

Americas Technology: Software

Views from the Valley: 4Q19

Views from the Valley is where we review trends in venture capital investment in order to identify emerging software and tech themes. During 4Q19, US VC funding declined 3% from 3Q levels to \$23.9bn and represented a decline of 8% yoy. Deal sizes increased 21% qoq, and there was 1 “mega-deal” (\$500mn+) in the quarter vs. 2 in 4Q18. Furthermore, there were 193 deals (+17% yoy) in 2019 that involved VC-backed private companies with \$1bn+ valuations, of which 46 of those deals occurred in 4Q19 (down 26% qoq, down 22% yoy).

In terms of AR/VR funding, in 2019, investments in companies innovating in virtual and augmented reality increased in aggregate dollar amount, although decreased in the number of deals. 144 deals were completed in 2019 for a total of \$834mn (up 20% yoy), of which 21 of those deals occurred in 4Q19 (down 50% qoq, down 48% yoy) for a total of \$55mn (down 81% qoq and down 72% yoy). On the other hand, investments in companies innovating in containers and serverless compute reached its highest levels in 2019, with 21 deals completed for a total of \$134mn (up 30% yoy). Furthermore, microservices and DevOps declined in aggregate dollar amount as well as in terms of number of deals completed in the quarter. 8 deals were completed vs. 10 in 3Q19 for a total of \$182mn (down 61% sequentially and down 68% yoy).

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Venture capital funding

According to data from CB Insights, VC investment in private and emerging companies in the United States totaled \$23.9bn in 4Q19, down 3% sequentially and down 8% annually (we note that CB Insights continuously refines its historical database; as such, figures cited in new editions of *Views from the Valley* may not be an exact match with prior editions).

Over the course of the entirety of 2018, we saw ten “mega-deals” (defined as deals greater than \$500mn), 4 of which were in 1Q18. In the fourth quarter of 2019, there was a single mega-deal that was over \$500mn, compared to two in 4Q18. The mega-deal this quarter was Chime, which offers banking services that are accessible

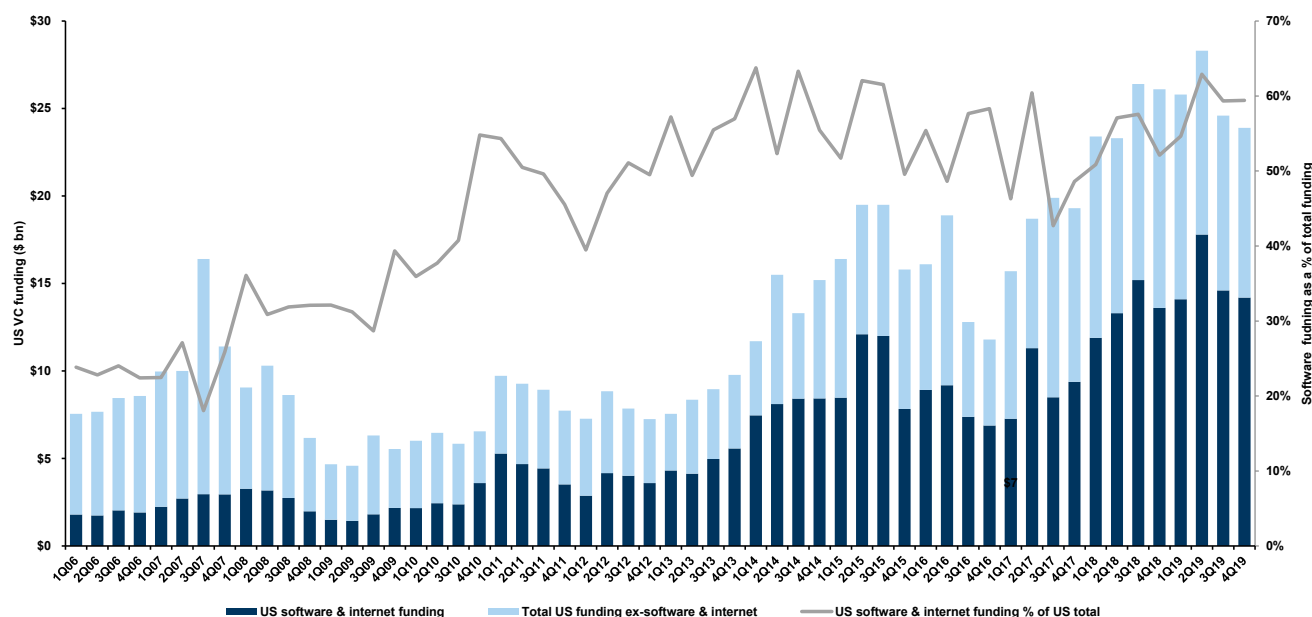
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via its mobile banking application, which raised \$500mn on December 6th.

