
  - Application Containerization is a virtualization method that deploys and runs distributed applications without the need of launching an entire Virtual Machine for each app
  - Though the technology has been available for a few years, adoption has picked up to a frantic pace with enterprises realizing the scalability, cybersecurity and delivery benefits of containers compared to virtual machines or physical servers
  - Whilst Docker and Kubernetes have dominated the industry, the container ecosystem is continuing to evolve. Adoption is occurring at a frantic pace, which leaves room for others to carve out market share as evidenced by Mesosphere's \$125m capital raise in May 2018
  - M&A activity is also growing particularly in adjacent areas, led by Red Hat's acquisition of CoreOS for \$250m earlier this year
- **Users of consumer software are increasingly paying for premium content early on in the customer journey**
  - At the advent of the freemium model, the majority of customers were happy to consume free content, listening to, or viewing ads to receive the content, whether news, music, information or education
  - This has shifted drastically in the last two years, as traditional media companies have adapted their business models to the digital age, and consumers are more inclined than ever to pay for premium content
    - » Spotify has 83m paying users on 180m MAUs, Masterclass is seeing a huge uptick in paying users, alongside other providers of premium content like the Wal Street Journal, New York Times, AllTrails, LinkedIn and more
  - Alongside maturing consumer attitudes, more content has shifted behind the paywall, signaling a conscious shift towards paid subscription based business models versus advertisement based revenue models
    - » Sirius XM's recently announced acquisition of Pandora is representative of a business that struggled to shift from a predominately advertisement based business model, and subsequently was unable to compete with it's paid subscription based competitors

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# Notable Software M&A Deals & Private Financings

(Q3 2018)

## Selected M&A Transactions

Announce Date	Target	Buyer	Target Description	Value (\$)	Implied EV/LTM Rev
Sep-18	Marketo	Adobe	Marketing automation platform	4,750	-
Sep-18	AdvancedMD	Global Payments	Cloud-based practice management	700	-
Sep-18	iCIMS	Vista Equity	Human capital management platform	1,200*	8.0x*
Aug-18	CloudHealth Technologies	VMware	Cloud-service-management software	500	-
Aug-18	AppNexus	AT&T	Platform that optimizes the sale and purchase of digital advertising	2,000*	-
Aug-18	Quorum Software	Thoma Bravo	Developer of ERP software for oil and gas companies	-	-
Aug-18	Ipreo	IHS Markit	Developer and provider of market intelligence, data and technology services	1,855	-
Aug-18	Adaptive Insights	Workday	Provider of business planning software	1,600	14.0x
Jul-18	Eze Software	SS&C Technologies	Investment management software	1,450	5.2x
Jul-18	PeopleDoc	Ultimate Software Group	Online document storage platform	300	-
Jul-18	GitHub	Microsoft	Software development collaboration platform	7,500	-
Jul-18	Viewpoint	Trimble	ERP software for construction companies	1,200	7.7x
Jul-18	Charles River Systems	State Street	Investment management platform	2,600	8.4x
Jul-18	Accruent	Fortive	Facilities & asset management software	2,000	-
Jul-18	Datorama	Salesforce	Cross-channel marketing analytics platform	758	-
Jul-18	CA Technologies	Broadcom	IT management software and solutions	18,448	4.4x
Jul-18	HipChat (Atlassian)	Slack	Enterprise internal communication	-	-
				<b>Median</b>	<b>7.9x</b>

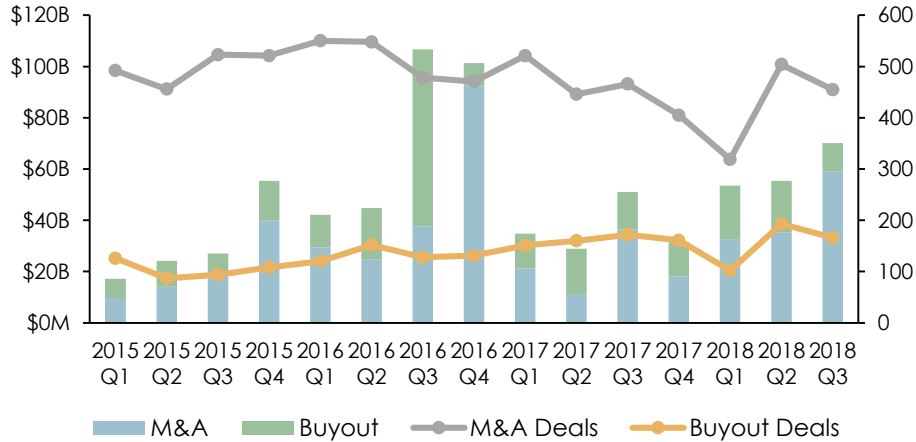
## Selected Private Financings

Announce Date	Issuer	Selected Investors	Issuer Description	Capital Raised (\$)
Sep-18	LendInvest	Atomico, Tiger, GP Bullhound	P2P mortgage financing	40
Aug-18	AppLovin	KKR	Mobile advertising network	400
Aug-18	Slack	Baillie Gifford, GA, T. Rowe Price, Wellington Management	Enterprise collaboration platform	427
Aug-18	MapR	Lightspeed Venture Partners, Mayfield Fund, Quadrille Capital	Cloud-based converged data platform for Analytics	153
Aug-18	Actifio	83North, Andreessen Horowitz, North Bridge Venture Partners	Multi-cloud data management software	100
Aug-18	Namely	GGV Capital, Sequoia Capital, Scale Venture Partners	Human capital management platform	60
Aug-18	Deezer	Access Industries, Kingdom Holding Company	Music streaming services	187
Jul-18	Gusto	CapitalG, Emergence Capital Partners, General Catalyst, KPCB, Y Combinator	Cloud-based payroll, benefits and HR management platform	140
Jul-18	Freshworks	Accel, CapitalG, Sequoia Capital India	Cloud-based customer support platform	100
Jul-18	Face++	Alibaba, Boyu Capital	Facial recognition software	600
Jul-18	Pony.ai	DCM Ventures, Eight Roads, Redpoint Ventures, Sequoia Capital China	Developer of an AI based self-driving platform	102
Jul-18	Toast	Bessemer Venture Partners, Lead Edge Capital, T. Rowe Price, Tiger Global	Restaurant management platform	115
Jul-18	Divvy	Insight Venture Partners, Pelion Venture Partners	Expense management platform	35
Jul-18	Automation Anywhere	GA, Goldman Sachs, NEA	Robotic process automation	250
Jul-18	Cylance	SharesPost, The Blackstone Group	Cloud-based cyber-security platform	150

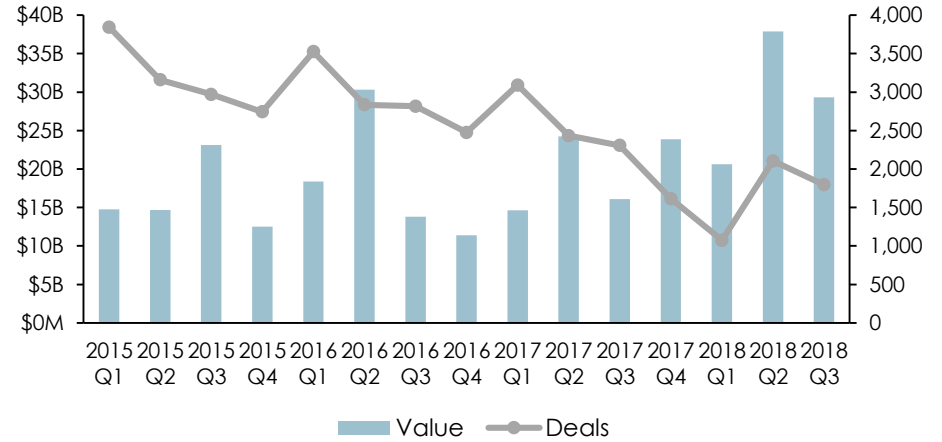
# Global Software Transaction Trends

## M&A and Private Placement Activity by Quarter

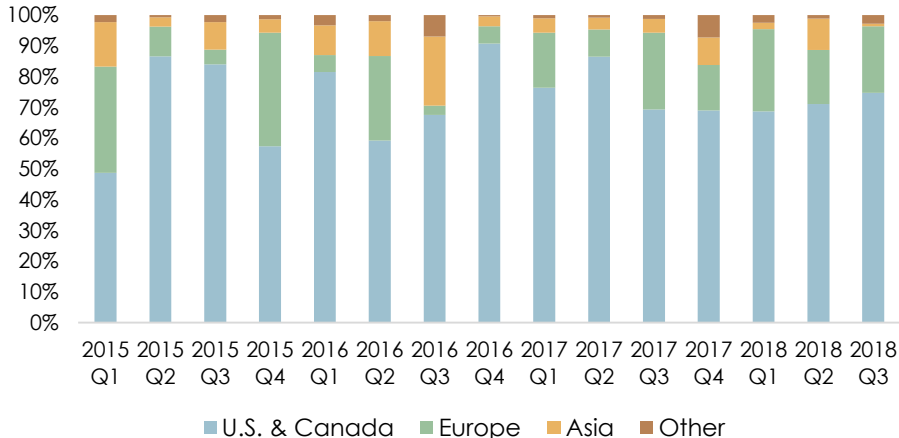
Transaction Deal Value & Volume Trending Upward



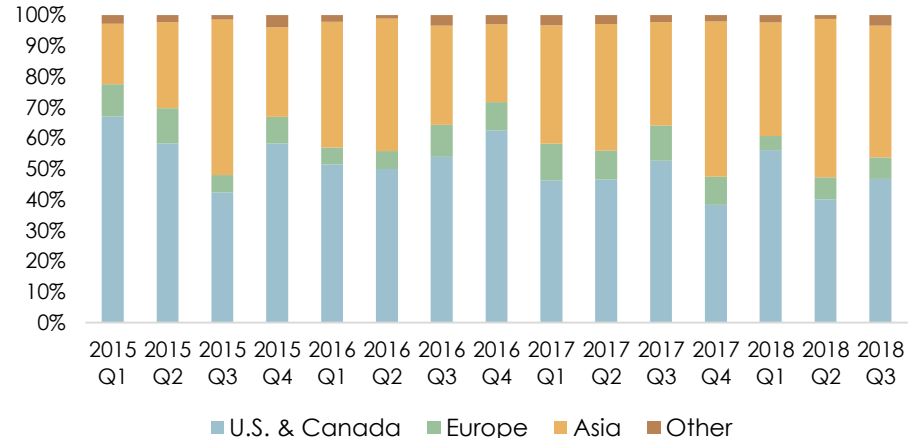
Private Placement Deal Values Becoming Larger



The US and Europe Continue to Dominate M&A Deal Volume



Private Placement Deal Volume by Region has Stayed Consistent





# Software IPOs in Q3 2018

Listed in Q3 2018



- Description (NASDAQ:TENB): Provider of cloud-based human capital management suite
- Listing Date: 07/27/18
- Offering Amount: \$250.7m
- Offering Price/Share: \$23
- % Change/IPO Price: 69.0%
- LTM Revenue: \$225.8m
- EV/Revenue<sup>1</sup>: 17.2x
- Selected Metrics:
  - Revenue Growth FY 17/16: 51%
  - 70% subscription based revenue
  - 124% dollar-based net retention
  - 24,000+ customers
  - 18% enterprise size customers



- Description (NASDAQ:SVMK): Provider of cloud-based SaaS platform used by companies and individuals to distribute surveys
- Listing Date: 09/26/18
- Offering Amount: \$180m
- Offering Price/Share: \$12
- % Change/IPO Price: 33.6%
- LTM Revenue: \$233.5
- EV/Revenue<sup>1</sup>: 10.1x
- Selected Metrics:
  - Revenue Growth CY 17/16: 6%
  - 600,000+ paying users
  - 12% enterprise size customers
  - 80% user acquisition through website or organic search
  - \$45m operating cash flow FY 2017

Filed in Q3 2018



- Description (Proposed Symbol, PLAN): Cloud-based business planning and performance management platform based on a single hub where business users can create and use models
- File Date: 09/14/2018
- LTM Revenue: \$199.9m
- Offering:
  - Assumed max. aggregate proceeds: \$247m
- Selected Metrics:
  - Revenue Growth FY 18/17: 40%
  - 86% recurring revenue
  - 900+ customers
  - 122% dollar-based net expansion rate
  - (\$14.5m) operating cash flow FY 2018



- Description: Provider of IT and infrastructure management software for IT and DevOps professionals
- Filed confidentially

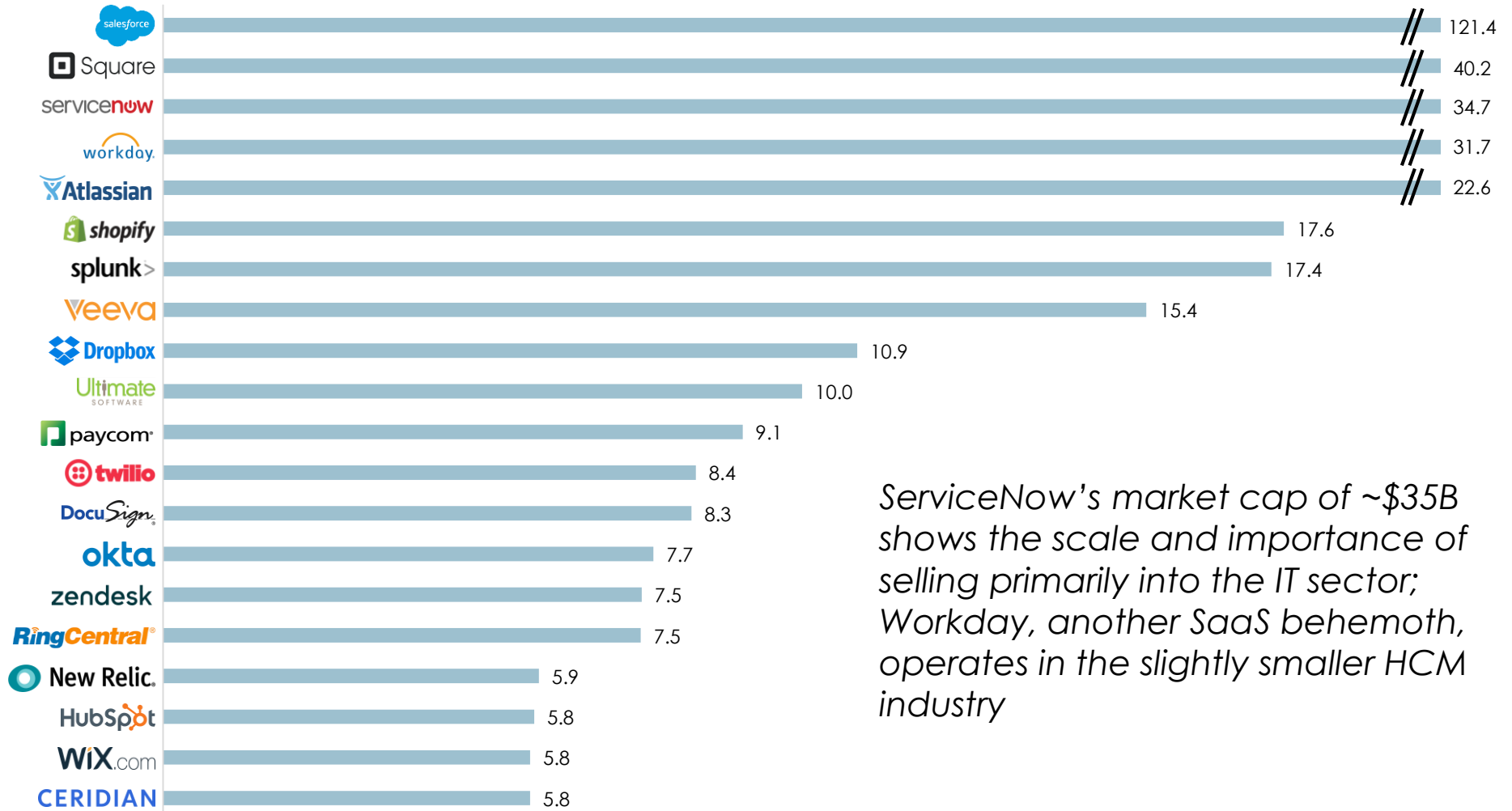


- Description (Proposed Symbol, NYSE:ESTC): Provider of a range of analytics and visualization tools meant to help businesses organize large data sets
- File Date: 09/05/2018
- LTM Revenue: \$184.9m
- Offering:
  - Assumed max. aggregate proceeds: \$223.5m
- Selected Metrics:
  - Revenue Growth FY 18/17: 282%
  - 93% recurring revenue
  - 5,500+ customers across 80 countries
  - (\$21m) operating cash flow FY 2018

