

Cloudflare, Inc. (NET)

Initiate Coverage at Outperform; Many Routes to Continued Growth

We are initiating coverage on Cloudflare with an Outperform rating and a price target of \$22. We believe Cloudflare has been successfully positioning itself to make share gains in a variety of markets including networking and security. While we expect Cloudflare to post over \$280 million in revenue for 2019, we believe the company remains in only the early stages of its enterprise opportunity. We do not see Cloudflare's growth as reliant on one product or feature but see multiple compelling offerings that should help continue to drive robust growth.

- **Building out compelling security portfolio.** We see several compelling security offerings currently in Cloudflare's product portfolio and expect the company to continue to develop its security capabilities. Products include Cloudflare Access, the company's zero trust security offering which would compete with the traditional VPN, and Cloudflare Gateway, which allows for protection of a company's on-premise infrastructure, among others. We see potential for Cloudflare to disrupt traditional ways of securing networks going forward and look for momentum with these product offerings.
- **Disruptor in CDN market.** We believe Cloudflare is well positioned to make continued share gains in the CDN market. While Cloudflare does face significant competition in the CDN market, including from market power Akamai (AKAM, covered by Baird analyst Will Power) and other disruptors like Fastly (FSLY, covered by Will Power), we believe Cloudflare's CDN growth has likely outpaced total market growth in recent years and believe there is opportunity for it to continue to do so moving forward.
- **Unique business model enabling development.** Cloudflare has a free tier of offerings, including consumer-focused products, that we believe the company is able to leverage to test products/features at a decent level of scale before releasing them to enterprise customers. This motion should help Cloudflare maintain a rapid level of development and continue to broaden its product portfolio.
- **Cloudflare Workers another opportunity.** Another product we are excited about is Cloudflare Workers, the company's serverless computing platform product, which management has indicated currently has a ~20% attach rate for new customers. We expect strong growth in serverless going forward and believe Cloudflare's network positions it well to take advantage of the serverless opportunity.
- **Early in the enterprise opportunity.** Overall, we believe Cloudflare is in the early stages of being able to take full advantage of the enterprise opportunity in front of it. The company has made significant investments in S&M, growing headcount there 59% YoY for 3Q19, and has shown momentum in growing its large customer count. We see continued potential for growth in the enterprise.
- **Outperform rating and \$22 price target.** Our price target represents a 2021E EV/Sales of 13.6x, a premium to a peer group trading at 12.7x. We believe Cloudflare will have to continue to show strong growth and success in the enterprise to command this proposed multiple.

Cloudflare offers cloud-deployed solutions addressing use cases in security, performance, and reliability, in addition to offering platform and consumer products.

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INITIATING COVERAGE

1-Year Price Chart



Stock Data

Rating:	Outperform
Suitability:	Higher Risk
Price Target:	\$22
Price (1/9/20):	\$17.02
Market Cap (mil):	\$5,700
Shares Out (mil):	334.9
Average Daily Vol (mil):	0.98
Dividend Yield:	0.0%

Estimates

FY Dec	2019E	2020E	2021E
Q1	(0.19) A	(0.05) E	(0.04) E
Q2	(0.22) A	(0.06) E	(0.05) E
Q3	(0.16) A	(0.05) E	(0.04) E
Q4	(0.07) E	(0.07) E	(0.06) E
Fiscal EPS	(0.50) E	(0.23) E	(0.19) E
Fiscal P/E	NM	NM	NM

Chart/Table Sources: FactSet and Baird Data. Price chart reflects most recent closing price.

Please refer to Appendix
- Important Disclosures
and Analyst Certification

Business Description

Cloudflare was founded in 2009 by Matthew Prince, Michelle Zatlyn, and Lee Holloway, and the company widely launched the Cloudflare system in September 2010. The company defines its broader mission as, “To build a better internet.” Cloudflare’s business model is centered around redefining performance, security, and other functions in the context of the cloud; it seeks to replace what it has termed “band-aid boxes” with its cloud deployed solutions. Cloudflare addresses a variety of use cases with the help of its global network; the company’s network spans ~200 cities and operates within 100 milliseconds of 94% of the world’s internet-connected population. The company completed its initial public offering in September 2019 at a price of \$15 per share.

In terms of specific products, Cloudflare addresses a variety of use cases across security, performance, and reliability. Security products offered include a web access firewall, DDoS protection, infrastructure protection through its Magic Transit product, and a zero-trust product, Access, among others. In terms of performance, Cloudflare offers a content delivery network as well as other products including intelligent routing and image optimization. Reliability products include load balancing and DNS. The company’s platform, which includes products like Cloudflare Workers, helps developers build serverless applications. Finally, the company offers two consumer products, 1.1.1.1 and Warp.

Cloudflare has built up a large base of users as a result of the free plan it offers, which includes features like its CDN and DDoS protection. The company also offers paid versions of packaged plans and sells some products outside of these plans; additionally, Cloudflare caters to large enterprises through its enterprise level offerings. The company counts over 77k paying customers and 475 large customers (those with annualized billings of more than \$100k) as of 3Q19.

Cloudflare has its headquarters in San Francisco, CA, and lists a total headcount of 1,191 as of 3Q19.

Cloudflare Senior Management Team

Matthew Prince, Chief Executive Officer and Chair of the Board of Directors.

Matthew Prince helped co-found Cloudflare and has served as CEO and Board Chair since July 2009. Mr. Prince also was a co-founder of Unspam Technologies and has served as chair of that company since December 2001. Mr. Prince has received numerous accolades and been a speaker at multiple conferences. He also currently serves as an Adjunct Professor of Law at John Marshall Law School.

Mr. Prince holds an M.B.A. from Harvard Business School, a J.D. from the University of Chicago Law School, and a B.A. in English with a minor in Computer Science from Trinity College-Hartford.

Michelle Zatlyn, Chief Operating Officer and Director.

Michelle Zatlyn also helped to co-found Cloudflare and currently serves as the company’s COO. Previously, she served as the Head of User Experience at Cloudflare from 2009 until her appointment to the COO role in 2016. Ms. Zatlyn has held a position as a member of Cloudflare’s Board of Directors since 2009. Prior to Cloudflare, she held positions at Google and Toshiba, among others.

Ms. Zatlyn holds an M.B.A. from Harvard Business School and a B.Sc. in Chemistry and Business from McGill University.

Thomas Seifert, Chief Financial Officer.

Thomas Seifert currently serves as CFO at Cloudflare, a position he has held since June 2017. Before joining Cloudflare, Mr. Seifert held various roles at Symantec, including Executive Vice President and CFO. Additionally, Mr. Seifert has held the position of CFO of both Brightstar Corp. and Advanced Micro Devices; at AMD, he also held the title of interim CEO for a time. Currently, he also serves on the boards of IPG Photonics Corporation and CompuGroup Medical SE.

Mr. Seifert holds a M.A. in Mathematics and Economics from Wayne State University and both an M.B.A. and a B.A. in Business Administration from Friedrich Alexander University in Germany.

Douglas Kramer, General Counsel.

Douglas Kramer currently serves as General Counsel of Cloudflare, a role he has worked in since August 2016. Prior to joining Cloudflare, Mr. Kramer held a variety of roles for the federal government, including Deputy Administrator of the U.S. Small Business Administration, General Counsel of the United States Agency for International Development, and Staff Secretary and Deputy Assistant to the President. Prior to his work in the government, he worked at multiple law firms.

Mr. Kramer holds a J.D. from the University of Chicago Law School and a B.A. in Philosophy and English from Georgetown University.

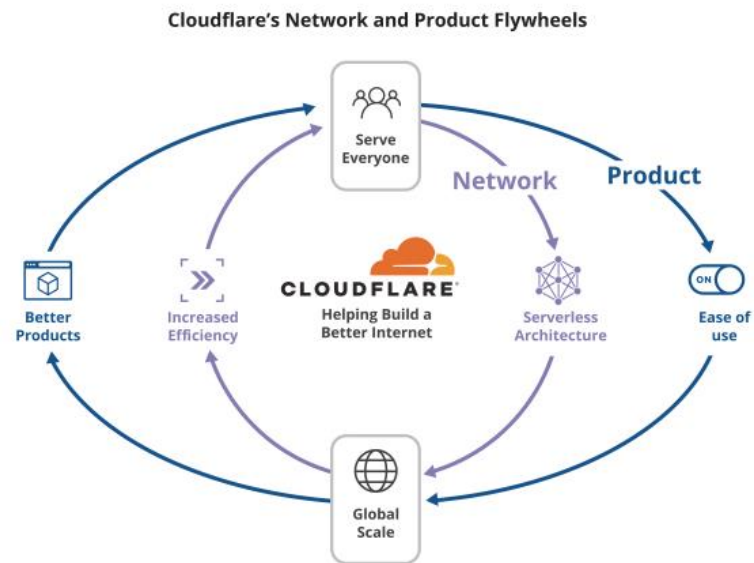
Products & Services

Cloudflare's products address a wide group of customer needs, primarily in the areas of performance, security, and reliability; the company also has both platform and consumer offerings. Before drilling down into the company's individual offerings, it is useful to discuss what the company sees as a dual, interconnected flywheel structure that has helped it build and cement its market position.

Per the company's S-1, its **Network Flywheel** involves the creation of "a network architecture that is flexible, scalable, and becomes more efficient as it expands." Essentially, the company built a network that can run every Cloudflare product/service on standard, commodity hardware; as such, the company refers to the architecture as "serverless," due to the lack of a need for specific hardware. This architecture has allowed the company to manage its network efficiently and helps provide the capacity for Cloudflare to offer its free tier of service. In turn, the free tier of service has helped the company generate global scale, which helps Cloudflare become a more attractive partner to ISPs. Cloudflare's network now spans ~200 cities in over 90 countries, operating within 100 milliseconds of 94% of the world's internet-connected population.