Total US VC investment was down 3% qoq while the number of deals was down 20% qoq, leading to an increase in the average deal size from \$12.8mn in 3Q19 to \$15.5mn in 4Q19. This figure is well above the historical quarterly average of \$9mn (beginning in 1Q11). In our view, this indicates that the funding environment remains generally robust. In the quarter, software and internet received 59% of the total funding, similar to last quarter's figure and above the historical (from 1Q11) average of 54%.

Exhibit 1: Aggregate VC investment was \$23.9bn in 4Q19...

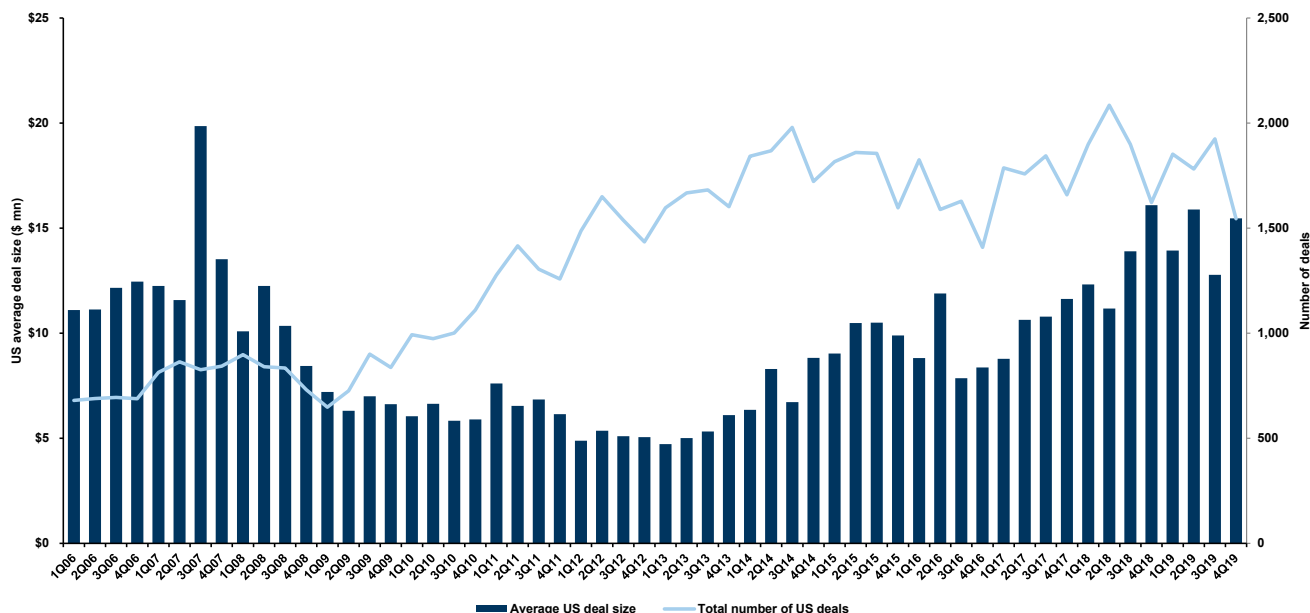
VC investment in private and emerging companies in the US (\$ bn)