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# GP Bullhound Selected SaaS Index Market Valuations

(Market Cap Values in \$ in billions)



*ServiceNow's market cap of ~\$35B shows the scale and importance of selling primarily into the IT sector; Workday, another SaaS behemoth, operates in the slightly smaller HCM industry*

# Analysis of GP Bullhound SaaS Index Valuations

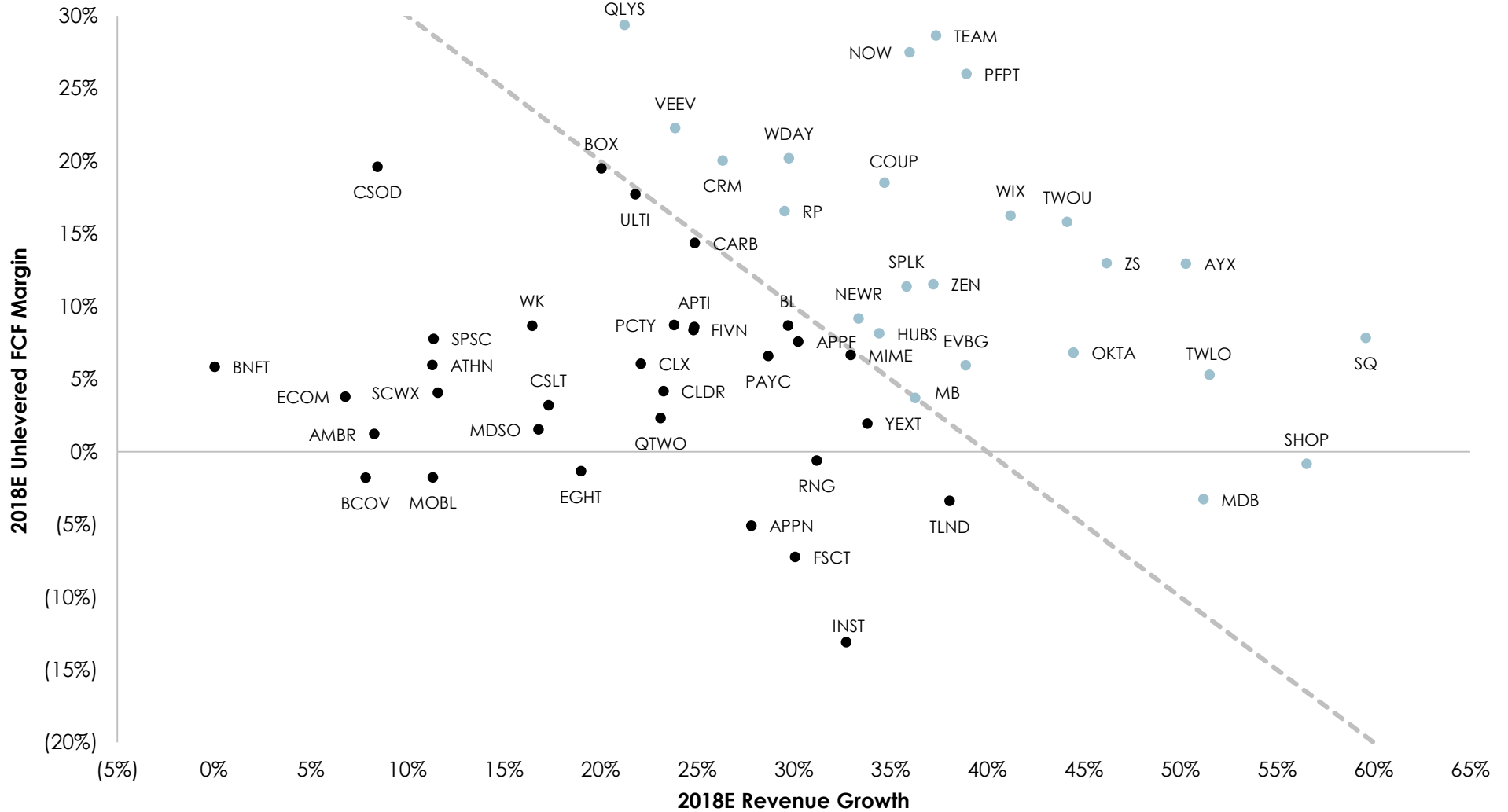
## Revenue Multiple Trends – Last Five Years

Current SaaS valuations are now higher than the 5 year mean; showing the robustness of the current market environment



# Rule of 40% – Public SaaS

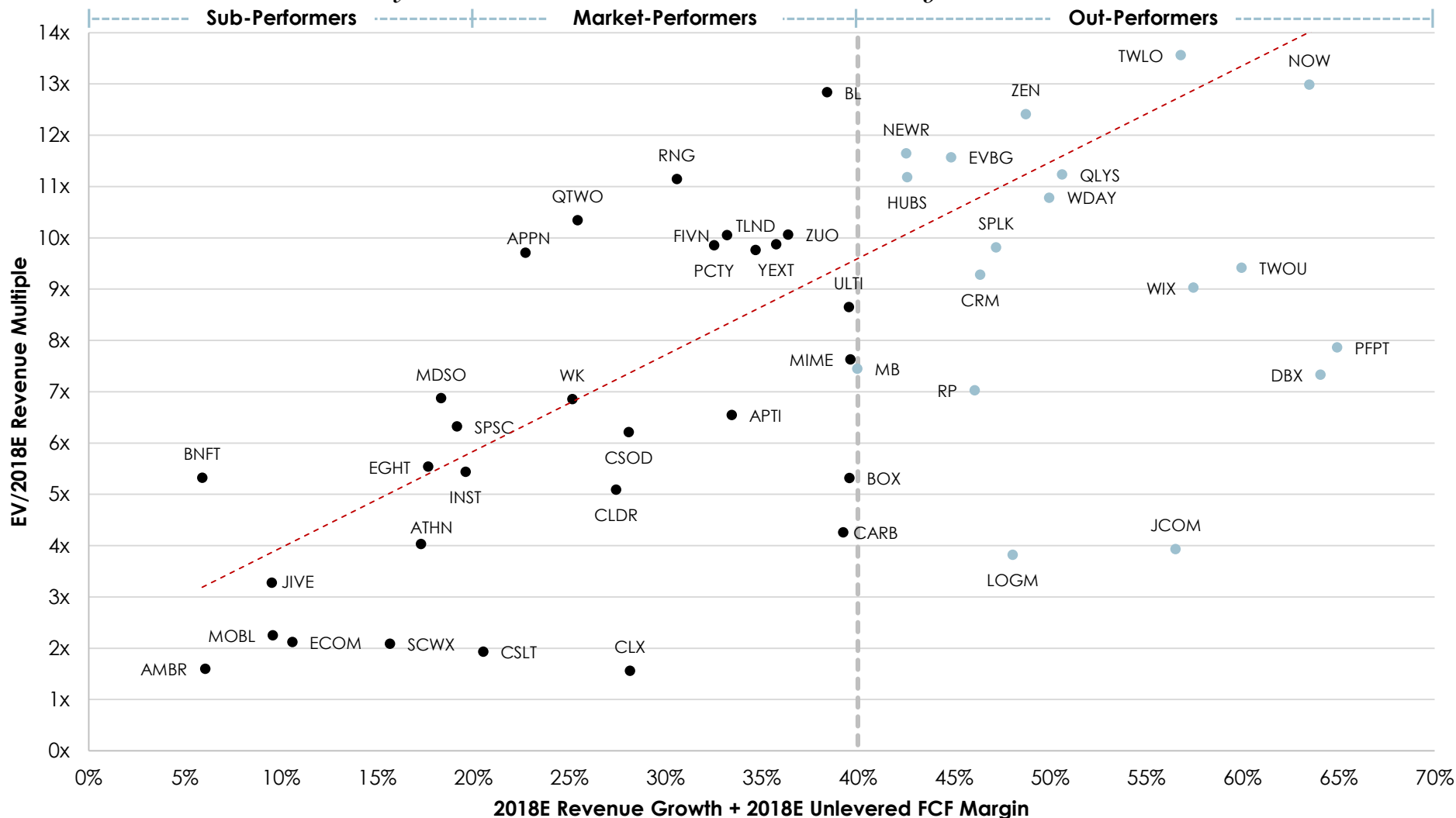
*2018E Growth and Profitability of Public SaaS Companies in GPB Index*



Source(s): Capital IQ as of 9/28/2018  
 Note: Data based on GP Bullhound SaaS Index, constituents can be found in Appendix A, excludes outliers and companies with "N/A"

# Rule of 40% – Public SaaS (Cont'd)

*Companies whose summed revenue growth rate and FCF margin is greater than 40%, are valued higher by investors than those below this 'rule of 40' line*

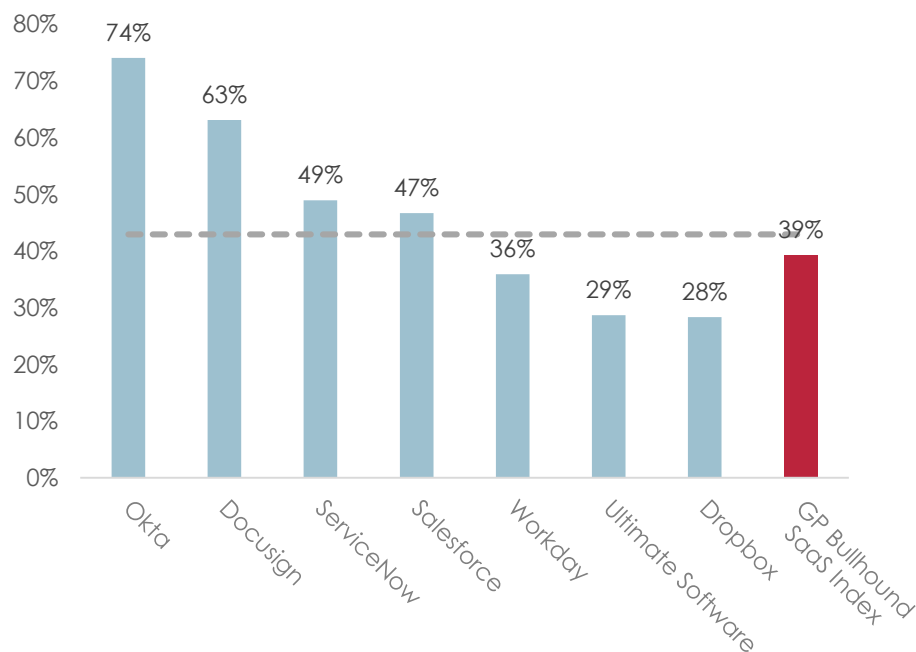


# Vertically Focused Cloud Software

*Significantly Lower Sales & Marketing Spend as a Percentage of Revenue  
However, generally lower growth and valuation multiples*

## Horizontal Software

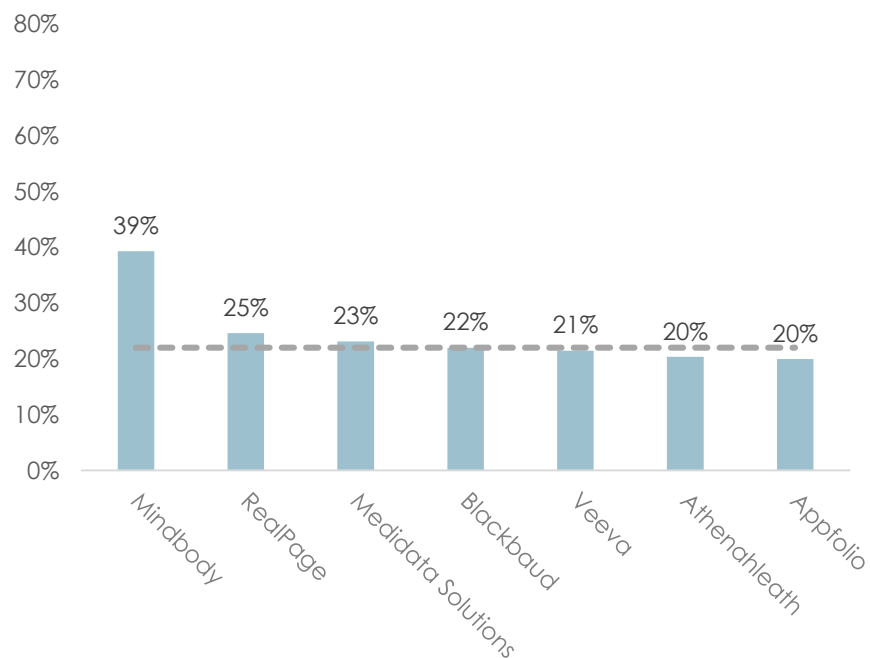
Median: 43%



EV/LTM Revenue	22.8x	12.4x	14.9x	10.4x	12.3x	9.5x	8.1x
FY18/17E Revenue Growth	61.9%	35.9%	34.7%	24.4%	35.6%	20.9%	24.1%

## Vertically-Specific Software

Median: 22%



8.7x	7.9x	7.5x	6.3x	18.9x	4.2x	16.1x
35.8%	29.8%	16.7%	10.8%	25.1%	10.6%	28.4%

# Software Public Company Valuations

*High Growth (2018 Revenue Growth Rate >30%)*

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
SS&C Technologies	US	8,287	\$56.83	42.6%	10.3%	(2.7%)	\$13,529	\$19,655	\$785	9.0x	5.8x	4.7x	27.6x	17.5x	13.5x	101.7%	49.0%	33.3%
Aveva Group	UK	4,400	37.75	NA	42.4%	5.3%	6,085	5,961	148	8.5x	10.0x	6.0x	46.4x	28.6x	22.0x	86.8%	NA	35.1%
Micro Focus	UK	14,800	18.65	(41.9%)	34.8%	12.9%	8,026	12,139	574	3.8x	3.1x	3.4x	12.4x	8.5x	8.7x	62.8%	NA	36.3%
Shopify	CA	3,000	164.15	41.0%	35.0%	13.2%	17,570	15,996	1,574	18.7x	15.5x	11.1x	NM	NM	NM	56.5%	56.4%	3.4%
Twilio	US	1,119	86.14	190.2%	130.1%	7.4%	8,353	7,982	795	16.2x	13.6x	10.7x	NM	NM	NM	51.5%	54.7%	3.8%
MongoDB	US	962	81.38	NA	95.1%	13.2%	4,197	3,884	523	20.2x	16.9x	12.4x	NM	NM	NM	51.2%	72.7%	(30.0%)
Alteryx	US	674	57.27	180.3%	71.9%	1.8%	3,611	3,448	331	21.2x	17.9x	13.4x	NM	NM	NM	50.3%	88.5%	(4.6%)
Trade Desk	US	713	150.91	158.8%	196.1%	7.7%	6,477	6,335	142	16.7x	13.8x	10.5x	70.1x	44.5x	34.1x	49.7%	76.6%	31.0%
Gridsum	CN	929	6.42	(36.4%)	(22.7%)	8.3%	198	199	39	2.5x	1.4x	1.0x	NM	10.5x	3.9x	47.5%	NA	13.0%
Upland Software	US	375	32.26	52.9%	15.2%	(12.6%)	678	818	19	6.7x	5.8x	5.4x	32.1x	16.5x	14.9x	45.6%	69.8%	35.0%
Zscaler	US	1,050	40.88	NA	48.5%	(13.0%)	4,984	4,685	299	24.6x	20.8x	15.9x	NM	NM	NM	45.1%	NA	(3.7%)
Okta	US	1,176	70.40	142.8%	84.0%	16.4%	7,688	7,415	536	22.8x	19.8x	15.0x	NM	NM	NM	44.5%	73.4%	(13.1%)
2U	US	1,865	75.24	37.7%	(6.5%)	(12.5%)	4,335	3,871	489	11.2x	9.4x	7.1x	NM	NM	NM	44.2%	78.1%	4.3%
Wix	IL	1,771	120.00	70.0%	56.9%	10.0%	5,754	5,404	636	10.5x	9.0x	7.1x	NM	48.4x	30.4x	41.2%	80.1%	18.7%
Wisefech	AU	900	15.99	133.7%	106.0%	2.7%	4,792	4,706	91	28.7x	23.4x	17.4x	NM	68.6x	49.6x	40.5%	NA	34.0%
Proofpoint	US	2,047	106.50	21.1%	(5.2%)	(9.9%)	5,496	5,566	134	9.1x	7.9x	6.2x	NM	56.2x	40.0x	38.9%	77.3%	14.0%
Everbridge	US	772	57.59	119.5%	63.4%	(0.7%)	1,680	1,666	106	13.6x	11.6x	9.2x	NM	NM	NM	38.9%	71.6%	(2.1%)
Ebix	US	4,515	79.15	22.6%	5.6%	1.3%	2,492	3,016	135	7.0x	6.1x	5.1x	21.0x	17.9x	15.0x	38.4%	64.6%	34.1%
Talend	FR	989	69.68	74.1%	47.9%	9.2%	2,095	2,003	93	11.3x	9.8x	7.7x	NM	NM	NM	38.1%	77.5%	(15.0%)
Atlassian	UK	2,638	96.33	179.3%	84.7%	9.9%	22,564	21,650	1,733	26.6x	21.5x	16.6x	NM	NM	60.6x	37.4%	NA	27.1%
Zendesk	US	2,360	70.96	149.1%	54.2%	5.4%	7,503	7,265	684	14.4x	12.4x	9.5x	NM	NM	NM	37.2%	73.0%	6.8%
Zuora	US	933	23.12	NA	NA	(28.5%)	2,466	2,304	180	11.2x	10.1x	8.0x	NM	NM	NM	36.4%	55.1%	(18.4%)
MINDBODY	US	1,661	40.63	56.6%	5.4%	9.7%	1,926	1,846	326	8.7x	7.4x	5.9x	NM	NM	NM	36.3%	70.8%	1.1%
ServiceNow	US	7,150	195.36	67.5%	22.3%	0.6%	34,714	33,821	1,750	14.9x	13.0x	10.1x	NM	50.8x	36.4x	36.0%	79.8%	25.6%
Splunk	US	3,200	120.15	79.1%	25.2%	(5.7%)	17,375	16,552	892	11.3x	9.8x	7.9x	NM	67.2x	47.4x	35.8%	83.2%	14.6%
Pure Storage	US	2,450	25.95	62.8%	33.9%	(2.3%)	6,129	5,459	1,107	4.6x	4.0x	3.1x	NM	42.0x	26.7x	35.1%	66.8%	9.5%
Tremor Video	US	136	3.79	(9.3%)	5.0%	4.4%	200	135	65	2.7x	2.3x	1.8x	NM	24.9x	8.7x	34.8%	92.3%	9.1%
Coupa Software	US	833	78.91	156.7%	75.6%	12.4%	4,615	4,340	443	19.8x	17.7x	14.3x	NM	NM	NM	34.7%	72.7%	2.0%
HubSpot	US	2,441	150.88	84.1%	40.4%	5.5%	5,817	5,575	550	12.6x	11.2x	9.0x	NM	NM	NM	34.4%	81.4%	9.5%
Pluralsight	US	825	32.01	NA	NA	(3.7%)	2,011	1,931	214	10.0x	8.6x	6.4x	NM	NM	NM	34.2%	75.8%	(21.4%)
Yext	US	800	23.66	79.2%	87.7%	(10.7%)	2,372	2,247	125	11.3x	9.9x	7.5x	NM	NM	NM	33.8%	75.5%	(15.4%)
New Relic	US	1,393	94.25	92.2%	30.0%	(9.8%)	5,415	5,085	721	13.3x	11.6x	9.2x	NM	NM	NM	33.4%	NA	12.8%
CenturyLink	US	47,000	21.20	10.4%	30.8%	(5.8%)	22,899	59,514	700	2.8x	2.5x	2.6x	7.9x	6.6x	6.5x	33.2%	53.5%	38.4%
Hortonworks	US	1,330	22.81	34.6%	15.6%	6.5%	1,856	1,774	81	5.7x	5.2x	4.2x	NM	NM	NM	33.0%	75.1%	(11.2%)