The other half of the equation, Cloudflare's **Product Flywheel**, speaks to the company's broad product portfolio that allows it to serve a large customer base. Cloudflare prides itself on its ability for its products to be deployed with relative ease. The broad deployment of the suite of Cloudflare products allows the company to experience a wide variety of events and threats; this experience can be leveraged by the broader Cloudflare platform to improve the company's ability to respond to various threats.

Figure I: Cloudflare's Dual Flywheel Structure



Source: Company Filings

Broken out and described below are some of Cloudflare's key products, grouped by the market they address.

Figure II: Cloudflare's Product Portfolio



Source: Company Filings

Figure III gives the pricing for Cloudflare's base plans and the features these plans include. Cloudflare also offers add-on products for its Free, Pro, and Business plans that are priced separately.

Figure III: CloudFlare Main Plans/Pricing

Plan Price	Free \$0/mo	Pro \$20/mo	Business \$200/mo	Enterprise Quoted
DDoS attack mitigation				
Global Content Delivery Network				
Support via email				
Enhanced security with Web Application Firewall				
Image and mobile optimization				
24x7x365 chat support				
100% uptime SLA				
CNAME set-up compatibility				
Easy PCI compliance				
Use your own SSL certificate				
Bot Management				
24x7x365 phone support				
Named solutions engineer support				
25x reimbursement uptime SLA				
Role-based account access				
Raw log information				
Unlimited custom rulesets for WAF				
TCP/UDP traffic protection (Spectrum)				

Source: Cloudflare Website, Baird Research

Security Products

Web Application Firewall (WAF)

Cloudflare's web application firewall sits in front of a website or other internet application, helping to protect it from a variety of vulnerabilities like SQL injection attacks and cross-site forgery requests. Given that Cloudflare sees a massive amount of traffic, the company reports its firewall rules can be triggered hundreds of millions of times per day. This traffic allows the company to see a wide variety of potential threats and potential vulnerabilities. A key value of

the service relative to legacy on-premise solutions is that Cloudflare constantly monitors vulnerabilities and can automatically apply WAF rules to address them, rather than forcing the customer to update on its own. Cloudflare lists enhanced security with WAF firewall as part of its Pro plan, which includes Cloudflare managed rules; however, its higher tier plans offer capabilities for additional firewall rules, custom WAF rules, and a variety of other features.

Distributed Denial of Service (DDoS)

Cloudflare's DDoS protection solution is a core part of Cloudflare's offering, as it is available in all plans, including its free offering. The company also offers enterprise-grade DDoS protection as part of its top package. Cloudflare can protect against a variety of different types of DDoS attacks and leverages its network capacity to help protect against even large attacks; the company notes its network capacity is 15x larger than the largest recorded DDoS attack.

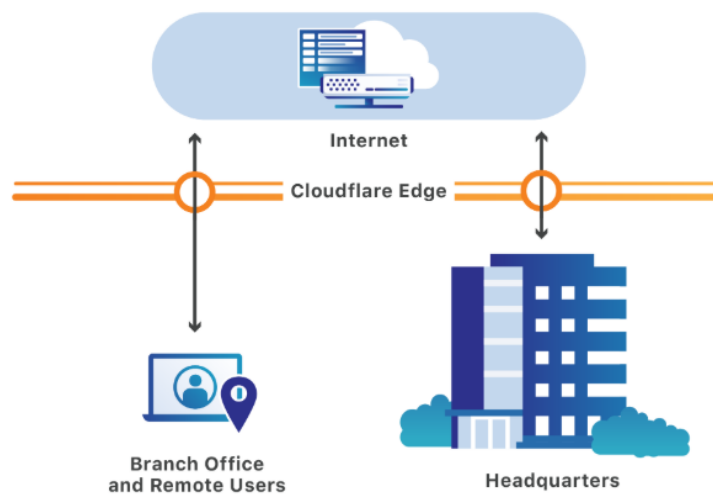
Cloudflare Access

Cloudflare Access is the company's foray into the growing market of zero-trust security. The technology allows users to secure access to company applications based on user permissions, without requiring use of a VPN, which often are derided by users for performance issues. The technology can integrate with a wide variety of identity providers, including Google, Okta, AzureAD, and Centrify. Access comes in two plans, Access Basic and Access Premium; Access Basic supports social identity providers and costs \$3/user/month, while Access Premium costs \$5/user/month but offers support for enterprise identity providers in addition to social providers (bulk discounts are available for Premium starting for companies over 100 users, and the list price drops to \$3/user/month for companies with greater than 2,000 seats). Cloudflare Access was released broadly in July 2018 after some users had been given beta access. Access was recently announced as one of two core products in Cloudflare for Teams.

Cloudflare Gateway

Cloudflare Gateway was very recently announced by Cloudflare management and the offering is not yet generally available. Essentially, Gateway will make Cloudflare the first destination of any outbound network traffic to insert a layer of protection between users and the internet. Gateway will allow users to secure their networks either by connecting their networks directly to Cloudflare through GRE tunnels (Magic Transit) or via a forward proxy. The company bills Cloudflare Gateway as "the modern Next Generation Firewall." The Enterprise version of Gateway will include features like data loss prevention as well as always-on browser isolation, which is supported by Cloudflare's recent acquisition of S2 Systems. A Cloudflare blog post indicated the rollout of this browser isolation technology will be complete in the second half of 2020. Some features of Gateway are currently available in beta and other features will be added to beta over time. Gateway is the other product in the company's Cloudflare for Teams suite.

Figure IV: Cloudflare Gateway



Source: Company Filings

Magic Transit

Magic Transit, Cloudflare's infrastructure protection tool, allows customers to use Cloudflare's services to protect their on-premise networks. The company positions Magic Transit as enabling companies to move network perimeter hardware into the cloud, offering capabilities including DDoS protection, next-gen firewall, and traffic acceleration. Like Cloudflare's other product offerings, the company seeks to disrupt traditional, on-premise boxes by moving their capabilities to the cloud. Magic Transit was launched relatively recently, in August 2019, and does not yet have widespread market validation. Given the enterprise nature of the offering, Cloudflare does not advertise pricing for the product like it does for many others.

Cloudflare Argo Tunnel

Cloudflare Argo Tunnel creates a secure route between a client's origin servers and the Cloudflare data center, allowing the user to encrypt application traffic to any type of infrastructure. This helps prevent direct attacks on company web servers because, when configured properly, all traffic to them should be routed through the Cloudflare network. Smart Routing, included with Argo Tunnel, helps reduce latency by routing traffic through less congested/more reliable paths; the company reports this reduces average origin traffic latency by 30%.

Bot Management

Cloudflare's bot management tool leverages capabilities including behavioral analytics and machine learning to differentiate between good and bad bots, blocking malicious traffic while allowing access to useful bots. The tool is a feature of Cloudflare's enterprise grade solutions.

Cloudflare Orbit

Cloudflare Orbit protects IoT devices at the network level, creating a secure connection between the devices and the internet, providing security benefits. The technology also allows device manufacturers to deploy "virtual patches" in order to address vulnerabilities across the network. Cloudflare does not publicly advertise pricing for Orbit.

SSL/TLS offerings

Cloudflare offers a variety of offerings related to SSL/TLS, which are centered around managing encrypted web traffic to prevent data theft/improve security. Cloudflare's product can operate in different modes to address different levels of required security and offers customers the ability to upload a dedicated SSL certificate or use a shared one. Cloudflare seeks to help make SSL configuration a much more straightforward process than it is when configured manually.

Rate Limiting

Cloudflare's Rate Limiting product prevents against denial-of-service attacks and brute-force login attempts, among other threats, at the application layer by providing users the ability to configure thresholds, define responses, and gain insights into specific URLs of websites, applications, or API endpoints. The pricing model is based on "good" requests, preventing costs from spiking as a result of attacks on the system.

Cloudflare Spectrum

Cloudflare Spectrum applies Cloudflare's DDoS, TLS, and IP Firewall to TCP/UDP services which can include secure file transfer services and email.

DNSSEC

DNSSEC works to ensure an application's traffic is routed safely to the correct servers, helping reduce the risk of phishing, malware infections, and data leak.

Performance Products

Content Delivery Network (CDN)

Cloudflare's CDN works to improve website speed by delivering content from a point of its network close to users. Cloudflare's CDN is a core piece of its overall product portfolio and one of the products included in the free version of Cloudflare. Key features of Cloudflare's CDN include access to China through the company's partnership with Baidu and the ability for customers to use API's, allowing for strong customization capabilities. The free nature of the product, combined with the benefits it can offer users, has helped Cloudflare come to support

over 20 million domains worldwide. Many of Cloudflare's other free and paid products either work with or in support of Cloudflare's CDN.

Cloudflare Argo

Cloudflare Argo is the company's smart routing tool, using technology to deliver web traffic across the fastest path possible. In addition to smart routing, the Cloudflare Argo product also includes the previously mentioned Argo Tunnel, as well as tiered caching. Pricing for Argo starts at \$5/month, plus \$0.10 per gigabyte of traffic between Cloudflare and site visitors after the first gigabyte.

Web Optimizations

Cloudflare offers a variety of web optimization features. With content optimization, Cloudflare can automatically adjust the delivery method of content for a website based upon the requesting device whilst maintaining the site's format/functionality. Mobile optimization does this for mobile users, and image optimization adjusts image size and quality for best performance. Image/mobile optimization are features of Cloudflare's least expensive paid plan, Pro.

Cloudflare Mobile SDK

Cloudflare Mobile Software Development Kit (SDK) allows developers to deploy diagnostic tools across any application without any dependencies on infrastructure. The tool is completely free to use.