Source: CB Insights, Goldman Sachs Global Investment Research

Exhibit 2: ...with deal counts declining and average deal sizes increasing

Average deal size (\$ mn) and number of deals



Source: CB Insights, Goldman Sachs Global Investment Research

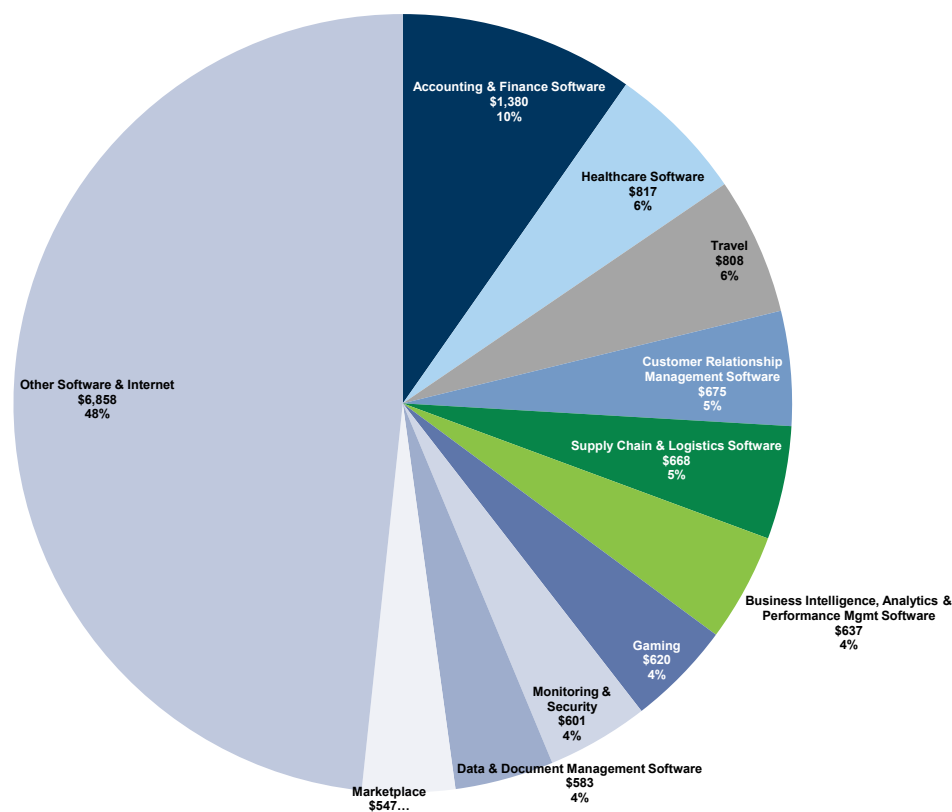
Breaking down the quarter in software and internet funding

We screened CB Insights for a more detailed breakdown of funding in the software and internet sectors. Of the \$14.2bn of total US VC investment in companies defined by CB Insights as being in the software or internet industries in 4Q19, all 10 of the top 10 sub-categories received over \$500mn, similar to the last two quarters:

- Accounting & Finance Software: \$1.38bn (10%)
- Healthcare Software: \$817mn (6%)
- Travel: \$808mn (6%)
- Customer Relationship Management Software: \$675mn (5%)
- Supply Chain & Logistics Software: \$668mn (5%)
- Business Intelligence, Analytics, & Performance Management Software: \$637mn (4%)
- Gaming: \$620mn (4%)
- Monitoring & Security: \$601mn (4%)
- Data & Document Management Software: \$583mn (4%)
- Marketplace: \$547mn (4%)

Exhibit 3: US software & internet VC investment by industry subgroup in 4Q19

Total equity funding: \$14.2bn; \$ in mn



Source: CB Insights, Goldman Sachs Global Investment Research

In Exhibit 4, we list the companies that received the most funding in each of the top five software/internet subgroups in 4Q19. We note that for several subgroups, a single large deal during the quarter helped to boost the funding metrics: Chime for \$500mn in Accounting & Finance Software and Convoy for \$400mn in Supply Chain & Logistics Software.