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration



# Software Public Company Valuations (Cont'd)

*High Growth (2018 Revenue Growth Rate >30%)*

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				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Mimecast	UK	1,192	\$41.88	47.8%	20.8%	0.8%	\$2,501	\$2,424	\$149	8.6x	7.6x	6.4x	NM	60.3x	39.2x	33.0%	NA	12.7%
Instructure	US	1,268	35.40	8.6%	(13.9%)	(10.9%)	1,233	1,116	117	6.1x	5.4x	4.3x	NM	NM	NM	32.7%	72.2%	(9.7%)
Amazon	US	566,000	2,003.00	109.4%	39.9%	3.6%	976,946	995,685	27,050	4.8x	4.2x	3.5x	48.3x	30.9x	23.3x	32.5%	40.3%	13.7%
DocuSign	US	2,255	52.51	NA	NA	(20.8%)	8,283	7,464	819	12.4x	10.9x	8.9x	NM	NM	NM	32.3%	78.6%	3.7%
RingCentral	US	1,352	93.20	132.1%	50.4%	(0.6%)	7,488	7,281	567	13.7x	11.1x	9.0x	NM	NM	71.1x	31.2%	77.0%	12.1%
Extreme Networks	US	2,713	5.48	(53.7%)	(50.1%)	(13.6%)	648	723	123	0.7x	0.7x	0.7x	8.9x	7.3x	5.5x	30.5%	NA	9.7%
AppFolio	US	672	78.45	66.7%	98.4%	(4.0%)	2,721	2,668	53	16.1x	14.5x	11.6x	NM	60.1x	41.6x	30.2%	62.7%	24.0%
ForeScout Technologies	US	818	37.71	NA	22.0%	5.4%	1,617	1,416	220	5.5x	5.0x	4.2x	NM	NM	NM	30.1%	76.5%	(10.2%)
<b>Average</b>										<b>11.9x</b>	<b>10.2x</b>	<b>7.9x</b>	<b>30.5x</b>	<b>35.1x</b>	<b>28.5x</b>	<b>41.7%</b>	<b>71.3%</b>	<b>8.9%</b>
<b>Median</b>										<b>11.3x</b>	<b>9.8x</b>	<b>7.6x</b>	<b>27.6x</b>	<b>30.9x</b>	<b>26.7x</b>	<b>36.8%</b>	<b>73.4%</b>	<b>9.5%</b>

# Software Public Company Valuations (Cont'd)

*Strong Growth (2018 Revenue Growth Rate Between 20% and 30%)*

Company Name	HQ	Employee	Share Price	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth	CY18E Margins	
			09-28-18	LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E	18/17	Gross	EBITDA
Workday	US	9,100	\$145.80	43.1%	17.8%	(4.2%)	\$31,675	\$29,867	\$2,985	12.3x	10.8x	8.6x	NM	68.2x	46.8x	29.8%	74.4%	15.8%
Blackline	US	806	56.33	64.5%	44.6%	7.4%	3,020	2,905	115	14.3x	12.8x	10.3x	NM	NM	NM	29.7%	81.8%	4.4%
RealPage	US	6,000	65.70	63.6%	28.6%	7.6%	5,892	6,117	373	7.9x	7.0x	6.1x	47.0x	26.7x	21.5x	29.5%	63.5%	26.3%
Attunity	IL	276	18.89	180.3%	162.4%	(10.4%)	398	365	33	5.0x	4.6x	3.8x	NM	42.1x	33.9x	29.2%	86.0%	10.9%
Paycom	US	2,548	155.35	107.8%	47.7%	2.0%	9,086	9,066	55	18.2x	16.3x	13.2x	NM	38.9x	31.9x	28.7%	84.1%	41.9%
Palo Alto Networks	US	5,348	225.26	60.1%	27.3%	(1.7%)	21,135	19,651	3,403	8.6x	7.8x	6.5x	NM	30.7x	24.6x	28.2%	NA	25.3%
Pivotal Software	US	2,671	19.61	NA	NA	(28.5%)	4,978	4,307	672	7.4x	6.6x	5.4x	NM	NM	NM	27.9%	64.1%	(10.0%)
Appian	US	2,000	33.01	31.6%	32.1%	(4.7%)	2,134	2,084	50	10.1x	9.7x	8.4x	NM	NM	NM	27.8%	63.5%	(15.6%)
Carbon Black	US	932	21.11	NA	NA	(15.9%)	1,493	1,315	178	7.0x	6.4x	5.2x	NM	NM	NM	27.6%	79.0%	(25.5%)
Yonyou	CN	14,773	4.05	46.1%	(11.4%)	(3.3%)	7,690	7,728	726	7.4x	6.4x	5.2x	44.3x	46.7x	34.8x	27.5%	70.2%	13.7%
Guidewire Software	US	2,292	101.01	31.1%	27.5%	2.6%	8,142	7,380	1,067	11.2x	10.2x	9.3x	NM	45.3x	47.7x	27.2%	NA	22.6%
Square	US	2,338	98.81	246.8%	108.5%	22.3%	40,206	39,655	1,622	14.8x	25.7x	18.4x	NM	NM	NM	59.6%	83.0%	16.3%
Varonis Systems	US	1,364	73.25	75.9%	23.7%	2.9%	2,140	1,982	159	8.1x	7.4x	6.3x	NM	NM	NM	26.8%	90.6%	2.6%
Inovalon	US	2,119	10.05	(40.5%)	(4.3%)	(14.5%)	1,534	2,420	84	5.1x	4.2x	3.7x	30.8x	14.3x	12.0x	26.9%	71.6%	29.7%
Salesforce	US	29,000	159.11	71.8%	41.0%	4.0%	121,397	122,368	3,427	10.4x	9.3x	7.7x	NM	39.0x	31.5x	26.3%	76.9%	23.8%
CyberArk	IL	1,015	79.84	94.5%	59.7%	8.4%	2,879	2,522	357	8.6x	7.8x	6.6x	74.1x	32.8x	27.0x	23.4%	87.5%	23.8%
Carbonite	US	954	35.75	61.8%	27.7%	(14.5%)	1,182	1,306	71	4.9x	4.3x	3.8x	48.5x	13.4x	11.3x	24.9%	77.1%	31.8%
Appfio	US	852	36.94	103.1%	32.4%	(1.2%)	1,662	1,521	249	7.2x	6.5x	5.6x	NM	NM	NM	23.2%	71.5%	4.3%
Five9	US	905	43.72	86.7%	49.5%	(8.6%)	2,541	2,473	274	11.0x	10.1x	8.6x	NM	68.9x	52.0x	24.8%	61.3%	14.6%
Alphabet	US	89,058	1,207.08	25.1%	20.1%	(3.1%)	834,977	736,704	102,254	5.9x	5.4x	4.6x	19.3x	14.6x	12.0x	24.5%	58.0%	36.8%
Constellation Software	CA	14,335	734.82	35.0%	8.1%	0.3%	15,572	15,514	344	5.6x	5.1x	4.4x	36.3x	20.6x	17.2x	24.1%	66.7%	24.7%
Dropbox	US	1,858	26.83	NA	(13.4%)	(1.2%)	10,882	10,068	982	8.1x	7.3x	6.3x	NM	33.6x	28.7x	24.1%	74.0%	21.8%
Adobe	US	17,973	269.95	83.9%	27.0%	2.6%	131,772	128,712	4,944	15.0x	14.3x	12.0x	41.7x	32.1x	26.1x	24.1%	88.3%	44.6%
Solium	CA	719	8.75	6.7%	0.8%	2.4%	493	413	90	4.3x	3.8x	3.2x	66.7x	34.9x	16.4x	23.9%	NA	10.9%
Veeva	US	2,171	108.76	92.9%	52.2%	5.9%	15,416	14,406	1,010	18.9x	17.1x	14.5x	NM	48.7x	40.9x	23.9%	72.6%	35.1%
Paylocity	US	2,600	80.24	67.6%	58.4%	3.2%	4,198	4,060	137	11.0x	9.9x	8.2x	NM	41.6x	28.2x	23.8%	NA	23.7%
Datawatch	US	144	11.65	2.9%	42.1%	(6.8%)	148	144	14	3.6x	3.1x	2.5x	NM	NM	NA	23.8%	NA	3.7%
Cloudera	US	1,648	17.64	3.6%	(15.7%)	26.0%	2,655	2,277	378	5.5x	5.1x	4.3x	NM	NM	NM	23.3%	74.9%	(14.9%)
Q2 Holdings	US	844	60.53	47.6%	34.5%	(3.2%)	2,570	2,469	279	11.5x	10.3x	8.4x	NM	NM	70.7x	23.1%	53.1%	9.6%
Sophos	UK	3,362	6.37	(12.9%)	1.5%	(7.9%)	3,037	3,210	120	5.0x	4.6x	4.1x	NM	36.1x	17.0x	22.4%	NA	12.8%

# Software Public Company Valuations (Cont'd)

*Strong Growth (2018 Revenue Growth Rate Between 20% and 30%)*

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
CLX Communications	SE	369	\$12.08	(13.8%)	68.8%	2.6%	\$648	\$697	\$20	1.8x	1.6x	1.4x	23.6x	17.9x	13.4x	22.1%	24.4%	8.7%
Ultimate Software	US	4,208	322.15	74.3%	35.6%	6.1%	10,016	9,841	188	9.5x	8.6x	7.3x	NM	35.9x	29.3x	21.8%	64.5%	24.1%
Qualys	US	1,024	89.10	69.7%	25.2%	(2.6%)	3,453	3,131	323	12.3x	11.2x	9.5x	46.8x	30.0x	25.3x	21.3%	78.1%	37.5%
Ellie Mae	US	1,500	94.77	17.0%	4.7%	(9.0%)	3,283	3,040	243	6.6x	6.1x	5.2x	44.7x	23.1x	17.5x	20.9%	60.8%	26.4%
Box	US	1,960	23.87	27.0%	18.1%	(10.3%)	3,339	3,229	204	5.8x	5.3x	4.4x	NM	NM	62.7x	20.0%	73.8%	3.8%
<b>Average</b>										<b>8.8x</b>	<b>8.4x</b>	<b>6.9x</b>	<b>43.7x</b>	<b>34.8x</b>	<b>30.0x</b>	<b>26.2%</b>	<b>71.6%</b>	<b>16.2%</b>
<b>Median</b>										<b>8.1x</b>	<b>7.3x</b>	<b>6.3x</b>	<b>44.5x</b>	<b>34.2x</b>	<b>27.6x</b>	<b>24.5%</b>	<b>73.8%</b>	<b>16.3%</b>