Reliability Products

Load Balancing

Cloudflare's load balancing helps reduce latency by distributing/balancing traffic across multiple servers/routing traffic to the closest region. Proper load management helps lead to a better experience for end users by improving reliability. Cloudflare's solution works across single, hybrid-cloud, and multi-cloud environments.

Anycast Network

Anycast routes request across a variety of different routes, leading to automatic load balancing based upon a variety of factors. Anycast helps maintain continuous service by ensuring no single server must take an excessive amount of traffic. Cloudflare's Anycast network is strengthened by its scale, which allows it to absorb the traffic it receives.

DNS

Cloudflare's DNS helps keep internet properties online; per Cloudflare's S-1, the company's DNS is one of the largest authoritative DNS networks in the world. The product can also serve as a secondary DNS. Cloudflare's DNS is available on all plans, including its free version. The company also offers a DNS Resolver; per the company, it is the world's fastest public DNS Resolver.

Always Online

Always Online is a Cloudflare feature which caches a version of a webpage and can serve this limited, cached version of the website to visitors if the customer's origin server goes down.

Video Streaming & Reliability

While technically included under its own category on the Cloudflare website, it is worth briefly mentioning the product here. Cloudflare's video hosting solution is meant to make video streaming easy to use and more affordable for customers, in addition to adding other features. Streaming is priced at \$1 per thousand minutes viewed with storage priced at \$5 per thousand minutes of video stored for the company's Free, Pro, and Business plans, with custom pricing available for enterprise customers.

Platform Products

Cloudflare Workers

Cloudflare Workers is the company's serverless computing offering which enables users to leverage the benefits of Cloudflare's global network to serve applications without having to worry about maintaining infrastructure. The product was fully released in March 2018 and is an

example of a FaaS offering. Pricing for the product, along with features available, can be seen in Figure V below.

Figure V: Cloudflare Workers Pricing

Cloudflare Workers Free Tier	Cloudflare Workers Unlimited Tier	Cloudflare Workers Enterprise Tier
Free 100k requests per day (UTC+0) <ul style="list-style-type: none">✓ Deploy up to 30 scripts✓ Runs on all 200 data centers✓ Free workers.dev subdomain✓ < 10ms CPU time per request✓ Lowest latency after first request	\$0.5/million requests (Minimum charge of \$5/mo) <ul style="list-style-type: none">✓ Deploy up to 30 scripts✓ Runs on all 200 data centers✓ Free workers.dev subdomain✓ < 50ms CPU time per request✓ Always lowest latency✓ Workers KV Support	Custom Annual billing available <ul style="list-style-type: none">✓ Custom number of scripts✓ Runs on all 200 data centers✓ Free workers.dev subdomain✓ Negotiable CPU time limits✓ Always lowest latency✓ Workers KV Support

Source: Company Website

Analytics

Cloudflare’s analytics tools help provide insight into website traffic, providing customers the ability to see and analyze a variety of types of data, including website traffic and information around threats trying to access the site.

Consumer Products

1.1.1.1

1.1.1.1. is a public DNS resolver, which DNSPerf points to as the fastest public DNS resolver in terms of raw performance, as determined by its extensive testing. In addition to its performance capabilities, Cloudflare’s product adds value to consumers in that it does not sell customer data to advertisers, unlike some other free DNS resolvers. The product supports DNS over HTTPS which secures DNS requests.

Warp

Cloudflare Warp, publicly released in September 2019 after some notable delays, is a consumer VPN. The basic version of Warp is included in the 1.1.1.1. app with a paid version available to purchase through the app. Unlike other consumer VPNs, Warp does not mask the user’s IP address; however, it does help transmit data securely across the internet, preventing spying from other parties. Warp seeks to accomplish this without any negative impact on performance seen with many other VPNs.

Market Overview

Security Markets

DDoS Prevention

The essential premise behind a Distributed Denial-of-Service (DDoS) attack is to use a flood of traffic to overwhelm a website or network, making it unavailable to legitimate users trying to access the resource. DDoS attacks have grown significantly in popularity in recent years, at least in part due to their accessibility and relative affordability; attacks can easily be purchased via the dark web and launched for small sums. A Kaspersky Lab report suggests DDoS attacks increased 84% in a short period from 4Q18 to 1Q19; even though this is a small sample size, it does point to the continued prevalence of DDoS attacks. A recent notable DDoS attack is one which took place against Wikipedia in September 2019, preventing users from accessing the site across multiple countries in Europe and the Middle East. There are a variety of strategies

for mitigating DDoS attacks, such as redirecting the harmful traffic away from the targeted servers to a “black hole.”

In terms of determining market size, IDC data suggests the overall market for DDoS prevention is somewhere around \$1.5 billion annually, with the majority of this market being dedicated to services relative to products. Growth opportunity in the market appears robust, with IDC estimating a ~17% CAGR for DDoS prevention from 2017-2022. Though Cloudflare does not offer the physical appliances that would account for the products segment of this market, we believe the company’s offering addresses a large portion of the overall market. Cloudflare offers DDoS protection as a part of its free offering. IDC named Cloudflare as a Leader in its 2019 MarketScape for DDoS Prevention Solutions.

Web Security

In its market definition of web security, IDC includes URL filtering, web, antimalware, web content filtering, and web application firewalls. In terms of sizing the overall market for web security, IDC data suggest it is somewhere in the range of \$3 billion-\$3.5 billion in annual spend for 2019. Of the submarkets included by IDC in its total, Cloudflare most directly addresses the market for web application firewalls, which we see as one of the major drivers of growth in web security moving forward. Essentially, a web application firewall sits between users and web applications, helping to protect the web applications from a wide variety of attacks. A web application firewall is set up as a reverse proxy. While a proxy sits in front of a user device, protecting the user from malicious content as the user accesses the internet, a reverse proxy sits in front of the web application, protecting the server from direct exposure to the internet and potential bad actors. Gartner data points to a roughly \$1 billion market size for web application firewalls directly.

Overall, Cloudflare has a variety of different security products that we see as addressing the web security market, from its WAF to its bot management capabilities. We see Cloudflare as well positioned with web security given its cloud-deployed architecture; research suggests customers are becoming increasingly focused on deploying WAF and other web security services directly from the cloud.

Firewall

Historically, firewalls have played a central role in securing networks; this role can be seen in the size of the firewall market, which IDC estimates suggest is nearly \$15 billion in 2019 for firewall/unified threat management. Firewalls can serve a variety of purposes in terms of securing a network, such as being configured to filter both incoming and outbound traffic. The firewall market is largely concentrated among four major players, who make up the Leaders in Gartner’s Magic Quadrant for Network Firewalls: Cisco, Check Point, Fortinet, and Palo Alto Networks. Together, these four vendors combine to make up a solid majority of the firewall market. Despite being a relatively established market, IDC estimates for growth in the firewall market remain solid, with the firm estimating a ~9% CAGR from 2018-2023.

There has been increasing speculation and discussion around the threat posed to more traditional firewalls by vendors of solutions that disrupt the traditional network architecture, such as Zscaler. The growth of cloud computing and the shift of networks and applications toward the cloud have disrupted the traditional network architecture. Historically, large networks have been set up in a hub-and-spoke format, with local offices being connected back to a company’s core data center(s). Traffic into and out of these data centers would then be routed through a company’s system of firewalls. However, the shift to the cloud has created problems with such an architecture, including in terms of performance. As a result of some of these challenges, SD-WAN, which can help improve branch connectivity, has recently grown in popularity. Additionally, companies like Zscaler have sprung up, allowing customers to connect directly and, importantly, securely to the Internet and cloud-based applications. Zscaler, for example, uses a proxy-based architecture to provide security for its customers. Though we have yet to see a mass shift of companies getting rid of firewalls completely in place of a product such as Zscaler Internet Access, we have heard from companies who are considering using the technology in place of branch firewalls, which would mark a notable shift in the security landscape.

Ultimately, we do not see a mass shift away from firewalls happening with any immediacy. A significant portion of enterprises will likely continue to employ a hybrid architecture rather than a one that is completely cloud-based; a recent study conducted by Vanson Bourne on behalf of

Nutanix found 85% of enterprises ranked hybrid cloud as the ideal operating model. We believe many organizations will continue to build a security architecture at least partially around firewalls and other more traditional security products, especially in the near term; as such, it is difficult to justify Cloudflare as having access to the entirety of the network firewall market, even if its products can theoretically address many of the same needs as traditional firewalls. Additionally, Cloudflare's offering which likely would serve as the most direct replacement for a company's firewalls which sit front of internal networks, Cloudflare Gateway, was only recently announced and lacks market validation. However, we see Cloudflare positioning itself to more directly compete with companies like Zscaler in this market with the recent announcement of Cloudflare Gateway. Again, while we do see a shift toward securing networks at the edge continuing to persist and disrupt the traditional firewall industry, we believe this transformation will take a significant amount of time to occur at scale.

VPN

The VPN market is a submarket of the broader network security market. Many individuals are familiar with VPNs, as they are often used in order to access a network from a remote location, enabling individuals to work outside of the office. IDC estimates suggest the VPN market is at close to \$0.5 billion dollars; additionally, IDC estimates point to managed VPN MPLS at ~\$10.5 billion in 2019 spend. In terms of sizing future market opportunity, IDC data suggest growth somewhere in the mid-single digits for the VPN market, but a decline in the managed VPN MPLS market. Again, companies like Zscaler and Cloudflare are seeking to disrupt the traditional VPN market; both of these companies' respective solutions allows users to be authenticated via the cloud. Cloudflare's solution, Cloudflare access, can integrate with a variety of identity providers, including Okta and AzureAD, to help ensure users only have access to the resources to which they are permitted.

