



# Technology, Media & Telecom

INFRASTRUCTURE SOFTWARE SECTOR REVIEW | Q1 2019

**HW** Harris Williams

# HW Infrastructure Software Introduction

## HARRIS WILLIAMS (“HW”) AS A FIRM

- Founded in 1991
- 330+ professionals across eight offices globally
- 150+ closed transactions in the last 24 months
- 21<sup>st</sup> record year in 2018
- 10 industry groups



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

- 35 professionals across Boston, San Francisco, and London
- 41 closed transactions in the last 24 months

### Horizontal Focus Sectors:

- 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

### Vertical Focus Sectors:

- 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

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## OBSERVATIONS ON KEY INFRASTRUCTURE SOFTWARE TRENDS

- Continued strength in Infrastructure Software with significant interest from strategic acquirers and financial investors alike – IBM’s acquisition of Red Hat became the largest ever enterprise software deal, while KKR’s acquisition of BMC was the largest PE-backed software deal since the recession. The public markets continue to be favorable with over 12 IPOs in the LTM period.
- A key trend has been the democratization of software development, allowing developers and business users alike to access APIs, tools, and technologies, and to create highly rich and relevant apps.
  - On the developer side, this has led to widespread adoption of open source technologies and recognition by industry giants, such as IBM and Microsoft, that to access these developers, you need to embrace these technologies.
  - On the business users side, this has led to the increasing adoption of low code software development models, business process management, project / collaboration software, and other configurable workflow tools.
  - Companies that have played on this theme, especially team-based, developer-centric, high velocity sales models, have traded at significant premiums to their peers.
  - Across verticals, this has led developers and users to create innovative cloud and mobile apps that are shifting those vertical ecosystems to online and mobile.
- Open source, hybrid cloud, and security continue to be key themes. While there has been increasing adoption of public cloud, security, compliance, and control concerns have led to growth in on-premise and private cloud environments.
- Legacy infrastructure software companies with strong cash flow characteristics have drawn interest from both large private equity funds as well as industrial strategic acquirers looking for software opportunities.

# Infrastructure Software Taxonomy

## SOFTWARE DEVELOPMENT / DEVOPS



Solutions that enable the software development lifecycle, including planning, creating, testing, and deploying software applications and systems



Application Lifecycle Management   Continuous Integration / Continuous Delivery   Version Management   Test Management

Select Market Participants

Atlassian   ca technologies   IBM   IDERA   MICRO FOCUS

Microsoft   ORACLE   PERFORCE   RogueWave   software

## IT OPERATIONS MANAGEMENT



Solutions that help to manage the provisioning, capacity, performance, and availability of an organization's IT infrastructure



Infrastructure / App / Database Performance Monitoring   IT GRC and Asset Management   Service and Support Management   Operations Analytics

Select Market Participants

bmc   ca technologies   CISCO   Compuware   helpsystems   IBM

ivanti   MICRO FOCUS   servicenow   solarwinds   zendesk

## SECURITY



Solutions that protect software and systems against malicious attacks, unauthorized access and resource use, and other external and internal risks



Identity and Access Management   Network / App / Data Security   Advanced Threat Protection   SIEM / Security Analysis

Select Market Participants

Check Point   CISCO   okta   paloalto   Qualys

SailPoint   SecureWorks   Symantec   tenable   zscaler

## DATA MANAGEMENT



Solutions that integrate, cleanse, migrate, and manage data across platforms to produce accurate and consistent information



Data Integration   Data Quality and Governance   Database Management   Data Analytics

Select Market Participants

alteryx   hadoop   Microsoft   Rocket   SAP

software   splunk >   syncsort   + a b l e a u   talend

## CLOUD MANAGED SERVICES



Solutions that manage cloud security, computing, storage, network operations, and application stacks to automate and enhance business operations



PaaS / aPaaS / iPaaS   Managed Hosting and Applications   Managed Security   Backup and Disaster Recovery

Select Market Participants

amazon   DELL   Google   Microsoft   MuleSoft / salesforce

rackspace   redhat / IBM   SAP   SecureWorks   vmware

## COLLABORATION / COMMUNICATION



Solutions that enable groups and teams to communicate, share, coordinate, cooperate, and solve problems for the purpose of completing a task



Project Portfolio Management   Business Process Management   Communications PaaS   Agile Project Management

Select Market Participants

Adobe   Atlassian   CISCO   Google   Microsoft

ORACLE   salesforce   smartsheet   twilio   workday

# Case Study: Mailgun

HW's TMT Group advised Thoma Bravo on its acquisition of Mailgun.



has acquired



## COMPANY OVERVIEW

Mailgun is a leading email API software platform that enables developers to embed email capabilities, such as send, receive, and track, into their applications.

Mailgun's robust technology infrastructure, combined with best-in-class developer tools and customer support, ensures market-leading email deliverability across several types of emails, including transactional and promotional use cases. Mailgun's solutions integrate directly with a company's internal applications and business intelligence tools, enabling developers to analyze email deliverability issues, or marketing professionals to monitor email campaign performance and customer engagement.

Mailgun serves over 150,000 organizations, with a network of blue chip clients that include Slack, Stripe, Lyft, and GitHub, among many others.