Exhibit 4: Companies that received the most funding in each of the top software & internet categories in 4Q19

\$ in mn

Accounting & Finance Software		Healthcare Software	
Top-funded companies	4Q19 funding (\$mn)	Top-funded companies	4Q19 funding (\$mn)
Chime	\$500.0	Innovaccer	\$60.0
BlueVine	\$102.5	ArcherDx	\$55.0
Unqork	\$80.0	OM1	\$50.0
nCino	\$80.0	Viz.ai	\$50.0
Juniper Square	\$75.0	Akoya Biosciences	\$50.0
Total Accounting & Finance Software	\$1,380.2	Total Healthcare Software	\$817.4
Travel		Customer Relationship Management Software	
Top-funded companies	4Q19 funding (\$mn)	Top-funded companies	4Q19 funding (\$mn)
Vacasa	\$319.0	Freshworks	\$150.0
Bird Rides	\$275.0	Highspot	\$75.0
Passport	\$65.0	Weave	\$70.0
Wheels Labs	\$50.0	Clari	\$60.0
Domio	\$50.0	Kustomer	\$60.0
Total Travel	\$808.1	Total Customer Relationship Management Software	\$675.4
Supply Chain & Logistics Software			
Top-funded companies	4Q19 funding (\$mn)		
Convoy	\$400.0		
Fabric	\$110.0		
Trackonomy	\$38.8		
Shipwell	\$35.0		
Updater	\$20.0		
Total Supply Chain & Logistics Software	\$667.8		

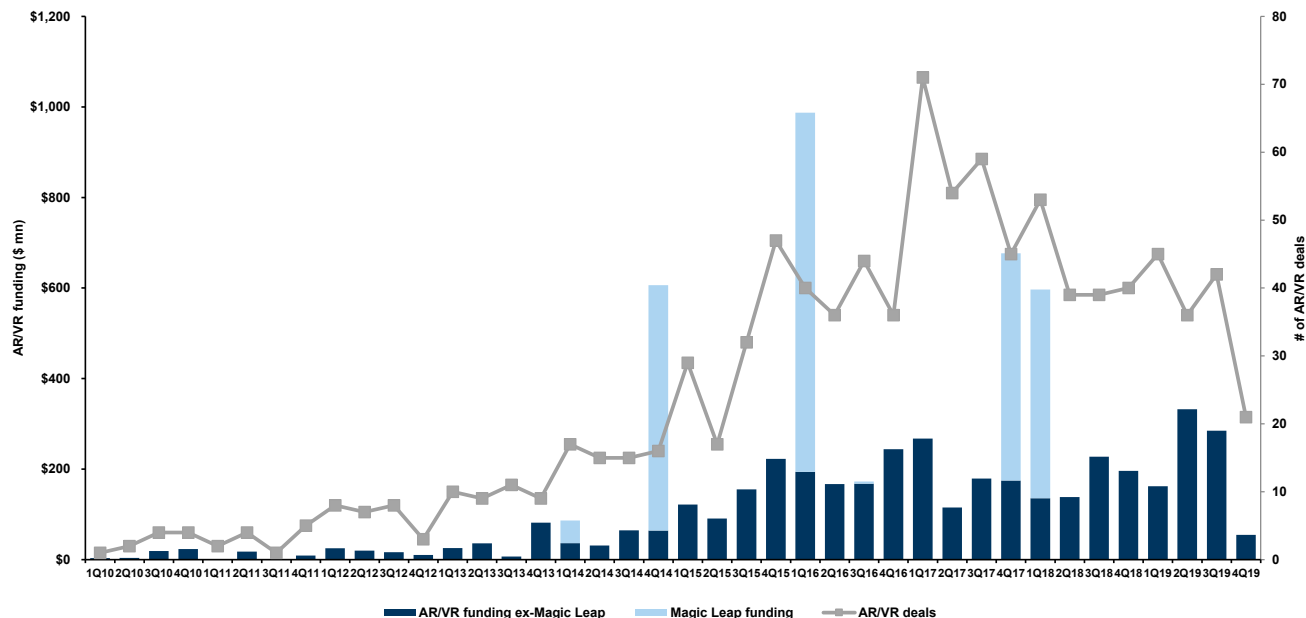
Source: CB Insights, compiled by Goldman Sachs Global Investment Research