Performance/Reliability Markets

Content Delivery Network (CDN)

To put it simply, a content delivery network helps website providers distribute their sites to consumers with increased speed and reliability. A CDN functions using a series of linked servers, generally around the globe for the major providers of CDNs; these servers allow users to receive content with increased speed by allowing them to access a server close to them instead of having to traverse the web to make it back to an origin server. For example, take a user living in Chicago trying to access a website hosted in Australia. Instead of having to connect directly to the Australian server, which would require the request to travel a great deal of distance, a CDN would allow the request to be routed to a data center nearby, improving the user's experience. CDNs can aid performance beyond simply allowing customers to take a shorter route to access sites; for example, CDNs can help deliver website content like videos and images with increased performance and even specifically optimize content based upon the user's device. Overall, CDNs have the ability to improve customer experience in addition to delivering benefits for the sites employing them.

In terms of direct benefits to the sites using CDNs, a key feature is their ability to improve reliability, allowing for more consistent access for users and reducing issues with uptime. CDNs can be used to distribute traffic among multiple servers as opposed to routing it all to one server; as such, this improves reliability by allowing sites to handle traffic by which it otherwise may have been overwhelmed. The nature of CDNs caching content in order to deliver it to users with increased speed also has the effect of allowing users to access versions of the website when it is down, enabling more constant access. Coincidentally, when doing research on another company, we recently saw a message indicating the site was down but Cloudflare was enabling us to access a recently cached version. A CDN can also help facilitate security technologies like DDoS prevention when configured properly, again helping sites improve overall reliability.

Overall, CDNs appear to be gaining increasing significance in the market. For example, a Cisco white paper indicates over half of all website traffic was already being routed through CDNs in 2017 and projects 72% of overall internet traffic will be routed through CDNs by 2022. The paper does note, however, that a portion of this traffic is carried through private CDNs set up by companies such as Facebook and Microsoft, which are restricted to usage only by the provider's content. IDC estimates the global CDN market at just under \$6 billion in 2018 spend, but projects it to more than double from there by 2023, representing a CAGR of 17.3%. The

market is currently dominated by Akamai, which IDC indicates held over 45% of the market share in 2018. Cloudflare, in comparison, likely holds a market share somewhere in the low-to-mid single digits. Other competition includes legacy players Limelight, Verizon, and CenturyLink, as well as upstarts like Fastly and Amazon, among others. We do see a solid runway for Cloudflare to continue to grow and pick up share in the CDN market moving forward.

Platform Markets

Serverless Computing

Serverless computing is a computing model in which a cloud provider runs and manages the server on which an application runs, allowing developers to place more focus on the actual development of their application. A key differentiator of serverless computing is pricing is based upon the actual amount of resources the application uses; this can theoretically reduce the cost for applications, as servers often experience quite a bit of idle time since, under a traditional model, companies need to allocate resources to servers based upon maximum potential usage, not current usage. A feature of many serverless compute models is their use of the Function as a Service (FaaS) model; FaaS allows smaller pieces of an overall application, or functions, to be uploaded and executed rather than an entire application. Overall, FaaS can help make deployment an easier process and reduce cost, though users do give up control of the infrastructure to the FaaS provider. CloudFlare Workers is an example of a FaaS platform.

In terms of market size, IDC forecasts suggest an overall market of approximately \$1.5 billion dollars in 2019. However, IDC forecasts robust growth for serverless, projecting a 2018-2023 CAGR of over 35%. Competition in the serverless market includes offerings like AWS Lambda and Azure Functions by Microsoft. Cloudflare Workers was made widely available relatively recently, in March 2018, but the company appears to be seeing early success with the product, calling out the product's attachment to the orders of 20% of new enterprise customers for 3Q19. Overall, given advantages like its global network from which it can deploy applications, we see potential for solid growth for Cloudflare in this market.

Analytics

Given that analytics is such a broad term, it is difficult to place a size on the market addressed by Cloudflare's analytics tools. For the sake of reference, IDC puts the data and AI segment of the Public Cloud Platform market at an estimated \$18 billion in spend in 2019, though we do not see Cloudflare as currently addressing a significant portion of this market. We believe companies will continue to place increased emphasis on data and analytics and see continued potential for the use of data in security. A 2019 study by Marsh and Microsoft found that only 30% of companies were using a quantitative approach to measuring their cyber risk. While this metric is not a perfect proxy for the overall usage of data and analytics in security, we believe it at least suggests continued room to incorporate data and analytics into companies' understandings of their security posture. Cloudflare will likely need to continue to make significant investment into its data and analytics capabilities if it is to become a true player in this space; currently, we see the company as offering a useful, but relatively limited, portfolio of analytics capabilities.

Growth Strategy

- 1) Grow Enterprise Customer Base. Given its primarily direct sales motion and the overall value proposition behind its products, Cloudflare has been able to attract a large overall customer base, with upwards of 77k paying customers as of 3Q19. While overall customer count has been robust, large customers, which Cloudflare defines as those customers with over \$100k in annualized billings, have traditionally made up only a small percentage of this overall customer number. Large customers have grown at a faster pace than overall customers in recent quarters, but the company still only counts 475 large customers as of 3Q19. Figure VI shows total customer count and QoQ growth, and Figure VII shows these same metrics for large customers.

We believe acquiring large, enterprise customers is crucial to the long-term revenue growth prospects of Cloudflare. We believe the company will continue to serve its overall customer base, including free users; however, we see enterprise customers as driving an outsized portion of revenue growth for Cloudflare for the foreseeable future. The Cloudflare portfolio appears increasingly suited to cater to the needs of larger enterprises, as evidenced by products like Access and Gateway. Cloudflare has a unique business model in that it actively serves both free customers and large enterprise, which can present some unique challenges. However, there are some benefits to this broad customer base, as free users give Cloudflare a testing pool for new features and products, which should help the company ultimately better deliver new capabilities to the enterprise from their outset. Ultimately, we believe for Cloudflare to continue to show robust growth it must increasingly target these enterprise customers. We see evidence of this focus within the company, such as in the substantial increase in sales and marketing headcount that Cloudflare has shown over the past year (+59% from end 3Q18 to end 3Q19). The company names ~10% of the Fortune 1000 as customers, which we see as indicative of its potential to add larger clients. Cloudflare has more than quadrupled its large customer count over the last 10 quarters, but we feel there is significant runway for further growth here as the company is able to build a reputation for serving the large enterprise. We see potential for Cloudflare to both add larger customers in their initial engagement and drive upsell from existing enterprise customers who may only be using a small subset of Cloudflare's offerings. We believe further penetration of the enterprise market can help Cloudflare maintain its robust growth.

Figure VI: Total Customer Count/Growth



Note: Baird estimates using company provided growth rates for 1Q17-3Q17
Source: Baird research, company documents

Figure VII: Large Customer (>\$100k Annualized Billings) Count/Growth

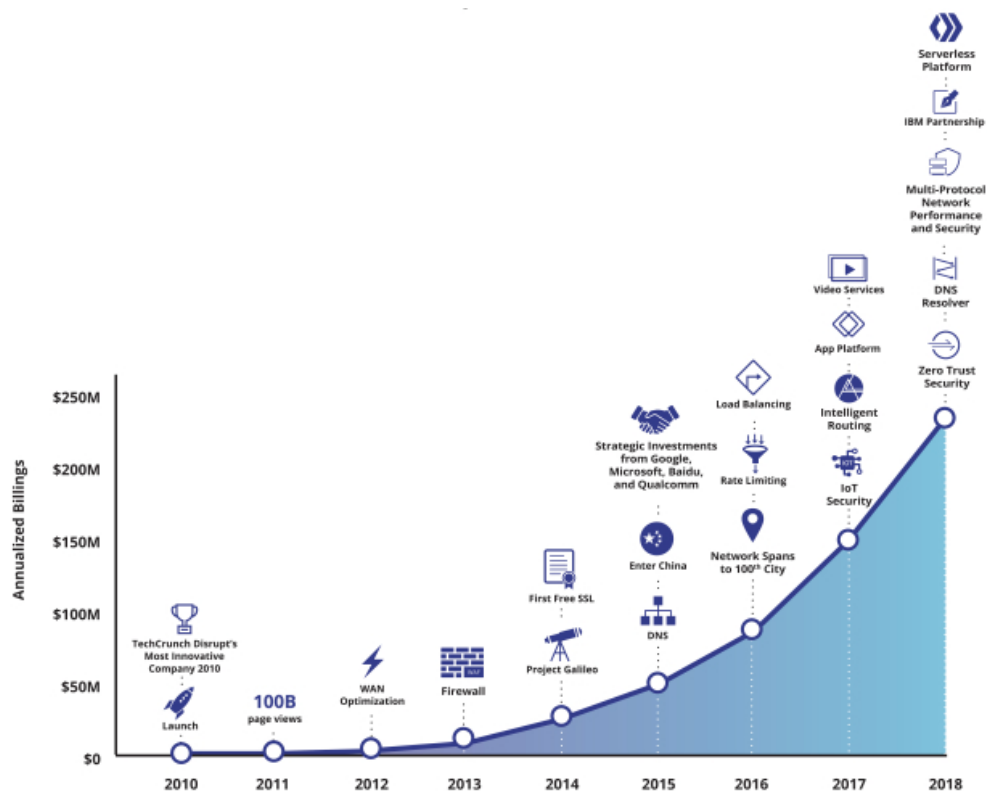
Note: Baird estimates using company provided growth rates for 1Q17-3Q17

Source: Baird research, company documents

- 2) Continue to Develop New Products. Throughout the company's history, Cloudflare has rapidly developed and deployed new products. As discussed previously, the company's dual flywheel structure has helped it grow with speed as the Network and Product Flywheels feed from and back into each other. As seen in Figure VII, Cloudflare has steadily introduced new products or features in recent years. We believe the scale of Cloudflare's network has helped the company reach a point where it can address a wide variety of use cases and deliver products with strong performance. We envision Cloudflare leveraging this scale moving forward in order to develop and deploy additional products. Recent products suggest Cloudflare's ability to develop products that address customer needs. For example, the company has recently called out some major wins for its Access product, such as a 25,000 seat deal with a major European pharmaceutical company. Similarly, Cloudflare Workers has seen success, being attached to the orders of more than 20% of new enterprise customers in 3Q19. Overall, Cloudflare appears committed to continuing to innovate; assuming it is able to continue to create quality products with strong demand, especially in the enterprise, we believe it can continue to grow.