## RELEVANT SUB-SECTORS

DEVELOPER  
CENTRIC

MARKETING

INFRASTRUCTURE  
SOFTWARE

SAAS

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# Select Infrastructure Software M&A Transactions<sup>1,2</sup>

**Closed April 3, 2019**



Enterprise Value: \$1,000M

EV / Rev: 8.0x

Rev: \$125M

EV / EBITDA: NA

## Vista Equity Partners' acquisition of QuickBase

- QuickBase provides a low-code business application development platform to more than 5,400 customers across verticals, allowing non-technical users to build cloud applications mapped to unique business use cases.
- The Company's software empowers business users to leverage visual modeling tools and existing templates to quickly create a purpose-built workflow solution, and easily connect to existing databases and application APIs to track and analyze data in real time.
- This democratization of software development results in richer and more relevant applications, strong alignment with business use cases, and independence from central IT. Following the acquisition, Vista will provide capital and operating expertise to grow QuickBase's product offerings, enhance workflow automation, and invest in AI and machine learning tools.

**Closed April 3, 2019**



Enterprise Value: \$166M

EV / Rev: NA

Rev: NA

EV / EBITDA: NA

## Atlassian's acquisition of AgileCraft

- AgileCraft provides an enterprise-level agile project management platform, helping business leaders and application teams gain visibility into all projects across the organization, whether planned or in progress, and manage prioritization, resource allocation, bottlenecks, and ROI.
- As businesses continue to focus on digital transformation projects across functional areas and embark on new Agile & DevOps methodologies, there is a growing need to manage these increasing number of projects to better align them with strategic goals and plans.
- The acquisition is highly complementary to Atlassian's Jira and other project management tools. While Jira is better suited for single team use cases, Agilecraft's solutions are targeted towards business leaders and C-suites and will help Atlassian sell at a more strategic level and elevate its presence within large enterprises.

**Closed March 28, 2019**



Enterprise Value: \$560M

EV / Rev: NA

Rev: NA

EV / EBITDA: NA

## Palo Alto Networks' acquisition of Demisto

- Demisto is a leader in the Security Orchestration, Automation, and Response ("SOAR") market, providing security analytics and automation technologies that help Security Operations Center ("SOC") / SecOps teams reduce alerts that require human intervention.
- The Company's solution collects security threat data and alerts from different sources and applications through open APIs, and then analyzes that data with AI / machine learning to drive automated incident response / response playbooks for threat prevention, improving productivity of security analysts, reducing manual workflows, and increasing response times.
- The acquisition will accelerate Palo Alto Networks' Application Framework strategy to operationalize data collected across its 60,000 customers from its own sensors and third party apps, and diversify revenue beyond next-gen firewalls.

**Closed February 28, 2019**



Enterprise Value: \$1,500M

EV / Rev: NA

Rev: NA

EV / EBITDA: NA

## Thoma Bravo's acquisition of ConnectWise

- ConnectWise provides a comprehensive business management platform that automates a variety of workflows across the technology service delivery lifecycle for managed services providers ("MSPs") and IT teams.
- The company's professional services automation ("PSA") and business management solutions include remote monitoring and management ("RMM"), service management, CRM and proposal / contract management, and back office functions like finance and time / billing. The Company has over 25,000 partners in more than 65 countries.
- Thoma Bravo has made a number of investments in the MSP and RMM categories, including Solarwinds, Continuum, and Bomgar, and post-acquisition will continue to drive organic and inorganic growth, as the managed services market experiences significant momentum.