An update on AR/VR funding

Investments in companies innovating in virtual and augmented reality were down sequentially and annually in 4Q19. 21 deals were completed vs. 42 in 3Q19, according to CB Insights, for a total of \$55mn (down 81% sequentially and down 72% yoy, excluding Magic Leap). We note that in 2019, total funding grew 20% yoy to \$834mn although the total number of deals declined 16% yoy to 144 deals completed in the year. We continue to believe that potential use cases for AR/VR will continue to grow as the technology continues to mature and investments continue to increase. Please see our [updated Profiles in Innovation on extended reality](#) for additional details.

Exhibit 5: Funding for AR/VR startups was down 72% yoy (down 81% qoq) ex-Magic Leap in 4Q19

Global VC investments in virtual and augmented reality startups



Source: CB Insights, compiled by Goldman Sachs Global Investment Research

Containers, serverless computing, microservices, & DevOps funding

We track funding for companies innovating on containers and serverless computing given our view that they enable the microservices journey. We also track microservices and DevOps funding given their increasing popularity as workloads are being migrated to and run in the public cloud. For additional details, please see our recent [Cloud Platforms](#) report.

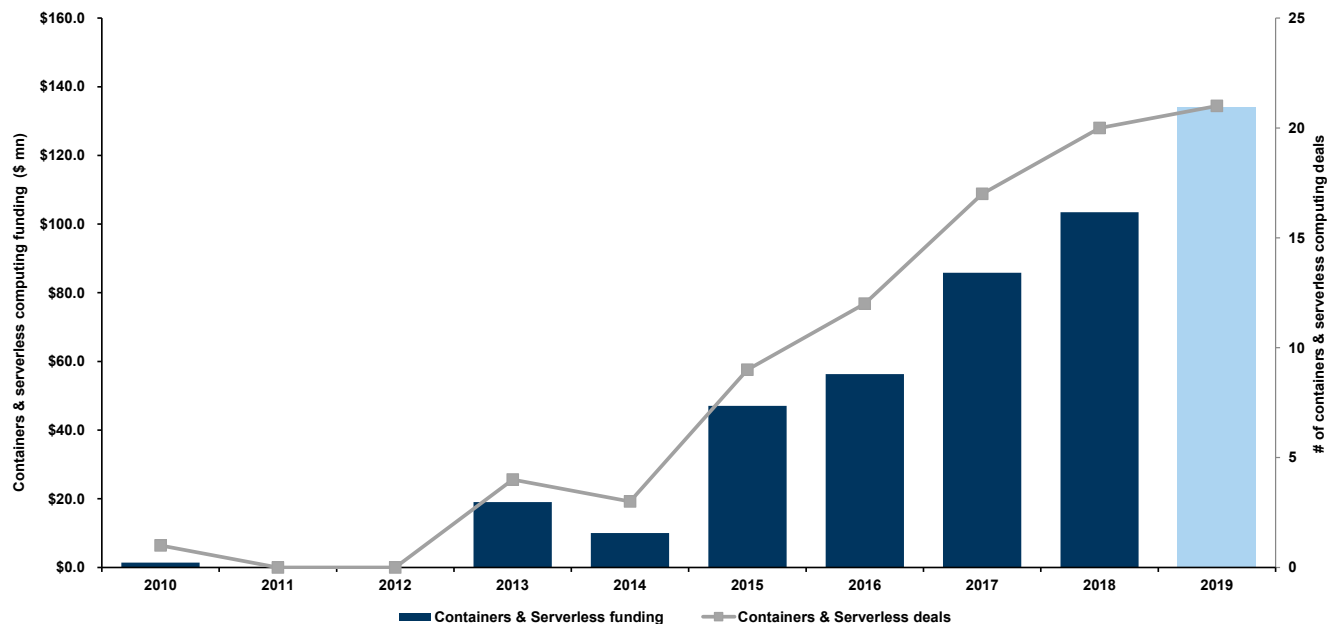
Containers and serverless computing companies have raised a total of \$457mn since 2010, reaching a new peak in total funding in 2019. In 2019, there were 21 deals (vs. 20 in 2018) totaling \$134mn (vs. \$104mn in 2018).