# Software Public Company Valuations (Cont'd)

*High Profitability (2018 EBITDA Margin >35%)*

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Verisign	US	952	\$160.12	51.6%	37.6%	0.6%	\$19,522	\$20,134	\$1,171	16.9x	16.6x	15.8x	25.7x	23.2x	22.2x	4.3%	84.7%	71.4%
MSCI	US	3,062	177.41	51.7%	17.8%	0.1%	15,760	16,966	1,368	12.4x	11.8x	10.8x	23.4x	21.5x	19.5x	13.2%	80.0%	54.7%
Check Point Software	IL	4,576	117.67	4.7%	18.8%	1.6%	18,382	16,700	1,682	8.9x	8.8x	8.4x	17.7x	16.3x	15.7x	2.4%	89.7%	53.8%
Black Knight	US	4,430	51.95	NA	11.2%	(2.5%)	7,761	9,214	11	8.5x	8.2x	7.6x	24.4x	17.0x	15.4x	5.8%	NA	48.5%
Aspen Technology	US	1,466	113.91	81.8%	46.9%	0.6%	8,109	8,183	96	16.4x	16.8x	14.5x	37.6x	34.9x	29.1x	(0.1%)	NA	48.1%
ANSYS	US	3,200	186.68	53.5%	20.5%	1.4%	15,737	15,041	696	12.9x	12.2x	11.1x	32.1x	26.6x	24.4x	13.7%	89.8%	45.8%
Adobe	US	17,973	269.95	83.9%	27.0%	2.6%	131,772	128,712	4,944	15.0x	14.3x	12.0x	41.7x	32.1x	26.1x	24.1%	88.3%	44.6%
Intel	US	102,700	47.29	25.0%	(4.7%)	(2.6%)	218,054	233,971	12,225	3.5x	3.4x	3.3x	8.1x	7.8x	7.5x	12.1%	61.9%	43.2%
Symantec	US	13,000	21.28	(35.7%)	(17.0%)	5.0%	13,226	15,933	2,325	3.3x	3.4x	3.3x	12.9x	7.8x	7.6x	(4.4%)	NA	43.1%
Progress Software	US	1,470	35.29	(6.4%)	(8.3%)	(12.3%)	1,589	1,568	138	3.9x	4.0x	3.9x	10.7x	9.4x	9.8x	(0.2%)	86.7%	42.2%
Oracle Financial	IN	8,818	53.96	(1.8%)	(6.0%)	(8.6%)	4,623	4,110	543	6.0x	6.0x	5.5x	14.7x	14.4x	12.7x	(5.1%)	NA	42.0%
MYOB	AU	1,500	2.19	(18.7%)	(8.4%)	1.1%	1,290	1,583	12	5.0x	4.9x	4.5x	15.4x	11.6x	11.2x	(0.8%)	91.3%	42.0%
Paycom	US	2,548	155.35	107.8%	47.7%	2.0%	9,086	9,066	55	18.2x	16.3x	13.2x	NM	38.9x	31.9x	28.7%	84.1%	41.9%
Microsoft	US	131,000	114.37	54.8%	27.9%	3.7%	877,014	830,853	133,669	7.5x	7.1x	6.5x	18.5x	17.1x	15.3x	15.7%	NA	41.5%
j2 Global	US	2,487	82.74	11.5%	7.0%	(1.0%)	4,105	4,756	357	4.1x	3.9x	3.7x	11.3x	9.7x	8.7x	7.9%	83.7%	40.5%
VMware	US	20,615	156.06	42.9%	30.1%	5.1%	63,787	54,725	13,300	6.5x	6.2x	5.7x	24.2x	15.6x	15.4x	12.0%	87.9%	39.7%
Akamai Technologies	US	7,443	73.15	53.4%	4.4%	(1.7%)	12,399	12,072	1,857	4.6x	4.5x	4.1x	18.0x	11.4x	10.3x	8.5%	67.7%	39.1%
F5 Networks	US	4,378	199.42	64.2%	39.8%	5.2%	12,128	11,044	1,085	5.2x	5.1x	4.9x	17.0x	13.1x	12.2x	4.2%	NA	38.5%
Temenos	CH	4,980	163.10	60.1%	36.5%	(10.0%)	11,322	11,746	88	14.7x	13.9x	12.4x	51.9x	36.2x	32.3x	15.6%	82.3%	38.5%
CenturyLink	US	47,000	21.20	10.4%	30.8%	(5.8%)	22,899	59,514	700	2.8x	2.5x	2.6x	7.9x	6.6x	6.5x	33.2%	53.5%	38.4%
Fiserv	US	24,000	82.38	28.5%	16.5%	5.0%	33,358	37,816	348	6.5x	6.5x	6.2x	20.5x	17.1x	16.5x	2.7%	47.5%	37.9%
Qualys	US	1,024	89.10	69.7%	25.2%	(2.6%)	3,453	3,131	323	12.3x	11.2x	9.5x	46.8x	30.0x	25.3x	21.3%	78.1%	37.5%
FIS	US	52,000	109.07	16.9%	14.4%	1.4%	35,864	44,178	683	5.0x	5.2x	5.0x	17.3x	14.0x	13.1x	(7.0%)	39.1%	37.1%
Alphabet	US	89,058	1,207.08	25.1%	20.1%	(3.1%)	834,977	736,704	102,254	5.9x	5.4x	4.6x	19.3x	14.6x	12.0x	24.5%	58.0%	36.8%
LogMeIn	US	3,396	89.00	(17.1%)	(20.3%)	5.0%	4,546	4,547	199	4.0x	3.8x	3.6x	13.3x	10.4x	9.7x	17.4%	82.7%	36.7%
Citrix	US	7,500	111.16	44.9%	21.2%	(1.9%)	15,080	15,718	1,509	5.4x	5.3x	5.1x	17.6x	14.6x	14.3x	4.3%	86.8%	36.4%
Verizon	US	153,100	53.39	8.1%	11.2%	(2.3%)	220,604	336,103	1,750	2.6x	2.6x	2.5x	7.2x	7.1x	6.9x	4.3%	57.5%	36.4%
Micro Focus	UK	14,800	18.65	(41.9%)	34.8%	12.9%	8,026	12,139	574	3.8x	3.1x	3.4x	12.4x	8.5x	8.7x	62.8%	NA	36.3%
Inuit	US	8,900	227.40	59.8%	33.0%	5.3%	58,822	57,544	1,716	9.6x	9.1x	8.4x	33.2x	25.0x	22.7x	16.8%	NA	36.3%
Open Text	CA	12,200	38.04	19.4%	11.8%	(2.4%)	10,163	12,101	683	4.3x	4.2x	4.1x	15.0x	11.7x	11.1x	11.0%	NA	36.0%

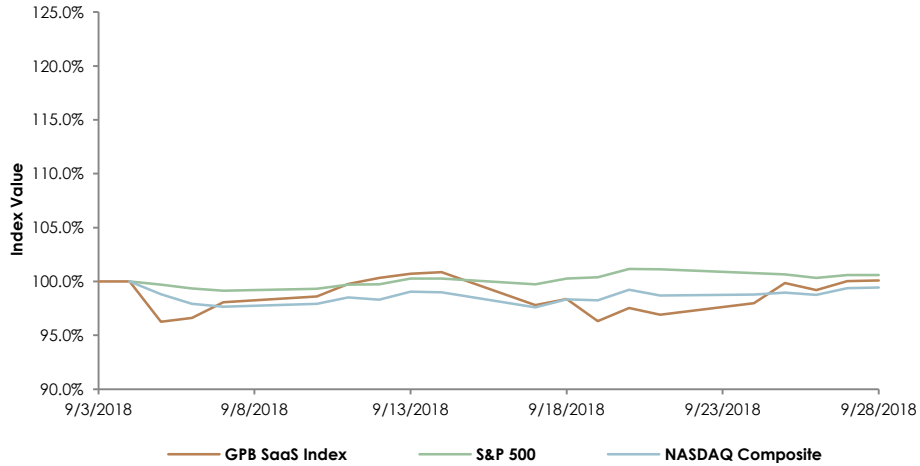
# Software Public Company Valuations (Cont'd)

*High Profitability (2018 EBITDA Margin >35%)*

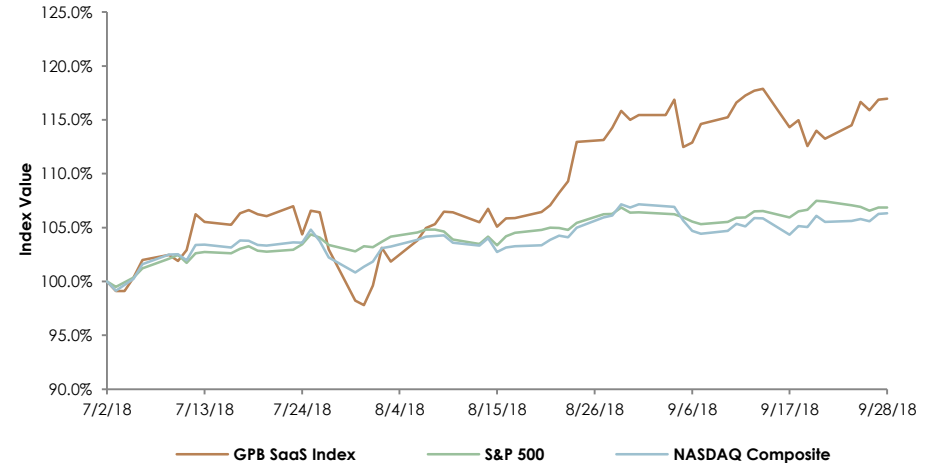
Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
TriNet	US	2,800	\$56.32	61.8%	23.6%	(3.9%)	\$3,973	\$4,165	\$231	1.2x	4.8x	4.4x	14.7x	13.5x	11.9x	7.0%	74.1%	35.9%
Cisco	US	74,200	48.65	45.9%	16.8%	3.6%	222,395	201,488	46,548	4.1x	4.0x	3.8x	13.7x	11.2x	10.8x	5.5%	NA	35.4%
Aveva Group	UK	4,400	37.75	NA	42.4%	5.3%	6,085	5,961	148	8.5x	10.0x	6.0x	46.4x	28.6x	22.0x	86.8%	NA	35.1%
Veeva	US	2,171	108.76	92.9%	52.2%	5.9%	15,416	14,406	1,010	18.9x	17.1x	14.5x	NM	48.7x	40.9x	23.9%	72.6%	35.1%
Upland Software	US	375	32.26	52.9%	15.2%	(12.6%)	678	818	19	6.7x	5.8x	5.4x	32.1x	16.5x	14.9x	45.6%	69.8%	35.0%
Jack Henry & Associates	US	6,307	160.08	56.0%	33.9%	2.0%	12,355	12,323	31	8.0x	7.8x	7.3x	26.0x	22.2x	20.2x	8.3%	NA	35.0%
<b>Average</b>										<b>7.9x</b>	<b>7.7x</b>	<b>6.9x</b>	<b>22.0x</b>	<b>18.5x</b>	<b>16.5x</b>	<b>14.6%</b>	<b>74.9%</b>	<b>41.0%</b>
<b>Median</b>										<b>6.3x</b>	<b>5.9x</b>	<b>5.5x</b>	<b>17.8x</b>	<b>15.1x</b>	<b>14.6x</b>	<b>9.7%</b>	<b>81.2%</b>	<b>38.5%</b>

# GP Bullhound SaaS Index Performance

*L1M*



*L3M*



*L6M*



*L12M*



- 1 Key Sector Takeaways
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# SaaS Company Executive Commentary



**Jade Van Doren**  
*CEO*



**An online platform that offers hand-curated trail maps for outdoor explorers. The online platform offers complete, accurate, global datasets for off-road recreation provided through detailed trail maps and also give reviews, photos and information.**

*"After years of low quality applications supported by ads, consumers are willing to subscribe to services that deliver actual value - high quality music in Spotify or a unique service and community like AllTrails."*



# SaaS Company Executive Commentary (Cont'd)



**James Critchley**  
*Co-Founder & CEO*

## Cloud.IQ

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**Automated eCommerce conversion platform designed to optimize customer conversion rate. The company's platform uses real-time data analytics and cart recovery technology for customer conversion, enabling businesses to improve conversion rate throughout the buying process.**

*"The urgency for CIQ technology is more relevant today than ever. Independent retailers are not only struggling on the high street but also online where they are totally out gunned by pure plays and Amazon and in a discounting race to the bottom. Online optimisation is complicated, needs the context of margin and needs to be done in 'the competitive microsecond' – the one-millionth of a second that consumers take choosing between a retailer's site or defaulting to Amazon. Advances in (and accessibility) to AI is game a changer."*

# SaaS Company Executive Commentary (Cont'd)



**Cedric Bru**  
*CEO & President*



**The company's invoice, payment and discounting management platform helps businesses turn every invoice into a revenue opportunity using their cash or third-party cash to fund early payments and lower the barriers for eInvoicing participation by accepting all forms of electronic invoices.**

*"There is over \$14 trillion in cash tied up in global supply chains. Technology and networks are reducing the operating and financing friction to free trapped cash for businesses to invest, grow and thrive."*

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# Key SaaS Metrics

## Definitions & Calculations

<u>Metric</u>	<u>Definition</u>	<u>Calculation</u>
<b>MRR</b>	Normalized measurement of recurring revenue, most frequently measured with a constant value in each month of the subscription period	$\text{MRR} = \# \text{ of paying customers} * \text{ARPA/month}$
<b>Customer Acquisition Cost (CAC)</b>	All S&M expenses for new customers. Sometimes excludes people management S&M costs	$\text{CAC} = \frac{\text{S\&M}}{\# \text{ of new customers}}$
<b>Customer Lifetime Value (CLV)</b>	Amount of profit a customer is calculated to deliver to the company over the lifetime of the customer	$\text{CLV} = \frac{\text{ARPU} * \text{GM}}{\text{Churn rate}}$
<b>Payback Period</b>	The number of months a company requires to payback its cost of customer acquisition	$\text{Payback Period} = \frac{\text{CAC}}{\text{ARPA} * \text{GM}}$
<b>Churn (Gross &amp; Net)</b>	<p><b>Gross Churn</b> is the number of customers you lose in a given period or cohort regardless of account expansion or growth</p> <p><b>Net Churn</b> is the number of customers gained or lost in a given period or cohort after taking into consideration new, reactivated, or expanded accounts</p>	$\text{Gross Churn} = \frac{\text{customers lost over time period}}{\text{customers at beginning of time period}}$ $\text{Net Churn} = \frac{(\text{customers lost over time period} - \text{customers gained over time period})}{\text{customers at beginning of time period}}$

# Key SaaS Metrics (Cont'd)

*Investors focus on key SaaS metrics, long-term business model viability and valuations*

<p><b>MRR / ARR / ARRR</b></p>	<ul style="list-style-type: none"> <li>• Monthly Recurring Revenues (MRR), Annual Recurring Revenue (ARR), Annual Run Rate Revenue (ARRR) are the key metrics that investors will focus on             <ul style="list-style-type: none"> <li>- Note: ARRR = ARR + Non-recurring revenue items</li> <li>- Also important to understand, the % on-demand SaaS vs. traditional license, and the mix between software and services</li> </ul> </li> <li>• Important to show continued growth in top line revenue (both reported and for the above metrics)</li> </ul>
<p><b>CAC vs. CLV</b></p>	<ul style="list-style-type: none"> <li>• Customer Acquisition Cost (CAC) payback period is typically stated in months. Represents the time taken to fully pay back sales and marketing investments</li> <li>• Growth is the key target for SaaS companies, but sales and marketing investments should ultimately be profitable. CAC payback periods:             <ul style="list-style-type: none"> <li>- <b>For SMEs, CAC payback period should be 6-12 months</b></li> <li>- <b>For Enterprise Customers, CAC payback period should be 9-15 months</b></li> <li>- A CAC payback period of &gt;24months should be a cause for concern</li> </ul> </li> <li>• Customer Lifetime Value = NPV of recurring gross profit of a customer less the initial cost of customer acquisition</li> <li>• <b>For SMEs, CLV should be between 3 &amp; 4 years</b> <ul style="list-style-type: none"> <li>- <b>For Enterprise Customers, CLV should be between 5 &amp; 7 years</b></li> </ul> </li> </ul>
<p><b>Churn &amp; Renewal Rates</b></p>	<ul style="list-style-type: none"> <li>• <b>Logo Churn:</b> Churn of absolute number of customers. Top companies have a Logo Churn of &lt;7%</li> <li>• <b>MRR Churn:</b> Churn of customer MRR that has been lost over given period of time. Top companies have a MRR Churn of &lt;5%, including upgrades/customer expansion, churn is ideally negative</li> <li>• <b>MRR Renewal:</b> Total MRR of renewed customers/Total MRR of existing customers at year beginning. Top companies have a MRR Renewal percentage of <b>105-110%</b> due to upsells to its installed base</li> <li>• <b>Net Revenue Retention:</b> <ul style="list-style-type: none"> <li>- Key metric for performance of SaaS business</li> <li>- &gt;100% upsells more than make up for churn</li> </ul> </li> <li>- <b>ARR as a Percentage of Upsells:</b> 15%+</li> </ul>
<p><b>Free Cash Flow / Burn Rate</b></p>	<ul style="list-style-type: none"> <li>• Growth is of paramount importance, with excess cash being used to fuel growth</li> <li>• Important, therefore, to understand the cash burn in the business and planning for capital efficient hyper-growth</li> </ul>

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# Public Comps – GP Bullhound SaaS Index