**Closed January 10, 2019**



Enterprise Value: \$250M

EV / Rev: NA

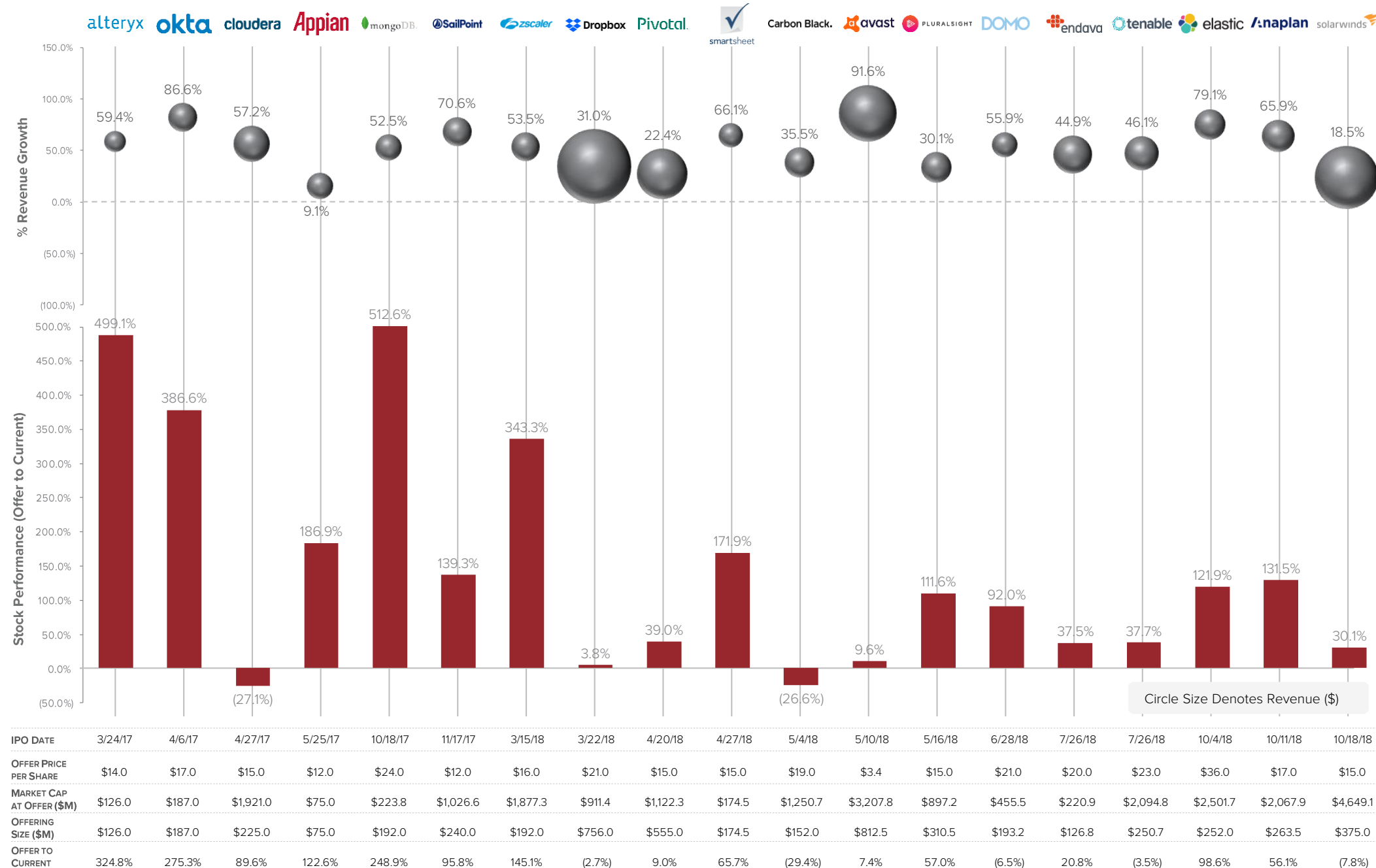
Rev: NA

EV / EBITDA: NA

## AWS' acquisition of CloudEndure

- CloudEndure provides a cloud-based continuous backup and disaster recovery solution for hybrid environments (on-premise and multi-cloud) by enabling the backup to be recovered across multiple environments. The Company also supports migration from on-premise to cloud and from one cloud environment to another cloud across AWS, Azure, and Google Cloud.
- The Company's solutions prevent data loss and downtime due to human errors, network failures, external threats, or any other disruptions, enabling companies to recover and mobilize entire applications with their data across clouds with near-zero downtime and no data loss.
- The acquisition will help AWS provide affordable cloud migration and disaster recovery and backup solutions for customers, and continue to be a significant partner in customers' hybrid cloud and multi-cloud strategies.

# Key Performance Metrics for Recent Infrastructure Software IPOs<sup>1</sup>



# Infrastructure Software – Trading Comparables Metrics

## VALUATION<sup>1</sup>

As of March 29, 2019 (\$ in millions)