We highlight several deals that occurred in 4Q19:

- A \$35mn Series C round for Diamanti, a purpose-built, fully integrated enterprise Kubernetes platform that spans on-premise and public cloud environments
- A \$14mn Series A round for Styra, which offers security products that help define, enforce, and validate security across Kubernetes environments.
- A \$8mn Series A round for Rafay Systems, which offers lifecycle management for containerized applications

Exhibit 6: Funding for containers & serverless computing startups reached a new peak in 2019 of \$134mn in total funding (+30% yoy)

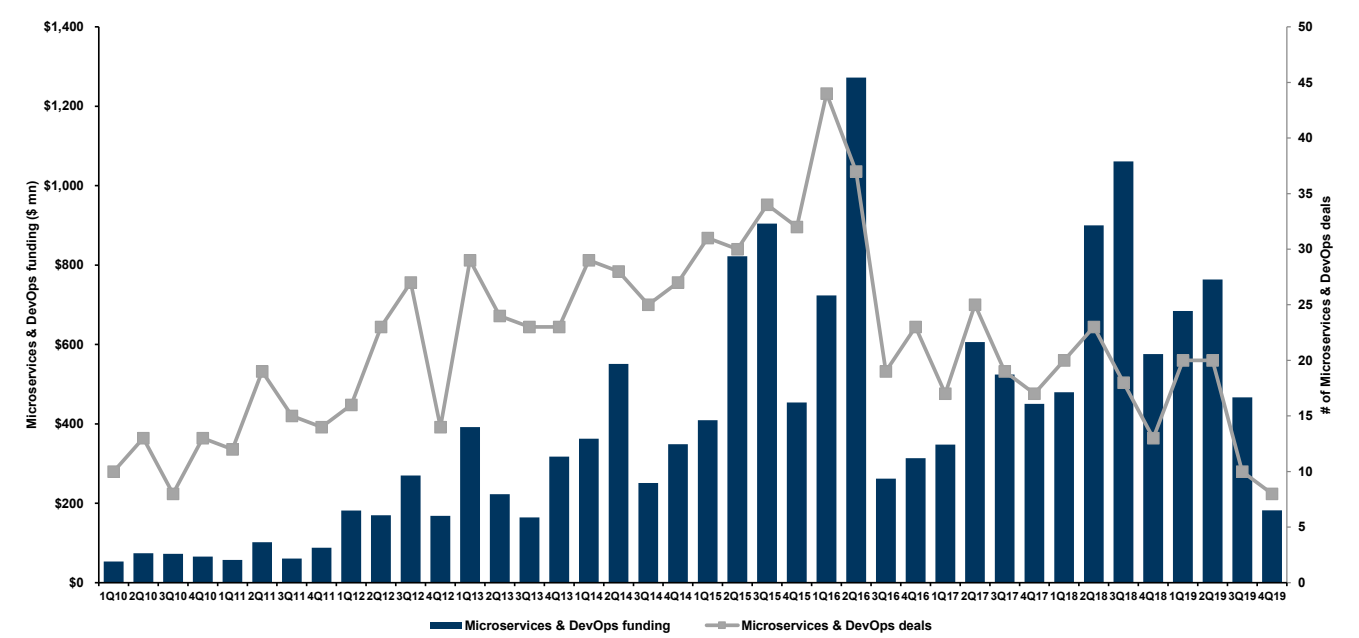
Global VC investments in containers and serverless startups



Source: CB Insights, Goldman Sachs Global Investment Research

As workloads are being migrated to the public cloud, further enabled by containers and serverless, companies are shifting to a microservices and DevOps design framework. We tracked funding for companies innovating in microservices and DevOps and note that the cadence of investments accelerated in 2016 and 2018. Since 2010, there have been 852 deals for a total of \$16.2bn. Recently, in 4Q19, there were 8 deals (vs. 13 in 4Q18 and 10 in 3Q19) for a total of \$182mn (-68% yoy, -61% qoq). We continue to believe that companies are increasingly adopting microservices and DevOps application architectures, which is further motivated by containers and serverless computing, for a broad set of use cases.