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Salesforce	US	29,000	\$159.03	71.7%	40.9%	3.9%	\$120,338	\$121,309	\$3,427	10.3x	9.2x	7.7x	NM	38.6x	38.6x	26.3%	76.9%	23.8%
Square	US	2,338	99.01	247.5%	108.9%	22.5%	40,636	40,086	1,622	14.9x	26.0x	18.6x	NM	NM	NM	59.6%	83.0%	16.3%
ServiceNow	US	7,150	195.63	67.7%	22.5%	0.7%	34,812	33,919	1,750	14.9x	13.0x	10.1x	NM	51.0x	51.0x	36.0%	79.8%	25.6%
Workday	US	9,100	145.98	43.3%	17.9%	(4.1%)	31,678	29,870	2,985	12.3x	10.8x	8.6x	NM	68.2x	68.2x	29.8%	74.4%	15.8%
Atlassian	UK	2,638	96.14	178.7%	84.3%	9.7%	22,703	21,789	1,733	26.7x	21.6x	16.7x	NM	NM	NM	37.4%	NA	27.1%
Shopify	CA	3,000	164.46	41.2%	35.2%	13.4%	17,571	15,997	1,574	18.7x	15.5x	11.1x	NM	NM	NM	56.5%	56.4%	3.4%
Splunk	US	3,200	120.91	80.3%	26.0%	(5.1%)	17,729	16,905	892	11.5x	10.0x	8.1x	NM	68.6x	68.6x	35.8%	83.2%	14.6%
Veeva	US	2,171	108.87	93.1%	52.3%	6.0%	15,733	14,722	1,010	19.3x	17.5x	14.8x	NM	49.8x	49.8x	23.9%	72.6%	35.1%
Dropbox	US	1,858	26.83	NA	(13.4%)	(1.2%)	10,794	9,980	982	8.0x	7.3x	6.3x	NM	33.3x	33.3x	24.1%	74.0%	21.8%
Ultimate Software	US	4,208	322.19	74.3%	35.6%	6.2%	10,043	9,867	188	9.5x	8.7x	7.3x	NM	36.0x	36.0x	21.8%	64.6%	24.1%
Paycom	US	2,548	155.41	107.9%	47.8%	2.0%	9,111	9,092	55	18.3x	16.4x	13.2x	NM	39.0x	39.0x	28.7%	84.1%	41.9%
Twilio	US	1,119	86.28	190.7%	130.5%	7.6%	8,408	8,036	795	16.3x	13.7x	10.7x	NM	NM	NM	51.5%	54.7%	3.8%
DocuSign	US	2,255	52.57	NA	NA	(20.7%)	8,243	7,425	819	12.3x	10.8x	8.8x	NM	NM	NM	32.3%	78.6%	3.7%
Okta	US	1,176	70.36	142.7%	83.9%	16.4%	7,682	7,410	536	22.8x	19.8x	15.0x	NM	NM	NM	44.5%	73.4%	(13.1%)
Zendesk	US	2,360	71.00	149.2%	54.3%	5.5%	7,523	7,285	684	14.4x	12.4x	9.5x	NM	NM	NM	37.2%	73.0%	6.8%
RingCentral	US	1,352	93.05	131.8%	50.2%	(0.7%)	7,408	7,202	567	13.6x	11.0x	8.9x	NM	NM	NM	31.2%	77.0%	12.1%
RealPage	US	6,000	65.90	64.1%	29.0%	7.9%	5,964	6,190	373	8.0x	7.1x	6.2x	47.5x	27.0x	27.0x	29.5%	63.5%	26.3%
HubSpot	US	2,441	150.95	84.2%	40.5%	5.6%	5,856	5,614	550	12.7x	11.3x	9.0x	NM	NM	NM	34.4%	81.4%	9.5%
Wix	IL	1,771	119.70	69.5%	56.5%	9.8%	5,787	5,437	636	10.6x	9.1x	7.2x	NM	48.7x	48.7x	41.2%	80.1%	18.7%
Ceridian HCM	US	4,212	42.03	NA	NA	8.7%	5,785	6,285	172	7.9x	8.5x	7.8x	60.4x	41.7x	41.7x	(1.7%)	45.8%	20.4%
Proofpoint	US	2,047	106.33	21.0%	(5.3%)	(10.1%)	5,588	5,658	134	9.3x	8.0x	6.3x	NM	57.1x	57.1x	38.9%	77.3%	14.0%
New Relic	US	1,393	94.23	92.2%	30.0%	(9.8%)	5,325	4,995	721	13.0x	11.4x	9.1x	NM	NM	NM	33.4%	NA	12.8%
athenahealth	US	5,156	133.60	8.0%	(5.1%)	(13.6%)	5,411	5,453	222	4.2x	4.0x	3.7x	22.5x	14.5x	14.5x	11.3%	54.0%	27.9%
Zscaler	US	1,050	40.78	NA	48.1%	(13.2%)	4,884	4,586	299	24.1x	20.3x	15.6x	NM	NM	NM	46.2%	NA	(3.7%)
Pivotal Software	US	2,671	19.58	NA	NA	(28.6%)	5,040	4,369	672	7.5x	6.7x	5.4x	NM	NM	NM	27.9%	64.1%	(10.0%)
Coupa Software	US	833	79.10	157.3%	76.1%	12.7%	4,593	4,318	443	19.7x	17.6x	14.2x	NM	NM	NM	34.7%	72.7%	2.0%
LogMeIn	US	3,396	89.10	(17.0%)	(20.2%)	5.1%	4,622	4,623	199	4.1x	3.9x	3.7x	13.6x	10.6x	10.6x	17.4%	82.7%	36.7%
Medidata Solutions	US	1,680	73.31	(6.7%)	17.3%	(12.5%)	4,372	4,346	408	7.4x	6.8x	5.7x	47.9x	28.8x	28.8x	16.8%	76.3%	23.7%
2U	US	1,865	75.19	37.6%	(6.6%)	(12.5%)	4,318	3,854	489	11.1x	9.4x	7.0x	NM	NM	NM	44.2%	78.1%	4.3%
Paylocity	US	2,600	80.32	67.7%	58.5%	3.3%	4,238	4,101	137	11.1x	10.0x	8.2x	NM	42.0x	42.0x	23.8%	NA	23.7%
MongoDB	US	962	81.55	NA	95.5%	13.5%	4,258	3,946	523	20.5x	17.2x	12.6x	NM	NM	NM	51.2%	72.8%	(30.0%)
J2 Global	US	2,487	82.85	11.6%	7.2%	(0.8%)	4,080	4,730	357	4.1x	3.9x	3.7x	11.2x	9.7x	9.7x	7.9%	83.7%	40.5%
Alteryx	US	674	57.21	180.0%	71.8%	1.7%	3,483	3,320	331	20.5x	17.2x	12.9x	NM	NM	NM	50.3%	88.5%	(4.6%)
Tenable	US	1,152	38.88	NA	NA	19.7%	3,617	3,883	24	17.2x	14.9x	11.7x	NM	NM	NM	38.8%	83.7%	(20.6%)

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

# Public Comps – GP Bullhound SaaS Index (Cont'd)

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Qualys	US	1,024	\$89.10	69.7%	25.2%	(2.6%)	\$3,475	\$3,152	\$323	12.3x	11.3x	9.5x	47.1x	30.2x	30.2x	21.3%	78.1%	37.5%
Cornerstone OnDemand	US	1,851	56.75	41.0%	48.8%	1.2%	3,335	3,233	642	6.2x	6.2x	5.7x	NM	38.6x	38.6x	8.5%	74.4%	16.0%
Box	US	1,960	23.91	27.2%	18.2%	(10.1%)	3,386	3,275	204	5.9x	5.4x	4.5x	NM	NM	NM	20.0%	73.8%	3.8%
Blackline	US	806	56.47	64.9%	45.0%	7.7%	3,046	2,931	115	14.4x	13.0x	10.4x	NM	NM	NM	29.7%	81.8%	4.4%
AppFolio	US	672	78.40	66.6%	98.2%	(4.1%)	2,683	2,630	53	15.9x	14.2x	11.5x	NM	59.3x	59.3x	30.2%	62.7%	24.0%
Cloudera	US	1,648	17.65	3.7%	(15.7%)	26.1%	2,667	2,289	378	5.6x	5.1x	4.3x	NM	NM	NM	23.3%	74.9%	(14.9%)
Q2 Holdings	US	844	60.55	47.7%	34.6%	(3.2%)	2,596	2,495	279	11.6x	10.4x	8.4x	NM	NM	NM	23.1%	53.1%	9.6%
Five9	US	905	43.69	86.6%	49.4%	(8.7%)	2,547	2,479	274	11.0x	10.1x	8.6x	NM	69.1x	69.1x	24.8%	61.3%	14.6%
Mimecast	UK	1,192	41.88	47.8%	20.8%	0.8%	2,501	2,424	149	8.6x	7.6x	6.4x	NM	60.3x	60.3x	33.0%	NA	12.7%
Zuora	US	933	23.11	NA	NA	(28.5%)	2,489	2,328	180	11.3x	10.2x	8.0x	NM	NM	NM	36.4%	55.1%	(18.4%)
Yext	US	800	23.70	79.5%	88.1%	(10.5%)	2,336	2,212	125	11.1x	9.7x	7.4x	NM	NM	NM	33.8%	75.5%	(15.4%)
Appian	US	2,000	33.10	32.0%	32.5%	(4.4%)	2,099	2,048	50	9.9x	9.5x	8.3x	NM	NM	NM	27.8%	63.5%	(15.6%)
Talend	FR	989	69.74	74.2%	48.0%	9.3%	2,084	1,992	93	11.3x	9.7x	7.6x	NM	NM	NM	38.1%	77.5%	(15.0%)
Pluralisight	US	825	32.00	NA	NA	(3.7%)	2,013	1,933	214	10.0x	8.6x	6.5x	NM	NM	NM	34.2%	75.8%	(21.4%)
8x8	US	1,225	21.25	59.8%	17.1%	(5.1%)	1,983	1,839	144	5.9x	5.5x	4.6x	NM	NM	NM	19.0%	NA	(2.1%)
MINDBODY	US	1,661	40.65	56.6%	5.4%	9.8%	1,940	1,861	326	8.8x	7.5x	6.0x	NM	NM	NM	36.3%	70.9%	1.2%
SPS Commerce	US	1,336	99.24	75.2%	59.8%	2.8%	1,734	1,562	173	6.7x	6.4x	5.8x	63.2x	32.5x	32.5x	11.4%	67.5%	19.7%
Workiva	US	1,287	39.50	89.0%	71.0%	18.1%	1,711	1,649	81	7.3x	6.9x	6.0x	NM	NM	NM	16.5%	72.7%	(7.8%)
SendGrid	US	433	36.79	NA	34.5%	4.4%	1,707	1,541	182	12.0x	10.7x	8.6x	NM	NM	NM	31.0%	75.8%	12.7%
Everbridge	US	772	57.64	119.7%	63.6%	(0.6%)	1,694	1,680	106	13.7x	11.7x	9.2x	NM	NM	NM	38.9%	71.6%	(2.1%)
Appfio	US	852	36.96	103.2%	32.5%	(1.1%)	1,647	1,506	249	7.1x	6.5x	5.6x	NM	NM	NM	24.8%	71.5%	4.3%
LivePerson	US	1,059	25.95	93.7%	65.3%	(1.7%)	1,619	1,550	70	6.6x	6.3x	5.6x	NM	68.8x	68.8x	13.1%	75.3%	9.1%
ForeScout Technologies	US	818	37.76	NA	22.2%	5.5%	1,580	1,379	220	5.4x	4.9x	4.1x	NM	NM	NM	30.1%	76.5%	(10.2%)
Carbon Black	US	932	21.18	NA	NA	(15.6%)	1,437	1,258	178	6.7x	6.1x	5.0x	NM	NM	NM	27.6%	79.0%	(25.5%)
Benefifocus	US	1,450	40.45	22.0%	67.1%	(5.4%)	1,290	1,365	53	5.1x	5.3x	4.8x	NM	NM	NM	0.0%	51.4%	3.8%
Instructure	US	1,268	35.40	8.6%	(13.9%)	(10.9%)	1,233	1,116	117	6.1x	5.4x	4.3x	NM	NM	NM	32.7%	72.2%	(9.7%)
SecureWorks	US	2,555	14.65	16.8%	72.4%	15.9%	1,198	1,096	103	2.2x	2.1x	1.9x	NM	NM	NM	11.6%	54.3%	(0.9%)
Carbonite	US	954	35.65	61.3%	27.3%	(14.7%)	1,198	1,322	71	5.0x	4.3x	3.8x	49.1x	13.6x	13.6x	24.9%	77.1%	31.8%
Upland Software	US	375	32.31	53.1%	15.4%	(12.5%)	697	837	19	6.9x	5.9x	5.5x	32.8x	16.9x	16.9x	45.6%	69.8%	35.0%
CLX Communications	SE	369	12.08	(13.8%)	68.8%	2.6%	648	697	20	1.8x	1.6x	1.4x	23.6x	17.9x	17.9x	22.1%	24.4%	8.7%
MobileIron	US	884	5.30	49.3%	8.2%	9.3%	545	446	98	2.5x	2.3x	2.1x	NM	NM	NM	11.3%	85.7%	(0.6%)
Castlight Health	US	527	2.70	(37.9%)	(21.7%)	(8.5%)	372	303	74	2.1x	2.0x	1.8x	NM	NM	NM	17.3%	65.5%	(8.5%)
ChannelAdvisor	US	737	12.45	8.3%	37.6%	(3.9%)	340	290	51	2.3x	2.2x	2.1x	NM	35.3x	35.3x	6.8%	79.1%	6.3%
Brightcove	US	494	8.40	16.7%	21.7%	2.4%	302	274	27	1.7x	1.6x	1.5x	NM	NM	NM	7.8%	61.2%	1.3%
Amber Road	US	692	9.62	26.4%	13.4%	10.8%	265	279	8	3.4x	3.3x	3.0x	NM	NM	NM	8.3%	54.9%	3.8%
<b>Average</b>										<b>10.5x</b>	<b>9.4x</b>	<b>7.6x</b>	<b>38.1x</b>	<b>39.5x</b>	<b>39.5x</b>	<b>28.2%</b>	<b>71.0%</b>	<b>7.9%</b>
<b>Median</b>										<b>10.0x</b>	<b>9.1x</b>	<b>7.3x</b>	<b>47.1x</b>	<b>38.6x</b>	<b>38.6x</b>	<b>29.5%</b>	<b>74.0%</b>	<b>6.8%</b>

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration



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# Public Comps – Large-Cap Consolidators

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Microsoft	US	131,000	\$114.37	54.8%	27.9%	3.7%	\$877,014	\$830,853	\$133,669	7.5x	7.1x	6.5x	18.5x	17.1x	15.3x	15.7%	NA	41.5%
Cisco	US	74,200	48.65	45.9%	16.8%	3.6%	222,395	201,488	46,548	4.1x	4.0x	3.8x	13.7x	11.2x	10.8x	5.5%	NA	35.4%
Intel	US	102,700	47.29	25.0%	(4.7%)	(2.6%)	218,054	233,971	12,225	3.5x	3.4x	3.3x	8.1x	7.8x	7.5x	12.1%	61.9%	43.2%
Oracle	US	137,000	51.56	7.2%	14.6%	6.0%	195,342	194,044	60,094	4.9x	4.9x	4.8x	12.0x	10.4x	10.1x	2.0%	NA	46.8%
SAP	DE	93,846	123.23	13.3%	18.1%	0.8%	147,082	150,344	5,730	5.4x	5.3x	4.9x	20.8x	15.9x	14.4x	1.0%	72.4%	33.1%
IBM	US	366,600	151.21	3.8%	(0.9%)	3.2%	138,020	172,022	11,707	2.2x	2.1x	2.1x	10.1x	8.9x	8.6x	2.1%	46.7%	24.1%
Salesforce	US	29,000	159.03	71.7%	40.9%	3.9%	120,338	121,309	3,427	10.3x	9.2x	7.7x	NM	38.6x	31.2x	26.3%	76.9%	23.8%
Hewlett Packard	US	66,000	16.31	11.9%	(7.6%)	(2.6%)	24,003	31,471	5,193	1.0x	1.0x	1.0x	10.4x	5.9x	5.8x	(6.2%)	NA	17.4%
<b>Average</b>										<b>4.9x</b>	<b>4.6x</b>	<b>4.3x</b>	<b>13.3x</b>	<b>14.5x</b>	<b>13.0x</b>	<b>7.3%</b>	<b>64.5%</b>	<b>33.2%</b>
<b>Median</b>										<b>4.5x</b>	<b>4.4x</b>	<b>4.3x</b>	<b>12.0x</b>	<b>10.8x</b>	<b>10.5x</b>	<b>3.8%</b>	<b>67.1%</b>	<b>34.2%</b>

# Public Comps – Advertising Technology

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins		
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA	
Alphabet	US	89,058	\$1,207.08	25.1%	20.1%	(3.1%)	\$834,977	\$736,704	\$102,254	5.9x	5.4x	4.6x	19.3x	14.6x	12.0x	24.5%	58.0%	36.8%	
Adobe	US	17,973	269.95	83.9%	27.0%	2.6%	131,772	128,712	4,944	15.0x	14.3x	12.0x	41.7x	32.1x	26.1x	24.1%	88.3%	44.6%	
Salesforce	US	29,000	159.03	71.7%	40.9%	3.9%	120,338	121,309	3,427	10.3x	9.2x	7.7x	NM	38.6x	31.2x	26.3%	76.9%	23.8%	
Trade Desk	US	713	150.91	158.8%	196.1%	7.7%	6,477	6,335	142	16.7x	13.8x	10.5x	70.1x	44.5x	34.1x	49.7%	76.6%	31.0%	
Hubspot	US	2,441	150.95	84.2%	40.5%	5.6%	5,856	5,614	550	12.7x	11.3x	9.0x	NM	NM	NM	34.4%	81.4%	9.5%	
Teradata	US	10,615	37.71	11.7%	(2.7%)	(8.6%)	4,491	4,106	882	1.9x	1.9x	1.9x	27.9x	12.5x	10.2x	0.2%	52.0%	15.3%	
Criteo	FR	2,678	22.94	(44.7%)	(15.2%)	(12.2%)	1,537	1,079	480	0.5x	1.1x	1.1x	4.2x	3.6x	3.4x	3.8%	88.3%	31.4%	
TechTarget	US	622	19.42	60.5%	0.6%	(20.6%)	536	529	34	4.5x	4.3x	3.8x	24.3x	16.5x	13.0x	14.3%	76.4%	25.9%	
ChannelAdvisor	US	737	12.45	8.3%	37.6%	(3.9%)	340	290	51	2.3x	2.2x	2.1x	NM	35.3x	26.1x	6.8%	79.1%	6.3%	
										Average	7.7x	7.0x	5.8x	31.3x	24.7x	19.5x	20.4%	75.2%	25.0%
										Median	5.9x	5.4x	4.6x	26.1x	24.3x	19.6x	24.1%	76.9%	25.9%