| 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.           | 2018A Rev. | 2019E Rev. | LTM EBITDA | Earnings |
| DIVERSIFIED INFRASTRUCTURE SOFTWARE  |         |              |            |           |              |              |                |        |            |                    |            |            |            |          |
| Microsoft                            | MSFT-US | \$868,692    | \$902,674  | 97.6%     | 29.2%        | 115.6%       | 18.0%          | 9.9%   | 42.3%      | 7.1x               | 6.0x       | NM         | 16.8x      | 25.8x    |
| Cisco Systems                        | CSCO-US | 220,133      | 235,575    | 99.6%     | 25.9%        | 92.1%        | 5.5%           | 3.0%   | 31.4%      | 4.3x               | 4.1x       | 3.8x       | 13.7x      | 17.8x    |
| Oracle                               | ORCL-US | 211,831      | 182,879    | 98.8%     | 17.4%        | 32.0%        | 0.4%           | 1.2%   | 42.8%      | 5.3x               | 5.2x       | 5.0x       | 12.5x      | 17.0x    |
| IBM                                  | IBM-US  | 173,068      | 125,080    | 87.1%     | (8.0%)       | (5.5%)       | (1.7%)         | (0.8%) | 22.2%      | 2.2x               | 2.2x       | 2.2x       | 9.9x       | 14.5x    |
| SAP                                  | SAP-DE  | 148,397      | 142,081    | 90.7%     | 10.7%        | 46.0%        | 8.4%           | 4.9%   | 27.1%      | 5.0x               | 4.5x       | 4.2x       | 18.5x      | 37.2x    |
| Micro Focus                          | MCRO-GB | 15,288       | 10,642     | 80.2%     | 87.9%        | 16.0%        | 64.2%          | 8.2%   | 44.5%      | 4.8x               | 4.6x       | NM         | 10.8x      | 22.6x    |
| Software AG                          | SOW-DE  | 2,384        | 2,491      | 63.2%     | (35.3%)      | (10.6%)      | 1.9%           | (0.4%) | 29.3%      | 2.3x               | 2.3x       | 2.2x       | 8.0x       | 13.0x    |
| Median                               |         | \$173,068    | \$142,081  | 90.7%     | 17.4%        | 32.0%        | 5.5%           | 3.0%   | 31.4%      | 4.8x               | 4.5x       | 3.8x       | 12.5x      | 17.8x    |
| CLOUD / SAAS INFRASTRUCTURE SOFTWARE |         |              |            |           |              |              |                |        |            |                    |            |            |            |          |
| ServiceNow                           | NOW-US  | \$48,473     | \$44,440   | 97.9%     | 49.0%        | 303.2%       | 33.4%          | 30.5%  | 4.3%       | 17.3x              | 11.0x      | 8.7x       | NM         | NM       |
| Atlassian                            | TEAM-US | 27,022       | 26,444     | 97.0%     | 108.4%       | 366.2%       | 31.5%          | 32.2%  | 3.0%       | 24.7x              | 15.7x      | NM         | NM         | NM       |
| Okta                                 | OKTA-US | 16,684       | 8,378      | 94.3%     | 107.6%       | NA           | 51.7%          | 27.1%  | NM         | 37.8x              | 24.4x      | 18.6x      | NM         | NM       |
| MongoDB                              | MDB-US  | 10,428       | 5,466      | 95.0%     | 238.8%       | NA           | 80.9%          | 26.1%  | NM         | 33.8x              | 21.9x      | 16.8x      | NM         | NM       |
| Zendesk                              | ZEN-US  | 10,369       | 9,182      | 98.7%     | 77.6%        | 314.6%       | 39.1%          | 32.4%  | NM         | 16.0x              | 10.0x      | 7.9x       | NM         | NM       |
| Nutanix                              | NTNX-US | 7,484        | 6,851      | 58.2%     | (23.2%)      | NA           | 15.0%          | 18.5%  | NM         | 6.0x               | 4.2x       | 3.2x       | NM         | NM       |
| Proofpoint                           | PFPT-US | 7,094        | 6,649      | 93.2%     | 6.8%         | 130.9%       | 34.2%          | 21.2%  | NM         | 9.4x               | 6.7x       | 5.8x       | NM         | NM       |
| New Relic                            | NEWR-US | 5,762        | 5,686      | 86.0%     | 33.2%        | 290.0%       | 35.0%          | 25.4%  | NM         | 12.0x              | 8.0x       | NM         | NM         | NM       |
| Smartsheet                           | SMAR-US | 5,420        | 4,209      | 83.2%     | NA           | NA           | 57.7%          | 36.7%  | NM         | 27.4x              | 15.9x      | 11.4x      | NM         | NM       |
| LogMeIn                              | LOGM-US | 4,263        | 4,084      | 65.1%     | (30.7%)      | 56.5%        | 14.0%          | 3.1%   | 30.2%      | 3.5x               | 3.2x       | 3.0x       | 11.4x      | 114.7x   |
| Qualys                               | QLYS-US | 3,546        | 3,267      | 84.2%     | 13.7%        | 228.7%       | 19.3%          | 15.7%  | 29.7%      | 12.3x              | 9.5x       | 8.1x       | 41.3x      | 53.2x    |
| Mimecast                             | MIME-US | 2,999        | 2,862      | 91.7%     | 33.6%        | 376.8%       | 30.0%          | 23.2%  | 9.3%       | 8.8x               | 6.2x       | NM         | 94.7x      | NM       |
| Talend                               | TLND-US | 1,649        | 1,525      | 68.8%     | 5.1%         | NA           | 30.6%          | 22.0%  | NM         | 7.7x               | 5.4x       | NM         | NM         | NM       |
| Median                               |         | \$7,094      | \$5,686    | 91.7%     | 33.4%        | 296.6%       | 33.4%          | 25.4%  | 9.3%       | 12.3x              | 9.5x       | 8.1x       | 41.3x      | 83.9x    |
| Median                               |         | \$10,399     | \$7,614    | 91.2%     | 25.9%        | 115.6%       | 30.3%          | 19.8%  | 29.5%      | 8.2x               | 6.1x       | 5.4x       | 13.1x      | 22.6x    |

# Infrastructure Software – Trading Comparables Metrics by Sector

## VALUATION<sup>1</sup>

As of March 29, 2019 (\$ in millions)