While we acknowledge the risk in a growth strategy that requires strong market adoption of products that have not yet been announced or released, we believe Cloudflare has made a strong investment in its R&D capabilities, evidenced, at least in part, by a 38% increase in R&D headcount from the end of 3Q18 to the end of 3Q19. Cloudflare's ambitious goal of "to help build a better internet" also suggests ambition in entering into new markets. We look for Cloudflare to continue to develop quality products going forward and to use these products to maintain a solid growth trajectory.

Figure VIII: Cloudflare Product Introduction History



Source: Cloudflare S-1

- 3) Take Share from Legacy Vendors. Given that Cloudflare seeks to disrupt a variety of markets, from traditional firewalls to CDNs, the company does face robust competition. However, Cloudflare, as a whole, has been growing significantly faster than many of these competitors. Though it is difficult to assess exactly which markets Cloudflare is taking share in given that the company does not break out revenue to specific products, we believe it is likely Cloudflare is taking share from CDN competitors like Limelight (Total revenue consensus expectations for +2% YoY growth in 2019) and Akamai (total revenue consensus 6% YoY for FY19), among others including Verizon. Cloudflare total growth has also outpaced growth of other CDN upstart Fastly, though it again is difficult to determine what portion of the company's growth is coming directly from its CDN and other performance products.

In terms of security, Cloudflare seeks to compete against a wide variety of legacy players, especially firewall companies like Cisco, Fortinet, Check Point, and Palo Alto Networks. These companies have managed to innovate to varying degrees; for example, Palo Alto has made a fairly aggressive push toward cloud and continues to show strong growth and Fortinet has made investments in technologies like SD-WAN. Check Point is one vendor which has not innovated as much in recent years and has shown much slower growth as a result of this lack of substantial change. We believe Cloudflare does have interesting security offerings that may ultimately disrupt the marketplace, though we see the majority of enterprises as likely to employ a hybrid infrastructure, not one completely delivered from the cloud. Cloudflare does also have to compete with other cloud-centric disruptors like Zscaler in security.

Ultimately, though Cloudflare faces strong competition in the markets it serves, we see potential for the company to take share against legacy competitors given its cloud-centric product offerings. We believe Cloudflare has a solid advantage over legacy players who

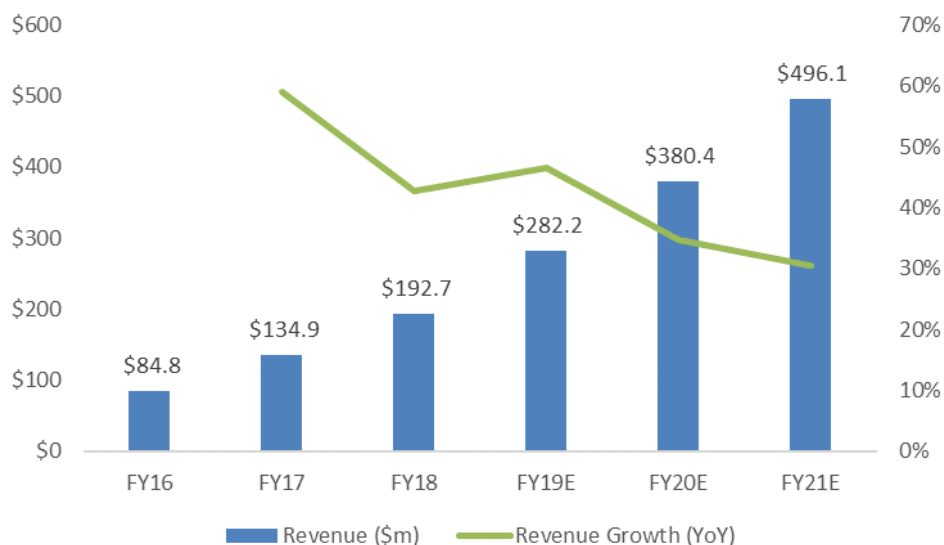
may eventually seek to make more of a pivot to cloud given that the company has already built up a network spanning the globe. We believe companies will continue to make a shift toward cloud and that Cloudflare is becoming increasingly well equipped to benefit from this broader trend.

Possible Growth Inhibitors

- 1) Failure to gain market adoption of new products. Throughout its history, Cloudflare has been able to rapidly introduce products, helping the company expand beyond its initial offerings to build out a much broader portfolio addressing a range of performance, security, and reliability use cases, among others. Though the company has means to test these emerging technologies, including the ability to receive feedback from free users before rolling them out on a larger scale, the failure of emerging products to gain market validation could serve as a risk to Cloudflare's growth opportunities. As Cloudflare expands into additional markets, we see the company as having to do a good amount of work to educate customers on why Cloudflare's solutions may be better served to address their needs than an incumbent that may have significantly more experience in the market. Ultimately, we believe market adoption of Cloudflare's emerging products is crucial to the long-term growth story of the company and any failure to develop innovative products for which the market sees a need may hurt growth prospects.
- 2) Business risk posed by both publicity and regulatory risks surrounding clientele. Cloudflare has historically pushed back against calls to actively deny customers access to its services. Given this historical precedent, as well as other legitimate benefits of using Cloudflare's services, the company has managed to attract a certain base of users that many organizations would think twice about serving, from the merely unsavory to those committing actively illegal acts. The reverse proxy nature of Cloudflare can serve as a shield to these customers' sites by helping to prevent law enforcement from tracing sites back to their true owners. Cloudflare has, in the past, policed some of its users, notably cutting ties with 8chan following the site's connection to multiple shootings and The Daily Stormer which had provoked violence in Charlottesville, VA. These two sites do not appear to represent isolated examples, either; a 2018 Huffington Post report alleged Cloudflare was providing some form of services for at least seven terrorist groups. The company has remained outspoken against taking an active role in moderating its customers even after the aforementioned incidents. Cloudflare could theoretically be exposed to legal action given some of the clientele it chooses to serve. Additionally, we see a business risk to Cloudflare if the company is associated with reprehensible websites or tragedies facilitated by these websites. Ultimately, we believe Cloudflare's model of serving almost everyone could potentially serve as a significant distraction for a publicly traded company.
- 3) Deterioration of Strategic Partnership with Baidu. Cloudflare has a strategic partnership with Chinese company Baidu which allows it access to Baidu's network in mainland China. As a part of this partnership, Cloudflare turned over relevant intellectual property to Baidu. Cloudflare's current agreement with Baidu is set to expire at the end of 2020, though it could be terminated on certain terms at any time. Cloudflare earned 20% of its revenue in the APAC region in 2018, and the company's own commentary suggests that the partnership is important to Cloudflare's business. Some of the potential forces that could cause a deterioration in the deal are not at all in Cloudflare's control. Given the current geopolitical climate and ongoing tension between the United States and China, it is possible a chain of events could be set off which results in the termination of the Cloudflare-Baidu relationship. Again, the loss of this key partner could be detrimental to Cloudflare's current and future business prospects, both in China and for customers seeking access to this large market.

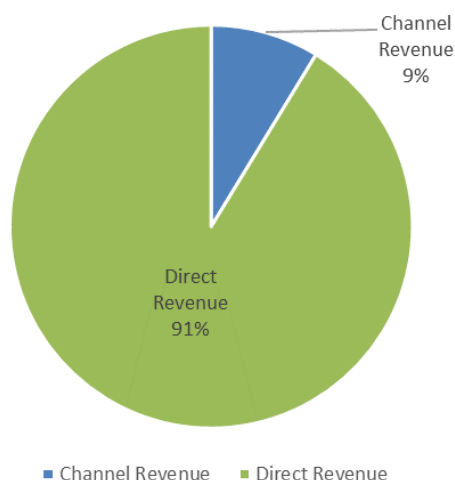
Financial Overview

Figure IX: Revenue Profile (in millions)



Source: Baird research, company documents

Cloudflare reports all its revenue on one line, so there is not clear visibility into which products account for which revenue. However, 3Q19 management commentary indicated a relatively even split between customers joining the company by buying security products vs. performance and reliability products. The company's pay-as-you-go customers purchase the company's Pro or Business plans through the company's website and typically pay for support and subscription monthly. The company's contracted customers, which enter into contracts for the Enterprise subscription plan, typically enter into an agreement for one year, though term lengths can range from one to three years. Company filings also note that Enterprise subscription plan agreements generally include a base subscription amount plus a smaller portion of the contract which is based upon the customer's usage. Cloudflare has shown robust revenue growth in recent years; our forecast/management's guidance suggests the company will have accelerated growth from FY18 to FY19. Cloudflare has invested heavily in sales and marketing in recent years, with the company increasing sales and marketing headcount by 59% from the end of 3Q18 to the end of 3Q19. Given this investment in sales and marketing, the relatively recent releases of products that we believe can be growth drivers—including Cloudflare Access (Enterprise release in January 2018), Cloudflare Workers (full release in March 2018), and Cloudflare Gateway (announced January 2020)—and Cloudflare's innovation cycle, we see continued runway for growth for the company.