# Public Comps – Business Intelligence/Analytics

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins		
				LTM	6M	11M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA	
Alphabet	US	89,058	\$1,207.08	25.1%	20.1%	(3.1%)	\$834,977	\$736,704	\$102,254	5.9x	5.4x	4.6x	19.3x	14.6x	12.0x	24.5%	58.0%	36.8%	
SAP	DE	93,846	123.23	13.3%	18.1%	0.8%	147,082	150,344	5,730	5.4x	5.3x	4.9x	20.8x	15.9x	14.4x	1.0%	72.4%	33.1%	
IBM	US	366,600	151.21	3.8%	(0.9%)	3.2%	138,020	172,022	11,707	2.2x	2.1x	2.1x	10.1x	8.9x	8.6x	2.1%	46.7%	24.1%	
Adobe	US	17,973	269.95	83.9%	27.0%	2.6%	131,772	128,712	4,944	15.0x	14.3x	12.0x	41.7x	32.1x	26.1x	24.1%	88.3%	44.6%	
NetApp	US	10,300	85.89	95.9%	44.4%	(0.1%)	22,269	19,194	4,817	3.2x	3.1x	3.0x	16.0x	12.6x	11.3x	8.8%	NA	24.4%	
Splunk	US	3,200	120.91	80.3%	26.0%	(5.1%)	17,729	16,905	892	11.5x	10.0x	8.1x	NM	68.6x	48.4x	35.8%	83.2%	14.6%	
Tableau Software	US	3,489	111.74	49.8%	41.1%	3.7%	9,268	8,356	912	8.4x	8.5x	7.4x	NM	NM	NM	12.9%	87.1%	(0.5%)	
Fair Isaac	US	3,546	228.55	61.5%	36.4%	1.9%	6,661	7,300	120	7.3x	6.9x	6.4x	32.5x	29.0x	23.3x	11.4%	NA	23.9%	
New Relic	US	1,393	94.23	92.2%	30.0%	(9.8%)	5,325	4,995	721	13.0x	11.4x	9.1x	NM	NM	75.0x	33.4%	NA	12.8%	
Blackbaud	US	3,182	101.48	16.4%	2.8%	(1.4%)	4,802	5,253	29	6.3x	6.0x	5.5x	37.0x	24.5x	22.1x	10.6%	60.6%	24.6%	
Teradata	US	10,615	37.71	11.7%	(2.7%)	(8.6%)	4,491	4,106	882	1.9x	1.9x	1.9x	27.9x	12.5x	10.2x	0.2%	52.0%	15.3%	
Alteryx	US	674	57.21	180.0%	71.8%	1.7%	3,483	3,320	331	20.5x	17.2x	12.9x	NM	NM	NM	50.3%	88.5%	(4.6%)	
Verint	US	5,700	50.10	18.6%	34.0%	1.8%	3,252	3,656	386	3.1x	2.9x	2.8x	25.6x	12.6x	11.2x	8.8%	66.3%	23.5%	
Cloudera	US	1,648	17.65	3.7%	(15.7%)	26.1%	2,667	2,289	378	5.6x	5.1x	4.3x	NM	NM	NM	23.3%	74.9%	(14.9%)	
Yext	US	800	23.70	79.5%	88.1%	(10.5%)	2,336	2,212	125	11.1x	9.7x	7.4x	NM	NM	NM	33.8%	75.5%	(15.4%)	
Talend	FR	989	69.74	74.2%	48.0%	9.3%	2,084	1,992	93	11.3x	9.7x	7.6x	NM	NM	NM	38.1%	77.5%	(15.0%)	
Hortonworks	US	1,330	22.81	34.6%	15.6%	6.5%	1,856	1,774	81	5.7x	5.2x	4.2x	NM	NM	NM	33.0%	75.1%	(11.2%)	
Workiva	US	1,287	39.50	89.0%	71.0%	18.1%	1,711	1,649	81	7.3x	6.9x	6.0x	NM	NM	NM	16.5%	72.7%	(7.8%)	
Applio	US	852	36.96	103.2%	32.5%	(1.1%)	1,647	1,506	249	7.1x	6.5x	5.6x	NM	NM	NM	24.8%	71.5%	4.3%	
LivePerson	US	1,059	25.95	93.7%	65.3%	(1.7%)	1,619	1,550	70	6.6x	6.3x	5.6x	NM	68.8x	53.4x	13.1%	75.3%	9.1%	
MicroStrategy	US	2,380	140.62	10.1%	10.1%	(4.9%)	1,613	913	700	1.8x	1.8x	1.7x	22.4x	NA	NA	2.1%	NA	0.0%	
Inovalon	US	2,119	10.05	(40.5%)	(4.3%)	(14.5%)	1,534	2,420	84	5.1x	4.2x	3.7x	30.8x	14.3x	12.0x	26.4%	71.6%	29.7%	
SDL	UK	3,700	6.22	(4.2%)	6.0%	(3.4%)	564	535	30	1.4x	1.3x	1.1x	14.0x	12.4x	10.3x	9.1%	53.1%	10.3%	
Affinity	IL	276	18.89	180.3%	162.4%	(10.4%)	398	365	33	5.0x	4.6x	3.8x	NM	42.1x	33.9x	29.2%	86.0%	10.9%	
Gridsum	CN	929	6.42	(36.4%)	(22.7%)	8.3%	198	199	39	2.5x	1.4x	1.0x	NM	10.5x	3.9x	47.5%	NA	13.0%	
Datawatch	US	144	11.65	2.9%	42.1%	(6.8%)	148	144	14	3.6x	3.1x	2.5x	NM	NM	NA	23.8%	NA	3.7%	
Hottolink	JP	87	8.03	52.7%	15.0%	(3.5%)	123	111	24	4.3x	NA	NA	23.4x	NA	NA	NA	NA	NA	
Expert System	IT	231	1.44	(18.5%)	(11.3%)	3.3%	51	68	5	1.6x	2.0x	1.7x	NM	13.6x	8.0x	19.3%	NA	14.5%	
										Average	6.6x	6.0x	5.1x	24.7x	24.6x	22.6x	20.9%	71.8%	11.2%
										Median	5.7x	5.3x	4.6x	23.4x	14.4x	12.0x	23.3%	73.8%	12.8%

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

# Public Comps – Communication

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins		
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA	
Microsoft	US	131,000	\$114.37	54.8%	27.9%	3.7%	\$877,014	\$830,853	\$133,669	7.5x	7.1x	6.5x	18.5x	17.1x	15.3x	15.7%	NA	41.5%	
Cisco	US	74,200	48.65	45.9%	16.8%	3.6%	222,395	201,488	46,548	4.1x	4.0x	3.8x	13.7x	11.2x	10.8x	5.5%	NA	35.4%	
Atlassian	UK	2,638	96.14	178.7%	84.3%	9.7%	22,703	21,789	1,733	26.7x	21.6x	16.7x	NM	NM	61.0x	37.4%	NA	27.1%	
Citrix	US	7,500	111.16	44.9%	21.2%	(1.9%)	15,080	15,718	1,509	5.4x	5.3x	5.1x	17.6x	14.6x	14.3x	4.3%	86.8%	36.4%	
Twilio	US	1,119	86.28	190.7%	130.5%	7.6%	8,408	8,036	795	16.3x	13.7x	10.7x	NM	NM	NM	51.5%	54.7%	3.8%	
RingCentral	US	1,352	93.05	131.8%	50.2%	(0.7%)	7,408	7,202	567	13.6x	11.0x	8.9x	NM	NM	70.3x	31.2%	77.0%	12.1%	
NICE Systems	IL	5,208	113.24	41.8%	25.9%	(1.0%)	6,948	6,889	511	4.9x	4.8x	4.4x	20.7x	15.8x	14.7x	7.8%	69.6%	30.0%	
Nuance	US	11,600	17.32	11.7%	13.3%	4.8%	4,967	6,806	485	3.4x	3.3x	3.2x	23.3x	11.4x	10.6x	3.9%	NA	28.8%	
j2 Global	US	2,487	82.85	11.6%	7.2%	(0.8%)	4,080	4,730	357	4.1x	3.9x	3.7x	11.2x	9.7x	8.7x	7.9%	83.7%	40.5%	
8x8	US	1,225	21.25	59.8%	17.1%	(5.1%)	1,983	1,839	144	5.9x	5.5x	4.6x	NM	NM	NM	19.0%	NA	(2.1%)	
Everbridge	US	772	57.64	119.7%	63.6%	(0.6%)	1,694	1,680	106	13.7x	11.7x	9.2x	NM	NM	NM	38.9%	71.6%	(2.1%)	
LivePerson	US	1,059	25.95	93.7%	65.3%	(1.7%)	1,619	1,550	70	6.6x	6.3x	5.6x	NM	68.8x	53.4x	13.1%	75.3%	9.1%	
CLX Communications	SE	369	12.08	(13.8%)	68.8%	2.6%	648	697	20	1.8x	1.6x	1.4x	23.6x	17.9x	13.4x	22.1%	24.4%	8.7%	
										<b>Average</b>	<b>8.8x</b>	<b>7.7x</b>	<b>6.4x</b>	<b>18.4x</b>	<b>20.8x</b>	<b>27.3x</b>	<b>19.9%</b>	<b>67.9%</b>	<b>20.7%</b>
										<b>Median</b>	<b>5.9x</b>	<b>5.5x</b>	<b>5.1x</b>	<b>18.5x</b>	<b>15.2x</b>	<b>14.5x</b>	<b>15.7%</b>	<b>73.5%</b>	<b>27.1%</b>

# Public Comps – ERP & Enterprise Application

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	6M	11M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Oracle	US	137,000	\$51.56	7.2%	14.6%	6.0%	\$195,342	\$194,044	\$60,094	4.9x	4.9x	4.8x	12.0x	10.4x	10.1x	2.0%	NA	46.8%
SAP	DE	93,846	123.23	13.3%	18.1%	0.8%	147,082	150,344	5,730	5.4x	5.3x	4.9x	20.8x	15.9x	14.4x	1.0%	72.4%	33.1%
Salesforce	US	29,000	159.03	71.7%	40.9%	3.9%	120,338	121,309	3,427	10.3x	9.2x	7.7x	NM	38.6x	31.2x	26.3%	76.9%	23.8%
Workday	US	9,100	145.98	43.3%	17.9%	(4.1%)	31,678	29,870	2,985	12.3x	10.8x	8.6x	NM	68.2x	46.8x	29.8%	74.4%	15.8%
Shopify	CA	3,000	164.46	41.2%	35.2%	13.4%	17,571	15,997	1,574	18.7x	15.5x	11.1x	NM	NM	NM	56.5%	56.4%	3.4%
Constellation Software	CA	14,335	734.82	35.0%	8.1%	0.3%	15,572	15,514	344	5.6x	5.1x	4.4x	36.3x	20.6x	17.2x	24.1%	66.7%	24.7%
Tyler Technologies	US	4,367	245.06	41.3%	18.8%	0.7%	9,472	9,319	153	10.5x	9.9x	8.9x	46.9x	32.8x	28.7x	11.9%	51.3%	30.1%
Sage Group	UK	13,292	7.65	(18.2%)	(15.8%)	(8.8%)	8,297	9,153	415	3.7x	3.8x	3.5x	14.0x	13.2x	12.2x	4.3%	NA	28.9%
Guidewire Software	US	2,292	101.01	31.1%	27.5%	2.6%	8,142	7,380	1,067	11.2x	10.2x	9.3x	NM	45.3x	47.7x	27.2%	NA	22.6%
Yonyou Networks	CN	14,773	4.05	46.1%	(11.4%)	(3.3%)	7,760	7,797	726	7.5x	6.5x	5.3x	44.7x	47.1x	35.1x	27.5%	70.2%	13.7%
Zendesk	US	2,360	71.00	149.2%	54.3%	5.5%	7,523	7,285	684	14.4x	12.4x	9.5x	NM	NM	NM	37.2%	73.0%	6.8%
Aveva Group	UK	4,400	37.75	NA	42.4%	5.3%	6,086	5,961	148	8.5x	10.0x	6.0x	46.4x	28.6x	22.0x	86.8%	NA	35.1%
RealPage	US	6,000	65.90	64.1%	29.0%	7.9%	5,964	6,190	373	8.0x	7.1x	6.2x	47.5x	27.0x	21.8x	29.5%	63.5%	26.3%
Blackbaud	US	3,182	101.48	16.4%	2.8%	(1.4%)	4,802	5,253	29	6.3x	6.0x	5.5x	37.0x	24.5x	22.1x	10.6%	60.6%	24.6%
Wisetech	AU	1,500	15.99	133.7%	106.0%	2.7%	4,792	4,706	91	28.7x	23.4x	17.4x	NM	68.6x	49.6x	40.5%	NA	34.0%
Medidata Solutions	US	1,680	73.31	(6.7%)	17.3%	(12.5%)	4,372	4,346	408	7.4x	6.8x	5.7x	47.9x	28.8x	22.5x	16.8%	76.3%	23.7%
j2 Global	US	2,487	82.85	11.6%	7.2%	(0.8%)	4,080	4,730	357	4.1x	3.9x	3.7x	11.2x	9.7x	8.7x	7.9%	83.7%	40.5%
Prosegur	ES	168,354	6.22	(16.7%)	(22.4%)	(8.4%)	3,721	4,325	1,188	0.9x	0.9x	0.8x	7.2x	7.3x	6.5x	(6.9%)	25.2%	12.3%
Five9	US	905	43.69	86.6%	49.4%	(8.7%)	2,547	2,479	274	11.0x	10.1x	8.6x	NM	69.1x	52.1x	24.8%	61.3%	14.6%
Appian	US	2,000	33.10	32.0%	32.5%	(4.4%)	2,099	2,048	50	9.9x	9.5x	8.3x	NM	NM	NM	27.8%	63.5%	(15.6%)
Enghouse	CA	1,504	63.49	50.7%	20.8%	3.3%	1,728	1,591	137	6.1x	5.9x	5.6x	22.5x	19.5x	18.6x	0.5%	NA	30.2%
SPS Commerce	US	1,336	99.24	75.2%	59.8%	2.8%	1,734	1,562	173	6.7x	6.4x	5.8x	63.2x	32.5x	27.5x	11.4%	67.5%	19.7%
Workiva	US	1,287	39.50	89.0%	71.0%	18.1%	1,711	1,649	81	7.3x	6.9x	6.0x	NM	NM	NM	16.5%	72.7%	(7.8%)
Everbridge	US	772	57.64	119.7%	63.6%	(0.6%)	1,694	1,680	106	13.7x	11.7x	9.2x	NM	NM	NM	38.9%	71.6%	(2.1%)
Technology One	AU	994	4.04	2.5%	1.4%	(3.4%)	1,279	1,238	44	5.8x	5.8x	5.1x	25.7x	23.7x	20.6x	(2.0%)	NA	24.5%
QAD	US	1,900	56.65	64.0%	36.8%	(6.6%)	1,062	936	140	2.9x	2.8x	2.7x	NM	43.8x	39.7x	9.7%	51.7%	6.4%
BasWare	FI	1,745	41.36	(12.3%)	(23.5%)	10.0%	594	602	48	3.5x	3.7x	3.4x	50.1x	NM	46.5x	(8.2%)	50.2%	(1.5%)
Model N	US	864	15.85	5.7%	(9.4%)	(1.9%)	495	497	58	3.2x	3.3x	3.1x	NM	50.6x	29.2x	7.5%	NA	6.5%
American Software	US	471	12.13	7.6%	(3.0%)	(33.2%)	375	290	85	2.6x	2.5x	2.3x	21.9x	18.3x	14.8x	8.7%	NA	13.7%
ChannelAdvisor	US	737	12.45	8.3%	37.6%	(3.9%)	340	290	51	2.3x	2.2x	2.1x	NM	35.3x	26.1x	6.8%	79.1%	6.3%
Amber Road	US	692	9.62	26.4%	13.4%	10.8%	265	279	8	3.4x	3.3x	3.0x	NM	NM	62.7x	8.3%	54.9%	3.8%
Freelancer	AU	390	0.37	0.1%	(0.9%)	(9.4%)	170	145	25	4.1x	4.0x	3.5x	NM	NM	63.7x	(5.9%)	85.0%	1.1%
<b>Average</b>										<b>7.8x</b>	<b>7.2x</b>	<b>6.0x</b>	<b>32.7x</b>	<b>32.5x</b>	<b>29.6x</b>	<b>18.1%</b>	<b>65.6%</b>	<b>17.1%</b>
<b>Median</b>										<b>6.5x</b>	<b>6.2x</b>	<b>5.5x</b>	<b>36.3x</b>	<b>28.7x</b>	<b>26.1x</b>	<b>11.6%</b>	<b>67.5%</b>	<b>17.7%</b>