| 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.           | 2018A Rev. | 2019E Rev. | LTM EBITDA | Earnings |
| SERVICE SUPPORT MANAGEMENT                          |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| ServiceNow  | NOW-US  | \$48,473     | \$44,440   | 97.9%     | 49.0%        | 303.2%       | 33.4%          | 30.5% | 4.3%       | 17.3x              | 11.0x      | 8.7x       | NM         | NM       |
| Zendesk   | ZEN-US  | \$10,369     | \$9,182    | 98.7%     | 77.6%        | 314.6%       | 39.1%          | 32.4% | NM         | 16.0x              | 10.0x      | 7.9x       | NM         | NM       |
| IT MANAGEMENT                                       |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| SolarWinds  | SWH-US  | \$7,706      | \$6,016    | 92.0%     | NA           | NA           | 12.1%          | 12.0% | 44.9%      | 9.0x               | 7.5x       | 6.7x       | 20.2x      | NM       |
| CONNECTIVITY AND COLLABORATION                      |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Atlassian   | TEAM-US | \$27,022     | \$26,444   | 97.0%     | 108.4%       | 366.2%       | 31.5%          | 32.2% | 3.0%       | 24.7x              | 15.7x      | NM         | NM         | NM       |
| Twilio  | TWLO-US | \$17,971     | \$15,910   | 95.0%     | 238.3%       | NA           | 71.1%          | 53.6% | NM         | 23.8x              | 12.7x      | 10.4x      | NM         | NM       |
| Dropbox   | DBX-US  | \$8,418      | \$8,978    | 50.1%     | (30.2%)      | NA           | 32.0%          | 16.1% | 8.8%       | 5.8x               | 4.5x       | 3.9x       | 65.6x      | NM       |
| Smartsheet  | SMAR-US | \$5,420      | \$4,209    | 83.2%     | NA           | NA           | 57.7%          | 36.7% | NM         | 27.4x              | 15.9x      | 11.4x      | NM         | NM       |
| LogMeIn   | LOGM-US | \$4,263      | \$4,084    | 65.1%     | (30.7%)      | 56.5%        | 14.0%          | 3.1%  | 30.2%      | 3.5x               | 3.2x       | 3.0x       | 11.4x      | 114.7x   |
| CORPORATE PERFORMANCE MANAGEMENT (“CPM”) / PLANNING |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Anaplan   | PLAN-US | \$6,242      | \$4,989    | 94.3%     | NA           | NA           | 44.6%          | 23.6% | NM         | 23.6x              | 15.8x      | 12.4x      | NM         | NM       |
| VIRTUALIZATION / CLIENT COMPUTING                   |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Vmware  | VMW-US  | \$77,730     | \$73,740   | 95.8%     | 48.8%        | 251.4%       | 12.7%          | 10.3% | 29.7%      | 8.4x               | 7.1x       | 6.6x       | 28.4x      | 37.1x    |
| Citrix Systems                                      | CTXS-US | \$15,087     | \$13,163   | 85.3%     | 7.4%         | 60.4%        | 4.8%           | 4.2%  | 27.1%      | 5.0x               | 4.7x       | 4.5x       | 18.6x      | 24.3x    |
| Nutanix   | NTNX-US | \$7,484      | \$6,851    | 58.2%     | (23.2%)      | NA           | 15.0%          | 18.5% | NM         | 6.0x               | 4.2x       | 3.2x       | NM         | NM       |
| MOBILE DEVICE MANAGEMENT                            |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| MobileIron  | MOBL-US | \$555        | \$588      | 95.8%     | 10.5%        | 25.7%        | 11.1%          | 9.5%  | NM         | 2.8x               | 2.4x       | 2.1x       | NM         | NM       |
| APPLICATION PERFORMANCE MANAGEMENT                  |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| New Relic   | NEWR-US | \$5,762      | \$5,686    | 86.0%     | 33.2%        | 290.0%       | 35.0%          | 25.4% | NM         | 12.0x              | 8.0x       | NM         | NM         | NM       |
| BUSINESS PROCESS MANAGEMENT                         |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Pegasystems   | PEGA-US | \$5,469      | \$5,083    | 95.7%     | 7.2%         | 160.3%       | 1.9%           | 14.4% | 0.5%       | 6.3x               | 5.0x       | NM         | NM         | NM       |
| Appian  | APPN-US | \$2,329      | \$2,212    | 78.9%     | 36.7%        | NA           | 23.4%          | 16.0% | NM         | 9.9x               | 7.6x       | 6.5x       | NM         | NM       |
| RAPID APPLICATION DEVELOPMENT                       |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Appian  | APPN-US | \$2,329      | \$2,212    | 78.9%     | 36.7%        | NA           | 23.4%          | 16.0% | NM         | 9.9x               | 7.6x       | 6.5x       | NM         | NM       |
| Progress Software                                   | PRGS-US | \$2,054      | \$2,020    | 93.2%     | 15.4%        | 75.3%        | (2.0%)         | 9.0%  | 33.7%      | 5.2x               | 4.7x       | NM         | 15.5x      | 33.7x    |