Figure X: Channel vs Direct Sales (TTM)

Source: Baird research, company documents

Cloudflare has traditionally received the vast majority of its revenue from its direct sales rather than through leveraging channel sales. Channel revenue, while still anywhere between 8% and 10% of total revenue over the last three quarters, has been growing at a much faster rate than direct revenue recently.

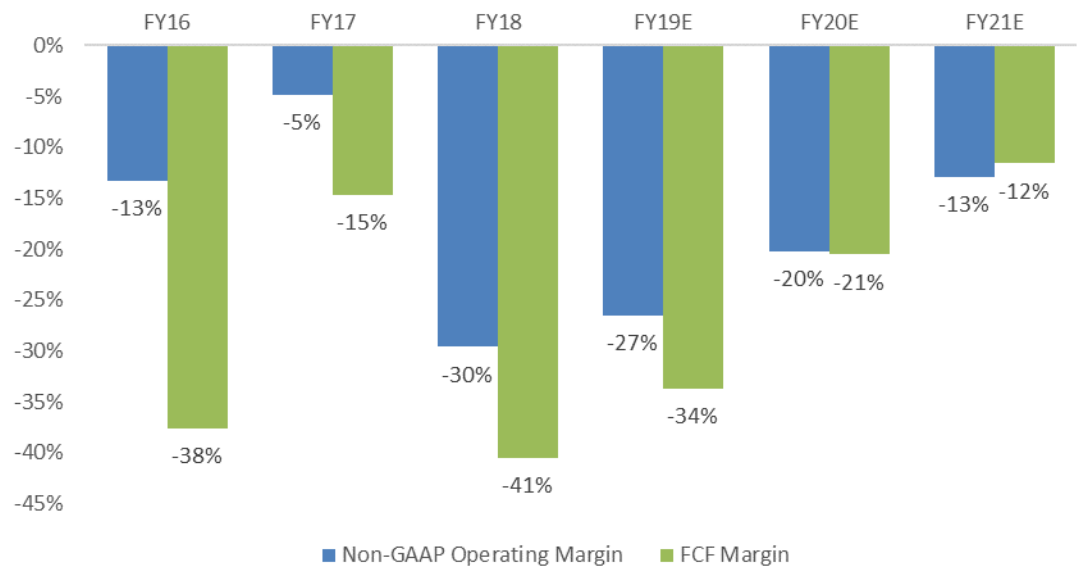
Figure XI: Billings Profile (in \$ thousands)

(FYE in December)	2016	2017	Q118	Q218	Q318	Q418	2018	Q119	Q219	Q319
Billings	81,771	140,415	48,419	44,815	49,204	55,139	197,577	69,127	70,751	76,828
QoQ				(7%)	10%	12%		25%	2%	9%
YoY		72%					41%	43%	58%	56%
Current Billings			48,337	44,793	49,305	55,129	197,564	47,430	52,658	58,336
QoQ				(7%)	10%	12%		(14%)	11%	11%
YoY								(2%)	18%	18%

Source: Baird research, company documents

Cloudflare has also shown robust billings growth in recent quarters/years. Deferred revenue has traditionally been much smaller relative to other security companies in our coverage; Cloudflare had a total deferred revenue balance of ~\$30.7 million at the end of its most recently reported 3Q19. Purely for the sake of context, CrowdStrike, which posted \$249 million in revenue in its FY19 (ended January 2019) had a deferred revenue balance of roughly \$290 million at the end of that fiscal year. This points to the prevalence of Cloudflare's pay-as-you-go customers as well as the fact that contracted customers are typically billed on a monthly basis. We think it is likely deferred revenue will continue to grow as Cloudflare continues to gain large enterprise customers.

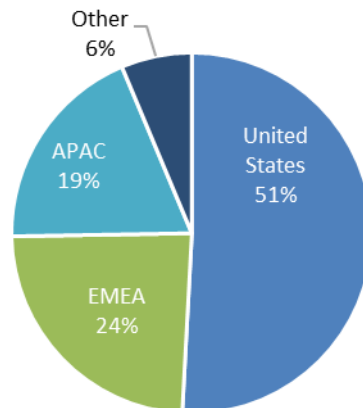
Figure XII: Margin History



Source: Baird research, company documents

Cloudflare has reported negative operating and FCF margins for the last several full fiscal years. We expect margins to remain negative in the near term, though we do not currently anticipate any near-term issues with negative FCF given the company had roughly ~\$661 million in cash/investments as of 3Q19.

Figure XIII: Revenue by Geography (3Q19)



Source: Baird research, company documents

Cloudflare does receive nearly half of its revenue from outside of the United States. Growth in the United States has actually been outpacing combined growth from all other geographies in recent quarters; for example, in 3Q19, revenue grew 57% YoY in the United States, 40% YoY in EMEA, 37% YoY in APAC, and 43% YoY in other regions. Recent outperformance in the United States is likely at least partially a function of relatively strong traction with enterprise customers there, though the company did call out some major enterprise wins in Europe on its recent 3Q19 call.

Valuation

We are initiating coverage on Cloudflare with an Outperform rating and \$22 price target.

We derive this price target using a 2021E EV/Sales multiple of 13.6x. This multiple compares to a median peer multiple of 12.7x EV/Sales with the peers having a similar growth rate. Overall, we believe the premium multiple is warranted as Cloudflare is in the early stages of capturing what we see as a large market opportunity for the company. We believe Cloudflare is poised to make share gains in the CDN market and believe the company is positioning itself well in terms of security. Overall, we see upside to current growth estimates for Cloudflare.

Figure XIV: Comp Group

Company	Ticker	Price 01/08/2020	Performance		EV	Revenue			Rev Growth		EV/Rev		FCF			EV/FCF	
			YTD	TTM		C19E	C20E	C21E	C20E	C21E	C20E	C21E	C19E	C20E	C21E	C20E	C21E
Cloudflare	NET	\$17.78	4.2%	NM	\$5,309	\$282	\$376	\$493	33.3%	31.0%	14.1x	10.8x	-\$90	-\$73	-\$57	NM	NM
Price Target																	
Cloudflare	NET	\$22.00			\$6,723	\$282	\$380	\$496	34.8%	30.4%	17.7x	13.6x	-\$95	-\$78	-\$57	NM	NM
CrowdStrike	CRWD	\$55.66	11.6%	NM	\$12,207	\$448	\$664	\$865	48.1%	30.3%	18.4x	14.1x	-\$54	\$2	\$64	NM	NM
Zscaler	ZS	\$50.75	9.1%	15.4%	\$6,602	\$348	\$461	\$589	32.6%	27.8%	14.3x	11.2x	\$14	\$20	\$51	NM	NM
Okta	OKTA	\$125.55	8.8%	82.2%	\$18,109	\$560	\$741	\$958	32.5%	29.3%	24.4x	18.9x	\$24	\$36	\$94	NM	NM
Zoom	ZM	\$72.55	6.6%	NM	\$19,236	\$587	\$845	\$1,122	43.9%	32.8%	22.8x	17.1x	\$91	\$123	\$163	NM	NM
Slack	WORK	\$23.77	5.7%	NM	\$12,173	\$604	\$836	\$1,113	38.4%	33.2%	14.6x	10.9x	-\$90	-\$30	\$53	NM	NM
Fastly	FSLY	\$21.79	8.6%	NM	\$1,853	\$196	\$257	\$327	30.6%	27.5%	7.2x	5.7x	-\$52	-\$60	-\$45	NM	NM
Mean			8.4%	48.8%	\$11,697	\$457	\$634	\$829	37.7%	30.2%	16.9x	13.0x	-\$11	\$15	\$63	NM	NM
Median			8.7%	48.8%	\$12,190	\$504	\$703	\$912	35.5%	29.8%	16.5x	12.7x	-\$19	\$11	\$59	NM	NM
Max			11.6%	82.2%	\$19,236	\$604	\$845	\$1,122	48.1%	33.2%	24.4x	18.9x	\$91	\$123	\$163	NM	NM
Min			5.7%	15.4%	\$1,853	\$196	\$257	\$327	30.6%	27.5%	7.2x	5.7x	-\$90	-\$60	-\$45	NM	NM

Source: Baird research, FactSet Research Systems

Investment Thesis

- **Grow enterprise customer base.** While Cloudflare has an overall base of over 77k paying customers as of 3Q19, the company currently has fewer than 500 large customers (greater than \$100k in annualized billings). The company has made significant investment in growing its S&M headcount in recent periods, showing 59% YoY growth in S&M headcount for 3Q19. We see potential for Cloudflare to continue to grow its large customer base, penetrating further into the enterprise with its increasingly broad suite of products. Additionally, we see upsell opportunity from within Cloudflare's existing customer base.
- **Continue to develop new products.** Cloudflare has broadened its product portfolio to expand far beyond a CDN in recent years, and we believe there is continued potential for the company to build out new products going forward. We believe the company can leverage its broad network to continue to develop products that meet a variety of customer needs, and the company has continued to invest in its R&D capabilities. While both Cloudflare Access and Cloudflare Workers are relatively new products, early commentary around them has been positive, which we believe points to the company's ability to create compelling products.
- **Potential to take share from legacy vendors.** We believe Cloudflare is one of the fastest growing publicly traded CDN providers, though acknowledge it is difficult to estimate what percentage of growth is coming from its CDN product. However, we see potential for continued share gains against legacy players in this market going forward. In security, we see Cloudflare seeking to compete more directly with a variety of vendors, including the major firewall providers, and other cloud-centric disruptors, like Zscaler. While we believe companies are likely to employ a hybrid infrastructure, we do see a continued shift to the cloud in security and believe Cloudflare is positioning itself to take advantage of this trend.
- **Valuation.** Our price target represents a 2021E EV/Sales of 13.6x, a premium to a peer group trading at 12.7x. Overall, we believe the premium multiple is warranted as Cloudflare is in the early stages of capturing what we see as a large market opportunity for the company. We believe Cloudflare is poised to make share gains in the CDN market and believe the company is positioning itself well in terms of security. Overall, we see upside to current growth estimates for Cloudflare.