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

# Public Comps – Financial Application

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Intuit	US	8,900	\$227.40	59.8%	33.0%	5.3%	\$58,822	\$57,544	\$1,716	9.6x	9.1x	8.4x	33.2x	25.0x	22.7x	16.8%	NA	36.3%
Fidelity National	US	52,000	109.07	16.9%	14.4%	1.4%	35,864	44,178	683	5.0x	5.2x	5.0x	17.3x	14.0x	13.1x	(7.0%)	39.1%	37.1%
Fiserv	US	24,000	82.38	28.5%	16.5%	5.0%	33,358	37,816	348	6.5x	6.5x	6.2x	20.5x	17.1x	16.5x	2.7%	47.5%	37.9%
MSCI	US	3,062	177.41	51.7%	17.8%	0.1%	15,760	16,966	1,368	12.4x	11.8x	10.8x	23.4x	21.5x	19.5x	13.2%	80.0%	54.7%
SS&C	US	8,287	56.83	42.6%	10.3%	(2.7%)	13,529	19,655	785	9.0x	5.8x	4.7x	27.6x	17.5x	13.5x	101.7%	49.0%	33.3%
Jack Henry & Associates	US	6,307	160.08	56.0%	33.9%	2.0%	12,355	12,323	31	8.0x	7.8x	7.3x	26.0x	22.2x	20.2x	8.3%	NA	35.0%
Temenos	CH	4,980	163.10	60.1%	36.5%	(10.0%)	11,322	11,746	88	14.7x	13.9x	12.4x	51.9x	36.2x	32.3x	15.6%	82.3%	38.5%
Black Knight	US	4,430	51.95	NA	11.2%	(2.5%)	7,761	9,214	11	8.5x	8.2x	7.6x	24.4x	17.0x	15.4x	5.8%	NA	48.5%
Fair Isaac	US	3,546	228.55	61.5%	36.4%	1.9%	6,661	7,300	120	7.3x	6.9x	6.4x	32.5x	29.0x	23.3x	11.4%	NA	23.9%
Oracle Financial	IN	8,818	53.96	(1.8%)	(6.0%)	(8.6%)	4,623	4,110	543	6.0x	6.0x	5.5x	14.7x	14.4x	12.7x	(5.1%)	NA	42.0%
SimCorp	DK	1,609	86.63	42.2%	24.5%	(7.6%)	3,397	3,382	50	7.9x	7.5x	6.9x	27.3x	26.8x	24.2x	10.2%	61.6%	28.1%
Ellie Mae	US	1,500	94.77	17.0%	4.7%	(9.0%)	3,283	3,040	243	6.6x	6.1x	5.2x	44.7x	23.1x	17.5x	20.9%	60.8%	26.4%
Bottomline Technologies	US	1,700	72.71	127.1%	92.2%	11.8%	3,084	3,101	132	8.0x	7.5x	6.9x	73.7x	31.5x	28.1x	13.1%	NA	24.0%
Envestnet	US	3,516	60.95	22.0%	6.3%	(2.6%)	2,766	3,085	134	4.1x	3.8x	3.3x	37.0x	19.9x	16.8x	19.9%	67.7%	19.0%
Q2 Holdings	US	844	60.55	47.7%	34.6%	(3.2%)	2,596	2,495	279	11.6x	10.4x	8.4x	NM	NM	71.4x	23.1%	53.1%	9.6%
Ebix	US	4,515	79.15	22.6%	5.6%	1.3%	2,492	3,016	135	7.0x	6.1x	5.1x	21.0x	17.9x	15.0x	38.4%	64.6%	34.1%
Applio	US	852	36.96	103.2%	32.5%	(1.1%)	1,647	1,506	249	7.1x	6.5x	5.6x	NM	NM	NM	24.8%	71.5%	4.3%
IRESS	AU	1,881	9.21	2.3%	26.1%	(7.0%)	1,574	1,709	15	5.2x	5.1x	4.8x	22.5x	19.0x	17.2x	1.2%	27.6%	26.8%
MYOB	AU	1,500	2.19	(18.7%)	(8.4%)	1.1%	1,290	1,583	12	5.0x	4.9x	4.5x	15.4x	11.6x	11.2x	(0.8%)	91.3%	42.0%
Average										7.9x	7.3x	6.6x	30.2x	21.4x	21.7x	16.5%	61.2%	31.6%
Median										7.3x	6.5x	6.2x	26.0x	19.9x	17.3x	13.1%	61.6%	34.1%

# Public Comps – Human Capital Management

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
ADP	US	57,000	\$150.66	38.2%	34.8%	4.7%	\$65,905	\$65,734	\$2,173	5.1x	4.8x	4.5x	22.5x	21.6x	18.6x	7.8%	NA	22.1%
ServiceNow	US	7,150	195.63	67.7%	22.5%	0.7%	34,812	33,919	1,750	14.9x	13.0x	10.1x	NM	51.0x	36.5x	36.0%	79.8%	25.6%
Workday	US	9,100	145.98	43.3%	17.9%	(4.1%)	31,678	29,870	2,985	12.3x	10.8x	8.6x	NM	68.2x	46.8x	29.8%	74.4%	15.8%
Ultimate Software	US	4,208	322.19	74.3%	35.6%	6.2%	10,043	9,867	188	9.5x	8.7x	7.3x	NM	36.0x	29.4x	21.8%	64.6%	24.1%
Paycom	US	2,548	155.41	107.9%	47.8%	2.0%	9,111	9,092	55	18.3x	16.4x	13.2x	NM	39.0x	32.0x	28.7%	84.1%	41.9%
Paylocity	US	2,600	80.32	67.7%	58.5%	3.3%	4,238	4,101	137	11.1x	10.0x	8.2x	NM	42.0x	28.5x	23.8%	NA	23.7%
TriNet	US	2,800	56.32	61.8%	23.6%	(3.9%)	3,973	4,165	231	1.2x	4.8x	4.4x	14.7x	13.5x	11.9x	7.0%	74.1%	35.9%
Cornerstone OnDemand	US	1,851	56.75	41.0%	48.8%	1.2%	3,335	3,233	642	6.2x	6.2x	5.7x	NM	38.6x	24.4x	8.5%	74.4%	16.0%
WageWorks	US	1,958	42.75	(30.7%)	(3.4%)	(18.0%)	1,694	1,047	892	2.4x	2.1x	2.0x	11.4x	7.0x	6.3x	3.5%	65.0%	30.0%
Benefitfocus	US	1,450	40.45	22.0%	67.1%	(5.4%)	1,290	1,365	53	5.1x	5.3x	4.8x	NM	NM	64.0x	0.0%	51.4%	3.8%
Instructure	US	1,268	35.40	8.6%	(13.9%)	(10.9%)	1,233	1,116	117	6.1x	5.4x	4.3x	NM	NM	NM	32.7%	72.2%	(9.7%)
Upland Software	US	375	32.31	53.1%	15.4%	(12.5%)	697	837	19	6.9x	5.9x	5.5x	32.8x	16.9x	15.2x	45.6%	69.8%	35.0%
Solium	CA	719	8.75	6.7%	0.8%	2.4%	493	413	90	4.3x	3.8x	3.2x	66.7x	34.9x	16.4x	23.9%	NA	10.9%
Freelancer	AU	390	0.37	0.1%	(0.9%)	(9.4%)	170	145	25	4.1x	4.0x	3.5x	NM	NM	63.7x	(5.9%)	85.0%	1.1%
<b>Average</b>										<b>7.7x</b>	<b>7.2x</b>	<b>6.1x</b>	<b>29.6x</b>	<b>33.5x</b>	<b>30.3x</b>	<b>18.8%</b>	<b>72.2%</b>	<b>19.7%</b>
<b>Median</b>										<b>6.1x</b>	<b>5.6x</b>	<b>5.1x</b>	<b>22.5x</b>	<b>36.0x</b>	<b>28.5x</b>	<b>22.8%</b>	<b>74.1%</b>	<b>22.9%</b>



# Public Comps – Infrastructure

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	6M	11M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
VMware	US	20,615	\$156.06	42.9%	30.1%	5.1%	\$63,787	\$54,725	\$13,300	6.5x	6.2x	5.7x	24.2x	15.6x	15.4x	12.0%	87.9%	39.7%
ServiceNow	US	7,150	195.63	67.7%	22.5%	0.7%	34,812	33,919	1,750	14.9x	13.0x	10.1x	NM	51.0x	36.5x	36.0%	79.8%	25.6%
Red Hat	US	11,870	136.28	24.4%	(6.8%)	(5.4%)	24,173	22,921	1,768	7.3x	7.0x	6.1x	38.1x	26.4x	22.1x	18.0%	NA	26.6%
Atlassian	UK	2,638	96.14	178.7%	84.3%	9.7%	22,703	21,789	1,733	26.7x	21.6x	16.7x	NM	NM	61.0x	37.4%	NA	27.1%
Splunk	US	3,200	120.91	80.3%	26.0%	(5.1%)	17,729	16,905	892	11.5x	10.0x	8.1x	NM	68.6x	48.4x	35.8%	83.2%	14.6%
Citrix	US	7,500	111.16	44.9%	21.2%	(1.9%)	15,080	15,718	1,509	5.4x	5.3x	5.1x	17.6x	14.6x	14.3x	4.3%	86.8%	36.4%
Symantec	US	13,000	21.28	(35.7%)	(17.0%)	5.0%	13,226	15,933	2,325	3.3x	3.4x	3.3x	12.9x	7.8x	7.6x	(4.4%)	NA	43.1%
Akamai Technologies	US	7,443	73.15	53.4%	4.4%	(1.7%)	12,399	12,072	1,857	4.6x	4.5x	4.1x	18.0x	11.4x	10.3x	8.5%	67.7%	39.1%
F5 Networks	US	4,378	199.42	64.2%	39.8%	5.2%	12,128	11,044	1,085	5.2x	5.1x	4.9x	17.0x	13.1x	12.2x	4.2%	NA	38.5%
Juniper Networks	US	9,381	29.97	8.2%	24.6%	3.6%	10,334	9,349	3,123	2.0x	2.0x	1.9x	10.2x	9.2x	8.6x	(5.9%)	59.0%	21.5%
Trend Micro	JP	5,970	64.41	31.7%	14.2%	3.1%	8,943	7,673	1,300	5.5x	5.3x	5.0x	15.9x	16.0x	14.8x	9.6%	80.4%	33.5%
Micro Focus	UK	14,800	18.65	(41.9%)	34.8%	12.9%	8,026	12,139	574	3.8x	3.1x	3.4x	12.4x	8.5x	8.7x	62.8%	NA	36.3%
Nutanix	US	4,000	42.72	90.5%	(10.9%)	(29.4%)	7,386	6,881	934	6.0x	5.6x	4.4x	NM	NM	NM	25.4%	NA	(7.0%)
Pure Storage	US	2,450	25.95	62.8%	33.9%	(2.3%)	6,129	5,459	1,107	4.6x	4.0x	3.1x	NM	42.0x	26.7x	35.1%	66.8%	9.5%
Proofpoint	US	2,047	106.33	21.0%	(5.3%)	(10.1%)	5,588	5,658	134	9.3x	8.0x	6.3x	NM	57.1x	40.7x	38.9%	77.3%	14.0%
New Relic	US	1,393	94.23	92.2%	30.0%	(9.8%)	5,325	4,995	721	13.0x	11.4x	9.1x	NM	NM	75.0x	33.4%	NA	12.8%
LogMeIn	US	3,396	89.10	(17.0%)	(20.2%)	5.1%	4,622	4,623	199	4.1x	3.9x	3.7x	13.6x	10.6x	9.8x	17.4%	82.7%	36.7%
Qualys	US	1,024	89.10	69.7%	25.2%	(2.6%)	3,475	3,152	323	12.3x	11.3x	9.5x	47.1x	30.2x	25.5x	21.3%	78.1%	37.5%
Software AG	DE	4,655	45.61	NA	(13.0%)	(10.4%)	3,375	3,284	459	3.3x	3.2x	3.1x	10.9x	10.6x	10.2x	(4.9%)	77.1%	30.6%
FireEye	US	2,960	17.00	1.1%	1.0%	5.1%	3,258	3,122	1,075	4.0x	3.8x	3.5x	NM	30.1x	28.3x	11.3%	74.6%	12.6%
Commvault	US	2,839	70.00	14.5%	24.4%	2.3%	3,201	2,740	462	3.9x	3.7x	3.4x	NM	24.7x	19.2x	6.2%	NA	15.2%
Sophos	UK	3,362	6.37	(12.9%)	1.5%	(7.9%)	3,037	3,210	120	5.0x	4.6x	4.1x	NM	36.1x	17.0x	22.4%	NA	12.8%
Mimecast	UK	1,192	41.88	47.8%	20.8%	0.8%	2,501	2,424	149	8.6x	7.6x	6.4x	NM	60.3x	39.2x	33.0%	NA	12.7%
Talend	FR	989	69.74	74.2%	48.0%	9.3%	2,084	1,992	93	11.3x	9.7x	7.6x	NM	NM	NM	38.1%	77.5%	(15.0%)
NetScout Systems	US	2,941	25.25	(22.5%)	(1.2%)	(3.1%)	2,034	2,174	459	2.3x	2.3x	2.2x	14.6x	NA	NA	(14.0%)	NA	0.0%
Hortonworks	US	1,330	22.81	34.6%	15.6%	6.5%	1,856	1,774	81	5.7x	5.2x	4.2x	NM	NM	NM	33.0%	75.1%	(11.2%)
Rapid7	US	1,204	36.92	111.2%	45.4%	(2.0%)	1,726	1,611	115	7.3x	6.7x	5.6x	NM	NM	NM	19.1%	72.8%	(6.9%)
Progress Software	US	1,470	35.29	(6.4%)	(8.3%)	(12.3%)	1,589	1,568	138	3.9x	4.0x	3.9x	10.7x	9.4x	9.8x	(0.2%)	86.7%	42.2%
SecureWorks	US	2,555	14.65	16.8%	72.4%	15.9%	1,198	1,096	103	2.2x	2.1x	1.9x	NM	NM	NM	11.6%	54.3%	(0.9%)
A10 Networks	US	855	6.08	(8.6%)	6.5%	(12.5%)	442	315	127	1.4x	1.4x	1.3x	NM	74.9x	27.1x	(3.1%)	77.9%	1.8%
Brightcove	US	494	8.40	16.7%	21.7%	2.4%	302	274	27	1.7x	1.6x	1.5x	NM	NM	32.1x	7.8%	61.2%	1.3%
<b>Average</b>										<b>6.7x</b>	<b>6.0x</b>	<b>5.1x</b>	<b>18.8x</b>	<b>28.6x</b>	<b>24.8x</b>	<b>17.7%</b>	<b>75.3%</b>	<b>18.7%</b>
<b>Median</b>										<b>5.2x</b>	<b>5.1x</b>	<b>4.2x</b>	<b>15.3x</b>	<b>20.3x</b>	<b>19.2x</b>	<b>17.4%</b>	<b>77.4%</b>	<b>15.2%</b>