Exhibit 7: Funding for Microservices & DevOps was down 61% sequentially (-68% yoy) in 4Q19
Global VC investments in microservices & DevOps startups



Source: CB Insights, Goldman Sachs Global Investment Research

Learning the alphabet

In Exhibit 8, we list the software and internet companies that received the top 10 funding rounds by each type of round in 4Q19. We believe separating the companies by type of funding round provides context for the maturities of the companies and can illuminate trends.

Exhibit 8: Top software & internet funding by series, 4Q19

\$ in mn

Series A		
Company	Product Type	4Q19 funding (\$mn)
Layer One	Asset & Financial Management & Trading Software	\$50.0
LeaseQuery	Accounting & Finance Software	\$40.0
Contentstack	Content Management Software	\$31.5
The Yes	Apparel & Accessories	\$30.0
Constellation Labs	Networking & Connectivity Software	\$29.7
Curated	Customer Relationship Management Software	\$27.5
Observe.ai	Customer Relationship Management Software	\$26.0
Bison Trails	Data Storage	\$25.5
Gravitational	Web Development	\$25.0
Game Ivy	Gaming	\$25.0
Total Series A		\$2,028
Series B		
Company	Product Type	4Q19 funding (\$mn)
Automation Anywhere	Scientific, Engineering Software	\$290.0
Fabric	Supply Chain & Logistics Software	\$110.0
Instabase	Application & Data Integration Software	\$105.0
Hometap	Asset & Financial Management & Trading Software	\$100.0
Unqork	Accounting & Finance Software	\$80.0
Zeus	Marketplace	\$55.0
Sisu	Business Intelligence, Analytics & Performance Mgmt Software	\$52.5
Viz.ai	Healthcare Software	\$50.0
Domio	Travel	\$50.0
Wheels Labs	Travel	\$50.0
Total Series B		\$3,025
Series C		
Company	Product Type	4Q19 funding (\$mn)
Vacasa	Travel	\$319.0
Next Insurance	Marketplace	\$250.0
Ripple	Payments	\$200.0
Clumio	Data Storage	\$135.0
Algolia	Search	\$110.0
Figure Technologies	Asset & Financial Management & Trading Software	\$103.0
SparkCognition	Manufacturing, Warehousing & Industrial Software	\$100.0
Armis	Monitoring & Security	\$100.0
Juniper Square	Accounting & Finance Software	\$75.0
Workato	Application & Data Integration Software	\$70.0
Total Series C		\$3,350
Series D		
Company	Product Type	4Q19 funding (\$mn)
Convoy	Supply Chain & Logistics Software	\$400.0
Bird Rides	Travel	\$275.0
Scopely	Gaming	\$200.0
Guild Education	HR & Workforce Management Software	\$157.0
Faire	Retail & Inventory Software	\$150.0
Automatic	Web Development	\$80.7
Highspot	Customer Relationship Management Software	\$75.0
Weave	Customer Relationship Management Software	\$70.0
Passport	Travel	\$65.0
Iterable	Advertising, Sales & Marketing	\$60.0
Total Series D		\$2,141
Series E+		
Company	Product Type	4Q19 funding (\$mn)
Chime	Accounting & Finance Software	\$500.0
Databricks	Data & Document Management Software	\$400.0
Vroom	Auto	\$254.0
Riskified	Monitoring & Security	\$165.0
Freshworks	Customer Relationship Management Software	\$150.0
BlueVine	Accounting & Finance Software	\$102.5
Pendo	Collaboration & Project Management Software	\$100.0
WalkMe	Education & Training Software	\$90.0
nCino	Accounting & Finance Software	\$80.0
SnapLogic	Application & Data Integration Software	\$72.0
Total Series E+		\$2,228