Risks & Caveats

- **Failure to gain adoption of new products.** We see significant opportunity for growth from some of Cloudflare's newer offerings. However, if these offerings fail to gain market adoption, Cloudflare growth may slow and overall results may suffer. We see Cloudflare having to work to educate potential customers on the use cases and capabilities for some of these emerging products, especially as the company expands into additional markets.
- **Strong competition in markets.** We believe Cloudflare faces significant competition in the vast majority of the markets it seeks to address, whether in CDN or in security. These competitors are oftentimes significantly larger than Cloudflare, which may present the company with additional challenges as it seeks to expand its install base. Again, we see education of these customers as being key to Cloudflare's strategy, which may prove challenging.
- **Business/reputational risk surrounding clientele.** Cloudflare has historically allowed customers from all over the world to use its products without screening its clientele. This philosophy has led to controversy in the past, including in notable incidents involving the website 8chan, after it was connected to multiple shootings, and The Daily Stormer, which helped provoke violence in Charlottesville, VA. Cloudflare did later cut ties with both of these companies. Ultimately, Cloudflare faces potential business and/or reputational risk if the company continues to be connected with violent or otherwise unsavory groups.

- **Deterioration of strategic partnership with Baidu.** Cloudflare's partnership with Baidu, which currently runs through the end of 2020, allows the company access to Baidu's network in China. Given current geopolitical tensions, the continuation of this agreement may be somewhat out of Cloudflare's control. Cloudflare results could suffer if its agreement with Baidu was terminated for any reason given some customers likely want/require access to this specific market.

Company Description

Cloudflare has its headquarters in San Francisco, CA, and was founded in 2009 by Matthew Prince, Michelle Zatlyn, and Lee Holloway; the company widely launched the Cloudflare system in September 2010. The company defines its broader mission as, "To build a better internet." Cloudflare addresses a variety of use cases with the help of its global network; the company's network spans ~200 cities and operates within 100 milliseconds of 94% of the world's internet-connected population. Cloudflare has built up a large base of users as a result of the free plan it offers, which includes features like its CDN and DDoS protection.

In terms of specific products, Cloudflare addresses a variety of use cases across security, performance, and reliability. Security products offered include a web access firewall, DDoS protection, infrastructure protection through its Magic Transit product, and a zero-trust product, Access, among others. In terms of performance, Cloudflare offers a content delivery network as well as other products including intelligent routing and image optimization. Reliability products include load balancing and DNS. The company's platform, which includes products like Cloudflare Workers, helps developers build serverless applications. Finally, the company offers two consumer products, 1.1.1.1 and Warp.



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Cloudflare, Inc. (NET)

\$ in thousands, except per share data

Income Statement														
(FYE in December)	2016	2017	2018	Q119	Q219	Q319	Q419E	2019E	Q120E	Q220E	Q320E	Q420E	2020E	2021E
Total Revenue:	84,791	134,915	192,674	61,727	67,424	73,941	79,117	282,209	86,237	92,705	98,268	103,181	380,391	496,090
QoQ				11%	9%	10%	7%		9%	8%	6%	5%		
YoY		59%	43%	48%	49%	48%	43%	46%	40%	37%	33%	30%	35%	30%
Gross Profit	60,931	106,636	149,773	47,430	52,658	58,336	60,847	219,271	65,832	71,939	76,546	78,838	293,155	379,840
Gross Margin	71.9%	79.0%	77.7%	76.8%	78.1%	78.9%	76.9%	77.7%	76.3%	77.6%	77.9%	76.4%	77.1%	76.6%
S&M	39,741	61,411	93,415	30,538	35,561	40,658	40,150	146,907	41,155	47,273	52,315	50,556	191,298	237,081
S&M-% of sales	46.9%	45.5%	48.5%	49.5%	52.7%	55.0%	50.7%	52.1%	47.7%	51.0%	53.2%	49.0%	50.3%	47.8%
R&D	22,620	32,681	52,931	17,232	18,462	20,062	21,631	77,387	23,212	24,226	25,434	26,920	99,792	123,943
R&D-% of sales	26.7%	24.2%	27.5%	27.9%	27.4%	27.1%	27.3%	27.4%	26.9%	26.1%	25.9%	26.1%	26.2%	25.0%
G&A	9,861	19,057	60,462	15,719	17,330	15,760	20,966	69,775	18,511	20,120	17,014	23,216	78,861	83,004
G&A-% of sales	11.6%	14.1%	31.4%	25.5%	25.7%	21.3%	26.5%	24.7%	21.5%	21.7%	17.3%	22.5%	20.7%	16.7%
Operating Expenses	72,222	113,149	206,808	63,489	71,353	76,480	82,747	294,069	82,878	91,618	94,763	100,692	369,951	444,028
QoQ				8%	12%	7%	8%		0%	11%	3%	6%		
YoY		57%	83%	48%	31%	50%	41%	42%	31%	28%	24%	22%	26%	20%
Operating Profit	(11,291)	(6,513)	(57,035)	(16,059)	(18,695)	(18,144)	(21,900)	(74,798)	(17,046)	(19,679)	(18,217)	(21,854)	(76,796)	(64,188)
Operating Margin	-13.3%	-4.8%	-29.6%	-26.0%	-27.7%	-24.5%	-27.7%	-26.5%	-19.8%	-21.2%	-18.5%	-21.2%	-20.2%	-12.9%
Interest / Other	(236)	15	(1,188)	347	454	21	2,374	3,196	2,415	2,410	2,358	2,270	9,453	8,360
Int/Oth	0%	0%	-1%	1%	1%	0%	3%	1%	3%	3%	2%	2%	2%	2%
Pretax Income	(11,527)	(6,498)	(58,223)	(15,712)	(18,241)	(18,123)	(19,526)	(71,602)	(14,631)	(17,269)	(15,859)	(19,584)	(67,343)	(55,828)
Taxes	(69)	(1,033)	(1,231)	(320)	(379)	(356)	(384)	(1,439)	(439)	(518)	(476)	(588)	(2,020)	(2,233)
Tax Rate	-1%	-16%	-2%	-2%	-2%	-2%	-2%	-2%	-3%	-3%	-3%	-3%	-3%	-4%
Net Income	(11,596)	(7,531)	(59,454)	(16,032)	(18,620)	(18,479)	(19,910)	(73,041)	(15,070)	(17,787)	(16,335)	(20,171)	(69,363)	(58,061)
NI Margin	-13.7%	-5.6%	-30.9%	-26.0%	-27.6%	-25.0%	-25.2%	-25.9%	-17.5%	-19.2%	-16.6%	-19.5%	-18.2%	-11.7%
EPS (Non-GAAP)	(\$0.15)	(\$0.10)	(\$0.73)	(\$0.19)	(\$0.22)	(\$0.16)	(\$0.07)	(\$0.50)	(\$0.05)	(\$0.06)	(\$0.05)	(\$0.07)	(\$0.23)	(\$0.19)
YoY			652%	40%	(13%)	(5%)	(63%)	(32%)	(73%)	(72%)	(65%)	(0%)	(53%)	(18%)
Fully Diluted Shares	75,721	77,147	80,981	85,078	85,683	118,056	295,000	145,954	296,000	297,250	298,500	299,750	297,875	302,625
Income Statement														
(FYE in December)	2016	2017	2018	Q119	Q219	Q319	Q419E	2019E	Q120E	Q220E	Q320E	Q420E	2020E	2021E
Billings	81,771	140,415	197,577	69,127	70,751	76,828	80,669	297,375	94,383	95,327	101,047	106,099	396,856	509,776
QoQ				25%	2%	9%	5%		17%	1%	6%	5%		
YoY		72%	41%	43%	58%	56%	46%	51%	37%	35%	32%	32%	33%	28%
Current Billings			197,564	47,430	52,658	58,336								
QoQ				(14%)	11%	11%								
YoY				(2%)	18%	18%								

Source: Company documents, Baird estimates.

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Cloudflare, Inc. (NET)

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\$ in thousands, except per share data

NET Business Metrics (FY)

	2016	2017	Q118	Q218	Q318	Q418	2018	Q119	Q219	Q319	Q419E	2019E	2020E	2021E
Paying Customers	35,002	49,309	52,562	56,119	61,285	67,899	67,899	72,580	74,873	77,057				
QoQ			7%	7%	9%	11%		7%	3%	3%				
YoY		41%	36%	31%	32%	38%	38%	38%	33%	26%				
Net QoQ Customer Adds		14,307	3,253	3,557	5,166	6,614	18,590	4,681	2,293	2,184				
QoQ			13%	9%	45%	28%		(29%)	(51%)	(5%)				
YoY			(11%)	(15%)	44%	130%	30%	44%	(36%)	(58%)				
Large Customers (>\$100k Annualized Billings)	95	184	218	240	277	313	313	358	408	475				
QoQ			18%	10%	15%	13%		14%	14%	16%				
YoY		94%	104%	80%	92%	70%	70%	64%	70%	71%				
Net QoQ Large Customer Adds		89	34	22	37	36	129	45	50	67				
QoQ			(14%)	(35%)	68%	(3%)		25%	11%	34%				
YoY			187%	(17%)	238%	(9%)	45%	32%	127%	81%				
Net Dollar-Based Retention Rate			114%	114%	114%	111%		116%	111%	111%				
Channel Partner Revenue	\$3,446	\$7,849	\$2,831	\$2,887	\$3,367	\$4,146	\$13,231	\$6,196	\$5,663	\$6,554				
QoQ				2%	17%	23%		49%	(9%)	16%				
YoY		128%					69%	119%	96%	95%				
%	4%	6%	7%	6%	7%	7%	7%	10%	8%	9%				
Direct Customer Revenue	\$81,345	\$127,066	\$38,993	\$42,394	\$46,703	\$51,353	\$179,443	\$55,531	\$61,761	\$67,387				
QoQ				9%	10%	10%		8%	11%	9%				
YoY		56%					41%	42%	46%	44%				
% total	96%	94%	93%	94%	93%	93%	93%	90%	92%	91%				
Total Revenue	\$84,791	\$134,915	\$41,824	\$45,281	\$50,070	\$55,499	\$192,674	\$61,727	\$67,424	\$73,941				
QoQ			8%	8%	11%	11%		11%	9%	10%				
YoY		59%	67%	57%	18%	44%	43%	48%	49%	48%				

Source: Company documents, Baird estimates.