# Infrastructure Software – Trading Comparables Metrics by Sector

## VALUATION<sup>1</sup>

As of March 29, 2019 (\$ in millions)

| 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.           | 2018A Rev. | 2019E Rev. | LTM EBITDA | Earnings |
| DATA MANAGEMENT                                  |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Splunk   | SPLK-US | \$19,278     | \$18,702   | 86.7%     | 26.6%        | 154.8%       | 43.0%          | 19.4% | NM         | 10.1x              | 7.3x       | 6.0x       | NM         | NM       |
| Tableau Software                                 | DATA-US | \$11,938     | \$10,944   | 93.0%     | 57.5%        | 178.8%       | 29.1%          | 20.0% | NM         | 10.0x              | 7.3x       | 6.0x       | NM         | NM       |
| Alteryx  | AYX-US  | \$6,697      | \$3,212    | 97.9%     | 145.7%       | NA           | 96.6%          | 31.4% | 19.4%      | 23.4x              | 14.5x      | 11.1x      | 120.4x     | 82.1x    |
| Cloudera   | CLDR-US | \$3,366      | \$2,942    | 48.8%     | (49.3%)      | NA           | 44.6%          | 54.8% | NM         | 6.0x               | 3.3x       | 2.7x       | NM         | NM       |
| Talend   | TLND-US | \$1,649      | \$1,525    | 68.8%     | 5.1%         | NA           | 30.6%          | 22.0% | NM         | 7.7x               | 5.4x       | NM         | NM         | NM       |
| Domo   | DOMO-US | \$409        | \$1,058    | 85.7%     | NA           | NA           | 30.2%          | 19.1% | NM         | 2.7x               | 1.9x       | 1.5x       | NM         | NM       |
| ENTERPRISE DATA SEARCH                           |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Elastic  | ESTC-US | \$7,697      | \$5,854    | 79.5%     | NA           | NA           | 75.0%          | 48.2% | NM         | 32.0x              | 17.4x      | NM         | NM         | NM       |
| HADOOP   |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Cloudera   | CLDR-US | \$3,366      | \$2,942    | 48.8%     | (49.3%)      | NA           | 44.6%          | 54.8% | NM         | 6.0x               | 3.3x       | 2.7x       | NM         | NM       |
| DATABASE SYSTEM                                  |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| MongoDB  | MDB-US  | \$10,428     | \$5,466    | 95.0%     | 238.8%       | NA           | 80.9%          | 26.1% | NM         | 33.8x              | 21.9x      | 16.8x      | NM         | NM       |
| APPLICATION LIFECYCLE MANAGEMENT / COLLABORATION |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Atlassian  | TEAM-US | \$27,022     | \$26,444   | 97.0%     | 108.4%       | 366.2%       | 31.5%          | 32.2% | 3.0%       | 24.7x              | 15.7x      | NM         | NM         | NM       |
| PAAS   |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Salesforce.com                                   | CRM-US  | \$125,876    | \$121,394  | 94.8%     | 36.2%        | 119.0%       | 26.3%          | 18.0% | 18.7%      | 9.0x               | 6.7x       | 5.6x       | 48.1x      | 104.8x   |
| Pivotal  | PVTL-US | \$4,771      | \$5,472    | 66.7%     | NA           | NA           | 26.4%          | 21.0% | NM         | 6.9x               | 4.9x       | 4.0x       | NM         | NM       |
| IAAS   |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Amazon   | AMZN-US | \$890,804    | \$876,223  | 86.8%     | 23.0%        | 199.9%       | 25.0%          | 18.7% | 12.0%      | 3.7x               | 2.8x       | 2.4x       | 30.7x      | 73.0x    |
| IT TRAINING                                      |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Pluralsight                                      | PS-US   | \$5,396      | \$2,358    | 82.7%     | NA           | NA           | 40.6%          | 33.5% | NM         | 21.4x              | 13.1x      | 9.5x       | NM         | NM       |
| DIGITAL / CLOUD / AGILE SERVICES                 |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| EPAM Systems                                     | EPAM-US | \$9,107      | \$9,163    | 97.4%     | 47.7%        | 129.3%       | 25.2%          | 22.3% | 16.3%      | 4.7x               | 3.3x       | 2.7x       | 28.8x      | 38.7x    |
| Globant  | GLOB-US | \$2,684      | \$2,570    | 96.5%     | 38.5%        | 127.2%       | 26.3%          | 28.8% | 17.4%      | 5.1x               | 3.5x       | 2.9x       | 29.5x      | 49.7x    |
| Endava   | DAVA-US | \$1,415      | \$403      | 87.3%     | NA           | NA           | 75.4%          | 22.2% | 15.8%      | 4.0x               | 2.8x       | NM         | 25.2x      | 15.0x    |