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

# Public Comps – IT Security

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins		
				LTM	6M	11M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA	
Cisco	US	74,200	\$48.65	45.9%	16.8%	3.6%	\$222,395	\$201,488	\$46,548	4.1x	4.0x	3.8x	13.7x	11.2x	10.8x	5.5%	NA	35.4%	
Palo Alto Networks	US	5,348	225.26	60.1%	27.3%	(1.7%)	21,135	19,651	3,403	8.6x	7.8x	6.5x	NM	30.7x	24.6x	28.2%	NA	25.3%	
Verisign	US	952	160.12	51.6%	37.6%	0.6%	19,522	20,134	1,171	16.9x	16.6x	15.8x	25.7x	23.2x	22.2x	4.3%	84.7%	71.4%	
Check Point Software	IL	4,576	117.67	4.7%	18.8%	1.6%	18,382	16,700	1,682	8.9x	8.8x	8.4x	17.7x	16.3x	15.7x	2.4%	89.7%	53.8%	
Splunk	US	3,200	120.91	80.3%	26.0%	(5.1%)	17,729	16,905	892	11.5x	10.0x	8.1x	NM	68.6x	48.4x	35.8%	83.2%	14.6%	
Fortinet	US	5,462	92.27	156.9%	76.5%	14.0%	15,606	14,173	1,434	8.7x	7.9x	7.0x	65.7x	32.4x	26.5x	19.9%	75.8%	24.6%	
Symantec	US	13,000	21.28	(35.7%)	(17.0%)	5.0%	13,226	15,933	2,325	3.3x	3.4x	3.3x	12.9x	7.8x	7.6x	(4.4%)	NA	43.1%	
Trend Micro	JP	5,970	64.41	31.7%	14.2%	3.1%	8,943	7,673	1,300	5.5x	5.3x	5.0x	15.9x	16.0x	14.8x	9.6%	80.4%	33.5%	
Okta	US	1,176	70.36	142.7%	83.9%	16.4%	7,682	7,410	536	22.8x	19.8x	15.0x	NM	NM	NM	44.5%	73.4%	(13.1%)	
Proofpoint	US	2,047	106.33	21.0%	(5.3%)	(10.1%)	5,588	5,658	134	9.3x	8.0x	6.3x	NM	57.1x	40.7x	38.9%	77.3%	14.0%	
Gemalto	NL	15,000	58.32	30.1%	(4.8%)	0.5%	5,291	6,030	293	1.7x	1.7x	1.7x	14.3x	9.9x	9.3x	(3.7%)	37.7%	17.6%	
Qualys	US	1,024	89.10	69.7%	25.2%	(2.6%)	3,475	3,152	323	12.3x	11.3x	9.5x	47.1x	30.2x	25.5x	21.3%	78.1%	37.5%	
FireEye	US	2,960	17.00	1.1%	1.0%	5.1%	3,258	3,122	1,075	4.0x	3.8x	3.5x	NM	30.1x	28.3x	11.3%	74.6%	12.6%	
Verint	US	5,700	50.10	18.6%	34.0%	1.8%	3,252	3,656	386	3.1x	2.9x	2.8x	25.6x	12.6x	11.2x	8.8%	66.3%	23.5%	
CyberArk	IL	1,015	79.84	94.5%	59.7%	8.4%	2,879	2,522	357	8.6x	7.8x	6.6x	74.1x	32.8x	27.0x	25.7%	87.5%	23.8%	
Mimecast	UK	1,192	41.88	47.8%	20.8%	0.8%	2,501	2,424	149	8.6x	7.6x	6.4x	NM	60.3x	39.2x	33.0%	NA	12.7%	
Varonis Systems	US	1,364	73.25	75.9%	23.7%	2.9%	2,140	1,982	159	8.1x	7.4x	6.3x	NM	NM	NM	26.8%	90.6%	2.6%	
Rapid7	US	1,204	36.92	111.2%	45.4%	(2.0%)	1,726	1,611	115	7.3x	6.7x	5.6x	NM	NM	NM	19.1%	72.8%	(6.9%)	
Imperva	US	1,020	46.45	7.0%	7.8%	(1.4%)	1,625	1,231	394	3.6x	3.5x	3.1x	NM	28.7x	23.4x	9.1%	80.0%	12.2%	
Cheetah Mobile	CN	2,465	9.83	11.7%	(21.2%)	(6.1%)	1,378	982	530	1.4x	1.3x	1.2x	8.3x	9.5x	12.1x	(1.8%)	65.2%	14.0%	
Secureworks	US	2,555	14.65	16.8%	72.4%	15.9%	1,198	1,096	103	2.2x	2.1x	1.9x	NM	NM	NM	11.6%	54.3%	(0.9%)	
F-Secure	FI	1,201	3.61	(28.1%)	(19.6%)	(10.0%)	569	476	93	2.4x	2.1x	1.8x	29.9x	34.4x	17.5x	10.5%	96.0%	6.1%	
MobileIron	US	884	5.30	49.3%	8.2%	9.3%	545	446	98	2.5x	2.3x	2.1x	NM	NM	64.4x	11.3%	85.7%	(0.6%)	
Zix	US	233	5.55	11.7%	30.6%	2.2%	301	283	18	4.2x	4.1x	3.8x	20.7x	14.5x	11.6x	6.5%	80.0%	27.9%	
Absolute Software	CA	495	5.79	(5.3%)	11.6%	(5.2%)	233	198	34	2.1x	2.1x	2.0x	33.1x	18.1x	13.1x	3.5%	NA	11.4%	
										<b>Average</b>	<b>6.9x</b>	<b>6.3x</b>	<b>5.5x</b>	<b>28.9x</b>	<b>27.2x</b>	<b>23.5x</b>	<b>15.1%</b>	<b>76.7%</b>	<b>19.8%</b>
										<b>Median</b>	<b>5.5x</b>	<b>5.3x</b>	<b>5.0x</b>	<b>23.2x</b>	<b>26.0x</b>	<b>22.2x</b>	<b>11.3%</b>	<b>79.0%</b>	<b>14.6%</b>

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

# Public Comps – Marketing Application

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins		
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA	
SAP	DE	93,846	\$123.23	13.3%	18.1%	0.8%	\$147,082	\$150,344	\$5,730	5.4x	5.3x	4.9x	20.8x	15.9x	14.4x	1.0%	72.4%	33.1%	
Acxiom	US	3,380	49.41	99.0%	76.1%	9.1%	3,837	3,971	95	4.3x	4.2x	3.9x	41.1x	21.7x	19.9x	4.7%	NA	19.4%	
Five9	US	905	43.69	86.6%	49.4%	(8.7%)	2,547	2,479	274	11.0x	10.1x	8.6x	NM	69.1x	52.1x	24.8%	61.3%	14.6%	
LivePerson	US	1,059	25.95	93.7%	65.3%	(1.7%)	1,619	1,550	70	6.6x	6.3x	5.6x	NM	68.8x	53.4x	13.1%	75.3%	9.1%	
SDL	UK	3,700	6.22	(4.2%)	6.0%	(3.4%)	564	535	30	1.4x	1.3x	1.1x	14.0x	12.4x	10.3x	9.1%	53.1%	10.3%	
ChannelAdvisor	US	737	12.45	8.3%	37.6%	(3.9%)	340	290	51	2.3x	2.2x	2.1x	NM	35.3x	26.1x	6.8%	79.1%	6.3%	
										<b>Average</b>	<b>5.2x</b>	<b>4.9x</b>	<b>4.4x</b>	<b>25.3x</b>	<b>37.2x</b>	<b>29.4x</b>	<b>9.9%</b>	<b>68.2%</b>	<b>15.5%</b>
										<b>Median</b>	<b>4.9x</b>	<b>4.7x</b>	<b>4.4x</b>	<b>20.8x</b>	<b>28.5x</b>	<b>23.0x</b>	<b>7.9%</b>	<b>72.4%</b>	<b>12.4%</b>

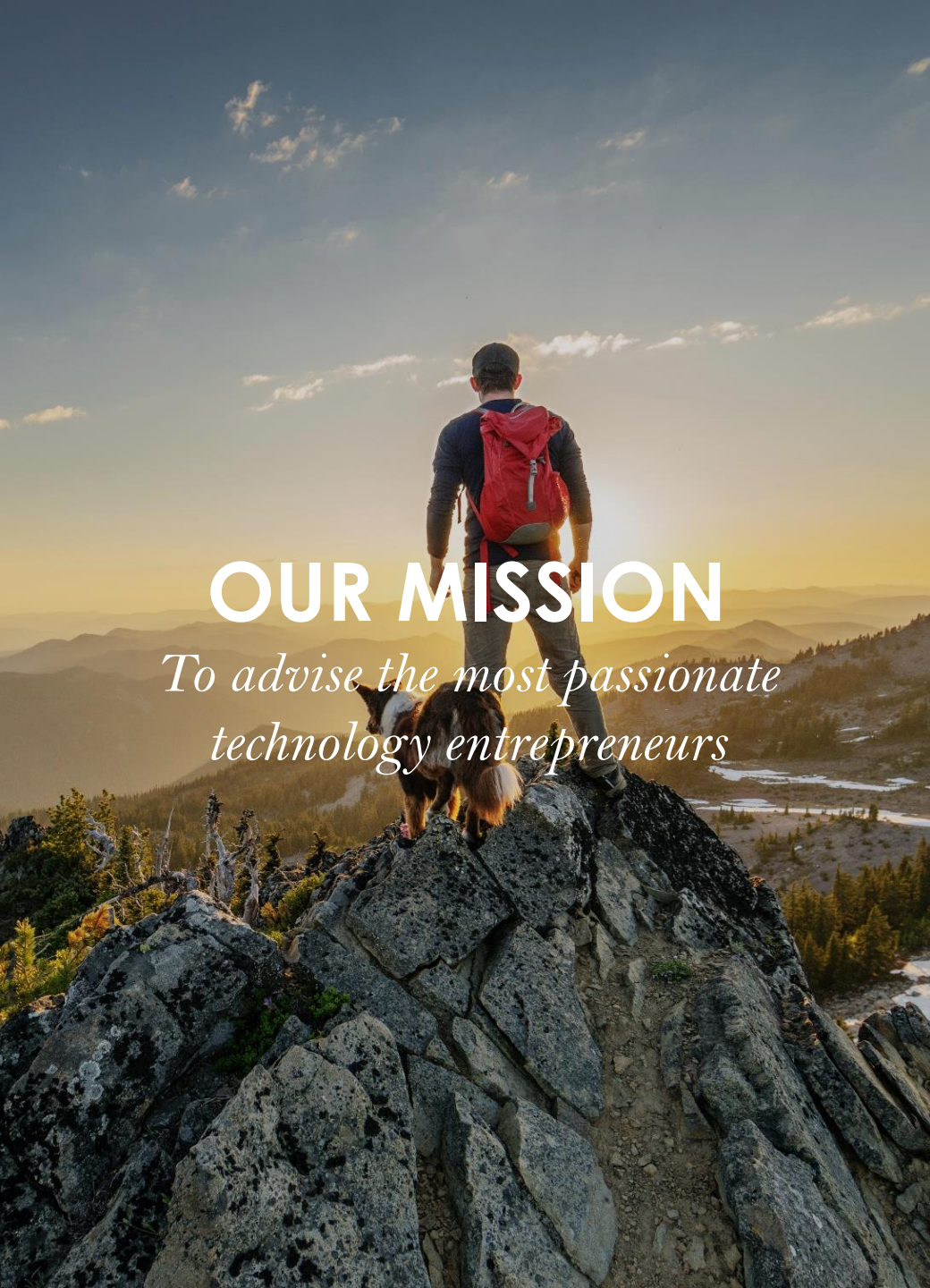
# Public Comps – Storage

Company Name	HQ	Employee	Share Price 09-28-18	Share Price Performance			Market Cap (m)	EV (m)	Cash (m)	EV/Revenue			EV/EBITDA			CY Revenue Growth 18/17	CY18E Margins	
				LTM	L6M	L1M				LTM	CY18E	CY19E	LTM	CY18E	CY19E		Gross	EBITDA
Amazon	US	566,000	\$2,003.00	109.4%	39.9%	3.6%	\$976,946	\$995,685	\$27,050	4.8x	4.2x	3.5x	48.3x	30.9x	23.4x	32.5%	40.3%	13.7%
Microsoft	US	131,000	114.37	54.8%	27.9%	3.7%	877,014	830,853	133,669	7.5x	7.1x	6.5x	18.5x	17.1x	15.3x	15.7%	NA	41.5%
Alphabet	US	89,058	1,207.08	25.1%	20.1%	(3.1%)	834,977	736,704	102,254	5.9x	5.4x	4.6x	19.3x	14.6x	12.0x	24.5%	58.0%	36.8%
Verizon	US	153,100	53.39	8.1%	11.2%	(2.3%)	220,604	336,103	1,750	2.6x	2.6x	2.5x	7.2x	7.1x	6.9x	4.3%	57.5%	36.4%
Oracle	US	137,000	51.56	7.2%	14.6%	6.0%	195,342	194,044	60,094	4.9x	4.9x	4.8x	12.0x	10.4x	10.1x	2.0%	NA	46.8%
IBM	US	366,600	151.21	3.8%	(0.9%)	3.2%	138,020	172,022	11,707	2.2x	2.1x	2.1x	10.1x	8.9x	8.6x	2.1%	46.7%	24.1%
Salesforce	US	29,000	159.03	71.7%	40.9%	3.9%	120,338	121,309	3,427	10.3x	9.2x	7.7x	NM	38.6x	31.2x	26.3%	76.9%	23.8%
CenturyLink	US	47,000	21.20	10.4%	30.8%	(5.8%)	22,899	59,514	700	2.8x	2.5x	2.6x	7.9x	6.6x	6.5x	33.2%	53.5%	38.4%
NetApp	US	10,300	85.89	95.9%	44.4%	(0.1%)	22,269	19,194	4,817	3.2x	3.1x	3.0x	16.0x	12.6x	11.3x	8.8%	NA	24.4%
Dropbox	US	1,858	26.83	NA	(13.4%)	(1.2%)	10,794	9,980	982	8.0x	7.3x	6.3x	NM	33.3x	28.5x	NA	74.0%	21.8%
Iron Mountain	US	24,000	34.52	(11.0%)	5.5%	(4.7%)	9,878	17,872	188	7.1x	4.2x	4.1x	13.0x	12.2x	11.4x	11.2%	57.9%	34.6%
Nutanix	US	4,000	42.72	90.5%	(10.9%)	(29.4%)	7,386	6,881	934	6.0x	5.6x	4.4x	NM	NM	NM	25.4%	NA	(7.0%)
Box	US	1,960	23.91	27.2%	18.2%	(10.1%)	3,386	3,275	204	5.9x	5.4x	4.5x	NM	NM	63.6x	20.0%	73.8%	3.8%
CommVault	US	2,839	70.00	14.5%	24.4%	2.3%	3,201	2,740	462	3.9x	3.7x	3.4x	NM	24.7x	19.2x	6.2%	NA	15.2%
Carbonite	US	954	35.65	61.3%	27.3%	(14.7%)	1,198	1,322	71	5.0x	4.3x	3.8x	49.1x	13.6x	11.4x	24.9%	77.1%	31.8%
Brightcove	US	494	8.40	16.7%	21.7%	2.4%	302	274	27	1.7x	1.6x	1.5x	NM	NM	32.1x	7.8%	61.2%	1.3%
<b>Average</b>										<b>5.1x</b>	<b>4.6x</b>	<b>4.1x</b>	<b>20.1x</b>	<b>17.7x</b>	<b>19.4x</b>	<b>16.3%</b>	<b>61.5%</b>	<b>24.2%</b>
<b>Median</b>										<b>4.9x</b>	<b>4.3x</b>	<b>4.0x</b>	<b>14.5x</b>	<b>13.6x</b>	<b>12.0x</b>	<b>15.7%</b>	<b>58.0%</b>	<b>24.3%</b>

Source(s): Capital IQ as of 9/28/2018

Note: Multiples in excess of 75.0x or less than 0.0x are considered not-material ("NM") and not taken into average calculation consideration

- 1 Key Sector Takeaways
- 2 Recent Software Transaction Trends
- 3 Public Market SaaS Analyses
- 4 SaaS CEO Commentary
- 5 Key SaaS Metrics
- 6 Appendix A: GP Bullhound SaaS Index
- 7 Appendix B: Software Public Comps by Category
- 8 Appendix C: GP Bullhound Software Report Overview, Software Credentials & Team**



## OUR MISSION

*To advise the most passionate  
technology entrepreneurs*

# Software Market Report Overview

- GP Bullhound is a leading technology advisory and investment firm, providing transaction advice and capital to the best entrepreneurs and founders
- With offices in London, San Francisco, Stockholm, Berlin, Manchester, Paris, Hong Kong, Madrid and New York, GP Bullhound provides advice and deep sector knowledge to the most disruptive and market-changing software companies
- GP Bullhound has established a quarterly market report on the **Software as a Service (“SaaS”)** space to provide **quantitative** insights into public and private market valuations across the transaction spectrum and **qualitative** insights into company business models, technology and customer trends
- The report examines the SaaS public company landscape, M&A, private placement and IPO trends

# GP Bullhound Track Record in the Software Space

## Strategic Transactions



Customer Engagement



HCM Software



Consumer Software



UI Design Software



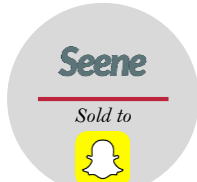
Design Software



Data Visualization Software



Communication Software



Computer Vision



Video Editing Software



Security Software



HCM Software



Analytics Software



Geolocation Software



Security Software



Computer Vision

## Financial Sponsor Transactions



POS Software



Media Editing



Marketing Software



Payment Software



Computer Vision



BPM Software



Payment Software



CSR Rating Software



BPM Software



Analytics Software



Music Software



Security Software



Media Software



Commerce Software



Media Software

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