Source: CB Insights, compiled by Goldman Sachs Global Investment Research

Deals involving billion-dollar valuations

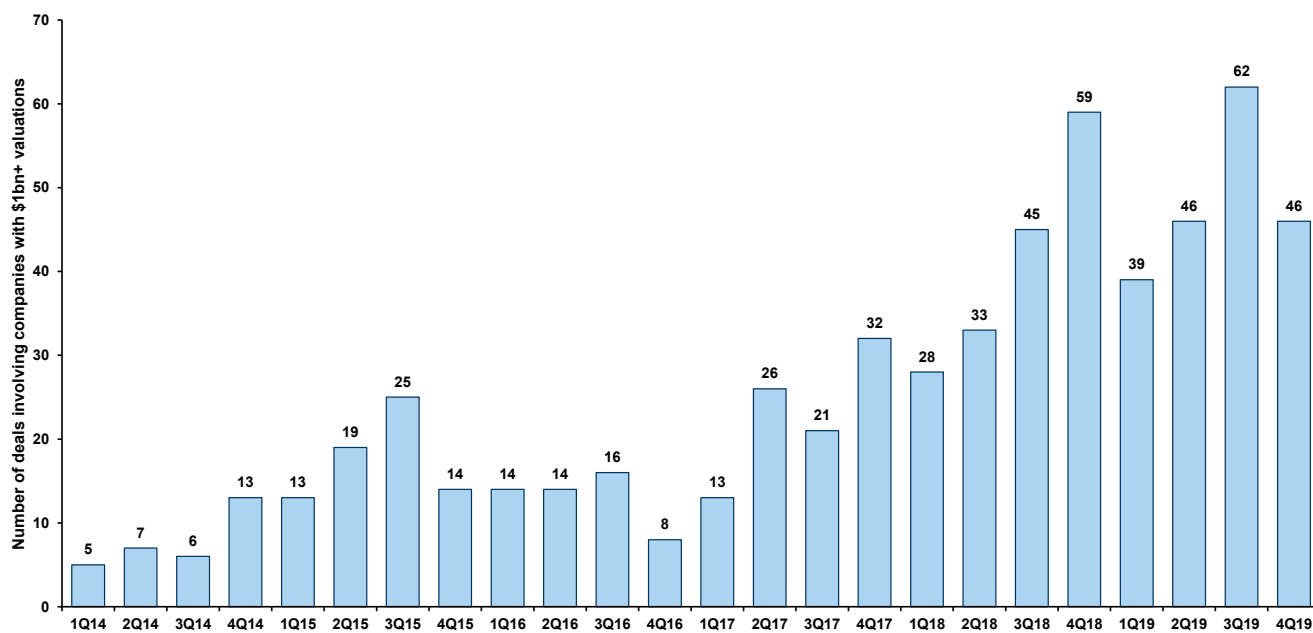
We track the number of deals involving privately-held companies with VC backing and valuations of at least \$1bn, based on data from Pitchbook. In 4Q19, 46 such deals were completed in the quarter, down 26% qoq and down 22% yoy. In 2019, there have been 193 deals involving privately-held companies with \$1bn+ valuations vs. 165 in 2018, raising a total of \$55.1bn vs. \$75.7bn in 2018.

We highlight a number of deals involving SaaS/software companies with \$1bn+ valuations that occurred in 4Q19:

- A \$290mn Series B round for Automation Anywhere, which offers robotic process automation (RPA) software designed to augment the human workforce by automating repetitive business processes. Automation Anywhere has a post-valuation of \$6.8bn vs. \$2.6bn in November 2018.
- A \$150mn Series H round for Freshworks, which offers customer engagement software for enterprises. Freshworks has a post-valuation of \$3.5bn vs. \$1.5bn in July 2018.
- A \$400mn Series F round for Databricks, a unified data analytics platform designed for big data analytics. Databricks has a post-valuation of \$6.2bn vs. \$2.75bn in Feb 2019.
- A \$85mn Series A round for Canva, an online graphic design platform. Canva has a post-valuation of \$3.2bn vs. \$2.5bn in May 2019.

Exhibit 9: 2019 had 193 deals involving VC-backed companies with \$1bn+ valuations vs. 165 in 2018

of deals



Source: Pitchbook, Goldman Sachs Global Investment Research

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Reg AC

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