# Security Software – Trading Comparables Metrics by Sector

## VALUATION<sup>1</sup>

As of March 29, 2019 (\$ in millions)

| 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.           | 2018A Rev. | 2019E Rev. | LTM EBITDA | Earnings |
| ENDPOINT PROTECTION / ANTI-VIRUS  |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Symantec                          | SYMC-US | \$23,156     | \$14,676   | 78.7%     | (11.1%)      | 25.0%        | (2.1%)         | 5.0%  | 26.2%      | 4.9x               | 4.5x       | 4.6x       | 18.7x      | NM       |
| Check Point Software              | CHKP-US | \$20,443     | \$19,644   | 98.7%     | 27.3%        | 50.9%        | 3.4%           | 4.0%  | 47.9%      | 10.6x              | 9.9x       | 9.4x       | 22.0x      | 24.1x    |
| Trend Micro                       | 4704-JP | \$6,847      | \$6,830    | 73.3%     | (16.1%)      | 33.7%        | 6.8%           | 7.0%  | 31.8%      | 4.7x               | 4.2x       | 4.1x       | 14.7x      | 26.5x    |
| Avast                             | AVST-GB | \$4,894      | \$3,522    | 88.9%     | NA           | NA           | 23.8%          | 9.0%  | 51.7%      | 6.1x               | 5.3x       | 5.0x       | 11.7x      | 14.6x    |
| FireEye                           | FEYE-US | \$3,597      | \$3,396    | 81.5%     | (0.8%)       | (6.3%)       | 8.5%           | 7.0%  | NM         | 4.3x               | 3.8x       | 3.6x       | NM         | NM       |
| Sophos Group                      | SOPH-GB | \$2,154      | \$1,886    | 46.0%     | (35.4%)      | 25.8%        | 10.9%          | 9.2%  | 11.9%      | 3.0x               | 2.6x       | 2.4x       | 25.5x      | 70.1x    |
| ENTERPRISE NETWORK FIREWALL       |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Palo Alto Networks                | PANW-US | \$24,038     | \$22,519   | 93.2%     | 33.8%        | 52.5%        | 29.6%          | 17.4% | 7.7%       | 8.7x               | 6.5x       | 5.7x       | 113.7x     | NM       |
| Check Point Software              | CHKP-US | \$20,443     | \$19,644   | 98.7%     | 27.3%        | 50.9%        | 3.4%           | 4.0%  | 47.9%      | 10.6x              | 9.9x       | 9.4x       | 22.0x      | 24.1x    |
| Fortinet                          | FTNT-US | \$15,083     | \$14,244   | 89.0%     | 56.7%        | 188.8%       | 20.7%          | 14.7% | 21.5%      | 8.0x               | 6.4x       | 5.7x       | 37.5x      | 40.8x    |
| WEB SECURITY / SECURE WEB GATEWAY |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Zscaler                           | ZS-US   | \$9,846      | \$8,806    | 97.6%     | 152.7%       | NA           | 60.0%          | 29.6% | 4.2%       | 36.1x              | 22.8x      | NM         | NM         | NM       |
| IDENTITY AND ACCESS MANAGEMENT    |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Okta                              | OKTA-US | \$16,684     | \$8,378    | 94.3%     | 107.6%       | NA           | 51.7%          | 27.1% | NM         | 37.8x              | 24.4x      | 18.6x      | NM         | NM       |
| CyberArk Software                 | CYBR-US | \$4,693      | \$4,377    | 99.7%     | 133.3%       | 186.4%       | 33.9%          | 17.9% | 26.0%      | 12.8x              | 9.5x       | 8.0x       | 49.1x      | 80.6x    |
| SailPoint Technologies            | SAIL-US | \$2,574      | \$2,522    | 83.0%     | 38.8%        | NA           | 29.7%          | 19.5% | 7.7%       | 9.9x               | 7.3x       | 6.1x       | 129.1x     | NM       |
| PRIVILEGED ACCESS MANAGEMENT      |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| CyberArk Software                 | CYBR-US | \$4,693      | \$4,377    | 99.7%     | 133.3%       | 186.4%       | 33.9%          | 17.9% | 26.0%      | 12.8x              | 9.5x       | 8.0x       | 49.1x      | 80.6x    |
| EMAIL / MESSAGING SECURITY        |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Proofpoint                        | PFPT-US | \$7,094      | \$6,649    | 93.2%     | 6.8%         | 130.9%       | 34.2%          | 21.2% | NM         | 9.4x               | 6.7x       | 5.8x       | NM         | NM       |
| Mimecast                          | MIME-US | \$2,999      | \$2,862    | 91.7%     | 33.6%        | 376.8%       | 30.0%          | 23.2% | 9.3%       | 8.8x               | 6.2x       | NM         | 94.7x      | NM       |
| VULNERABILITY MANAGEMENT          |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Qualys                            | QLYS-US | \$3,546      | \$3,267    | 84.2%     | 13.7%        | 228.7%       | 19.3%          | 15.7% | 29.7%      | 12.3x              | 9.5x       | 8.1x       | 41.3x      | 53.2x    |
| Tenable                           | TENB-US | \$3,515      | \$3,046    | 80.4%     | NA           | NA           | 39.8%          | 25.6% | NM         | 12.2x              | 8.2x       | 6.8x       | NM         | NM       |
| Rapid7                            | RPD-US  | \$2,658      | \$2,411    | 96.2%     | 97.9%        | 292.6%       | 25.0%          | 23.6% | NM         | 10.1x              | 7.1x       | 5.8x       | NM         | NM       |
| SECURITY INCIDENT RESPONSE        |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| FireEye                           | FEYE-US | \$3,597      | \$3,396    | 81.5%     | (0.8%)       | (6.3%)       | 8.5%           | 7.0%  | NM         | 4.3x               | 3.8x       | 3.6x       | NM         | NM       |
| ADVANCED THREAT PROTECTION        |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| FireEye                           | FEYE-US | \$3,597      | \$3,396    | 81.5%     | (0.8%)       | (6.3%)       | 8.5%           | 7.0%  | NM         | 4.3x               | 3.8x       | 3.6x       | NM         | NM       |
| Carbon Black                      | CBLK-US | \$976        | \$987      | 39.9%     | NA           | NA           | 26.6%          | 15.3% | NM         | 4.4x               | 3.4x       | 2.8x       | NM         | NM       |