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Last updated: 1/9/2020

Cloudflare, Inc. (NET)

\$ in thousands, except per share data

Balance Sheet

	F2017	Mar-18	Jun-18	Sep-18	Dec-18	F2018	Mar-19	Jun-19	Sep-19	Dec-19	F2019	F2020	F2020
Assets													
Cash & Equivalents/Marketable Securities	\$73,407	\$67,699	\$46,506	\$189,081	\$160,657	\$160,657	\$141,394	\$124,688	\$645,105				
Accounts Receivable	11,476	21,346	24,424	25,837	25,155	25,155	30,511	29,926	32,205				
Contract Assets	3,710	1,318	1,122	1,366	1,552	1,552	1,372	1,705	1,470				
Prepaid Expenses and Other Current	3,431	4,724	5,116	6,724	9,373	9,373	9,494	9,687	16,898				
Total Current Assets	92,024	95,087	77,168	223,008	196,737	196,737	182,771	166,006	695,678				
Long-term investments	-	-	-	-	-	-	-	-	16,169				
Property and equipment, net	51,423	53,315	55,159	58,380	73,210	73,210	81,758	84,640	92,485				
Deferred commissions	10,765	11,822	13,033	14,414	15,940	15,940	17,846	19,482	21,141				
Goodwill	4,083	4,083	4,083	4,083	4,083	4,083	4,083	4,083	4,083				
Intangible Assets	673	558	411	264	156	156	125	94	62				
Restricted Cash	2,437	2,437	5,562	6,371	6,371	6,371	6,371	6,371	6,660				
Other	1,738	2,005	1,962	1,959	1,883	1,883	2,507	6,183	3,569				
Total Assets	163,143	169,307	157,378	308,479	298,380	298,380	295,461	286,859	839,847				
Liabilities and Equity													
Accounts Payable	4,725	6,632	13,710	11,474	14,285	14,285	13,941	17,128	9,517				
Accrued Expenses	8,893	15,120	13,930	13,958	15,699	15,699	17,196	18,577	23,121				
Note Payable (current)	356	358	361	308	255	255	165	74	37				
Deferred revenue (ST)	11,927	18,440	17,952	17,187	16,817	16,817	23,209	26,757	29,835				
Other Current	1,262	2,189	3,577	14,943	14,323	14,323	15,442	14,952	14,629				
Total Current Liabilities	27,163	42,739	49,530	57,870	61,379	61,379	69,953	77,488	77,139				
Note Payable	255	165	74	37	-	0	-	-	-				
Lease Financing Obligation	10,313	10,352	10,392	10,420	10,443	10,443	10,466	10,490	10,501				
Deferred Revenue (LT)	207	289	311	210	220	220	1,228	1,007	816				
Other Long Term	3,493	4,172	4,896	7,092	8,322	8,322	10,517	11,788	10,993				
Total Liabilities	41,431	57,717	65,203	75,629	80,364	80,364	92,164	100,773	99,449				
Stockholders' Equity	121,712	111,590	92,175	232,850	218,016	218,016	203,297	186,086	740,398				
Total Liabilities and Equity	\$163,143	\$169,307	\$157,378	\$308,479	\$298,380	\$298,380	\$295,461	\$286,859	\$839,847				

Ratio Analysis

	F2017	Mar-18	Jun-18	Sep-18	Dec-18	F2018	Mar-19	Jun-19	Sep-19	Dec-19	F2019	F2020	F2020
ROE						-27.3%	-31.9%	-34.2%	-9.3%				
Gross Cash Balance	\$73,407	\$67,699	\$46,506	\$189,081	\$160,657	\$160,657	\$141,394	\$124,688	\$645,105				
Net Cash / Share	\$0.93	\$0.85	\$0.58	\$2.31	\$1.90	\$1.90	\$1.66	\$1.45	\$5.60				
BV / Share	\$1.58	\$1.42	\$1.17	\$2.85	\$2.58	\$2.69	\$2.39	\$2.17	\$6.27				
Current Ratio	3.4x	2.2x	1.6x	3.9x	3.2x	3.2x	2.6x	2.1x	9.0x				
DSO	31	46	49	46	41	48	44	40	39				
Deferred Revenue (ST)	\$11,927	\$18,440	\$17,952	\$17,187	\$16,817	\$16,817	\$23,209	\$26,757	\$29,835				
YoY					41%	41%	26%	49%	74%				
Deferred Revenue (LT)	\$207	\$289	\$311	\$210	\$220	\$220	\$1,228	\$1,007	\$816				
YoY					6%	6%	325%	224%	289%				
Total Deferred	\$12,134	\$18,729	\$18,263	\$17,397	\$17,037	\$17,037	\$24,437	\$27,764	\$30,651				
QoQ		54%	(2%)	(5%)	(2%)		43%	14%	10%				
YoY					40%	40%	30%	52%	76%				

Cash Flow Analysis

	F2017	Mar-18	Jun-18	Sep-18	Dec-18	F2018	Mar-19	Jun-19	Sep-19	Dec-19	F2019	F2020	F2020
Net Income (GAAP)	(\$10,748)	(\$11,468)	-\$21,020	-\$37,989	-\$16,687	(\$87,164)	(\$17,114)	-\$19,706	-\$40,853	-\$23,866	(\$101,539)	(\$80,775)	(\$72,943)
Depreciation & amortization	12,174	3,876	4,402	5,119	5,508	18,905	6,170	6,990	7,763	7,430	28,353	33,984	39,876
Stock comp	2,755	789	1,060	24,436	1,062	27,347	1,057	1,044	22,911	1,213	26,225	7,835	10,640
Working cap/Other	(4,969)	497	539	1,051	74	2,161	(137)	72	1,333	-	1,268	-	-
Cash flow operations	3,167	-\$1,442	-\$15,657	-\$13,912	-\$12,270	(43,281)	-\$9,690	-\$2,867	-\$17,786	-\$5,540	(35,883)	(12,234)	13,706
per share	\$0.04	(\$0.02)	(\$0.20)	(\$0.17)	(\$0.15)	(\$0.53)	(\$0.11)	(\$0.03)	(\$0.15)	(\$0.02)	(\$0.25)	(\$0.04)	\$0.05
Less: capex	(19,031)	(3,822)	(2,485)	(6,200)	(12,959)	(25,466)	(9,036)	(9,954)	(11,991)	(13,873)	(44,854)	(52,878)	(57,082)
Free cash flow	(19,808)	(7,123)	(19,899)	(22,141)	(28,957)	(78,120)	(22,123)	(16,895)	(33,638)	(22,413)	(95,069)	(78,112)	(57,375)
per share	(\$0.26)	(\$0.09)	(\$0.25)	(\$0.27)	(\$0.34)	(\$0.96)	(\$0.26)	(\$0.20)	(\$0.28)	(\$0.08)	(\$0.65)	(\$0.26)	(\$0.19)

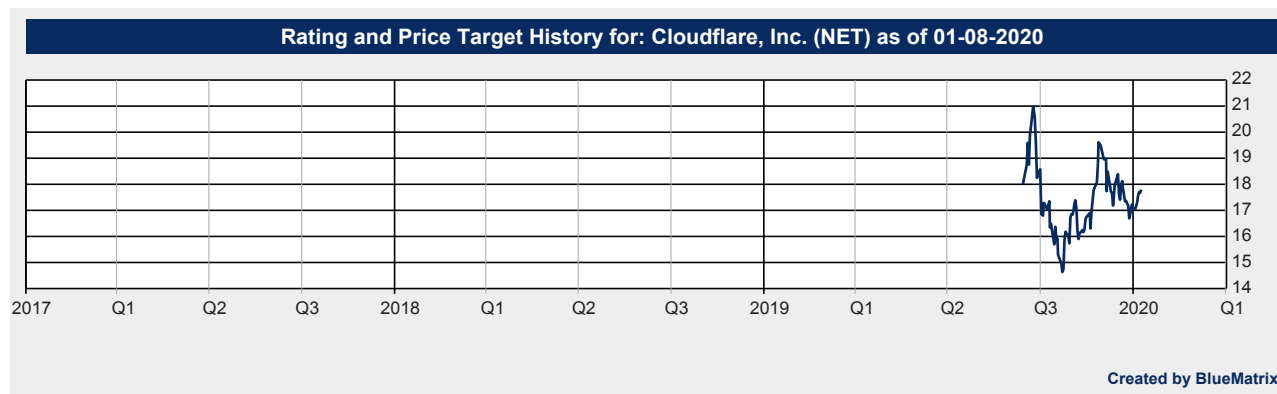
Source: Company documents, Baird estimates.

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Appendix - Important Disclosures and Analyst Certification

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1 Robert W. Baird & Co. Incorporated makes a market in the securities of NET.

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