# Security Software – Trading Comparables Metrics by Sector

## VALUATION<sup>1</sup>

As of March 29, 2019 (\$ in millions)

| 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.           | 2018A Rev. | 2019E Rev. | LTM EBITDA | Earnings |
| MANAGED SECURITY SERVICES       |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| SecureWorks                     | SCWX-US | \$1,442      | \$1,476    | 73.9%     | 127.7%       | NA           | 9.3%           | 9.8%  | NM         | 2.7x               | 2.3x       | 2.2x       | NM         | NM       |
| UNIFIED THREAT MANAGEMENT / SMB |         |              |            |           |              |              |                |       |            |                    |            |            |            |          |
| Fortinet                        | FTNT-US | \$15,083     | \$14,244   | 89.0%     | 56.7%        | 188.8%       | 20.7%          | 14.7% | 21.5%      | 8.0x               | 6.4x       | 5.7x       | 37.5x      | 40.8x    |
| Sophos Group                    | SOPH-GB | \$2,154      | \$1,886    | 46.0%     | (35.4%)      | 25.8%        | 10.9%          | 9.2%  | 11.9%      | 3.0x               | 2.6x       | 2.4x       | 25.5x      | 70.1x    |

# Infrastructure Software – Transaction Activity

## SELECT RECENT M&A TRANSACTIONS<sup>1,2</sup>

| Announced Date | Target              | Buyer(s)                              | Description   | Enterprise Value (\$m) | Implied EV / Revenue | Implied EV / EBITDA |
|----------------|---------------------|---------------------------------------|---|------------------------|----------------------|---------------------|
| Pending        | WhiteHat Security   | NTT Security                          | Provider of a risk management platform intended to offer website security services.                       | *                      | *                    | *                   |
| Pending        | Onestream Software  | KKR                                   | Provider of a corporate performance management platform designed to simplify enterprise processes.        | *                      | *                    | *                   |
| 05/01/2019     | Ipswitch            | Progress Software                     | Provider of secure data file transfer and network management software solutions.                          | \$225                  | *                    | *                   |
| 04/30/2019     | Magnitude Software  | 3i Group                              | Provider of enterprise information management software.   | \$179                  | 2.9x                 | *                   |
| 04/03/2019     | AgileCraft          | Atlassian                             | Provider of an all-in-one agile management solution suite for scaled agile software services.             | \$166                  | *                    | *                   |
| 04/03/2019     | QuickBase           | Vista Equity Partners                 | Provider of a low-code application development platform.  | \$1,000                | 8.0x                 | *                   |
| 03/28/2019     | Demisto             | Palo Alto Networks                    | Provider of an automated incident response and security platform to offer integrated threat intelligence. | \$560                  | *                    | *                   |
| 03/26/2019     | Webroot             | Carbonite                             | Provider of internet threat detection and endpoint security solutions.                                    | \$619                  | 2.9x                 | *                   |
| 03/04/2019     | EnableSoft          | Nintex                                | Provider of robotic process automation SaaS solutions.  | *                      | *                    | *                   |
| 03/01/2019     | BluVector           | Comcast                               | Provider of a cyber-threat detection platform that defends enterprises against evolving security threats. | *                      | *                    | *                   |
| 02/28/2019     | MicroPact           | Tyler Technologies                    | Provider of performance management and business intelligence application software.                        | \$185                  | 2.6x                 | *                   |
| 02/25/2019     | ConnectWise         | Thoma Bravo                           | Provider of a remote monitoring and management platform.  | \$1,500                | *                    | *                   |
| 02/25/2019     | Worksoft            | Marlin Equity Partners                | Provider of automation software created for high-velocity business process discovery and testing.         | *                      | *                    | *                   |
| 02/21/2019     | Cylance             | BlackBerry                            | Provider of a cybersecurity platform to predict and prevent execution of advanced threats and malware.    | \$1,500                | 13.8x                | *                   |
| 02/20/2019     | Rogue Wave Software | Perforce Software (Clearlake Capital) | Provider of cross-platform software developer tools and embedded components.                              | *                      | *                    | *                   |
| 02/20/2019     | AppRiver            | Zix                                   | Provider of channel-first cybersecurity and productivity solutions.                                       | \$275                  | 3.8x                 | *                   |
| 02/15/2019     | Interset Software   | Micro Focus                           | Provider of a cyber-threat protection platform created to detect and respond to threats.                  | *                      | *                    | *                   |
| 01/24/2019     | Citus Data          | Microsoft                             | Provider of a DaaS platform designed to make PostgreSQL databases faster and more scalable.               | *                      | *                    | *                   |
| 01/23/2019     | Travis CI           | Idera                                 | Provider of a hosted continuous integration platform for the open source community.                       | *                      | *                    | *                   |
| 01/10/2019     | CloudEndure         | Amazon.com                            | Provider of cloud migration, disaster recovery, and continuous backup solutions.                          | \$250                  | *                    | *                   |

\* Unpublished information.

# Select HW TMT Transactions

|                          |  |                                      |                                  |                                  |                                  |  |                     |                          |                                  |                                   |                                      |                                  |                                   |                                  |
|--------------------------|--|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|--|---------------------|--------------------------|----------------------------------|-----------------------------------|--------------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| <br>acquired<br>         | <br>strategic investment from<br>                      | <br>acquired by<br>                  | <br>acquired<br>                 | <br>acquired by<br>              | <br>acquired<br>                 | <br>acquired by<br>                        | <br>acquired by<br> | <br>acquired<br>         | <br>acquired by<br>              | <br>acquired by<br>               | <br>acquired<br>                     | <br>acquired by<br>              | <br>acquired by<br>               | <br>acquired by<br>              |
| <br>acquired<br>         | <br>a wholly-owned affiliate of<br><br>acquired by<br> | <br>invested in<br>                  | <br>majority investment from<br> | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>                        | <br>acquired by<br> | <br>acquired by<br>      | <br>investment from<br>          | <br>acquired<br>                  | <br>acquired by<br>                  | <br>merged with<br>              | <br>investment from<br>           | <br>acquired by<br>              |
| <br>acquired by<br>      | <br>acquired<br>                                       | <br>acquired by<br>                  | <br>investment from<br>          | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>                        | <br>acquired by<br> | <br>acquired<br>         | <br>majority investment from<br> | <br>growth investment from<br>    | <br>acquired by<br>                  | <br>majority investment from<br> | <br>acquired by<br>               | <br>majority investment from<br> |
| <br>recapitalized by<br> | <br>acquired by<br>                                    | <br>acquired<br>                     | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>                        | <br>acquired by<br> | <br>recapitalized by<br> | <br>acquired by<br>              | <br>acquired by<br>               | <br>acquired by<br>                  | <br>acquired by<br>              | <br>acquired by<br>               | <br>acquired by<br>              |
| <br>acquired by<br>      | <br>acquired by<br>                                    | <br>acquired a majority stake in<br> | <br>acquired by<br>              | <br>majority investment from<br> | <br>minority investment from<br> | <br>acquired by<br>                        | <br>acquired by<br> | <br>acquired by<br>      | <br>acquired by<br>              | <br>strategic investment from<br> | <br>merged with<br>                  | <br>acquired by<br>              | <br>acquired by<br>               | <br>acquired by<br>              |
| <br>acquired by<br>      | <br>acquired by<br>                                    | <br>acquired by<br>                  | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>                        | <br>acquired by<br> | <br>acquired by<br>      | <br>acquired by<br>              | <br>acquired by<br>               | <br>majority recapitalization by<br> | <br>recapitalized by<br>         | <br>acquired by<br>               | <br>acquired by<br>              |
| <br>acquired<br>         | <br>acquired by<br>                                    | <br>acquired by<br>                  | <br>acquired by<br>              | <br>acquired by<br>              | <br>acquired by<br>              | <br>significant equity investment from<br> | <br>acquired by<br> | <br>acquired by<br>      | <br>acquired by<br>              | <br>minority investment from<br>  | <br>acquired by<br>                  | <br>acquired by<br>              | <br>strategic investment from<br> | <br>acquired by<br>              |



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## Sources

1. FACTSET.
2. PITCHBOOK.

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